Exakat Documentation

Release 1

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Contents:

CHAPTER

ONE

INTRODUCTION

This is the documentation of the Exakat engine, version 2.6.6 (Build 1503), on Sat, 03 Feb 2024 11:06:47 +0000.

1.1 What is Exakat ?

Exakat is a tool for analyzing, reporting and assessing PHP code source efficiently and systematically. Exakat processes PHP 5.2 to 7.4 and 8.3 code, as well as reporting on security, performance, code quality, migration.

Exakat reads the code, builds an AST and several dependency graphs, then indexes all of it in a graph database. From there, exakat runs analysis, collecting potential errors and descriptive information about the code. Finally, exakat produces reports, both for humans and machines.

1.2 Use Cases

1.2.1 Code quality

Exakat detects hundreds of issues in PHP code : dead code, incompatible calls, undefined calls, illogical expressions, etc. Exakat is built for PHP, and cover common mistakes.

1.2.2 PHP version migration

Every PHP middle version is a migration by itself : based on the manual and common practices, exakat find both backward incompatibilities, that prevent migration, and new features, that makes code modern.

Exakat review code for minor version, and spot bug fixes that may impact the code.

1.2.3 Framework code quality

Common best practices and recommendations for specific plat-forms like Wordpress, CakePHP or Zend Framework are covered.

1.2.4 PHP configurations

Exakat detects several specialized analyzes, for Web security : making the code more secure online; PHP performances : allowing faster execution.

1.2.5 Security, performances, testability

Exakat has several specialized analyzes, for Web security : making the code more secure online; PHP performances : allowing faster execution; Testability : targeting the common pitfalls that makes code less testable.

1.2.6 Feature inventories

When auditing code, it is important to have a global view. Exakat collects all PHP features (magic functions, any operator, special functions or patterns) and represents them in one report, giving auditors a full view.

Exakat inventories all literals for later review, helping with the magic number syndrome and any data refactoring.

1.3 Exakat compared to others

1.3.1 Code sniffer

Automated coding standard violation detection for PHP review the code for syntax layout. Exakat is not a coding standard detection tool, as it focuses on bug finding, rather than coding layout.

While checking for coding standard, some bugs may be detected, and when checking for bugs, some coding standards may be found too.

Using AST, dependency graphs and knowledge databases, Exakat reviews the code, checks its potential usage and mis-usage. Exakat doesn't take any presentation nor comments into accounts : only functions, variables and their effects.

1.3.2 Phan, PHPstan, PHP

PHP code quality checks, based on type compatibility, and structure definitions. Exakat shares AST style analysis but it goes a bit further by including common mistakes and actual PHP features detections.

1.3.3 PHP7mar, PHP7cc

Code review for PHP 5 to migrate to PHP 7. Exakat covers every middle version from PHP 5.3 to PHP 7.3.

1.3.4 PHP-ci, Jenkins, Grumphp

Continuous integration and code quality management check the code by running code quality tools and collecting all the reported informations. Exakat is a good companion for those tools.

Exakat provides machine readable format reports, such as json, xml, text that may be consumed by CI. Exakat provides also human readable format, such as HTML, for interactive review of the reports, and a longer usage life span.

1.4 Platforms

Exakat is an Open Source tool. The code is available on Github.com/exakat/exakat, as Docker image and Vagrant file. It is also available as a phar download.

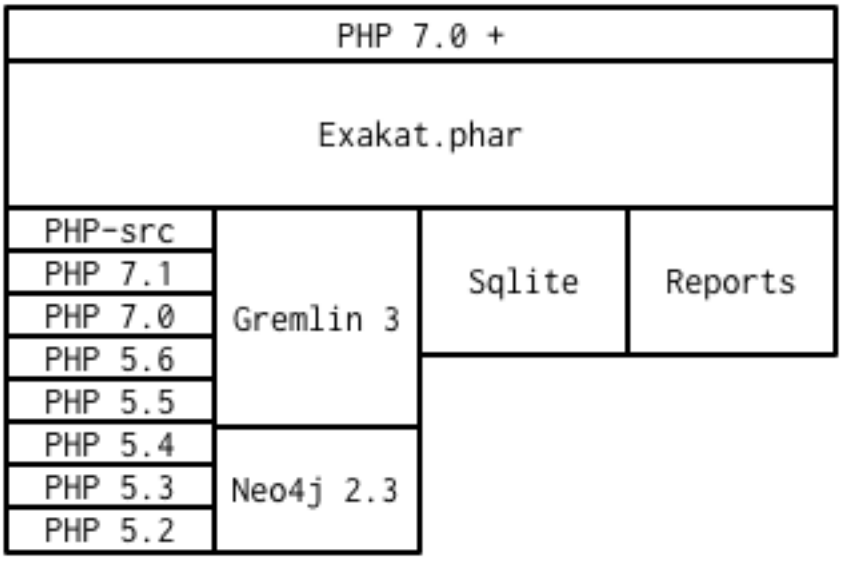
Exakat Cloud is a SaaS platform, offering exakat audits on code, anytime, at reduced cost.

Exakat SAS is a Service company, providing consulting and training services around automated analysis and code quality for PHP.

1.5 Architecture

Exakat relies on PHP to lint and tokenize the target code; a graph database to process the AST and the tokens; a SQLITE 3 database to store the results and produce the various reports.

Exakat itself runs on PHP 7.2, with a short selection of extensions. It is tested with PHP 7.0 and 7.3.



Source code is imported into exakat using VCS client, like git, SVN, mercurial, tar, zip, bz2 or even symlink. Only reading access is actually required : the code is never modified in any way.

At least one version of PHP have to be used, and it may be the same running Exakat. Only one version is used for analysis and it may be different from the running PHP version. For example, exakat may run with PHP 7.2 but audit code with PHP 5.6. Extra versions of PHP are used to provide compilations reports. PHP middle versions may be configured separately. Minor versions are not important, except for edge cases.

The gremlin server is used to query the source code. Once analyzes are all finished, the results are dumped into a SQLITE database and the graph may be removed. Reports are build from the SQLITE database.

CHAPTER

TWO

RELEASE NOTE

Here is the release note of exakat.

Version 2.6.7 (, 2024-01-11)

- **Architecture**
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- **Cobbler**
  -
- **Report**
  -
- **Analysis**
  -
- **Tokenizer**
  -

Version 2.6.6 (, 2024-01-11)

- **Architecture**
  -
- **Cobbler**
  -
- **Report**
  - Ambassador : fixed documentation display of PHP scripts
  - CallGraph : displays the call graph in dot format
- **Analysis**
  - Refactored analysis : fixed bug in Missing New (confusion with property)
  - Augmented analysis : null coalesce and ?? with members
  - New analysis : useless coalesce operator
  - New analysis : report empty json_decode()
  - Refactored analysis : No Parenthesis For Language Construct now covers yield and yield from
  - New analysis : exit/die without parenthesis

  - New analysis : count() is not negative
  - Refactored analysis : Must return now skips generators and exited functions
  - Refactored analysis : Double object assignation now focuses on variables, properties.
  - Refactored analysis : Removed false positives with 'Can Call Generator'
  - Refactored analysis : Removed false positives with OnlyVariablePassedByReference
  - Refactored analysis : Useless reference in foreach
  - New analysis : report possible confusion between parameter and variable in arrow functions
  - New analysis : report usage of the new PHP 8.1 types
  - New analysis : report usage of the new PHP 8.2 types
  - New analysis : report usage of strpos() < 1 (possible bug)
- **Tokenizer**
  - Made property inside a string with a Name, not a Identifier
  - Mark variable in append as modified

Version 2.6.5 (, 2024-01-31)

- **Architecture**
  - Added support for NEXT in Sequence, Method definition, Functioncall, concatenations
- **Cobbler**
  -
- **Report**
  -
- **Analysis**
  - Refactored analysis : Structures/UselessTrailingComma handles method calls
  - Refactored analysis : Structures/UnreachableCode handles never returntype
  - Refactored analysis : Classes/AbstractOrImplements
  - Fixed analysis : Complete/ReturnType had a bug with Classanonymous
  - Refactored analysis : Variables/InconsistentUsage had a bug with Classanonymous
  - New analysis : report useless nullsafe operator usage
  - New analysis : report file_put_contents(, [])
  - New analysis : report nested match() calls
  - New analysis : report useless short ternary
  - New analysis : dump all combined method calls
- **Tokenizer**
  - Fixed display of ?-> inside strings
  - Refactored Goto labels with a common atom between goto and labels
  - Fixed minor errors with SEQUENCE (via NEXT)

Version 2.6.4 (, 2023-12-31)

- **Architecture**
  - Moved assert configuration to ini_set and php.ini
  - Added a set of token values for Debian 12 and 8.3
  - Void is now a single atom in the graph (speed up, less resources)
  - Speed up Load with less arrays, more classes
- **Analysis**
  - New analysis : report PHP native attribute usage
  - New analysis : check for injectable version, based on attribute declaration
  - New analysis : report multiple definition for the same property in a class family
  - Refactored analysis : multiply by one now reports +$a as a hidden cast.
  - New analysis : is_a() or instanceof favorite
  - Refactored analysis : Use Stdclass has extended coverage now
  - Refactored analysis : Undefined Classes includes Enum now
  - Refactored analysis : Pss outside a class include Enum now
  - New analysis : suggest using (array)
  - Refactored analysis : set class_alias() definitions
  - Refactored analysis : Could Use Null-safe operator now covers new situations
  - New analysis : check after nullsafe operator
  - New analysis : Don't use Null typed elements with a null-safe operator
  - New analysis : report invalid casts
  - New analysis : could use strcontains()
  - New analysis : suggest removing unused variable in catch
  - New analysis : suggest adding readonly to property
  - New analysis : spot calls just after an instantiation
  - New analysis: report try without catch but with finally
  - New analysis: report precedence errors with coalesce and comparisons
  - Refactored analysis : Cache Outside Loop was upgraded to spot cases in for, while and do while.
  - Refactored analysis : Join On File is extended with the reverse: file_get_contents() with explode()
  - New analysis: report exported properties
  - Removed analysis: remove duplicate rule OnlyVariableForReference
  - New analysis: report literal passed by reference
- **Tokenizer**
  - Added CALLED link to new calls
  - Fixed edgecases with match and readonly

Version 2.6.3 (, 2023-12-14)

- **Analysis**

  - New analysis : report non-static method called from static method
  - New analysis : report properties that are untyped, uninitialized, and no set in the constructor.
  - New analysis : report traits used in a type
  - New analysis : report short assignations on appends (should not be possible)
  - Updated analysis : report usage of static properties with ??= and other short assignations
  - New analysis : added support for the friend attribute
  - New analysis : report method names starting with __
  - New analysis : report $array[count($array)] append system
  - Updated analysis : unknown directive names cover more PHP functions and combinaisons
  - New analysis : report when void is returned by reference in a method
  - Updated analysis : Can Count Iterable was upgraded with types
  - New analysis : can't call a generator directly
  - New analysis : report useless trailing comma
  - Removed analysis : propagate calls (Complete)
  - New analysis : report non-int and non-string used as index in an array call
  - New analysis : report attempt to instantiate non-class (e, t, i)
  - Updated analysis : Too Many Variables in Method
- **Tokenizer**
  - Fixed bug with short assignment left operand not being marked as read as well as written
  - Added fullnspath to Staticclass atom
  - Added support for THROWN, CALLED, YIELDED links in methods

Version 2.6.2 (, 2023-11-21)

- **Analysis**
  - New analysis : Casting Method Favorite
  - Updated analysis : Ellipsis detection improved
  - New analysis : report arrays that are used for append and direct index access at the same time
  - New analysis : report get_class() and get_parent_class() without arguments
  - Updated analysis : Literal inventory now reports float, array() and heredocs
  - New analysis : report usage of advanced static variable initialisation
  - New analysis : cannot be readonly
  - New analysis : report triplet stats from the internal graph
  - New analysis : report static variables outside a method
  - Updated analysis : Missing types are now covering class constants too
  - New analysis : report usage of Deprecated features (CITE, functions, parameters…)
  - Updated analysis : Could Be Typed * now supports class constants
  - New analysis : add support for #[Override] before PHP 8.3

  - New analysis : report variables that use their type as name

Version 2.6.1 (, 2023-10-19)

- **Cobbler**
  - New Cobbler : Logical to In_array() conversion
- **Analysis**
  - Updated analysis : Use same types for comparisons was refactored
  - Updated analysis : Add Zero skips ?? and ?: when it is used to create default values
  - Updated analysis : Implode() args order was refactored with type support
  - New analysis : report multiline expressions
  - New analysis : report usage of typed constants
  - Updated analysis : sprintf() argument counts is improved
  - Updated analysis : double instruction skips try, while, do while.
  - Updated analysis : useless instruction refactored clone expressions
  - Updated analysis : array Append in a list() call
  - Updated analysis : written only variables now take into account isset() too
  - Updated analysis : recursive functions don't report recursion via property or method call()
  - Updated analysis : Shell favorite

Version 2.6.0 (, 2023-10-04)

- **Architecture**
  - Refactored generation of VCS
- **Cobbler**
  - New cobbler : rename namespace
  - New cobbler : rename function
  - New cobbler : rename constant
  - New cobbler : rename class
  - New cobbler : rename interface
  - New cobbler : rename enums
  - New cobbler : rename trait
  - New cobbler : rename method
  - New cobbler : rename class constant
  - New cobbler : rename property
- **Report**
  - Added Classes dependencies table to Ambassador
  - Added Classes dependencies counts table to Ambassador
  - Added Classes dependent counts table to Ambassador
  - Added Namespaces to Exception tree

  - Added list of repeated class names
  - New report : Naming, that checks spelling
- **Analysis**
  - Updated analysis : Useless Null Coalesce now omits stdclass
  - New analysis : report rewritten final class constant
  - New analysis : report uselessly rewriten class constant
  - Updated analysis : Fixed detection of use for functions and constants
  - Removed analysis : Removed 'Mark callable'
  - Updated analysis : Fixed detection of calls to __construct
  - Updated analysis : Avoid Boolean as Argument sped up
  - Updated analysis : Property Could Be Local sped up
  - New analysis : Report blind variable used beyond their foreach() loop
  - Updated analysis : Could Use Try has more exceptions sources
  - New analysis : Report recalled conditions
  - Updated analysis : Upgraded Classes depencencies list with attributes, New initializers and instanceof
  - New analysis : Report incompatible property definition between trait and class
  - Updated analysis : Deep definition now includes define() calls and enums
  - Updated analysis : Collection of File dependencies now include interfaces
  - Updated analysis : Fixed but in Could Be Spaceship
  - Updated analysis : Upgraded 'unthrown exception' to handle variables
  - New analysis : report usage of self:: on
  - New analysis : report usage of DNF
  - Updated analysis : readonly usage covers classes and anonymous classes
  - New analysis : report usage of FTN as standalone type
  - New analysis : Collect usage of throw and their method
  - New analysis : Collect literals used in comparisons
  - New analysis : Suggest using array_combine()
  - New analysis : Report comparisons with distinct scalar types
  - New analysis : reports null being used as array's index
  - New analysis : collect all named things in the source code
  - Updated analysis : isComponent also supports enum and declare
  - New analysis : report useless Try clauses
  - New analysis : report converted exceptions
  - New analysis : report methods that are no more than a single if
  - New analysis : suggest to ditch default before assigning it
  - Updated analysis : Unset or Cast was refactored with less raw() calls

  - Updated analysis : PPP declaration style
  - New analysis : collect the number of injections in a constructor
  - New analysis : collect the property usage level for each class
  - New analysis : collect structures, instead of in dump
  - New analysis : collect catch, to complete results with throw collect
  - Updated analysis : report usage of standalone True, False, Null.
  - New analysis : report identical cases in match and switch
  - New analysis : report usage of constants in traits
  - New analysis : preference between short and formal comparison
  - New analysis : report yield that can be turned into a yield from
  - New analysis : report usage of enum cases in static constant expressions
  - New analysis : report modification of readonly properties in __clone()
  - New analysis : report usage of internal classes with class_alias()
  - New analysis : report usage PHP 8.3 new dynamic
  - New analysis : static variables may be initialized with arbitrary expression in PHP 8.3
  - New analysis : report when an interface's class constant visibility is not public when in the class
  - Updated analysis : upgraded pre-calculate used variable in closure
  - Updated analysis : Insufficient typehint (extended coverage)
  - New analysis : Report final trait method that are overwritten
- **Tokenizer**
  - Added support for typed constants
  - Checked support for readonly anonymous classes
  - Fixed LINK in DNF types
  - Added support for attributes in enum, trait, interface and enumcase

Version 2.5.2 (Wang Gui, 2023-02-04)

- **Report**
  - New report : Format for SonarCube
- **Analysis**
  - New analysis : report array literal, used by index.
  - New analysis : Cannot use empty strings with explode()
  - New analysis : Report max() and min() applied on empty arrays.
  - Updated analysis : Unused methods now skips internal use
  - Updated analysis : Date formats are collected only on Datetime and Datetimeimmutable
  - New analysis : strpos() used to convert integer to their ascii value
  - New analysis : report double checks in the code
  - New analysis : skip empty arrays in array_merge()

  - New analysis : ellipis is slower than array_merge()
  - Updated analysis : variable type is detected with cast too.
  - New analysis : follow unvalidated data in $_SESSION
  - Updated analysis : updated in_array() to also report short arrays
  - Updated analysis : closure2string skips when other arguments are necessary
  - Updated analysis : condition is always true is upgraded with more work on is_a() and class type
  - Updated analysis : htmlspecialchars() changed behavior in 8.1
  - Updated analysis : always false does a better job at comparing types
  - Updated analysis : upgraded analysis with types
  - New analysis : new functions in PHP 8.3
  - New analysis : suggestion for str_ends_with()
  - New analysis : suggestion for str_starts_with()
  - Updated analysis : dirname with 3rd arg is suggested when using '$path/../' strings
  - New analysis : collect the number of arguments per PHP native calls
  - New analysis : report if/then when a variable is assigned in one branch, but not in the other
  - New analysis : report mono or multi bytes favorite
  - New analysis : count the number of arguments to PHP native calls
  - Updated analysis : Null on boolean now takes into account types
  - Updated analysis : upgraded Make One Call analysis to spot calls within same expression
  - Updated analysis : incompatible type with incoming now covers call with superglobals
  - Updated analysis : fixed bug when calculating DEFINITION for superglobals
  - New analysis : report different constructors
  - New analysis : report usage of short ternary operator
  - New analysis : report when finalizing the call before the closure is better
  - New analysis : report object cast to int or float
  - New analysis : report variables initialized before an if condition with reinitialisation
  - New analysis : report incompatible constructors
  - New analysis : Report sidelined methods from a trait
  - New analysis : Report misused Generators
  - New analysis : Substr() for partitions in a loop
  - New analysis : suggest caching local calls to reduce processing
  - New analysis : report list of PHP 8.3 new classes

- **Tokenizer**
  - Added support for readonly + final/abstract class
  - Fixed DEFINITION for static in new
  - Fixed DEFINITION for global variable definitions

  - Upgraded support for variable types with PDFF
  - Adapted support for undefined Identifier between PHP 7 and 8

Version 2.5.1 (Wang Gui, 2023-01-19)

- **Architecture**
  - Extracted Called* to external class
  - Introduced parallel loading for nodes and properties (links are WIP)
- **Analysis**
  - New analysis : suggest omitting empty arrays before array_merge()
  - Updated analysis : more calls are collected
  - Updated analysis : Strict comparison with boolean covers array_search and array_keys
  - New analysis : report useless methods
  - Updated analysis : Add Zero also covers syntax like +$a
  - New analysis : report weak tests on array, without checks on index
  - New analysis : report multiple types in switch (PHP 8 compability)
  - New analysis : could be a readonly class
  - Updated analysis : Comparison strings to int include in_array() and co
  - New analysis : report class invasions
  - New analysis : report property invasions
  - New analysis : collect all setlocale() calls
  - Updated analysis : Collected calls includes __construct()
  - Updated analysis : Collected calls includes __clone()
  - New analysis : report usage of ++ on strings
  - New analysis : report usage of deprecated mb_string encodings
- **Tokenizer**
  - Fixed edge cases with readonly/namespace as method name
  - Fixed handling of static keyword with rare combinaisons

Version 2.5.0 (Wang Gui, 2023-01-05)

- **Architecture**
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- **Cobbler**
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- **Report**
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- **Analysis**
  - Refactored analysis : WrongTypeWithCall skips variables without a type
  - Refactored analysis : BailoutEarly skips blocks with one element only

- Refactored analysis : NonStaticMethodsCalledStatic extended to Stubs
- New analysis : ambiguous types for variables
- Refactored analysis : Unpreprocessed skips static::class
- Refactored analysis : Undefined constant skips class constants with variables
- New analysis : report exception that can't be chained
- Refactored analysis : ShellExec preferences
- Refactored analysis : CreateMagicProperty was extended
- New analysis : report possible ::class usage
- New analysis : report wrong order of argument with variadic
- New analysis : report wrong encoding usage with mbstring
- Refactored analysis : Sped up 'could be abstract method'
- Refactored analysis : Undefined Interfaces differentiate classes and interfaces
- New analysis : Ternary and Coalesce Operators order
- Refactored analysis : Set Parent DEFINITION also adds DEFINITION for CPM
- Refactored analysis : NativeClassTypeCompatibility upgraded fully to stub support
- New analysis : Report useless assignation of promoted properties
- Refactored analysis : Parameter name checking works with methods
- Refactored analysis : Classes/CouldUseClassOperator is extended to all CITE
- Refactored analysis : Classes/UndefinedConstants skips situations where the class is a variable of unknown type
- Refactored analysis : Infinite recursion also detects coalesce
- New analysis : Report methods / property confusions
- New analysis : Suggest using __NAMESPACE__, instead of hardcoded string
- Refactored analysis : Indirect injection is extended with ?? ?: and ? :
- New analysis : Report too many chained calls one in the other
- Refactored analysis : 'This is for classes' is extended to traits and enums
- Refactored analysis : 'Unsupported types with operator' is now using Stubs files
- New analysis : Report wrong typed with incoming values
- Refactored analysis : 'Queries in loops' is now using extended to methods and one functioncall down.
- Refactored analysis : Identical Variables in Foreach now searches inside the source
- New analysis : Empty Loops
- New analysis : Report arrays that are too much extracted
- New analysis : Report methods where variables are not needed (only unique usage)
- New analysis : Report possible emission of TypeError
- Refactored analysis : Cant Throw now skips Interfaces
- Refactored analysis : fixed false positive with Always False

  - Refactored analysis : Constant Invalid names do not confuse the constant and its value
  - Refactored analysis : Undefined Variable in Catch, now skips variables also created in the catch clause
  - Refactored analysis : Implicit conversion to int : skip float returned values
  - Refactored analysis : Closure could be static now checks for internal definitions of enums or anonymous class
  - Refactored analysis : Dont Collect void is extended to unspecified return types
  - Refactored analysis : useless coalesce
  - Refactored analysis : Indirect Injections
  - Refactored analysis : Useless Reference now checks PHP, ext and stubs
  - New analysis : Suggest to throw exceptions with json_*code()
  - Refactored analysis : Scalar are not arrays cleaned
  - Refactored analysis : No net for xml now enforces class too
  - Refactored analysis : Static for classes now omits static variables
  - Refactored analysis : Incompatibility signature now omits __construct
  - Refactored analysis : Unreachable code
  - New analysis : collect all calls from methods to methods
  - New analysis : set fullnspath to method calls
  - New analysis : report variables with an initial capital S (readability)
  - New analysis : type dodging in parameter with union type
- **Tokenizer**
  - Fixed bug with related to readonly position
  - Fixed bug where define was not correctly set with fullnspath
  - Fixed priorities for print and yield
  - Added support for DNF in the engine
  - Added definition with static calls, within a class
  - Added support for methods and properties with static calls to parent:
  - Refactored handling of scope with $this and self/static
  - Created a Precedence class for each version
  - Refactored calculations for currentMethods in external class
  - Migrating from Method to readsStubs (WIP)
  - Handled edge cases in Yield (yield yield)
  - Removed link between bool and int values when loading (edge case of numeric strings)
  - Cleaned Load of GlobalVars array

Version 2.4.9 (Wang Gui, 2022-09-07)

- **Analysis**
  - Refactored analysis : Uses Default now supports PDFF and functions

  - Refactored analysis : Using PDFF with ext/seaslog and ext/memcache
  - Removed analysis : ext/wikidiff2, ext/wincache, ext/iis, ext/libevent, ext/mhash, ext/parsekit, ext/kdm5
  - New analysis : date() versus DatetTime preferences.
  - New analysis : identify unused public methods
  - Refactored analysis : Detecting wrong visibility with implemented methods was sped up
  - Removed analysis : Interface/ConcreteVisibility, double with Classes/ImplementedMethodsArePublic
  - New analysis : identify potential abstract methods
  - Refactored analysis : Upgraded 'Wrong Type With Call' to use the known variable types
  - Refactored analysis : No Parent now takes traits into account.
  - Refactored analysis : Should Have Destructor : removed some false positives, refactored documentation.
  - Refactored analysis : No Parent now also checks for traits
  - Refactored analysis : Uses default argument skips Virtualproperties
  - New analysis : Complete/SolveTraitConstants adds support for constants in traits (PHP 8.2)
  - Refactored analysis : Complete/SetParentDefinition was trimmed of 2 useless queries
  - Refactored analysis : PPP declaration style
  - Refactored analysis : Is Global Constant (removed usage of .ini)
  - Refactored analysis : Overwritten* are simplified for speed up and deduplication
  - Refactored analysis : UndefinedClasses speed up
  - Refactored analysis : Should Preprocess now adds Heredocs and skips variables inside strings
  - Refactored analysis : Should use Ternary now skips elsif
  - Refactored analysis : ext/fann now use pdff

- **Tokenizer**
  - Added support for PHP keywords in namespace names.

Version 2.4.8 (Xue Rengui, 2022-08-24)

- **Architecture**
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- **Cobbler**
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- **Report**
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- **Analysis**
  - Refactored analysis : strange names now covers types too.
  - Removed analysis : ext/proctitle, Composer/IsComposerName, ext/cyrus
  - Removed analysis : Composer/IsComposerInterface,
  - Refactored analysis : VariableTypehint now skips self-transforming variables in default

  - Refactored analysis : ErrorMessages now also tracks trigger_error()
  - New analysis : ext/teds, ext/scrypt, ext/geospatial
  - Refactored analysis with pdff : ext/crypto, ext/ev, ext/enchant
  - Refactored analysis : refactored 'could use short assignation'
  - Removed analysis : ext/ereg, ext/async
  - Refactored analysis : undefined class constants are also looked in the children classes
  - Refactored analysis : vendor/symfony and vendor/phalcon
  - Refactored analysis : Unused Methods now handles foreach() with new()
  - New analysis : vendor/feast framework
  - Checked unit tests : 4480 / 4450 test pass (99.3% pass)
- **Tokenizer**
  - Fixed detection of constant in ternary/coalesce
  - Finish adding types

Version 2.4.7 (Xu Jingzong, 2022-08-03)

- **Architecture**
  -
- **Cobbler**
  - New cobbler : remove brackets to single-instruction commands
- **Report**
  - New inventory : IP
- **Analysis**
  - Refactored analysis : Could Use Array_sum()
  - Refactored analysis : Wrong Attribute with properties
  - Refactored analysis : implode Args order now support types
  - Refactored analysis : fopen mode does accept rw
  - Refactored analysis : references on objects (full refactor)
  - New analysis : finding empty arrays with comparisons
  - New analysis : using strict with in_array or not
  - New analysis : no default for referenced parameter
  - New analysis : No clone constant before PHP 8.1
  - New analysis : Complete enum cases with definition to value and name
  - Refactored analysis : better handling of clone in Variable Typehint
  - Refactored analysis : cleaned some false positives with Undefined Properties
  - Refactored analysis : Unresolved use now uses stubs; upgrade in function/const coverage
  - Removed analysis : ext/recode, ext/runkit, ext/ming
  - Refactored analysis : Better coverage for 1 + []

  - Refactored analysis : Difference preference has gremlin upgraded
  - New analysis : Ext/random (PHP 8.2)
  - New analysis : IP inventory
  - Refactored analysis : JsonSerialize and ReturnTypeWIllChange cover new methods
- **Tokenizer**
  - Added support for -> out of Enum cases (with name and value)
  - Added new classes from PHP 8.2
  - Fixed missing fullnspath for attributes with absolute path
  - Added all attributes to properties

Version 2.4.6 (Li Yuanji, 2022-07-20)

- **Architecture**
  - Skip loading of WS property when only doing an audit (speed up loading)
  - Finished moved to Gremlin 3.6
- **Cobbler**
  - New cobbler : adds brackets to single-instruction commands
- **Report**
  - Ambassador : refactored trait matrix
- **Analysis**
  - Refactored analysis : Wrong Type Hint with First Class Callable
  - New analysis : PHP 8.2 new functions
  - Refactored analysis : Useless Cast takes advantages of const types
- **Tokenizer**
  - Typed all internal atoms
  - Added types to internal loading engine

Version 2.4.5 (Li Yuanji, 2022-07-07)

- **Architecture**
  - Docs : fixed presentation for cobblers
- **Cobbler**
  - New cobbler : remove abstract option
- **Report**
  -
- **Analysis**
  - Refactored analysis : No Pss Outside Class also checks for static closures
  - New analysis : Report errors in sprintf() formats
  - New analysis : Report methods and properties with the same name in a class
  - New analysis : Report invalid chars in date scanning formats

  - Refactored analysis : Useless Coalesce applied to PHP native methods
  - New analysis : Report Abstract Private methods in traits (php 8.0-)
  - Refactored analysis : Dynamic New now also works on parenthesis
  - New analysis : Report Utf8_encode() and utf8_decode() deprecation
  - Refactored analysis : Create Default Values checks on self-transforming variables
  - Refactored analysis : Missing Typehint skips constructor and destructor
  - Refactored analysis : Useless constructor skip one that has other constructor calling it
  - New analysis : Some Magic methods have compulsory return types
  - Refactored analysis : Overwritten const is extended to classes without constants (but in their parent or interfaces)
  - Refactored analysis : Nested ternaries now checks assignations, New parameter to set the min depth
  - Refactored analysis : Instantiating Abstract now uses PDFF
  - Refactored analysis : $this may be OK in closures (they can be rebinded later)
  - Refactored analysis : Adding 'Void' returntype when possible
  - Refactored analysis : Don't Collect Void was upgraded with methods returning nothing.
  - Refactored analysis : Identical Expressions, now checks = and omits short assignations
  - New analysis : If Then Return Favorite
  - Refactored analysis : Useless Casting checks % distinctly
  - Refactored analysis : Add Zero skips variables more often
  - New analysis : Could Be Resource
  - New analysis : DateTime Immutable is not immutable
- **Tokenizer**
  - Fixed namespace's names dectection for older PHP versions
  - Fixed Functioncall detection inside a new operator.

Version 2.4.4 (Li Jiancheng, 2022-06-23)

- **Architecture**
  - Upgraded to Gremlin 3.6.0 (tinkergraph)
  - Prepared engine to work with GSneo4j 3.6.0
- **Cobbler**
  - New cobbler : turn ${a} into {$a} for PHP 8.2 compatibility
  - Refactored cobbler : Adds null type to nullable parameters
- **Report**
  -
- **Analysis**
  - Refactored analysis : Non nullable setter skip properties set in constructor
  - Removed analysis : ext/ffmpeg, ext/fdf, ext/xcache, ext/yis, ext/cairo

  - Refactored analysis : ext/rdkafka, ext/zookeeper now uses PDFF
  - Refactored analysis : Should Preprocess, now include local constant strings
  - Refactored analysis : Undefined Interface, now not reporting extra Types
  - New analysis : retyped reference, when a parameter with a type, eventually get a new type
  - Refactored analysis : Static methods called from object, modernization
  - Refactored analysis : New Analyzers, omits local defaults values
  - Refactored analysis : Access Protected now takes into account PDFF
  - Refactored analysis : Null type detection includes null defaut value for parameters.
  - New analysis : Report type error for default values
  - Refactored analysis : 'ds', 'ssh2' were upgraded to PDFF
  - Checked unit tests : 4373 / 4349 test pass (99.5% pass)
  - New analysis : Ice framework
  - New analysis : taint
- **Tokenizer**
  - Fixed 'constant' bug with functioncall on a nsname
  - Upgraded Typehint detection to handle clone() calls
  - Upgraded Typehint inference for properties and variables

Version 2.4.3 (Emperor Gaozu of Tang, 2022-06-02)

- **Architecture**
  - Doctor failed to copy the tinkergraph configuration files
  - Removed old connector GSneo4j/Tinkergraph
  - Refactored starting/emptying of gremlin database
  - Testing on PHP 8.2
- **Cobbler**
  - Added suggestions when the -P is not found
  - New cobbler : add Final to classes
  - New cobbler : removes Final from classes
  - Upgraded cobbler : removes Readonly from classes
- **Report**
  - Ambassador, Emissary, Diplomat : removed link to the source code.
  - Ambassador, Emissary, Diplomat : fixed link to online documentation
- **Analysis**
  - Fixed analysis : Undefined Classes and Trait where affected by the recent Complete/Returntyping
  - Refactored analysis : 'Variables Used Once' not omit inherited parameters.
  - Refactored analysis : 'Functions without return' not skip methods with Never and methods that throw in the main sequence.

  - New analysis : 'Parent is not Static', but rather self
  - Refactored analysis : 'Use This'
  - Refactored analysis : 'Extension/Extxhprof' to PDFF
  - Refactored analysis : Removing usage of methods, moving to PDFF
  - New analysis : 'No magic method for Enums'
  - Refactored analysis : 'Multiple Identical Keys' now also processes automated index
  - New analysis : 'Modifying Readonly' (WIP)
  - Refactored analysis : 'Could use short assignation' skips usage of ??
  - New analysis : 'Readonly Can only be assigned in defining class'
  - Refactored analysis : 'Runkit7' was upgraded to PDFF
  - Refactored analysis : 'Gnupg' was upgraded to PDFF
  - Refactored analysis : 'xdiff' was upgraded to PDFF
  - Refactored analysis : 'event' was upgraded to PDFF
  - New analysis : ext/stomp, ext/csv
  - New analysis : Suggestion making the default assignation in property definition
  - Refactored analysis : 'Redefined private properties' now covers PDFF too
  - Refactored analysis : 'Failing Stubstr Comparison' now accepts != <>
  - Refactored analysis : 'Insufficient typehint' extended with class constants
  - Refactored analysis : 'Unused constant' takes advantage of hierarchy
  - Refactored analysis : 'Useless Abstract' extended to include single extended classes
  - Refactored analysis : 'Mismatched Default Value' now omits parameters without default value
  - New analysis : method is identity
  - New analysis : report overloaded existing names in use, from PDFF
  - New analysis : collect incoming date inventory
  - New analysis : collect vendor's API usage
  - New analysis : report Array addition usage
  - Checked unit tests : 4373 / 4349 test pass (99.5% pass)
- **Tokenizer**
  - Added support for PHP 8.2 readonly classes
  - Fixed bug that made VariableTypehint automatically isPHP

Version 2.4.2 (Li Chunfeng, 2022-05-18)

- **Analysis**
  - Refactored analysis : 'Raised access Level' now supports PDFF files
  - Refactored analysis : 'Cant Extends Final' also Works with anonymous classes
  - New analysis : Report 'Lowered access levels'
  - Refactored analysis : 'Final methods' extended to traits

  - Refactored analysis : 'Overwritten Methods' fixed bug with Traits
  - New analysis : 'Cant extends Final Methods'
  - Refactored analysis : 'Cant extends Final Constants' with PDFF support
  - New analysis : 'Extension Excimer'
  - New analysis : 'Report implicit float to int conversions'
  - Refactored analysis : 'Is always false' is extended to typed properties
  - New analysis : 'Report inegalities with different types'
  - New analysis : Report traits used once
  - Refactored analysis : 'Is Not Implements' now supports PDFF; support for trait added.
  - Refactored analysis : 'Wrong name with paramter' : added support for PDFF
  - Fixed analysis : 'Overwritten Methods' skipped some interfaces
  - Refactored analysis : 'Fossilized methods' was counting methods that are defined with Virtualmethod
  - Refactored analysis : 'Fix bug' when missing fqn in New for Classes/WrongTypedPropertyInit
  - New analysis : Report unknown locales.
  - New analysis : ext/pkcs11
  - New analysis : ext/spx
  - Checked unit tests : 4314 / 4317 test pass (99% pass)
  - Refactored analysis : 'Basename suffix' detection extended
- **Tokenizer**
  - Fixed bug with float and power
  - Fixed bug in global variable creation
  - Create all possible links to static keyword
  - Speed up creation of links to $GLOBALS

Version 2.4.1 (Yuan Tiangang, 2022-05-04)

- **Architecture**
  - New Dump : collect all stub's structures
- **Report**
  - Sarif : Fixed URI (no initial /) and Exakat version
  - Unused : report unused stuff in the code
  - Ambassador : upgrade presentation of the Exception Treephp
- **Analysis**
  - New analysis : Deprecated String interpolation in PHP 8.2
  - Refactored analysis : Spaceship features is used for isRead property
  - Refactored analysis : Skip analysis of returntypes for methods with throw/assert/trigger_error()
  - New analysis : Report unused Enumeration Cases
  - Refactored analysis : Can't instantiate class now takes local class into account

  - Refactored analysis : Many new examples extracted from the docs
  - Refactored analysis : fixed bug with 'Wrong Type With Call'
  - Refactored analysis : Conditional structures now includes Enums too.
  - New analysis : Don't throw raw exceptions
  - New analysis : Useless Coalesce operator (when there is a type available)
  - New analysis : ext/yar
  - Refactored analysis : 'Wrong number of argument' now includes methods defined in a trait in a PDFF
  - Refactored analysis : moved ext/amqp to PDFF

Version 2.4.0 (Yin Kaishan, 2022-04-20)

- **Report**
  - Ambassador : suggest literals to be turned into a constant, based on assignation and comparison
- **Analysis**
  - Refactored analysis : 'Classes/WrongCase' reported too many arguments
  - New analysis : No constructor in interfaces
  - Refactored analysis : Bail Out Early also report if/then when in last position of an sequence
  - Refactored analysis : Useless Casting also checks for double application of typehint/cast
  - New analysis : Could Be A constant (in Dump)
  - New analysis : Could Be Spaceship
  - Refactored analysis : Vendors/Concrete5 is updated to Concrete5 v9.0
  - New analysis : Vendors Sylius
  - Refactored analysis : Vendors/Joomla is updated to Joomla 4.2.0
  - Refactored analysis : Wrong Number Of Arguments supports Constructors and methods (static and normal)

Version 2.3.9 (Fu Yi, 2022-04-06)

- **Architecture**
  - Changed Loading system to handle globals directly with gremlin, and without ids
- **Cobbler**
  - New cobbler : adds 'function array_key_exists' to the list of use statements to speed up array_key_exists.
- **Analysis**
  - Refactored analysis : Fixed bug with 'each' and namespaces in Php/Deprecated
  - Refactored analysis : Next Month Trap was updated with support for datetime (Immutable)
  - Refactored analysis : TimeStamp Differences now covers any seconds additions. Datetime::format('U') was also added to sources.
  - New analysis : Avoid using 86400 to handle days when calculating dates.
  - New analysis : Do not reuse the source name in a foreach($a as $a)
  - New analysis : Use constants when the function returns them

  - Updated analysis : New constants for 'Use Constants As Arguments'
  - Refactored analysis : many Extensions/Ext* are moving to pdff support
  - Refactored analysis : speedup Should Preprocess analysis
  - Refactored analysis : Modernized Overwritten class constants
  - New analysis : Report overwritten final constants from PDFF
  - Refactored analysis : Moving Extensions/Ext* to PDFF
  - Refactored analysis : Repeated Regex
  - New analysis : Report string / integer comparison for PHP 8.0 migration
  - Refactored analysis : Defined Class Constants differentiate from Enumeration cases
  - New analysis : Complete functions with obvious typehints
  - New analysis : Extension protobuf
  - Refactored analysis : Upgraded Property analysis to use PDFF
  - Refactored analysis : 'Multiple identical keys' now has an array size limit (15000)
  - New analysis : Constant favorite : use or not?
  - Refactored analysis : Upgraded 'Unresolved classes' with Pdff support
- **Tokenizer**
  - Fixed isPhp/isExt/isStub detection for catch classes

Version 2.3.8 (Xiao Yu, 2022-03-23)

- **Architecture**
  - Speed up gremlin queries
- **Report**
  - Pdff : added support for hasDefault in properties and parameters
- **Analysis**
  - New analysis : Report type of string introspection used in the code, as a favorite
  - New analysis : Report functions to be of type 'never'.
  - Refactored analysis : Variables used once by context, now omits Blind variables
  - Refactored analysis : Redeclared PHP functions works with PHP 8.1's functions
  - Refactored analysis : Modern Empty
  - Refactored analysis : Deprecated Functions
  - Refactored analysis : Removed usage of IsExtInterface in UndefinedClasses
  - Refactored analysis : Suggesting static class names over objects takes into account the nature of the typehint available.
  - Refactored analysis : Using PDFF with ext/gender, ext/decimal, ext/xxtea, ext/mailparse, ext/uuid.
  - Refactored analysis : Using PDFF with ext/xmlreader, ext/writer, ext/mongodb, ext/gd, ext/dom
  - Refactored analysis : Class Usage rule now skips Interfaces in Implements
  - Removed analysis : Modules/*

  - Removed analysis : Extensions/Extzbarcode

Version 2.3.7 (Xiao Yu, 2022-03-09)

- **Architecture**
  - Fixed all internal step's case
- **Report**
  - New report : PerRule (same as PerFile, but grouped by rules)
  - New report : CompatibilityPHP56 (based on Perfile, dedicated to Compatibility PHP 5.6)
  - Updated report : Ambassador now lists @keywords in phpdocs (inventories)
  - Updated report : Manual includes sections for namespaces, and global constants
- **Analysis**
  - New analysis : Use variables when they are created inside a loop
  - New analysis : Simplify Foreach()
  - New analysis : Identical Conditions on If-elseif
  - Refactored analysis : Undefined Instanceof now relies on isPhp/isExt/IsStub
  - Refactored analysis : First byte only, now uses variable typehints
  - Refactored analysis : Dont loop on yield
  - Refactored analysis : Interfaces suggestion now accepts php/ext/stubs configuration
  - Refactored analysis : Static calls to traits exclude self, parent, static
  - Refactored analysis : Don't read and write at the same time : Extended to all containers, removed edge cases
  - Refactored analysis : Undefined interfaces takes Variable Typehint into account
  - Refactored analysis : Incompatible Method signature
  - Refactored analysis : Unfinished objects now checks called internal methods
  - Refactored analysis : Better coverage for Class Constants
  - Refactored analysis : Insufficient typehint skips properties without a type
- **Tokenizer**
  - Extended support for Variable typehints

Version 2.3.6 (Qin Qiong, 2022-02-16)

- **Architecture**
  -
- **Cobbler**
  - Refactored cobbler : 'SetTypehint' checks more before adding a class typehint
- **Report**
  - Ambassador : added the list of extended dependencies as an audit report
  - Diplomat : removed 4 rules from Analyze (Classes/Redefined*)
- **Analysis**

  - New analysis : Too Many Stringed If-then-elsif
  - New analysis : Undefined Enumeration case
  - New analysis : Unfinished objects
  - New analysis : Class Alias usage
  - New analysis : Undefined Methods
  - New analysis : Suggest array_sum(), from the code
  - New analysis : Missing type on any structure (method, parameter, property)
  - New analysis : Spot unreachable methods
  - New analysis : Public Reach lists the paths from public methods to private ones.
  - New analysis : Avoid Static calls on objects when possible
  - Deprecated analysis : Is Php Function
  - Refactored analysis : Removed usage of IsExtFunction analysis
  - Refactored analysis : 'Could Be array' relies on … too
  - Refactored analysis : 'No need for else' now skips elseif
  - Refactored analysis : 'Undefined constants, functions, traits, interfaces, classes{const, static P/M}' now leverages the stubs
  - Refactored analysis : 'Insufficient typehint' checks for union types
  - Refactored analysis : 'Used Once Properties' now omits classes that have dynamic properties
  - Refactored analysis : 'Unused class constants'
  - Refactored analysis : 'Reuse variable' has a narrower focus, and takes scope into account.
  - Refactored analysis : 'Weak Type' Extended analysis to typed containers
  - Refactored analysis : Definitions stats now break down to isPHP/isStub/isExt
  - Refactored analysis : Isset() calls with more complex expressions
  - Bug: fixed PHp/MixedKeyword in analyzer database
  - Checked unit tests : 4123 / 4132 test pass (99% pass)

- **Tokenizer**
  - Refactored Foreach variable detection
  - Fixed constant detection in deep namespaces
  - Restored Stubs from configuration and commandline
  - Added fullnspath to static properties
  - Added Complete/Is*Structure, to finish marking atoms with isPhp, isStub
  - Deprecating Composer/IsComposerNsname
  - Fixed bug with class_alias
  - Added Not to guess list
  - Fixed bug in engine with comments at the end of scripts.

Version 2.3.5 (Yuchi Gong, 2022-02-02)

- **Architecture**
  - 'Complete' ruleset will run the configured rulesets that are not already run
- **Cobbler**
  - New cobbler : removes readonly option on properties
  - New cobbler : removes useless variables
- **Report**
  - Ambassador : added counts with the actual sizes of the classes (constants, properties, methods)
  - Ambassador : Fixed display of compatibility features
  - Uml : Report number of classes exported
- **Analysis**
  - New analysis : List all external dependencies extensions
  - New analysis : report recycling of foreach() sources
  - New analysis : report usage of readonly
  - New analysis : Suggest updating if-then to ternary operator
  - New analysis : Report multiple similar calls in a row
  - New analysis : Suggest using FILE_APPEND with file_put_contents()
  - New analysis : Report missing visibilities
  - New analysis : Identify literal that may actually be existing constants.
  - Fixed analysis : Cancelled parameter shall take ??= into consideration
  - Refactored analysis : 'Cannot use static with closure' analysis is extended to properties
  - Refactored analysis : Upgraded detection of variable modified by a reference in a PHP or custom function/methodcall.
  - Refactored analysis : Fixed bug with 'This is for class' where typehint where not correctly seen inside a class.
  - Refactored analysis : 'Insufficient typehint' was upgraded with class constants checks
  - Refactored analysis : 'Undefined class' skips ? as a class
  - Refactored analysis : 'Static loops' now takes into account modifications in the conditions
  - Refactored analysis : 'Complex expressions' omits match
  - Refactored analysis : 'Cache variable outside loop' fixed bug with function names and new expressions
  - Refactored analysis : 'Logical mistakes' now checks for constants on the rest of the comparison
  - Refactored analysis : 'Cant instantiate class' now takes into account self/static
  - Refactored analysis : 'Should use self' also reports self opportunities in new expression.
  - Refactored analysis : 'Written only' fixed a bug with propperties
  - Refactored analysis : 'No choice' also spots ?: null and ?? null
  - Refactored analysis : Written Only Variable now takes into account references in parameters
  - Refactored analysis : Classes's strange names covers methods, properties and classes.
  - Refactored analysis : Caught but never thrown exceptions have an updated list of exception

  - Refactored analysis : Unresolved Catch uses updated PHP exception/error list
  - Refactored analysis : PHP 8.0 new types now covers mixed and also properties.
  - Refactored analysis : PHP 8.0 union type differentiate between ?A and null|A
  - Refactored analysis : CIT same names was extended to Enumeration
- **Tokenizer**
  - Fixed boolval for multiplications
  - Fixed spaceship for string and boolean values
  - Added processing to isPhp/isExt/isStub to implemented names

Version 2.3.4 (Yuchi Gong, 2022-01-19)

- **Cobbler**
  - New cobbler : remove unused use expression
  - Added 4 directives to each rules : namespaces, ignore_dirs, include_dirs and file_extensions. They filter out some of the results.
- **Report**
  - Composer : upgrade the list of core PHP extensions
- **Analysis**
  - New analysis : Mark simple getters/setters in classes
  - New analysis : Report unchecked divisions (int and operators)
  - New analysis : report possible abstract constants in classes (which should be defined in a parent)
  - New analysis : report recycled variables
  - Refactored analysis : Upgraded 'Object references' with union and intersectional types
  - Refactored analysis : Removed edges cases in 'Don't collect void'
  - Refactored analysis : Extension detection now takes into account enums
  - Refactored analysis : Upgraded AlwaysFalse with better typehinting inference
  - Refactored analysis : indentation levels missed several results while reporting
  - Refactored analysis : interfaces, traits and constants were missing for use expression resolution
  - Refactored analysis : Undefined Interfaces now exclude better PHP or ext's interfaces
  - Refactored analysis : Never Used Parameter confused Void and first argument
  - Refactored analysis : Self were reported as outside a class when in foreach()
  - Refactored analysis : Clone with non-arrays now checks PHP native functions too
  - Refactored analysis : Excluded powers from calculations in IsZero
  - Refactored analysis : Fixed discrepancy between ' and " handling of
  - Extended tests : match without default
- **Tokenizer**
  - Fixed a bug where static keyword is processed as a simple nsname
  - Fixed a bug where typehints were not marked as isPhp, isExt or isStub

  - Fixed an edge case with array functions inside match() syntax
  - Fixed an edge case with Closures and reference-use variable
  - Fixed an edge case with static inside ternary
  - Fixed yield expression scope
  - Added Table for PHP 8.2 compilations checks
  - Removed extra void with use expression for traits

Version 2.3.3 (Xu Maogong, 2022-01-05)

- **Cobbler**
  - New Cobbler : removes attributes
- **Report**
  -
- **Analysis**
  - New analysis : suggest using ?-> when Null is a possiblity
  - New analysis : Report backward incompatibility with overloaded interface constants
  - New analysis : Mark variables as local constants when only assigned once
  - New analysis : suggest using iterable, based on array|traversable usage
  - New analysis : Report usage of PHP 8.1 intersection typehints
  - Refactored analysis : Hidden Nullable rule now handles intersection types
  - Refactored analysis : 'Use Nullable' covers properties too
  - Refactored analysis : 'Could Be stringable' is extended to trait usage
  - Refactored analysis : skip static and globals when counting variable usage in methods
  - Refactored analysis : PHP 8.0 Union type detection includes properties
  - Added tests to Complete/Overloaded* (CPM)
- **Tokenizer**
  - Fixed a bug with Ternary and constants

Version 2.3.2 (Wei Zheng, 2021-12-16)

- **Cobbler**
  - New cobbler : removes a method
- **Report**
  -
- **Analysis**
  - New analysis : suggest ::class instead of get_class()
  - New analysis : report when a class extends stdclass (for dynamic properties review)
  - New analysis : Reports when checks are made on the existence of properties
  - Upgraded analysis : Useless Typechecks is upgraded with union and intersectional type checks
  - Upgraded analysis : Reporting invalid access to protected CPM

  - Upgraded analysis : Removed Used Properties with classes with dynamic properties
  - Fixed bug in PropagateConstants
- **Tokenizer**
  - Added detection of typehints for variables

Version 2.3.1 (Li Shimin, 2021-12-01)

- **Cobbler**
  - Fixed bug with Settypehint when multiple types are available
- **Report**
  - New Pdff report : PHP Document File Format
- **Analysis**
  - New analysis : report promoted properties
  - New analysis : report deprecated PHP 8.2 callable
  - New analysis : report new in initializers
  - New analysis : report nested attributes
  - New analysis : report direct calls to Trait methods and properties
  - New analysis : report auto vivification of false (PHP 8.1)
  - New analysis : report implicit float to integer conversion for arrays
  - Updated analysis : Declare Static and Global early.
  - Updated analysis : No Null For Native now uses typehints
  - Updated analysis : refined No Static variable in method
- **Tokenizer**
  - Fixed bug with __METHOD__ when it is called outside a method

Version 2.3.0 (Wei, 2021-11-18)

- **Architecture**
  - Catchup tokens from PHP 5.6 till 7.2
  - Report unknown Rulesets during reports command
  - Extended 'catalog' command to list rules too
  - Extended 'catalog' command to return YAML format
- **Report**
  - Added several new analysis to the Rector report
  - Added mixed and never to Appinfo report
  - Ugraded Sarif report with bartlett/sarif-php-sdk
- **Analysis**
  - New analysis : report the missing mixed returntype for jsonserialize
  - New analysis : report final with constants
  - New analysis : report never usage (typehint)

  - New analysis : report PHP 8.1 typehint incompatibilities
  - New analysis : report PHP 8.0 typehint incompatibilities
  - New analysis : report PHP 8.0 named parameters
  - New analysis : report First Class Callable Syntax
  - New analysis : New Functions in PHP 8.1
  - New analysis : Removed functions in PHP 8.1
  - New analysis : Prepare 'never' for PHP 8.1
  - New analysis : Prepare 'mixed' for PHP 8.0
  - New analysis : detect mixed and never usage as typehints
  - Upgraded analysis : Wrong Number of arguments also works with new first class callable syntax
  - Upgraded analysis : Typehint stats now includes union and intersection types
  - Upgraded analysis : Removed functions in PHP 8.0

Version 2.2.5 (Wood star, 2021-11-03)

- **Analysis**
  - New analysis : Calling Trait Static Method directly is deprecated in PHP 8.1
  - New analysis : No reference for returned void
  - New analysis : No Null for PHP native methods
  - Updated analysis : Wrong type for argument now covers classes, union type and intersection types.
  - Updated analysis : Wrong type for argument now covers classes, union type and intersection types.
  - Updated analysis : Unused Private Methods are also detected with array($this, 'xx') syntax
  - Checked unit tests : 3821 / 3805 test pass (99% pass)
- **Cobblers**
  - New cobbler : remove typehints from arguments, returns and properties

Version 2.2.4 (Gold star, 2021-10-21)

- **Dataset**
  - Updated PHP native dataset with missing classes and typehint.
- **Analysis**
  - New analysis : Report incompatible typehint with native PHP methods in PHP 8.1
  - New analysis : Report Missing Attribute Attribute
  - New analysis : Report full_path index in $_FILES usage
  - Updated analysis : Type detection also include return type from methods
- **Cobblers**
  - Updated cobbler : Set typehint handles typehint from arguments
- **Tokenizer**
  - Added more cases for Constant types

Version 2.2.3 (Wu, 2021-10-06)

- **Architecture**
  - Updated INI files for PHP 8.1
- **Data**
  - Extended PHP directives lists
- **Report**
  - New report Migration 8.1
- **Analysis**
  - New analysis : PHP 8.1 removed directives
  - New analysis : PHP 8.1 removed constants
  - New analysis : Wrong named parameter for PHP native function
  - New analysis : Report duplicate named arguments
  - New analysis : htmlentities (and co) default 2nd argument
  - Updated analysis : Scalars are not arrays. Extemded with type support.
- **Tokenizer**
  - Support for callable strlen(…)
  - Test for new syntax for octal 0o123

Version 2.2.2 (Si, 2021-09-22)

- **Architecture**
  - Refactored documentation
- **Report**
  - Added support for PHP 8.1 compatiblity
- **Analysis**
  - New analysis : Restrict $GLOBALS usage
  - New analysis : No object as array's index
  - New analysis : Overreaching classes (PHP feature)
  - New analysis : Report Enum usage
  - Updated analysis : Typehints/* got new Unit Tests
  - Updated analysis : Explode optimisation
- **Tokenizer**
  - Reduced the number of DEFAULT creation for properties
  - Added support for new PHP 8.1 syntax (Enum)

Version 2.2.1 (Chen, 2020-11-20)

- **Architecture**
  - Export : WIP of exporting PHP code from graph
  - New directives : rules_version_max, rules_version_min, ignore_rules and ignore_namespace
- **Report**

  - Sarif : Fixed line number that may be null or less
  - Ambassador : Fixed visibility report
- **Analysis**
  - New analysis : check for match as a keyword
  - New analysis : replace static variable by static properties
  - New analysis : warn about usage of get_object_vars()
  - New analysis : report global and static variables that are declared multiple times
  - Updated analysis : extended Used Classes to abstract classes
  - Updated analysis : wrong number of argument now supports $this()
  - Updated analysis : parse_str last argument doesn't apply anymore in PHP 8
  - Updated analysis : useless argument now omits parameter with default value
  - Checked unit tests : 3797 / 3800 test pass (99% pass)
- **Tokenizer**
  - Fixed race condition with phpdocs
  - Refactored static and global variables definitions (avoid double definitions)
  - Fixed detection of [] inside a list()
  - Fixed detection of alternative syntax for switch
  - Added use property to usenamespace too (for grouping)

Version 2.2.0 (Mao, 2020-10-15)

- **Architecture**
  - Extended Export command to produce PHP scripts from the graph database
  - Added more typehints
  - Added new command 'onefile'
  - Sped up database restart with id reset
  - Updated list of functions for several extensions. Started adding methods, class constants..
- **Report**
  - Ambassador : updated popularities
  - Ambassador : added missing PHP 8.0 ruleset
- **Analysis**
  - New analysis : report arguments and properties whose name clashes with the typehint
  - New analysis : report long preparation before throw command
  - New analysis : missing __isset() method
  - New analysis : suggest array_keys() for array_search in loops
  - New analysis : array_map() complains with values by reference
  - New analysis : report final private properties
  - New analysis : report misnamed constant/variable

  - New analysis : check for attribute configuration (PHP 8.0)
  - New analysis : suggest dropping variable in catch clause
  - New analysis : report resources that should not be tested with is_resource (PHP 8.0)
  - New analysis : check for named arguments and variadic
  - Updated analysis : wrong number of argument now supports $this()
  - Updated analysis : redefined private property uses OVERWRITE
  - Updated analysis : refactored UndefinedFunctions for speed
  - Updated analysis : array_map() complains with values by reference
  - Updated analysis : removed false positives on properties in strings
  - Updated analysis : unsupported types with operators skips cast values
  - Updated analysis : cancelled parameters are also for array_map/array_walk
  - Updated analysis : variable variable skips variables inside strings
  - Updated analysis : removed functions are not reported when in if/then with function_exists()
  - Updated analysis : wrong optional parameter fixed false positive with …
  - Updated analysis : extended list of removed directives, functions and constants
  - Removed analysis : RealVariables
  - Checked unit tests : 3761 / 3772 test pass (99% pass)
- **Tokenizer**
  - Added Void to empty default/case
  - Bitoperation added to isRead
  - Fixed list[] in a Foreach
  - Fixed token T_OPEN_DOLLAR_CURLY_BRACKET

Version 2.1.9 (Yin, 2020-10-01)

- **Architecture**
  - Removed old and unused commands
  - Modernized usage of docker as phpexec
  - New directive php_extensions to managed list of ext
- **Report**
  - Ambassador : removed 3 gremlins from typehint stats, added scalar types
  - New Migration80 report, dedicated to PHP 8.0 migrations
  - New Stubs.ini report, dedicated to exakat extensions production
- **Analysis**
  - New analysis : report arguments which are not nullable because of constants.
  - New analysis : could use stringable interface
  - New analysis : suggest explode()'s third argument when applicable
  - New analysis : suggest PHP 8.0 promoted properties

  - New analysis : report arrays with negative index, and auto-indexing
  - New analysis : report unsupported types with operators
  - New analysis : report usage of track_errors directive (PHP 8.0)
  - New analysis : report useless types on __get/__set
  - New analysis : count the number of use expressions in a file
  - New analysis : Avoid modifying typed arguments
  - New analysis : Report Assumptions in the code
  - New analysis : array_fill() usage with objects
  - New analysis : mismatch between parameter name and type
  - Updated analysis : magic methods definitions also find usage for __invoke()
  - Updated analysis : noscream operator usage may have exceptions
  - Updated analysis : identical methods and identical closures
  - Updated data : list of exceptions and their emitters
- **Tokenizer**
  - Upgraded detection of extensions' structures, beyond functions

Version 2.1.8 (Chou, 2020-09-18)

- **Architecture**
  - added '–' options, and kept the '-' options, for migration purposes. (–format and -format are both available)
  - Added support for PHP 8 attributes in dump.sqlite
  - Added 'precision' to rule docs.
  - Moved all but one data collection from Dump -collect to Dump/ analysis.
- **Report**
  - New report : SARIF
  - Typehint suggestion report : Tick classes when they are fully covered
  - Weekly report : fix donuts display.
  - Stubsjson : Added support for PHP attributes
  - Stubs : Added support for PHP attributes
- **Analysis**
  - New ruleset : CI-Checks
  - New analysis : 'Multiple declare(strict_types = 1)'
  - New analysis : 'No more (unset) in PHP 8'
  - New analysis : Cancel methods in parent : when methods should not have been abstracted in parent class.
  - New analysis : '$php_errormsg is removed in PHP 8'
  - New analysis : 'Mismatch Parameter Name' checks parameter names between inherited methods for consistency

  - Upgraded analysis : 'Useless Arguments' is accelerated
  - Upgraded analysis : 'Don't use Void' weeded out false positives
  - Upgraded analysis : 'Wrong type for native calls' weeded out false positives
  - Upgraded analysis : 'Non static methods called statically' was refactored for PHP 8.0 support
  - Upgraded analysis : 'PHP Keywords' includes 'match'
  - Upgraded analysis : 'Useless instruction' reports '$a ?? null' as useless.
  - Upgraded analysis : 'Uncaught exceptions' is extended to local variables
  - Upgraded analysis : 'Foreach favorites' also covers the keys
  - Upgraded analysis : 'Should Preprocess' skips expressions with constants
  - Upgraded analysis : 'Compare Hashes' has more functions covered
  - Removed analysis : 'Normal Properties' : no need anymore.
- **Tokenizer**
  - Moved isPhp attribute to Task/Load plugin
  - Created isExt attribute to Task/Load plugin

Version 2.1.7 (zi, 2020-09-07)

- **Architecture**
  - Refactored loading class, to keep query load at optimal size for Gremlin
  - GC during load to free memory
  - More typehints
  - Move several collections to Dump/ ruleset
- **Report**
  - Upgraded Typesuggestion report with report on closures and arrow functions
  - Added Arrowfunctions in inventories
  - Added collection of arguments and details for closures and arrowfunctions
- **Analysis**
  - New analysis : Could Be In Parent : suggest methods that should be defined in a parent
  - New analysis : Don't pollute namespace
  - New analysis : report insufficient return typehints
  - Upgraded analysis : 'Method signature must be compatible' now PHP 8.0 compatible
  - Upgraded analysis : 'Wrong type with native function' fixes false positives
  - Upgraded analysis : 'Same condition' added coverage for || conditions
  - Upgraded analysis : 'Missing returntype' extended to class typehints
  - Upgraded analysis : 'Should Use This' also covers special functions like get_class_called()
  - Upgraded analysis : 'No concat in loop' skips nested loops
  - Upgraded analysis : 'Always false' covers typehint usage
  - Upgraded analysis : 'NoChoice' doesn't report large expressions

  - Upgraded analysis : 'Dont mix PlusPlus' skip () and =
  - Upgraded analysis : 'Fallthrough' don't report final cases without break
  - Checked unit tests : 3663 / 3630 test pass (99% pass)
- **Tokenizer**
  - Removed 'root' property
  - Upgraded to new Attributes #[] in detection and normalisation
  - Fixed constant detection within instanceof
  - Created RETURN and RETURNED for Arrowfunctions (there is no return otherwise)
  - Parent method also calls children methods when those are not defined there
  - Support for multiple attributes in one syntax

Version 2.1.6 (Night Patrol Deity, 2020-08-28)

- **Architecture**
  - More typehints coverage
  - Various speed-up
  - Lighter logging with gremlin
  - Fixed installation path
- **Report**
  - Upgraded Typesuggestion report
  - Upgraded Stubs and Stubsjson
- **Analysis**
  - New analysis : report PHP 8.0 unknown parameters
  - New analysis : overwritten methods with different argument counts
  - New analysis : Warn of iconv and TRANSLIT for portability
  - New analysis : Warn of glob and { } for portability
  - Upgraded analysis : 'Useless check' covers new situations.
  - Upgraded analysis : 'Abstract away' now covers new calls.
  - Upgraded analysis : 'Must return Typehint' skips Void.
  - Upgraded analysis : 'Missing new' with less false positives
  - Checked unit tests : 3559 / 3630 test pass (98% pass)
- **Tokenizer**
  - Support for Virtualmethod and imports from traits
  - Refactored Usenamespace atom
  - Fixed calculations of fullnspath for static::class
  - Fixed detection of null/true/false in new()
  - Added support for T_BAD_CHARACTER

Version 2.1.5 (Day Patrol Deity, 2020-08-04)

- **Architecture**
  - Fixed comment size estimation by 1 for T_COMMENT
  - Added more typehints to code
- **Report**
  - Typehint suggestions : added ticks to fully typed methods
  - Emissary : Extract more information from dump.sqlite, instead of datastore.sqlite
  - Ambassador : Added a list of parameters, defined in the application
  - Ambassador : Added a list of fossilised methods
  - Stubs : Added check around PHP native functions and CIT
  - StubsJson : Added property for PHP native structures
- **Analysis**
  - New analysis : Report insufficient initialisation for array_merge() collector variable
  - New analysis : Report useless triple equals
  - New analysis : Don't compare typed boolean return values
  - New analysis : Report wrong type used with PHP functions
  - New analysis : Suggest abstracting away some PHP native functions
  - New analysis : Report try block that are too large
  - New analysis : Report variables potentially undefined in catch clause
  - New analysis : Report swapped arguments in methods overwriting
  - Upgraded analysis : InvalidPackFormat speed up
  - Upgraded analysis : Added parameter to Security/ShouldUsePreparedStatement to choose the preparing method
  - Upgraded analysis : Added parameter to Security/HardcodedPasswords to choose the name of properties/index
  - Upgraded analysis : PHP 8.0 new scalar typehint, stringable interface
- **Tokenizer**
  - Added support for named parameters (PHP 8.0)
  - Trimmed some properties from atoms
  - Removed non-existent atom mentions
  - Added support for Attributes (WIP)
  - Added support for ?->
  - Added support for new T_*_NAME tokens

Version 2.1.4 (Marshal of Heavenly Blessing, 2020-07-23)

- **Architecture**
  - Added time of last commit in audit results
  - Added more typehints
  - Upgraded PHP native method description with typehints (WIP)

- **Report**
  - Typehint suggestion report
  - New toplogies : call order,
  - Ambassador : new statistics for typehint usage
- **Analysis**
  - New analysis : Report double assignation of objects
  - New analysis : Typehints/CouldBe*, which makes suggestions for typehints
  - New analysis : Checks for argument type when typehint is present in custom methods
  - Upgraded analysis : Too Many Finds may be configured for threshold and prefix/suffix
  - Upgraded analysis : Typehints stats were extended to properties and multiple typehints
  - Upgraded analysis : Global outside Loop is extended to static variable too
  - Upgraded analysis : ErrorMessages also detect local variable contents
  - Upgraded analysis : Speed up for NullBoolean, Interfaces IsNotImplemented, InvalidPackFormat, arrayIndex, noWeakCrypto
  - Checked unit tests : 3532 / 3496 test pass (99% pass)
- **Tokenizer**
  - Removed 'aliased' property in atoms
  - Fixed spotting of PHP native constants, when in Define() structure
  - Fixed loading of false values
  - Added support for the trailing comma in closure's use expression
  - more handling of phpdocs
  - Null is now reused when it is a default value, as a typehint.
  - Logical was split in two : Logical and Bitoperation
  - Added support for match() { } expression
  - Fixed boolean calculations during Load
  - Removed auto-referencing in DEFAULT calculations

Version 2.1.3 (Marshal of the Heavenly Canopy, 2020-07-02)

- **Architecture**
  - Removed all usage of datastore in Reports, and only rely on dump.
  - ignore_rules is now case insensitive
  - Moved some of the loading to a separate gremlin call to reduce the size of node load.
  - Fixed the branch option with Git calls.
  - Storing trait's use expresion's options.
- **Report**
  - Ambassador ; New inventory : PHP protocol used (php, phar, glob://...)
  - Stubs and StubsJson, have been tested extensively

- **Analysis**
  - New analysis : report double assignations of the same object ($a = $b = new C)
  - New analysis : report cyclic references
  - Upgraded analysis : Used Constants edge situations
  - Upgraded analysis : No real comparison : extended analysis to constants
  - Upgraded analysis : extended detection of dynamic method calls to call_user_func*
  - Upgraded analysis : paths are detected with new functions
  - Checked unit tests : 3490 / 3520 test pass (99% pass)
- **Tokenizer**
  - More phpdoc support (from code to report)
  - Added isPHP to absolute FQN notations

Version 2.1.2 (Mountain Deity, 2020-06-25)

- **Architecture**
  - Removed files task from initproject.
  - Added ignore_rule directive, to ignore specific rules while running a specific report
  - More documentation (in particular, modifications section)
  - Exakat avoids to return twice the same results (file and line)
  - Sped up some analysis, and added a time limit per analysis
  - Removed double linking for static variables
- **Report**
  - New reports ; Stubs and StubsJson, which produce the stubs of the audited code (PHP and JSON format) (WIP)
  - New report ; Typehint suggestion (WIP)
  - Ambassador ; offers the configuration for all the rules that spotted issues in the current audit, for reuse in other codes
  - Collect the number of property per class
- **Analysis**
  - New analysis : Report methods that are too much indented on average
  - New analysis : Report possible confusion between a class and an alias
  - New analysis : Report variables that are static and global at the same time
  - New analysis : Report statement with long blocks
  - New analysis : Report phpdoc's deprecated methods and function calls
  - Upgraded analysis : Dereferencing levels now include () and =
  - Upgraded analysis : Unused Methods now skips classes that calls themselves dynamically
  - Upgraded analysis : No Need Get_class() was refactored
  - Upgraded analysis : Avoid Optional Properties was refactored
  - Upgraded analysis : Variable inconsistent Usage was extended with more reach

  - Upgraded analysis : Indirect Injections was upgraded with better reach with variables
  - Upgraded analysis : Direct Injections was upgraded with include
  - Upgraded analysis : PHP 8.0 new scalar typehint, stringable interface
  - Upgraded analysis : Mismatch Type and default now avoids undefined constants
  - Upgraded analysis : Wrong Optional Parameter is upgraded for PHP 8.0
  - Upgraded analysis : Indentation level was refactored
  - Checked unit tests : 3480 / 3510 test pass (99% pass)
- **Tokenizer**
  - Upgraded detection of PHP native constants, when they are in absolute notation
  - Dump task stores use expressions' options, plus minor fixes
  - Added support for Attributes (PHP 8.0)
  - Added support for Union types (PHP 8.0)
  - AtomIs step (WITH_VARIABLE) was extended with local variables
  - DEFAULT doesn't point anymore on auto-updated values
  - Extended support for phpdoc in the code
  - Added support for promoted properties (PHP 8.0)

Version 2.1.1 (Earth Deity, 2020-06-01)

- **Architecture**
  - Using timeLimit() to prevent Gremlin from running too deep in the rabbit hole
  - Added Neo4j Graphson V3 Graph driver
  - Moved 'Dump' rules to a specific Ruleset for easier administration
  - Propagated the upgrade to PHP 8.0 union types to three more rules
  - Fixed access to the list of ignored files
  - Added support for explicit stub files
  - Fixed multiple calls to Dump (better reentrant)
- **Report**
  - New report : Meters, which holds measures for the audited code.
  - Ambassador : inventory of OpenSSL ciphers
- **Analysis**
  - New analysis : Report unused traits
  - New analysis : Report chmod 777 system calls
  - New analysis : Check for keylength when generated by PHP
  - New analysis : Report methods with prefix/suffix and expected typehint
  - New analysis : Mark classes when they call dynamically their own methods
  - New analysis : Check for constants hidden in variable names ${X} != $X;
  - New analysis : Throw will be an expression in PHP 8.0

  - Upgraded analysis : Dangling operator now checks for loops too
  - Upgraded analysis : 'Variables used once' now skips variable definitions
  - Upgraded analysis : 'Access Private' takes into account dynamic classes
  - Upgraded analysis : 'Could Centralize' now uses a custom threshold. Default is 8 usage of an expression to centralize.
  - Upgraded analysis : 'Return true/false' checks that they are alone in the blocks
  - Upgraded analysis : 'Unreachable code' checks on constants values before reporting the next expression
  - Upgraded analysis : 'Magic methods' are case insensitive
  - Upgraded analysis : 'No Hardcoded passwords' has new functions that require a password
  - Upgraded analysis : 'Unused methods' are omitted for dynamically called methods and overwritten methods
  - Upgraded analysis : Insufficient Property Typehint also works for untyped properties
  - Upgraded analysis : PHP 8.0 new scalar typehint, stringable interface
  - Checked unit tests : 3383 / 3444 test pass (98% pass)
- **Tokenizer**
  - Arguments with null as default values, automatically are nullable
  - Intval is also an integer for logical operations
  - Default Values now omits recursives assignations
  - Fixed fullnspath for PHP short tags
  - Added link between new command and constructor of anonymous classes.

Version 2.1.0 (City God, 2020-05-13)

- **Architecture**
  - results stored in HashResults are now testable
  - Moved all query methods to Query/DSL namespace, from Analyzer class
- **Report**
  - New report : ClassReview, with focus on classes structures
  - New report : Typechecks, with focus on type hint usage
  - Ambassador : Added typehint stats section
  - Ambassador : fixed display of classes name in classes tree
  - Ambassador : some missing sections have been rehabilitated
- **Analysis**
  - New analysis : Trailing comma in signature (PHP 8.0)
  - New analysis : Hidden nullable types
  - New analysis : Not implemented abstract methods
  - New analysis : Report confusion between variables and arguments with arrow functions
  - Upgraded analysis : No literal for reference was extended

  - Upgraded analysis : Add zero is extended to constants
  - Upgraded analysis : This is for classes is now valid with arrow functions
  - Upgraded analysis : Useless arguments takes also into account constants
  - Upgraded analysis : Wrong Type With Call supports variadic arguments
  - Upgraded analysis : Extension constants now support fully qualified names
  - Upgraded analysis : Bad Typehint relay is compatible with union types
  - Upgraded analysis : Multiple Identical Cases now handles constants too
  - Checked unit tests : 3437 / 3477 test pass (99% pass)
- **Tokenizer**
  - Restored 'List' atom
  - Interface methods are now 'abstract' by default
  - Added 'array' typehint for variadic arguments
  - Distinguish between argument and local variable in fn functions
  - Removed nullable property
  - propagate calls now propagates closures and arrow functions
  - Added support for union types (PHP 8.0)
  - Check all error messages from php, not just the first ones

Version 2.0.9 (Jialan, 2020-04-30)

- **Architecture**
  - Added option in TU for analysis that won't fill the result table.
  - Reduced the number of duplicate links in the graph
  - Upgraded tokens for PHP 8.0.
- **Analysis**
  - New analysis : Don't collect void
  - New analysis : Wrongly inited properties
  - New analysis : Not inited properties
  - Upgraded analysis : PHP 8.0 removed functions
  - Upgraded analysis : Useless instructions also include global/static variables
  - Upgraded analysis : Bad Relay Function now works with return types and property types
  - Upgraded analysis : 'Scalar or object properties' are upgraded with static calls
  - Removed analysis : Classes and Arrays IsRead and IsModified. Use properties now.
  - Checked unit tests : 3347 / 3420 test pass (97% pass)
- **Tokenizer**
  - Fixed edge case for xor, with intval
  - Refactored multiple calculation for cast values
  - Added support for links between constants and use expressions

  - Linked classes with calls, when using use expression

Version 2.0.8 (Ao Run, 2020-04-20)

- **Architecture**
  - Added new information in dump.sqlite, to make report autonomous
- **Analysis**
  - Upgraded analysis : Paths are also recognized with constants, and more functions
  - Upgraded analysis : Should Use single Quotes
  - Checked unit tests : 3328 / 3398 test pass (97% pass)
- **Tokenizer**
  - Fixed detection of PHP constants

Version 2.0.7 (Ao Shun, 2020-04-14)

- **Architecture**
  - Adopted strict_types
  - Removed ctype1 attribute
  - Moved linting into separate processes
  - Refactored analysis to export to dump via SQL
  - Added 'None' ruleset to Dump task
- **Report**
  - Ambassador : Added Constant's order report
  - None : Added support for No report
- **Analysis**
  - Upgraded analysis : Undefined class constants
  - Upgraded analysis : Undefined global constants
  - Upgraded analysis : Undefined property
  - Checked unit tests : 3347 / 3420 test pass (97% pass)
- **Tokenizer**
  - Support PHP 8.0's tokens
  - Added support for multiple typehint in the engine
  - Fixed edge case for boolean type casting

Version 2.0.6 (Ao Qin, 2020-03-04)

- **Architecture**
  - Refactored analysis types for first UT
  - Moving to PHP 7.4 by default
- **Report**
  - Rector : added more coverage
  - All : better display of typed properties

- **Analysis**
  - New analysis : Semantic names of arguments
  - New analysis : !$a == $b
  - New prototype : possibles interfaces
  - Upgraded analysis : Overwritten literals now skips .=
  - Upgraded analysis : Scalar or object handles return type
  - Checked unit tests : 3322 / 3420 test pass (97% pass)

Version 2.0.5 (Ao Guang, 2019-11-25)

- **Architecture**
  - Fixed access to severity and timetofix from compiled extension
- **Report**
  - Ambassador : Fixed links to documentation
- **Analysis**
  - Upgraded analysis : Mismatched Type and Default now omit undefined constants
  - Checked unit tests : 3366 / 3402 test pass (99% pass)

Version 2.0.4 (Army Defeating Star of Heaven's Gate, 2019-11-18)

- **Architecture**
  - Reducing Analyzer's class method count
  - Moving more collections to Dump/ and Complete/
- **Report**
  - Rector : added more coverage
  - Ambassador : Skiped analysis are now reported, not with -1
  - Ambassador : Foreach favorites's graph is displayed
  - Ambassador : Visibility suggestion has full method names
- **Analysis**
  - Upgraded analysis : Don't Mix ++ now skips $a[$b++]
  - Upgraded analysis : Type hint stats skips some return values
  - Checked unit tests : 3365 / 3401 test pass (99% pass)

Version 2.0.3 (Military Star of the North Pole, 2019-11-11)

- **Architecture**
  - Added check on xdebug presence (nesting limit)
  - Moving more collections to Dump/
- **Analysis**
  - New analysis : Nullable typehint requires a test on NULL
  - New analysis : Typehint that requires too much
  - Upgraded analysis : Printf check on arguments works with '.'

  - Upgraded analysis : No magic for arrays skips __get()
  - Upgraded analysis : Const recommended, but not when methods are used
  - Upgraded analysis : Written only variables handles compact()
  - Upgraded analysis : Callbacks need returns, but not for spl_autoload_register()
  - Upgraded analysis : Extended analysis to Concatenation an Heredoc for Email
  - Upgraded analysis : Disconnected classes handles case sensitivity
  - Checked unit tests : 3371 / 3397 test pass (99% pass)

Version 2.0.2 (Danyuan Star of Honesty and Chasity, 2019-11-04)

- **Architecture**
  - Adding more typehint
  - Created new class to build Dot files
  - Cleaned double examples
  - Dump handles multiple definitions for constants, class, trait, functions.
- **Report**
  - Added new Topology report
  - Added new Type hint topology sort
  - Stubs : added class constant visibility
- **Analysis**
  - New analysis : Report argument whose name clashes with typehint
  - New analysis : Report properties that are insufficiently typed
  - Moved 'Inclusions' to Dump/
  - Added steps to find original and relayed arguments
- **Tokenizer**
  - Fixed paralellisation bug in Load

Version 2.0.1 (Military Star of the North Pole, 2019-10-28)

- **Architecture**
  - Added more return type
  - Centralized reading for ini or json
- **Report**
  - Ambassador: fixed Foreach favorites
  - Ambassador: added sort to number of parameter list
  - Checked unit tests : 3345 / 3377 test pass (99% pass)
- **Analysis**
  - Upgraded xmlwriter to json

Version 2.0.0 (Civil Star of Mystery and Darkness, 2019-10-21)

- **Architecture**

  - Manual file/line fixes
  - More simplifcations in load step
- **Report**
  - Ambassador : fixed performance display
  - Ambassador : report list of shell commands
  - Typehint4all : first report
  - Perfile : fixed sorting
- **Analysis**
  - New analysis : Report possible typehint for bool, int, string, array. WIP
  - Upgraded analysis : common alternatives are extended to switch and elsif
  - Upgraded analysis : xmlreader description includes class constants, properties and methods.
  - Upgraded analysis : callback needs return, is extended to php native functions
  - Checked unit tests : 3345 / 3377 test pass (99% pass)

Version 1.9.9 (Lasting Prosperity Star of True Man, 2019-10-14)

- **Architecture**
  - Documentation review
- **Report**
  - New reports : Stubs, Rector
  - Typehint stats
  - Stubs takes into account use expression
  - Added Concrete5 and Typo3 as vendors
- **Analysis**
  - New analysis : checks on is_a third argument
  - New analysis : Invalid mbstring encodings
  - New analysis : Weird Index in arrays
  - New analysis : Avoid FILTER_SANITIZE_MAGIC_QUOTES
  - New analysis : Don't forget third argument
  - New analysis : Hard to update methods
  - New analysis : Merge two ifthen into one
  - New analysis : Report wrong type with calls
  - New analysis : Check case for namespaces
  - Updated analysis : Undefined interfaces now includes interfaces extensions
  - Updated analysis : Report more wrong types with return type
  - Updated analysis : Register globals also applied to class
  - Updated analysis : Could Use Try covers more new, functions and static calls
  - Updated analysis : Useless Cast also reports (string) array (always Array)

  - Checked unit tests : 3343 / 3366 test pass (99% pass)
- **Tokenizer**
  - Create default values for foreach
  - Load captures empty files, and omit them
  - Create default values also handles ??=

Version 1.9.8 (Giant Gate Star of Dark Essence, 2019-10-07)

- **Architecture**
  - Upgraded dump command to handle multiple -P
  - .yaml configuration handles multiple reports
  - Started journey to strict_types
  - Code cleaning
- **Report**
  - Ambassador : Fixed report of Flexible Docs
  - Ambassador : trimmed delimiters in inventories
  - Inventory : Foreach, with key values
- **Analysis**
  - New analysis : Wrong case for functions
  - New analysis : Parameter Hiding
  - New analysis : Report usage of Traversable
  - Updated analysis : Undeclared properties skips undefined properties
  - Updated analysis : Useless Interface, modernized query
  - Updated analysis : String Holding Variables now skips default, const, sprintf
  - Updated analysis : Binaries are not confused with hex
  - Updated analysis : Extended 'Insufficient typehint' to abstract classes
  - Checked unit tests : 3324 / 3343 test pass (99% pass)
- **Tokenizer**
  - Fixed handling of large powers
  - Added more escaping when storing to SQLITE

Version 1.9.7 (Greedy Wolf Star of Sunlight, 2019-09-30)

- **Architecture**
  - Added support for analysis reporting missing values in a reference list
  - Fixe batch dumping of results
- **Report**
  - Ambassador : new inventory : dereferencing levels
- **Analysis**
  - New analysis : Use PHP Native URL parsing functions

  - New analysis : Maximum dereferencing level
  - New analysis : Use case value in a switch : it was already tested
  - Updated analysis : No class as typehint accepts abstract classes
  - Updated analysis : Create Magic Property reachs out to traits
  - Updated analysis : Security also reports usage of unserialize()
  - Updated analysis : Mistmatched default argument also covers methods
  - Updated analysis : Never used parameter also covers methods
  - Updated analysis : Unused global also cover static variables
  - Updated analysis : Duplicate strings threshold is not 15, not 5.
  - Checked unit tests : 3289 / 3319 test pass (99% pass)
- **Tokenizer**
  - RETURNTYPE, TYPEHINT, and DEFAUT are not always on, with Void atom, or better.
  - DEFAULT value targets end-values, skips ??, ?:, () and =.
  - Exceptions now reports errors in the Query, not where it is thrown

Version 1.9.6 (Star of Birth, 2019-09-23)

- **Architecture**
  - Moved new elements to Complete/
  - Moved new elements to Dump/
  - Initial configuration of project now includes analysis parameters with default
  - Added descriptions to Rulesets
  - New command Config : displays current configuration for reuse and editing
  - Upgraded Doctor : support for docker-php, in-code
- **Report**
  - Ambassador : removed { } on magic property inventory
  - Ambassador : new inventory of network protocols used (udp://, ssh2://…)
- **Analysis**
  - New analysis : avoid mb_string inside loops
  - New analysis : avoid SSLvx and TLSv1.0
  - New analysis : report duplicate literal in the code, with parameter
  - New analysis : warn about null property
  - New coverage : calls to __call and __callStatic
  - Updated coverage : expressions with parenthesis
  - Updated coverage : default values are now targeting the final value in multiple assignations.
  - Updated analysis : Strange Variable name skips Staticdefinition and its default value
  - Updated analysis : Useless instructions are upgrade with pure functions
  - Updated analysis : Extended Closure2string with Arrowfunctions

  - Updated analysis : Extended 'Could be local variable' to traits
  - Updated analysis : Unused Global also covers static variables
  - Checked unit tests : 3279 / 3304 test pass (99% pass)
- **Tokenizer**
  - Updated tokens for PHP 7.4

Version 1.9.5 (Star of Adversity, 2019-09-16)

- **Architecture**
  - Added count property to Analysis node, stepstone for Diff analysis
  - Added support for 'optional' step
  - Added support for 'interfaces' as typehint for remote definitions
  - Removed more true/false values
  - Fixed strtolower with mb_strtolower in Dump
- **Report**
  - Added several PHP error messages
  - Ambassador : added inventory of magic properties
  - Ambassador : added inventory of typehints for methods (WIP)
  - Added support for function/closure/argument arguments
  - Added support for function/closure/argument arguments
- **Analysis**
  - New analysis : No literal value as referenced argument
  - New analysis : use array_slice or array_splice
  - New analysis : Useless typechecks with Typehint
  - New analysis : Report non-implemented interfaces
  - New analysis : Incompatible Signatures with Self (PHP 7.4+)
  - New analysis : Report wrong expectations from interfaces
  - Upgraded analysis : Excluded __construct and __destruct from Magic Methods
  - Upgraded analysis : Concat and Addition : Now also for bitshift
  - Upgraded analysis : Incompatible Signatures with Self (PHP 7.3)
  - Upgraded analysis : Elseif and Sequences are omitted in Level analysis
- **Tokenizer**
  - Upgraded support for magic properties

Version 1.9.4 (Star of Benefit, 2019-09-09)

- **Architecture**
  - Dump avoid storing multiple definition for the same class
  - Added more native return definitions
  - Adding UT for Complete/

  - Dump inventories are being moved to analysis class
  - Moving more Themes => rulesets
- **Report**
  - Ambassador : Fixed several internal links
  - Ambassador : Displays the levels of nesting in the code
  - Ambassador : Upgraded compatibility report with PHP 7.4
  - New report : Stubs
- **Analysis**
  - New analysis : PHP 7.4 New Directives
  - New analysis : Too many dimensions with array
  - New analysis : Check concat and coalesce precedence
  - New analysis : Adopt explode() third argument
  - New analysis : Ternary and useless assignation
  - New analysis : Nested ternary without parenthesis
  - New analysis : Spread operator with arrays
  - New analysis : Max level of indentation
  - New analysis : Use Arrowfunctions
  - Upgraded analysis : Clone with non object handles containers
  - Upgraded analysis : Calling non-static methods statically
  - Upgraded analysis : Unresolved Instanceof
  - Upgraded analysis : Array_merge and variadic, extended to isset
  - Checked unit tests : 3234 / 3259 test pass (99% pass)
- **Tokenizer**
  - Last element of list() is not omitted anymore

Version 1.9.3 (Star of Longevity, 2019-09-02)

- **Architecture**
  - Created new Complete category, with data complement for analysis
  - Refactored constant propagation
  - Made code compatible with PHP 7.4
  - Rename project_themas to project_rulesets
  - Added support of -p with .exakat.yaml
- **Report**
  - Ambassador : reworked presentation for visibility suggestions
- **Analysis**
  - New analysis : report covariance and contravariance for compatibility
  - New analysis : no spread operator for hash values

  - New analysis : self-closing tags are omitted by strip_tags
  - New analysis : report Openssl_random_pseudo_byte second argument usage
  - New analysis : CURLPIPE_HTTP1 is obsolete
  - New analysis : removed PHP 7.4 directives
  - New analysis : do not use … with array_merge without checks
  - Updated analysis : added crc32c as hash algorithm
  - Removed analysis : Removed Curly Arrays (double take)
  - Checked unit tests : 3219 / 3240 test pass (99% pass)
- **Tokenizer**
  - Extended OVERWRITE to Interfaces
  - Extended support for class_alias()

Version 1.9.2 (Star of Prosperity, 2019-08-26)

- **Architecture**
  - Introduced a new set of analysis : Complete
  - Cleaned code for PHP 7.4 usage
  - Refactored Query to skip impossible Gremlin calls
  - Now using Project for project names
- **Report**
  - New report : classes dependencies (HTML version)
  - New report : files dependencies (HTML and DOT version)
  - Ambassador : datas -> data
- **Analysis**
  - New analysis : {} are deprecated in PHP 7.4
  - New analysis : Don't use ENT_IGNORE
  - New analysis : fn is a PHP 7.4 keyword
  - Updated analysis : Functions/UseConstantAsArguments covers also password_hash()
  - Updated analysis : printf arguments now handles positional formatters
  - Checked unit tests : 3172 / 3199 test pass (99% pass)
- **Tokenizer**
  - Fixed precedence for left associativity

Version 1.9.1 (Star of Life, 2019-08-19)

- **Architecture**
  - Fixed zip as code source
- **Report**
  - Ambassador : Fixed issues list for Favorites
  - Owasp : switched dashboards

- **Analysis**
  - Updated analysis : Loop Calling got one extra check
  - Checked unit tests : 3148 / 3187 test pass (99% pass)

Version 1.9.0 (Ming Wenzhang of Jiayin, 2019-07-29)

- **Architecture**
  - Added missing configuration file for tinkergraph 3.4
  - Upgraded support for running exakat with PHP 7.4
- **Analysis**
  - New analysis : array_key_exists() now report object usage
  - New analysis : report mb_strrpos 4th argument
  - New analysis : Reflection export are deprecated
  - New analysis : Report classes without parents but with 'parent'
  - New analysis : Don't use scalar as arrays
  - New analysis : Report use of PHP 7.4 serialize method
  - Updated analysis : Multiple Identical Keys checks for undefined keys first
  - Updated analysis : Dont be too manual : extended to catch clauses
  - Updated analysis : setcookie detection anchors the keyword at the beginning of the string
  - Updated analysis : Failed Substr comparison now works with constants
  - Updated analysis : Added support for continue 2 and 3
  - Checked unit tests : 3147 / 3186 test pass (99% pass)
- **Tokenizer**
  - Added support for __serialize and __unserialize
  - Added support for numeric literal separator
  - Skip entirely unparsable files

Version 1.8.9 (Meng Feiqing of Jiachen, 2019-07-22)

- **Architecture**
  - Check on graphdb configuration : default to nogremlin
  - Added support for baseline for project and report
  - Moved more doc to ruleset
  - Check on .git folder for update
  - Added -version option for upgrade command
  - Doctor honors .exakat.yml file
- **Analysis**
  - New analysis : Report useless type of checks
  - New analysis : Disconnected classes
  - New analysis : Avoid using mb_detect_encoding()

  - New analysis : Check that source and blind variables are different in foreach
  - New analysis : ~ or ! favorite
  - Updated analysis : Is Zero omits multiplications
  - Updated analysis : Used Private Property is upgraded
  - Updated analysis : Multiple Identical Keys : refactored
  - Updated analysis : Undefined variables now skips extract, include, eval
  - Checked unit tests : 3147 / 3166 test pass (99% pass)
- **Tokenizer**
  - Refactored support for Foreach : each blind variable is in VALUE
  - Upgraded precedence for ! (not)
  - Propagate constants with assignations
  - Fixed link to $this inside heredoc and co
  - Fixed an edgecase where Static method call was confused with Newcall

Version 1.8.8 (Wei Yuqing of Jiawu, 2019-07-15)

- **Architecture**
  - Modernized tinkergraph support
  - When pcntl is available, stubs are produced in a child process
  - Removed duplicated methods
  - Exported sequences to helpers
  - More UT libraries are supported
  - Federated BUSYTIMEOUT in constant
- **Report**
  - Ambassador and all dependend reports were refactored : menu is configurable with Yaml
  - Emissary is the upcoming configurable report.
- **Analysis**
  - New step : Load data from code
  - New analysis : Variables used for setting aside value temporarily
  - New analysis : Use PHP array_* functions, instead of loops
  - Updated analysis : Unused methods now skips methods from PHP native interfaces (Arrayaccess)
  - Updated analysis : No class for typehint is now omitting PHP and extensions classes
  - Updated analysis : Switch to Switch applies to comparisons now
  - Updated analysis : Close namingg was sped up significantly
  - Updated analysis : array_column() suggestion was refined
  - Updated analysis : Htmlentities parameters also support some parenthesis usage
  - Updated analysis : Constant Scalar Expression only target specified expressions
  - Updated analysis : Static Properties skip Virtual properties

  - Checked unit tests : 3131 / 3155 test pass (99% pass)
- **Tokenizer**
  - Refactored support for Exit and Die
  - Added raw support for phpdoc

Version 1.8.7 (Hu Wenchang of Jiashen, 2019-07-08)

- **Architecture**
  - Added bugs fixes up to 7.3.7
  - New factory method for the graph
- **Analysis**
  - New analysis : Backward compatible check on generators (can't return)
  - New analysis : Report wrong return typehint
  - New analysis : Use DateTimeImmutable
  - New concept : Methods that throw errors
  - Updated analysis : Recursive functions disambiguate methods
  - Updated analysis : Refactored property/variable confusion
  - Updated analysis : Could typehint checks on type validations
  - Updated analysis : Variable used once check for abstract methods
  - Updated analysis : Array_merge in loops omits file_put_contents()
  - Updated analysis : Simple Regex covers all special sequences, and unicode sequences
  - Checked unit tests : 3131 / 3142 test pass (99% pass)
- **Tokenizer**
  - Differentiated support for self and static in calls
  - Moved Symfony support to its extension
  - Reworked loading to make it parallels.

Version 1.8.6 (Wei Yuqing of Jiawu, 2019-07-01)

- **Architecture**
  - Added support for Tinkegraph 3.4
  - Extended support for Dev
  - Renamed Themes to Ruleset (WIP)
  - Split several long running queries into smaller chunks
  - Cached files to memory, write them once only
  - Optimized sides queries : omitting them when possible
  - Added count of issues in Analyse node
  - Optimized loading by grouping by inV
  - More coverage for Arrowfunction
- **Report**

  - Dump : collect PHP cyclomatic complexity
- **Analysis**
  - New analysis : Dependant abstract classes
  - New analysis : Don't use Null or Boolean as an array
  - New analysis : Infinite recursion
  - Updated analysis : Raised levels
  - Updated analysis : Method signature must be compatible
  - Updated analysis : Access Private in Trait is OK
  - Updated analysis : Recursive function
  - Checked unit tests : 3099 / 3105 test pass (99% pass)
- **Tokenizer**
  - Upgraded support for 'Modules'

Version 1.8.5 (Zhan Zijiang of Jiaxu, 2019-06-24)

- **Architecture**
  - Fixed several bugs in the online documentation
  - Started removing analysis, replacing with analysis
  - Fixed path in docker PHP usage.
- **Report**
  - Ambassador : Export full INI and YAML config to replicate audit
- **Analysis**
  - New analysis : Unused class constants
  - New analysis : Could Use available Trait
  - New analysis : literal that Could Be Constant
  - Updated analysis : Access Private in Trait is OK
  - Updated analysis : multiple identical argument is extended to closures, methods
  - Updated analysis : ext/rdkafka
  - Updated analysis : No Hardcoded Hash is accelerated
  - Updated analysis : Extended printf() check to constants
  - Updated analysis : Optimized 'redefined method'
  - Updated analysis : Memoize Magic Call
  - Updated analysis : set_locale requires constants
  - Checked unit tests : 3099 / 3105 test pass (99% pass)
- **Tokenizer**
  - Added missing isModified to Foreach keys
  - Class Method Definition handles old style constructor
  - strict_types don't yield a block

  - Added typed values for magic constants
  - Refactored new -> constructor link for Self, Static, parent
  - Added missing arguments count to Newcall

Version 1.8.4 (Wang Wenqing of Jiazi, 2019-06-17)

- **Architecture**
  - Added support for PHP in docker images for compilation tests
  - First prototype for Gremlin in a specific docker image
- **Report**
  - Ambassador : restored original URL
  - Replaced 'Complexity' => 'Time To Fix'
  - Replaced 'Receipt' => Ruleset
- **Analysis**
  - New analysis : regex with arrays
  - New analysis : Complex property names
  - New analysis : array_key_exists speed up
  - New analysis : curl_version forbidden argument
  - New analysis : PHP 7.4 new functions, classes and constants
  - Fixed analysis : Long Variable
  - Updated analysis : printf() format check extended to constants
  - Updated analysis : Written only variables is extended to static and global
  - Updated analysis : refactored 'Make default'
  - Updated analysis : 'Wrong number of arguments' is extended to methods
  - Updated analysis : 'Use coalesce' checks for
  - Updated analysis : Refactored 'Nested ifthen' to have a parameter
  - Updated analysis : Extended 'Class Usage' to return typehint
  - Updated analysis : Sped up 'Used Classes'
  - Checked unit tests : 2993 / 3071 test pass (97% pass)
- **Tokenizer**
  - Upgraded handling of declare with strict_types
  - Support for magic properties across classes and traits
  - Added support for parent with properties
  - Properties are handled with static and normal at the same time
  - Fixed virtualproperties with static keyword (self and parent are ok)
  - Added argument count for 'new A', without parenthesis
  - Restored old break behavior for PHP 5 and older.

Version 1.8.3 (Jade Man of Yang, 2019-06-10)

- **Architecture**
  - Extension docs show version numbers
  - Manual uses internal links
- **Report**
  - New report : SARB
  - Updated report : Ambassador list number of arguments in natural order
- **Analysis**
  - New analysis : from substr() to trim()
  - New analysis : suggest making magic property a concrete one (2 ways)
  - New analysis : no array auto-append
  - Updated analysis : 'Scalar or object property' refactored
  - Updated analysis : 'Multiple identical keys' get a new check on intval, broadened to constants
  - Updated analysis : 'Indirect injection' accelerated
  - Updated analysis : 'Could be class constant' accelerated
  - Updated analysis : 'Never used property' refactored
  - Updated analysis : 'Modern empty' modernized and broadened
  - Updated analysis : 'Useless check' skips isset/empty as they may be useful
  - Updated analysis : 'Identical methoods' skips abstract methods
  - Updated analysis : 'No Count Zero' also uses sizeof(), skips switch()
  - Checked unit tests : 2993 / 3071 test pass (97% pass)
- **Tokenizer**
  - Upgraded local definitions for properties to Load phase
  - Handle static keyword in closures
  - Moved 'Real' to 'Float'
  - Created 'Scalartypehint' atom
  - Fixed intval, boolval for true and false

Version 1.8.2 (Zhao Ziyu of Dingchou, 2019-06-03)

- **Architecture**
  - Refactored 'Update' command, to VCS
  - Collect missing definitions counts
  - Report handles a list of analysis names
- **Analysis**
  - New analysis : No Need To Get_Class
  - New analysis : Report identical inherited methods
  - New analysis : Function returning -1 in case of error
  - Updated analysis : TypeHint must be returned, doesn't apply to abstract methods or interface methods

  - Updated analysis : 'Could Use Interface' also checks for static and visibility
  - Updated analysis : 'Concat empty' skips variables
  - Checked unit tests : 3024 / 3048 test pass (99% pass)
- **Tokenizer**
  - Created 'virtual' properties, for limiting children agglomerations
  - Fixed normalized code for use traits
  - Added DEFAULT to all variable definitions
  - Connect strings to class definitions
  - Handle variable in 'compact', when they are static

Version 1.8.1 (Zhang Wentong of Dinghai, 2019-05-27)

- **Architecture**
  - Fixed Symlink destination
  - Added collecting classes children, traits and interfaces counts
  - Added support for constants and functions in modules
  - Added missing functions in data
- **Report**
  - New report : exakatYaml, which help configuring exakat
  - New report : Yaml
  - New report : Top10
  - Updated report : Json, text and xml get 'fullcode'
- **Analysis**
  - Updated analysis : Should use self is extended to parent classes
  - Updated analysis : Should use prepared statement now skips some SQL queries
  - Checked unit tests : 3024 / 3048 test pass (99% pass)

Version 1.8.0 (Zang Wengong of Dingyou, 2019-05-20)

- **Architecture**
  - Added missing native PHP functions
  - Restored anchor for ignore_dirs[] configuration
  - Removed more MAX_LOOPING usage
- **Report**
  - Ambassador : removed { & @ } artefacts from globals
- **Analysis**
  - New analysis : Function returning -1 in case of error
  - New analysis : Report PHP 7.4 unpacking inside array
  - New analysis : Report PHP 7.4 new functions and fn
  - New analysis : Useless arguments

  - New analysis : Addition and concatenation precedence for PHP 7.4
  - New analysis : report concatenation of empty strings
  - New analysis : casting has precedence over ternary
  - New analysis : report already used traits
  - New analysis : report missing traits in use expression
  - Updated analysis : isset on whole arrays : extended analysis to Phpvariables
  - Updated analysis : SQLITE3 requires single quotes
  - Updated analysis : Dir then slash : extended to constants
  - Updated analysis : Variable Strange Name extended to strange types
  - Updated analysis : Possible interface's analysis is sped up
  - Checked unit tests : 3021 / 3045 test pass (99% pass)
- **Tokenizer**
  - Fixed fullcode of Usetrait
  - Extended method definitions to traits
  - Extended fluent interface detection to parents
  - Fixed dump for visibility change
  - Handle method aliases in use expression (as)
  - Better noDelimiter for double quotes strings

Version 1.7.9 (Shi Shutong of Dingwei, 2019-05-13)

- **Architecture**
  - Upgraded list of functions by extension : openssl, math, hrtime
  - Added global atom to track all globals
  - Rewrote several Dump queries with DSL
  - Added support for Notice in Phpexec
  - Added support for .exakat.ini and .exakat.yaml
  - Added support for arrow functions : fn =>
  - Added support for spread operator in arrays [...[1,2,3]]
- **Report**
  - Inventories : added 'inclusions' and 'global variables'
  - Ambassador : added global variables
- **Analysis**
  - New analysis : support for ext/ffi, uuid
  - Updated analysis : Nested Ternary handles parenthesis
  - Updated analysis : Static loops is extended to references and arrays
  - Updated analysis : Recursive function is extended to Magic methods and Closures
  - Checked unit tests : 3014 / 3019 test pass (99% pass)

- **Tokenizer**
  - Moved 'is_in_ignored_dir' to a property
  - Cleaned getFullnspath() call in Load
  - Fixed latent bug on Function fullnspath
  - Heredoc and Nowdoc are reported as constant if needed
  - Isset() is not read
  - Ignore PHP notices when linting
  - Globals are now centralised across a repository
  - Extended definitions for Virtualproperties
  - Removed double DEFINITION link with new

Version 1.7.8 (Cui Juqing of Dingyi, 2019-05-06)

- **Architecture**
  - renamed test.php to ut.php in tests
  - reorganized destinations folders
  - organized exakat for 'inside code' audit
- **Analysis**
  - New analysis : support for libsvm
  - Updated analysis : Multiple unset() handles unset() at the beginning of the scope
  - Updated analysis : undefined static class now accounts for PHP and module classes
  - Checked unit tests : 2961 / 2995 test pass (99% pass)
- **Tokenizer**
  - Extended class usage to static::class.
  - refactored 2 analysis for speed : double instruction and double assignations
  - fixed recent bug where Project token is twice.

Version 1.7.7 (Sima Qing of Dingmao, 2019-04-29)

- **Architecture**
  - Upgraded to gremlin-php 3.1.1
  - Moved autoload into its own namespace
  - Started extending themes to modules
  - Skip external libraries when unit testing
  - Dump got one more query moved to DSL
  - Fixed build for overwritten methods, extended to magic methods
  - Load tokens by batch (5000+ tokens), not by file.
- **Analysis**
  - New analysis : Security : integer conversion
  - New analysis : implode() with one argument

  - Updated analysis : Invalid Regex handles \ more precisely
  - Updated analysis : delimiter detection was checked for all of them
  - Checked unit tests : 2947 / 2983 test pass (99% pass)
- **Tokenizer**
  - Upgraded Fallback detection for functions

Version 1.7.6 (Jade Maiden of Yin, 2019-04-22)

- **Architecture**
  - Refactored Class definition with return typehint
  - Added configuration for including development extensions.
  - Extended LoadFinal typehint hunting
- **Report**
  - Phpcsfixer : new report
  - Ambassador : report usage of overridden PHP functions
  - Ambassador : new favorite : variable name in catch clause
- **Analysis**
  - New analysis : array_merge and ellipsis should use coalesce
  - New analysis : Report overridden PHP native functions
  - New analysis : Merge all unset() into one
  - Updated analysis : Added missing constant for curl, pgsql, openssl
  - Updated analysis : Variadic are not variable arguments
  - Updated analysis : Useless Reference argument extended to foreach()
  - Updated analysis : Use Constant also covers pi()
  - Updated analysis : Inclusion Wrong Case handles dirname with 2nd argument
  - Updated analysis : Useless Argument : handles some edge cases with arrays
  - Checked unit tests : 2947 / 2975 test pass (99% pass)
- **Tokenizer**
  - Upgraded handling of isRead and isModified attributes
  - Changed variadic argument counts in method declarations
  - Fixed original value in 'Sign'

Version 1.7.5 (Xue King Zhuanlun, 2019-04-15)

- **Architecture**
  - Cleaned unused variables
- **Report**
  - Ambassador : bugfixes report version 7.3, dropped 5.6 and 5.5
- **Analysis**
  - Updated analysis : Already interface : extended to interface parents

  - Updated analysis : Else if to elseif : extended to one-liners
  - Updated analysis : No reference for ternary was extended
  - Updated analysis : Implements is for interface
  - Updated analysis : Refactored Is a Magic Property
  - Updated analysis : Refactored Conditional structures for constants
  - Checked unit tests : 2926 / 2950 test pass (99% pass)
- **Tokenizer**
  - Link properties to magicmethod
  - Deduplicated virtual properties
  - Added isRead and IsModified properties. Omitting the corresponding analysis.

Version 1.7.4 (Lu King Pingdeng, 2019-04-08)

- **Architecture**
  - reports, themes may be specified multiple times
  - 'project' command also work on themes and report from command line
  - Added htmlpurifier in auto-ignored libraries
  - Counting definitions, omitting Virtualproperties
  - Automatically detect identical files
- **Report**
  - Inventories are grouped by values, sorted by count
- **Analysis**
  - Updated analysis : This is for class : extended analysis to self and parent
  - Updated analysis : Undefined Classes
  - Updated analysis : Refactored Defined Parent MP
  - Updated analysis : Redefined PHP function is restricted to global scope
  - Updated analysis : Could Use Alias also covers functions, constants.
  - Updated analysis : Refined SQL detection
  - Fixed step : goToAllParentsTrait missed some of the parent
  - Checked unit tests : 2916 / 2944 test pass (99% pass)
- **Tokenizer**
  - Removed impossible implementations of traits
  - Fixed functioncalls' 'absolute' property
  - Refined parent's definitions
  - Trait also sports virtualproperties
  - Virtualproperties now respect visibilities
  - Distinguish Variables from Staticpropertynames
  - Added missing DEFINITION for Use (namespaces)

Version 1.7.3 (Huang, King Dushi, 2019-04-01)

- **Architecture**
  - New command 'show' that display project creation command
  - Refactored UT detection mechanism
- **Report**
  - Ambassador : report identical files in the code
  - Ambassador : global variable inventory is now grouped by name
- **Analysis**
  - Updated analysis : PPPDeclaration style : handles Virtualproperties
  - Updated analysis : Closure2string : extended analysis
  - Updated analysis : Non-Ascii variable skips { }, & and @
  - Updated analysis : Could Be Static exclude abstract methods
  - Updated analysis : MismatchedTypehint : handles methodcalls and class hierarchy
  - Updated analysis : Could Use Try : refined analysis to avoid literals
  - Updated analysis : Hidden use, handles Virtualproperty
  - Updated analysis : Classes, wrong case, handles FQN
  - Checked unit tests : 2846 / 2926 test pass (97% pass)
- **Tokenizer**
  - Moved creation of Virtualproperty early, to catch more situations
  - Virtualproperty mimic Propertydefinition
  - Added extra check when roaming the classes tree
  - Handles Sign constant values correctly

Version 1.7.2 (Dong King Taishan, 2019-03-25)

- **Architecture**
  - Restored the external library checker
  - Added support for extension's CIT (Symfony, Drupal)
- **Report**
  - Ambassador : added Suggestions theme to docs.
  - Perfile : New report, text, per file
- **Analysis**
  - New analysis : Report potential 'unsupported operand type'
  - New analysis : Check for existence with __call() and __callstatic
  - Updated analysis : Wrong number of arguments (methods) upgraded
  - Updated analysis : Could Be Static ignores empty methods, constants methods
  - Updated analysis : Added Variable to possibly useless expression
  - Updated analysis : Constant names are detected based on available noDelimiter

  - Updated analysis : Abstract classes may have no abstract methods
  - Checked unit tests : 2889 / 2912 test pass (99% pass)
- **Tokenizer**
  - Added link between __clone and clone
  - Now handling functions and constants when ignored
  - Fixed dynamic constants in collector

Version 1.7.1 (Bi King Biancheng, 2019-03-18)

- **Report**
  - Ambassador : report lines that concentrate lots of issues
- **Analysis**
  - Extended GoToAllImplements to extended interfaces
  - Updated analysis : NoScream usage, with authorized functioncall list like fopen
  - Updated analysis : HiddenUse with support for virtual properties
  - Checked unit tests : 2867 / 2900 test pass (99% pass)
- **Tokenizer**
  - Added support for 'Virtualproperties'
  - Harmonized file escaping feature

Version 1.7.0 (Bao King Yama, 2019-03-11)

- **Architecture**
  - Added auto-documenting 'ignored' cit to weed out obvious false positive
- **Report**
  - Made Diplomat the default report
  - Added History report : it stores metrics from audit to audit
- **Analysis**
  - New analysis : Identify self transforming variables ($x = foo($x))
  - New analysis : Report unclonable variables
  - Updated analysis : Undefined Classes, Interfaces and Trait now omit 'ignored' cit from folders
  - Updated analysis : Inconsistent usage is refactored for properties
  - Updated analysis : Useless expression, with clone new x
  - Updated analysis : Only Variable For Reference accepts $this, $_GET
  - Updated analysis : Lost References was modernized
  - Checked unit tests : 2854 / 2884 test pass (99% pass)
- **Tokenizer**
  - Refactored support for Staticmethod (in a trait's use)
  - Added definitions for trait's use

Version 1.6.9 (Lu King Wuguan, 2019-03-04)

- **Architecture**
  - Optimized Dump when navigating the links to the File Atom
  - Refactored LoadFinal into separate classes
  - Upgraded to Tinkergraph 3.3.5
  - Added options to cleandb to stop and start gremlin from exakat
  - Skip the task if no analysis has to run
- **Analysis**
  - New analysis : Report inconsistent usage of properties or variables
  - New analysis : Typehinted return must return
  - Updated analysis : Variables used once handles closure (use) correctly
  - Updated analysis : Is Zero was refactored partially (WIP)
  - Updated analysis : Bad Typehint relay got a fix
  - Updated analysis : Function Subscripting is only suggested for one usage
  - Updated analysis : Lost References was modernized
  - Checked unit tests : 2854 / 2881 test pass (99% pass)
- **Tokenizer**
  - Added definition for injected properties
  - Fixed sack() for subqueries
  - $this is not a classic variable
  - Removed double DEFINITION links
  - Fixed edge case with define() at the end of a script

Version 1.6.8 (Yu King Songdi, 2019-02-25)

- **Architecture**
  - Added support for PHP 8.0
  - Fixed Constant FNP
  - Advance progressbar when ignoring files
- **Report**
  - Ambassador : report usage of factories
  - Collect stats about Foreach usage
- **Analysis**
  - New analysis : Report violation of law of Demeter
  - New analysis : Report removed constants and functions in PHP 8.0
  - Updated analysis : Refactored Nullable Typehint
  - Checked unit tests : 2851 / 2872 test pass (99% pass)
- **Tokenizer**
  - Fixed edge case for Logical with strings

  - Reduced max level of looping in GoToAllParents
  - Distinguish $$ and ${$

Version 1.6.7 (Li King Chujiang, 2019-02-18)

- **Architecture**
  - Documentation covers more PHP functions
  - Added some missing PHP functions
  - Fixed destination folder for extensions
- **Report**
  - Ambassador : limited size of default values in visibility report.
  - Ambassador : reporting class depth
  - Ambassador : reporting dynamically created constants
  - Diplomat : leanner, meaner version of Ambassador
  - New category : Top 10 classic mistakes
- **Analysis**
  - New analysis : Report when relayed typehint are not the sames
  - Updated analysis : Regex now handles local variables and constants
  - Updated analysis : Variables Used Once now covers closures and use
  - Checked unit tests : 2846 / 2867 test pass (99% pass)
- **Tokenizer**
  - Defineconstant may be constant
  - Fixed handling of Nullable for typehint
  - Started preparing for Gremlin 3.4.0 : WIP

Version 1.6.6 (Jiang King Qinguang , 2019-02-11)

- **Architecture**
  - Removed FetchContext() from DSL
  - Added options to follow constants from atomIs.
- **Report**
  - Now dumps magic methods
- **Analysis**
  - New analysis : Report insufficient interfaces in typehint
  - Updated analysis : Class constant now ignore empty classes
  - Checked unit tests : 2837 / 2858 test pass (99% pass)
- **Tokenizer**
  - Moved 'Define' to its own atom
  - Upgraded Logical to hanlde Strings as PHP
  - Fixed T_POWER => T_POW

  - Refactored calculation for globalpath
  - Fixed edgecase with endswitch;

Version 1.6.5 (Mahagate, 2019-02-04)

- **Architecture**
  - Added CVS as an external service
  - Graph GSNeo4j export variable for shell access. putenv is not sufficient
  - Dump : report class name, not its code
  - Extended listAllThemes to extensions
  - Fixed bug in extension loader with phar
- **Report**
  - Ambassador : restored file dependencies tree
  - Ambassador : fixed altered directive filename
  - Ambassador : added direct link to docs
- **Analysis**
  - New analysis : arrays that are initialized with strings
  - New analysis : Avoid Lone variables as conditions
  - New analysis : Added support for weakref and pcov
  - Updated analysis : extended regex to arrays in preg_* calls
  - Updated analysis : Implicit globals now also marks the variable in global space
  - Updated analysis : Add Zero, Multiply by One also cover 2 * $x = 1;
  - Updated analysis : Could Use Interface now takes into account PHP interfaces, and classes first level.
  - Updated analysis : Relay Functions now omits calls to parent's __construct and __destruct
  - Checked unit tests : 2830 / 2852 test pass (99% pass)

Version 1.6.4 (Parasamgate, 2019-01-28)

- **Architecture**
  - Added support for CVS as a VCS
  - Upgraded support for tar as a VCS
  - Added support modification counts by files
  - Added first tracking for closures
  - Upgraded Tinkergraph driver
- **Report**
  - Added Atoms in the documentations
  - Extra protection for Class Changes
- **Analysis**
  - Updated analysis : Use-arguments are now counted as arguments
  - Updated analysis : Max Argument check was refactored

  - Updated analysis : IsModified now takes into account extensions
  - Updated analysis : Should Use This now exclude empty methods
  - Updated analysis : undefined classes now support PHP 7.4 typed properties
  - Updated analysis : added missing scalar PHP types
  - Updated analysis : uncaught exceptions now cover parents
  - Updated analysis : refactored incompatibility checks for methods
  - Checked unit tests : 2824 / 2841 test pass (99% pass)
- **Tokenizer**
  - Refactored alternative ending, removed extra VOID
  - Upgraded contexts and their nesting
  - Added extra checks on variables names
  - Added support for ??= (PHP 7.4)

Version 1.6.3 (Paragate, 2019-01-21)

- **Architecture**
  - Better presentation for exakat extensions
  - Added build.xml for Jenkins
  - Fixed copyright years
- **Report**
  - Ambassador : fixed class name for Phpcompilation
- **Analysis**
  - New analysis : assign and compare at the same time
  - Updated analysis : uncaught exceptions now cover parents
  - Updated analysis : strpos too much is extended to strrpos and strripos
  - Updated analysis : Refactored Indirect injections for more refined reports
  - Updated analysis : Empty Block doesn't omit Ifthen anymore
  - Updated analysis : Implemented methods are public mistook interface methods
  - Updated analysis : Object Reference omits arguments that are wholly assigned
  - Checked unit tests : 2808 / 2826 test pass (99% pass)
- **Tokenizer**
  - Added support for PHP 7.4 typed properties (needs PHP 7.4-dev)

Version 1.6.2 (Silver Headed Gate, 2019-01-14)

- **Architecture**
  - Fixed infinite loop when an option missed a value
  - Produce phpversion in config.ini, but leave it commented
- **Report**
  - Ambassador : colored syntax for visibility report

  - Ambassador : inventory reports now display number of usages
- **Analysis**
  - Updated analysis : Added support for PHP 7.2.14
  - Updated analysis : Avoid Using Class handles
  - Updated analysis : Unused Functions works with multiple identical functions
  - Checked unit tests : 2795 / 2817 test pass (99% pass)
- **Tokenizer**
  - Fixed bug that mixed T_OR and T_XOR
  - Fixed bug that missed intval for Power
  - Handles multiple definitions of functions
  - Removed one Void too many with closing tag

Version 1.6.1 (Golden Light Gate, 2019-01-07)

- **Architecture**
  - Upgraded documentation for Extensions
  - Upgraded processing of files, specially with special chars
  - Project stops when no token are found
  - Storing hash for each files. RFU.
- **Report**
  - Ambassador : added support for class constant's changes
  - Ambassador : added classSize report
  - Ambassador : 'New issues' now takes line difference into account
  - Themes are better dumped
- **Analysis**
  - New analysis : array_key_exists() is faster in PHP 7.4
  - New analysis : partial report from preg_match()
  - Updated analysis : Avoid Using Class handles
  - Updated analysis : Class Usage uses class_alias()
  - Updated analysis : Empty traits
  - Updated analysis : Unused arguments now skips __set()
  - Updated analysis : Path strings
  - Updated analysis : Missing include handles more concatenations
  - Checked unit tests : 2792 / 2812 test pass (99% pass)
- **Tokenizer**
  - Fixed precedence for identical operators
  - Fixed bug with ?> inside switch

Version 1.6.0 (VirupakSa, 2018-12-31)

- **Architecture**
  - VCS are not tested when they are not used
- **Analysis**
  - Updated analysis : Php Reserved names ignores variable variables
  - Updated analysis : Array not using a constant, with Heredoc
  - Updated analysis : Long arguments
  - Updated analysis : Empty With Expression ignores simple assignations
  - Refactored analysis : Callback needs returns
  - Refactored analysis : No Return used
  - Checked unit tests : 2780 / 2805 test pass (99% pass)
- **Tokenizer**
  - Fixed regression with Yield and =>
  - Fixed edge case "$a[-0x00]"

Version 1.5.9 (Dhrtarastra, 2018-12-24)

- **Architecture**
  - Use PHP in project config for default PHP version
  - cleandb uses -p
  - Moved projects/.exakat to projects/<-p>/.exakat folders
  - Using $config and not more hardcoded tinkergraph
  - Extra check on doctor
- **Report**
  - Ambassador : extra check for 'previous' report
- **Analysis**
  - Upgraded analysis : Empty With Expression skip a few false positive
  - Checked unit tests : 2770 / 2795 test pass (99% pass)
- **Tokenizer**
  - Fixed edgecase for methods named 'class'
  - Fixed class name in Project

Version 1.5.8 (Virudhaka, 2018-12-17)

- **Architecture**
  - Handles themas provided by extensions
  - Added busyTimeout for dump.sqlite
  - Reduced size of thema tables
  - Docs handle parameter dynamically
  - Added 'update' for extensions
- **Report**

  - Ambassador : added a 'Path' inventory, with file paths
- **Analysis**
  - New analysis : Closures that are identical
  - Upgraded analysis : Url and SQL detection, case sensitivity
  - Upgraded analysis : Could Use array_fill_keys
  - Upgraded analysis : Undefined functions doesn't miss functions inside classes, handles interfaces
  - Upgraded analysis : Empty Functions better handles return;
  - Upgraded analysis : Long Argument may be configured
  - Upgraded analysis : Fixed bug with empty include path
  - Checked unit tests : 2770 / 2795 test pass (99% pass)
- **Tokenizer**
  - Added FNP to strings
  - First link between method and definition with typehint
  - Support for class_alias
  - Fixed edge case with use ?>
  - Fixed variable in string behavior for $this and $php variables

Version 1.5.7 (Vaisravana, 2018-12-10)

- **Architecture**
  - Extended Dump to support aliased methods
  - Support for SQLITE in extensions
  - Moved each framework to extensions
  - Added Laravel extension
- **Documentation**
  - First version for the Extension chapter
  - Fixed mysterious ' in the docs
- **Report**
  - Ambassador : added a 'New issues' section, with new analysis
  - Ambassador : added trait matrix
  - Ambassador : fixed an infinite loop when trait include themselves in cycles
  - Added more message count to several reports
- **Analysis**
  - New analysis : method could be static
  - New analysis : multiple inclusion of traits
  - New analysis : avoid self using traits
  - New analysis : ext/wasm and ext/async
  - Upgraded analysis : No Hardcoded Hash, skip hexadecimal numbers

  - Upgraded analysis : Defined properties extends to traits
  - Upgraded analysis : PSS outside a class, when PSS are in strings
  - Upgraded analysis : Access private works with methods (not just static)
  - Checked unit tests : 2772 / 2785 test pass (99% pass)
- **Tokenizer**
  - Fixed bug in Dump, when nothing to clean
  - Fixed edge bug on Callable detection
  - Extended support for self, static and parent, in typehint and new
  - Fixed precedence of yield and yield from
  - Fixed handling of throw at the end of a script
  - Added support to solve conflict on traits

Version 1.5.6 (Jingang, 2018-12-03)

- **Architecture**
  - Moved all framework to extensions. WIP.
  - Code cleaning
  - Refactored the analysis dependency sorting
  - Now display progress bar for files
  - Fixed configuration for directories and files
- **Report**
  - Fixed FileDependecy and DependencyWheel, to actually count messages
- **Analysis**
  - Added a lot more new method descriptions for PHP native classes
  - New analysis : suggestion simplification for !isset($a) || !isset($a[1])
  - New analysis : Useless Trait alias
  - New analysis : report usage of ext/sdl
  - Upgraded analysis : Refactored IsZero, to handle assignations and parenthesis
  - Upgraded analysis : pack format is better checked
  - Checked unit tests : 2759 / 2771 test pass (99% pass)
- **Tokenizer**
  - Fixed a missing fullnspath for origin in Use for Traits
  - Handles simple aliases for traits methods
  - Fixed mishandling of variables inside strings
  - Fixed support of negative numbers inside strings
  - Fixed bug with yield inside an array
  - Fixed strange case with define and integers as constant names

Version 1.5.5 (Ratnadhvaja, 2018-11-25)

- **Architecture**
  - Initial version of Exakat extensions
  - Moved processing of 2-tokens files to Load
  - Speed up CSV creations
  - Upgrades are read from https, no http
  - Moved loading's sqlite to memory for speed gain
  - Doctor now auto-create test folder
- **Report**
  - New report : Php city. See your PHP code as a city
  - Ambassador : Appinfo() now reports keywords used as method or property
  - Fixed reported names of properties
- **Analysis**
  - New analysis : checks some HTTP headers for security
  - New analysis : Use _file() functions, not file_get_contents()
  - New analysis : Optimize looks for fgetcsv()
  - Upgraded analysis : Several refactored analysis
  - Checked unit tests : 3083 / 3096 test pass (99% pass)
- **Tokenizer**
  - Fixed encoding error in loading, for clone types.

Version 1.5.4 (Mahakasyapa, 2018-11-19)

- **Architecture**
  - Added error message for memory limit
  - Added GC to Project action
  - Migrated Melis to extension
  - Dumping data is now done en masse
  - Analysers now handle side-queries
  - Clear message in case of memory limit
  - Doctor doesn't stop at missing helpers
  - VCS leak less errors
  - Added support for 7z
  - Extended validation for themas
  - Restored Tinkergraph driver
  - Upgrade logs with extra reports
- **Analysis**
  - New analysis : Report problems with class constant visibilities
  - New analysis : Avoid self, parent and static in interfaces

  - Upgraded analysis : Variable reuse now skips empty arrays
  - Checked unit tests : 3077 / 3090 test pass (99% pass)
- **Tokenizer**
  - Fixed bug where variable was mistaken for a string inside strings

Version 1.5.3 (Ananda, 2018-11-12)

- **Architecture**
  - Extended results to methods, traits
  - Added support for PHP 7.2.12
  - 'master' is not used anymore as default branch
  - Fixed creation of initial config/exakat.ini
  - Fixed handling badly written exakat.ini or PHP binary paths
- **Report**
  - Ambassador : report classes that could be final or abstract
- **Analysis**
  - New analysis : Property Used Once : now includes redefined functions
  - New analysis : iterator_to_array() should use yield with keys or array_merge()
  - New analysis : Don't loop on yield : use yield from
  - Upgraded analysis : Dependant trait now include parent-traits
  - Checked unit tests : 3080 / 3093 test pass (99% pass)
- **Tokenizer**
  - Changed handling of variable that are both global AND local
  - Disambiguated variables and properties
  - Extended OVERWRITE to constants and methods

Version 1.5.2 (Master Puti, 2018-11-05)

- **Report**
  - Fixed storage of themes in dump.sqlite
  - Ambassador : report nothing when there are no trait, interface or class in the tree.
- **Analysis**
  - New analysis : idn_to_ascii() will get new default
  - New analysis : support for decimal extension
  - New analysis : support for psr extension
  - Upgraded analysis : Extended support to PHP native exceptions
  - Upgraded analysis : Could use typecast now handles intval() second param
  - Upgraded analysis : Variable strange names avoids properties
  - Checked unit tests : 3058 / 3085 test pass (99% pass)
- **Tokenizer**

  - Upgraded support for arrays inside strings (string/constant distinction)
  - Added DEFINITION for constant() and defined()
  - Fixed value of line for some placeholder definition

Version 1.5.1 (Eighteen Arhats, 2018-10-29)

- **Analysis**
  - New analysis : could use basename() second args
  - Upgraded analysis : Variables strange names do not report ...
  - Checked unit tests : 3061 / 3079 test pass (99% pass)
- **Tokenizer**
  - Moved TRAILING as a property
  - Moved NULLABLE as a property
  - Sync ALIAS with AS
  - Fixed link between Use expression when using an alias

Version 1.5.0 (Pilanpo Bodhisattva, 2018-10-22)

- **Architecture**
  - Fixed " in the examples of the manual
  - Upgraded stability with new history testing
- **Report**
  - Ambassador : now report interface and trait hierarchy
  - Ambassador : new format inventory for pack and printf
  - Dump : Fixed list of traits
- **Analysis**
  - New analysis : Could Use Try, for native calls that may produce an exception
  - New analysis : idn_to_ascii() will get new default
  - Upgraded analysis : Undefined variables exclude $this
  - Upgraded analysis : Variables used once avoid properties
  - Upgraded analysis : ext/json : JsonException
  - Upgraded analysis : added new PHP 7.3 constants (curl, pgsql, mbstring, standard)
  - Upgraded analysis : scalar or object property now ignore NULL as default
  - Refactored analysis : UsedProtectedMethod
  - Checked unit tests : 3059 / 3071 test pass (99% pass)
- **Tokenizer**
  - Handles NaN and INF when the literals reach them
  - Static constant may be variable if object is variable
  - Removed superfluous linking for static calls.

Version 1.4.9 (Lingji Bodhisattva, 2018-10-15)

- **Architecture**
  - Extended documentation with phpVersion, time to fix and severity
  - Upgraded bufixes to PHP 7.2.11
  - Added more tests on arguments in the DSL
  - Removed double definitions for class constants
  - Initial support for extension folder
- **Report**
  - Collect the number of local variables, per method
- **Analysis**
  - New analysis : report accessing properties the wrong way
  - New analysis : suggest named patterns
  - New analysis : check Pack() arguments
  - New analysis : Return in generators, for PHP 7.0 +
  - New analysis : Repeated interfaces
  - New analysis : Static properties shouldn't use references until PHP 7.3
  - New analysis : Don't read and write in the same expression
  - Upgraded analysis : is interface methods, extended to magic methods
  - Upgraded analysis : empty regex
  - Upgraded analysis : never used properties
  - Upgraded analysis : logical operators in letters
  - Upgraded analysis : could use interface, extended with PHP native interfaces
  - Upgraded analysis : Is Zero, better handling of mixed expressions
  - Refactored analysis : Empty functions
  - Refactored analysis : Used Private Methods
  - Checked unit tests : 3036 / 3055 test pass (99% pass)
- **Tokenizer**
  - Added DEFINITION between new and __construct
  - Added support for className::class()
  - Added better support for dynamic method calls
  - Added better support for dynamic property calls
  - Removed some usage of TokenIs

Version 1.4.8 (Ksitigarbha, 2018-10-08)

- **Architecture**
  - Adding more validation at DSL step level : stricter check on args, speed gain
  - Cleaning more analysis from MAX_LOOPING variable
  - Better protection for file names

  - Removed static properties from DSL
- **Analysis**
  - New analysis : Don't use __clone before PHP 7.0
  - New analysis : Watch out for filter_input as a data source
  - Upgraded analysis : Method Used Below refactored for speed
  - Upgraded analysis : Undefined class constants now takes into account interfaces
  - Removed anaysis : Relaxed Heredoc was double with Flexible Heredoc
  - Checked unit tests : 3016 / 3033 test pass (99% pass)
- **Tokenizer**
  - Build links between methodcall and method in a class
  - Added links between method and its overwritten version in child
  - Fixed fallback for functions
  - Fixed linked between traits and their definition
  - Removed variable definition for Parametername
  - Simplified double usage between return and pushExpression()

Version 1.4.7 (Maitreya, 2018-10-01)

- **Architecture**
  - Added 'Suggestions' section to documentation, for many rules
  - WIP : removing usage of MAX_LOOPING in analysis
  - Added a lot of new external services
  - Added documentation for creating a new analysis
- **Analysis**
  - Upgraded analysis : No interface was dropped in PHP 7.2
  - Upgraded analysis : IsAMagicProperty extended to parents
  - Removed anaysis : Relaxed Heredoc was double with Flexible Heredoc
  - Checked unit tests : 3017 / 3029 test pass (99% pass)
- **Tokenizer**
  - Linking variable in closure's use to its local variable
  - Removed some unused atoms from GraphElements

Version 1.4.6 (Dipankara, 2018-09-24)

- **Architecture**
  - Various code refactorisations
  - Migration to PHPUnit 7.3.5
  - Fixed filenames case
  - Better handling of VCS
  - More validations for project names

  - More docs
- **Report**
  - Ambassador/Weekly : fixed ‘ in analyser titles
- **Analysis**
  - Upgraded analysis : Fopen mode accepts ‘r+b’
  - Upgraded analysis : Unused Traits
  - Upgraded analysis : Undefined Variables
  - Checked unit tests : 3020 / 3033 test pass (99% pass)
- **Tokenizer**
  - New analysis : report literal used with reference
  - Added support for boolval to Keyvalue
  - Fixed support for boolval to Arraylist
  - Added DEFINITION to static methods
  - Added Variabledefinition for local variables
  - Fixed bug in Not

Version 1.4.5 (Guanyin Bodhisattva, 2018-09-17)

- **Architecture**
  - Removed times() for until() in Dumps
- **Report**
  - Manual : added folders tree
- **Analysis**
  - New analysis : Add Default To Parameter
  - Upgraded analysis : Avoid reporting PHP function as classes
  - Upgraded analysis : More empty Functions than just foo() {}
  - Upgraded analysis : Wrong Number of argument now takes into account variadic
  - Upgraded analysis : Should Use Constant now encompasses () and ?: structures
  - Upgraded analysis : This Is Not An Array now takes ArrayObject/SimpleXmlElement into account
  - Checked unit tests : 3009 / 3020 test pass (99% pass)
- **Tokenizer**
  - Fixed ‘constant’ status with Arrayliteral
  - Fixed bug where strings are build close to the end of the script

Version 1.4.4 (White Dragon Horse, 2018-09-10)

- **Architecture**
  - Doctor reports the set of tokens used
  - Lots of docs checks
- **Report**

  - Ambassador / Phpconfiguration : report disable_functions and disable_classes
  - Finished Weekly report
- **Analysis**
  - New analysis : report ext/seaslog
  - Upgraded analysis : Incompatible signatures
  - Fixed DSL : analysisIs
  - Checked unit tests : 3000 / 3010 test pass (99% pass)
- **Tokenizer**
  - Closure are now processed with runplugin
  - Removed depencencies to usedClasses
  - Fixed detections of Closure at the end of a script

Version 1.4.3 (Sha Wujing, 2018-09-03)

- **Architecture**
  - No error if missing svn
  - Extended 'First' thema
  - Now reporting PHP native CIT, constants and functions
- **Report**
  - Ambassador : php.ini suggestions includes disable_functions
- **Analysis**
  - New analysis : report typecasting for json_decode
  - New analysis : report classes that could be final
  - New analysis : simplify closure into callback
  - New analysis : report inconsistent elseif conditions
  - Upgraded analysis : Reduced false positive on Type/Default mismatch
  - Upgraded analysis : Drop Else After Return uses elsif
  - Upgraded analysis : Unused Private Property (rare)
  - Checked unit tests : 2990 / 3004 test pass (99% pass)
- **Tokenizer**
  - Removed extra Void after function definitions
  - Fixed fullnspath with define()

Version 1.4.2 (Zhu Bajie, 2018-08-27)

- **Architecture**
  - Fixed leftover bugs in the new DSL language
  - Adopter Query in LoadFinal (first test)
  - Extended support for clone type 1
- **Report**

  - New Report : Weekly report
- **Analysis**
  - New analysis : report forgotten conflict in traits
  - New analysis : undefined insteadof
  - New analysis : undefined variable
  - New analysis : report classes that must call parent::__construct
  - Upgraded analysis : Inexistant Compact variable
  - Upgraded analysis : Test class was refactored
  - Checked unit tests : 2975 / 2989 test pass (99% pass)
- **Tokenizer**
  - New atom : Staticmethod, for Insteadof (replacing 'Staticconstant')
  - Added DEFINITION link for array('class', 'method') structure

Version 1.4.1 (Tang Sanzang, 2018-08-20)

- **Architecture**
  - Spined off Query for Gremlin, with Exakat DSL.
  - Centralized 'methods' property in Analysis class
  - Extended MAX_LOOPING usage
- **Analysis**
  - Added new thema : Class Review
  - Upgraded analysis : Defined Parent MP (less queries)
  - Upgraded analysis : Less false positives
  - Added support for PHP 7.2.9
  - Checked unit tests : 2965 / 2980 test pass (99% pass).
- **Tokenizer**
  - Fixed Edge case with Ternary and Boolean
  - Added Staticpropertyname to distinguish from variables
  - Added support for remote definitions to methods
  - Removed global path for CIT (no fallback)

Version 1.4.0 (Sun Wu Kong, 2018-08-13)

- **Architecture**
  - Chunked result inserts for Dump
  - More support for PHP 7.4
- **Report**
  - Ambassador : added new Appinfo for relaxed Heredoc, trailing comma…
- **Analysis**
  - New analysis : class can be abstract

  - New analysis : trailing comma
  - New analysis : relaxed heredoc
  - New analysis : removed functions in PHP 7.3
  - New analysis : continue versus break
  - Upgraded analysis : Hardcoded passwords is extended to objects
  - Checked unit tests : 2964 / 2979 test pass (99% pass).
- **Tokenizer**
  - Measure definitions stats for classes.
  - Added support for relaxed heredoc
  - Added support for closure as a return value
  - Refactored support for Ternary and Labels

Version 1.3.9 (Du Ruhui, 2018-08-06)

- **Architecture**
  - Added support for PHP 7.4
  - 'Copy' won't update anymore
- **Report**
  - Ambassador : fixed repeated 'compatibility' menu entry
- **Analysis**
  - New analysis : avoid __CLASS__ and get_called_class().
  - New analysis : prepare for (real) deprecation
  - New analysis : const / define preference
  - New analysis : define case sensitivity preference
  - New analysis : avoid defining assert() in namespaces
  - Removed analysis : Variables/Arguments
  - Checked unit tests : 2957 / 2971 test pass (99% pass).
- **Tokenizer**
  - Removed Noscream - AT atom
  - Added definition for class constants
  - Fixed bug : can't apply ~ to false
  - Extended DEFINITION support to closure's use and references

Version 1.3.8 (Fang Xuanling, 2018-07-30)

- **Architecture**
  - 'Copy' won't update code anymore.
- **Analysis**
  - Upgraded analysis : 'should use operator' only applies to constant chr() call
  - Upgraded analysis : Useless Instructions is faster

  - Checked unit tests : 2948 / 2962 test pass (99% pass).
- **Tokenizer**
  - Added support for variable definitions in methods

Version 1.3.7 (unnamed demon, 2018-07-16)

- **Architecture**
  - Fixed handling of multiple updates
- **Report**
  - More documentations
- **Analysis**
  - New analysis : report usage of callback to process array
  - New analysis : report usage of case insensitive constants
  - Upgraded analysis : Hardcoded passwords is extended to objects
  - Upgraded analysis : Go To Key Directly handles comparisons
  - Added support for PHP 7.0.20
  - Checked unit tests : 2948 / 2962 test pass (99% pass).

Version 1.3.6 (Zhang Gongjin, 2018-07-16)

- **Architecture**
  - Added support for Rar archives
  - Removed call to gremlin server at 'status' time
- **Analysis**
  - New analysis : support for msgpack extension
  - New analysis : support for lzf extension
  - Upgraded analysis : added missing function names in several extensions
  - Checked unit tests : 2941 / 2955 test pass (99% pass).

Version 1.3.5 (Gao Shilian, 2018-07-09)

- **Architecture**
  - Removed 4 unused exceptions
  - Extracted Query from Analysis
- **Report**
  - Reports : centralized all doc reading
  - Reports : doc reading now parses sections (avoid overlap)
  - Ambassador : Added exakat version and build to dashboard.
  - Ambassador : Added Class Tree (All class hierarchies)
- **Analysis**
  - Fixed bug with 'last' and '2last'
  - New analysis : Report undefined::class

  - New analysis : Report returned assignations as useless
  - New analysis : Split scalar typehint by versions
  - Upgraded analysis : Extended Reuse Variable to instantiations
  - Upgraded analysis : Masking parenthesis are only for referenced arguments
  - Upgraded analysis : Wrong case doesn't apply to parent/static/self
  - Upgraded analysis : Locally Unused Properties are extended to traits
  - Upgraded analysis : Should Preprocess is extended to concatenations
  - Upgraded analysis : Array_key_fill exclude variables by default
  - Upgraded analysis : Ambiguous static reports the whole property definition
  - Checked unit tests : 2919 / 2944 test pass (99% pass).
- **Tokenizer**
  - Added missing constants
  - Fixed support for goto true;
  - Fixed edge case for nested ternaries and boolean
  - Moved Goto and Label to Name Atom

Version 1.3.4 (Cheng Yaojin, 2018-07-02)

- **Architecture**
  - Added check when unarchiving tar.gz and tar.bz
  - Added check for neo4j installation, (error grabing)
  - Moved Upgrade to tmp folder
- **Analysis**
  - Parameters are actually defined in the class
  - New analysis : ambiguous visibilities of properties
  - New analysis : report usage of PHP 7.1+ hash algorithm
  - New analysis : csprng (random_bytes and random_int)
  - New analysis : ext/libeio
  - New analysis : report incompatible signatures for methods
  - Upgraded analysis : Unused Private Methods handles fluent interfaces
  - Upgraded analysis : Defined Parent keyword
  - Upgraded analysis : Recursion
  - Refactored codeIs/codeIsNot
  - Checked unit tests : 2908 / 2923 test pass (99% pass).
- **Tokenizer**
  - Added support for 'parent' definitions
  - Fixed element counts in concatenation
  - Fixed operator priority in Strval

  - Upgraded handling of undefined constants to string

Version 1.3.3 (Ma Sanbao, 2018-06-25)

- **Architecture**
  - Better handling of fallback to global for functions
  - Weekly code clean
  - Refactored several analysis for speed
- **Report**
  - Ambassador : fixed regression in the dashboard
  - Fixed edge case with properties
- **Analysis**
  - New analysis : closure that can be static
  - Upgraded analysis : empty function doesn't count static or global
  - Upgraded analysis : reported globals include $GLOBALS also
  - Checked unit tests : 2881 / 2911 test pass (98% pass).
- **Tokenizer**
  - Moved collection of functioncall to LoadFinal
  - Added collection of interfaces and newcall
  - Moved Declare to its own token
  - Moved Property definitions to its own token

Version 1.3.2 (Duan Zhixian, coming up)

- **Architecture**
  - Reading stats from store, not graph.
  - Git now fails silently if login is requested at clone / pull
- **Report**
  - New analysis : == or === favorites
  - New analysis : > or < favorites
  - Upgraded analysis : written only variables is now faster
  - Upgraded analysis : PHP reserved words has now 2 parameters
  - Removed analysis : Type/Integer, Real, Closures.
  - Checked unit tests : 2901 / 2914 test pass (99% pass).
- **Tokenizer**
  - Static, PPP, Final and Abstract are now properties
  - Fixed regex in several rules
  - Added support for code clone detection (WIP)

Version 1.3.1 (Liu Hongji, 2018-06-03)

- **Architecture**

  - Cleaned code of unused classes and ;
  - Fixed connexion script to the database
  - Fixed check of php.log folder
- **Report**
  - Ambassador : display correct compilation state
- **Analysis**
  - Upgraded analysis : used constant is also applied to defined()
  - Upgraded analysis : used protected methods is case insensitive
  - Upgraded analysis : Empty class omits extended classes
  - Upgraded analysis : More sequences to SimplePreg
  - Upgraded analysis : Throwable is not 'unthrown' anymore
  - Removed analysis : Static CPM
  - Checked unit tests : 2901 / 2914 test pass (99% pass).
- **Tokenizer**
  - Upgraded support for ::class

Version 1.3.0 (Xue Rengui, 2018-06-03)

- **Architecture**
  - Added support for Tinkergraph 3.3.3
  - Handles situations where exakat has no database
  - Check for PHP version at bootstrap
- **Report**
  - Ambassador : Updated PHP recommendation report with PHP 7.3
  - All : Variables don't sport … nor & anymore
- **Analysis**
  - New analysis : Single Use Variable
  - New analysis : Should Use Operator
  - New analysis : Check JSON production
  - New analysis : Report visibility usage with constants
  - Upgraded analysis : used constant is also applied to defined()
  - Upgraded analysis : used protected methods is case insensitive
  - Upgraded analysis : used directives handle function version
  - Upgraded analysis : added lcg_value for better rand
  - Upgraded analysis : Use Nullable extended to methods, closures.
  - Upgraded analysis : Fixed support for '_' native function
  - Checked unit tests : 2895 / 2907 test pass (99% pass).

Version 1.2.9 (Wang Gui, 2018-05-28)

- **Architecture**
  - Removed query cache from gremlin
  - Added pre-query check to prevent queries that have no chance of result
- **Report**
  - Ambassador : first 50% of documentation fix : double quotes are not well displayed
  - Ambassador : Results are ordered by files, then by lines
- **Analysis**
  - New analysis : Flexible Heredoc syntax
  - New analysis : Non-compatible methods
  - New analysis : Use the Blind Var
  - New analysis : Inexistant Compact
  - New analysis : Typehint / default value mismatch
  - Upgraded analysis : strict_types are not recognized as undefined constant
  - Upgraded analysis : More new methods for PHP 7.3
  - Upgraded analysis : Dependant traits
  - Upgraded analysis : Strpos comparison
  - Upgraded analysis : Method Must Return
  - Checked unit tests : 2885 / 2889 test pass (99% pass).
- **Tokenizer**
  - Interface may have const, not traits (Loading)
  - Added support for static call to methods

Version 1.2.8 (Xu Jingzong, 2018-05-21)

- **Architecture**
  - Implemented a cache for speed boost.
  - Refactored files finding method
  - Git VCS always submit a user when cloning (using exakat by default)
  - Moved custom themes from themas.ini to themes.ini
- **Report**
  - Ambassador : fixed naming the audit
  - Ambassador : added 'Dead code' section
  - Doctor : split themes display (default/customs)
- **Analysis**
  - New analysis : Report what should be done in SQL
  - New analysis : Typehinted reference
  - New analysis : Strpos doing too much work
  - New analysis : Can't instantiate class

  - Upgraded analysis : Don't echo error
  - Upgraded analysis : PPP Declaration style
  - Upgraded analysis : Useless abstract class
  - Upgraded analysis : Buried assignation doesn't report declare anymore
  - Upgraded analysis : Abstract methods are not reported as unused
  - Upgraded analysis : relaxed version constraint for all Extensions/*
  - Checked unit tests : 2852 / 2856 test pass (99% pass).
- **Tokenizer**
  - Fixed handling of short_open_tags
  - Fixed edge case with %

Version 1.2.7 (Li Yuanji, 2018-05-14)

- **Architecture**
  - Extended status command to all VCS
  - Added support for customized themes
  - Added Upgrading section, List of parametrized analysis, revamped summary
  - Simplified handling of commandline options
  - Removed usage of JSON for 'doctor'
- **Report**
  - A lot more documentation, examples, links.
  - Optimized type downloader
  - Added report themes pre-requisites
- **Analysis**
  - New analysis : ext/cmark
  - Upgraded analysis : too many children is configurable
  - Upgraded analysis : error_reporting 0 and -1 are not reported as issues.
  - Checked unit tests : 2835 / 2839 test pass (99% pass).
- **Tokenizer**
  - Fixed bug where constant self referenced.
  - Moved Identifiers to Names
  - Added first definitions for members.

Version 1.2.6 (Li Jiancheng, 2018-05-07)

- **Architecture**
  - Moved more classes to helpers
  - Removed constants for Tokens
  - Upgraded to Robo 1.2.3
- **Report**

  - Added support for custom themas for reports.
- **Analysis**
  - New analysis : zookeeper
  - New analysis : Report missing parenthesis
  - New analysis : Report invalid interval checks
  - New analysis : Suggest array_unique when possible
  - New analysis : Report when callback needs a return
  - New analysis : Reduce the number of if
  - Updated Exception list, up to PHP 7.3
  - Upgraded analysis : Printf Arguments
  - Upgraded analysis : Count On Null
  - Upgraded analysis : Regex on Collector
  - Upgraded analysis : File Inclusion wrong case handles parenthesis
  - Upgraded analysis : Make globals a property
  - Upgraded analysis : Invalid regex
  - Checked unit tests : 2814 / 2818 test pass (99% pass).
- **Tokenizer**
  - Added definition links for staticmethodcalls.
  - Added boolean and int values to __DIR__ and co.
  - Removed several static properties
  - Fixed precedence of instanceof
  - Added support for Null val

Version 1.2.5 (Li Yuan, 2018-04-30)

- **Architecture**
  - Added command 'config' to configure project from commandline
  - Made Exakat reentrant
  - Moved Configuration creation to external file
  - Upgraded status when audit isn't run yet
- **Analysis**
  - New analysis : Regex on Collector
  - Upgraded analysis : Only Variable with reference argument
  - Upgraded analysis : File Inclusion Wrong Case
  - Upgraded analysis : Invalid Regex
  - Added support for PHP 7.2.5, 7.1.17 and 7.0.30
  - Checked unit tests : 2802 / 2809 test pass (99% pass).
- **Tokenizer**

  - Fixed various bugs with constant scalar expression

Version 1.2.4 (Li Chunfeng, 2018-04-23)

- **Architecture**
  - Now fail with explicit message for memory running out
- **Report**
  - Ambassador : Updated 'confusing variables' report
- **Analysis**
  - Upgraded analysis : Could be short assignment
  - Upgraded analysis : Could be static
  - Upgraded analysis : Fail Substr Comparison (handles constants)
  - Checked unit tests : 2796 / 2801 test pass (99% pass).
- **Tokenizer**
  - Added propagation of constants when value can be processed
  - Introduced 'Parameter' token, to differentiate with Variable
  - Fixed syntax highlighting
  - Fixed a bug with negative bitshift

Version 1.2.3 (Yuan Tiangang, 2018-04-16)

- **Architecture**
  - New append for logs
- **Report**
  - New report : Manual.
  - Ambassador : Rewrote the export of 'confusing variables'
- **Analysis**
  - New analysis : report strtr bad usage
  - New analysis : don't unset properties
  - Upgraded analysis : Invalid Regex
  - Upgraded analysis : Property Could Be Local
  - Upgraded analysis : No Hardcoded path
  - Upgraded analysis : echo/print preferences also report printf
  - Removed analysis : Close Naming (now done at Report level)
  - Checked unit tests : 2770 / 2786 test pass (99% pass).
- **Tokenizer**
  - Removed double definition for functioncalls

Version 1.2.2 (Yin Kaishan, 2018-04-09)

- **Architecture**
  - Cleaned doctor so it works even without requirements

  - Fixed special chars with git URL
- **Report**
  - Ambassador : new inventory with classes changes in heritage
  - Ambassador : new inventory of large expressions
  - Upgraded report : Defined Exceptions are cleaned of doubles
- **Analysis**
  - New analysis : report Redefined Private Properties
  - New analysis : report substr() usage with strlen
  - Upgraded analysis for Inclusion Wrong Case filenames
  - Upgraded analysis : Cast To Boolean is extended to True/False
  - Upgraded analysis : Omit negative lengths
  - Upgraded analysis : interface search also include parameter counts
  - Upgraded analysis : Failed Substr Comparison handles special chars
  - Upgraded analysis : Identical consecutive omits arrays
  - Checked unit tests : 2757 / 2775 test pass (99% pass).

Version 1.2.1 (Fu Yi, 2018-04-02)

- **Architecture**
  - Fixed generation of analysis logs
  - Fixed doctor, which wouldn't diagnostic the absence of needed extensions
- **Report**
  - More real-life examples in docs
- **Analysis**
  - New favorites : property declaration unique or multiples ?
  - New analysis : $a = +$b;
  - New analysis for Melis : Regex check and Route constraints
  - Upgraded analysis : Constant used below
  - Checked unit tests : 2760 / 2766 test pass (99% pass).
- **Tokenizer**
  - Fixed counts in property declarations
  - Fixed final new lines in heredoc/nowdoc

Version 1.2.0 (Xiao Yu, 2018-03-26)

- **Architecture**
  - Upgraded concurrency with analysis
  - Replaced $_SERVER['_'] by PHP_BINARY
  - Removed old code (> 1.0.0)
  - Adopted 'stable' version for progressbar

  - Fixed loading with Bazaar
  - Added support for Parametrized analysis
  - Better initial configuration with doctor
- **Report**
  - Ambassador : upgraded analysis settings table
- **Analysis**
  - New analysis : Report Private functions for Wordpress
  - New analysis : Suggest simplifying chr(123);
  - New analysis : Too many native calls
  - Updated analysis : fallthrough are not reported with die
  - New Theme : Random
  - Collecting more stats for classes.
  - Checked unit tests : 2758 / 2741 test pass (99% pass).
- **Tokenizer**
  - Upgraded support for Heredoc

Version 1.1.9 (Qin Qiong, 2018-03-19)

- **Architecture**
  - Better documentation for reports
  - Adding Real Code examples to documentation
  - Refactored Config reading
  - Moved more VCS information to its own class
- **Report**
  - Upgraded report : Ambassador reports the number of parameters in methods
  - New report : favorites (spin-off from Ambassador)
  - Upgraded report : Inventories also covers Dateformat, Regex, Sql, Url, Email, Unicode Blocks.
- **Analysis**
  - New analysis : too many parameters
  - New analysis : report mass creation of arrays
  - Checked unit tests : 2755 / 2738 test pass (99% pass).

Version 1.1.8 (Yuchi Gong, 2018-03-12)

- **Architecture**
  - Reduced cache when running analysis
  - Fixed order of analysis
- **Report**
  - Ambassador : fixed faceted search problems
  - Codacy : added codacy-style report

- **Analysis**
  - New analysis : support for IBM db2, leveldb
  - New analysis : should use count's second argument
  - Upgraded analysis : Randomly sorted arrays
  - Checked unit tests : 2749 / 2731 test pass (99% pass).
- **Tokenizer**
  - Fixed edge case where die is an argument
  - Fixed edge case where Yield returns a array

Version 1.1.7 (Xu Maogong, 2018-03-05)

- **Architecture**
  - Removed most static in Analysis
- **Report**
  - New format : All, that produces all reports
  - Ambassador : new report estimates fitting PHP version
  - Ambassador : report enable_dl in configuration
- **Analysis**
  - New analysis : report dynamic library loading
  - New analysis : suggest array_fill_keys()
  - New analysis : PHP 7.3 optional last argument
  - New analysis : added support for xxtea, opencensus, varnish, uopz
  - Upgraded BugFixes report to PHP 7.2.3
  - Updated analysis : ext/cairo has new functions
  - Updated analysis : PHP 7.3 new functions
  - Removed analysis : NullCoalesce (double)
  - Checked unit tests : 2743 / 2731 test pass (99% pass).
- **Tokenizer**
  - Moved 'constant' to plugins
  - Fixed bug when updating with HG

Version 1.1.6 (Wei Zheng, 2018-02-26)

- **Architecture**
  - Created 'First', a recipe of initial analysis
  - Prepared installation for compose
- **Report**
  - Restored 'INLINE' results
  - New reports : Stats
  - Collect PHP native function cool

- **Analysis**
  - New analysis : report suggest compact instead of array
  - New analysis : list with references (PHP 7.3+)
  - New analysis : report situation where check is done on non-cast value
  - New analysis : foreach($array as $o -> $v) as error prone
  - Handle cases where PHP regex are not compilable anyway
  - Checked unit tests : 2732 / 2722 test pass (99% pass).
- **Tokenizer**
  - Propagate constant concatenation values.
  - Fixed calculation of intval
  - Refactored Configuration readers
  - Fixed bug when calculating __METHOD__

Version 1.1.5 (Li Shimin, 2018-02-19)

- **Architecture**
  - Refactored all reports
  - Removed outdated Devoops report
- **Report**
  - Upgraded BugFixes report to PHP 7.2.2
  - Ambassador : generates a list of confusing variables
  - New report : OWASP
- **Analysis**
  - New analysis : Use Math
  - New analysis : Extensions ext/hrtime
  - New analysis : Possible Infinite Loops
  - Upgraded analysis : addZero, Multiply by one supports new situations
  - Upgraded analysis : added microtime, uniqid .. to better rand.
  - Checked unit tests : 2719 / 2724 test pass (99% pass).
- **Tokenizer**
  - Fixed check on script compilation that was too strict.
  - Fixed internal assert()
  - Exported VCS to separate classes
  - Refactored load with 3 separate plugins : intval, noDelimiter, booval

Version 1.1.4 (The Great White Turle, 2018-02-12)

- **Architecture**
  - Build concatenation values in scalar constante expression.
  - Upgraded export of file dependencies values

- **Report**
  - Ambassador : fixed duration of audit.
  - Composer : provides a full list of depend extensions
- **Analysis**
  - New analysis : Report useless catch
  - New analysis : suggest using array_search / array_keys instead of foreach
  - New analysis : double array_flip is slow
  - New analysis : Suggest using cached values
  - New analysis : Functions that fallback to global namespace
  - Upgraded analysis : Encoded letters supports leading 0 in unicode codepoint
  - Upgraded analysis : Variable strange names now report 3 identical consecutive letters
  - Upgraded analysis : Upgraded support to __dir__
  - Checked unit tests : 2716 / 2711 test pass (99% pass).
- **Tokenizer**
  - Fixed definitions link for functions

Version 1.1.3 (The fairy Su'e, 2018-02-05)

- **Report**
  - Fixed Ambassador : the favorites weren't displayed.
- **Analysis**
  - New analysis : Report useless references
  - New analysis : Melis configuration : Undefined configuration array
  - New analysis : Melis configuration : make string.
  - Upgraded analysis : Parent first
  - Checked unit tests : 2700 / 2695 test pass (99% pass).
- **Tokenizer**
  - Better handling of Labels.
  - Fixed edge case where class and constants where mistaken one for the other

Version 1.1.2 (Jade Rabbit Spirit, 2018-01-29)

- **Architecture**
  - Upgraded docs to tinkergraph 3.2.7
- **Analysis**
  - New analysis : Report missing included files
  - New analysis : ZF3 : No Echo Outside a View.
  - New analysis : Local Global variable : report variable that looks global but are not
  - Upgraded analysis : Directive names are check with case sensitive analysis
  - Checked unit tests : 2687 / 2693 test pass (99% pass).

- **Tokenizer**
  - Magic Constant hold their actual value
  - Fixed Fullnspath for constants (case sensitive)
  - Fixed edge case with exit and die
  - Fixed edge case with exit and die and -1

Version 1.1.1 (Wood Xie of Dipper, 2018-01-22)

- **Architecture**
  - Fixed path when calling exakat from outside its install folder
  - First analysis for Melis Framework
  - Optimized dictionary collection
- **Report**
  - Ambassador : upgraded graph for class sizes
- **Analysis**
  - New analysis : report case problems with includes
  - New analysis : Melis framework
  - New analysis : inventory of view properties for Zend Framework
  - New analysis : report view files for Zend Framework
  - Upgraded analysis : + is accepted as regex delimiter
  - Upgraded analysis : same condition searches inside blocks
  - Checked unit tests : 2665 / 2671 test pass (99% pass).
- **Tokenizer**
  - Magic constants __DIR__ and __FILE__ get their actual value in noDelimiter
  - Created Eval atom
  - Removed 'Name' token for echo, print, die, exit.
  - Upgraded handling of constant names inside strings
  - Removed a bug when storing dictionary.

Version 1.1.0 (Wood Dragon of Horn, 2018-01-15)

- **Architecture**
  - Replaced 'code' property with a dictionary
- **Tokenizer**
  - Introduced 'Magicmethod' for Magic methods in class
  - Fixed a bug when ' is in file path
  - Fixed a bug when several raw HTML are in a PHP script.

Version 1.0.11 (Wood Dragon of Well, 2018-01-08)

- **Architecture**
  - Added assertion for property name.

- **Report**
  - Ambassador : Added report of classes's size.
  - Fixed missing audit end's time.
- **Analysis**
  - New analysis : Sqlite3 doesn't escape "
  - Upgraded analysis : Strange names also report qqqq sequences in variable names
  - Checked unit tests : 2617 / 2657 test pass (99% pass).
- **Tokenizer**
  - Fixed fullnspath handling for constants (case insensitive for the constant name)

Version 1.0.10 (Wood Wolf of Legs, 2018-01-01)

- **Architecture**
  - Fixed Sqlite3 escaping error : use ', not "
- **Report**
  -
- **Analysis**
  - Upgraded analysis : ? is possible as delimiter
  - Analysis works better with nested structures
  - Checked unit tests : 2601 / 2649 test pass (99% pass).
- **Tokenizer**
  - First plugin for Load Task.
  - Upgraded support for define-d constant.
  - Introduced Phpvariable
  - Fixed scoping with array index.

Version 1.0.9 (King of Dust Protection, 2017-12-25)

- **Report**
  - Ambassador : list complex expressions.
  - Dump : added function inventory
  - Dump : added begin and end line for structures.
- **Analysis**
  - New analysis : report reference error with Ternary operator
  - New analysis : report Undefined classes in Wordpress.
  - Upgraded analysis : preg option E, tighter regex.
- **Tokenizer**
  - Better handling of long path name. TBC.
  - Introduced Parent, Static, Self, Exit, Echo, Print.

Version 1.0.8 (King of Heat Protection, 2017-12-18)

- **Architecture**
  - Doctor reports memory_limit and JAVA_OPTIONS/JAVA_HOME
  - Made database restart more portable
  - Added spell checking on docs
- **Report**
  - Ambassador : Regex inventory added
  - Ambassador : Largest expressions reported
- **Analysis**
  - New analysis : report identical operands on both sides of operator
  - New analysis : report potentially mistaken concatenation in array
  - New analysis : report mistaken scalar typehint
  - New analysis : report undefined classes by symfony version
  - New analysis : report undefined classes by wordpress version
  - Upgraded analysis : Interfaces are also reported from return typehint
  - Upgraded analysis : Mistaken concatenation got rid of various false-positives
  - Checked unit tests : 2601 / 2633 test pass (99% pass).
- **Tokenizer**
  - Isset, Empty, Phpvariables now have their own atom.
  - Fixed edge case with $ token
  - Fixed Constant fqn building
  - UTF-8 protection for propertyname

Version 1.0.7 (King of Heat Protection, 2017-12-11)

- **Architecture**
  - Added /var to default omitted folders
- **Analysis**
  - New analysis : should use array_filter.
  - New analysis : ext/igbinary
  - Checked unit tests : 2533 / 2599 test pass (97% pass).
- **Tokenizer**
  - Fixed

Version 1.0.6 (Fuli, 2017-12-04)

- **Architecture**
  - Refactored description
  - Moved PHPsyntax to a function
- **Analysis**
  - New analysis : Never used parameter.

  - New analysis : always use named boolean parameters
  - Upgraded analysis : unused arguments
  - Checked unit tests : 2573 / 2585 test pass (99% pass).
- **Tokenizer**
  - Added new token : This for $this
  - Updated loader to handle PHP 7.3 functioncall syntax (final ,)
  - Turned Markcallable into an independant analysis

Version 1.0.5 (King of Cold Protection, 2017-11-27)

- **Architecture**
  - Configured Exakat for Tinkergraph 3.3. Still unfinished.
  - Documentation now has an external link to extensions.
- **Report**
  - Ambassador : added more inventories : URL SQL, email, GET index, MD5, Mime
- **Analysis**
  - New analysis : parent first
  - New analysis : Report uncommon Environment Vars
  - New analysis : Report invalid Regex
  - New analysis : Report contatenation in Zend DB
  - Fixed analysis : Deprecated Functions
  - Fixed analysis : Unknown PCRE2 option
  - Upgraded analysis : hardcoded password
  - Upgraded analysis : array_merge in loops
  - Upgraded analysis : substr() first. Handle following expressions
  - Refactored analysis : Used Functions
  - Refactored analysis : Add Zero
  - Checked unit tests : 2573 / 2585 test pass (99% pass).
- **Tokenizer**
  - Fixed a bug that linked functions and definitions

Version 1.0.4 (Boxiang Demon, 2017-11-20)

- **Architecture**
  - PhpExec, get only path to binary.
  - Cleaned docs of double links
  - Cleaned code
- **Report**
  - Added libsodium, Argon2 to Crypto; DL() usage to PHP.
  - Compatibility report only focuses on backward incompatibilities.

  - New recipes will cover 'suggestions for better code'. Coming up.
- **Analysis**
  - New analysis : " string is better than ' (sorry…)
  - New analysis : PHP 7.3's PCRE 2
  - New analysis : report missing 'new' in front of class name.
  - New analysis : use is_object instead of is_resource for ext/hash
  - New analysis : report non-countable calls
  - New analysis : report DL usage in Appinfo
  - New analysis : slice first, then map arrays.
  - New analysis : Avoid 5th argument in PHP 7.2 for set_error_handler
  - New analysis : avoid null with get_class()
  - New analysis : suggest using list() with foreach instead of arrays
  - New analysis : avoid using $this as argument in constructor
  - New analysis : Report usage of ext/vips
  - New inventory : GPC variables
  - Updated analysis : Use Class Operator doesn't report methods names anymore
  - Updated analysis : Long argument size is raised to 60 chars
  - Updated analysis : ignore when missing break is in last case
  - Updated analysis : Use This ignores 'self'.
  - Updated analysis : Randomly sorted Arrays ignores arrays of 3 or less.
  - Updated analysis : ext/mcrypt gets its constants
  - Updated analysis : more strange names being used in code
  - Updated analysis : more PHP 7.2 removed functions
  - Checked unit tests : 2563 / 2572 test pass (99% pass).
- **Tokenizer**
  - Reduced duplicated that may lead to loading error.

Version 1.0.3 (Baize Demon, 2017-11-13)

- **Architecture**
  - Fixed driver Tinkergraph, which was not setting the right ids.
  - Doctor now reports $JAVA_OPTIONS, in case one need to allocate more memory
  - Doctor now reports token limit
  - Moved config.ini creation to first phase of init.
  - Fixed collect of error when init with git.
  - Upgraded driver gremlin-php to 3.0.2
- **Report**
  - Ambassador : Now reports the namespaces as a tree.

  - New analysis : report members that are static and not.
  - Updated analyzis : normal method called statically.
- **Analysis**
  - Added support for Drupal, FuelPHP and Phalcon.

Version 1.0.2 (Suanni Demon, 2017-11-06)

- **Architecture**
  - Better report of error messages from VCS.
  - Updated support for Vagrant
- **Report**
  - Ambassador : Fixed display for 'Callback'
- **Analysis**
  - New analysis : substr() first, then replace.
  - New analysis : report double prepare (WP).
  - New analysis : avoir the +1 month trap
  - New analysis : check for printf() options
  - New analysis : check for placeholder in prepare (WP)
  - New analysis : avoid direct injection into prepare (WP)
  - New analysis : performance recommendation for switch.
  - New analysis : merge if/if into if/then/else
  - Checked unit tests : 2500 / 2536 test pass (99% pass).

Version 1.0.1 (Xueshi Demon, 2017-10-30)

- **Architecture**
  - Created Result class for Graphdb results
  - Docker image is updated with version 1.0.1
  - Vagrant files are updated with version 1.0.1
  - Preparing support for Gremlin 3.3.0
- **Report**
  - Added support for PHP 7.1.11 and 7.0.25
- **Analysis**
  - New analysis : could be else (for consecutive opposite if/then)
  - Checked unit tests : 2517 / 2527 test pass (99% pass).

Version 1.0.0 (Roushi Demon, 2017-10-23)

- **Architecture**
  - Tested on Gremlin 3.2.6. Checked Gremlin 3.3.0, but it needs more work.
  - Upgraded doctor for installation and report.
  - Upgraded docs to set gremlin-server as default install.

- **Report**
  - Added support for Clang-style report.
  - Ambassador : fixed link to exception Tree.
  - Inventories : Date format,
  - Audit names are reported in every Ambassador-style report.
- **Analysis**
  - Upgraded PHP directive list.
  - Functions In For loop : prevent issue if the function uses a loop variable.
  - Useless instruction : do not report return $i++ if $i is reference
  - Useless instruction : Avoir reporting properties when they are magic
  - New analysis : mark properties to be magic.
  - Upgraded list of PHP logins, to report hard coded passwords.
  - Upgraded close naming : variables that differ with 1 chars are reported.
  - Added assert(false…) to list of branching syntax.
  - Checked unit tests : 2515 / 2525 test pass (99% pass).

Version 0.12.16 (Tawny Lion Demon, 2017-10-16)

- **Report**
  - Beta version for Drill Instructor
  - Upgraded Inventories report with Sessions, Cookies, Incoming variables
- **Analysis**
  - New analysis : Expression too complex.
  - New analysis : Session Handler must implements SessionUpdateTimestampHandlerInterface
  - New analysis : is Zero : additions that negate some terms
  - New analysis : unconditional loops
  - Upgraded Zend Framework review with latest versions (feed, http, eventmanager…)
  - Upgraded 'Strange names' with new typos
  - Upgraded 'Logical to in_array' to handle separated comparisons
  - Checked unit tests : 2505 / 2515 test pass (99% pass).
- **Tokenizer**
  - Fixed bug with Sign in Additions.

Version 0.12.15 (Nine Headed Lion, 2017-10-09)

- **Architecture**
  - Server : now supports stop, start and restart.
  - Every audit gets a random name, for easy differentiation
  - Added support for PHP 7.3
- **Report**

  - Ambassador : list of analysis that report nothing : Good job!
  - Slim report : fixed build
- **Analysis**
  - New analysis : file upload names vulnerability check
  - New analysis : variable that may hold different types of date
  - New analysis : always anchor regex
  - Checked unit tests : 2475 / 2480 test pass (99% pass).

Version 0.12.14 (Grand Saint of Nine Spirits, 2017-10-02)

- **Architecture**
  - Support UTF-8 on Gremlin Server (other encoding are not)
  - Better display of vcs updates
- **Report**
  - Ambassador : added Security and Performances
  - Ambassador : Upgraded exception presentation
- **Analysis**
  - New analysis : report fallthrough in switch
  - New analysis : inventory regex
  - Added support for PHP 7.1.10 and 7.0.24

Version 0.12.13 (King of the Southern Hill, 2017-09-25)

- **Architecture**
  - Code cleaning
- **Report**
  - Ambassador : changed display of the audit
- **Analysis**
  - Refactored several analysis

Version 0.12.12 (Ruler of the Kingdom of Miefa, 2017-09-18)

- **Report**
  - Ambassador : fixed collect of interfaces and trait names
- **Analysis**
  - New analysis : ext/Parle
  - New analysis : help optimize pathinfo() usage
  - New analysis : catch array_values() usage with list and pathinfo()
  - Updated analysis : Don't show error messages with catch->getMessage();
  - Updated analysis : No concat in loop handles $x = $c . $x;
  - Checked unit tests : 2456 / 2461 test pass (99% pass).
- **Tokenizer**

  - Added support for ‘, “ and > in file names. Still missing support for
  - Restaured fallback to global constants.
  - Fixed special case : <?php ++$x ?>

Version 0.12.11 (Half-Guanyin, 2017-09-11)

- **Architecture**
  - Added support options for branches and tags
  - Added support for config in server mode
- **Report**
  - Fixed methods dump for interfaces.
- **Analysis**
  - Added all analysis to report could be private/protected for
- **Tokenizer**
  - Fixed handling of ‘<’ char in paths

Version 0.12.10 (Golden Nosed Albino Rat Spirit, 2017-09-04)

- **Architecture**
  - Upgraded server version with config alteration features.
  - New generated config-cache
- **Report**
  - Fixed property names in Visibility report
- **Analysis**
  - Arrays/IsModified : arrays are not modified unless in a (unset)
- **Tokenizer**
  - Fixed ‘constant’ for functioncalls
  - Introduced ‘Name’ for Identifier without a fullnspath
  - Added support for branches and tags in init
  - Fixed edge case with $o->$$b

Version 0.12.9 (Lady Earth Flow, 2017-08-28)

- **Architecture**
  - Creates config.cache, with cached calculated configs. Remove to update.
- **Report**
  - GraphQL : Upgraded GraphQL report, with relationships.
- **Analysis**
  - New analysis : suggest moving for() to foreach()
  - New analysis : shell_exec/exec/*backtick* favorite
  - Update analysis : Abstract Static is for PHP 7.0-
- **Tokenizer**

  - Removed Arguments and ARGUMENTS.
  - Finished 'factory' from Config.
  - Better handling of long path names.

Version 0.12.8 (ruler of the Kingdom of Biqiu, 2017-08-21)

- **Analysis**
  - New analysis : use foreach, not for()
  - New analysis : ext/fam, ext/rdkafka
- **Tokenizer**
  - Fixed edge case where pathnames are too long on OSX.

Version 0.12.7 (Old Man of the South Pole, 2017-08-14)

- **Architecture**
  - Fixed project_vcs when none is used.
- **Analysis**
  - Better documentation for in_array replacements and array_unique()
  - Added support for PHP 7.1.8 and 7.0.22

Version 0.12.6 (White Faced Vixen Spirit, 2017-08-07)

- **Analysis**
  - New analysis : no negative for strings before 7.1
  - New analysis : use in_array instead of ||
  - Updated analysis : preg_quote has no delimiter
- **Tokenizer**
  - Fixed bug in handling real value for negative numbers

Version 0.12.5 (White Deer Spirit, 2017-07-31)

- **Architecture**
  - Removed config singleton
- **Report**
  - New report : simpletables (HTML)
- **Analysis**
  - New analysis : report optional parameters
  - New analysis : report concat inside a loop
  - Updated analysis : Could Be Class Constant, when no visibility is provided.

Version 0.12.4 (peacock Mahamayuri, 2017-07-24)

- **Architecture**
  - Optimized performances for large projects (over 2M tokens)
  - Support Neo4j as a driver for Tinkgerpop
- **Report**

  - Now covering all PHP 7.2 features
- **Analysis**
  - New analysis : Extension xattr
  - New analysis : report 'object' as a class name
  - New analysis : No Array for magic property
  - New analysis : suggest reducing code for isset
  - New favorite : and / &&
  - Updated analysis : fetch correct delimiter, even if escaped.
  - Extended coverage for several analysis
  - Removed several nested-subqueries (bad for performances)
- **Tokenizer**
  - Tinkergraph/Neo4j : reworked loading data from disk.
  - Added protection for $ in filename

Version 0.12.3 (Golden Winged Great Peng, 2017-07-17)

- **Architecture**
  - Prepared options for several back servers : Tinkergraph, Gremlin-Server/Neo4j, Janusgraph
- **Report**
  - New report : Marmelab (GraphQL server)
- **Analysis**
  - New analysis : Report when a property is used as object or scalar
  - New analysis : Mismatched Typehint
  - New analysis : Mismatched Default values
  - Upgraded analysis :
  - Fixed a gremlin bug in noAtomInside
- **Tokenizer**
  - Added support for trailing comma in group use (PHP 7.2)
  - Fixed building of constants' values

Version 0.12.2 (Samantabhadra, 2017-07-10)

- **Architecture**
  - Added support for Tinkergraph as graph backend
- **Report**
  - Ambassador : reports callback/closures, all 3 declares (ticks, encoding, strict_types)
  - Ambassador : reports strict_types as favorite
  - PlantUML : upgraded report
- **Analysis**
  - New analysis : Mismatched ternary branches

  - New analysis : mkdir, by default, uses 777.
  - New analysis : ext/lapack
  - Upgraded analysis : option E for preg_match, refined results
  - Checked unit tests : 2337 / 2366 test pass (99% pass).
- **Tokenizer**
  - Added support for Instanceof and GROUPUSE with Nsname

Version 0.12.1 (Yellow Toothed Elephant, 2017-07-03)

- **Architecture**
  - Refactored structures extractions in dump
- **Report**
  - New report : PlantUML
  - Ambassador : Appinfo now reports how popular is a feature
- **Analysis**
  - New analysis : Const / Define() favorite for constants
  - New analysis : do not return in finally
  - Upgraded analysis : Add Zero was refactored
- **Tokenizer**
  - Prepared list of tokens and relations

Version 0.12.0 (Manjusri, 2017-06-26)

- **Architecture**
  - Added support for Janusgraph (Gremlin 3)
  - Refactored dump's data collection for speed.bb
- **Report**
  - Added support for Wordpress and Joomla as Frameworks
- **Analysis**
  - New analysis : Avoid Optional properties
  - New analysis : Multiple declarations of functions
  - New analysis : Non breakable spaces in names
  - New analysis : Favorite Heredoc delimiter
  - New analysis : ext/swoole
- **Tokenizer**
  - Modified several nodes/links names, for compatibility purposes

Version 0.11.8 (Xiaozuanfeng, 2017-06-19)

- **Architecture**
  - Starte working on JanusGraph to add to Neo4j/Gremlin3
- **Report**

  - Ambassador : reports Strings encoding and Unicode-block (when available)
  - Ambassador : reports framework founds (first 6, more as we go).
  - Ambassador : reports how frequently an analysis yield results to compare with current situation
- **Analysis**
  - New analysis : Classes where declaration order differs from : use, const, properties and methods.
  - New analysis : Could use interface (but implements is missing)
  - New analysis : Cant Inherit Abstract Method (PHP 7.2 upgrade)
  - New analysis : use session_start() options
  - Updated analysis : Dynamica method calls cover { } too
  - Checked unit tests : 2305 / 2305 test pass (100% pass).
- **Tokenizer**
  - Checked code on early PHP 7.2 version

Version 0.11.7 (Long Armed Ape Monkey, 2017-06-12)

- **Report**
  - Ambassador : report detected patterns (2 firsts)
  - None report : for when dump is sufficient
- **Analysis**
  - New analysis : could factor functioncalls
  - New analysis : PSR-* usage
  - New analysis : support for Judy and Gender extensions
  - Added thema for Compatibility PHP 7.3
  - Added thema for Dependency Injection
- **Tokenizer**
  - Fixed edge case where classes starting with 'namespace' where mistakenly processed
  - Removed Block from CIT

Version 0.11.6 (Red Bottomed Horse Monkey, 2017-06-05)

- **Architecture**
  - Removed singleton to Config. WIP
- **Report**
  - Ambassador : reports usage of PSR 3,6,7,11,13,16.
  - UML : report now protects file names
- **Analysis**
  - New analysis : Ext stats
  - New analysis : report mixed concatenation / interpolation strings
  - Updated analysis : htmlentities actually uses combinaison, not alternatives,
  - Updated analysis : Close Tag consistency ignores __HALT_COMPILER files

Version 0.11.5 (Intelligent Stone Monkey, 2017-05-30)

- **Report**
  - Ambassador : fixed visibility suggestion
  - New report : Dependency wheel
- **Analysis**
  - New analysis : avoid typehinting with classes
  - New analysis : implemented methods must be public
  - New analysis : no reference on left of assignement
  - New analysis : Could typehint with instanceof
  - Updated analysis : Useless parenthesis cover clone, yield, yield from.
  - Updated analysis : Make One Call also reports nested calls
- **Tokenizer**
  - Split functions and closures,
  - Split classes and anonymous classes
  - Split variable with definitions (Property, Static and Global)
  - File count is always reported (even 0)

Version 0.11.4 (Six Eared Macaque, 2017-05-22)

- **Architecture**
  - Results : returns now multiple results at once
- **Report**
  - New report : codeflower
  - Ambassador : report usage of Debug functions, browscap
  - Ambassador : omits 0 in donuts
  - Ambassador : faceted search for compatiblity
- **Analysis**
  - New analysis : report functions whose return is not used
  - New analysis : only variable can be passed by reference
  - Added limits to all in-depth searches
  - Checked unit tests : 2216 / 2216 test pass (100% pass).
- **Tokenizer**
  - Fixed edge case, where return is finished by a close tag
  - Split Variables into Variables, Objects and Arrays.

Version 0.11.3 (Sun Deity of Mao, 2017-05-15)

- **Architecture**
  - Speed up batch processing for lists of analysis
  - Split data collection from the initial dump.

- **Report**
  - Ambassador : Upgraded presentation of issues, and internals links.
- **Analysis**
  - New analysis : Sphinx extension
  - New analysis : GRPC extension
  - New analysis : reports arrays that are randomly sorted.
  - New analysis : report multiple catch clauses
  - Updated analysis : direct injections include all SERVER_* values
  - Upgrade for PHP 7.1.15 and 7.0.19
- **Tokenizer**
  - Split Functioncall into Functioncall, MethocallCall and Newcall.
  - Added support for 'namespace' in any full name.

Version 0.11.2 (Scorpion Demon, 2017-05-08)

- **Architecture**
  - Code cleaning, and more stability
- **Analysis**
  - New analysis : Report preference between != and <>
  - New analysis : report empty regex and wrong delimiters
  - Added protection for $ in RegexDelimiters

Version 0.11.1 (Ruler of Women's Country, 2017-05-01)

- **Architecture**
  - Fixed handling for large list of data in gremlin queries
  - Handles static in anonymous classes correctly
- **Report**
  - Reports handle traits like class.
- **Analysis**
  - New analysis : ends arrays with , or not (favorite)
  - New analysis : suspicious comparison
  - New analysis : strange spaces in strings
- **Tokenizer**
  - Arrays are now Arrayliteral, split from Functioncall

Version 0.11.0 (Immortal Ruyi, 2017-04-24)

- **Architecture**
  - Removed prepared statements from loops in dump
  - made Gremlin cache compatible with 32bits platforms
- **Report**

  - Ambassador : first work on upgrading visibilities for properties.
- **Analysis**
  - New analysis : could use str_repeat()
  - New analysis : Crc32() Might Be Negative
  - Update analysis : Queries in loop reports cubrid and sqlsrv, prepared statements.
  - Update analysis : type mismatch for indices works on constants too.
  - Update analysis : Loop calling covers less ground
- **Tokenizer**
  - Split function and method entities for differentiated processing

Version 0.10.9 (Single Horned Rhinoceros King, 2017-04-17)

- **Architecture**
  - File extensions are processed before include/ignore dirs.
  - Reduced number of DEFINITION links, leading to less processing.
  - Added several assertion() in the code
  - Added assertions report in doctor (better leave them out with phar)
- **Report**
  - Added support for PHP 7.0.18 and 7.1.4
  - Ambassador : better layout for favorites
  - Zend Framework : 8 new components supported
  - Zend Framework : now supports zendframework/zendframework too
  - Zend Framework : report unused components
- **Analysis**
  - New analysis : report nested Use expressions
  - New analysis : report repeated regex (to be federated)
  - New analysis : report code that output directly to std
  - Updated analysis : Should use this now omits overwritten methods
  - New analysis : report overwritten methods
  - Upgraded analysis : 2123 / 2123 test pass (100% pass)

Version 0.10.8 (King of Spiritual Touch, 2017-04-10)

- **Report**
  - Slim report : list of routes used.
- **Analysis**
  - New analysis : report Group Use Declaration (PHP 7.0+)
  - Zend Framework : 30 components are now covered.
  - Slim : No echo in route callable and Inventory of routes.
  - PHP : list of new PHP 7.2 functions.

- **Tokenizer**
  - Sped up loading time by 10%.
  - Added support for PHP6 binary string : $a = u'b';

Version 0.10.7 (Immortal of Antelope Power, 2017-04-03)

- **Report**
  - Ambassador : fixed composer report.
  - Added report for Composer (beta phase)
  - Added report for Slim framework.
- **Analysis**
  - Added support for Slim versions.
  - Added 10 new components for Zend Framework 3
- **Tokenizer**
  - Fixed support for $ in file names.

Version 0.10.6 (Immortal of Elk Power, 2017-03-27)

- **Architecture**
  - Major speed up of loading and analysis
  - Fixed themes configuration.
- **Report**
  - Ambassador : report cookies usage, infinite and NAN usage
  - Zend Framework : Report incompatibilites component/version for ZF3
- **Analysis**
  - Upgraded analysis : 1941 / 1941 test pass (100.00% pass)
  - New analysis : Zend Framework 3 Deprecated
  - New analysis : Zend cache, view, db.
  - New analysis : Report missing type tests.
  - New analysis : suggest setcookie() with safe arguments
  - New analysis : Do not cast to Int
  - New analysis : CakePHP classes compatibilities from 2.5 to 3.3
  - Upgraded analysis : instanceof doesn't report traits anymore
  - Upgraded analysis : mb_ereg has options in the 4th arguments
  - Upgraded analysis : more strange names
- **Tokenizer**
  - Reviewed most of the load processing.
  - Reduced the number of 'fullnspath' properties.

Version 0.10.5 (Immortal of Tiger Power, 2017-03-13)

- **Architecture**

  - Collect graph size in dump.sqlite
  - Collect memory usage in dump.sqlite
  - Now uses the calling PHP version to run all parts of exakat (no config)
  - Doctor report the ran gremlin version.
- **Report**
  - Ported the Zend Framework report to ambassador
  - Added regex delimiter in favorites.
  - Ambassador : syntax coloring
- **Analysis**
  - New analysis : could be typehinted 'callable'
  - New analysis : encoded letters in strings for security
  - New analysis : report arguments that may be callable
  - New analysis : report strangely named variables
  - New analysis : report strangely named constants
  - New analysis : too many FindsBy*() methods
  - Updated analysis : Useless Instructions doesn't report array_merge(_recursive) with one argument
  - Updated analysis : array_replace handles …
  - Updated analysis : 7.2 deprecation with assert()
  - Generalized usage of commons for CIT
  - Added first 4 set of analysis for Zend Framework 3
  - Added support for dynamic new $a[i];
- **Tokenizer**
  - Fixed fullnspath with new on functioncall
  - Reduced the number of fullnspath loaded
  - Added support for 's'() as functioncall
  - Fixed case where file names has ' ' in it

Version 0.10.4 (Dragon King of the West Sea, 2017-03-06)

- **Architecture**
  - Ignore some classic files by default (README, LICENSE…)
- **Report**
  - Ambassador : protection of HTML values
  - PHPcompilation : fixed export to stdout
- **Analysis**
  - New analysis : report useless else branches
  - New analysis : should regenerate session Id, for PHP and Zend Framework
  - Added support for Extension Data structures (ext/ds)

  - Upgraded analysis : Hardcoded Hash
  - Speed up analysis for extensions
- **Tokenizer**
  - Fixed edge case where a constant was used inside a ternary operator
  - Fixed processing of labels

Version 0.10.3 (Dragon King of the Jing River, 2017-02-27)

- **Architecture**
  - Added URL glossary to Manual.
  - Extended CS ruleset
  - Use exakat/exakat as user/login for git.
  - New helper to rename analysis
  - Project command now accept -P/-T to run one analysis/Thema directly
- **Report**
  - New report style : Codesniffer
- **Analysis**
  - New analysis : suggest usage for array_column()
  - New analysis : __DIR__ must be concatenated with a string starting with '/'
  - New analysis : report usage of parent, self and static outside a class/trait
  - New analysis : report properties used only in one method
  - New analysis : report properties used only once at all
  - New analysis : multiple aliases per class
  - Updated analysis : Fopen() mode support 'e' option (7.1.2 +)
  - Updated analysis : Make One Call covers str_replace, substr_replace, preg_replace*
  - Updated analysis : Unused arguments : now ignores arguments from interface or parent
- **Tokenizer**
  - Removed double DEFINITION link. Faster loading, less processing.
  - Fixed an edge case when function name is boolean or null.
  - Cleaned atom and tokens names
  - Fixed edge case when object is instantiated in a ternary

Version 0.10.2 (Water Lizard Dragon, 2017-02-20)

- **Architecture**
  -
- **Report**
  - Text format now understand -T, -P to extract only some of the results.
  - Fixed dump of extends.
- **Analysis**

  - Added support for PHP 7.1.2 and PHP 7.0.16
  - New analysis : report forgotten 'throw' keyword.
  - New analysis : report class / function confusing name
  - Added support for libsodium
  - Upgraded PHP Relaxed Keyword : Ignore properties.
  - Upgraded analysis : 1824 / 1826 test pass (99.9% pass)
- **Tokenizer**
  - Fixed a bug that mistakes native PHP classes for functions
  - Fixed rare situation with grouped const/function.

Version 0.10.1 (King of Wuji Kingdom, 2017-02-13)

- **Architecture**
  - Report SVN revision when updating or not.
  - Default reports are in config.
  - Configure now supports include_dirs, to include files.
  - Project name is now noted in datastore.
  - Inventories is a default themas; PHP Compatibility < 5.6 are not default anymore.
- **Documentation**
  - Fixed outgoing links
  - Better coverage of PHP functions
- **Report**
  - Added 'Inventories' report : reports all names and literals
  - Ambassador : Added list of included files, Yield From and classes stats
- **Analysis**
  - New Analysis : Strange Names For Methods (Classes/StrangeName)
  - New Analysis : SQL queries (Type/Sql)
  - New Analysis : Avoid Non Wordpress Globals (Wordpress/AvoidOtherGlobals)
  - Upgraded analysis : Should be single quote, escape sequences refined.
  - Upgraded analysis : Should Preprocess now support determinist PHP functions
  - Upgraded analysis : 1817 / 1824 test pass (99.6% pass)
- **Tokenizer**
  - Fixed LOC counting.
  - Fixed edge case when closure is directly use as argument
  - Fixed double inventories for Use's Definitions

Version 0.10.0 (Azure Lion, 2017-02-06)

- **Architecture**
  - Replacement of booleans with constants (WIP)

  - Removed PHPloc (merged features into load)
  - Added coding standard for Code Sniffer (ruleset.xml)
  - PHP version used default to running script version
  - Now reading Token Constants from the binaries
  - Doctor reports project configuration if -p is used
- **Report**
  -
- **Analysis**
  - New Analysis : No Boolean As Default
  - New Analysis : Raised Access Level
  - New Analysis : Recommend Wpdb->prepare when variables are in query
  - Directive suggestion now include error_log
  - Upgraded analysis : UselessParenthesis also checks Typehint
  - Upgraded analysis : 1804 / 1811 test pass (99.6% pass)
- **Tokenizer**
  - Reinforced detection of parsable PHP script
  - Fixed Files command : it now cleans data before running
  - Removed warning about memory
  - Index creation made lighter

Version 0.9.9 (Pilanpo Bodhisattva, 2017/01/30)

- **Architecture**
  - Moving true/false to constants
- **Report**
  - Ambassador : Added 'Compilation' and Version compatibility reports.
  - Prepared collection of dependencies in dump
- **Analysis**
  - New Thema : Compatibility PHP 7.2
  - New analysis : Deprecated Features of PHP 7.2
  - New analysis : Removed Function for PHP 7.2
  - New preference : New Line Style
  - Upgraded analysis : 1781 / 1802 test pass (98.9% pass)

Version 0.9.8 (Multiple Eyed Creature, 2017-01-23)

- **Architecture**
  - Moved 'Truthy/Falsy' as 'boolean' characteristics
  - Updated Gremlin3 interface to handle Groovy maps
  - Added default name when creating project

- **Report**
  - Added checks on merged table at Dump stage
  - Added support for PHP 7.1.1 and 7.0.15
- **Analysis**
  - New analysis : variables assigned twice or more
  - New preference : new x() / new x;
  - Upgraded analysis : 1785 / 1794 test pass (99.5% pass)
  - Fixed Interface usage : missing interfaces extends interfaces
  - Added extra check for Functioncalls
- **Tokenizer**
  - Added support for instanceof + several names

Version 0.9.7 (Hundred Eyed Demon Lord, 2017-01-16)

- **Architecture**
  - Fixed constant names for tokens in Load
  - Changed duplication check to dedup(). Cleaned analysis for duplicates.
  - Speed but for large projects. Work in Progress.
  - Reduced usage of static properties
  - Better detection of PHP scripts during project
- **Report**
  - Fixed generation of inventories when no target is provided
- **Analysis**
  - New analysis : Could Be Protected Property (not a public)
  - New analysis : avoid large literal arrays in local variables.
  - New analysis : report long arguments.
  - Removed analysis : Structures/EchoArguments (double with Echo With Concat)
- **Tokenizer**
  - Fixed list of constants for PHP 7.1

Version 0.9.6 (Spider Demons, 2017-01-09)

- **Architecture**
  - Added support for report/analysis theme list in config (exakat and project)
  - Better cleaning of projects
  - Doctor : Initialisation with themes/reports; Reports executable being used.
  - Added a log for gremlin Queries
  - Rebuild the server command
  - Added 'catalog' command
- **Report**

  - Split Phpconfiguration into eponymous and Phpcompilation
- **Analysis**
  - New analysis : avoid Glob, use scandir without sorting.
  - New analysis : always configure ext/sqlite3 FetchRow()
  - New analysis : no string with append
  - Removed analysis : Structures/ForeachSourcesNotVariable
  - Upgraded Analysis 'Should Import Functions'
  - Upgraded analysis : 1764 / 1773 test pass (99.5% pass).
- **Tokenizer**
  - Added 'aliased' property to nodes.

Version 0.9.5 (Immortal Ziyang, 2017-01-04)

- **Architecture**
  - Better check of PHP version
- **Report**
  - Ambassador : report analysis settings
  - PHP Compilations : supports all extensions
  - New report : Inventories
- **Analysis**
  - New analysis : Don't Use Fallback to Global space
  - New analysis : MongoDB (ext/mongo version 3)
  - New analysis : zbarcode
  - Bug : Fixed intval for octals in Arrays/MultipleIdenticalKeys
  - Removed analysis : Php/InconsistantClosingTag (double)
- **Tokenizer**
  - Ranking arguments, not functioncall

Version 0.9.4 (Lady of Jinsheng Palace, 2016-12-19)

- **Architecture**
  - Rewrote the concurrence check (removed needs for ext/sem)
  - Results are never double anymore
  - Upgraded gremlin calls, to handle n
  - Dump cleans the previous values before dumping
  - Excluded namespaces classes when searching for external libraries
- **Report**
  - Ambassador : extension usage, inventories, global lists, stats, PHP Compilation directives
  - Covers more compilation directives (Not finished)
- **Analysis**

  - New analysis : Final by Ocramius
  - Upgraded : Comparison with == : added curl_exec
  - Upgraded : isset with constant (mistake on properties as arrays)
  - Upgraded : Avoid using now uses full NS path
  - Upgraded : Useless instructions handles for() correctly
  - Upgraded : Recursive, IsGenerator and Loop Calling includes yield from
  - Upgraded analysis : 1741 / 1750 test pass (99.5% pass).

Version 0.9.3 (Purple-Gold Bells, 2016-12-12)

- **Architecture**
  - Lots of cleaned code
  - Harmonized data for extensions
  - Stop 'project' if no code is available
  - Now using stub in phar.
- **Report**
  - Added directives, bugfixes, external services and
  - Added support for PHP 7.0.14 and 5.6.29
- **Analysis**
  - New analysis : Wordpress, recommend prepare()
  - More favorite reports : final ?> and unset()/(unset)
  - Reduced number of double reports for many analysis
  - Update : Fixed analysis with $THIS
  - Upgrade : report useless casting of comparisons
  - Update : Should use this takes into account parent

Version 0.9.2 (Golden Haired Hou, 2016-12-05)

- **Architecture**
  - First version of Exakat for docker (beta)
  - Added a waiting loop in cleandb
  - Docs include a list of new analysis per version
- **Report**
  - Added 2 first inventories, Appinfo() in Ambassador
  - Favorites now reports global/$GLOBALS
  - Restore composer.lock report
  - Upgraded uselessReturn for the final return.
- **Analysis**
  - New analysis for Newt, Nsapi,
  - New analysis : __ in methods names

  - New analysis : Too many local variables
  - New analysis : Avoid array_push()
  - Upgraded ext/apache coverage

Version 0.9.1 (Sai Tai Sui, 2016-11-28)

- **Architecture**
  - Docker supported in exakat/config.ini for PHP binaries.
  - Added exakatSince in analysis documentation
  - Added some missing tokens in anonymize command
- **Report**
  - Added several new analysis for PHP 7.1
- **Analysis**
  - new analysis : find methods that could return Void
  - new analysis : find malformed octal sequence in strings
  - new analysis : spot rethrown exception
  - new analysis : reach the last element
  - new analysis : find undefined Zend Framework classes (2.0 to 3.0)
  - Upgraded analysis : 1706 / 1714 test pass (99.5% pass).
- **Tokenizer**
  - Fixed handling references (some were missing)
  - Fixed handling of ellipsis (some were missing)

Version 0.9.0 (Python Demon, 2016-11-21)

- **Architecture**
  - Project now include 'Preference' analysis
  - Dump is now incremental (-u option), and doesn't need to be run in paralell
  - Added new hashAnalysis table, to handle generic results from analysis.
  - Added project name in the graph.
  - New command 'status' to report the current status of exakat
- **Report**
  - Ambassador includes 'Preferences' section and new menu system
  - Upgraded progressbar to display project processing
- **Analysis**
  - New analysis : Early Bail Out (with if/then)
  - New analysis : PHP 7.1 backward incompatibilities with microseconds
  - New analysis : Wordpress : recommend using WP api, not PHP.
  - Upgraded 'Constant condition' to include do..while()
  - Upgraded 'Useless Abstract' to include methodless classes

  - Upgraded analysis : 1687 / 1697 test pass (99% pass).
- **Tokenizer**
  - Added 'Array' to list of determinist functions (more constants are spotted)
  - Fixed 'Name' for Array Short Syntax.
  - Fixed variadic support

Version 0.8.9 (Yellow Brows Great King, 2016-11-14)

- **Architecture**
  - Fixed and document -tgz and -zip option of init
  - Removed progress folder
  - Made MagicNumber a parallel task in Project.
  - Turned some die into assertion()
  - .phar doesn't report any PHP errors.
  - Checked compilation with PHP 5.3->7.2
- **Report**
  - Removed Faceted report
  - Added Bugfixes for PHP 7.0.13, 5.6.28 and PHP 7.2
  - Added 'One variable string' to Radwell report
- **Analysis**
  - New analysis : Object Calisthenics #1, #4
  - New analysis : check that properties are all set at constructor time.
  - New analysis : spot useless checks
  - Updated UndefinedParentMP to take PHP ext classes into account
  - Upgraded 'array_merge in loops' with file_put_contents
  - Upgraded 'useless parenthesis' with math operations
  - Upgraded analysis : 1666 / 1682 test pass (99% pass).
  - Added debug Query method to analysis
- **Tokenizer**
  - Fixed Files to compile first, then count tokens
  - Find Ext Lib handle UT classes better
  - Added limit to 'code' before loading into database. There is a 2M limit.
  - Fixed edge case with nested foreach()
  - Fixed segmentation fault when getting tokens from a script with wrong encoding

Version 0.8.8 (Apricot Immortal, 2016-11-07)

- **Architecture**
  - Added concurency test to avoid running several instance at the same time
  - Report error when it happens with git clone

  - Added UT classes to external libraries
  - Dump is now hidden until finished.
  - Better detection of java and composer (Thanks Julien)
- **Report**
  - New report : Radwell
  - New report : PhpConfiguration helping with configure and php.ini
  - Ambassador : Fixed dashboard values
- **Analysis**
  - New analysis : time() vs strtotime('now')
  - New analysis : useless casting
  - New analysis : No Isset() with Empty()
  - New analysis : don't echo errors
  - New analysis : ext/rar
  - New analysis : use Class::class when possible
  - Added array_key_exists() to slow functions list.
  - Upgraded UpperCaseKeywords to handle partial uppercase
  - Added reported directives for ext/filter
  - Upgraded 'Variables used once' to exclude $this and arguments
  - Upgraded Unreachable Code with break/continue;
  - Multiple Identical Keys now handles null, boolean, real.
  - Upgraded analysis : 1652 / 1668 test pass (99% pass).
- **Tokenizer**
  - Now spots true, false, null as Boolean and Null
  - Removed 'xargs too many arguments' error on Linux

Version 0.8.7 (Naked Demon, 2016-10-31)

- **Architecture**
  - Upgraded Boolean and Integer to report results without storing them in graph
- **Analysis**
  - New analysis : modernizable empty() calls
  - New analysis : recommend Positive conditions
  - New analysis : drop else after return
  - Upgraded analysis : unreacheable code handles if/then with returns.
  - Added tests for Boolean and Null
  - More not Hashes dict.
  - Upgraded analysis : 1637 / 1650 test pass (99% pass).
- **Tokenizer**

  - Fixed line number of <?=
  - Fixed token on arguments

Version 0.8.6 (Fuyun Sou, 2016-10-24)

- **Architecture**
  - New command to ping a queue
  - More documentation
- **Report**
  - Ambassador report sped up multiple times
  - Text, Json and XML all report only analysis (not the dependencies)
- **Analysis**
  - New analysis : suggest ternary instead of Ifthen
  - New analysis : check for returned value usage
  - Added support for PHP 7.0.12 and 5.6.27
  - Added more bugs fixing from extensions
  - Fixed analysis for Zend Framework 1
  - Ignore $this in variable used once
  - Fixed report with unlimited arguments functions
  - Overwritten literals : Ignore assignations in for()
  - Upgraded old PHP 5.* analysis to Gremlin 3
  - Upgraded analysis : 1639 / 1645 test pass (99% pass).
- **Tokenizer**
  - Fixed precedence between require and .
  - Better fullcode for <?=

Version 0.8.5 (Naked Demon, 2016-10-17)

- **Architecture**
  - Moved all classes under Exakat folder for clean hierarchy
- **Report**
  - Ambassador : restored line number in display
- **Analysis**
  - New analysis, check for substr() comparisons with literals
  - New analysis, suggest boolean cast, instead of Ternary.
  - New analysis, spot 3 levels of if/then
  - Upgraded 'hardcoded password', for kadm5 and hash_* functions
  - Upgraded 'external libs', with Zend Framework
  - Upgraded analysis : 1625 / 1638 test pass (99% pass).

Version 0.8.4 (Lingkongzi, 2016-10-10)

- **Architecture**
  - Moved Tasks into ExkatTasks
  - Fixed findExternalLibs
- **Report**
  - Ambassador report got good annex, fixed settings and faceted search
  - Omit clearPHP if not present in docs
- **Analysis**
  - New analysis : detect multiple identical traits/interface in CIT
  - New analysis : suggest creating aliases to reduce code
  - New analysis : spot aliases that may be reused again
  - New analysis : hidden use, that are not at the beginning of the code
  - Upgraded analysis : 1607 / 1618 test pass (99% pass).
  - More documentations to many analysis
  - HasMagicProperty report all magic methods
  - Upgraded 'Useless Parenthesis' with more situations
  - Upgraded 'Unchecked resources' with 2 more situations
  - Fixed several analysis when using Boolean and Null as a class
  - Fixed analysisIsNot with arrays
  - Removed include-like from undefined functions
  - Arrays/AmbiguousKeys : Extended to arrays calls
- **Tokenizer**
  - Fixed edge case with return ?>
  - Fixed path for reporting

Version 0.8.3 (Guzhi Gong, 2016-10-03)

- **Architecture**
  - Created temp folder .exakat in projects_dir
  - Removed mentions of float, only using Real
  - Moved Config to ExakatConfig
  - More examples in docs
- **Report**
  - Added settings and files to Ambassador
- **Analysis**
  - New analysis for dependant Traits
  - Added new Theme 'Cakephp' with 6 analysis for migration
  - New values for Not-a-hash
  - Unresolved Catch now takes Throwable into account

- **Tokenizer**
  - Fixed edge case where return is used inside if/then without { } nor value.
  - Fixed 'code' and 'token' for ?: and ()

Version 0.8.2 (Jinjie Shiba Gong, 2016-09-26)

- **Architecture**
  - More examples in docs
  - Fixed 'file' in results
- **Report**
  - Added more media for Ambassador
- **Analysis**
  - New analysis for count/strlen compared to 0
  - Upgraded analysis : 1563 / 1579 test pass (99% pass).
  - Backported all 4 Wordpress analysis (wpdb, nonce usage)
  - Added new Wordpress analysis : variable escaping in templates
- **Tokenizer**
  - Fixed <?= so it is handled like echo

Version 0.8.1 (Babo'erben, 2016-09-19)

- **Architecture**
  - Added main Try/Catch
- **Report**
  - Added 'Ambassador' report.
- **Analysis**
  - Upgraded analysis : 1540 / 1561 test pass (99% pass).
  - More documentation (examples, glossary)
  - Added a list of stopwords for No Hardcoded Hash
  - Upgraded analysis 'No Hardcoded Path' with protocols and glob with wildcards
  - Upgraded analysis 'No Hardcoded Hash' with stopwords
  - Added new Analysis for portability : spot common Linux files
  - Added new Analysis : use system temp dir, not hardcoded one
  - New analysis that spot unused protected methods
  - Added Time-to-fix and severity to all analysis
- **Tokenizer**
  - Fixed edge case with if/then and try/catch
  - Synchronized constants in Tokens/Consts*.php
  - Added support for PHP 7.2

Version 0.8.0 (Benbo'erba, 2016-09-12)

- **Architecture**
  - More examples in the docs
  - Better find root in export
- **Report**
  - Prepared code for new report style
- **Analysis**
  - New analysis : no throw in __destruct
  - New analysis : spot empty blocks in control structures
  - Update : Check parse_str and mb_parse_str()
  - Upgraded analysis : 1524 / 1540 test pass (99% pass).
- **Tokenizer**
  - Fixed representation of [] and [index] with static properties

Version 0.7.10 (Nine Headed Bug, 2016-09-05)

- **Architecture**
  - Added optional dependency to mbstring in Doctor
  -
- **Analysis**
  - Added analysis for PHP 7.1 features
  - Upgraded analysis : 1377 / 1510 test pass (91% pass).
- **Tokenizer**
  - Removed parasit 'void' added in sequences.
  - Raised export max depth to 15.
  - Fixed FQN for new without parenthesis
  - Fixed support for PHP 5.5/5.6.
  - Added support for iterable
  - Checked support for extensions and ignore dirs

Version 0.7.9 (Wansheng Princess, 2016-08-29)

- **Architecture**
  - Added several features at Loading time : mark global variables in $GLOBALS, fallback FQN in functions, link constant to definitions.
- **Analysis**
  - Added analysis for impossible comparisons (count($a) < or >= 0)
  - Added analysis for PHP 7.1 : removed directives, added functions
  - Upgraded analysis : 1485 / 1522 test pass (97.5% pass).
- **Tokenizer**
  - Fixed edge case with <?= $v;

  - Fixed priorities between include and .
  - Better support of trait in classes

Version 0.7.8 (Wansheng Dragon King, 2016-08-22)

- **Architecture**
  - Prepared databases for PHP 7.2
- **Analysis**
  - Reports that preg_match results are not checked
  - Report List short syntax usage.
  - Upgraded analysis : 1224 / 1493 test pass.
- **Tokenizer**
  -

Version 0.7.7 (Water Repelling Golden Crystal Beast, 2016-08-17)

- **Analysis**
  - Upgraded Bug database to handle PHP 7.0.10, 5.6.24 and 5.5.38

Version 0.7.5 (Jade Faced Princess, 2016-07-19)

- **Architecture**
  - Added 'anonymize' command, that anonymize files and projects
- **Analysis**
  - new analysis : recommend preg_replace_callback_array() when there are several call to preg_replace_callback_array()
  - Upgraded analysis : 1103 / 1464 test pass.
- **Tokenizer**
  - Lots of fixes for stability : tested on 28M tokens

Version 0.7.4 (Great Sage Who Pacifies Heaven, 2016-07-12)

- **Architecture**
  - Entirely rewrote the 'Tokenizer' part
  - Upgraded database schema
- **Analysis**
  - Upgraded analysis : 1027 / 1461 test pass.
- **Tokenizer**
  - Entirely rewrote the 'Tokenizer' part
  - 1851 UT pass correctly (extra 51)

Version 0.6.7 (Red boy, 2016-05-30)

- **Report**
  - Added List With Keys in Appinfo()
  - Added by-reference functions mention

  - Now reporting good visibility/static for __callstatic
  - Added bug info for PHP 7.0.7, 5.5.36, 5.6.21
- **Analysis**
  - New : recommend instanceof over is_object()
  - Fixed several ignored limitations, due to case : $phpversion
- **Tokenizer**
  - Fixed 'originclass' in namespaced use

Version 0.6.6 (Princess Iron Fan, 2016-05-23)

- **Report**
  - New report, suggest disable_functions directive value.
  - Added support for memcached directives
- **Analysis**
  - New analysis : spot throw without new
  - New analysis : suggest adding 2nd parameter to unserialize in PHP 7.0+
  - New analysis : spot successive if/then with the same condition
  - Added support for zendoptimizer and suhosin extensions
  - PHP7 indirect expression : added support for {} in properties
- **Tokenizer**
  - Raised cycle count, to speed up building AST for large projects

Version 0.6.5 (Great Sage Who Pacifies Heaven, 2016-05-16)

- **Analysis**
  - New analysis : spot globals that may be turned into property
  - New analysis : check that ZF1 classes are well located
  - Upgraded 'dangling foreach reference' to support key=>value
  - Better support for PHP 7 indirect expression
  - More directives for xdebug
  - Eval Without Try is PHP 7 only
  - No Choice analysis is now case insensitive
- **Tokenizer**
  - Added support for keys in list() (PHP 7.1)
  - Added support for constant visibility (PHP 7.2)
  - Added support for Multi catch : catch(A|B $e) (PHP 7.1)
  - Fixed bug with + and instanceof
  - Fixed precedence between :: and ??

Version 0.6.4 (Bull Demon King, 2016-05-09)

- **Architecture**

  - Externalized the list of recognized libraries to Json
  - Added 'Wordpress' and 'Coding convention' as Recipes
- **Report**
  - Initial report for Zend Framework. Still prototyping.
- **Analysis**
  - Accelerated analysis for Implicit GLobals variables
  - New analyze : Indirect Injections (Security)
  - New analyze : Should Use Coalesce (code upgrade)
  - New analyze : Suggest dirname(__FILE__) => __DIR__
  - Added 'str_rot13' as unsafe 'crypto'
  - Properties without default can't be redefined
  - Added Yield and Yield From as structures without parenthesis needs
  - Double Assignation, unless 2nd call is a functioncall (less false positives)

Version 0.6.3 (Jade Faced Princess, 2016-05-02)

- **Architecture**
  - Removed several useless pieces of code (self analysis)
  - Added documentation for Wordpress Recipes
  - Lengthened Cycle for tokenizer
- **Report**
  - Added bugfixes for PHP 7.0.6, 5.6.21, 5.5.35.
  - Now reporting token counts per files
- **Analysis**
  - New analysis : Spot variable that holds $_GET, $_POST, $_REQUEST or $_COOKIE values (internal)
  - New analysis : Report variables that are overwritten by themselves
  - New analysis : Report useless switch (empty, 1 case only)
  - Upgraded NoChoice to handle larger sequences
  - Upgraded Useless Global to handle global $x / $GLOBALS['x'] situations
  - New analysis : Wordpress Recipe : Unverified Nonce, Best Usage for $wpdb
  - New analysis : Void for PHP 7.1
- **Tokenizer**
  - Fixed but with Typehint
  - Added phppowerpoint class in external libraries

Version 0.6.2 (Long Armed Ape Monkey, 2016-04-25)

- **Architecture**
  - Fixed phar detection (based on ext/phar)
  - Cleaned code with myself

- **Report**
  - New report format : clustergrammer
- **Analysis**
  - New analysis : same conditions in If / Then
  - New analysis : spot dead code in catch expressions
  - Static loops now exclude methods usage
  - Indirect variable expression are stricter
  - preg_* Option e has better support for delimiters
  - Upgraded Direct Injection in case of concatenation
  - Detect Ellipsis when counting arguments
  - Could use short assignation : avoid $a += $a + 3;
- **Tokenizer**
  - Sped up Typehint detection
  - No indexing for T_STRING in properties
  - Reduced errors from token_get_all()

Version 0.6.1 (Red Bottomed Horse Monkey, 2016-04-18)

- **Architecture**
  - Prepared to support PHP 7.1
  - Fixed bug in user / passwords when initing the project
  - Better support for ::class when searching for libraries
- **Analysis**
  - UselessParenthesis : spot nested parenthesis
  - Spot exceptions that are thrown but uncaught by the current code
  - Support for ext/lua,
  - New : Check catch order in try/catch
  - Better identification of Composer classes, based on composer.json
  - Now spot interfaces in use declarations (less undefined interfaces)
- **Tokenizer**
  - Added support for PHP 7.1
  - key => value in list() calls
  - visibility for constants in Classes and Interfaces
  - Accelerated up Typehint support

Version 0.6.0 (Intelligent Stone Monkey, 2016-04-11)

- **Architecture**
  - Fixed a bug in Find external libraries
  - Applied fixed based on new analysis audit

  - Fixed a bug that prevented results to be prepared for report (Thanks Philippe G.)
- **Report**
  - Now reports reason for excluding a file from analysis
- **Analysis**
  - New analysis : Logical Mistake (first version),
  - New analysis : Iffectations (code restoration)
  - New analysis : Common alternatives
  - New analysis : No Choice (No alternatives)
  - New analysis : Random_* Without Try (security risk)
  - New analysis : Unknown PCRE options
  - New analysis : Identical conditions
  - New analysis : Hardcoded hashes
  - Upgrade List with appends with variable name
  - Upgrade /e option detection
  - Fixed detection of unused use, with long namespaces.
  - Added finfo to ext/finfo
  - Finds exceptions that are reserved for later throwing
  - Exclude anonymous classes from Already Defined Interface
- **Tokenizer**
  - Extended cycle number to speed up tokenizer.
  - Better escaping of file names

Version 0.5.9 (Six Eared Macaque, 2016-04-04)

- **Architecture**
  - One progressbar per Recipe during project analysis
  - report's documentation
  - Upgraded 'External Lib' to ignore Composer folders.
  - Fixed a bug about interpreting tokens
  - Dump collects classes, interfaces, traits definitions
  - Now storing project name in database for future use
  - Removed PHP configuration modifications (error_reporting, display_errors)
- **Report**
  - Added 'Uml' report : hierarchy report
  - Now reports Pear Usage
  - Upgraded Bugfix database for 7.0.5, 5.6.20 and 5.5.34
  - Report Yield (from) usage
  - New external configuration files : bazar, github, docker, openshift

- **Analysis**
  - Added detection for undefined classes in ZF (1.8 to 1.12)
  - New : report undefined Traits
  - Added support for parent/grandparent when checking argument numbers
  - Added support for V8js
- **Tokenizer**
  - Fixed bug in fullnspath for use within trait or class
  - It is possible to reach a property on an array append
  - Fixed AST between PHP 5 and 7 for globals
  - Simplified ++ analysis

Version 0.5.8 (Sun Deity of Mao, 2016-03-28)

- **Architecture**
  - Moved to self::, instead of static::.
  - First UT for command line
  - Sped up phploc. Prepare code for finite states, in Tasks.
  - Prepare for Gremlin3 (moved gremlin calls to class)
  - Reduced shell_exec usage
- **Report**
  - Fixed display bugs in Devoops report
  - Removed double analysis
  - 'Wrong number of arguments' now supports constructors
- **Analysis**
  - Upgraded 'No Hardcoded IP' to handle constants, spot domains
  - Added support for TokyoTyrant
  - New analysis : spot simple regex, and suggest strpos
  - Excluded "$a[b]" from undefined constants
- **Tokenizer**
  - Fixed bug with nested call to echo.
  - Fixed bug where concatenation ends on a 'AS' keyword
  - Added support of Constants in Foreach
  - Fixed multiple bugs in Grouped Use
  - Support for function as 'class' in static calls
  - Comparison accepts powers
  - Added support for empty array short syntax in sequence
  - Support constant with visibility
  - Parenthesis may be the base for Arrays

Version 0.5.7 (Scorpion Demon, 2016-03-21)

- **Architecture**
  - Added support for folders in UT, for tests that requires several files
  - Improved compatibility with PHPunit
  - Moving gremlin_query() to Gremlin2 class
  - Doctor also reports for phar
  - Improved adaptation to PHP and Exakt in server mode
  - Autoload shouldn't die
  - Fixed case when calling Phpexec
  - Upgraded status presentation in server mode
- **Report**
  - More details for Global Variable list
- **Analysis**
  - Now spotting class when it is inside a string
  - Check for $this outside a trait/class
  - Check for ternary/concatenation precedence
  - Spot classes that attempt to extend final
  - Spot set_exception_handler() that may need rework
  - Refined array_merge analysis, in case of nested loops
- **Tokenizer**
  - Yield [from] may be inside an array
  - Refactored for/foreach tokens
  - Added support for a 'Project' node

Version 0.5.6 (Ruler of Women's Country, 2016-03-14)

- **Architecture**
  - Fixed some backward compatibility with PHP 5.4
  - Started revamping 'Status' command
  - Centralized all tokenizations to PhpExec class
  - Removed usage of __DIR__ and __FILE__
- **Analysis**
  - Spot usage of empty() that can't work on PHP 5.4
  - Suggest using random_int instead of rand
  - Upgraded 'No Array_merge in loops' with array_merge_recursive
  - Added support for scalar type hint in Undefined Classes
  - New analysis : Better rand()
- **Tokenizer**

  - Instanceof has lower precedence than comparison

Version 0.5.5 (Immortal Ruyi, 2016-03-07)

- **Architecture**
  - Added default values for all neo4j_* configs
- **Report**
  - Added support for bugfixes in 7.0.4, 5.6.19 and 5.5.33
  - Added support for bugfixes in 7.1.0-dev
- **Analysis**
  - Added support for Typehint in Undeclared Classes
  - Extended 'Multiple Classes in One File' to interfaces and traits
  - Added analysis for truthy and falsy
  - Spot interfaces implemented by parents (Thanks PHP Inspect)
  - Report usage for unsafe Curl options
- **Tokenizer**
  - Fixed emptyString inside a Heredoc
  - Fixed bug where Sign has lower priority than Power

Version 0.5.4 (Nezha, 2016-02-29)

- **Architecture**
  - Removed some shell_exec() to help with portability
  - Clean command now rebuilds an empty datastore
  - Check the availability of php binaries before using
  - Produce report in a hidden folder, then push it
- **Report**
  - Report the list of bug fixes that apply to code
- **Analysis**
  - Help using preg_match_all options
- **Tokenizer**
  - Fixed a bug with reference and instanceof

Version 0.5.3 (Li Jing, 2016-02-22)

- **Architecture**
  - More UT
  - Supports symlinks for neo4j's folder
  - Supports symlinks for 'code' folder in projects
  - Added upgrade command to check for exakat's available versions and upgrade
- **Analysis**
  - Spot CLI scripts

  - Undefined Interfaces avoids self, parent, static
  - Fixed bug in spotting undefined Interface
  - Variable Used Once in a method are not arguments
  - Added support for all structures in Double Assignation

Version 0.5.2 (Single Horned Rhinoceros King, 2016-02-15)

- **Analysis**
  - Fixed functioncall detection with 'empty'
  - Refined 'Buried assignation' analysis
  - Fixed a bug when using definitions (class, trait, interface, functions…)
  - Better support for case-insensitive constants
  -
- **Tokenizer**
  - Fixed bug in use statement
  - Now spots PHP code in files without extension
  - Upgraded support for grouped Use statement
  - namespace may be a valid nsname part
  - Fixed bracket reports in do…while

Version 0.5.1 (King of Spiritual Touch, 2016-02-08)

- **Architecture**
  - Added test in UT to skip incompilable sources
  - Stabilized tokenizer's UT (partial)
- **Report**
  - HTML protection in Devoops format
  - No display of negative stats
  - Added support for directives : wincache, xcache, apc, opcache
  - Added support for eaccelerator and openssl
- **Analysis**
  - New analysis : Spot unknown PHP directive names
  - Fixed Constants/MultipleDefinedConstants
  - Better detection of functioncalls (with List)
  - Better spotting of ini_set arguments
  - Unreachable code now finds die and exit
  - ObjectReference won't report references on scalar types
  - Revamped 'pregOptionE' analysis
  - Cleaned code with too many arguments
  - Removed useless print

  - Better report of eval() usage
  - Revamped 'Dynamic code' report
  - Fixed bug in Case/Default that are empty
  - Avoided sequences of sequences in Case/Default
  - Fixed Detection of classes' usage with extension
- **Tokenizer**
  - Fixed bracket detection on While and DoWhile
  - Detect void in DoWhile
  - Removed useless T_DIE token
  - Fixed fullcode processing for anonymous classes

Version 0.5.0 (Immortal of Antelope Power, 2016-02-01)

- **Architecture**
  - Added support for HTTP API, through 'server' command.
- **Analysis**
  - Fopen modes checked
  - Redefined default, in class's properties
- **Tokenizer**
  - Fixed situation where echo and print used parenthesis (they don't)
  - Fixed rare but with instanceof and concatenation
  - Fixed support of integers in Gremlin
  - Fixed bug in addslashes and and $ protection order
  - Made Assignations more robust (no un-processed tokens)
  - Reduced the number of shell_exec usage => speed up
  - Finished support for relaxed keyword support in classes (PHP 7)

Version 0.4.6 (Immortal of Elk Power, 2016-01-25)

- **Architecture**
  - New installation script with Vagrant and Ansible (Thanks Alexis!)
  - Updated documentation
  - Added a command to remove a project
- **Report**
  - Devoops reports has case-insensitive menu sort
- **Analysis**
  - Spot redefined properties, classes and methods.
  - Spot properties that may be turned private
  - Fixed special case in Wrong Number Of Arguments
  - Fixed 'OnePage' analysis

- **Tokenizer**
  - Finished support for relaxed keywords in classes
  - Sped up tokenizer by keeping counts of tokens in datastore
  - Fixed detection of CakePHP
  - Fixed special case with Labels
  - Fixed rare case with die() within ternary operator

Version 0.4.5 (Immortal of Tiger Power, 2016-01-18)

- **Architecture**
  - Upgraded documentation
  - Default command is 'help'
- **Report**
  - Better version for FacetedJson report
- **Analysis**
  - New analysis that spots wrong type of argument in PHP internal functions
  - Fixed Isset With Constant for PHP 7
  - Fixed a bug that limited query size during analysis (good for bigger projects)
  - Include variadic (...) to Variable Argument Number
- **Tokenizer**
  - Fixed a bug that blocked tokenizer when a analyzed script generated parse errors.
  - Added support for bazar, svn.
  - Fixed a bug in Nsnames at Loading time.

Version 0.4.4 (Crown Prince Mo'ang, 2016-01-11)

- **Architecture**
  - Reviewed OnePage analysis
  - Dump as now an option to select Recipes
  - Dump forces line to be integer
  - Added a task to update a project's code (git only ATM)
- **Report**
  - Better check when opening database for report (more to come)
  - FacetedJson (and Json) report ignore non-unicode lines
  - Added 'search' box to facetedJson
- **Analysis**
  - Switch To Switch suggestions
  - Unused arguments patch for arguments used in methods
  - Unused properties doesn't mistake function static variable
- **Tokenizer**

  - All Nsnames are now build at Loading time
  - Constants may be calld 'const'
  - More relaxed syntax for methods (exit, include, eval…)
  - Foreach may use coalesce
  - Fixed an edge case with Closures in functioncall

Version 0.4.3 (Tuolong, 2015-01-04)

- **Architecture**
  - Copyright year bump
  - Doctor reports memory_limit and php version consistency
  - Switched to rmDirRecursive
- **Report**
  - Removed old style reporting system
- **Analysis**
  - Fixed fileupload and filesystem directives reports
  - Added report of Environment variable usage
  - Added iconv_set_encoding to the list of directive usage
  - Extension analyzes now takes into account namespaces and traits
  - Analysiss all have severity and time to fix
- **Tokenizer**
  -

Version 0.4.2 (Red Boy, 2015-12-22)

- **Architecture**
  - Published documentation on http://exakat.readthedocs.org
  - First version of the faceted report (-format Faceted)
- **Report**
  - First version of the faceted report (-format Faceted)
  - Fixed Dump that actually finishes after some time
- **Analysis**
  - Spot unused arguments
  - Fixed notInInterface() filter
  - Upgraded HtmlEntitiesCall

Version 0.4.1 (Azure Lion, 2015-12-14)

- **Architecture**
  - Rebuild the report system, for speed and versatility.
- **Report**
  - Available format : JSON, Sqlite, XML, Text and HTML (Devoops).

  - Rules are now part of the documentation.
- **Analysis**
  - Upgraded 'Buried assignations'
  - Locally Unused also spots properties without visibility (but with definition)
  - Could be class constant, if the property is used at least once
  - Better detection of files that are Definitions only (fix at Namespace calls)
  - ++ is now correctly reported as isRead and isWritten in Arguments
  - Closure's use($x) are now reported in both context (calling and called)
  - Removed usage of 'back' method, that is blocking at high token counts
- **Tokenizer**
  - Fixed support for {} and {$ } inside strings
  - Fixed bug with Typehint, that prevented compilation
  - Fixed several (rare) edge cases with Sign and Staticproperties.
  - Fixed detection of closing tags

Version 0.4.0 (Lion Lynx Demon, 2015-12-07)

- **Architecture**
  - Made PHP 7.0 the default (moved to 0.4.0)
  - Ran unit tests on PHPunit 5.1
  - Added a background tasks to build report. Will allow for progressive report.
- **Report**
  - Rewrote the report from scratch. Should be finished next iteration.
  - New report is working for XML and Text report.
- **Analysis**
  - Added support for ext/pecl_http
  - Added several classic folders as ignored by default (change this in config.ini)
  - Create a check for functioncall (and not methods)
  - Spots join('', file())
  - Safely ignoring some dynamic calls in undefined functions (Thanks Marc Delisle)
  - Removed ArrayAppend from double assignation
- **Tokenizer**
  - Fixed a bug when class was auto-referenced.
  - Fixed detecting Static properties when they are also arrays.
  - Fixed fatal errors for mal-formed octals

Version 0.3.12 (Nine Tailed Vixen, 2015-11-30)

- **Architecture**
  - ProgressBar is now displayed during Analyze phase.

- **Report**
  - Report list of error messages used in the library
- **Analysis**
  - Omit eval with hardcoded strings
  - Exclude some index from _SERVER from the report (they are safe)
  - Exclude php://* files as hard coded path
  - Report usage of timestamp to calculate duration
  - Spots unused traits
  - Fixed support for big integers
- **Tokenizer**
  - First support for relaxed keywords in classes. More to come.
  - Checked UT on PHP 7 (Soon to become default version)
  - Fixed version detection in Tokenizer
  - Fixed fullnspath in Use expression;

Version 0.3.11 (Hu A'qi, 2015-11-16)

- **Architecture**
  - Report external services files that may be in the repository
- **Report**
  - Report nested dirname calls (may be changed in PHP 7)
- **Analysis**
  - Better spotting of static loops
  - Don't confuse $globals and $GLOBALS
- **Tokenizer**
  - Rewrote support for As in classes.
  - Fixed arguments that were indexed as Void
  - Trimmed code

Version 0.3.10 (Silver Horned King, 2015-11-09)

- **Architecture**
  - Centralized call to cypher.
- **Report**
  - Sped up several analyzes
- **Analysis**
  - Fixed naming bug with reflexion
  - Support class name in arrays, short syntax
  - Report Relay Functions
  - More PHP 7 incompatibilities reports

- **Tokenizer**
  - Support for 7.1 compilation (dev only)
  - Added cakephp to external libraries
  - Fixed parsing bug with static (as property definition)
  - Fixed 'count' in sequences from Function
  - Rewrote Argument detection (when there is no parenthesis)

Version 0.3.9 (Golden Horned King, 2015-11-02 up)

- **Architecture**
  - Cleaned code with Exakat
- **Analysis**
  - Refined report about double assignation
  - Fixed argument counting in Function Definition
  - Better support of array in Locally Used Properties
  - Updated Composer database
- **Tokenizer**
  - Fixed a bug that ignored Blocks
  - Fixed a rare bug with echo and the following arguments

Version 0.3.8 (Baihuaxiu, 2015-10-26)

- **Architecture**
  - Cleaned too many display (they go to log now), leaving commandline empty (or -v)
  - A lot more PHP 7 incompatibilities spotted
- **Report**
  - Added the list of global variables in the projects (if any)
  - Fixed reports for PHP 5.2 (they were ignored)
- **Analysis**
  - Better handling of composer in unresolved classes
  - Spot setlocale with string (PHP 7)
  - Spot string unpacking (PHP 7)
  - Upgraded static method call, to avoid classes of the same family
  - Report eval without try/catch
  - Report preg_replace with /e
  - Fixed report for empty list()
  - Spot hexadecimal in strings
  - Report usort (and co) as incompatibilities between PHP 7 and 5
- **Tokenizer**
  - Fixed edge case with Sign and namespaced function

  - Added xajax, adodb and gacl as common library
  - Fixed arguments in short array syntax
  - Fixed case where [3] was spotted inside a string

Version 0.3.7 (Yellow Robe Demon, 2015-10-19)

- **Architecture**
  - Added and reviewed many UT. More stability.
- **Report**
  - Fixed the report of the actual version of PHP being used.
  - Non-run analysis are not marked with a stethoscope
  - Report now report closures and not the containing method
  - Removed some dashboard that would generate empty links
- **Analysis**
  - Better spot of blocks inside Alternative syntax
  - Speed up method spotting
  - Fixed properties which were mistaken with deep definitions
- **Tokenizer**
  - Fixed fullcode for Typehint
  - Removed Ppp and moved it to Visibility

Version 0.3.6 (White Bone Demon, 2015-10-12)

- **Architecture**
  - Large speed up at Parsing stage, for large projects
  - Added git informations in Doctor
- **Tokenizer**
  - Changed processing for Arguments.
  - Support for more PHP 7 features, including Use Grouping,
  - Fixed support for ~
  - Simplified ::class handling

Version 0.3.5 (Mingyue, 2015-10-06)

- **Architecture**
  - Reported usage of array constants, improving backward compatibility
  - Checked running on PHP 7
- **Report**
  - Added Definition annex
  - Fixed 'version incompatible' report that was mistaken with 'no result'
  - List all directives being modified in the code
  - List more directives that should be set for production.

- **Analysis**
  - Reworked the Themes about compatibility.
  - Added many tests for PHP 7.0 compatibility
  - Sped up UsedMethod analysis
  - Added support for PHP 7 feature : Unicode Escape Sequences, New functions/classes/interfaces, Removed Functions,
- **Tokenizer**
  - Changed processing for Empty PHP code
  - Support Variable Indirection for both PHP 5 and 7 (depends on exec version)
  - Avoid ignoring all code when finding External Libraries
  - Fixed edge cases with declare() when it is conditional.
  - Support for PHP 7's f()()()

Version 0.3.4 (Qingfeng, 2015-09-28 up)

- **Architecture**
  - Added token_limit configuration to avoid running too large project (default is 1 000 000)
  - Several new tools for internal consistency check.
  - Removed support for neo-contrib's gremlin plugin
- **Report**
  - Report libraries that were found and ignored
- **Analysis**
  - Sped up queries that required previous analysis or multiples atoms
  - Spot global keywords inside loops (perf)
  - Better spotting of Composer classes
  - Report double assignations
- **Tokenizer**
  - Added support for Anonymous classes (PHP 7)
  - Fixed namespace manipulations (They weren't lower case)
  - Mark constants as fail back globals or local to the namespace
  - Support Null Coalesce operator (PHP 7)
  - Fixed rare case for empty strings and noDelimiter

Version 0.3.3 (Immortal Zhenyuan, 2015-09-21)

- **Architecture**
  - Removed some shell stderr that leaked to the main script
- **Report**
  - Added the list of used analysis
  - favicon is now used in the report (Devoops)

  - Fixed count report for Else
  - Fixed directive reports for trader, bcmath and ldap.
- **Analysis**
  - Rebuild the composer database
  - Fixed htmlentities analyze
  - Spot usage of 'substr($s, $p, +/- 1)' and recommend '$s[$p]'
- **Tokenizer**
  - Fixed Multiplication with instantiation

Version 0.3.2 (Tiger Vanguard, 2015-09-14)

- **Report**
  - Added link back from analysis to its themes.
- **Analysis**
  - Useless Returns are now Trait compatible
  - Optimized Composer validation
  - Removed IsKnownVendor analyze (replaced by Composer)
  - Spot inconsistent concatenations ("$a b".$c)
- **Tokenizer**
  - Fixed situation where forgotten white spaces didn't have a file
  - Removed DELETE and S_STRING index
  - Fixed compatibility with Debian (shell commands)
  - Added UT for and / && precedence versus =
  - Fixed identification of empty instructions (Functions / Closure have different behaviors)

Version 0.3.1 (Yellow Wind Demon, 2015-09-03)

- **Architecture**
  - Removed usage of Everyman dependencies
  - Added support for Neo4j Authentication
  - Added a JobQueue
  - Cleaned code with exakat itself
- **Report**
  - Added Dump to SQLITE format for custom manipulations of the results
  - Added new collection of rules for Calesthenics (dev)
  - Updated composer database
  - Now reporting found Composer.
- **Analysis**
  - Fixed Compilation spotting
- **Tokenizer**

  - Fixed an edge case with Sign, when used in a concatenation

Version 0.3.0 (Lingxuzi, 2015-Aug-25)

- **Architecture**
  - Moved to Thinkaurelius's gremlin plug-in, Neo4j 2.2.4 and Java 8.
- **Report**
  - Added a view by File
  - Added sorting for results (by file and by analyze)
- **Analysis**
  - Spot functions whose results should be checked before they are used
  - Spot breaks/continue out of a loop
  - Exports all the results in a dump.sqlite file
- **Tokenizer**
  - Fixed a minor bug with ::class (messed up the {} counts)
  - removed dependency to Everyman's Neo4j classes.
  - Added a step that removes big and identifiable libraries in PHP (such as tcpdf, jpgraph, etc..)

Version 0.2.5 (Scholar in a White Robe, 2015-Aug-17)

- **Report**
  - List the files that are ignored in the annex
- **Analysis**
  - Updated Knowledge Database for memcache, aliases, zlib, standard
  - Added more directives to Review
  - Added support for xhprof
- **Tokenizer**
  - Fixed bug with Else (Not-alternative)
  - Fixed Sequence creation with If-Then
  - Yield may be assigned
  - Removed one Tokenizer's operation (filterOut2)
  - Fixed priorities with Concatenation, Multiplication, Additions
  - Process Echo and Print separately
  - Automatically removes common bundled libraries to reduce app size

Version 0.2.4 (Black Wind Demon, 2015-06-22)

- **Analysis**
  - Rebuild the composer database
  - Lots of new extensions supported : ev, libevent, event, php-ast, wikidiff2, proctitle, inotify, ibase, amqp, geoip, output buffering,
  - Report errors when non-variables are returned by reference

  - Marked more analyzes for PHP 7
  - Fixed Unpreprocess structures with split
  - Upgraded spotting for useless parenthesis
  - Added a check ++$i vs $i++;
  - Exclude abstract methods from Variables Used Once
  - Added new directives
  - Also check for ASP Tags
- **Tokenizer**
  - Fixed the fullpath for functions when they are not defined in the code
  - Upgraded support for Return Type (PHP 7.0+)
  - error_reporting with -1 is OK
  - Fixed a precedence problem with & and &&
  - Refactored Ifthen token to support return type
  - Added a kill command when cleaning Database

Version 0.2.3 (Techu Shi, 2015-06-22)

- **Analysis**
  - Report usage of Return Typehint, and Scalar Typehint
  - Report usage of classes that used to return null on new
  - Report useless abstract classes
- **Tokenizer**
  - Upgraded 'init' command, to handle various VCS
  - Added support for Return Typehint

Version 0.2.2 (Xiong Shangjun, 2015-06-16)

- **Analysis**
  - Now spots short assignations
  - More UselessInstructions spotted
  - Ignore Unset as modified values in loops
- **Tokenizer**
  - Added support for PHP7 new tokens (T_SPACESHIP, T_COALESCE, T_YIELD_FROM)
  - Split loading into more .csv files for lighter and more robust queries
  - Better support for arrays [1,2,3] as functioncall (just like array())
  - Process tokens by batches of 800
  - Clean vertex at each queries, not Sequence

Version 0.2.1 (General Yin, 2015-06-02)

- **Analysis**
  - sizeOf may have 2 arguments

  - 2 clearPHP link added in documentation
- **Tokenizer**
  - Fixed bug with Bitshift and Addition
  - Fixed bug with Sequence when merging sequences
  - Fixed bug with String and Addition
  - Fixed Visibility in Use instruction
  - Foreach accepts Constants as Source
  - Fixed special case for nested IfThen

Version 0.2.0 (Demon of Confusion, 2015-05-15)

- First version

CHAPTER

THREE

STANDARD INSTALLATION

Here are 2 tutorials to run Exakat on your code. You may install exakat with the *projects* folder, and centralize multiple audits in one place, or run exakat in-code, right from the source code. You may also run exakat on a host machine (aka, bare-metal), or as a docker container.

- Bare metal install
- with projects folder
- within the code

All tutorials follow the same steps :

- Project initialisation
- Audit run
- Reports access

3.1 Standard install, with projects folder

3.1.1 Installation

Refer to the *Installation* section in the ADMINISTRATOR GUIDE to install Exakat.

3.1.2 Initialization

First, fetch the code to be audited. This has to be done once. Later, the code may be updated.

```
php exakat.phar init -p sculpin -R https://github.com/sculpin/sculpin
```

This command inits the project in the 'projects' folder, with the name 'sculpin', then clone the code with the provided repository. By default, the cloning is done by git.

Exakat requires a copy of the code to run an audit. When accessing via VCS, such as git, mercurial, svn, etc., read-only access is sufficient and recommended. Exakat doesn't write anything in the code, nor stage, commit or push.

More information on options in the _Commands.

3.1.3 Execution

After initialization, you may run an audit :

```
php exakat.phar project -p sculpin
```

This command runs the whole auditing cycle : code loading, code audits and report building. It is ready to work with the initial configuration. The configuration may be adapted later.

Once the run is finished, the reports are place in the folder *projects/sculpin/*. For example, a HTML version is available in *projects/sculpin/report/index.html*. Simply open the 'projects/sculpin/report/index.html' file in a browser.

3.1.4 More reports

Once the 'project' command has been fully run, you may run the 'report' command to create different reports. Usually, 'Diplomat' has the most complete report, and other focused reports are available.

It is possible to create the remaining reports, once an audit has been finished. Here is an example of a Uml report.

```
php exakat.phar report -p sculpin -format Uml -file uml
```

This export the current project in UML format. The file is called 'uml.dot' : dot is added by exakat, as the report has to be opened by graphviz compatible software.

The full list of available reports are in the *Reports* section.

Once it is finished, the reports are in the folder *projects/sculpin/* under different names.

3.1.5 New run

After adding some modifications in the code, commit them in the repository. Then, run :

```
php exakat.phar update  -p sculpin
php exakat.phar project -p sculpin
```

This command updates the repository to the last modification, then runs the whole audit again. If the code is not using a VCS repository, then the update command has no effect on the code. You should update the code manually, by replacing it with a newer version.

Once the audit is finished, the reports are in the same folders as previously : *projects/sculpin/report* (HTML version).

The reports replace any previous report. To keep a report of a previous version, move it away from the current location, or give it another name.

3.2 Bare metal install, within the code

This tutorial runs exakat from the source code repository.

3.2.1 Installation

Refer to the *Installation* section in the ADMINISTRATOR GUIDE to install Exakat.

3.2.2 Initialization

Go to the directory that contains the source code.

Create a configuration file called *.exakat.yml*, with the following content :

```
project: "name"
```

This is the minimum configuration for that file. It is sufficient for this tutorial, and we will produce more reports later. You will read more about _Configuration in the dedicated section.

3.2.3 Execution

After creating the configuration file above, an audit may be run :

```
exakat project
```

This command runs the whole cycle : code loading, code audits and report building. It works without initial configuration.

Once it is finished, the reports are in the current folder. Simply open the 'report/index.html' file in a browser.

3.2.4 More reports

When running exakat inside code, audits must be configured before the run of the audit.

Edit the .exakat.yml file, and update the file with the following lines :

```
project: "name"
project_reports:
  - Uml
  - Plantuml
  - Ambassador
```

Then, run the audit as explained in the previous section.

This configuration produces 3 reports : "Ambassador", which is the default report, "Uml", available in the 'uml.dot' file, and "Plantuml", that may be opened with plantuml.

The full list of available reports are in the 'Command' section.

3.2.5 New run

After some modifications in the code, run again exakat with the same command than the first time. Since the audit is run within the code source, no update operation is needed.

Check the *config.ini* file before running the audit, to check if all the reports you want are configured.

```
exakat project
```

CHAPTER

FOUR

DOCKER INSTALLATION

Here are 2 tutorials to run Exakat on your code. You may install exakat with the projects folder, and centralize your audits in one place, or run exakat in-code, right from the source code. You may also run exakat with a bare-metal installation, or as a docker container.

- Docker container
- with projects folder
- within the code

All four tutorials offer the same steps : + Project initialisation + Audit run + Reports access

4.1 Docker container, with projects folder

This tutorial runs exakat audits, when source code are organized in the *projects* folder. Any folder will do, since exakat is now hosted in the docker image.

4.1.1 Initialization

Go to the directory that contains the 'projects' folder.

Init the project with the following command :

```
docker run -it --rm -v /Users/famille/Desktop/analyzeG3/projects:/usr/src/exakat/
↪projects exakat/exakat:latest exakat init -p sculpin -R https://github.com/sculpin/
↪sculpin -git
```

This will create a 'projects/sculpin' folder, with various documents and folder. The most important folder being 'code', where the code of the project is fetched, an cached. See _Commands for more details about the *init* command.

4.1.2 Execution

After creating the project, an audit may be run from the same directory:

```
docker run -it --rm -v /Users/famille/Desktop/analyzeG3/projects:/usr/src/exakat/
↪projects exakat/exakat:dev exakat project -p sculpin
```

This command runs the whole cycle : code loading, code audits and report building.

Once it is finished, the report is available in the *projects/sculpin/report/* folder. Open *projects/sculpin/report/index.htmll* with a browser.

4.1.3 More reports

When running exakat with the projects folder, reports may be configured before the run of the audit, in the config.ini file, or in command line, or extracted after the run.

After a first audit, use the *report* command. Here is an example with the *Uml* report.

```
docker run -it --rm -v /Users/famille/Desktop/analyzeG3/projects:/usr/src/exakat/
↪projects exakat/exakat:dev exakat report -p sculpin -format Uml
```

Reports may only be build if the analysis they depend on, were already processed.

In command line, use the *-format* option, multiple times if necessary.

```
docker run -it --rm -v /Users/famille/Desktop/analyzeG3/projects:/usr/src/exakat/
↪projects exakat/exakat:dev exakat project -p sculpin -format Uml
```

In config.ini, edit the *projects/sculpin/report/config.ini* file, and add the following lines :

```
project_reports[] = 'Uml';
project_reports[] = 'Plantuml';
project_reports[] = 'Ambassador';
```

Then, run the audit as explained in the previous section.

The full list of available reports are in the _Reports section.

4.1.4 New run

After adding some modifications to the code and committing them, you need to update the code before running it again : otherwise, it will run on the previous version of the code.

```
docker run -it --rm -v /Users/famille/Desktop/analyzeG3/projects:/usr/src/exakat/
↪projects exakat/exakat:dev exakat update -p sculpin
docker run -it --rm -v /Users/famille/Desktop/analyzeG3/projects:/usr/src/exakat/
↪projects exakat/exakat:dev exakat project -p sculpin
```

4.2 Docker container, within the code folder

This tutorial runs exakat audits from the source code repository, with a docker container.

4.2.1 Installation

Refer to the _Installation section to install Exakat on docker.

4.2.2 Initialization

Go to the directory that contains the source code.

Create a configuration file called *.exakat.yml*, with the following content :

```
project: "name"
```

This is the minimum configuration for that file. You may read more about _Configuration in the dedicated section.

4.2.3 Execution

After creating the configuration file, an audit may be run from the same directory:

```
docker run -it --rm -v $(`pwd`):/src exakat/exakat:latest exakat project
```

This command runs the whole cycle : code loading, code audits and report building. It works without initial configuration.

Once it is finished, the report is displayed on the standard output (aka, the screen).

4.2.4 More reports

When running exakat inside code, reports must be configured before the run of the audit : they will be build immediately.

Edit the .exakat.yml file, and add the following lines :

```
project: "name"
project_reports:
  - Uml
  - Plantuml
  - Ambassador
```

Then, run the audit as explained in the previous section.

This configuration produces 3 reports : "Ambassador", which is the default report, "Uml", available in the 'uml.dot' file, and "Plantuml", that may be opened with plantuml.

The full list of available reports are in the _Reports section.

4.2.5 New run

After adding some modifications to the code, run again exakat with the same command than the first time. Since the audit is run within the code source, no explicit update operation is needed.

Check the *.exakat.yml* file before running the audit, to check if all the reports you want are configured.

```
docker run -it --rm -w /src -v $(pwd):/src --entrypoint "/usr/src/exakat/exakat.phar"␣
↪exakat/exakat:latest project
```

CHAPTER

FIVE

TUTORIALS

- *First audit with Exakat*
- *First audit with Exakat (Docker)*
- *First audit within the code*
- *First audit within the code (Docker)*
- Prepare for PHP migration with Exakat []=>
- Installing Exakat to monitor several projects []=>

5.1 First audit with Exakat

In this tutorial, we'll use an open source project called 'sculpin' as a guinea pig. You can replace it with any accessible source code of yours. The name of the project is also 'sculpin', though this is both self-descriptive and arbitrary.

5.1.1 Init a project

```
php exakat.phar doctor
php exakat.phar init -p sculpin -R https://github.com/sculpin/sculpin.git
```

After this step, there is a folder 'sculpin' inside the 'projects' folder. The files will be stored there.

5.1.2 Run exakat

```
php exakat.phar project -p sculpin -v
```

This command runs the default configuration over the requested code source. After displaying the different steps, it provides a first report: Diplomat.

Open the report, with a web browser: it is located in projects/sculpin/diplomat.

Congratulations, this is your first audit.

5.2 First audit with Exakat (Docker)

In this tutorial, we'll use an open source project called 'sculpin' as a guinea pig. You can replace it with any accessible source code of yours. The name of the project is also 'sculpin', though this is both self-descriptive and arbitrary.

5.2.1 Init a project

```
docker run -it -v $(pwd)/projects:/usr/src/exakat/projects --rm --name my-exakat exakat/
↪exakat exakat init -p sculpin -R https://github.com/sculpin/sculpin.git
```

After this step, there is a folder 'sculpin' inside the 'projects' folder. The files will be stored there.

```
docker run -it -v /home/my-user/.ssh:/home/exakat/ssh -v $(pwd)/projects:/usr/src/exakat/
↪projects --rm --name my-exakat exakat/exakat exakat project -p sculpin  -v
```

5.2.2 Run exakat

```
docker run -it -v $(pwd)/projects:/usr/src/exakat/projects --rm --name my-exakat exakat/
↪exakat exakat project -p sculpin -v
```

This command runs the default configuration over the requested code source. After displaying the different steps, it provides a first report: Diplomat.

Open the report, with a web browser: it is located in projects/sculpin/diplomat.

Congratulations, this is your first audit.

5.3 First audit within the code (Local)

This tutorial show how to run exakat within the code source itself, instead of running it with a separate folder. This is adapted to reports that are displayed directly in the terminal.

As a pre requisite, you should have installed Exakat on your system, and, in a different folder, hold some source code that needs to be audited.

5.3.1 Init the project

Exakat recognizes the code as an auditable source code when it can find a `.exakat.ini` or `.exakat.yaml` file in the source. YAML has priority when both are present.

The `.exakat.yaml` file :

```
project = "exakat";
project_reports[] = "Text";
```

The `.exakat.yaml` file :

5.4 ::

project: exakat project_reports:

- Text

In case both files are found, the `.INI` file has precedence.

5.4.1 Run exakat

```
php /path/to/installation/exakat.phar project -v
```

This command runs the default configuration over the code source. It displays immediately the audit as a Text file, directly in the terminal.

5.5 First audit within the code (Docker)

In this tutorial, we show how to run exakat within the code source itself, instead of running it with a separate folder. We'll use a Docker installation for that.

As a pre requisite, you should have pulled the exakat/exakat:latest on your docker installation; and, in a different folder, hold some source code that needs to be audited.

5.5.1 Init the project

Exakat recognizes the code as an auditable source code when it can find a `.exakat.ini` or `.exakat.yaml` file in the source. YAML file has priority when both are present.

The `.exakat.yaml` file :

```
project = "exakat";
project_reports[] = "Text";
```

The `.exakat.yaml` file :

5.6 ::

project: exakat project_reports:

- Text

In case both files are found, the `.INI` file has precedence.

5.6.1 Run exakat

```
docker run -it -v $(pwd):/src --rm --name my-exakat exakat/exakat exakat project
```

This command runs the default configuration over the code source. The report is displayed immediately in the terminal.

Congratulations, this is your first audit.

CHAPTER

SIX

OVERVIEW

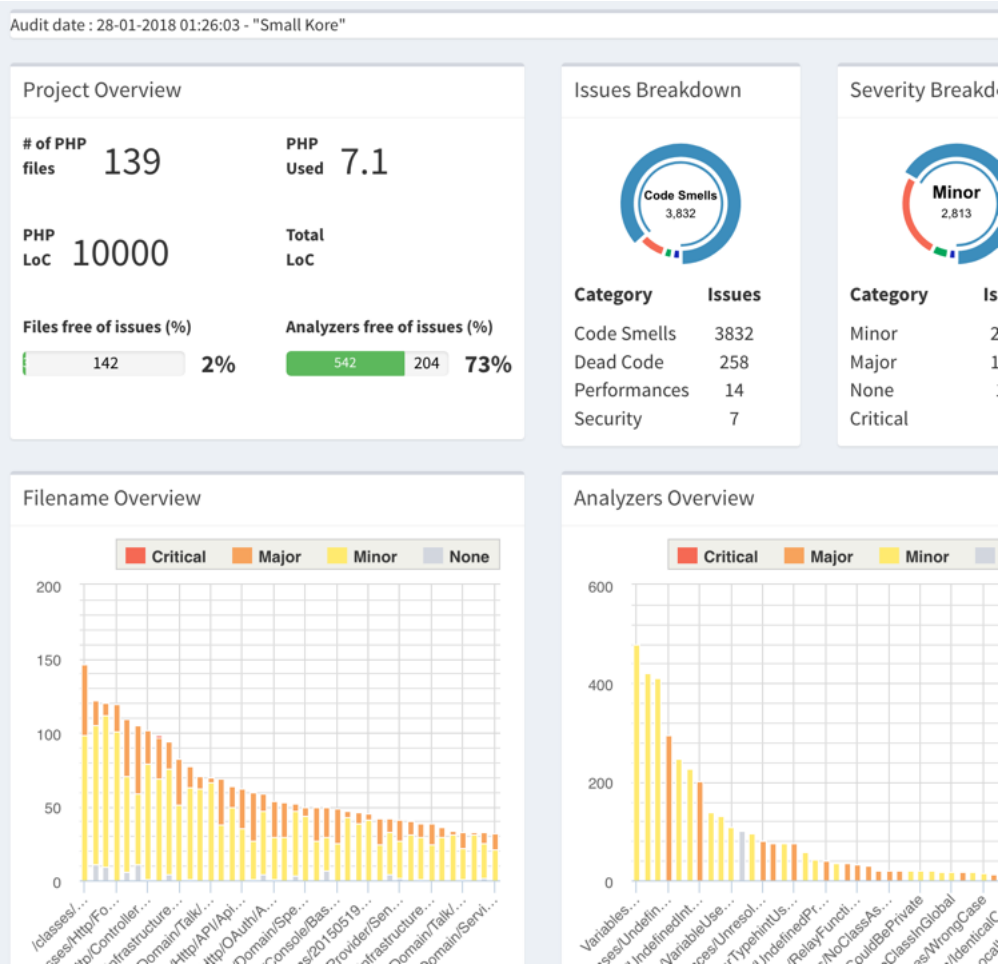
6.1 Summary

- *1644 analyzers*
- **`Compatible with PHP 5.2 to 8.4`_**
- **`Migration guide from 5.2 to 8.4`_**
- *Modernize your code*
- *Detect code smells or bugs that impact the code*
- *appinfo(): the list of PHP features*
- *List of significant PHP directives*
- *Framework and application support*
- *Hierarchy Diagrams*
- *Code visualizations*

6.2 1644 analyzers

There are currently 1644 different analyzers that check the PHP code to report code smells. Analyzers are inspired by PHP manual, migration documents, community good practices, computer science or simple logic.

Some of them track rare occurrences, and some are frequent. Some track careless mistakes and some are highly complex situations. In any case, exakat has your back, and will warn you.



6.3 Compatible with PHP 5.2 to 8.2

The Exakat engine audits code with PHP versions that range from PHP 5.2 to PHP 8.3-dev.

The Exakat engine itself runs on PHP 7.x+ and is regularly checked on those versions. It is possible to run Exakat on 7.2 and audit a code with PHP 5.6.

6.4 Migration guidew from 5.2 to 8.2

Every middle version of PHP comes with its migration guide from the manual, and from community's feedback. Incompatibilities are included as analyzers in Exakat, and report everything they can find that may prevent you from moving to the newer version.

Although they won't catch it all, they do reduce the amount of unexpected surprises by a lot.

Version	Name	7.3	7.2	7.1	7.0	5.6	5.5	5.4
	Compilation		⚠	⚠	⚠	⚠	⚠	
5.4+	Methodcall On New	✓	✓	✓	✓	✓	✓	✓
5.5+	Cant Use Return Value In Write Context	✓	✓	✓	✓	✓	✓	⚠
5.5+	::class	✓	✓	✓	✓	✓	✓	⚠
5.5+	Empty With Expression	✓	✓	✓	✓	✓	✓	⚠
5.6+	Constant Scalar Expressions	✓	✓	✓	✓	✓	⚠	⚠
7.0-	Abstract Static Methods	⚠	⚠	⚠	⚠	✓	✓	✓
7.0-	Null On New	⚠	⚠	⚠	⚠	✓	✓	✓
7.0-	ext/apc	⚠	⚠	⚠	⚠	✓	✓	✓
7.0-	ext/mysql	⚠	⚠	⚠	⚠	✓	✓	✓
7.0-	Reserved Keywords In PHP 7	⚠	⚠	⚠	⚠	✓	✓	✓
7.0+	Parenthesis As Parameter	✓	✓	✓	✓	⚠	⚠	⚠
7.1-	New Functions In PHP 7.1	⚠	⚠	⚠	✓	✓	✓	✓
7.2-	PHP 7.2 Deprecations	⚠	⚠	✓	✓	✓	✓	✓
7.2-	New Functions In PHP 7.2	⚠	⚠	✓	✓	✓	✓	✓
7.2-	PHP 7.2 Removed Functions	⚠	⚠	✓	✓	✓	✓	✓
5.4+	Binary Glossary							
5.5+	Const With Array							
5.5+	Use password_hash()							

6.5 Modernize your code

Migrations are too often considered over when incompatibilities are removed. In fact, the best is still to come : using the new features. Or, using the new features from previous versions, that were forgotten. Exakat dedicates a whole category of suggestions to modern PHP features that should be used now.

Visibility recommendations

Name	Value	None (public)	Public	Protected	Private	Consta
class AuthUser						
STATUS_DEL	-1	★		★	★	
STATUS_NORMAL	1	★		★	★	
IS_SUPER_NO	0	★				
IS_SUPER_YES	1	★				
public static function tableName( ) { /**/ }		★	★			
public function rules( ) { /**/ }		★	★	★		
public function attributeLabels( ) { /**/ }		★				
public static function findByUsername($username) { /**/ }		★	★	★		
public function validatePassword($password) { /**/ }		★				
public function setPassword($password) { /**/ }		★				
public static function findIdentity($id) { /**/ }		★	★	★		
public static function findIdentityByAccessToken($token) { /**/ }		★	★	★		
public function getId( ) { /**/ }		★				

6.6 Detect code smells or bugs that impact the code

Every minor version of PHP comes with bug fixes and modifications at the function level. Some special situations are better handled, and that may have impact in your code. Every modified function, class, trait or interface that is also found in your code is reported here, giving a good overview of the impact of every minor version.

Safe bet : keep up to date!

PHP Minor versions impact report

This is the list of bugfixes, found in minor versions of PHP that may impact your code.

Title	7.2	7.1	7.0	5.6	5.5	p s
fread not free unused buffer	7.2.1	7.1.13	-	-	-	-
putenv does not work properly if parameter contains non-ASCII unicode character	7.2.1	7.1.13	-	-	-	-
Invalid opcode 138/1/1	7.2.1	-	-	-	-	-
debug info of Closures of internal functions contain garbage argument names	-	7.1.11	7.0.25	-	-	-
applied upstream patch for CVE-2016-1283	-	7.1.11	7.0.25	-	-	-
SplDoublyLinkedList::setIteratorMode masks intern flags	-	7.1.11	7.0.25	-	-	-
incorrect behavior of AppendIterator::append in foreach loop	-	7.1.10	7.0.24	-	-	-
AppendIterator::append() is broken when appending another AppendIterator	-	7.1.10	-	-	-	-
null pointer dereference in _function_string	-	7.1.9	7.0.23	-	-	-
Unserialize ArrayIterator broken	-	7.1.9	7.0.23	-	-	-
Crash in recursive iterator destructors	-	7.1.9	7.0.23	-	-	-
Main CWD initialized with wrong codepage	-	7.1.9	-	-	-	-
Appending AppendIterator leads to segfault	-	7.1.9	-	-	-	-
References to deleted XPath query results	-	7.1.7	7.0.21	-	-	-
Segfault when cast Reflection object to string with undefined constant	-	7.1.7	7.0.21	-	-	-
null coalescing operator failing with SplFixedArray	-	7.1.7	7.0.21	-	-	-

6.7 appinfo(): the list of PHP features

Do you know the PHP features that your application rely upon ? Recursivité, reflexion, backticks or anonymous classes ? Exakat collect all those features, and sum them up in one nice table, so you know all of it.

Directive list

This is an overview of the recommended directives for your application. The most important directives have been collected here, for a quick review. The
manual, when applicable. When an extension is missing from the list below, either it as no specific configuration directive, or it is not used by the current

Directive	Suggestion	Description
date		
date.timezone	Europe/Amsterdam	It is not safe to rely on the system's timezone settings. Make sure the directive date.time
mbstring		
default_charset	UTF-8	This directive handle encoding for input, internal and output. default_charset
mbstring.internal_encoding	Do not rely on it	This directive is deprecated or removed since PHP 5.6. It is recommended to use the "de
Extra configurations		mbstring runtime configuration
pcre		
Extra configurations		PCRE runtime configuration
standard		
memory_limit	120	This sets the maximum amount of memory in bytes that a script is allowed to allocate. T eating up all available memory on a server. It is recommended to set this as low as possi
max_execution_time	90	This sets the maximum amount of time, in seconds, that a script is allowed to run. The l also, the better has the script to be written. Avoid really large values that are only useful
expose_php	Off	Exposes to the world that PHP is installed on the server. For security reasons, it is better
display_errors	Off	This determines whether errors should be printed to the screen as part of the output or
error_reporting	E_ALL	Set the error reporting level. Always set this high, so as to have the errors reported, and
log_errors	On	Always log errors for future use
error_log	Name of a writable file, suitable for logging.	Name of the file where script errors should be logged.
Extra configurations		Standard runtime configuration
file		

6.8 List of significant PHP directives

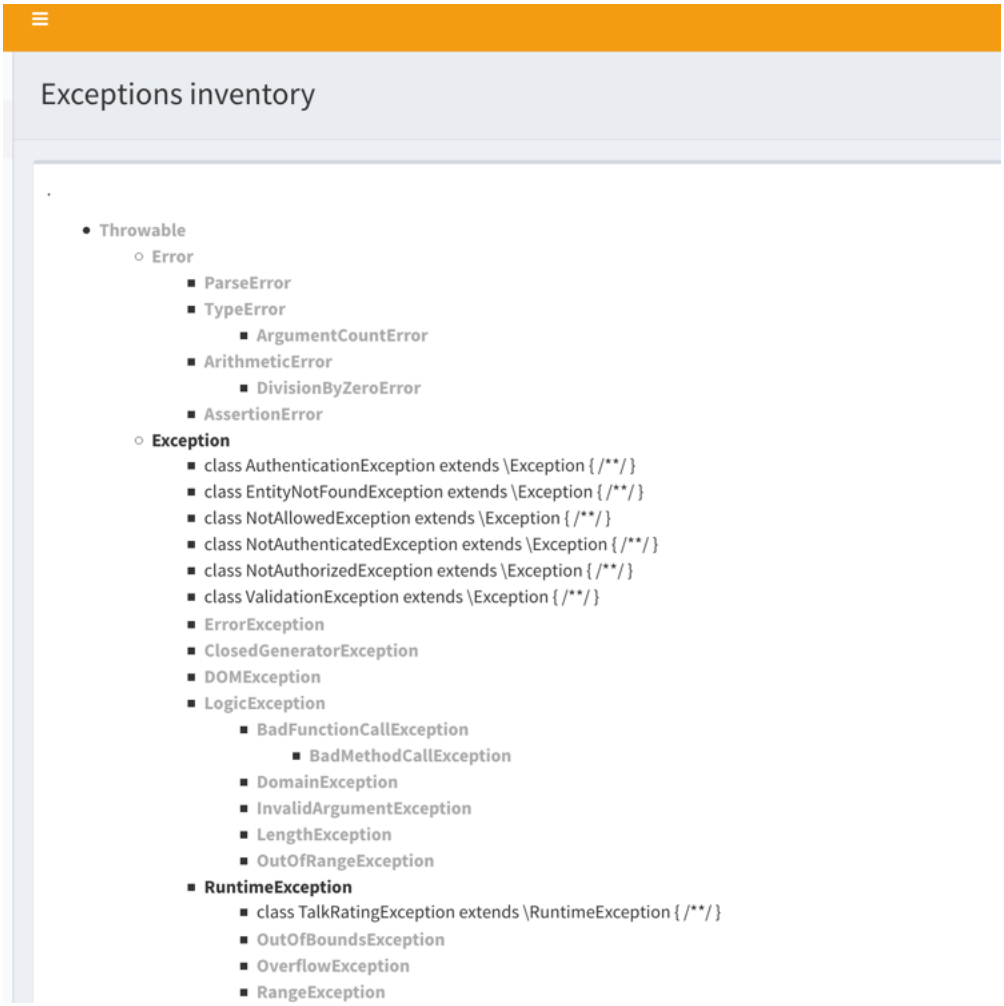
Exakat recommends which PHP directives to check while preparing your code for production. If 'memory_limit' is an ever green, may be 'post_max_size' (linked to file_upload), or assertions shouldn't be forgotten. Based on feature and extension usage, it also list the most important directives, and leads you to the full manual list, in case you want to fine tune it to the max. Use it as a reminder.

6.9 Framework and application support

Exakat provides support for framework and application specific rules. Supported frameworks includes Cakephp, Codeigniter, Drupal, Laravel, Melis, Slim, Symfony, Wordpress and Zend Framework

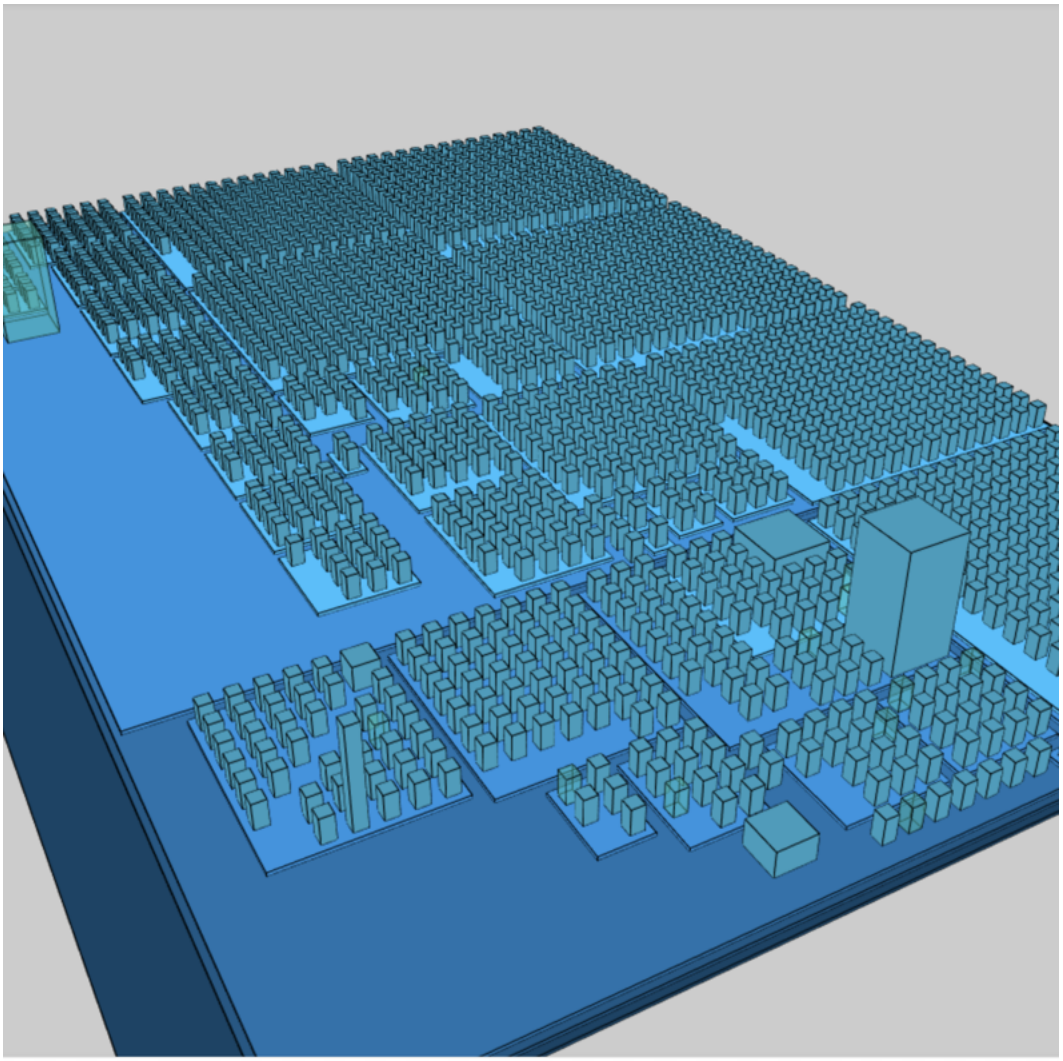
6.10 Hierarchy Diagrams

Exakat documents the code automatically with several diagrams, such as : * UML class diagramm, based on inheritance (classes), usage (traits) and implementations (interfaces), grouped by namespaces. * The Exceptions tree * The traits tree and the trait matrix



6.11 Code visualizations

Exakat documents the code automatically with several diagrams, such as : a full UML class diagramm, based on inheritance (classes), usage (traits) and implementations (interfaces), grouped by namespaces.



CHAPTER

SEVEN

PHP VERSION

7.1 Compatible with PHP 5.2 to 8.0-dev

The Exakat engine audits code with PHP versions that range from PHP 5.2 to PHP 8.0-dev.

The Exakat engine itself runs on PHP 7.x+ and is regularly checked on those versions. It is possible to run Exakat on 7.2 and audit a code with PHP 5.6.

CHAPTER

EIGHT

LIBRARY & FRAMEWORK SUPPORT

8.1 Summary

- Supported Rulesets
- Supported Reports
- Supported PHP Extensions
- Applications
- Recognized Libraries
- New analyzers
- External services
- PHP Error messages
- Exakat Changelog

8.2 External Library Support

Libraries that are popular, large and often included in repositories are identified early in the analysis process, and ignored. This prevents Exakat to analysis some code foreign to the current repository : it prevents false positives from this code, and make the analysis much lighter. The whole process is entirely automatic.

Those libraries, or even some of the, may be included again in the analysis by commenting the ignored_dir[] line, in the projects/<project>/config.ini file.

- ADOdb
- atoum
- BBQ
- CakePHP
- CI xmlRPC
- CPDF
- Codeception
- DomPDF
- FPDF
- phpGACL

- gettext Reader
- jpGraph
- HTML2PDF
- HTML Purifier
- http_class
- IDNA convert
- lessc
- magpieRSS
- MarkDown Parser
- Markdown
- mpdf
- oauthToken
- passwordHash
- pChart
- pclZip
- Propel
- phpExecl
- phpMailer
- PHPSpec
- PHPUnit
- qrCode
- Services_JSON
- sfYaml
- SimplePie
- SimpleTest
- swift
- Smarty
- Symfony Unit Test
- tcpdf
- text_diff
- text highlighter
- tfpdf
- Typo3TestingFramework
- UTF8
- Xajax
- Yii

- Zend Framework

8.3 External Services Support

List of external services whose configuration files has been commited in the code.

- ahoy - ahoy.yml, .ahoy.l3d.yml
- Apache - .htaccess, htaccess.txt
- Apple - .DS_Store
- appveyor - appveyor.yml, .appveyor.yml
- ant - build.xml
- ansistrano - .ansistrano
- apigen - apigen.yml, apigen.neon
- arcunit - .arcunit
- artisan - artisan
- atoum - .bootstrap.atoum.php, .atoum.php, .atoum.bootstrap.php
- arcanist - .arclint, .arcconfig
- asp.net - web.config
- bazaar - .bzr
- babeljs - .babel.rc, .babel.js, .babelrc, babel.config.js
- behat - behat.yml.dist, behat.yml
- bitbucket - bitbucket-pipelines.yml, bitbucket-pipelines.yml.template, bitbucket_packagist_scripts.json
- box2 - box.json, box.json.dist
- bower - bower.json, .bowerrc
- browserslist - .browserslistrc
- captainhook - captainhook.json
- circleCI - circle.yml, .circleci
- codacy - .codacy.json
- codeception - codeception.yml, codeception.dist.yml
- codecov - .codecov.yml, codecov.yml
- codeclimate - .codeclimate.yml
- composer require checker - composer-require-checker.json
- composer - composer.json, composer.lock, vendor, composer.phar
- couscous - couscous.yml
- Code Sniffer - .php_cs, .php_cs.dist, .phpcs.xml, php_cs.dist, phpcs.xml, phpcs.xml.dist, ruleset.xml, .phpcs.xml.dist
- coveralls - .coveralls.yml
- crowdin - crowdin.yml

- cvs - CVS
- cypress - cypress.config.js, cypress.config.ts
- deptrack - deptrac.yaml
- direnv - .envrc
- docheader - .docheader
- docker - .dockerignore, .docker, docker-compose.yml, docker-compose.yaml, Dockerfile, .env.docker
- dotenv - .env.dist, .env, .env.example
- doxygen - Doxyfile
- docblox - docblox.dist.xml
- drone - .dockerignore, .docker
- drupalci - drupalci.yml
- drush - drush.services.yml
- editorconfig - .editorconfig
- eslint - .eslintrc, .eslintignore, eslintrc.js, .eslintrc.js, .eslintrc.json
- Exakat - .exakat.yaml, .exakat.yml, .exakat.ini
- favicon - favicon.ico
- Flakes - flake.lock, flake.nix
- flintci - .flintci.yml
- garden - garden.yaml
- gherkin - .gherkin-lintrc
- git - .git, .gitignore, .gitattributes, .gitmodules, .mailmap, .githooks, .git-hooks
- gitbook - .gitbook.yaml
- gitpod - .gitpod.yml, gitpod.code-workspace, .gitpod.dockerfile, .gitpod.Dockerfile
- github - .github
- gitlab - .gitlab-ci.yml
- gulp - gulpfile.js, gulpfile.babel.js
- grumphp - grumphp.yml.dist, grumphp.yml, grumphp.dist.yml
- gush - .gush.yml
- gruntjs - Gruntfile.js, gruntfile.js
- humbug - humbug.json.dist, humbug.json
- infection - infection.yml, .infection.yml, infection.json.dist, infection.json
- insight - .sensiolabs.yml, .symfony.insight.yaml
- jekyll - _config.yml, _config.toml
- jest - jest.config.js
- jetbrains - .idea
- jshint - .jshintrc, .jshintignore

- Laravel Mix - mix-manifest.json
- karma - ./karma.conf.js, ./karma.conf.coffee, ./karma.conf.ts, karma.conf.js
- lando - .lando.yml
- lerna - lerna.json
- mercurial - .hg, .hgtags, .hgignore, .hgeol
- Makefile - Makefile
- mkdocs - mkdocs.yml
- npm - package.json, .npmignore, .npmrc, package-lock.json
- nvm - .nvmrc
- openshift - .openshift
- pdepend - pdepend.xml, pdepend.xml.dist
- phan - .phan
- pharcc - .pharcc.yml
- phalcon - .phalcon
- phpbench - phpbench.json, phpbench.json.dist
- phpci - phpci.yml
- php-cs-fixer - .php-cs-fixer.php, .php-cs-fixer.dist.php
- Phpdocumentor - .phpdoc.xml, phpdoc.dist.xml, phpdoc.xml.dist
- phpdox - phpdox.xml.dist, phpdox.xml
- phive - phive.xml
- pint - pint.json
- phanalist - phanalist.yaml
- phinx - phinx.yml
- phpformatter - .formatter.yml
- phplint - .phplint.yml
- phpmetrics - .phpmetrics.yml.dist
- phpsa - .phpsa.yml
- phpspec - phpspec.yml, .phpspec, phpspec.yml.dist
- phpstan - phpstan.neon, .phpstan.neon, phpstan.neon.dist, phpstan-baseline.neon, phpstan.tests.neon.dist, phpstan.dist.neon
- phpswitch - .phpswitch.yml
- PHPMD - phpmd.xml, phpmd.xml.dist, phpmd_ruleset.xml
- PHPstorm - .phpstorm.meta.php
- PHPUnit - phpunit.xml.dist, phpunit.xml, phpunit.xml.legacy, phpunit.dist.xml, phpunit-unit.xml
- postcss - postcss.config.js
- prettier - .prettierrc, .prettierignore, .prettierrc.json, .prettierrc.js

- psalm - psalm.xml, psalm-baseline.xml, psalm.xml.dist
- puppet - .puppet
- qodana - qodana.yaml
- readthedocs - .readthedocs.yml, .readthedocs.yaml
- renovate - renovate.json
- rmt - .rmt.yml
- robo - RoboFile.php, robo.yml.dist
- sass-lint - .sass-link.yml
- scrutinizer - .scrutinizer.yml
- semantic versioning - .semver
- shifter - .shifter.json
- Sonar - sonar-project.properties
- Snyk - .snyk
- SPIP - paquet.xml
- stickler - .stickler.yml
- storyplayer - storyplayer.json.dist
- styleci - .styleci.yml
- stylelint - .stylelintrc, .stylelintignore, .stylelintrc.json, stylelint.config.js
- sublimelinter - .csslintrc
- symfony - symfony.lock
- svn - svn.revision, .svn, .svnignore
- tailwind - tailwind.config.js, tailwind.js
- transifex - .tx
- typescript - tsconfig.json
- Robots.txt - robots.txt
- travis - .travis.yml, .env.travis, .travis, .travis.php.ini, .travis.coverage.sh, .travis.ini, travis.php.ini, .travis.install.sh
- varci - .varci, .varci.yml
- Vagrant - Vagrantfile
- vite - vite.config.js
- visualstudio - .vscode
- vue - vue.config.js
- webpack - webpack.mix.js, webpack.config.js, webpack.ssr.mix.js
- yarn - yarn.lock, .yarnclean
- yamllint - .yamllint.yaml
- Zend_Tool - zfproject.xml

8.4 Supported PHP Extensions

PHP extensions are used to check for structures usage (classes, interfaces, etc.), to identify dependencies and directives.

PHP extensions are described with the list of structures they define : functions, classes, constants, traits, variables, interfaces, namespaces, and directives.

- ext/amqp
- ext/apache
- ext/apc
- ext/apcu
- ext/array
- ext/php-ast
- ext/bcmath
- ext/bzip2
- ext/calendar
- ext/cmark
- ext/com
- ext/crypto
- ext/CSV
- ext/ctype
- ext/curl
- ext/date
- ext/db2
- ext/dba
- ext/decimal
- ext/dio
- ext/dom
- ext/ds
- ext/eaccelerator
- ext/eio
- ext/enchant
- ext/ev
- ext/event
- Excimer
- ext/exif
- ext/expect
- ext/fam
- ext/fann

- ext/ffi
- ext/file
- ext/fileinfo
- ext/filter
- ext/fpm
- ext/ftp
- ext/gd
- ext/gearman
- ext/gender
- ext/geoip
- Geospatial
- ext/gettext
- ext/gmagick
- ext/gmp
- ext/gnupgp
- ext/grpc
- ext/hash
- ext/hrtime
- ext/pecl_http
- ext/ibase
- Ice framework
- ext/iconv
- ext/igbinary
- ext/imagick
- ext/imap
- ext/info
- ext/inotify
- ext/intl
- ext/json
- ext/judy
- ext/ldap
- ext/leveldb
- ext/libsodium
- ext/libxml
- ext/lua
- ext/lzf

- ext/mail
- ext/mailparse
- ext/math
- ext/mbstring
- ext/mcrypt
- ext/memcache
- ext/memcached
- ext/mongo
- ext/mongodb
- ext/msgpack
- ext/mssql
- ext/mysql
- ext/mysqli
- ext/ncurses
- ext/newt
- ext/nsapi
- ext/ob
- ext/oci8
- ext/odbc
- ext/opcache
- ext/opencensus
- ext/openssl
- ext/parle
- ext/password
- ext/pcntl
- ext/pcov
- ext/pcre
- ext/pdo
- ext/pgsql
- ext/phalcon
- ext/phar
- ext/pkcs11
- ext/posix
- ext/protobuf
- ext/pspell
- ext/psr

- Random extension
- ext/rar
- ext/rdkafka
- ext/readline
- ext/redis
- ext/reflection
- ext/scrypt
- ext/sdl
- ext/seaslog
- ext/sem
- ext/session
- ext/shmop
- ext/simplexml
- ext/snmp
- ext/soap
- ext/sockets
- ext/sphinx
- ext/spl
- ext/spx
- ext/sqlite
- ext/sqlite3
- ext/sqlsrv
- ext/ssh2
- ext/standard
- ext/stats
- Stomp
- String
- ext/suhosin
- ext/svm
- Swoole
- Extensions/Exttaint
- ext/teds
- ext/tidy
- ext/tokenizer
- ext/tokyotyrant
- ext/trader

- ext/uopz
- ext/uuid
- ext/v8js
- ext/varnish
- ext/vips
- ext/wasm
- ext/wddx
- ext/weakref
- ext/xattr
- ext/xdebug
- ext/xdiff
- ext/xhprof
- ext/xml
- ext/xmlreader
- ext/xmlrpc
- ext/xmlwriter
- ext/xsl
- ext/xxtea
- ext/yaml
- Extensions yar
- ext/zend_monitor
- ext/zip
- ext/zlib
- ext/0mq
- ext/zookeeper

CHAPTER

NINE

CONFIGURATION

9.1 Summary

- *Common Behavior*
- *Project Configuration*
- *In-code Configuration*
- *Commandline Configuration*
- *Specific analysis configurations*

9.2 Common Behavior

9.2.1 General Philosophy

Exakat tries to avoid configuration as much as possible, so as to focus on working out of the box, rather than spend time on pre-requisite.

As such, it probably does more work, but that may be dismissed later, at reading time.

More configuration options appear with the evolution of the engine.

9.2.2 Precedence

The exakat engine read directives from six places, with the following precedence :

1. The command line options
2. The .exakat.ini or .exakat.yaml file at the root of the code
3. The environment variables
4. The config.ini file in the project directory
5. The exakat.ini file in the config directory
6. The default values in the code

The precedence of the directives is the same as the list above : command line options always have highest priority, config.ini files are in second, when command line are not available, and finally, the default values are read in the code.

Some of the directives are only available in the config.ini files, or at the engine level.

9.2.3 Common Options

All options are the same, whatever the command provided to exakat. -f always means files, and -q always means quick.

Any option that a command doesn't understand is ignored.

Any option that is not recognized is ignored and reported (with visibility).

9.2.4 Option placements

This table show in which file the directive may be placed to be used. 'exakat' is the config/exakat.ini file, 'project' is the projects/–name–/config.ini file, and 'in-code' is the .exakat.yaml/ini file, directly in the code.

name	exakat	project	in-code	rule
phpversion	X	X	X	
ignore_dirs	X	X	X	X
include_dirs	X	X	X	X
ignore_rules	X	X	X	
file_extensions	X	X	X	X
project_name	X	X	X	
project_description	X	X	X	
project_url		X		
project_vcs		X		
project_reports		X	X	
project_rulesets		X	X	
project_vcs		X		
project_packagist		X		
project_cobblers	X	X	X	
rulesets			X	

9.2.5 Option availability

This table shows which operation (audit, cobbler) is parametered by which directive.

name	project / analyze	cobble
phpversion	X	X
ignore_dirs	X	X
include_dirs	X	X
ignore_rules	X	X
file_extensions	X	X
project_reports	X	
project_rulesets	X	
project_vcs		X
project_cobblers		X

9.3 Project Configuration

Project configuration are were the project specific configuration are stored. For example, the project name, the ignored directories or its external libraries are kept. Configurations only affect one project and not the others.

Project configuration file are called 'config.ini'. They are located, one per project, in the 'projects/<project name>/config.ini' file.

9.3.1 Available Options

Here are the currently available options in Exakat's project configuration file : projects/<project name>/config.ini

phpversion

PHP Version with which to run the code analysis.

It may be one of : 8.2, 8.1, 8.0, 7.4, 7.3, 7.2, 7.1, 7.0, 5.6, 5.5, 5.4, 5.3, 5.2. Default is 8.0 or the CLI version used to init the project. 8.2 is currently the development version. 5.* versions are available, but are less tested. phpversion it is a string.

include_dirs

This is the list of files and dir to include in the project's directory. It is chrooted in the project's folder. Values provided with a starting / are used as a path prefix.

Values without / are used as a substring, anywhere in the path. include_dirs are added AFTER ignore_dirs, so as to partially ignore a folder, such as the vendor folder from composer. include_dirs is an array of string.

ignore_dirs

This is the list of files and dir to ignore in the project's directory. It is chrooted in the project's folder. Values provided with a starting / are used as a path prefix. Values without / are used as a substring, anywhere in the path.

ignore_dirs is an array of string.

file_extensions

This is the list of file extensions that is considered as PHP scripts. All others are ignored. All files bearing those extensions are subject to check, though they are scanned first for PHP tags before being analyzed. The extensions are comma separated, without dot.

The default are : php, php3, inc, tpl, phtml, tmpl, phps, ctp file_extensions may be a comma-separated list of values as a string, or an array.

project_name

This is the project name, as it appears at the top left in the Ambassador report.

project_url

This is the repository URL for the project. It is used to get the source for the project.

project_vcs

This is the VCS used to fetch the project source.

project_description

This is the description of the project.

project_packagist

This is the packagist name for the code, when the code is fetched with composer.

9.4 In-code Configuration

In-code configuration is a configuration file that sits at the root of the code. When exakat finds it, it uses it for in-code auditing.

- The file is *.exakat.ini*, and is a valid INI file. It has priority over the YAML version.
- The file is *.exakat.yaml*, and is a valid YAML file. *.exakat.yml* is also valid, but not recommended.

In case those files are not found, or valid, Exakat reverts to default values.

Unrecognized values are ignored.

9.4.1 Exakat in-code YAML example

```
project: exakat
project_name: exakat
project_rulesets:
- my_ruleset
- Security
project_report:
- Diplomat
file_extensions: php,php3,phtml
include_dirs:
  - /
ignore_dirs:
  - /tests
  - /vendor
  - /docs
```

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```
  - /media
ignore_rules:
  - Structures/AddZero
rulesets:
  my_ruleset:
      - Structures/AddZero
      - Structures/MultiplyByOne
```

9.4.2 Exakat in-code INI example

```
project= exakat
project_name= exakat
project_rulesets[] = my_ruleset
project_rulesets[] = Security
project_report[] = Diplomat
file_extensions= php,php3,phtml
include_dirs[] = /
ignore_dirs[] = /tests
ignore_dirs[] = /vendor
ignore_dirs[] = /docs
ignore_dirs[] = /media
ignore_rules[] = Structures/AddZero
```

9.4.3 Exakat in-code skeleton

Copy-paste this YAML code into a file called *.exakat.yaml*, located at the root of your repository.

```
project: <project identifier>
project_name: "<project_name>"
project_rulesets:
  - Analyze
file_extensions: php,php3,phtml
project_report:
  - <list of reports to build>
  - Ambassador
include_dirs:
  - /
ignore_rules:
  -
exclude_rules:
  -
ignore_dirs:
  - /tests
  - /vendor
  - /docs
  - /media
Structures/AddZero:
  php_extensions:
    - php
```

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```
    - php3
  namespaces:
    - \\ns
```

9.4.4 Exakat in project's config.ini file

Copy-paste this YAML code into a file called *.exakat.yaml*, located at the root of your repository.

This configuration is for the Structures/AddZero rule. It ignores directories at the root, starting with a *c*; it applies the rule only to files with tpl, php, php3 extensions and the namespaces *\ns* and *\ns2*.

```
[Structures/AddZero]
ignore_dirs = "/c";
file_extensions = "tpl,php,php3";
namespaces[] = "\\ns,"
namespaces[] = "\\ns2,"
```

9.4.5 Available Options

Here are the currently available options in Exakat's project configuration file : projects/–project name–/config.ini.

When a value is ignored, it will be filled with the default value of the project, or the server. When defined, they replace those default values.

include_dirs

This is the list of files and dir to include in the project's directory. It is chrooted in the project's folder. Values provided with a starting / are used as a path prefix.

Values without / are used as a substring, anywhere in the path. include_dirs are added AFTER ignore_dirs, so as to partially ignore a folder, such as the vendor folder from composer.

This an array of strings, which are dirnames or filenames.

ignore_dirs

This is the list of files and dir to ignore in the project's directory. It is chrooted in the project's folder. Values provided with a starting / are used as a path prefix. Values without / are used as a substring, anywhere in the path.

This an array of strings, which are dirnames or filenames.

ignore_rules

The rules mentioned in this list are ignored when running the audit. Rules are ignored after loading the rulesets configuration : as such, it is possible to ignore rules inside a ruleset, without ignoring the whole ruleset.

The rules in this list are Exakat's short name : ignore_rules[] = "Structures/AddZero"

This an array of strings, which are all rules names

include_rules

There is no include_rules directive. Create a custom Ruleset, and include it with project_rulesets (see below).

This an array of strings, which are all rules names.

file_extensions

This is the list of file extensions that is considered as PHP scripts. All others are ignored. All files bearing those extensions are subject to check, though they are scanned first for PHP tags before being analyzed. The extensions are comma separated, without dot.

This an array of strings, which are all extension names, without the '.' dot.

project_name

This is the project name, as it appears at the top left in the Ambassador report.

This is a string.

project_url

This is the repository URL for the project. It is used to get the source for the project.

project_vcs

This is the VCS used to fetch the project source.

This is a string.

project_description

This is the description of the project.

This is free text, used in reports.

project_description

This is the description of the project.

This is free text, used in reports.

project_packagist

This is the packagist name for the code, when the code is fetched with composer.

This is a single string.

project_rulesets

This is the list of default rules to run for this project.

This an array of strings, which are ruleset names.

project_reports

This is the list of default reports to run for this project.

This an array of strings, which are all reports names

rulesets

This is a list of custom ruleset, along with the ruleset names.

This directive is only available with YAML format.

This an array of hashes. The keys of the hashes are the custom rulsets, and their value is an array of rule short names.

9.5 Rule-level Configuration

There are configuration which are available for each rule. They are common and always available.

9.5.1 namespaces

The namespaces where this rule applies. Only results within the listed namespaces will be reported. All others are omitted.

By défault, all namespaces are used.

Namespaces may be specified similarly to file paths : *ns*, with the leading backslash, for absolute namespaces : then, they are treated as prefixes. *ns*, without the leading backslash, for relative namespaces : then, they are treated as any part of the namespace. It is possible to use * and *?*, like for path in a file systems.

9.5.2 ignore_dirs

The folders where this rule applies. Only results within the listed folders will be reported. All others are omitted, unless added with include_dirs.

By défault, all folders are used.

folders may be specified similarly to file paths : */ns*, with the leading backslash, for absolute path : then, they are treated as prefixes. *ns*, without the leading backslash, for relative folders : then, they are treated as any part of the path. It is possible to use * and *?*, like for path in a file systems.

9.5.3 include_dirs

The folders where this rule applies. Only results within the listed folders will be reported. All others are omitted, unless added with include_dirs.

By défault, all folders are used.

folders may be specified similarly to file paths : */ns*, with the leading backslash, for absolute path : then, they are treated as prefixes. *ns*, without the leading backslash, for relative folders : then, they are treated as any part of the path. It is possible to use * and *?*, like for path in a file systems.

9.5.4 file_extensions

The file's extensions where this rule applies. Only files with the listed extensions will be reported.

By default, all the configured extensions are used.

Note that this filter is applied after the file_extensions configuration is used to select the audited files in the repository. So, this directive shall, at worse, only use extensions that are already applied.

9.5.5 Configuration in .yaml file

Copy-paste this YAML code into a file called *.exakat.yaml*, located at the root of your repository.

```
file_extensions: php,php3,phtml
project: <project short name>
project_name: <project name, as displayed in reports>
project_rulesets:
- <list of rulesets to apply>
- Analysis
file_extensions: php,php3,phtml
project_report:
- <list of reports to build>
- Ambassador
include_dirs:
  - /
ignore_rules:
  -
exclude_rules:
  -
ignore_dirs:
  - /tests
  - /vendor
```

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```
  - /docs
  - /media
```

9.6 Commandline Configuration

Commandline configurations are detailled with each command, in the _Commands section.

9.7 Specific analysis configurations

Some analyzer may be configured individually. Those parameters are then specific to one analyzer, and it only affects their behavior.

Analyzers may be configured in the *project/*/config.ini*; they may also be configured globally in the *config/exakat.ini* file.

@ Operator

- authorizedFunctions : noscream_functions.json
  - Functions that are authorized to sports a @.

Abstract Away

- abstractableCalls :
  - Functions that shouldn't be called directly, unless in a method.
- abstractableClasses :
  - Classes that shouldn't be instantiated directly, unless in a method.

Abstract Class Constants

- minimum : 2
  - Minimal number of constant found in children to report this as a potential abstract class.

Array() / [ ] Consistence

- array_ratio : 10
  - Percentage of arrays in one of the syntaxes, to trigger the other syntax as a violation.

Cancel Common Method

- cancelThreshold : 75
  - Minimal number of cancelled methods to suggest the cancellation of the parent.

Collect Vendor Structures

- pdffList : []
  - List of vendors, their version and related PDFF. {'vendor':['wordpress.5.9.pdff','wordpress.5.8.pdff']}

Could Be A Constant

- minOccurences : 1
  - Minimal number of occurrences of the literal.

- skipString : ,.php
  - List of omitted string values. For example, the empty string.
- skipInteger : 1,-0,-1
  - List of omitted integer values. By default, 0, 1 and -1.

Could Be Enumeration

- minElements : 2
  - Minimal number of elements to consider that a property may be an enumeration.

Could Be Parent Method

- minChildren : 4
  - Minimal number of children using this method.

Could Make A Function

- centralizeThreshold : 8
  - Minimal number of calls of the function with one common argument.

Could Use Existing Constant

- omittedValues :
  - Comma-separated list of values that have to be ignored with this analysis. They replace the default values of 0 and 1.

Custom Class Usage

- forbiddenClasses :
  - List of classes to be avoided

Duplicate Literal

- minDuplicate : 15
  - Minimal number of duplication before the literal is reported.
- ignoreList : 0,1,2,10
  - Common values that have to be ignored. Comma separated list.

Fossilized Method

- fossilizationThreshold : 6
  - Minimal number of overwriting methods to consider a method difficult to update.

Hardcoded Passwords

- passwordsKeys : password_keys.json
  - List of array index and property names that shall be checked for potential secret key storages.

Immutable Signature

- maxOverwrite : 8
  - Minimal number of method overwrite to consider that any refactor on the method signature is now hard.

Injectable Version

- injectableVersion : injectableversion

  - The FQN for the InjectableVersion attribute. By default, it is in the global space
- checkInjectableVersion : checkinjectableversion
  - The FQN for the CheckInjectableVersion attribute. By default, it is in the global space

Keep Files Access Restricted

- filePrivileges : 0777
  - List of forbidden file modes (comma separated). This should be a decimal value : 511 instead of 777. The values will not be converted from octal to decimal.

Large Try Block

- tryBlockMaxSize : 5
  - Maximal number of expressions in the try block.

Long Arguments

- codeTooLong : 100
  - Minimum size of a functioncall or a methodcall to be considered too long.

Long Preparation For Throw

- preparationLineCount : 8
  - Minimal number of lines before the throw.

Make Magic Concrete

- magicMemberUsage : 1
  - Minimal number of magic member usage across the code, to trigger a concrete property.

Max Level Of Nesting

- maxLevel : 4
  - Maximum level of nesting for control flow structures in one scope.

Memoize MagicCall

- minMagicCallsToGet : 2
  - Minimal number of calls of a magic property to make it worth locally caching.

Method Usage

- searchFor :
  - Method to report in the codes : use static syntax to describe them : a::foo(); abc::goo().

Missing Include

- constant_or_variable_name : 100
  - Literal value to be used when including files. For example, by configuring 'Files_MissingInclude["HOME_DIR"] = "/tmp/myDir/";', then 'include HOME_DIR . "my_class.php"; will be actually be used as '/tmp/myDir/my_class.php'. Constants must be configured with their correct case. Variable must be configured with their initial '$'. Configure any number of variable and constant names.

Multiline Expressions

- min : 2
  - Minimal number of lines in an expression to report.

Multiple Index Definition

- arrayMaxSize : 15000
  - Maximal size of arrays to be analyzed. This will speed up analysis, and leave the largest arrays untouched.

Nested Ifthen

- nestedIfthen : 3
  - Maximal number of acceptable nesting of if-then structures

Nested Ternary

- minNestedTernary : 2
  - Minimal number of nested ternary to report.

New On Functioncall Or Identifier

- threshold : 10
  - Maximal percentage for a syntax to be considered to be fixed.

PHP Keywords As Names

- reservedNames :
  - Other reserved names : all in a string, comma separated.
- allowedNames :
  - PHP reserved names that can be used in the code. All in a string, comma separated.

Prefix And Suffixes With Typehint

- prefixedType : prefixedType['is'] = 'bool';

prefixedType['has'] = 'bool'; prefixedType['set'] = 'void'; prefixedType['list'] = 'array';

- List of prefixes and their expected returntype
- suffixedType : prefixedType['list'] = 'bool';

prefixedType['int'] = 'int'; prefixedType['string'] = 'string'; prefixedType['name'] = 'string'; prefixedType['description'] = 'string'; prefixedType['id'] = 'int'; prefixedType['uuid'] = 'Uuid';

- List of suffixes and their expected returntype

Randomly Sorted Arrays

- maxSize : 5
  - Maximal size of arrays to survey.

Should Use Prepared Statement

- queryMethod : query_methods.json
  - Methods that call a query.

Too Complex Expression

- complexExpressionThreshold : 30
  - Minimal number of operators in one expression to report.

Too Long A Block

- longBlock : 200

  - Size of a block for it to be too long. A block is commanded by a for, foreach, while, do…while, if/then else structure.

Too Many Array Dimensions

- maxDimensions : 3
  - Number of valid dimensions in an array.

Too Many Children

- childrenClassCount : 15
  - Threshold for too many children classes for one class.

Too Many Dereferencing

- tooManyDereferencing : 7
  - Maximum number of dereferencing.

Too Many Finds

- minimumFinds : 5
  - Minimal number of prefixed methods to report.
- findPrefix : find
  - list of prefix to use when detecting the 'find'. Comma-separated list, case insensitive.
- findSuffix :
  - list of fix to use when detecting the 'find'. Comma-separated list, case insensitive.

Too Many Injections

- injectionsCount : 5
  - Threshold for too many injected parameters for one class.

Too Many Local Variables

- tooManyLocalVariableThreshold : 15
  - Minimal number of variables in one function or method to report.

Too Many Native Calls

- nativeCallCounts : 3
  - Number of native calls found inside another call.

Too Many Parameters

- parametersCount : 8
  - Minimal number of parameters to report.

Too Many Stringed Elseif

- maxIf : 5
  - Maximum number of allowed stringed if-then-elseif structure.

Too Much Indented

- indentationAverage : 1
  - Minimal average of indentation in a method to report. Default is 1.0, which means that the method is on average at one level of indentation or more.

- minimumSize : 3
  - Minimal number of expressions in a method to apply this analysis.

Used Once Trait

- timeUsed : 2
  - Maximal number of trait usage, before the trait is considered enough used.

Useless Argument

- maxUsageCount : 30
  - Maximum count of function usage. Use this to limit the amount of processed arguments.

Variables With Long Names

- variableLength : 20
  - Minimum size of a long variable name, including the initial $.

Wrong Locale

- otherLocales :
  - Other accepted locales, comma separated
- maxPositions : 3
  - Number of argument in setLocale() to be tried.

9.8 Check Install

Once the prerequisite are installed, it is advised to run to check if all is found :

php exakat.phar doctor

After this run, you may edit 'config/config.ini' to change some of the default values. Most of the time, the default values will be OK for a quick start.

CHAPTER

TEN

SCOPING ANALYSIS

10.1 Summary

- *scoping files*
- *scoping rules*
- *scoping reports*

10.2 Scoping files

ignore_dirs and include_dirs are the option used to select files within a folder. Here are some tips to choose

- From the full list of files, ignore_dirs[] is applied, then include_dirs is applied. The remaining list is processed.
- ignore one file : *ignore_dirs[] = "/path/to/file.php"*
- ignore one dir : *ignore_dirs[] = "/path/to/dir/"*
- ignore siblings but include one dir : *ignore_dirs[] = "/path/to/parent/"; include_dirs[] = "/path/to/parent/dir/"*
- ignore every name containing 'test' : *ignore_dirs[] = "test";*
- only include one dir (and exclude the rest): *include_dirs[] = "/path/to/dir/";*
- omitting include_dirs defaults to *"include_dirs[] = ""*
- omitting ignore_dirs defaults to *"ignore_dirs[] = ""*
- including or ignoring files multiple times only has effect once

include_dirs has priority over the *config.cache* configuration file. If a folder has been marked for exclusion in the *config.cache* file, it may be forced to be included by configuring its value with include_dirs in the *config.ini* file.

10.3 Scoping rules

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10.4 Scoping reports

Exakat builds a list of analysis to run, based on two directives : *project_reports* and *projects_themes*. Both are list of rulesets. Unknown rulesets are omitted.

project_reports makes sure you can extract those reports, while *projects_themes* allow you to build reports a la carte later, and avoid running the whole audit again.

10.4.1 Required rulesets

First, analysis are very numerous, and it is very tedious to sort them by hand. Exakat only handles 'themes' which are groups of analysis. There are several list of rulesets available by default, and it is possible to customize those lists.

When using the *projects_themes* directive, you can configure which rulesets must be processed by exakat, each time a 'project' command is run. Those rulesets are always run.

10.4.2 Report-needed rulesets

Reports are build based on results found during the auditing phase. Some reports, like 'Ambassador' or 'Drillinstructor' needs the results of specific rulesets. Others, like 'Text' or 'Json' build reports at the last moment.

As such, exakat uses the project_reports directive to collect the list of necessary rulesets, and add them to the *projects_themes* results.

10.4.3 Late reports

It is possible de extract a report, even if the configuration has not been explicitly set for it.

For example, it is possible to build the Owasp report after telling exakat to build a 'Ambassador' report, as Ambassador includes all the analysis needed for Owasp. On the other hand, the contrary is not true : one can't get the Ambassador report after running exakat for the Owasp report, as Owasp only covers the security rulesets, and Ambassador requires other rulesets.

10.4.4 Recommendations

- The 'Ambassador' report has all the classic rulesets, it's the most comprehensive choice.
- To collect everything possible, use the ruleset 'All'. It's also the longest-running ruleset of all.
- To get one report, simply configure project_report with that report.
- You may configure several rulesets, like 'Security', 'Suggestions', 'CompatibilityPHP73', and later extract independant results with the 'Text' or 'Json' format.
- If you just want one compulsory report and two optional reports (total of three), simply configure all of them with project_report. It's better to produce extra reports, than run again a whole audit to collect missing informations.
- It is possible to configure customized rulesets, and use them in project_rulesets
- Excluding one analyzer is not supported. Use custom rulesets to build a new one instead.

10.4.5 Example

```
project_reports[] = 'Drillinstructor';
project_reports[] = 'Owasp';

project_themes[] = 'Security';
project_themes[] = 'Suggestions';
```

With that configuration, the Drillinstructor and the Owasp report are created automatically when running 'project'. Use the following command to get the specific rulesets ;

```
php exakat.phar report -p <project> -format Text -T Security -v
```

10.5 Predefined config files

45 rulesets detailled here :

10.5.1 All

All for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[All]
  analyzer[] = "Arrays/AmbiguousKeys";
  analyzer[] = "Arrays/AppendAndAssignArrays";
  analyzer[] = "Arrays/ArrayBracketConsistence";
  analyzer[] = "Arrays/ArrayNSUsage";
  analyzer[] = "Arrays/Arrayindex";
  analyzer[] = "Arrays/EmptyFinal";
  analyzer[] = "Arrays/EmptySlots";
  analyzer[] = "Arrays/FloatConversionAsIndex";
  analyzer[] = "Arrays/GettingLastElement";
  analyzer[] = "Arrays/MassCreation";
  analyzer[] = "Arrays/MistakenConcatenation";
  analyzer[] = "Arrays/MixedKeys";
  analyzer[] = "Arrays/Multidimensional";
  analyzer[] = "Arrays/MultipleIdenticalKeys";
  analyzer[] = "Arrays/NegativeStart";
  analyzer[] = "Arrays/NoSpreadForHash";
  analyzer[] = "Arrays/NonConstantArray";
  analyzer[] = "Arrays/NullBoolean";
  analyzer[] = "Arrays/Phparrayindex";
  analyzer[] = "Arrays/RandomlySortedLiterals";
  analyzer[] = "Arrays/ShouldPreprocess";
  analyzer[] = "Arrays/SliceFirst";
  analyzer[] = "Arrays/StringInitialization";
  analyzer[] = "Arrays/TooManyDimensions";
  analyzer[] = "Arrays/WeakType";
  analyzer[] = "Arrays/WeirdIndex";
```

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```
analyzer[] = "Arrays/WithCallback";
analyzer[] = "Attributes/Friend";
analyzer[] = "Attributes/InjectableVersion";
analyzer[] = "Attributes/MissingAttributeAttribute";
analyzer[] = "Attributes/ModifyImmutable";
analyzer[] = "Attributes/NestedAttributes";
analyzer[] = "Attributes/Override";
analyzer[] = "Attributes/PhpNativeAttributes";
analyzer[] = "Attributes/UsingDeprecated";
analyzer[] = "Classes/AbstractConstants";
analyzer[] = "Classes/AbstractOrImplements";
analyzer[] = "Classes/AbstractStatic";
analyzer[] = "Classes/Abstractclass";
analyzer[] = "Classes/Abstractmethods";
analyzer[] = "Classes/AccessPrivate";
analyzer[] = "Classes/AccessProtected";
analyzer[] = "Classes/AmbiguousStatic";
analyzer[] = "Classes/AmbiguousVisibilities";
analyzer[] = "Classes/Anonymous";
analyzer[] = "Classes/AvoidOptionArrays";
analyzer[] = "Classes/AvoidOptionalProperties";
analyzer[] = "Classes/AvoidUsing";
analyzer[] = "Classes/CancelCommonMethod";
analyzer[] = "Classes/CannotBeReadonly";
analyzer[] = "Classes/CantExtendFinal";
analyzer[] = "Classes/CantInheritAbstractMethod";
analyzer[] = "Classes/CantInstantiateClass";
analyzer[] = "Classes/CantInstantiateNonClass";
analyzer[] = "Classes/CantOverwriteFinalConstant";
analyzer[] = "Classes/CantOverwriteFinalMethod";
analyzer[] = "Classes/CheckAfterNullSafeOperator";
analyzer[] = "Classes/CheckOnCallUsage";
analyzer[] = "Classes/ChecksPropertyExistence";
analyzer[] = "Classes/ChildRemoveTypehint";
analyzer[] = "Classes/CitSameName";
analyzer[] = "Classes/ClassAliasUsage";
analyzer[] = "Classes/ClassInvasion";
analyzer[] = "Classes/ClassOverreach";
analyzer[] = "Classes/ClassUsage";
analyzer[] = "Classes/Classnames";
analyzer[] = "Classes/CloneWithNonObject";
analyzer[] = "Classes/CloningUsage";
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analyzer[] = "Functions/IsGlobal";
analyzer[] = "Functions/KillsApp";
analyzer[] = "Functions/LoopCalling";
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analyzer[] = "Functions/MismatchTypeAndDefault";
analyzer[] = "Functions/MismatchedDefaultArguments";
analyzer[] = "Functions/MismatchedTypehint";
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analyzer[] = "Functions/MultipleIdenticalClosure";
analyzer[] = "Functions/MultipleReturn";
analyzer[] = "Functions/MultipleSameArguments";
analyzer[] = "Functions/MustReturn";
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analyzer[] = "Functions/NoBooleanAsDefault";
analyzer[] = "Functions/NoClassAsTypehint";
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analyzer[] = "Functions/NoLiteralForReference";
analyzer[] = "Functions/NoReferencedVoid";
analyzer[] = "Functions/NoReturnUsed";
analyzer[] = "Functions/NullTypeFavorite";
analyzer[] = "Functions/NullableWithConstant";
analyzer[] = "Functions/NullableWithoutCheck";
analyzer[] = "Functions/OneLetterFunctions";
analyzer[] = "Functions/OnlyVariableForReference";
analyzer[] = "Functions/OnlyVariablePassedByReference";
analyzer[] = "Functions/OptionalParameter";
analyzer[] = "Functions/ParameterHiding";
analyzer[] = "Functions/PrefixToType";
analyzer[] = "Functions/RealFunctions";
analyzer[] = "Functions/Recursive";
analyzer[] = "Functions/RedeclaredPhpFunction";
analyzer[] = "Functions/RelayFunction";
analyzer[] = "Functions/RetypedReference";
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analyzer[] = "Functions/ShouldUseConstants";
analyzer[] = "Functions/ShouldYieldWithKey";
analyzer[] = "Functions/TooManyLocalVariables";
analyzer[] = "Functions/TooManyParameters";
analyzer[] = "Functions/TooMuchIndented";
analyzer[] = "Functions/TypeDodging";
analyzer[] = "Functions/TypehintMustBeReturned";
analyzer[] = "Functions/TypehintedReferences";
analyzer[] = "Functions/Typehints";
analyzer[] = "Functions/UnbindingClosures";
analyzer[] = "Functions/UndefinedFunctions";
analyzer[] = "Functions/UnknownParameterName";
analyzer[] = "Functions/UnsetOnArguments";
analyzer[] = "Functions/UnusedArguments";
analyzer[] = "Functions/UnusedFunctions";
analyzer[] = "Functions/UnusedInheritedVariable";
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analyzer[] = "Functions/UnusedReturnedValue";
analyzer[] = "Functions/UseArrowFunctions";
analyzer[] = "Functions/UseConstantAsArguments";
analyzer[] = "Functions/UseConstantsAsReturns";
analyzer[] = "Functions/UsedFunctions";
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analyzer[] = "Functions/UselessDefault";
analyzer[] = "Functions/UselessReferenceArgument";
analyzer[] = "Functions/UselessReturn";
analyzer[] = "Functions/UselessTypeCheck";
analyzer[] = "Functions/UsesDefaultArguments";
analyzer[] = "Functions/UsingDeprecated";
analyzer[] = "Functions/VariableArguments";
analyzer[] = "Functions/VariableParameterAmbiguityInArrowFunction";
analyzer[] = "Functions/VoidIsNotAReference";
analyzer[] = "Functions/WithoutReturn";
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analyzer[] = "Functions/WrongArgumentType";
analyzer[] = "Functions/WrongCase";
analyzer[] = "Functions/WrongNumberOfArguments";
analyzer[] = "Functions/WrongNumberOfArgumentsMethods";
analyzer[] = "Functions/WrongOptionalParameter";
analyzer[] = "Functions/WrongReturnedType";
analyzer[] = "Functions/WrongTypeWithCall";
analyzer[] = "Functions/WrongTypehintedName";
analyzer[] = "Functions/funcGetArgModified";
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analyzer[] = "Interfaces/AvoidSelfInInterface";
analyzer[] = "Interfaces/CantImplementTraversable";
analyzer[] = "Interfaces/CantOverloadConstants";
analyzer[] = "Interfaces/CouldUseInterface";
analyzer[] = "Interfaces/EmptyInterface";
analyzer[] = "Interfaces/InheritedClassConstantVisibility";
analyzer[] = "Interfaces/InterfaceMethod";
analyzer[] = "Interfaces/InterfaceUsage";
analyzer[] = "Interfaces/Interfacenames";
analyzer[] = "Interfaces/IsExtInterface";
analyzer[] = "Interfaces/IsNotImplemented";
analyzer[] = "Interfaces/NoConstructorInInterface";
analyzer[] = "Interfaces/NoGaranteeForPropertyConstant";
analyzer[] = "Interfaces/Php";
analyzer[] = "Interfaces/PossibleInterfaces";
analyzer[] = "Interfaces/RepeatedInterface";
analyzer[] = "Interfaces/UndefinedInterfaces";
analyzer[] = "Interfaces/UnusedInterfaces";
analyzer[] = "Interfaces/UsedInterfaces";
analyzer[] = "Interfaces/UselessInterfaces";
analyzer[] = "Namespaces/Alias";
analyzer[] = "Namespaces/AliasConfusion";
analyzer[] = "Namespaces/ConstantFullyQualified";
analyzer[] = "Namespaces/ConstantWithUseFavorite";
analyzer[] = "Namespaces/CouldUseAlias";
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analyzer[] = "Namespaces/CouldUseMagicConstant";
analyzer[] = "Namespaces/EmptyNamespace";
analyzer[] = "Namespaces/GlobalImport";
analyzer[] = "Namespaces/HiddenUse";
analyzer[] = "Namespaces/MultipleAliasDefinitionPerFile";
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analyzer[] = "Namespaces/NamespaceUsage";
analyzer[] = "Namespaces/Namespacesnames";
analyzer[] = "Namespaces/NoKeywordInNamespace";
analyzer[] = "Namespaces/OverloadExistingNames";
analyzer[] = "Namespaces/ShouldMakeAlias";
analyzer[] = "Namespaces/UnresolvedUse";
analyzer[] = "Namespaces/UnusedUse";
analyzer[] = "Namespaces/UseFunctionsConstants";
analyzer[] = "Namespaces/UseWithFullyQualifiedNS";
analyzer[] = "Namespaces/UsedUse";
analyzer[] = "Namespaces/WrongCase";
analyzer[] = "Patterns/AbstractAway";
analyzer[] = "Patterns/CourrierAntiPattern";
analyzer[] = "Patterns/DependencyInjection";
analyzer[] = "Patterns/Factory";
analyzer[] = "Patterns/GetterSetter";
analyzer[] = "Performances/ArrayKeyExistsSpeedup";
analyzer[] = "Performances/ArrayMergeInLoops";
analyzer[] = "Performances/Autoappend";
analyzer[] = "Performances/AvoidArrayPush";
analyzer[] = "Performances/CacheVariableOutsideLoop";
analyzer[] = "Performances/ClassOperator";
analyzer[] = "Performances/CountToAppend";
analyzer[] = "Performances/CsvInLoops";
analyzer[] = "Performances/DoInBase";
analyzer[] = "Performances/DoubleArrayFlip";
analyzer[] = "Performances/EllipsisMerge";
analyzer[] = "Performances/FetchOneRowFormat";
analyzer[] = "Performances/IssetWholeArray";
analyzer[] = "Performances/JoinFile";
analyzer[] = "Performances/LogicalToInArray";
analyzer[] = "Performances/MakeOneCall";
analyzer[] = "Performances/MbStringInLoop";
analyzer[] = "Performances/MemoizeMagicCall";
analyzer[] = "Performances/NoConcatInLoop";
analyzer[] = "Performances/NoGlob";
analyzer[] = "Performances/NotCountNull";
analyzer[] = "Performances/OptimizeExplode";
analyzer[] = "Performances/PHP7EncapsedStrings";
analyzer[] = "Performances/Php74ArrayKeyExists";
analyzer[] = "Performances/PreCalculateUse";
analyzer[] = "Performances/PrePostIncrement";
analyzer[] = "Performances/RegexOnArrays";
analyzer[] = "Performances/RegexOnCollector";
analyzer[] = "Performances/ShouldCacheLocal";
analyzer[] = "Performances/SimpleSwitch";
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analyzer[] = "Performances/SimplifyForeach";
analyzer[] = "Performances/SkipEmptyArray";
analyzer[] = "Performances/SlowFunctions";
analyzer[] = "Performances/StaticCallDontNeedObjects";
analyzer[] = "Performances/StaticCallWithSelf";
analyzer[] = "Performances/StrposTooMuch";
analyzer[] = "Performances/SubstrFirst";
analyzer[] = "Performances/SubstrInLoops";
analyzer[] = "Performances/TooManyExtractions";
analyzer[] = "Performances/UseArraySlice";
analyzer[] = "Performances/UseBlindVar";
analyzer[] = "Performances/timeVsstrtotime";
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analyzer[] = "Php/Argon2Usage";
analyzer[] = "Php/ArrayKeyExistsWithObjects";
analyzer[] = "Php/AssertFunctionIsReserved";
analyzer[] = "Php/AssertionUsage";
analyzer[] = "Php/AssignAnd";
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analyzer[] = "Php/AutoloadUsage";
analyzer[] = "Php/AvoidGetobjectVars";
analyzer[] = "Php/AvoidMbDectectEncoding";
analyzer[] = "Php/AvoidReal";
analyzer[] = "Php/AvoidSetErrorHandlerContextArg";
analyzer[] = "Php/BetterRand";
analyzer[] = "Php/CallingStaticTraitMethod";
analyzer[] = "Php/CantUseReturnValueInWriteContext";
analyzer[] = "Php/CaseForPSS";
analyzer[] = "Php/CastUnsetUsage";
analyzer[] = "Php/CastingUsage";
analyzer[] = "Php/ClassAliasSupportsInternalClasses";
analyzer[] = "Php/ClassConstWithArray";
analyzer[] = "Php/ClassFunctionConfusion";
analyzer[] = "Php/CloneConstant";
analyzer[] = "Php/CloseTags";
analyzer[] = "Php/CloseTagsConsistency";
analyzer[] = "Php/ClosureThisSupport";
analyzer[] = "Php/Coalesce";
analyzer[] = "Php/CoalesceEqual";
analyzer[] = "Php/CompactInexistant";
analyzer[] = "Php/ComparisonOnDifferentTypes";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/ConstWithArray";
analyzer[] = "Php/ConstantScalarExpression";
analyzer[] = "Php/CookiesVariables";
analyzer[] = "Php/CouldUseIsCountable";
analyzer[] = "Php/CouldUsePromotedProperties";
analyzer[] = "Php/Crc32MightBeNegative";
analyzer[] = "Php/CryptoUsage";
analyzer[] = "Php/DateFormats";
analyzer[] = "Php/DateTimeNotImmutable";
analyzer[] = "Php/DeclareEncoding";
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analyzer[] = "Php/DeclareStrictType";
analyzer[] = "Php/DeclareTicks";
analyzer[] = "Php/DefineWithArray";
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analyzer[] = "Php/Deprecated";
analyzer[] = "Php/DetectCurrentClass";
analyzer[] = "Php/DirectCallToClone";
analyzer[] = "Php/DirectiveName";
analyzer[] = "Php/DirectivesUsage";
analyzer[] = "Php/DlUsage";
analyzer[] = "Php/DontPolluteGlobalSpace";
analyzer[] = "Php/EchoTagUsage";
analyzer[] = "Php/EllipsisUsage";
analyzer[] = "Php/EmptyList";
analyzer[] = "Php/EnumUsage";
analyzer[] = "Php/ErrorLogUsage";
analyzer[] = "Php/ExitNoArg";
analyzer[] = "Php/ExponentUsage";
analyzer[] = "Php/FailingAnalysis";
analyzer[] = "Php/FalseToArray";
analyzer[] = "Php/FilesFullPath";
analyzer[] = "Php/FilterToAddSlashes";
analyzer[] = "Php/FinalConstant";
analyzer[] = "Php/FirstClassCallable";
analyzer[] = "Php/FlexibleHeredoc";
analyzer[] = "Php/FopenMode";
analyzer[] = "Php/ForeachDontChangePointer";
analyzer[] = "Php/ForeachObject";
analyzer[] = "Php/GlobalWithoutSimpleVariable";
analyzer[] = "Php/GlobalsVsGlobal";
analyzer[] = "Php/Gotonames";
analyzer[] = "Php/GroupUseDeclaration";
analyzer[] = "Php/GroupUseTrailingComma";
analyzer[] = "Php/Haltcompiler";
analyzer[] = "Php/HashAlgos";
analyzer[] = "Php/HashAlgos53";
analyzer[] = "Php/HashAlgos54";
analyzer[] = "Php/HashAlgos71";
analyzer[] = "Php/HashAlgos74";
analyzer[] = "Php/HashUsesObjects";
analyzer[] = "Php/IdnUts46";
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analyzer[] = "Php/IncomingValues";
analyzer[] = "Php/IncomingVariables";
analyzer[] = "Php/Incompilable";
analyzer[] = "Php/IntegerSeparatorUsage";
analyzer[] = "Php/InternalParameterType";
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analyzer[] = "Php/IsNAN";
analyzer[] = "Php/IsnullVsEqualNull";
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analyzer[] = "Php/ListWithAppends";
analyzer[] = "Php/ListWithKeys";
analyzer[] = "Php/ListWithReference";
analyzer[] = "Php/LogicalInLetters";
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analyzer[] = "Php/MiddleVersion";
analyzer[] = "Php/MissingMagicIsset";
analyzer[] = "Php/MissingSubpattern";
analyzer[] = "Php/MixedKeyword";
analyzer[] = "Php/MixedUsage";
analyzer[] = "Php/MultipleDeclareStrict";
analyzer[] = "Php/MustCallParentConstructor";
analyzer[] = "Php/NamedArgumentAndVariadic";
analyzer[] = "Php/NamedParameterUsage";
analyzer[] = "Php/NativeClassTypeCompatibility";
analyzer[] = "Php/NestedTernaryWithoutParenthesis";
analyzer[] = "Php/NeverKeyword";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NewExponent";
analyzer[] = "Php/NewInitializers";
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analyzer[] = "Php/NoClassInGlobal";
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analyzer[] = "Php/NoReferenceForStaticProperty";
analyzer[] = "Php/NoReferenceForTernary";
analyzer[] = "Php/NoReturnForGenerator";
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analyzer[] = "Php/NoSubstrMinusOne";
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analyzer[] = "Php/OnlyVariablePassedByReference";
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analyzer[] = "Php/PHP70scalartypehints";
analyzer[] = "Php/PHP71scalartypehints";
analyzer[] = "Php/PHP72scalartypehints";
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analyzer[] = "Php/PHP80scalartypehints";
analyzer[] = "Php/PHP81scalartypehints";
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analyzer[] = "Php/Password55";
analyzer[] = "Php/PathinfoReturns";
analyzer[] = "Php/PearUsage";
analyzer[] = "Php/Php54NewFunctions";
analyzer[] = "Php/Php54RemovedFunctions";
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analyzer[] = "Php/Php71NewFunctions";
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analyzer[] = "Php/Php72Deprecation";
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analyzer[] = "Php/Php81RemovedFunctions";
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analyzer[] = "Php/Php82NewTypes";
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analyzer[] = "Php/Prints";
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analyzer[] = "Php/ReservedNames";
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analyzer[] = "Php/ReturnWithParenthesis";
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analyzer[] = "Php/StrtrArguments";
analyzer[] = "Php/SuperGlobalUsage";
analyzer[] = "Php/ThrowUsage";
analyzer[] = "Php/ThrowWasAnExpression";
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analyzer[] = "Php/TrailingComma";
analyzer[] = "Php/TriggerErrorUsage";
analyzer[] = "Php/TryCatchUsage";
analyzer[] = "Php/TryMultipleCatch";
analyzer[] = "Php/TypedPropertyUsage";
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analyzer[] = "Php/UnicodeEscapeSyntax";
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analyzer[] = "Php/UnsetOrCast";
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analyzer[] = "Php/UseClassAlias";
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analyzer[] = "Php/UseNullSafeOperator";
analyzer[] = "Php/UseNullableType";
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analyzer[] = "Php/UseTrailingUseComma";
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analyzer[] = "Php/WrongAttributeConfiguration";
analyzer[] = "Php/WrongTypeForNativeFunction";
analyzer[] = "Php/YieldFromUsage";
analyzer[] = "Php/YieldUsage";
analyzer[] = "Php/debugInfoUsage";
analyzer[] = "Php/oldAutoloadUsage";
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analyzer[] = "Portability/GlobBraceUsage";
analyzer[] = "Portability/IconvTranslit";
analyzer[] = "Portability/LinuxOnlyFiles";
analyzer[] = "Portability/WindowsOnlyConstants";
analyzer[] = "Project/IsLibrary";
analyzer[] = "Psr/Psr11Usage";
analyzer[] = "Psr/Psr13Usage";
analyzer[] = "Psr/Psr16Usage";
analyzer[] = "Psr/Psr3Usage";
analyzer[] = "Psr/Psr6Usage";
analyzer[] = "Psr/Psr7Usage";
analyzer[] = "Security/AnchorRegex";
analyzer[] = "Security/AvoidThoseCrypto";
analyzer[] = "Security/CantDisableClass";
analyzer[] = "Security/CantDisableFunction";
analyzer[] = "Security/CompareHash";
analyzer[] = "Security/ConfigureExtract";
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analyzer[] = "Security/DirectInjection";
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analyzer[] = "Security/IntegerConversion";
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analyzer[] = "Security/MoveUploadedFile";
analyzer[] = "Security/NoEntIgnore";
analyzer[] = "Security/NoNetForXmlLoad";
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analyzer[] = "Security/ShouldUseSessionRegenerateId";
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analyzer[] = "Security/SuperGlobalContagion";
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analyzer[] = "Security/UploadFilenameInjection";
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analyzer[] = "Structures/AddZero";
analyzer[] = "Structures/AlteringForeachWithoutReference";
analyzer[] = "Structures/AlternativeConsistenceByFile";
analyzer[] = "Structures/AlwaysFalse";
analyzer[] = "Structures/ArrayAccessOnLiteralArray";
analyzer[] = "Structures/ArrayAddition";
analyzer[] = "Structures/ArrayCountTripleEqual";
analyzer[] = "Structures/ArrayFillWithObjects";
analyzer[] = "Structures/ArrayMapPassesByValue";
analyzer[] = "Structures/ArrayMergeAndVariadic";
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analyzer[] = "Structures/ArrayMergeWithEllipsis";
analyzer[] = "Structures/ArraySearchMultipleKeys";
analyzer[] = "Structures/AssigneAndCompare";
analyzer[] = "Structures/AssignedInOneBranch";
analyzer[] = "Structures/AutoUnsetForeach";
analyzer[] = "Structures/BailOutEarly";
analyzer[] = "Structures/BasenameSuffix";
analyzer[] = "Structures/BlindVariableUsedBeyondLoop";
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analyzer[] = "Structures/Bracketless";
analyzer[] = "Structures/Break0";
analyzer[] = "Structures/BreakNonInteger";
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analyzer[] = "Structures/CalltimePassByReference";
analyzer[] = "Structures/CanCountNonCountable";
analyzer[] = "Structures/CannotUseAppendForReading";
analyzer[] = "Structures/CastFavorite";
analyzer[] = "Structures/CastToBoolean";
analyzer[] = "Structures/CastingTernary";
analyzer[] = "Structures/CatchShadowsVariable";
analyzer[] = "Structures/CheckAllTypes";
analyzer[] = "Structures/CheckDivision";
analyzer[] = "Structures/CheckJson";
analyzer[] = "Structures/CoalesceAndConcat";
analyzer[] = "Structures/CoalesceNullCoalesce";
analyzer[] = "Structures/CommonAlternatives";
analyzer[] = "Structures/ComparedButNotAssignedStrings";
analyzer[] = "Structures/ComparedComparison";
analyzer[] = "Structures/ComparisonFavorite";
analyzer[] = "Structures/ComplexExpression";
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analyzer[] = "Structures/ConcatenationInterpolationFavorite";
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analyzer[] = "Structures/ConstDefineFavorite";
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analyzer[] = "Structures/ConstantConditions";
analyzer[] = "Structures/ConstantScalarExpression";
analyzer[] = "Structures/ContinueIsForLoop";
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analyzer[] = "Structures/CouldBeElse";
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analyzer[] = "Structures/CouldBeStatic";
analyzer[] = "Structures/CouldBeTernary";
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analyzer[] = "Structures/CouldUseArraySum";
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analyzer[] = "Structures/CouldUseMatch";
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analyzer[] = "Structures/CouldUseStrContains";
analyzer[] = "Structures/CouldUseStrrepeat";
analyzer[] = "Structures/CouldUseYieldFrom";
analyzer[] = "Structures/CountIsNotNegative";
analyzer[] = "Structures/CryptWithoutSalt";
analyzer[] = "Structures/CurlVersionNow";
analyzer[] = "Structures/DanglingArrayReferences";
analyzer[] = "Structures/DateTimePreference";
analyzer[] = "Structures/DeclareStaticOnce";
analyzer[] = "Structures/DefaultThenDiscard";
analyzer[] = "Structures/DeprecatedMbEncoding";
```

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```
analyzer[] = "Structures/DereferencingAS";
analyzer[] = "Structures/DieExitConsistance";
analyzer[] = "Structures/DifferencePreference";
analyzer[] = "Structures/DirThenSlash";
analyzer[] = "Structures/DirectlyUseFile";
analyzer[] = "Structures/DontAddSeconds";
analyzer[] = "Structures/DontBeTooManual";
analyzer[] = "Structures/DontChangeBlindKey";
analyzer[] = "Structures/DontCompareTypedBoolean";
analyzer[] = "Structures/DontLoopOnYield";
analyzer[] = "Structures/DontMixPlusPlus";
analyzer[] = "Structures/DontReadAndWriteInOneExpression";
analyzer[] = "Structures/DontReuseForeachSource";
analyzer[] = "Structures/DontUseTheTypeAsVariable";
analyzer[] = "Structures/DoubleAssignation";
analyzer[] = "Structures/DoubleChecks";
analyzer[] = "Structures/DoubleInstruction";
analyzer[] = "Structures/DoubleObjectAssignation";
analyzer[] = "Structures/DropElseAfterReturn";
analyzer[] = "Structures/DuplicateCalls";
analyzer[] = "Structures/DynamicCalls";
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analyzer[] = "Structures/EchoPrintConsistance";
analyzer[] = "Structures/EchoWithConcat";
analyzer[] = "Structures/ElseIfElseif";
analyzer[] = "Structures/ElseUsage";
analyzer[] = "Structures/EmptyBlocks";
analyzer[] = "Structures/EmptyJsonError";
analyzer[] = "Structures/EmptyLines";
analyzer[] = "Structures/EmptyLoop";
analyzer[] = "Structures/EmptyTryCatch";
analyzer[] = "Structures/EmptyWithExpression";
analyzer[] = "Structures/ErrorMessages";
analyzer[] = "Structures/ErrorReportingWithInteger";
analyzer[] = "Structures/EvalUsage";
analyzer[] = "Structures/EvalWithoutTry";
analyzer[] = "Structures/ExitUsage";
analyzer[] = "Structures/FailingSubstrComparison";
analyzer[] = "Structures/Fallthrough";
analyzer[] = "Structures/FilePutContentsDataType";
analyzer[] = "Structures/FileUploadUsage";
analyzer[] = "Structures/FileUsage";
analyzer[] = "Structures/ForWithFunctioncall";
analyzer[] = "Structures/ForeachNeedReferencedSource";
analyzer[] = "Structures/ForeachReferenceIsNotModified";
analyzer[] = "Structures/ForeachSourceValue";
analyzer[] = "Structures/ForeachWithList";
analyzer[] = "Structures/ForgottenWhiteSpace";
analyzer[] = "Structures/FunctionPreSubscripting";
analyzer[] = "Structures/FunctionSubscripting";
analyzer[] = "Structures/GetClassWithoutArg";
analyzer[] = "Structures/GlobalInGlobal";
```

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```
analyzer[] = "Structures/GlobalOutsideLoop";
analyzer[] = "Structures/GlobalUsage";
analyzer[] = "Structures/GoToKeyDirectly";
analyzer[] = "Structures/GtOrLtFavorite";
analyzer[] = "Structures/HeredocDelimiterFavorite";
analyzer[] = "Structures/Htmlentitiescall";
analyzer[] = "Structures/HtmlentitiescallDefaultFlag";
analyzer[] = "Structures/IdenticalCase";
analyzer[] = "Structures/IdenticalConditions";
analyzer[] = "Structures/IdenticalConsecutive";
analyzer[] = "Structures/IdenticalElseif";
analyzer[] = "Structures/IdenticalOnBothSides";
analyzer[] = "Structures/IdenticalVariablesInForeach";
analyzer[] = "Structures/IfThenReturnFavorite";
analyzer[] = "Structures/IfWithSameConditions";
analyzer[] = "Structures/Iffectation";
analyzer[] = "Structures/ImplicitConversionToInt";
analyzer[] = "Structures/ImplicitGlobal";
analyzer[] = "Structures/ImpliedIf";
analyzer[] = "Structures/ImplodeArgsOrder";
analyzer[] = "Structures/IncludeUsage";
analyzer[] = "Structures/InconsistentConcatenation";
analyzer[] = "Structures/InconsistentElseif";
analyzer[] = "Structures/IndicesAreIntOrString";
analyzer[] = "Structures/InfiniteRecursion";
analyzer[] = "Structures/InitThenIf";
analyzer[] = "Structures/InvalidCast";
analyzer[] = "Structures/InvalidDateScanningFormat";
analyzer[] = "Structures/InvalidPackFormat";
analyzer[] = "Structures/InvalidRegex";
analyzer[] = "Structures/IsAVersusInstanceof";
analyzer[] = "Structures/IsZero";
analyzer[] = "Structures/IssetWithConstant";
analyzer[] = "Structures/JsonEncodeExceptions";
analyzer[] = "Structures/JsonWithOption";
analyzer[] = "Structures/ListOmissions";
analyzer[] = "Structures/LogicalMistakes";
analyzer[] = "Structures/LoneBlock";
analyzer[] = "Structures/LongArguments";
analyzer[] = "Structures/LongBlock";
analyzer[] = "Structures/MailUsage";
analyzer[] = "Structures/MaxLevelOfIdentation";
analyzer[] = "Structures/MbStringNonEncodings";
analyzer[] = "Structures/MbstringThirdArg";
analyzer[] = "Structures/MbstringUnknownEncoding";
analyzer[] = "Structures/McryptcreateivWithoutOption";
analyzer[] = "Structures/MergeIfThen";
analyzer[] = "Structures/MismatchedTernary";
analyzer[] = "Structures/MissingAssignation";
analyzer[] = "Structures/MissingCases";
analyzer[] = "Structures/MissingNew";
analyzer[] = "Structures/MissingParenthesis";
```

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```
analyzer[] = "Structures/MisusedYield";
analyzer[] = "Structures/MixedConcatInterpolation";
analyzer[] = "Structures/ModernEmpty";
analyzer[] = "Structures/MultilineExpressions";
analyzer[] = "Structures/MultipleCatch";
analyzer[] = "Structures/MultipleDefinedCase";
analyzer[] = "Structures/MultipleSimilarCalls";
analyzer[] = "Structures/MultipleTypeCasesInSwitch";
analyzer[] = "Structures/MultipleTypeVariable";
analyzer[] = "Structures/MultipleUnset";
analyzer[] = "Structures/MultiplyByOne";
analyzer[] = "Structures/NamedRegex";
analyzer[] = "Structures/NegativePow";
analyzer[] = "Structures/NestedIfthen";
analyzer[] = "Structures/NestedLoops";
analyzer[] = "Structures/NestedMatch";
analyzer[] = "Structures/NestedTernary";
analyzer[] = "Structures/NeverNegative";
analyzer[] = "Structures/NewLineStyle";
analyzer[] = "Structures/NextMonthTrap";
analyzer[] = "Structures/NoAppendOnSource";
analyzer[] = "Structures/NoArrayUnique";
analyzer[] = "Structures/NoAssignationInFunction";
analyzer[] = "Structures/NoChangeIncomingVariables";
analyzer[] = "Structures/NoChoice";
analyzer[] = "Structures/NoDirectAccess";
analyzer[] = "Structures/NoDirectUsage";
analyzer[] = "Structures/NoEmptyRegex";
analyzer[] = "Structures/NoEmptyStringWithExplode";
analyzer[] = "Structures/NoGetClassNull";
analyzer[] = "Structures/NoHardcodedHash";
analyzer[] = "Structures/NoHardcodedIp";
analyzer[] = "Structures/NoHardcodedPath";
analyzer[] = "Structures/NoHardcodedPort";
analyzer[] = "Structures/NoIssetWithEmpty";
analyzer[] = "Structures/NoMaxOnEmptyArray";
analyzer[] = "Structures/NoNeedForElse";
analyzer[] = "Structures/NoNeedForTriple";
analyzer[] = "Structures/NoNeedGetClass";
analyzer[] = "Structures/NoNullForIndex";
analyzer[] = "Structures/NoObjectAsIndex";
analyzer[] = "Structures/NoParenthesisForLanguageConstruct";
analyzer[] = "Structures/NoReferenceOnLeft";
analyzer[] = "Structures/NoReturnInFinally";
analyzer[] = "Structures/NoSubstrOne";
analyzer[] = "Structures/NoValidCast";
analyzer[] = "Structures/NoVariableIsACondition";
analyzer[] = "Structures/NonBreakableSpaceInNames";
analyzer[] = "Structures/NonIntStringAsIndex";
analyzer[] = "Structures/Noscream";
analyzer[] = "Structures/NotEqual";
analyzer[] = "Structures/NotNot";
```

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```
analyzer[] = "Structures/NotOrNot";
analyzer[] = "Structures/ObjectReferences";
analyzer[] = "Structures/OnceUsage";
analyzer[] = "Structures/OneDotOrObjectOperatorPerLine";
analyzer[] = "Structures/OneExpressionBracketsConsistency";
analyzer[] = "Structures/OneIfIsSufficient";
analyzer[] = "Structures/OneLevelOfIndentation";
analyzer[] = "Structures/OneLineTwoInstructions";
analyzer[] = "Structures/OnlyFirstByte";
analyzer[] = "Structures/OnlyVariableReturnedByReference";
analyzer[] = "Structures/OpensslRandomPseudoByteSecondArg";
analyzer[] = "Structures/OrDie";
analyzer[] = "Structures/OverwrittenForeachVar";
analyzer[] = "Structures/PHP7Dirname";
analyzer[] = "Structures/PhpinfoUsage";
analyzer[] = "Structures/PlusEgalOne";
analyzer[] = "Structures/PossibleIncrement";
analyzer[] = "Structures/PossibleInfiniteLoop";
analyzer[] = "Structures/PrintAndDie";
analyzer[] = "Structures/PrintWithoutParenthesis";
analyzer[] = "Structures/PrintfArguments";
analyzer[] = "Structures/PropertyVariableConfusion";
analyzer[] = "Structures/QueriesInLoop";
analyzer[] = "Structures/RandomWithoutTry";
analyzer[] = "Structures/RecalledCondition";
analyzer[] = "Structures/RegexDelimiter";
analyzer[] = "Structures/RepeatedPrint";
analyzer[] = "Structures/RepeatedRegex";
analyzer[] = "Structures/ResourcesUsage";
analyzer[] = "Structures/ResultMayBeMissing";
analyzer[] = "Structures/ReturnTrueFalse";
analyzer[] = "Structures/ReturnVoid";
analyzer[] = "Structures/ReuseVariable";
analyzer[] = "Structures/SGVariablesConfusion";
analyzer[] = "Structures/SameConditions";
analyzer[] = "Structures/SequenceInFor";
analyzer[] = "Structures/SetAside";
analyzer[] = "Structures/SetlocaleNeedsConstants";
analyzer[] = "Structures/ShellUsage";
analyzer[] = "Structures/ShortOrCompleteComparison";
analyzer[] = "Structures/ShortTags";
analyzer[] = "Structures/ShouldChainException";
analyzer[] = "Structures/ShouldMakeTernary";
analyzer[] = "Structures/ShouldPreprocess";
analyzer[] = "Structures/ShouldUseExplodeArgs";
analyzer[] = "Structures/ShouldUseForeach";
analyzer[] = "Structures/ShouldUseMath";
analyzer[] = "Structures/ShouldUseOperator";
analyzer[] = "Structures/SimplePreg";
analyzer[] = "Structures/SprintfFormatCompilation";
analyzer[] = "Structures/StaticLoop";
analyzer[] = "Structures/StrictInArrayFavorite";
```

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```
analyzer[] = "Structures/StringInterpolationFavorite";
analyzer[] = "Structures/StripTagsSkipsClosedTag";
analyzer[] = "Structures/StrposCompare";
analyzer[] = "Structures/StrposLessThanOne";
analyzer[] = "Structures/SubstrLastArg";
analyzer[] = "Structures/SubstrToTrim";
analyzer[] = "Structures/SuspiciousComparison";
analyzer[] = "Structures/SwitchToSwitch";
analyzer[] = "Structures/SwitchWithMultipleDefault";
analyzer[] = "Structures/SwitchWithoutDefault";
analyzer[] = "Structures/TernaryInConcat";
analyzer[] = "Structures/TestThenCast";
analyzer[] = "Structures/ThrowsAndAssign";
analyzer[] = "Structures/TimestampDifference";
analyzer[] = "Structures/TooManyChainedCalls";
analyzer[] = "Structures/TooManyElseif";
analyzer[] = "Structures/TryFinally";
analyzer[] = "Structures/UncheckedResources";
analyzer[] = "Structures/UnconditionLoopBreak";
analyzer[] = "Structures/UnknownPregOption";
analyzer[] = "Structures/Unpreprocessed";
analyzer[] = "Structures/UnreachableCode";
analyzer[] = "Structures/UnsetInForeach";
analyzer[] = "Structures/UnsupportedOperandTypes";
analyzer[] = "Structures/UnsupportedTypesWithOperators";
analyzer[] = "Structures/UnusedGlobal";
analyzer[] = "Structures/UnusedLabel";
analyzer[] = "Structures/UseArrayFunctions";
analyzer[] = "Structures/UseCaseValue";
analyzer[] = "Structures/UseConstant";
analyzer[] = "Structures/UseCountRecursive";
analyzer[] = "Structures/UseDebug";
analyzer[] = "Structures/UseFileAppend";
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analyzer[] = "Structures/UseListWithForeach";
analyzer[] = "Structures/UsePositiveCondition";
analyzer[] = "Structures/UseSameTypesForComparisons";
analyzer[] = "Structures/UseStrEndsWith";
analyzer[] = "Structures/UseStrStartsWith";
analyzer[] = "Structures/UseSystemTmp";
analyzer[] = "Structures/UseUrlQueryFunctions";
analyzer[] = "Structures/UseVariableInsideLoop";
analyzer[] = "Structures/UselessBrackets";
analyzer[] = "Structures/UselessCasting";
analyzer[] = "Structures/UselessCheck";
analyzer[] = "Structures/UselessCoalesce";
analyzer[] = "Structures/UselessGlobal";
analyzer[] = "Structures/UselessInstruction";
analyzer[] = "Structures/UselessNullCoalesce";
analyzer[] = "Structures/UselessParenthesis";
analyzer[] = "Structures/UselessShortTernary";
analyzer[] = "Structures/UselessSwitch";
```

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analyzer[] = "Structures/UselessTrailingComma";
analyzer[] = "Structures/UselessUnset";
analyzer[] = "Structures/VardumpUsage";
analyzer[] = "Structures/VariableGlobal";
analyzer[] = "Structures/VariableMayBeNonGlobal";
analyzer[] = "Structures/WhileListEach";
analyzer[] = "Structures/WrongLocale";
analyzer[] = "Structures/WrongPrecedenceInExpression";
analyzer[] = "Structures/WrongRange";
analyzer[] = "Structures/YodaComparison";
analyzer[] = "Structures/pregOptionE";
analyzer[] = "Structures/strOrMbFavorite";
analyzer[] = "Structures/toStringThrowsException";
analyzer[] = "Traits/AlreadyParentsTrait";
analyzer[] = "Traits/CannotCallTraitMethod";
analyzer[] = "Traits/ConstantsInTraits";
analyzer[] = "Traits/CouldUseTrait";
analyzer[] = "Traits/DependantTrait";
analyzer[] = "Traits/EmptyTrait";
analyzer[] = "Traits/FinalTraitsAreFinal";
analyzer[] = "Traits/IncompatibleProperty";
analyzer[] = "Traits/IsExtTrait";
analyzer[] = "Traits/LocallyUsedProperty";
analyzer[] = "Traits/MethodCollisionTraits";
analyzer[] = "Traits/MultipleUsage";
analyzer[] = "Traits/NoPrivateAbstract";
analyzer[] = "Traits/Php";
analyzer[] = "Traits/SelfUsingTrait";
analyzer[] = "Traits/SidelinedMethod";
analyzer[] = "Traits/TraitIsNotAType";
analyzer[] = "Traits/TraitMethod";
analyzer[] = "Traits/TraitNotFound";
analyzer[] = "Traits/TraitUsage";
analyzer[] = "Traits/Traitnames";
analyzer[] = "Traits/UndefinedInsteadof";
analyzer[] = "Traits/UndefinedTrait";
analyzer[] = "Traits/UnusedClassTrait";
analyzer[] = "Traits/UnusedTrait";
analyzer[] = "Traits/UsedOnceTrait";
analyzer[] = "Traits/UsedTrait";
analyzer[] = "Traits/UselessAlias";
analyzer[] = "Type/ArrayIndex";
analyzer[] = "Type/Binary";
analyzer[] = "Type/CharString";
analyzer[] = "Type/Continents";
analyzer[] = "Type/DuplicateLiteral";
analyzer[] = "Type/Email";
analyzer[] = "Type/GPCIndex";
analyzer[] = "Type/Heredoc";
analyzer[] = "Type/Hexadecimal";
analyzer[] = "Type/HexadecimalString";
analyzer[] = "Type/HttpHeader";
```

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```
analyzer[] = "Type/HttpStatus";
analyzer[] = "Type/IncomingDateFormat";
analyzer[] = "Type/Ip";
analyzer[] = "Type/MalformedOctal";
analyzer[] = "Type/Md5String";
analyzer[] = "Type/MimeType";
analyzer[] = "Type/NoRealComparison";
analyzer[] = "Type/Nowdoc";
analyzer[] = "Type/Octal";
analyzer[] = "Type/OctalInString";
analyzer[] = "Type/OneVariableStrings";
analyzer[] = "Type/OpensslCipher";
analyzer[] = "Type/Pack";
analyzer[] = "Type/Path";
analyzer[] = "Type/Pcre";
analyzer[] = "Type/Ports";
analyzer[] = "Type/Printf";
analyzer[] = "Type/Protocols";
analyzer[] = "Type/Regex";
analyzer[] = "Type/Sapi";
analyzer[] = "Type/Shellcommands";
analyzer[] = "Type/ShouldBeSingleQuote";
analyzer[] = "Type/ShouldTypecast";
analyzer[] = "Type/SilentlyCastInteger";
analyzer[] = "Type/SimilarIntegers";
analyzer[] = "Type/SpecialIntegers";
analyzer[] = "Type/Sql";
analyzer[] = "Type/StringHoldAVariable";
analyzer[] = "Type/StringInterpolation";
analyzer[] = "Type/StringWithStrangeSpace";
analyzer[] = "Type/UdpDomains";
analyzer[] = "Type/UnicodeBlock";
analyzer[] = "Type/Url";
analyzer[] = "Typehints/CouldBeArray";
analyzer[] = "Typehints/CouldBeBoolean";
analyzer[] = "Typehints/CouldBeCIT";
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analyzer[] = "Typehints/CouldBeGenerator";
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analyzer[] = "Typehints/CouldBeNever";
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analyzer[] = "Typehints/CouldBeString";
analyzer[] = "Typehints/CouldBeVoid";
analyzer[] = "Typehints/CouldNotType";
analyzer[] = "Typehints/MissingReturntype";
analyzer[] = "Typehints/MissingTypehints";
analyzer[] = "Typehints/StandaloneTypeTFN";
```

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```
analyzer[] = "Typehints/WrongTypeWithDefault";
analyzer[] = "Utils/Selector";
analyzer[] = "Variables/AmbiguousTypes";
analyzer[] = "Variables/AssignedTwiceOrMore";
analyzer[] = "Variables/Blind";
analyzer[] = "Variables/CloseNaming";
analyzer[] = "Variables/ComplexDynamicNames";
analyzer[] = "Variables/ConstantTypo";
analyzer[] = "Variables/Globals";
analyzer[] = "Variables/InconsistentUsage";
analyzer[] = "Variables/InheritedStaticVariable";
analyzer[] = "Variables/InterfaceArguments";
analyzer[] = "Variables/IsLocalConstant";
analyzer[] = "Variables/LocalGlobals";
analyzer[] = "Variables/LostReferences";
analyzer[] = "Variables/NoInitialS";
analyzer[] = "Variables/NoStaticVarInMethod";
analyzer[] = "Variables/NoVariableNeeded";
analyzer[] = "Variables/Overwriting";
analyzer[] = "Variables/OverwrittenLiterals";
analyzer[] = "Variables/Php5IndirectExpression";
analyzer[] = "Variables/Php7IndirectExpression";
analyzer[] = "Variables/RealVariables";
analyzer[] = "Variables/RecycledVariables";
analyzer[] = "Variables/RedeclaredStaticVariable";
analyzer[] = "Variables/References";
analyzer[] = "Variables/SelfTransform";
analyzer[] = "Variables/StaticVariableInNamespace";
analyzer[] = "Variables/StaticVariableInitialisation";
analyzer[] = "Variables/StaticVariables";
analyzer[] = "Variables/StrangeName";
analyzer[] = "Variables/UncommonEnvVar";
analyzer[] = "Variables/UndefinedConstantName";
analyzer[] = "Variables/UndefinedVariable";
analyzer[] = "Variables/UniqueUsage";
analyzer[] = "Variables/VariableLong";
analyzer[] = "Variables/VariableNonascii";
analyzer[] = "Variables/VariableOneLetter";
analyzer[] = "Variables/VariablePhp";
analyzer[] = "Variables/VariableUppercase";
analyzer[] = "Variables/VariableUsedOnce";
analyzer[] = "Variables/VariableUsedOnceByContext";
analyzer[] = "Variables/VariableVariables";
analyzer[] = "Variables/WrittenOnlyVariable";
analyzer[] = "Vendors/Codeigniter";
analyzer[] = "Vendors/Concrete5";
analyzer[] = "Vendors/Drupal";
analyzer[] = "Vendors/Ez";
analyzer[] = "Vendors/Feast";
analyzer[] = "Vendors/Fuel";
analyzer[] = "Vendors/Joomla";
analyzer[] = "Vendors/Laravel";
```

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```
  analyzer[] = "Vendors/Phalcon";
  analyzer[] = "Vendors/Sylius";
  analyzer[] = "Vendors/Symfony";
  analyzer[] = "Vendors/Typo3";
  analyzer[] = "Vendors/Wordpress";
  analyzer[] = "Vendors/Yii";
```

All for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'All':
   - 'Arrays/AmbiguousKeys'
   - 'Arrays/AppendAndAssignArrays'
   - 'Arrays/ArrayBracketConsistence'
   - 'Arrays/ArrayNSUsage'
   - 'Arrays/Arrayindex'
   - 'Arrays/EmptyFinal'
   - 'Arrays/EmptySlots'
   - 'Arrays/FloatConversionAsIndex'
   - 'Arrays/GettingLastElement'
   - 'Arrays/MassCreation'
   - 'Arrays/MistakenConcatenation'
   - 'Arrays/MixedKeys'
   - 'Arrays/Multidimensional'
   - 'Arrays/MultipleIdenticalKeys'
   - 'Arrays/NegativeStart'
   - 'Arrays/NoSpreadForHash'
   - 'Arrays/NonConstantArray'
   - 'Arrays/NullBoolean'
   - 'Arrays/Phparrayindex'
   - 'Arrays/RandomlySortedLiterals'
   - 'Arrays/ShouldPreprocess'
   - 'Arrays/SliceFirst'
   - 'Arrays/StringInitialization'
   - 'Arrays/TooManyDimensions'
   - 'Arrays/WeakType'
   - 'Arrays/WeirdIndex'
   - 'Arrays/WithCallback'
   - 'Attributes/Friend'
   - 'Attributes/InjectableVersion'
   - 'Attributes/MissingAttributeAttribute'
   - 'Attributes/ModifyImmutable'
   - 'Attributes/NestedAttributes'
   - 'Attributes/Override'
   - 'Attributes/PhpNativeAttributes'
   - 'Attributes/UsingDeprecated'
   - 'Classes/AbstractConstants'
   - 'Classes/AbstractOrImplements'
```

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```
  - 'Classes/AbstractStatic'
  - 'Classes/Abstractclass'
  - 'Classes/Abstractmethods'
  - 'Classes/AccessPrivate'
  - 'Classes/AccessProtected'
  - 'Classes/AmbiguousStatic'
  - 'Classes/AmbiguousVisibilities'
  - 'Classes/Anonymous'
  - 'Classes/AvoidOptionArrays'
  - 'Classes/AvoidOptionalProperties'
  - 'Classes/AvoidUsing'
  - 'Classes/CancelCommonMethod'
  - 'Classes/CannotBeReadonly'
  - 'Classes/CantExtendFinal'
  - 'Classes/CantInheritAbstractMethod'
  - 'Classes/CantInstantiateClass'
  - 'Classes/CantInstantiateNonClass'
  - 'Classes/CantOverwriteFinalConstant'
  - 'Classes/CantOverwriteFinalMethod'
  - 'Classes/CheckAfterNullSafeOperator'
  - 'Classes/CheckOnCallUsage'
  - 'Classes/ChecksPropertyExistence'
  - 'Classes/ChildRemoveTypehint'
  - 'Classes/CitSameName'
  - 'Classes/ClassAliasUsage'
  - 'Classes/ClassInvasion'
  - 'Classes/ClassOverreach'
  - 'Classes/ClassUsage'
  - 'Classes/Classnames'
  - 'Classes/CloneWithNonObject'
  - 'Classes/CloningUsage'
  - 'Classes/ConstVisibilityUsage'
  - 'Classes/ConstantClass'
  - 'Classes/ConstantDefinition'
  - 'Classes/ConstantUsedBelow'
  - 'Classes/Constructor'
  - 'Classes/CouldBeAbstractClass'
  - 'Classes/CouldBeAbstractMethod'
  - 'Classes/CouldBeClassConstant'
  - 'Classes/CouldBeFinal'
  - 'Classes/CouldBeIterable'
  - 'Classes/CouldBeParentMethod'
  - 'Classes/CouldBePrivate'
  - 'Classes/CouldBePrivateConstante'
  - 'Classes/CouldBePrivateMethod'
  - 'Classes/CouldBeProtectedConstant'
  - 'Classes/CouldBeProtectedMethod'
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  - 'Classes/CouldBeReadonlyProperty'
  - 'Classes/CouldBeStatic'
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  - 'Classes/DefinedParentMP'
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  - 'Classes/DemeterLaw'
  - 'Classes/DependantAbstractClass'
  - 'Classes/DifferentArgumentCounts'
  - 'Classes/DirectCallToMagicMethod'
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  - 'Classes/InheritedPropertyMustMatch'
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  - 'Classes/InsufficientPropertyTypehint'
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  - 'Classes/NewDynamicConstantSyntax'
  - 'Classes/NewOnFunctioncallOrIdentifier'
  - 'Classes/NewThenCall'
  - 'Classes/NoMagicWithArray'
  - 'Classes/NoNullWithNullSafeOperator'
  - 'Classes/NoPSSOutsideClass'
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  - 'Classes/NoSelfReferencingConstant'
  - 'Classes/NonNullableSetters'
  - 'Classes/NonPpp'
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  - 'Classes/RedefinedDefault'
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  - 'Classes/UndefinedConstants'
  - 'Classes/UndefinedMethod'
  - 'Classes/UndefinedParentMP'
  - 'Classes/UndefinedProperty'
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  - 'Exceptions/ConvertedExceptions'
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  - 'Extensions/Extigbinary'
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  - 'Structures/NoChoice'
  - 'Structures/NoDirectAccess'
  - 'Structures/NoDirectUsage'
  - 'Structures/NoEmptyRegex'
  - 'Structures/NoEmptyStringWithExplode'
  - 'Structures/NoGetClassNull'
  - 'Structures/NoHardcodedHash'
  - 'Structures/NoHardcodedIp'
  - 'Structures/NoHardcodedPath'
  - 'Structures/NoHardcodedPort'
  - 'Structures/NoIssetWithEmpty'
  - 'Structures/NoMaxOnEmptyArray'
  - 'Structures/NoNeedForElse'
  - 'Structures/NoNeedForTriple'
  - 'Structures/NoNeedGetClass'
  - 'Structures/NoNullForIndex'
  - 'Structures/NoObjectAsIndex'
  - 'Structures/NoParenthesisForLanguageConstruct'
  - 'Structures/NoReferenceOnLeft'
  - 'Structures/NoReturnInFinally'
  - 'Structures/NoSubstrOne'
  - 'Structures/NoValidCast'
  - 'Structures/NoVariableIsACondition'
  - 'Structures/NonBreakableSpaceInNames'
  - 'Structures/NonIntStringAsIndex'
  - 'Structures/Noscream'
  - 'Structures/NotEqual'
  - 'Structures/NotNot'
  - 'Structures/NotOrNot'
  - 'Structures/ObjectReferences'
  - 'Structures/OnceUsage'
  - 'Structures/OneDotOrObjectOperatorPerLine'
  - 'Structures/OneExpressionBracketsConsistency'
  - 'Structures/OneIfIsSufficient'
  - 'Structures/OneLevelOfIndentation'
  - 'Structures/OneLineTwoInstructions'
  - 'Structures/OnlyFirstByte'
  - 'Structures/OnlyVariableReturnedByReference'
  - 'Structures/OpensslRandomPseudoByteSecondArg'
```

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```
  - 'Structures/OrDie'
  - 'Structures/OverwrittenForeachVar'
  - 'Structures/PHP7Dirname'
  - 'Structures/PhpinfoUsage'
  - 'Structures/PlusEgalOne'
  - 'Structures/PossibleIncrement'
  - 'Structures/PossibleInfiniteLoop'
  - 'Structures/PrintAndDie'
  - 'Structures/PrintWithoutParenthesis'
  - 'Structures/PrintfArguments'
  - 'Structures/PropertyVariableConfusion'
  - 'Structures/QueriesInLoop'
  - 'Structures/RandomWithoutTry'
  - 'Structures/RecalledCondition'
  - 'Structures/RegexDelimiter'
  - 'Structures/RepeatedPrint'
  - 'Structures/RepeatedRegex'
  - 'Structures/ResourcesUsage'
  - 'Structures/ResultMayBeMissing'
  - 'Structures/ReturnTrueFalse'
  - 'Structures/ReturnVoid'
  - 'Structures/ReuseVariable'
  - 'Structures/SGVariablesConfusion'
  - 'Structures/SameConditions'
  - 'Structures/SequenceInFor'
  - 'Structures/SetAside'
  - 'Structures/SetlocaleNeedsConstants'
  - 'Structures/ShellUsage'
  - 'Structures/ShortOrCompleteComparison'
  - 'Structures/ShortTags'
  - 'Structures/ShouldChainException'
  - 'Structures/ShouldMakeTernary'
  - 'Structures/ShouldPreprocess'
  - 'Structures/ShouldUseExplodeArgs'
  - 'Structures/ShouldUseForeach'
  - 'Structures/ShouldUseMath'
  - 'Structures/ShouldUseOperator'
  - 'Structures/SimplePreg'
  - 'Structures/SprintfFormatCompilation'
  - 'Structures/StaticLoop'
  - 'Structures/StrictInArrayFavorite'
  - 'Structures/StringInterpolationFavorite'
  - 'Structures/StripTagsSkipsClosedTag'
  - 'Structures/StrposCompare'
  - 'Structures/StrposLessThanOne'
  - 'Structures/SubstrLastArg'
  - 'Structures/SubstrToTrim'
  - 'Structures/SuspiciousComparison'
  - 'Structures/SwitchToSwitch'
  - 'Structures/SwitchWithMultipleDefault'
  - 'Structures/SwitchWithoutDefault'
  - 'Structures/TernaryInConcat'
```

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```
  - 'Structures/TestThenCast'
  - 'Structures/ThrowsAndAssign'
  - 'Structures/TimestampDifference'
  - 'Structures/TooManyChainedCalls'
  - 'Structures/TooManyElseif'
  - 'Structures/TryFinally'
  - 'Structures/UncheckedResources'
  - 'Structures/UnconditionLoopBreak'
  - 'Structures/UnknownPregOption'
  - 'Structures/Unpreprocessed'
  - 'Structures/UnreachableCode'
  - 'Structures/UnsetInForeach'
  - 'Structures/UnsupportedOperandTypes'
  - 'Structures/UnsupportedTypesWithOperators'
  - 'Structures/UnusedGlobal'
  - 'Structures/UnusedLabel'
  - 'Structures/UseArrayFunctions'
  - 'Structures/UseCaseValue'
  - 'Structures/UseConstant'
  - 'Structures/UseCountRecursive'
  - 'Structures/UseDebug'
  - 'Structures/UseFileAppend'
  - 'Structures/UseInstanceof'
  - 'Structures/UseListWithForeach'
  - 'Structures/UsePositiveCondition'
  - 'Structures/UseSameTypesForComparisons'
  - 'Structures/UseStrEndsWith'
  - 'Structures/UseStrStartsWith'
  - 'Structures/UseSystemTmp'
  - 'Structures/UseUrlQueryFunctions'
  - 'Structures/UseVariableInsideLoop'
  - 'Structures/UselessBrackets'
  - 'Structures/UselessCasting'
  - 'Structures/UselessCheck'
  - 'Structures/UselessCoalesce'
  - 'Structures/UselessGlobal'
  - 'Structures/UselessInstruction'
  - 'Structures/UselessNullCoalesce'
  - 'Structures/UselessParenthesis'
  - 'Structures/UselessShortTernary'
  - 'Structures/UselessSwitch'
  - 'Structures/UselessTrailingComma'
  - 'Structures/UselessUnset'
  - 'Structures/VardumpUsage'
  - 'Structures/VariableGlobal'
  - 'Structures/VariableMayBeNonGlobal'
  - 'Structures/WhileListEach'
  - 'Structures/WrongLocale'
  - 'Structures/WrongPrecedenceInExpression'
  - 'Structures/WrongRange'
  - 'Structures/YodaComparison'
  - 'Structures/pregOptionE'
```

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```
  - 'Structures/strOrMbFavorite'
  - 'Structures/toStringThrowsException'
  - 'Traits/AlreadyParentsTrait'
  - 'Traits/CannotCallTraitMethod'
  - 'Traits/ConstantsInTraits'
  - 'Traits/CouldUseTrait'
  - 'Traits/DependantTrait'
  - 'Traits/EmptyTrait'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/IncompatibleProperty'
  - 'Traits/IsExtTrait'
  - 'Traits/LocallyUsedProperty'
  - 'Traits/MethodCollisionTraits'
  - 'Traits/MultipleUsage'
  - 'Traits/NoPrivateAbstract'
  - 'Traits/Php'
  - 'Traits/SelfUsingTrait'
  - 'Traits/SidelinedMethod'
  - 'Traits/TraitIsNotAType'
  - 'Traits/TraitMethod'
  - 'Traits/TraitNotFound'
  - 'Traits/TraitUsage'
  - 'Traits/Traitnames'
  - 'Traits/UndefinedInsteadof'
  - 'Traits/UndefinedTrait'
  - 'Traits/UnusedClassTrait'
  - 'Traits/UnusedTrait'
  - 'Traits/UsedOnceTrait'
  - 'Traits/UsedTrait'
  - 'Traits/UselessAlias'
  - 'Type/ArrayIndex'
  - 'Type/Binary'
  - 'Type/CharString'
  - 'Type/Continents'
  - 'Type/DuplicateLiteral'
  - 'Type/Email'
  - 'Type/GPCIndex'
  - 'Type/Heredoc'
  - 'Type/Hexadecimal'
  - 'Type/HexadecimalString'
  - 'Type/HttpHeader'
  - 'Type/HttpStatus'
  - 'Type/IncomingDateFormat'
  - 'Type/Ip'
  - 'Type/MalformedOctal'
  - 'Type/Md5String'
  - 'Type/MimeType'
  - 'Type/NoRealComparison'
  - 'Type/Nowdoc'
  - 'Type/Octal'
  - 'Type/OctalInString'
  - 'Type/OneVariableStrings'
```

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```
  - 'Type/OpensslCipher'
  - 'Type/Pack'
  - 'Type/Path'
  - 'Type/Pcre'
  - 'Type/Ports'
  - 'Type/Printf'
  - 'Type/Protocols'
  - 'Type/Regex'
  - 'Type/Sapi'
  - 'Type/Shellcommands'
  - 'Type/ShouldBeSingleQuote'
  - 'Type/ShouldTypecast'
  - 'Type/SilentlyCastInteger'
  - 'Type/SimilarIntegers'
  - 'Type/SpecialIntegers'
  - 'Type/Sql'
  - 'Type/StringHoldAVariable'
  - 'Type/StringInterpolation'
  - 'Type/StringWithStrangeSpace'
  - 'Type/UdpDomains'
  - 'Type/UnicodeBlock'
  - 'Type/Url'
  - 'Typehints/CouldBeArray'
  - 'Typehints/CouldBeBoolean'
  - 'Typehints/CouldBeCIT'
  - 'Typehints/CouldBeCallable'
  - 'Typehints/CouldBeFloat'
  - 'Typehints/CouldBeGenerator'
  - 'Typehints/CouldBeInt'
  - 'Typehints/CouldBeIterable'
  - 'Typehints/CouldBeNever'
  - 'Typehints/CouldBeNull'
  - 'Typehints/CouldBeParent'
  - 'Typehints/CouldBeResource'
  - 'Typehints/CouldBeSelf'
  - 'Typehints/CouldBeString'
  - 'Typehints/CouldBeVoid'
  - 'Typehints/CouldNotType'
  - 'Typehints/MissingReturntype'
  - 'Typehints/MissingTypehints'
  - 'Typehints/StandaloneTypeTFN'
  - 'Typehints/WrongTypeWithDefault'
  - 'Utils/Selector'
  - 'Variables/AmbiguousTypes'
  - 'Variables/AssignedTwiceOrMore'
  - 'Variables/Blind'
  - 'Variables/CloseNaming'
  - 'Variables/ComplexDynamicNames'
  - 'Variables/ConstantTypo'
  - 'Variables/Globals'
  - 'Variables/InconsistentUsage'
  - 'Variables/InheritedStaticVariable'
```

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```
  - 'Variables/InterfaceArguments'
  - 'Variables/IsLocalConstant'
  - 'Variables/LocalGlobals'
  - 'Variables/LostReferences'
  - 'Variables/NoInitialS'
  - 'Variables/NoStaticVarInMethod'
  - 'Variables/NoVariableNeeded'
  - 'Variables/Overwriting'
  - 'Variables/OverwrittenLiterals'
  - 'Variables/Php5IndirectExpression'
  - 'Variables/Php7IndirectExpression'
  - 'Variables/RealVariables'
  - 'Variables/RecycledVariables'
  - 'Variables/RedeclaredStaticVariable'
  - 'Variables/References'
  - 'Variables/SelfTransform'
  - 'Variables/StaticVariableInNamespace'
  - 'Variables/StaticVariableInitialisation'
  - 'Variables/StaticVariables'
  - 'Variables/StrangeName'
  - 'Variables/UncommonEnvVar'
  - 'Variables/UndefinedConstantName'
  - 'Variables/UndefinedVariable'
  - 'Variables/UniqueUsage'
  - 'Variables/VariableLong'
  - 'Variables/VariableNonascii'
  - 'Variables/VariableOneLetter'
  - 'Variables/VariablePhp'
  - 'Variables/VariableUppercase'
  - 'Variables/VariableUsedOnce'
  - 'Variables/VariableUsedOnceByContext'
  - 'Variables/VariableVariables'
  - 'Variables/WrittenOnlyVariable'
  - 'Vendors/Codeigniter'
  - 'Vendors/Concrete5'
  - 'Vendors/Drupal'
  - 'Vendors/Ez'
  - 'Vendors/Feast'
  - 'Vendors/Fuel'
  - 'Vendors/Joomla'
  - 'Vendors/Laravel'
  - 'Vendors/Phalcon'
  - 'Vendors/Sylius'
  - 'Vendors/Symfony'
  - 'Vendors/Typo3'
  - 'Vendors/Wordpress'
  - 'Vendors/Yii'
```

10.5.2 Analyze

Analyze for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Analyze]
  analyzer[] = "Arrays/AmbiguousKeys";
  analyzer[] = "Arrays/AppendAndAssignArrays";
  analyzer[] = "Arrays/FloatConversionAsIndex";
  analyzer[] = "Arrays/MultipleIdenticalKeys";
  analyzer[] = "Arrays/NoSpreadForHash";
  analyzer[] = "Arrays/NonConstantArray";
  analyzer[] = "Arrays/NullBoolean";
  analyzer[] = "Arrays/RandomlySortedLiterals";
  analyzer[] = "Arrays/TooManyDimensions";
  analyzer[] = "Arrays/WeakType";
  analyzer[] = "Attributes/MissingAttributeAttribute";
  analyzer[] = "Attributes/ModifyImmutable";
  analyzer[] = "Classes/AbstractOrImplements";
  analyzer[] = "Classes/AbstractStatic";
  analyzer[] = "Classes/AccessPrivate";
  analyzer[] = "Classes/AccessProtected";
  analyzer[] = "Classes/AmbiguousStatic";
  analyzer[] = "Classes/AmbiguousVisibilities";
  analyzer[] = "Classes/AvoidOptionArrays";
  analyzer[] = "Classes/AvoidOptionalProperties";
  analyzer[] = "Classes/CantExtendFinal";
  analyzer[] = "Classes/CantInstantiateClass";
  analyzer[] = "Classes/CantInstantiateNonClass";
  analyzer[] = "Classes/CantOverwriteFinalConstant";
  analyzer[] = "Classes/CheckAfterNullSafeOperator";
  analyzer[] = "Classes/CheckOnCallUsage";
  analyzer[] = "Classes/CitSameName";
  analyzer[] = "Classes/CloneWithNonObject";
  analyzer[] = "Classes/CouldBeAbstractClass";
  analyzer[] = "Classes/CouldBeFinal";
  analyzer[] = "Classes/CouldBeStatic";
  analyzer[] = "Classes/CouldInjectParam";
  analyzer[] = "Classes/CyclicReferences";
  analyzer[] = "Classes/DependantAbstractClass";
  analyzer[] = "Classes/DifferentArgumentCounts";
  analyzer[] = "Classes/DirectCallToMagicMethod";
  analyzer[] = "Classes/DontSendThisInConstructor";
  analyzer[] = "Classes/DontUnsetProperties";
  analyzer[] = "Classes/EmptyClass";
  analyzer[] = "Classes/HiddenNullable";
  analyzer[] = "Classes/ImplementIsForInterface";
  analyzer[] = "Classes/ImplementedMethodsArePublic";
  analyzer[] = "Classes/IncompatibleSignature";
  analyzer[] = "Classes/IncompatibleSignature74";
  analyzer[] = "Classes/InheritedPropertyMustMatch";
  analyzer[] = "Classes/InstantiatingAbstractClass";
```

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```
analyzer[] = "Classes/MakeDefault";
analyzer[] = "Classes/MakeGlobalAProperty";
analyzer[] = "Classes/MethodSignatureMustBeCompatible";
analyzer[] = "Classes/MismatchProperties";
analyzer[] = "Classes/MissingAbstractMethod";
analyzer[] = "Classes/MultipleDeclarations";
analyzer[] = "Classes/MultipleTraitOrInterface";
analyzer[] = "Classes/NewThenCall";
analyzer[] = "Classes/NoMagicWithArray";
analyzer[] = "Classes/NoNullWithNullSafeOperator";
analyzer[] = "Classes/NoPSSOutsideClass";
analyzer[] = "Classes/NoParent";
analyzer[] = "Classes/NoPublicAccess";
analyzer[] = "Classes/NoReadonlyAssignationInGlobal";
analyzer[] = "Classes/NoSelfReferencingConstant";
analyzer[] = "Classes/NonNullableSetters";
analyzer[] = "Classes/NonPpp";
analyzer[] = "Classes/NonStaticMethodsCalledStatic";
analyzer[] = "Classes/OldStyleConstructor";
analyzer[] = "Classes/OldStyleVar";
analyzer[] = "Classes/ParentFirst";
analyzer[] = "Classes/ParentIsNotStatic";
analyzer[] = "Classes/PropertyCouldBeLocal";
analyzer[] = "Classes/PropertyMethodSameName";
analyzer[] = "Classes/PropertyNeverUsed";
analyzer[] = "Classes/PropertyUsedInOneMethodOnly";
analyzer[] = "Classes/PssWithoutClass";
analyzer[] = "Classes/ScalarOrObjectProperty";
analyzer[] = "Classes/ShouldUseSelf";
analyzer[] = "Classes/ShouldUseThis";
analyzer[] = "Classes/StaticCannotCallNonStatic";
analyzer[] = "Classes/StaticContainsThis";
analyzer[] = "Classes/StaticMethodsCalledFromObject";
analyzer[] = "Classes/SwappedArguments";
analyzer[] = "Classes/ThisIsForClasses";
analyzer[] = "Classes/ThisIsNotAnArray";
analyzer[] = "Classes/ThisIsNotForStatic";
analyzer[] = "Classes/ThrowInDestruct";
analyzer[] = "Classes/TooManyDereferencing";
analyzer[] = "Classes/TooManyFinds";
analyzer[] = "Classes/TooManyInjections";
analyzer[] = "Classes/UndeclaredStaticProperty";
analyzer[] = "Classes/UndefinedClasses";
analyzer[] = "Classes/UndefinedConstants";
analyzer[] = "Classes/UndefinedParentMP";
analyzer[] = "Classes/UndefinedProperty";
analyzer[] = "Classes/UndefinedStaticMP";
analyzer[] = "Classes/UndefinedStaticclass";
analyzer[] = "Classes/UnfinishedObject";
analyzer[] = "Classes/UnreachableMethod";
analyzer[] = "Classes/UnresolvedClasses";
analyzer[] = "Classes/UnresolvedInstanceof";
```

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```
analyzer[] = "Classes/UnusedClass";
analyzer[] = "Classes/UnusedConstant";
analyzer[] = "Classes/UnusedPublicMethod";
analyzer[] = "Classes/UseClassOperator";
analyzer[] = "Classes/UseInstanceof";
analyzer[] = "Classes/UsedOnceProperty";
analyzer[] = "Classes/UselessAbstract";
analyzer[] = "Classes/UselessAssignationOfPromotedProperty";
analyzer[] = "Classes/UselessConstructor";
analyzer[] = "Classes/UselessFinal";
analyzer[] = "Classes/UselessMethod";
analyzer[] = "Classes/UsingThisOutsideAClass";
analyzer[] = "Classes/WeakType";
analyzer[] = "Classes/WrongName";
analyzer[] = "Classes/WrongTypedPropertyInit";
analyzer[] = "Constants/BadConstantnames";
analyzer[] = "Constants/ConstRecommended";
analyzer[] = "Constants/CreatedOutsideItsNamespace";
analyzer[] = "Constants/InvalidName";
analyzer[] = "Constants/MultipleConstantDefinition";
analyzer[] = "Constants/StrangeName";
analyzer[] = "Constants/UndefinedConstants";
analyzer[] = "Enums/NoMagicMethod";
analyzer[] = "Enums/UndefinedEnumcase";
analyzer[] = "Enums/UnusedEnumCase";
analyzer[] = "Exceptions/CantThrow";
analyzer[] = "Exceptions/CatchUndefinedVariable";
analyzer[] = "Exceptions/ConvertedExceptions";
analyzer[] = "Exceptions/ForgottenThrown";
analyzer[] = "Exceptions/OverwriteException";
analyzer[] = "Exceptions/ThrowFunctioncall";
analyzer[] = "Exceptions/ThrowRawExceptions";
analyzer[] = "Exceptions/UncaughtExceptions";
analyzer[] = "Exceptions/Unthrown";
analyzer[] = "Exceptions/UselessCatch";
analyzer[] = "Exceptions/UselessTry";
analyzer[] = "Files/InclusionWrongCase";
analyzer[] = "Files/MissingInclude";
analyzer[] = "Functions/AliasesUsage";
analyzer[] = "Functions/AvoidBooleanArgument";
analyzer[] = "Functions/CallbackNeedsReturn";
analyzer[] = "Functions/CanCallGenerator";
analyzer[] = "Functions/CancelledParameter";
analyzer[] = "Functions/CannotUseStaticForClosure";
analyzer[] = "Functions/CouldCentralize";
analyzer[] = "Functions/DeepDefinitions";
analyzer[] = "Functions/DontUseVoid";
analyzer[] = "Functions/DuplicateNamedParameter";
analyzer[] = "Functions/EmptyFunction";
analyzer[] = "Functions/FnArgumentVariableConfusion";
analyzer[] = "Functions/HardcodedPasswords";
analyzer[] = "Functions/InsufficientTypehint";
```

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```
analyzer[] = "Functions/MethodIsNotAnIf";
analyzer[] = "Functions/MismatchParameterName";
analyzer[] = "Functions/MismatchTypeAndDefault";
analyzer[] = "Functions/MismatchedDefaultArguments";
analyzer[] = "Functions/MismatchedTypehint";
analyzer[] = "Functions/ModifyTypedParameter";
analyzer[] = "Functions/MustReturn";
analyzer[] = "Functions/NeverUsedParameter";
analyzer[] = "Functions/NoBooleanAsDefault";
analyzer[] = "Functions/NoDefaultForReference";
analyzer[] = "Functions/NoLiteralForReference";
analyzer[] = "Functions/NoReferencedVoid";
analyzer[] = "Functions/NoReturnUsed";
analyzer[] = "Functions/OnlyVariableForReference";
analyzer[] = "Functions/OnlyVariablePassedByReference";
analyzer[] = "Functions/RedeclaredPhpFunction";
analyzer[] = "Functions/RelayFunction";
analyzer[] = "Functions/RetypedReference";
analyzer[] = "Functions/ShouldUseConstants";
analyzer[] = "Functions/ShouldYieldWithKey";
analyzer[] = "Functions/TooManyLocalVariables";
analyzer[] = "Functions/TypehintMustBeReturned";
analyzer[] = "Functions/TypehintedReferences";
analyzer[] = "Functions/UndefinedFunctions";
analyzer[] = "Functions/UnknownParameterName";
analyzer[] = "Functions/UnusedArguments";
analyzer[] = "Functions/UnusedInheritedVariable";
analyzer[] = "Functions/UnusedReturnedValue";
analyzer[] = "Functions/UseConstantAsArguments";
analyzer[] = "Functions/UseConstantsAsReturns";
analyzer[] = "Functions/UselessArgument";
analyzer[] = "Functions/UselessReferenceArgument";
analyzer[] = "Functions/UselessReturn";
analyzer[] = "Functions/UsesDefaultArguments";
analyzer[] = "Functions/UsingDeprecated";
analyzer[] = "Functions/VoidIsNotAReference";
analyzer[] = "Functions/WithoutReturn";
analyzer[] = "Functions/WrongArgumentNameWithPhpFunction";
analyzer[] = "Functions/WrongArgumentType";
analyzer[] = "Functions/WrongNumberOfArguments";
analyzer[] = "Functions/WrongOptionalParameter";
analyzer[] = "Functions/WrongReturnedType";
analyzer[] = "Functions/WrongTypeWithCall";
analyzer[] = "Functions/funcGetArgModified";
analyzer[] = "Interfaces/AlreadyParentsInterface";
analyzer[] = "Interfaces/CantImplementTraversable";
analyzer[] = "Interfaces/CouldUseInterface";
analyzer[] = "Interfaces/EmptyInterface";
analyzer[] = "Interfaces/IsNotImplemented";
analyzer[] = "Interfaces/NoGaranteeForPropertyConstant";
analyzer[] = "Interfaces/RepeatedInterface";
analyzer[] = "Interfaces/UndefinedInterfaces";
```

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```
analyzer[] = "Interfaces/UselessInterfaces";
analyzer[] = "Namespaces/ConstantFullyQualified";
analyzer[] = "Namespaces/EmptyNamespace";
analyzer[] = "Namespaces/HiddenUse";
analyzer[] = "Namespaces/MultipleAliasDefinitionPerFile";
analyzer[] = "Namespaces/MultipleAliasDefinitions";
analyzer[] = "Namespaces/OverloadExistingNames";
analyzer[] = "Namespaces/ShouldMakeAlias";
analyzer[] = "Namespaces/UnresolvedUse";
analyzer[] = "Namespaces/UseWithFullyQualifiedNS";
analyzer[] = "Performances/ArrayMergeInLoops";
analyzer[] = "Performances/LogicalToInArray";
analyzer[] = "Performances/MemoizeMagicCall";
analyzer[] = "Performances/PrePostIncrement";
analyzer[] = "Performances/StrposTooMuch";
analyzer[] = "Performances/UseArraySlice";
analyzer[] = "Php/ArrayKeyExistsWithObjects";
analyzer[] = "Php/AssertFunctionIsReserved";
analyzer[] = "Php/AssignAnd";
analyzer[] = "Php/Assumptions";
analyzer[] = "Php/AvoidMbDectectEncoding";
analyzer[] = "Php/BetterRand";
analyzer[] = "Php/CloneConstant";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/Crc32MightBeNegative";
analyzer[] = "Php/DateTimeNotImmutable";
analyzer[] = "Php/Deprecated";
analyzer[] = "Php/DontPolluteGlobalSpace";
analyzer[] = "Php/EmptyList";
analyzer[] = "Php/ExitNoArg";
analyzer[] = "Php/FalseToArray";
analyzer[] = "Php/FopenMode";
analyzer[] = "Php/ForeachObject";
analyzer[] = "Php/HashAlgos";
analyzer[] = "Php/Incompilable";
analyzer[] = "Php/InternalParameterType";
analyzer[] = "Php/IsAWithString";
analyzer[] = "Php/IsnullVsEqualNull";
analyzer[] = "Php/JsonSerializeReturnType";
analyzer[] = "Php/LogicalInLetters";
analyzer[] = "Php/MissingMagicIsset";
analyzer[] = "Php/MissingSubpattern";
analyzer[] = "Php/MultipleDeclareStrict";
analyzer[] = "Php/MustCallParentConstructor";
analyzer[] = "Php/NativeClassTypeCompatibility";
analyzer[] = "Php/NeverKeyword";
analyzer[] = "Php/NoCastToInt";
analyzer[] = "Php/NoClassInGlobal";
analyzer[] = "Php/NoNullForNative";
analyzer[] = "Php/NoReferenceForTernary";
analyzer[] = "Php/OnlyVariablePassedByReference";
analyzer[] = "Php/PathinfoReturns";
```

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```
analyzer[] = "Php/Php81NewFunctions";
analyzer[] = "Php/ScalarAreNotArrays";
analyzer[] = "Php/ShortOpenTagRequired";
analyzer[] = "Php/ShouldUseCoalesce";
analyzer[] = "Php/StrposWithIntegers";
analyzer[] = "Php/StrtrArguments";
analyzer[] = "Php/TooManyNativeCalls";
analyzer[] = "Php/UnknownPcre2Option";
analyzer[] = "Php/UseObjectApi";
analyzer[] = "Php/UsePathinfo";
analyzer[] = "Php/UseSetCookie";
analyzer[] = "Php/UseStdclass";
analyzer[] = "Php/VersionCompareOperator";
analyzer[] = "Php/WrongAttributeConfiguration";
analyzer[] = "Php/WrongTypeForNativeFunction";
analyzer[] = "Php/oldAutoloadUsage";
analyzer[] = "Security/DontEchoError";
analyzer[] = "Security/ShouldUsePreparedStatement";
analyzer[] = "Structures/AddZero";
analyzer[] = "Structures/AlteringForeachWithoutReference";
analyzer[] = "Structures/AlternativeConsistenceByFile";
analyzer[] = "Structures/AlwaysFalse";
analyzer[] = "Structures/ArrayAccessOnLiteralArray";
analyzer[] = "Structures/ArrayFillWithObjects";
analyzer[] = "Structures/ArrayMapPassesByValue";
analyzer[] = "Structures/ArrayMergeAndVariadic";
analyzer[] = "Structures/ArrayMergeArrayArray";
analyzer[] = "Structures/AssigneAndCompare";
analyzer[] = "Structures/AutoUnsetForeach";
analyzer[] = "Structures/BailOutEarly";
analyzer[] = "Structures/BooleanStrictComparison";
analyzer[] = "Structures/BreakOutsideLoop";
analyzer[] = "Structures/BuriedAssignation";
analyzer[] = "Structures/CannotUseAppendForReading";
analyzer[] = "Structures/CastToBoolean";
analyzer[] = "Structures/CastingTernary";
analyzer[] = "Structures/CatchShadowsVariable";
analyzer[] = "Structures/CheckAllTypes";
analyzer[] = "Structures/CheckDivision";
analyzer[] = "Structures/CheckJson";
analyzer[] = "Structures/CoalesceAndConcat";
analyzer[] = "Structures/CoalesceNullCoalesce";
analyzer[] = "Structures/CommonAlternatives";
analyzer[] = "Structures/ComparedComparison";
analyzer[] = "Structures/ConcatEmpty";
analyzer[] = "Structures/ContinueIsForLoop";
analyzer[] = "Structures/CouldBeElse";
analyzer[] = "Structures/CouldBeSpaceship";
analyzer[] = "Structures/CouldBeStatic";
analyzer[] = "Structures/CouldUseDir";
analyzer[] = "Structures/CouldUseShortAssignation";
analyzer[] = "Structures/CouldUseStrrepeat";
```

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```
analyzer[] = "Structures/CouldUseYieldFrom";
analyzer[] = "Structures/CountIsNotNegative";
analyzer[] = "Structures/DanglingArrayReferences";
analyzer[] = "Structures/DefaultThenDiscard";
analyzer[] = "Structures/DirThenSlash";
analyzer[] = "Structures/DontAddSeconds";
analyzer[] = "Structures/DontChangeBlindKey";
analyzer[] = "Structures/DontMixPlusPlus";
analyzer[] = "Structures/DontReadAndWriteInOneExpression";
analyzer[] = "Structures/DontReuseForeachSource";
analyzer[] = "Structures/DoubleAssignation";
analyzer[] = "Structures/DoubleChecks";
analyzer[] = "Structures/DoubleInstruction";
analyzer[] = "Structures/DoubleObjectAssignation";
analyzer[] = "Structures/DropElseAfterReturn";
analyzer[] = "Structures/EchoWithConcat";
analyzer[] = "Structures/ElseIfElseif";
analyzer[] = "Structures/EmptyBlocks";
analyzer[] = "Structures/EmptyJsonError";
analyzer[] = "Structures/EmptyLines";
analyzer[] = "Structures/EmptyLoop";
analyzer[] = "Structures/EmptyTryCatch";
analyzer[] = "Structures/ErrorReportingWithInteger";
analyzer[] = "Structures/EvalUsage";
analyzer[] = "Structures/EvalWithoutTry";
analyzer[] = "Structures/ExitUsage";
analyzer[] = "Structures/FailingSubstrComparison";
analyzer[] = "Structures/ForeachReferenceIsNotModified";
analyzer[] = "Structures/ForeachSourceValue";
analyzer[] = "Structures/ForgottenWhiteSpace";
analyzer[] = "Structures/GlobalUsage";
analyzer[] = "Structures/Htmlentitiescall";
analyzer[] = "Structures/HtmlentitiescallDefaultFlag";
analyzer[] = "Structures/IdenticalCase";
analyzer[] = "Structures/IdenticalConditions";
analyzer[] = "Structures/IdenticalConsecutive";
analyzer[] = "Structures/IdenticalOnBothSides";
analyzer[] = "Structures/IdenticalVariablesInForeach";
analyzer[] = "Structures/IfWithSameConditions";
analyzer[] = "Structures/Iffectation";
analyzer[] = "Structures/ImplicitConversionToInt";
analyzer[] = "Structures/ImpliedIf";
analyzer[] = "Structures/ImplodeArgsOrder";
analyzer[] = "Structures/IndicesAreIntOrString";
analyzer[] = "Structures/InfiniteRecursion";
analyzer[] = "Structures/InvalidCast";
analyzer[] = "Structures/InvalidDateScanningFormat";
analyzer[] = "Structures/InvalidPackFormat";
analyzer[] = "Structures/InvalidRegex";
analyzer[] = "Structures/IsZero";
analyzer[] = "Structures/ListOmissions";
analyzer[] = "Structures/LogicalMistakes";
```

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```
analyzer[] = "Structures/LoneBlock";
analyzer[] = "Structures/LongArguments";
analyzer[] = "Structures/MaxLevelOfIdentation";
analyzer[] = "Structures/MbStringNonEncodings";
analyzer[] = "Structures/MbstringThirdArg";
analyzer[] = "Structures/MbstringUnknownEncoding";
analyzer[] = "Structures/MergeIfThen";
analyzer[] = "Structures/MismatchedTernary";
analyzer[] = "Structures/MissingAssignation";
analyzer[] = "Structures/MissingCases";
analyzer[] = "Structures/MissingNew";
analyzer[] = "Structures/MissingParenthesis";
analyzer[] = "Structures/MisusedYield";
analyzer[] = "Structures/MixedConcatInterpolation";
analyzer[] = "Structures/ModernEmpty";
analyzer[] = "Structures/MultipleDefinedCase";
analyzer[] = "Structures/MultipleTypeVariable";
analyzer[] = "Structures/MultiplyByOne";
analyzer[] = "Structures/NegativePow";
analyzer[] = "Structures/NestedIfthen";
analyzer[] = "Structures/NestedMatch";
analyzer[] = "Structures/NestedTernary";
analyzer[] = "Structures/NeverNegative";
analyzer[] = "Structures/NextMonthTrap";
analyzer[] = "Structures/NoAppendOnSource";
analyzer[] = "Structures/NoChangeIncomingVariables";
analyzer[] = "Structures/NoChoice";
analyzer[] = "Structures/NoDirectUsage";
analyzer[] = "Structures/NoEmptyRegex";
analyzer[] = "Structures/NoEmptyStringWithExplode";
analyzer[] = "Structures/NoGetClassNull";
analyzer[] = "Structures/NoHardcodedHash";
analyzer[] = "Structures/NoHardcodedIp";
analyzer[] = "Structures/NoHardcodedPath";
analyzer[] = "Structures/NoHardcodedPort";
analyzer[] = "Structures/NoIssetWithEmpty";
analyzer[] = "Structures/NoNeedForElse";
analyzer[] = "Structures/NoNeedForTriple";
analyzer[] = "Structures/NoNullForIndex";
analyzer[] = "Structures/NoObjectAsIndex";
analyzer[] = "Structures/NoParenthesisForLanguageConstruct";
analyzer[] = "Structures/NoReferenceOnLeft";
analyzer[] = "Structures/NoSubstrOne";
analyzer[] = "Structures/NoValidCast";
analyzer[] = "Structures/NoVariableIsACondition";
analyzer[] = "Structures/NonIntStringAsIndex";
analyzer[] = "Structures/Noscream";
analyzer[] = "Structures/NotEqual";
analyzer[] = "Structures/NotNot";
analyzer[] = "Structures/ObjectReferences";
analyzer[] = "Structures/OnceUsage";
analyzer[] = "Structures/OneLineTwoInstructions";
```

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```
analyzer[] = "Structures/OnlyFirstByte";
analyzer[] = "Structures/OnlyVariableReturnedByReference";
analyzer[] = "Structures/OrDie";
analyzer[] = "Structures/OverwrittenForeachVar";
analyzer[] = "Structures/PossibleInfiniteLoop";
analyzer[] = "Structures/PrintAndDie";
analyzer[] = "Structures/PrintWithoutParenthesis";
analyzer[] = "Structures/PrintfArguments";
analyzer[] = "Structures/QueriesInLoop";
analyzer[] = "Structures/RepeatedPrint";
analyzer[] = "Structures/RepeatedRegex";
analyzer[] = "Structures/ResultMayBeMissing";
analyzer[] = "Structures/ReturnTrueFalse";
analyzer[] = "Structures/SameConditions";
analyzer[] = "Structures/ShouldChainException";
analyzer[] = "Structures/ShouldMakeTernary";
analyzer[] = "Structures/ShouldPreprocess";
analyzer[] = "Structures/ShouldUseExplodeArgs";
analyzer[] = "Structures/SprintfFormatCompilation";
analyzer[] = "Structures/StaticLoop";
analyzer[] = "Structures/StripTagsSkipsClosedTag";
analyzer[] = "Structures/StrposCompare";
analyzer[] = "Structures/StrposLessThanOne";
analyzer[] = "Structures/SuspiciousComparison";
analyzer[] = "Structures/SwitchToSwitch";
analyzer[] = "Structures/SwitchWithoutDefault";
analyzer[] = "Structures/TernaryInConcat";
analyzer[] = "Structures/TestThenCast";
analyzer[] = "Structures/ThrowsAndAssign";
analyzer[] = "Structures/TimestampDifference";
analyzer[] = "Structures/UncheckedResources";
analyzer[] = "Structures/UnconditionLoopBreak";
analyzer[] = "Structures/UnknownPregOption";
analyzer[] = "Structures/Unpreprocessed";
analyzer[] = "Structures/UnsetInForeach";
analyzer[] = "Structures/UnsupportedOperandTypes";
analyzer[] = "Structures/UnsupportedTypesWithOperators";
analyzer[] = "Structures/UnusedGlobal";
analyzer[] = "Structures/UseConstant";
analyzer[] = "Structures/UseInstanceof";
analyzer[] = "Structures/UsePositiveCondition";
analyzer[] = "Structures/UseSameTypesForComparisons";
analyzer[] = "Structures/UseSystemTmp";
analyzer[] = "Structures/UselessBrackets";
analyzer[] = "Structures/UselessCasting";
analyzer[] = "Structures/UselessCheck";
analyzer[] = "Structures/UselessCoalesce";
analyzer[] = "Structures/UselessGlobal";
analyzer[] = "Structures/UselessInstruction";
analyzer[] = "Structures/UselessNullCoalesce";
analyzer[] = "Structures/UselessParenthesis";
analyzer[] = "Structures/UselessShortTernary";
```

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```
  analyzer[] = "Structures/UselessSwitch";
  analyzer[] = "Structures/UselessUnset";
  analyzer[] = "Structures/VardumpUsage";
  analyzer[] = "Structures/WhileListEach";
  analyzer[] = "Structures/WrongLocale";
  analyzer[] = "Structures/WrongPrecedenceInExpression";
  analyzer[] = "Structures/WrongRange";
  analyzer[] = "Structures/pregOptionE";
  analyzer[] = "Structures/toStringThrowsException";
  analyzer[] = "Traits/AlreadyParentsTrait";
  analyzer[] = "Traits/CannotCallTraitMethod";
  analyzer[] = "Traits/DependantTrait";
  analyzer[] = "Traits/EmptyTrait";
  analyzer[] = "Traits/MethodCollisionTraits";
  analyzer[] = "Traits/TraitIsNotAType";
  analyzer[] = "Traits/TraitNotFound";
  analyzer[] = "Traits/UndefinedInsteadof";
  analyzer[] = "Traits/UndefinedTrait";
  analyzer[] = "Traits/UselessAlias";
  analyzer[] = "Type/NoRealComparison";
  analyzer[] = "Type/OneVariableStrings";
  analyzer[] = "Type/ShouldTypecast";
  analyzer[] = "Type/SilentlyCastInteger";
  analyzer[] = "Type/StringHoldAVariable";
  analyzer[] = "Type/StringWithStrangeSpace";
  analyzer[] = "Typehints/MissingReturntype";
  analyzer[] = "Typehints/StandaloneTypeTFN";
  analyzer[] = "Typehints/WrongTypeWithDefault";
  analyzer[] = "Variables/AssignedTwiceOrMore";
  analyzer[] = "Variables/ConstantTypo";
  analyzer[] = "Variables/LostReferences";
  analyzer[] = "Variables/OverwrittenLiterals";
  analyzer[] = "Variables/RecycledVariables";
  analyzer[] = "Variables/UndefinedConstantName";
  analyzer[] = "Variables/UndefinedVariable";
  analyzer[] = "Variables/VariableNonascii";
  analyzer[] = "Variables/VariableUsedOnce";
  analyzer[] = "Variables/VariableUsedOnceByContext";
  analyzer[] = "Variables/WrittenOnlyVariable";
```

Analyze for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Analyze':
   - 'Arrays/AmbiguousKeys'
   - 'Arrays/AppendAndAssignArrays'
   - 'Arrays/FloatConversionAsIndex'
   - 'Arrays/MultipleIdenticalKeys'
```

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```
  - 'Arrays/NoSpreadForHash'
  - 'Arrays/NonConstantArray'
  - 'Arrays/NullBoolean'
  - 'Arrays/RandomlySortedLiterals'
  - 'Arrays/TooManyDimensions'
  - 'Arrays/WeakType'
  - 'Attributes/MissingAttributeAttribute'
  - 'Attributes/ModifyImmutable'
  - 'Classes/AbstractOrImplements'
  - 'Classes/AbstractStatic'
  - 'Classes/AccessPrivate'
  - 'Classes/AccessProtected'
  - 'Classes/AmbiguousStatic'
  - 'Classes/AmbiguousVisibilities'
  - 'Classes/AvoidOptionArrays'
  - 'Classes/AvoidOptionalProperties'
  - 'Classes/CantExtendFinal'
  - 'Classes/CantInstantiateClass'
  - 'Classes/CantInstantiateNonClass'
  - 'Classes/CantOverwriteFinalConstant'
  - 'Classes/CheckAfterNullSafeOperator'
  - 'Classes/CheckOnCallUsage'
  - 'Classes/CitSameName'
  - 'Classes/CloneWithNonObject'
  - 'Classes/CouldBeAbstractClass'
  - 'Classes/CouldBeFinal'
  - 'Classes/CouldBeStatic'
  - 'Classes/CouldInjectParam'
  - 'Classes/CyclicReferences'
  - 'Classes/DependantAbstractClass'
  - 'Classes/DifferentArgumentCounts'
  - 'Classes/DirectCallToMagicMethod'
  - 'Classes/DontSendThisInConstructor'
  - 'Classes/DontUnsetProperties'
  - 'Classes/EmptyClass'
  - 'Classes/HiddenNullable'
  - 'Classes/ImplementIsForInterface'
  - 'Classes/ImplementedMethodsArePublic'
  - 'Classes/IncompatibleSignature'
  - 'Classes/IncompatibleSignature74'
  - 'Classes/InheritedPropertyMustMatch'
  - 'Classes/InstantiatingAbstractClass'
  - 'Classes/MakeDefault'
  - 'Classes/MakeGlobalAProperty'
  - 'Classes/MethodSignatureMustBeCompatible'
  - 'Classes/MismatchProperties'
  - 'Classes/MissingAbstractMethod'
  - 'Classes/MultipleDeclarations'
  - 'Classes/MultipleTraitOrInterface'
  - 'Classes/NewThenCall'
  - 'Classes/NoMagicWithArray'
  - 'Classes/NoNullWithNullSafeOperator'
```

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```
  - 'Classes/NoPSSOutsideClass'
  - 'Classes/NoParent'
  - 'Classes/NoPublicAccess'
  - 'Classes/NoReadonlyAssignationInGlobal'
  - 'Classes/NoSelfReferencingConstant'
  - 'Classes/NonNullableSetters'
  - 'Classes/NonPpp'
  - 'Classes/NonStaticMethodsCalledStatic'
  - 'Classes/OldStyleConstructor'
  - 'Classes/OldStyleVar'
  - 'Classes/ParentFirst'
  - 'Classes/ParentIsNotStatic'
  - 'Classes/PropertyCouldBeLocal'
  - 'Classes/PropertyMethodSameName'
  - 'Classes/PropertyNeverUsed'
  - 'Classes/PropertyUsedInOneMethodOnly'
  - 'Classes/PssWithoutClass'
  - 'Classes/ScalarOrObjectProperty'
  - 'Classes/ShouldUseSelf'
  - 'Classes/ShouldUseThis'
  - 'Classes/StaticCannotCallNonStatic'
  - 'Classes/StaticContainsThis'
  - 'Classes/StaticMethodsCalledFromObject'
  - 'Classes/SwappedArguments'
  - 'Classes/ThisIsForClasses'
  - 'Classes/ThisIsNotAnArray'
  - 'Classes/ThisIsNotForStatic'
  - 'Classes/ThrowInDestruct'
  - 'Classes/TooManyDereferencing'
  - 'Classes/TooManyFinds'
  - 'Classes/TooManyInjections'
  - 'Classes/UndeclaredStaticProperty'
  - 'Classes/UndefinedClasses'
  - 'Classes/UndefinedConstants'
  - 'Classes/UndefinedParentMP'
  - 'Classes/UndefinedProperty'
  - 'Classes/UndefinedStaticMP'
  - 'Classes/UndefinedStaticclass'
  - 'Classes/UnfinishedObject'
  - 'Classes/UnreachableMethod'
  - 'Classes/UnresolvedClasses'
  - 'Classes/UnresolvedInstanceof'
  - 'Classes/UnusedClass'
  - 'Classes/UnusedConstant'
  - 'Classes/UnusedPublicMethod'
  - 'Classes/UseClassOperator'
  - 'Classes/UseInstanceof'
  - 'Classes/UsedOnceProperty'
  - 'Classes/UselessAbstract'
  - 'Classes/UselessAssignationOfPromotedProperty'
  - 'Classes/UselessConstructor'
  - 'Classes/UselessFinal'
```

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```
  - 'Classes/UselessMethod'
  - 'Classes/UsingThisOutsideAClass'
  - 'Classes/WeakType'
  - 'Classes/WrongName'
  - 'Classes/WrongTypedPropertyInit'
  - 'Constants/BadConstantnames'
  - 'Constants/ConstRecommended'
  - 'Constants/CreatedOutsideItsNamespace'
  - 'Constants/InvalidName'
  - 'Constants/MultipleConstantDefinition'
  - 'Constants/StrangeName'
  - 'Constants/UndefinedConstants'
  - 'Enums/NoMagicMethod'
  - 'Enums/UndefinedEnumcase'
  - 'Enums/UnusedEnumCase'
  - 'Exceptions/CantThrow'
  - 'Exceptions/CatchUndefinedVariable'
  - 'Exceptions/ConvertedExceptions'
  - 'Exceptions/ForgottenThrown'
  - 'Exceptions/OverwriteException'
  - 'Exceptions/ThrowFunctioncall'
  - 'Exceptions/ThrowRawExceptions'
  - 'Exceptions/UncaughtExceptions'
  - 'Exceptions/Unthrown'
  - 'Exceptions/UselessCatch'
  - 'Exceptions/UselessTry'
  - 'Files/InclusionWrongCase'
  - 'Files/MissingInclude'
  - 'Functions/AliasesUsage'
  - 'Functions/AvoidBooleanArgument'
  - 'Functions/CallbackNeedsReturn'
  - 'Functions/CanCallGenerator'
  - 'Functions/CancelledParameter'
  - 'Functions/CannotUseStaticForClosure'
  - 'Functions/CouldCentralize'
  - 'Functions/DeepDefinitions'
  - 'Functions/DontUseVoid'
  - 'Functions/DuplicateNamedParameter'
  - 'Functions/EmptyFunction'
  - 'Functions/FnArgumentVariableConfusion'
  - 'Functions/HardcodedPasswords'
  - 'Functions/InsufficientTypehint'
  - 'Functions/MethodIsNotAnIf'
  - 'Functions/MismatchParameterName'
  - 'Functions/MismatchTypeAndDefault'
  - 'Functions/MismatchedDefaultArguments'
  - 'Functions/MismatchedTypehint'
  - 'Functions/ModifyTypedParameter'
  - 'Functions/MustReturn'
  - 'Functions/NeverUsedParameter'
  - 'Functions/NoBooleanAsDefault'
  - 'Functions/NoDefaultForReference'
```

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```
  - 'Functions/NoLiteralForReference'
  - 'Functions/NoReferencedVoid'
  - 'Functions/NoReturnUsed'
  - 'Functions/OnlyVariableForReference'
  - 'Functions/OnlyVariablePassedByReference'
  - 'Functions/RedeclaredPhpFunction'
  - 'Functions/RelayFunction'
  - 'Functions/RetypedReference'
  - 'Functions/ShouldUseConstants'
  - 'Functions/ShouldYieldWithKey'
  - 'Functions/TooManyLocalVariables'
  - 'Functions/TypehintMustBeReturned'
  - 'Functions/TypehintedReferences'
  - 'Functions/UndefinedFunctions'
  - 'Functions/UnknownParameterName'
  - 'Functions/UnusedArguments'
  - 'Functions/UnusedInheritedVariable'
  - 'Functions/UnusedReturnedValue'
  - 'Functions/UseConstantAsArguments'
  - 'Functions/UseConstantsAsReturns'
  - 'Functions/UselessArgument'
  - 'Functions/UselessReferenceArgument'
  - 'Functions/UselessReturn'
  - 'Functions/UsesDefaultArguments'
  - 'Functions/UsingDeprecated'
  - 'Functions/VoidIsNotAReference'
  - 'Functions/WithoutReturn'
  - 'Functions/WrongArgumentNameWithPhpFunction'
  - 'Functions/WrongArgumentType'
  - 'Functions/WrongNumberOfArguments'
  - 'Functions/WrongOptionalParameter'
  - 'Functions/WrongReturnedType'
  - 'Functions/WrongTypeWithCall'
  - 'Functions/funcGetArgModified'
  - 'Interfaces/AlreadyParentsInterface'
  - 'Interfaces/CantImplementTraversable'
  - 'Interfaces/CouldUseInterface'
  - 'Interfaces/EmptyInterface'
  - 'Interfaces/IsNotImplemented'
  - 'Interfaces/NoGaranteeForPropertyConstant'
  - 'Interfaces/RepeatedInterface'
  - 'Interfaces/UndefinedInterfaces'
  - 'Interfaces/UselessInterfaces'
  - 'Namespaces/ConstantFullyQualified'
  - 'Namespaces/EmptyNamespace'
  - 'Namespaces/HiddenUse'
  - 'Namespaces/MultipleAliasDefinitionPerFile'
  - 'Namespaces/MultipleAliasDefinitions'
  - 'Namespaces/OverloadExistingNames'
  - 'Namespaces/ShouldMakeAlias'
  - 'Namespaces/UnresolvedUse'
  - 'Namespaces/UseWithFullyQualifiedNS'
```

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```
  - 'Performances/ArrayMergeInLoops'
  - 'Performances/LogicalToInArray'
  - 'Performances/MemoizeMagicCall'
  - 'Performances/PrePostIncrement'
  - 'Performances/StrposTooMuch'
  - 'Performances/UseArraySlice'
  - 'Php/ArrayKeyExistsWithObjects'
  - 'Php/AssertFunctionIsReserved'
  - 'Php/AssignAnd'
  - 'Php/Assumptions'
  - 'Php/AvoidMbDectectEncoding'
  - 'Php/BetterRand'
  - 'Php/CloneConstant'
  - 'Php/ConcatAndAddition'
  - 'Php/Crc32MightBeNegative'
  - 'Php/DateTimeNotImmutable'
  - 'Php/Deprecated'
  - 'Php/DontPolluteGlobalSpace'
  - 'Php/EmptyList'
  - 'Php/ExitNoArg'
  - 'Php/FalseToArray'
  - 'Php/FopenMode'
  - 'Php/ForeachObject'
  - 'Php/HashAlgos'
  - 'Php/Incompilable'
  - 'Php/InternalParameterType'
  - 'Php/IsAWithString'
  - 'Php/IsnullVsEqualNull'
  - 'Php/JsonSerializeReturnType'
  - 'Php/LogicalInLetters'
  - 'Php/MissingMagicIsset'
  - 'Php/MissingSubpattern'
  - 'Php/MultipleDeclareStrict'
  - 'Php/MustCallParentConstructor'
  - 'Php/NativeClassTypeCompatibility'
  - 'Php/NeverKeyword'
  - 'Php/NoCastToInt'
  - 'Php/NoClassInGlobal'
  - 'Php/NoNullForNative'
  - 'Php/NoReferenceForTernary'
  - 'Php/OnlyVariablePassedByReference'
  - 'Php/PathinfoReturns'
  - 'Php/Php81NewFunctions'
  - 'Php/ScalarAreNotArrays'
  - 'Php/ShortOpenTagRequired'
  - 'Php/ShouldUseCoalesce'
  - 'Php/StrposWithIntegers'
  - 'Php/StrtrArguments'
  - 'Php/TooManyNativeCalls'
  - 'Php/UnknownPcre2Option'
  - 'Php/UseObjectApi'
  - 'Php/UsePathinfo'
```

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```
  - 'Php/UseSetCookie'
  - 'Php/UseStdclass'
  - 'Php/VersionCompareOperator'
  - 'Php/WrongAttributeConfiguration'
  - 'Php/WrongTypeForNativeFunction'
  - 'Php/oldAutoloadUsage'
  - 'Security/DontEchoError'
  - 'Security/ShouldUsePreparedStatement'
  - 'Structures/AddZero'
  - 'Structures/AlteringForeachWithoutReference'
  - 'Structures/AlternativeConsistenceByFile'
  - 'Structures/AlwaysFalse'
  - 'Structures/ArrayAccessOnLiteralArray'
  - 'Structures/ArrayFillWithObjects'
  - 'Structures/ArrayMapPassesByValue'
  - 'Structures/ArrayMergeAndVariadic'
  - 'Structures/ArrayMergeArrayArray'
  - 'Structures/AssigneAndCompare'
  - 'Structures/AutoUnsetForeach'
  - 'Structures/BailOutEarly'
  - 'Structures/BooleanStrictComparison'
  - 'Structures/BreakOutsideLoop'
  - 'Structures/BuriedAssignation'
  - 'Structures/CannotUseAppendForReading'
  - 'Structures/CastToBoolean'
  - 'Structures/CastingTernary'
  - 'Structures/CatchShadowsVariable'
  - 'Structures/CheckAllTypes'
  - 'Structures/CheckDivision'
  - 'Structures/CheckJson'
  - 'Structures/CoalesceAndConcat'
  - 'Structures/CoalesceNullCoalesce'
  - 'Structures/CommonAlternatives'
  - 'Structures/ComparedComparison'
  - 'Structures/ConcatEmpty'
  - 'Structures/ContinueIsForLoop'
  - 'Structures/CouldBeElse'
  - 'Structures/CouldBeSpaceship'
  - 'Structures/CouldBeStatic'
  - 'Structures/CouldUseDir'
  - 'Structures/CouldUseShortAssignation'
  - 'Structures/CouldUseStrrepeat'
  - 'Structures/CouldUseYieldFrom'
  - 'Structures/CountIsNotNegative'
  - 'Structures/DanglingArrayReferences'
  - 'Structures/DefaultThenDiscard'
  - 'Structures/DirThenSlash'
  - 'Structures/DontAddSeconds'
  - 'Structures/DontChangeBlindKey'
  - 'Structures/DontMixPlusPlus'
  - 'Structures/DontReadAndWriteInOneExpression'
  - 'Structures/DontReuseForeachSource'
```

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```
  - 'Structures/DoubleAssignation'
  - 'Structures/DoubleChecks'
  - 'Structures/DoubleInstruction'
  - 'Structures/DoubleObjectAssignation'
  - 'Structures/DropElseAfterReturn'
  - 'Structures/EchoWithConcat'
  - 'Structures/ElseIfElseif'
  - 'Structures/EmptyBlocks'
  - 'Structures/EmptyJsonError'
  - 'Structures/EmptyLines'
  - 'Structures/EmptyLoop'
  - 'Structures/EmptyTryCatch'
  - 'Structures/ErrorReportingWithInteger'
  - 'Structures/EvalUsage'
  - 'Structures/EvalWithoutTry'
  - 'Structures/ExitUsage'
  - 'Structures/FailingSubstrComparison'
  - 'Structures/ForeachReferenceIsNotModified'
  - 'Structures/ForeachSourceValue'
  - 'Structures/ForgottenWhiteSpace'
  - 'Structures/GlobalUsage'
  - 'Structures/Htmlentitiescall'
  - 'Structures/HtmlentitiescallDefaultFlag'
  - 'Structures/IdenticalCase'
  - 'Structures/IdenticalConditions'
  - 'Structures/IdenticalConsecutive'
  - 'Structures/IdenticalOnBothSides'
  - 'Structures/IdenticalVariablesInForeach'
  - 'Structures/IfWithSameConditions'
  - 'Structures/Iffectation'
  - 'Structures/ImplicitConversionToInt'
  - 'Structures/ImpliedIf'
  - 'Structures/ImplodeArgsOrder'
  - 'Structures/IndicesAreIntOrString'
  - 'Structures/InfiniteRecursion'
  - 'Structures/InvalidCast'
  - 'Structures/InvalidDateScanningFormat'
  - 'Structures/InvalidPackFormat'
  - 'Structures/InvalidRegex'
  - 'Structures/IsZero'
  - 'Structures/ListOmissions'
  - 'Structures/LogicalMistakes'
  - 'Structures/LoneBlock'
  - 'Structures/LongArguments'
  - 'Structures/MaxLevelOfIdentation'
  - 'Structures/MbStringNonEncodings'
  - 'Structures/MbstringThirdArg'
  - 'Structures/MbstringUnknownEncoding'
  - 'Structures/MergeIfThen'
  - 'Structures/MismatchedTernary'
  - 'Structures/MissingAssignation'
  - 'Structures/MissingCases'
```

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```
  - 'Structures/MissingNew'
  - 'Structures/MissingParenthesis'
  - 'Structures/MisusedYield'
  - 'Structures/MixedConcatInterpolation'
  - 'Structures/ModernEmpty'
  - 'Structures/MultipleDefinedCase'
  - 'Structures/MultipleTypeVariable'
  - 'Structures/MultiplyByOne'
  - 'Structures/NegativePow'
  - 'Structures/NestedIfthen'
  - 'Structures/NestedMatch'
  - 'Structures/NestedTernary'
  - 'Structures/NeverNegative'
  - 'Structures/NextMonthTrap'
  - 'Structures/NoAppendOnSource'
  - 'Structures/NoChangeIncomingVariables'
  - 'Structures/NoChoice'
  - 'Structures/NoDirectUsage'
  - 'Structures/NoEmptyRegex'
  - 'Structures/NoEmptyStringWithExplode'
  - 'Structures/NoGetClassNull'
  - 'Structures/NoHardcodedHash'
  - 'Structures/NoHardcodedIp'
  - 'Structures/NoHardcodedPath'
  - 'Structures/NoHardcodedPort'
  - 'Structures/NoIssetWithEmpty'
  - 'Structures/NoNeedForElse'
  - 'Structures/NoNeedForTriple'
  - 'Structures/NoNullForIndex'
  - 'Structures/NoObjectAsIndex'
  - 'Structures/NoParenthesisForLanguageConstruct'
  - 'Structures/NoReferenceOnLeft'
  - 'Structures/NoSubstrOne'
  - 'Structures/NoValidCast'
  - 'Structures/NoVariableIsACondition'
  - 'Structures/NonIntStringAsIndex'
  - 'Structures/Noscream'
  - 'Structures/NotEqual'
  - 'Structures/NotNot'
  - 'Structures/ObjectReferences'
  - 'Structures/OnceUsage'
  - 'Structures/OneLineTwoInstructions'
  - 'Structures/OnlyFirstByte'
  - 'Structures/OnlyVariableReturnedByReference'
  - 'Structures/OrDie'
  - 'Structures/OverwrittenForeachVar'
  - 'Structures/PossibleInfiniteLoop'
  - 'Structures/PrintAndDie'
  - 'Structures/PrintWithoutParenthesis'
  - 'Structures/PrintfArguments'
  - 'Structures/QueriesInLoop'
  - 'Structures/RepeatedPrint'
```

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```
  - 'Structures/RepeatedRegex'
  - 'Structures/ResultMayBeMissing'
  - 'Structures/ReturnTrueFalse'
  - 'Structures/SameConditions'
  - 'Structures/ShouldChainException'
  - 'Structures/ShouldMakeTernary'
  - 'Structures/ShouldPreprocess'
  - 'Structures/ShouldUseExplodeArgs'
  - 'Structures/SprintfFormatCompilation'
  - 'Structures/StaticLoop'
  - 'Structures/StripTagsSkipsClosedTag'
  - 'Structures/StrposCompare'
  - 'Structures/StrposLessThanOne'
  - 'Structures/SuspiciousComparison'
  - 'Structures/SwitchToSwitch'
  - 'Structures/SwitchWithoutDefault'
  - 'Structures/TernaryInConcat'
  - 'Structures/TestThenCast'
  - 'Structures/ThrowsAndAssign'
  - 'Structures/TimestampDifference'
  - 'Structures/UncheckedResources'
  - 'Structures/UnconditionLoopBreak'
  - 'Structures/UnknownPregOption'
  - 'Structures/Unpreprocessed'
  - 'Structures/UnsetInForeach'
  - 'Structures/UnsupportedOperandTypes'
  - 'Structures/UnsupportedTypesWithOperators'
  - 'Structures/UnusedGlobal'
  - 'Structures/UseConstant'
  - 'Structures/UseInstanceof'
  - 'Structures/UsePositiveCondition'
  - 'Structures/UseSameTypesForComparisons'
  - 'Structures/UseSystemTmp'
  - 'Structures/UselessBrackets'
  - 'Structures/UselessCasting'
  - 'Structures/UselessCheck'
  - 'Structures/UselessCoalesce'
  - 'Structures/UselessGlobal'
  - 'Structures/UselessInstruction'
  - 'Structures/UselessNullCoalesce'
  - 'Structures/UselessParenthesis'
  - 'Structures/UselessShortTernary'
  - 'Structures/UselessSwitch'
  - 'Structures/UselessUnset'
  - 'Structures/VardumpUsage'
  - 'Structures/WhileListEach'
  - 'Structures/WrongLocale'
  - 'Structures/WrongPrecedenceInExpression'
  - 'Structures/WrongRange'
  - 'Structures/pregOptionE'
  - 'Structures/toStringThrowsException'
  - 'Traits/AlreadyParentsTrait'
```

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```
  - 'Traits/CannotCallTraitMethod'
  - 'Traits/DependantTrait'
  - 'Traits/EmptyTrait'
  - 'Traits/MethodCollisionTraits'
  - 'Traits/TraitIsNotAType'
  - 'Traits/TraitNotFound'
  - 'Traits/UndefinedInsteadof'
  - 'Traits/UndefinedTrait'
  - 'Traits/UselessAlias'
  - 'Type/NoRealComparison'
  - 'Type/OneVariableStrings'
  - 'Type/ShouldTypecast'
  - 'Type/SilentlyCastInteger'
  - 'Type/StringHoldAVariable'
  - 'Type/StringWithStrangeSpace'
  - 'Typehints/MissingReturntype'
  - 'Typehints/StandaloneTypeTFN'
  - 'Typehints/WrongTypeWithDefault'
  - 'Variables/AssignedTwiceOrMore'
  - 'Variables/ConstantTypo'
  - 'Variables/LostReferences'
  - 'Variables/OverwrittenLiterals'
  - 'Variables/RecycledVariables'
  - 'Variables/UndefinedConstantName'
  - 'Variables/UndefinedVariable'
  - 'Variables/VariableNonascii'
  - 'Variables/VariableUsedOnce'
  - 'Variables/VariableUsedOnceByContext'
  - 'Variables/WrittenOnlyVariable'
```

10.5.3 Appinfo

Appinfo for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Appinfo]
  analyzer[] = "Arrays/ArrayNSUsage";
  analyzer[] = "Arrays/Arrayindex";
  analyzer[] = "Arrays/Multidimensional";
  analyzer[] = "Arrays/Phparrayindex";
  analyzer[] = "Arrays/WithCallback";
  analyzer[] = "Attributes/NestedAttributes";
  analyzer[] = "Classes/Abstractclass";
  analyzer[] = "Classes/Abstractmethods";
  analyzer[] = "Classes/Anonymous";
  analyzer[] = "Classes/ClassAliasUsage";
  analyzer[] = "Classes/ClassOverreach";
  analyzer[] = "Classes/Classnames";
  analyzer[] = "Classes/CloningUsage";
  analyzer[] = "Classes/ConstVisibilityUsage";
```

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```
analyzer[] = "Classes/ConstantDefinition";
analyzer[] = "Classes/DynamicClass";
analyzer[] = "Classes/DynamicConstantCall";
analyzer[] = "Classes/DynamicMethodCall";
analyzer[] = "Classes/DynamicNew";
analyzer[] = "Classes/DynamicPropertyCall";
analyzer[] = "Classes/ImmutableSignature";
analyzer[] = "Classes/MagicMethod";
analyzer[] = "Classes/MultipleClassesInFile";
analyzer[] = "Classes/NewDynamicConstantSyntax";
analyzer[] = "Classes/OldStyleConstructor";
analyzer[] = "Classes/OverwrittenConst";
analyzer[] = "Classes/PromotedProperties";
analyzer[] = "Classes/ReadonlyUsage";
analyzer[] = "Classes/RedefinedMethods";
analyzer[] = "Classes/StaticMethods";
analyzer[] = "Classes/StaticProperties";
analyzer[] = "Classes/TestClass";
analyzer[] = "Classes/UntypedNoDefaultProperties";
analyzer[] = "Classes/VariableClasses";
analyzer[] = "Composer/Autoload";
analyzer[] = "Composer/UseComposer";
analyzer[] = "Composer/UseComposerLock";
analyzer[] = "Constants/CaseInsensitiveConstants";
analyzer[] = "Constants/ConditionedConstants";
analyzer[] = "Constants/ConstantUsage";
analyzer[] = "Constants/DynamicCreation";
analyzer[] = "Constants/MagicConstantUsage";
analyzer[] = "Constants/PhpConstantUsage";
analyzer[] = "Constants/VariableConstant";
analyzer[] = "Dump/ParameterArgumentsLinks";
analyzer[] = "Exceptions/DefinedExceptions";
analyzer[] = "Exceptions/MultipleCatch";
analyzer[] = "Exceptions/ThrownExceptions";
analyzer[] = "Extensions/Extamqp";
analyzer[] = "Extensions/Extapache";
analyzer[] = "Extensions/Extapc";
analyzer[] = "Extensions/Extapcu";
analyzer[] = "Extensions/Extarray";
analyzer[] = "Extensions/Extast";
analyzer[] = "Extensions/Extbcmath";
analyzer[] = "Extensions/Extbzip2";
analyzer[] = "Extensions/Extcalendar";
analyzer[] = "Extensions/Extcmark";
analyzer[] = "Extensions/Extcom";
analyzer[] = "Extensions/Extcrypto";
analyzer[] = "Extensions/Extcsv";
analyzer[] = "Extensions/Extctype";
analyzer[] = "Extensions/Extcurl";
analyzer[] = "Extensions/Extdate";
analyzer[] = "Extensions/Extdb2";
analyzer[] = "Extensions/Extdba";
```

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```
analyzer[] = "Extensions/Extdecimal";
analyzer[] = "Extensions/Extdio";
analyzer[] = "Extensions/Extdom";
analyzer[] = "Extensions/Extds";
analyzer[] = "Extensions/Exteaccelerator";
analyzer[] = "Extensions/Exteio";
analyzer[] = "Extensions/Extenchant";
analyzer[] = "Extensions/Extev";
analyzer[] = "Extensions/Extevent";
analyzer[] = "Extensions/Extexcimer";
analyzer[] = "Extensions/Extexif";
analyzer[] = "Extensions/Extexpect";
analyzer[] = "Extensions/Extfam";
analyzer[] = "Extensions/Extfann";
analyzer[] = "Extensions/Extffi";
analyzer[] = "Extensions/Extfile";
analyzer[] = "Extensions/Extfileinfo";
analyzer[] = "Extensions/Extfilter";
analyzer[] = "Extensions/Extfpm";
analyzer[] = "Extensions/Extftp";
analyzer[] = "Extensions/Extgd";
analyzer[] = "Extensions/Extgearman";
analyzer[] = "Extensions/Extgender";
analyzer[] = "Extensions/Extgeoip";
analyzer[] = "Extensions/Extgeospatial";
analyzer[] = "Extensions/Extgettext";
analyzer[] = "Extensions/Extgmagick";
analyzer[] = "Extensions/Extgmp";
analyzer[] = "Extensions/Extgnupg";
analyzer[] = "Extensions/Extgrpc";
analyzer[] = "Extensions/Exthash";
analyzer[] = "Extensions/Exthrtime";
analyzer[] = "Extensions/Exthttp";
analyzer[] = "Extensions/Extibase";
analyzer[] = "Extensions/Extice";
analyzer[] = "Extensions/Exticonv";
analyzer[] = "Extensions/Extigbinary";
analyzer[] = "Extensions/Extimagick";
analyzer[] = "Extensions/Extimap";
analyzer[] = "Extensions/Extinfo";
analyzer[] = "Extensions/Extinotify";
analyzer[] = "Extensions/Extintl";
analyzer[] = "Extensions/Extjson";
analyzer[] = "Extensions/Extjudy";
analyzer[] = "Extensions/Extldap";
analyzer[] = "Extensions/Extleveldb";
analyzer[] = "Extensions/Extlibsodium";
analyzer[] = "Extensions/Extlibxml";
analyzer[] = "Extensions/Extlua";
analyzer[] = "Extensions/Extlzf";
analyzer[] = "Extensions/Extmail";
analyzer[] = "Extensions/Extmailparse";
```

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```
analyzer[] = "Extensions/Extmath";
analyzer[] = "Extensions/Extmbstring";
analyzer[] = "Extensions/Extmcrypt";
analyzer[] = "Extensions/Extmemcache";
analyzer[] = "Extensions/Extmemcached";
analyzer[] = "Extensions/Extmongo";
analyzer[] = "Extensions/Extmongodb";
analyzer[] = "Extensions/Extmsgpack";
analyzer[] = "Extensions/Extmssql";
analyzer[] = "Extensions/Extmysql";
analyzer[] = "Extensions/Extmysqli";
analyzer[] = "Extensions/Extncurses";
analyzer[] = "Extensions/Extnewt";
analyzer[] = "Extensions/Extnsapi";
analyzer[] = "Extensions/Extob";
analyzer[] = "Extensions/Extoci8";
analyzer[] = "Extensions/Extodbc";
analyzer[] = "Extensions/Extopcache";
analyzer[] = "Extensions/Extopencensus";
analyzer[] = "Extensions/Extopenssl";
analyzer[] = "Extensions/Extparle";
analyzer[] = "Extensions/Extpassword";
analyzer[] = "Extensions/Extpcntl";
analyzer[] = "Extensions/Extpcov";
analyzer[] = "Extensions/Extpcre";
analyzer[] = "Extensions/Extpdo";
analyzer[] = "Extensions/Extpgsql";
analyzer[] = "Extensions/Extphalcon";
analyzer[] = "Extensions/Extphar";
analyzer[] = "Extensions/Extpkcs11";
analyzer[] = "Extensions/Extposix";
analyzer[] = "Extensions/Extprotobuf";
analyzer[] = "Extensions/Extpspell";
analyzer[] = "Extensions/Extpsr";
analyzer[] = "Extensions/Extrandom";
analyzer[] = "Extensions/Extrar";
analyzer[] = "Extensions/Extrdkafka";
analyzer[] = "Extensions/Extreadline";
analyzer[] = "Extensions/Extredis";
analyzer[] = "Extensions/Extreflection";
analyzer[] = "Extensions/Extscrypt";
analyzer[] = "Extensions/Extsdl";
analyzer[] = "Extensions/Extseaslog";
analyzer[] = "Extensions/Extsem";
analyzer[] = "Extensions/Extsession";
analyzer[] = "Extensions/Extshmop";
analyzer[] = "Extensions/Extsimplexml";
analyzer[] = "Extensions/Extsnmp";
analyzer[] = "Extensions/Extsoap";
analyzer[] = "Extensions/Extsockets";
analyzer[] = "Extensions/Extsphinx";
analyzer[] = "Extensions/Extspl";
```

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```
analyzer[] = "Extensions/Extspx";
analyzer[] = "Extensions/Extsqlite";
analyzer[] = "Extensions/Extsqlite3";
analyzer[] = "Extensions/Extsqlsrv";
analyzer[] = "Extensions/Extssh2";
analyzer[] = "Extensions/Extstandard";
analyzer[] = "Extensions/Extstats";
analyzer[] = "Extensions/Extstomp";
analyzer[] = "Extensions/Extstring";
analyzer[] = "Extensions/Extsuhosin";
analyzer[] = "Extensions/Extsvm";
analyzer[] = "Extensions/Extswoole";
analyzer[] = "Extensions/Exttaint";
analyzer[] = "Extensions/Extteds";
analyzer[] = "Extensions/Exttidy";
analyzer[] = "Extensions/Exttokenizer";
analyzer[] = "Extensions/Exttokyotyrant";
analyzer[] = "Extensions/Exttrader";
analyzer[] = "Extensions/Extuopz";
analyzer[] = "Extensions/Extuuid";
analyzer[] = "Extensions/Extv8js";
analyzer[] = "Extensions/Extvarnish";
analyzer[] = "Extensions/Extvips";
analyzer[] = "Extensions/Extwasm";
analyzer[] = "Extensions/Extwddx";
analyzer[] = "Extensions/Extweakref";
analyzer[] = "Extensions/Extxattr";
analyzer[] = "Extensions/Extxdebug";
analyzer[] = "Extensions/Extxdiff";
analyzer[] = "Extensions/Extxhprof";
analyzer[] = "Extensions/Extxml";
analyzer[] = "Extensions/Extxmlreader";
analyzer[] = "Extensions/Extxmlrpc";
analyzer[] = "Extensions/Extxmlwriter";
analyzer[] = "Extensions/Extxsl";
analyzer[] = "Extensions/Extxxtea";
analyzer[] = "Extensions/Extyaml";
analyzer[] = "Extensions/Extyar";
analyzer[] = "Extensions/Extzendmonitor";
analyzer[] = "Extensions/Extzip";
analyzer[] = "Extensions/Extzlib";
analyzer[] = "Extensions/Extzmq";
analyzer[] = "Extensions/Extzookeeper";
analyzer[] = "Files/IsCliScript";
analyzer[] = "Files/NotDefinitionsOnly";
analyzer[] = "Functions/Closures";
analyzer[] = "Functions/ConditionedFunctions";
analyzer[] = "Functions/DeepDefinitions";
analyzer[] = "Functions/Dynamiccall";
analyzer[] = "Functions/FallbackFunction";
analyzer[] = "Functions/Functionnames";
analyzer[] = "Functions/FunctionsUsingReference";
```

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```
analyzer[] = "Functions/IsGenerator";
analyzer[] = "Functions/MultipleDeclarations";
analyzer[] = "Functions/Recursive";
analyzer[] = "Functions/RedeclaredPhpFunction";
analyzer[] = "Functions/Typehints";
analyzer[] = "Functions/UseArrowFunctions";
analyzer[] = "Functions/VariableArguments";
analyzer[] = "Interfaces/Interfacenames";
analyzer[] = "Namespaces/Alias";
analyzer[] = "Namespaces/NamespaceUsage";
analyzer[] = "Namespaces/Namespacesnames";
analyzer[] = "Patterns/CourrierAntiPattern";
analyzer[] = "Patterns/DependencyInjection";
analyzer[] = "Patterns/Factory";
analyzer[] = "Php/AlternativeSyntax";
analyzer[] = "Php/Argon2Usage";
analyzer[] = "Php/AssertionUsage";
analyzer[] = "Php/AutoloadUsage";
analyzer[] = "Php/CastingUsage";
analyzer[] = "Php/Coalesce";
analyzer[] = "Php/ConstantScalarExpression";
analyzer[] = "Php/CryptoUsage";
analyzer[] = "Php/DeclareEncoding";
analyzer[] = "Php/DeclareStrict";
analyzer[] = "Php/DeclareStrictType";
analyzer[] = "Php/DeclareTicks";
analyzer[] = "Php/DirectivesUsage";
analyzer[] = "Php/DlUsage";
analyzer[] = "Php/EchoTagUsage";
analyzer[] = "Php/EllipsisUsage";
analyzer[] = "Php/ErrorLogUsage";
analyzer[] = "Php/FinalConstant";
analyzer[] = "Php/FirstClassCallable";
analyzer[] = "Php/Gotonames";
analyzer[] = "Php/GroupUseDeclaration";
analyzer[] = "Php/Haltcompiler";
analyzer[] = "Php/Incompilable";
analyzer[] = "Php/IntegerSeparatorUsage";
analyzer[] = "Php/IsINF";
analyzer[] = "Php/IsNAN";
analyzer[] = "Php/Labelnames";
analyzer[] = "Php/ListShortSyntax";
analyzer[] = "Php/ListWithKeys";
analyzer[] = "Php/MiddleVersion";
analyzer[] = "Php/MixedUsage";
analyzer[] = "Php/NamedParameterUsage";
analyzer[] = "Php/NestedTernaryWithoutParenthesis";
analyzer[] = "Php/NeverKeyword";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NewInitializers";
analyzer[] = "Php/OveriddenFunction";
analyzer[] = "Php/PearUsage";
```

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```
analyzer[] = "Php/Php7RelaxedKeyword";
analyzer[] = "Php/Php80OnlyTypeHints";
analyzer[] = "Php/Php80UnionTypehint";
analyzer[] = "Php/Php80VariableSyntax";
analyzer[] = "Php/Php81IntersectionTypehint";
analyzer[] = "Php/PlusPlusOnLetters";
analyzer[] = "Php/RawPostDataUsage";
analyzer[] = "Php/ReturnTypehintUsage";
analyzer[] = "Php/ScalarTypehintUsage";
analyzer[] = "Php/ShortTernary";
analyzer[] = "Php/SpreadOperatorForArray";
analyzer[] = "Php/SuperGlobalUsage";
analyzer[] = "Php/ThrowUsage";
analyzer[] = "Php/TrailingComma";
analyzer[] = "Php/TriggerErrorUsage";
analyzer[] = "Php/TryCatchUsage";
analyzer[] = "Php/TryMultipleCatch";
analyzer[] = "Php/TypedPropertyUsage";
analyzer[] = "Php/UseAttributes";
analyzer[] = "Php/UseBrowscap";
analyzer[] = "Php/UseClassAlias";
analyzer[] = "Php/UseCli";
analyzer[] = "Php/UseContravariance";
analyzer[] = "Php/UseCookies";
analyzer[] = "Php/UseCovariance";
analyzer[] = "Php/UseDNF";
analyzer[] = "Php/UseEnumCaseInConstantExpression";
analyzer[] = "Php/UseNullSafeOperator";
analyzer[] = "Php/UseNullableType";
analyzer[] = "Php/UseTrailingUseComma";
analyzer[] = "Php/UseWeb";
analyzer[] = "Php/UsesEnv";
analyzer[] = "Php/YieldFromUsage";
analyzer[] = "Php/YieldUsage";
analyzer[] = "Psr/Psr11Usage";
analyzer[] = "Psr/Psr13Usage";
analyzer[] = "Psr/Psr16Usage";
analyzer[] = "Psr/Psr3Usage";
analyzer[] = "Psr/Psr6Usage";
analyzer[] = "Psr/Psr7Usage";
analyzer[] = "Security/CantDisableClass";
analyzer[] = "Security/CantDisableFunction";
analyzer[] = "Structures/ArrayAddition";
analyzer[] = "Structures/ComplexExpression";
analyzer[] = "Structures/ConstDefineFavorite";
analyzer[] = "Structures/ConstantScalarExpression";
analyzer[] = "Structures/DateTimePreference";
analyzer[] = "Structures/DereferencingAS";
analyzer[] = "Structures/DynamicCalls";
analyzer[] = "Structures/DynamicCode";
analyzer[] = "Structures/ElseUsage";
analyzer[] = "Structures/ErrorMessages";
```

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```
analyzer[] = "Structures/EvalUsage";
analyzer[] = "Structures/ExitUsage";
analyzer[] = "Structures/FilePutContentsDataType";
analyzer[] = "Structures/FileUploadUsage";
analyzer[] = "Structures/FileUsage";
analyzer[] = "Structures/FunctionSubscripting";
analyzer[] = "Structures/GlobalInGlobal";
analyzer[] = "Structures/GlobalUsage";
analyzer[] = "Structures/IncludeUsage";
analyzer[] = "Structures/MailUsage";
analyzer[] = "Structures/MultipleCatch";
analyzer[] = "Structures/NestedLoops";
analyzer[] = "Structures/NoDirectAccess";
analyzer[] = "Structures/NonBreakableSpaceInNames";
analyzer[] = "Structures/Noscream";
analyzer[] = "Structures/OnceUsage";
analyzer[] = "Structures/ResourcesUsage";
analyzer[] = "Structures/ShellUsage";
analyzer[] = "Structures/ShortTags";
analyzer[] = "Structures/TryFinally";
analyzer[] = "Structures/UseDebug";
analyzer[] = "Traits/Php";
analyzer[] = "Traits/TraitUsage";
analyzer[] = "Traits/Traitnames";
analyzer[] = "Type/ArrayIndex";
analyzer[] = "Type/Binary";
analyzer[] = "Type/Email";
analyzer[] = "Type/GPCIndex";
analyzer[] = "Type/Heredoc";
analyzer[] = "Type/Hexadecimal";
analyzer[] = "Type/Ip";
analyzer[] = "Type/Md5String";
analyzer[] = "Type/Nowdoc";
analyzer[] = "Type/Octal";
analyzer[] = "Type/Pack";
analyzer[] = "Type/Path";
analyzer[] = "Type/Printf";
analyzer[] = "Type/Protocols";
analyzer[] = "Type/Regex";
analyzer[] = "Type/Shellcommands";
analyzer[] = "Type/Sql";
analyzer[] = "Type/Url";
analyzer[] = "Variables/References";
analyzer[] = "Variables/StaticVariables";
analyzer[] = "Variables/UncommonEnvVar";
analyzer[] = "Variables/VariableLong";
analyzer[] = "Variables/VariablePhp";
analyzer[] = "Variables/VariableVariables";
analyzer[] = "Vendors/Codeigniter";
analyzer[] = "Vendors/Concrete5";
analyzer[] = "Vendors/Drupal";
analyzer[] = "Vendors/Ez";
```

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```
  analyzer[] = "Vendors/Feast";
  analyzer[] = "Vendors/Fuel";
  analyzer[] = "Vendors/Joomla";
  analyzer[] = "Vendors/Laravel";
  analyzer[] = "Vendors/Phalcon";
  analyzer[] = "Vendors/Sylius";
  analyzer[] = "Vendors/Symfony";
  analyzer[] = "Vendors/Typo3";
  analyzer[] = "Vendors/Wordpress";
  analyzer[] = "Vendors/Yii";
```

Appinfo for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Appinfo':
   - 'Arrays/ArrayNSUsage'
   - 'Arrays/Arrayindex'
   - 'Arrays/Multidimensional'
   - 'Arrays/Phparrayindex'
   - 'Arrays/WithCallback'
   - 'Attributes/NestedAttributes'
   - 'Classes/Abstractclass'
   - 'Classes/Abstractmethods'
   - 'Classes/Anonymous'
   - 'Classes/ClassAliasUsage'
   - 'Classes/ClassOverreach'
   - 'Classes/Classnames'
   - 'Classes/CloningUsage'
   - 'Classes/ConstVisibilityUsage'
   - 'Classes/ConstantDefinition'
   - 'Classes/DynamicClass'
   - 'Classes/DynamicConstantCall'
   - 'Classes/DynamicMethodCall'
   - 'Classes/DynamicNew'
   - 'Classes/DynamicPropertyCall'
   - 'Classes/ImmutableSignature'
   - 'Classes/MagicMethod'
   - 'Classes/MultipleClassesInFile'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/OldStyleConstructor'
   - 'Classes/OverwrittenConst'
   - 'Classes/PromotedProperties'
   - 'Classes/ReadonlyUsage'
   - 'Classes/RedefinedMethods'
   - 'Classes/StaticMethods'
   - 'Classes/StaticProperties'
   - 'Classes/TestClass'
   - 'Classes/UntypedNoDefaultProperties'
```

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```
  - 'Classes/VariableClasses'
  - 'Composer/Autoload'
  - 'Composer/UseComposer'
  - 'Composer/UseComposerLock'
  - 'Constants/CaseInsensitiveConstants'
  - 'Constants/ConditionedConstants'
  - 'Constants/ConstantUsage'
  - 'Constants/DynamicCreation'
  - 'Constants/MagicConstantUsage'
  - 'Constants/PhpConstantUsage'
  - 'Constants/VariableConstant'
  - 'Dump/ParameterArgumentsLinks'
  - 'Exceptions/DefinedExceptions'
  - 'Exceptions/MultipleCatch'
  - 'Exceptions/ThrownExceptions'
  - 'Extensions/Extamqp'
  - 'Extensions/Extapache'
  - 'Extensions/Extapc'
  - 'Extensions/Extapcu'
  - 'Extensions/Extarray'
  - 'Extensions/Extast'
  - 'Extensions/Extbcmath'
  - 'Extensions/Extbzip2'
  - 'Extensions/Extcalendar'
  - 'Extensions/Extcmark'
  - 'Extensions/Extcom'
  - 'Extensions/Extcrypto'
  - 'Extensions/Extcsv'
  - 'Extensions/Extctype'
  - 'Extensions/Extcurl'
  - 'Extensions/Extdate'
  - 'Extensions/Extdb2'
  - 'Extensions/Extdba'
  - 'Extensions/Extdecimal'
  - 'Extensions/Extdio'
  - 'Extensions/Extdom'
  - 'Extensions/Extds'
  - 'Extensions/Exteaccelerator'
  - 'Extensions/Exteio'
  - 'Extensions/Extenchant'
  - 'Extensions/Extev'
  - 'Extensions/Extevent'
  - 'Extensions/Extexcimer'
  - 'Extensions/Extexif'
  - 'Extensions/Extexpect'
  - 'Extensions/Extfam'
  - 'Extensions/Extfann'
  - 'Extensions/Extffi'
  - 'Extensions/Extfile'
  - 'Extensions/Extfileinfo'
  - 'Extensions/Extfilter'
  - 'Extensions/Extfpm'
```

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```
  - 'Extensions/Extftp'
  - 'Extensions/Extgd'
  - 'Extensions/Extgearman'
  - 'Extensions/Extgender'
  - 'Extensions/Extgeoip'
  - 'Extensions/Extgeospatial'
  - 'Extensions/Extgettext'
  - 'Extensions/Extgmagick'
  - 'Extensions/Extgmp'
  - 'Extensions/Extgnupg'
  - 'Extensions/Extgrpc'
  - 'Extensions/Exthash'
  - 'Extensions/Exthrtime'
  - 'Extensions/Exthttp'
  - 'Extensions/Extibase'
  - 'Extensions/Extice'
  - 'Extensions/Exticonv'
  - 'Extensions/Extigbinary'
  - 'Extensions/Extimagick'
  - 'Extensions/Extimap'
  - 'Extensions/Extinfo'
  - 'Extensions/Extinotify'
  - 'Extensions/Extintl'
  - 'Extensions/Extjson'
  - 'Extensions/Extjudy'
  - 'Extensions/Extldap'
  - 'Extensions/Extleveldb'
  - 'Extensions/Extlibsodium'
  - 'Extensions/Extlibxml'
  - 'Extensions/Extlua'
  - 'Extensions/Extlzf'
  - 'Extensions/Extmail'
  - 'Extensions/Extmailparse'
  - 'Extensions/Extmath'
  - 'Extensions/Extmbstring'
  - 'Extensions/Extmcrypt'
  - 'Extensions/Extmemcache'
  - 'Extensions/Extmemcached'
  - 'Extensions/Extmongo'
  - 'Extensions/Extmongodb'
  - 'Extensions/Extmsgpack'
  - 'Extensions/Extmssql'
  - 'Extensions/Extmysql'
  - 'Extensions/Extmysqli'
  - 'Extensions/Extncurses'
  - 'Extensions/Extnewt'
  - 'Extensions/Extnsapi'
  - 'Extensions/Extob'
  - 'Extensions/Extoci8'
  - 'Extensions/Extodbc'
  - 'Extensions/Extopcache'
  - 'Extensions/Extopencensus'
```

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```
  - 'Extensions/Extopenssl'
  - 'Extensions/Extparle'
  - 'Extensions/Extpassword'
  - 'Extensions/Extpcntl'
  - 'Extensions/Extpcov'
  - 'Extensions/Extpcre'
  - 'Extensions/Extpdo'
  - 'Extensions/Extpgsql'
  - 'Extensions/Extphalcon'
  - 'Extensions/Extphar'
  - 'Extensions/Extpkcs11'
  - 'Extensions/Extposix'
  - 'Extensions/Extprotobuf'
  - 'Extensions/Extpspell'
  - 'Extensions/Extpsr'
  - 'Extensions/Extrandom'
  - 'Extensions/Extrar'
  - 'Extensions/Extrdkafka'
  - 'Extensions/Extreadline'
  - 'Extensions/Extredis'
  - 'Extensions/Extreflection'
  - 'Extensions/Extscrypt'
  - 'Extensions/Extsdl'
  - 'Extensions/Extseaslog'
  - 'Extensions/Extsem'
  - 'Extensions/Extsession'
  - 'Extensions/Extshmop'
  - 'Extensions/Extsimplexml'
  - 'Extensions/Extsnmp'
  - 'Extensions/Extsoap'
  - 'Extensions/Extsockets'
  - 'Extensions/Extsphinx'
  - 'Extensions/Extspl'
  - 'Extensions/Extspx'
  - 'Extensions/Extsqlite'
  - 'Extensions/Extsqlite3'
  - 'Extensions/Extsqlsrv'
  - 'Extensions/Extssh2'
  - 'Extensions/Extstandard'
  - 'Extensions/Extstats'
  - 'Extensions/Extstomp'
  - 'Extensions/Extstring'
  - 'Extensions/Extsuhosin'
  - 'Extensions/Extsvm'
  - 'Extensions/Extswoole'
  - 'Extensions/Exttaint'
  - 'Extensions/Extteds'
  - 'Extensions/Exttidy'
  - 'Extensions/Exttokenizer'
  - 'Extensions/Exttokyotyrant'
  - 'Extensions/Exttrader'
  - 'Extensions/Extuopz'
```

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```
  - 'Extensions/Extuuid'
  - 'Extensions/Extv8js'
  - 'Extensions/Extvarnish'
  - 'Extensions/Extvips'
  - 'Extensions/Extwasm'
  - 'Extensions/Extwddx'
  - 'Extensions/Extweakref'
  - 'Extensions/Extxattr'
  - 'Extensions/Extxdebug'
  - 'Extensions/Extxdiff'
  - 'Extensions/Extxhprof'
  - 'Extensions/Extxml'
  - 'Extensions/Extxmlreader'
  - 'Extensions/Extxmlrpc'
  - 'Extensions/Extxmlwriter'
  - 'Extensions/Extxsl'
  - 'Extensions/Extxxtea'
  - 'Extensions/Extyaml'
  - 'Extensions/Extyar'
  - 'Extensions/Extzendmonitor'
  - 'Extensions/Extzip'
  - 'Extensions/Extzlib'
  - 'Extensions/Extzmq'
  - 'Extensions/Extzookeeper'
  - 'Files/IsCliScript'
  - 'Files/NotDefinitionsOnly'
  - 'Functions/Closures'
  - 'Functions/ConditionedFunctions'
  - 'Functions/DeepDefinitions'
  - 'Functions/Dynamiccall'
  - 'Functions/FallbackFunction'
  - 'Functions/Functionnames'
  - 'Functions/FunctionsUsingReference'
  - 'Functions/IsGenerator'
  - 'Functions/MultipleDeclarations'
  - 'Functions/Recursive'
  - 'Functions/RedeclaredPhpFunction'
  - 'Functions/Typehints'
  - 'Functions/UseArrowFunctions'
  - 'Functions/VariableArguments'
  - 'Interfaces/Interfacenames'
  - 'Namespaces/Alias'
  - 'Namespaces/NamespaceUsage'
  - 'Namespaces/Namespacesnames'
  - 'Patterns/CourrierAntiPattern'
  - 'Patterns/DependencyInjection'
  - 'Patterns/Factory'
  - 'Php/AlternativeSyntax'
  - 'Php/Argon2Usage'
  - 'Php/AssertionUsage'
  - 'Php/AutoloadUsage'
  - 'Php/CastingUsage'
```

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```
  - 'Php/Coalesce'
  - 'Php/ConstantScalarExpression'
  - 'Php/CryptoUsage'
  - 'Php/DeclareEncoding'
  - 'Php/DeclareStrict'
  - 'Php/DeclareStrictType'
  - 'Php/DeclareTicks'
  - 'Php/DirectivesUsage'
  - 'Php/DlUsage'
  - 'Php/EchoTagUsage'
  - 'Php/EllipsisUsage'
  - 'Php/ErrorLogUsage'
  - 'Php/FinalConstant'
  - 'Php/FirstClassCallable'
  - 'Php/Gotonames'
  - 'Php/GroupUseDeclaration'
  - 'Php/Haltcompiler'
  - 'Php/Incompilable'
  - 'Php/IntegerSeparatorUsage'
  - 'Php/IsINF'
  - 'Php/IsNAN'
  - 'Php/Labelnames'
  - 'Php/ListShortSyntax'
  - 'Php/ListWithKeys'
  - 'Php/MiddleVersion'
  - 'Php/MixedUsage'
  - 'Php/NamedParameterUsage'
  - 'Php/NestedTernaryWithoutParenthesis'
  - 'Php/NeverKeyword'
  - 'Php/NeverTypehintUsage'
  - 'Php/NewInitializers'
  - 'Php/OveriddenFunction'
  - 'Php/PearUsage'
  - 'Php/Php7RelaxedKeyword'
  - 'Php/Php80OnlyTypeHints'
  - 'Php/Php80UnionTypehint'
  - 'Php/Php80VariableSyntax'
  - 'Php/Php81IntersectionTypehint'
  - 'Php/PlusPlusOnLetters'
  - 'Php/RawPostDataUsage'
  - 'Php/ReturnTypehintUsage'
  - 'Php/ScalarTypehintUsage'
  - 'Php/ShortTernary'
  - 'Php/SpreadOperatorForArray'
  - 'Php/SuperGlobalUsage'
  - 'Php/ThrowUsage'
  - 'Php/TrailingComma'
  - 'Php/TriggerErrorUsage'
  - 'Php/TryCatchUsage'
  - 'Php/TryMultipleCatch'
  - 'Php/TypedPropertyUsage'
  - 'Php/UseAttributes'
```

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```
  - 'Php/UseBrowscap'
  - 'Php/UseClassAlias'
  - 'Php/UseCli'
  - 'Php/UseContravariance'
  - 'Php/UseCookies'
  - 'Php/UseCovariance'
  - 'Php/UseDNF'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Php/UseNullSafeOperator'
  - 'Php/UseNullableType'
  - 'Php/UseTrailingUseComma'
  - 'Php/UseWeb'
  - 'Php/UsesEnv'
  - 'Php/YieldFromUsage'
  - 'Php/YieldUsage'
  - 'Psr/Psr11Usage'
  - 'Psr/Psr13Usage'
  - 'Psr/Psr16Usage'
  - 'Psr/Psr3Usage'
  - 'Psr/Psr6Usage'
  - 'Psr/Psr7Usage'
  - 'Security/CantDisableClass'
  - 'Security/CantDisableFunction'
  - 'Structures/ArrayAddition'
  - 'Structures/ComplexExpression'
  - 'Structures/ConstDefineFavorite'
  - 'Structures/ConstantScalarExpression'
  - 'Structures/DateTimePreference'
  - 'Structures/DereferencingAS'
  - 'Structures/DynamicCalls'
  - 'Structures/DynamicCode'
  - 'Structures/ElseUsage'
  - 'Structures/ErrorMessages'
  - 'Structures/EvalUsage'
  - 'Structures/ExitUsage'
  - 'Structures/FilePutContentsDataType'
  - 'Structures/FileUploadUsage'
  - 'Structures/FileUsage'
  - 'Structures/FunctionSubscripting'
  - 'Structures/GlobalInGlobal'
  - 'Structures/GlobalUsage'
  - 'Structures/IncludeUsage'
  - 'Structures/MailUsage'
  - 'Structures/MultipleCatch'
  - 'Structures/NestedLoops'
  - 'Structures/NoDirectAccess'
  - 'Structures/NonBreakableSpaceInNames'
  - 'Structures/Noscream'
  - 'Structures/OnceUsage'
  - 'Structures/ResourcesUsage'
  - 'Structures/ShellUsage'
  - 'Structures/ShortTags'
```

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```
  - 'Structures/TryFinally'
  - 'Structures/UseDebug'
  - 'Traits/Php'
  - 'Traits/TraitUsage'
  - 'Traits/Traitnames'
  - 'Type/ArrayIndex'
  - 'Type/Binary'
  - 'Type/Email'
  - 'Type/GPCIndex'
  - 'Type/Heredoc'
  - 'Type/Hexadecimal'
  - 'Type/Ip'
  - 'Type/Md5String'
  - 'Type/Nowdoc'
  - 'Type/Octal'
  - 'Type/Pack'
  - 'Type/Path'
  - 'Type/Printf'
  - 'Type/Protocols'
  - 'Type/Regex'
  - 'Type/Shellcommands'
  - 'Type/Sql'
  - 'Type/Url'
  - 'Variables/References'
  - 'Variables/StaticVariables'
  - 'Variables/UncommonEnvVar'
  - 'Variables/VariableLong'
  - 'Variables/VariablePhp'
  - 'Variables/VariableVariables'
  - 'Vendors/Codeigniter'
  - 'Vendors/Concrete5'
  - 'Vendors/Drupal'
  - 'Vendors/Ez'
  - 'Vendors/Feast'
  - 'Vendors/Fuel'
  - 'Vendors/Joomla'
  - 'Vendors/Laravel'
  - 'Vendors/Phalcon'
  - 'Vendors/Sylius'
  - 'Vendors/Symfony'
  - 'Vendors/Typo3'
  - 'Vendors/Wordpress'
  - 'Vendors/Yii'
```

10.5.4 Attributes

Attributes for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Attributes]
  analyzer[] = "Attributes/Friend";
  analyzer[] = "Attributes/MissingAttributeAttribute";
  analyzer[] = "Attributes/ModifyImmutable";
  analyzer[] = "Attributes/Override";
  analyzer[] = "Attributes/PhpNativeAttributes";
  analyzer[] = "Attributes/UsingDeprecated";
  analyzer[] = "Functions/KillsApp";
  analyzer[] = "Functions/UsingDeprecated";
```

Attributes for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Attributes':
   - 'Attributes/Friend'
   - 'Attributes/MissingAttributeAttribute'
   - 'Attributes/ModifyImmutable'
   - 'Attributes/Override'
   - 'Attributes/PhpNativeAttributes'
   - 'Attributes/UsingDeprecated'
   - 'Functions/KillsApp'
   - 'Functions/UsingDeprecated'
```

10.5.5 CE

CE for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CE]
  analyzer[] = "Arrays/ArrayNSUsage";
  analyzer[] = "Arrays/Arrayindex";
  analyzer[] = "Arrays/Multidimensional";
  analyzer[] = "Arrays/MultipleIdenticalKeys";
  analyzer[] = "Arrays/NegativeStart";
  analyzer[] = "Arrays/Phparrayindex";
  analyzer[] = "Arrays/WithCallback";
  analyzer[] = "Classes/Abstractclass";
  analyzer[] = "Classes/Abstractmethods";
  analyzer[] = "Classes/Anonymous";
  analyzer[] = "Classes/CheckOnCallUsage";
  analyzer[] = "Classes/ClassAliasUsage";
```

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```
analyzer[] = "Classes/Classnames";
analyzer[] = "Classes/CloningUsage";
analyzer[] = "Classes/ConstantClass";
analyzer[] = "Classes/ConstantDefinition";
analyzer[] = "Classes/DefinedConstants";
analyzer[] = "Classes/DefinedProperty";
analyzer[] = "Classes/DirectCallToMagicMethod";
analyzer[] = "Classes/DontUnsetProperties";
analyzer[] = "Classes/DynamicClass";
analyzer[] = "Classes/DynamicConstantCall";
analyzer[] = "Classes/DynamicMethodCall";
analyzer[] = "Classes/DynamicNew";
analyzer[] = "Classes/DynamicPropertyCall";
analyzer[] = "Classes/FinalPrivate";
analyzer[] = "Classes/HasMagicProperty";
analyzer[] = "Classes/ImmutableSignature";
analyzer[] = "Classes/IsNotFamily";
analyzer[] = "Classes/IsaMagicProperty";
analyzer[] = "Classes/MagicMethod";
analyzer[] = "Classes/MultipleClassesInFile";
analyzer[] = "Classes/MultipleDeclarations";
analyzer[] = "Classes/MultipleTraitOrInterface";
analyzer[] = "Classes/NoMagicWithArray";
analyzer[] = "Classes/NoParent";
analyzer[] = "Classes/NonPpp";
analyzer[] = "Classes/NonStaticMethodsCalledStatic";
analyzer[] = "Classes/OldStyleConstructor";
analyzer[] = "Classes/OverwrittenConst";
analyzer[] = "Classes/RedefinedConstants";
analyzer[] = "Classes/RedefinedDefault";
analyzer[] = "Classes/RedefinedMethods";
analyzer[] = "Classes/StaticContainsThis";
analyzer[] = "Classes/StaticMethods";
analyzer[] = "Classes/StaticMethodsCalledFromObject";
analyzer[] = "Classes/StaticProperties";
analyzer[] = "Classes/TestClass";
analyzer[] = "Classes/ThrowInDestruct";
analyzer[] = "Classes/UndeclaredStaticProperty";
analyzer[] = "Classes/UndefinedConstants";
analyzer[] = "Classes/UndefinedProperty";
analyzer[] = "Classes/UndefinedStaticclass";
analyzer[] = "Classes/UseClassOperator";
analyzer[] = "Classes/UseInstanceof";
analyzer[] = "Classes/UselessFinal";
analyzer[] = "Classes/VariableClasses";
analyzer[] = "Classes/WrongTypedPropertyInit";
analyzer[] = "Complete/CreateCompactVariables";
analyzer[] = "Complete/CreateMagicProperty";
analyzer[] = "Complete/FollowClosureDefinition";
analyzer[] = "Complete/MakeClassConstantDefinition";
analyzer[] = "Complete/MakeFunctioncallWithReference";
analyzer[] = "Complete/OverwrittenConstants";
```

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```
analyzer[] = "Complete/OverwrittenProperties";
analyzer[] = "Complete/SetArrayClassDefinition";
analyzer[] = "Complete/SetParentDefinition";
analyzer[] = "Composer/Autoload";
analyzer[] = "Composer/UseComposer";
analyzer[] = "Composer/UseComposerLock";
analyzer[] = "Constants/CaseInsensitiveConstants";
analyzer[] = "Constants/ConstRecommended";
analyzer[] = "Constants/ConstantStrangeNames";
analyzer[] = "Constants/ConstantUsage";
analyzer[] = "Constants/Constantnames";
analyzer[] = "Constants/CustomConstantUsage";
analyzer[] = "Constants/DynamicCreation";
analyzer[] = "Constants/IsExtConstant";
analyzer[] = "Constants/IsPhpConstant";
analyzer[] = "Constants/MagicConstantUsage";
analyzer[] = "Constants/MultipleConstantDefinition";
analyzer[] = "Constants/PhpConstantUsage";
analyzer[] = "Constants/UndefinedConstants";
analyzer[] = "Constants/VariableConstant";
analyzer[] = "Dump/CallOrder";
analyzer[] = "Dump/CollectAtomCounts";
analyzer[] = "Dump/CollectClassChanges";
analyzer[] = "Dump/CollectClassChildren";
analyzer[] = "Dump/CollectClassConstantCounts";
analyzer[] = "Dump/CollectClassDepth";
analyzer[] = "Dump/CollectClassInterfaceCounts";
analyzer[] = "Dump/CollectClassTraitsCounts";
analyzer[] = "Dump/CollectClassesDependencies";
analyzer[] = "Dump/CollectDefinitionsStats";
analyzer[] = "Dump/CollectFilesDependencies";
analyzer[] = "Dump/CollectForeachFavorite";
analyzer[] = "Dump/CollectGlobalVariables";
analyzer[] = "Dump/CollectLiterals";
analyzer[] = "Dump/CollectLocalVariableCounts";
analyzer[] = "Dump/CollectMbstringEncodings";
analyzer[] = "Dump/CollectMethodCounts";
analyzer[] = "Dump/CollectNativeCallsPerExpressions";
analyzer[] = "Dump/CollectParameterCounts";
analyzer[] = "Dump/CollectParameterNames";
analyzer[] = "Dump/CollectPhpStructures";
analyzer[] = "Dump/CollectPropertyCounts";
analyzer[] = "Dump/CollectReadability";
analyzer[] = "Dump/CollectUseCounts";
analyzer[] = "Dump/CollectVariables";
analyzer[] = "Dump/ConstantOrder";
analyzer[] = "Dump/CyclomaticComplexity";
analyzer[] = "Dump/DereferencingLevels";
analyzer[] = "Dump/EnvironnementVariables";
analyzer[] = "Dump/FossilizedMethods";
analyzer[] = "Dump/Inclusions";
analyzer[] = "Dump/IndentationLevels";
```

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```
analyzer[] = "Dump/NewOrder";
analyzer[] = "Dump/ParameterArgumentsLinks";
analyzer[] = "Dump/TypehintingStats";
analyzer[] = "Dump/Typehintorder";
analyzer[] = "Exceptions/DefinedExceptions";
analyzer[] = "Exceptions/MultipleCatch";
analyzer[] = "Exceptions/OverwriteException";
analyzer[] = "Exceptions/ThrowFunctioncall";
analyzer[] = "Exceptions/ThrownExceptions";
analyzer[] = "Exceptions/UselessCatch";
analyzer[] = "Extensions/Extamqp";
analyzer[] = "Extensions/Extapache";
analyzer[] = "Extensions/Extapc";
analyzer[] = "Extensions/Extapcu";
analyzer[] = "Extensions/Extarray";
analyzer[] = "Extensions/Extast";
analyzer[] = "Extensions/Extbcmath";
analyzer[] = "Extensions/Extbzip2";
analyzer[] = "Extensions/Extcalendar";
analyzer[] = "Extensions/Extcmark";
analyzer[] = "Extensions/Extcom";
analyzer[] = "Extensions/Extcrypto";
analyzer[] = "Extensions/Extctype";
analyzer[] = "Extensions/Extcurl";
analyzer[] = "Extensions/Extdate";
analyzer[] = "Extensions/Extdb2";
analyzer[] = "Extensions/Extdba";
analyzer[] = "Extensions/Extdecimal";
analyzer[] = "Extensions/Extdio";
analyzer[] = "Extensions/Extdom";
analyzer[] = "Extensions/Extds";
analyzer[] = "Extensions/Exteaccelerator";
analyzer[] = "Extensions/Exteio";
analyzer[] = "Extensions/Extenchant";
analyzer[] = "Extensions/Extev";
analyzer[] = "Extensions/Extevent";
analyzer[] = "Extensions/Extexif";
analyzer[] = "Extensions/Extexpect";
analyzer[] = "Extensions/Extfam";
analyzer[] = "Extensions/Extfann";
analyzer[] = "Extensions/Extffi";
analyzer[] = "Extensions/Extfile";
analyzer[] = "Extensions/Extfileinfo";
analyzer[] = "Extensions/Extfilter";
analyzer[] = "Extensions/Extfpm";
analyzer[] = "Extensions/Extftp";
analyzer[] = "Extensions/Extgd";
analyzer[] = "Extensions/Extgearman";
analyzer[] = "Extensions/Extgender";
analyzer[] = "Extensions/Extgeoip";
analyzer[] = "Extensions/Extgettext";
analyzer[] = "Extensions/Extgmagick";
```

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```
analyzer[] = "Extensions/Extgmp";
analyzer[] = "Extensions/Extgnupg";
analyzer[] = "Extensions/Extgrpc";
analyzer[] = "Extensions/Exthash";
analyzer[] = "Extensions/Exthrtime";
analyzer[] = "Extensions/Exthttp";
analyzer[] = "Extensions/Extibase";
analyzer[] = "Extensions/Exticonv";
analyzer[] = "Extensions/Extigbinary";
analyzer[] = "Extensions/Extimagick";
analyzer[] = "Extensions/Extimap";
analyzer[] = "Extensions/Extinfo";
analyzer[] = "Extensions/Extinotify";
analyzer[] = "Extensions/Extintl";
analyzer[] = "Extensions/Extjson";
analyzer[] = "Extensions/Extjudy";
analyzer[] = "Extensions/Extldap";
analyzer[] = "Extensions/Extleveldb";
analyzer[] = "Extensions/Extlibsodium";
analyzer[] = "Extensions/Extlibxml";
analyzer[] = "Extensions/Extlua";
analyzer[] = "Extensions/Extlzf";
analyzer[] = "Extensions/Extmail";
analyzer[] = "Extensions/Extmailparse";
analyzer[] = "Extensions/Extmath";
analyzer[] = "Extensions/Extmbstring";
analyzer[] = "Extensions/Extmcrypt";
analyzer[] = "Extensions/Extmemcache";
analyzer[] = "Extensions/Extmemcached";
analyzer[] = "Extensions/Extmongo";
analyzer[] = "Extensions/Extmongodb";
analyzer[] = "Extensions/Extmsgpack";
analyzer[] = "Extensions/Extmssql";
analyzer[] = "Extensions/Extmysql";
analyzer[] = "Extensions/Extmysqli";
analyzer[] = "Extensions/Extncurses";
analyzer[] = "Extensions/Extnewt";
analyzer[] = "Extensions/Extnsapi";
analyzer[] = "Extensions/Extob";
analyzer[] = "Extensions/Extoci8";
analyzer[] = "Extensions/Extodbc";
analyzer[] = "Extensions/Extopcache";
analyzer[] = "Extensions/Extopencensus";
analyzer[] = "Extensions/Extopenssl";
analyzer[] = "Extensions/Extparle";
analyzer[] = "Extensions/Extpassword";
analyzer[] = "Extensions/Extpcntl";
analyzer[] = "Extensions/Extpcov";
analyzer[] = "Extensions/Extpcre";
analyzer[] = "Extensions/Extpdo";
analyzer[] = "Extensions/Extpgsql";
analyzer[] = "Extensions/Extphalcon";
```

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```
analyzer[] = "Extensions/Extphar";
analyzer[] = "Extensions/Extposix";
analyzer[] = "Extensions/Extpspell";
analyzer[] = "Extensions/Extpsr";
analyzer[] = "Extensions/Extrar";
analyzer[] = "Extensions/Extrdkafka";
analyzer[] = "Extensions/Extreadline";
analyzer[] = "Extensions/Extredis";
analyzer[] = "Extensions/Extreflection";
analyzer[] = "Extensions/Extsdl";
analyzer[] = "Extensions/Extseaslog";
analyzer[] = "Extensions/Extsem";
analyzer[] = "Extensions/Extsession";
analyzer[] = "Extensions/Extshmop";
analyzer[] = "Extensions/Extsimplexml";
analyzer[] = "Extensions/Extsnmp";
analyzer[] = "Extensions/Extsoap";
analyzer[] = "Extensions/Extsockets";
analyzer[] = "Extensions/Extsphinx";
analyzer[] = "Extensions/Extspl";
analyzer[] = "Extensions/Extsqlite";
analyzer[] = "Extensions/Extsqlite3";
analyzer[] = "Extensions/Extsqlsrv";
analyzer[] = "Extensions/Extssh2";
analyzer[] = "Extensions/Extstandard";
analyzer[] = "Extensions/Extstats";
analyzer[] = "Extensions/Extstring";
analyzer[] = "Extensions/Extsuhosin";
analyzer[] = "Extensions/Extsvm";
analyzer[] = "Extensions/Extswoole";
analyzer[] = "Extensions/Exttidy";
analyzer[] = "Extensions/Exttokenizer";
analyzer[] = "Extensions/Exttokyotyrant";
analyzer[] = "Extensions/Exttrader";
analyzer[] = "Extensions/Extuopz";
analyzer[] = "Extensions/Extuuid";
analyzer[] = "Extensions/Extv8js";
analyzer[] = "Extensions/Extvarnish";
analyzer[] = "Extensions/Extvips";
analyzer[] = "Extensions/Extwasm";
analyzer[] = "Extensions/Extwddx";
analyzer[] = "Extensions/Extweakref";
analyzer[] = "Extensions/Extxattr";
analyzer[] = "Extensions/Extxdebug";
analyzer[] = "Extensions/Extxdiff";
analyzer[] = "Extensions/Extxhprof";
analyzer[] = "Extensions/Extxml";
analyzer[] = "Extensions/Extxmlreader";
analyzer[] = "Extensions/Extxmlrpc";
analyzer[] = "Extensions/Extxmlwriter";
analyzer[] = "Extensions/Extxsl";
analyzer[] = "Extensions/Extxxtea";
```

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```
analyzer[] = "Extensions/Extyaml";
analyzer[] = "Extensions/Extzendmonitor";
analyzer[] = "Extensions/Extzip";
analyzer[] = "Extensions/Extzlib";
analyzer[] = "Extensions/Extzmq";
analyzer[] = "Extensions/Extzookeeper";
analyzer[] = "Files/IsCliScript";
analyzer[] = "Files/NotDefinitionsOnly";
analyzer[] = "Functions/AliasesUsage";
analyzer[] = "Functions/CallbackNeedsReturn";
analyzer[] = "Functions/CantUse";
analyzer[] = "Functions/Closures";
analyzer[] = "Functions/ConditionedFunctions";
analyzer[] = "Functions/DeepDefinitions";
analyzer[] = "Functions/DynamicCode";
analyzer[] = "Functions/Dynamiccall";
analyzer[] = "Functions/FallbackFunction";
analyzer[] = "Functions/Functionnames";
analyzer[] = "Functions/FunctionsUsingReference";
analyzer[] = "Functions/IsExtFunction";
analyzer[] = "Functions/IsGenerator";
analyzer[] = "Functions/KillsApp";
analyzer[] = "Functions/MismatchParameterName";
analyzer[] = "Functions/MultipleDeclarations";
analyzer[] = "Functions/MustReturn";
analyzer[] = "Functions/NoLiteralForReference";
analyzer[] = "Functions/NullableWithConstant";
analyzer[] = "Functions/Recursive";
analyzer[] = "Functions/RedeclaredPhpFunction";
analyzer[] = "Functions/ShouldYieldWithKey";
analyzer[] = "Functions/TypehintMustBeReturned";
analyzer[] = "Functions/TypehintedReferences";
analyzer[] = "Functions/Typehints";
analyzer[] = "Functions/UnbindingClosures";
analyzer[] = "Functions/UndefinedFunctions";
analyzer[] = "Functions/UnknownParameterName";
analyzer[] = "Functions/UnusedInheritedVariable";
analyzer[] = "Functions/UseArrowFunctions";
analyzer[] = "Functions/UseConstantAsArguments";
analyzer[] = "Functions/UsesDefaultArguments";
analyzer[] = "Functions/VariableArguments";
analyzer[] = "Functions/WrongNumberOfArguments";
analyzer[] = "Functions/WrongOptionalParameter";
analyzer[] = "Functions/WrongReturnedType";
analyzer[] = "Functions/WrongTypeWithCall";
analyzer[] = "Interfaces/CantImplementTraversable";
analyzer[] = "Interfaces/Interfacenames";
analyzer[] = "Interfaces/IsExtInterface";
analyzer[] = "Interfaces/IsNotImplemented";
analyzer[] = "Interfaces/UndefinedInterfaces";
analyzer[] = "Namespaces/Alias";
analyzer[] = "Namespaces/EmptyNamespace";
```

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```
analyzer[] = "Namespaces/HiddenUse";
analyzer[] = "Namespaces/MultipleAliasDefinitionPerFile";
analyzer[] = "Namespaces/MultipleAliasDefinitions";
analyzer[] = "Namespaces/NamespaceUsage";
analyzer[] = "Namespaces/Namespacesnames";
analyzer[] = "Namespaces/ShouldMakeAlias";
analyzer[] = "Patterns/CourrierAntiPattern";
analyzer[] = "Patterns/DependencyInjection";
analyzer[] = "Patterns/Factory";
analyzer[] = "Performances/ArrayMergeInLoops";
analyzer[] = "Performances/PrePostIncrement";
analyzer[] = "Performances/StrposTooMuch";
analyzer[] = "Performances/UseArraySlice";
analyzer[] = "Php/AlternativeSyntax";
analyzer[] = "Php/Argon2Usage";
analyzer[] = "Php/ArrayKeyExistsWithObjects";
analyzer[] = "Php/AssertionUsage";
analyzer[] = "Php/AssignAnd";
analyzer[] = "Php/AutoloadUsage";
analyzer[] = "Php/BetterRand";
analyzer[] = "Php/CastUnsetUsage";
analyzer[] = "Php/CastingUsage";
analyzer[] = "Php/Coalesce";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/CryptoUsage";
analyzer[] = "Php/DeclareEncoding";
analyzer[] = "Php/DeclareStrict";
analyzer[] = "Php/DeclareStrictType";
analyzer[] = "Php/DeclareTicks";
analyzer[] = "Php/Deprecated";
analyzer[] = "Php/DetectCurrentClass";
analyzer[] = "Php/DirectivesUsage";
analyzer[] = "Php/DlUsage";
analyzer[] = "Php/EchoTagUsage";
analyzer[] = "Php/EllipsisUsage";
analyzer[] = "Php/ErrorLogUsage";
analyzer[] = "Php/FilterToAddSlashes";
analyzer[] = "Php/FopenMode";
analyzer[] = "Php/Gotonames";
analyzer[] = "Php/GroupUseDeclaration";
analyzer[] = "Php/Haltcompiler";
analyzer[] = "Php/HashAlgos74";
analyzer[] = "Php/IdnUts46";
analyzer[] = "Php/Incompilable";
analyzer[] = "Php/IntegerSeparatorUsage";
analyzer[] = "Php/InternalParameterType";
analyzer[] = "Php/IsAWithString";
analyzer[] = "Php/IsINF";
analyzer[] = "Php/IsNAN";
analyzer[] = "Php/IsnullVsEqualNull";
analyzer[] = "Php/Labelnames";
analyzer[] = "Php/ListShortSyntax";
```

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```
analyzer[] = "Php/ListWithKeys";
analyzer[] = "Php/LogicalInLetters";
analyzer[] = "Php/MiddleVersion";
analyzer[] = "Php/MissingSubpattern";
analyzer[] = "Php/NestedTernaryWithoutParenthesis";
analyzer[] = "Php/NoClassInGlobal";
analyzer[] = "Php/NoMoreCurlyArrays";
analyzer[] = "Php/NoReferenceForTernary";
analyzer[] = "Php/OveriddenFunction";
analyzer[] = "Php/PearUsage";
analyzer[] = "Php/Php74Deprecation";
analyzer[] = "Php/Php74NewClasses";
analyzer[] = "Php/Php74NewConstants";
analyzer[] = "Php/Php74NewFunctions";
analyzer[] = "Php/Php74RemovedDirective";
analyzer[] = "Php/Php74RemovedFunctions";
analyzer[] = "Php/Php74ReservedKeyword";
analyzer[] = "Php/Php74mbstrrpos3rdArg";
analyzer[] = "Php/Php7RelaxedKeyword";
analyzer[] = "Php/Php80NamedParameterVariadic";
analyzer[] = "Php/Php80NewFunctions";
analyzer[] = "Php/Php80OnlyTypeHints";
analyzer[] = "Php/Php80RemovedConstant";
analyzer[] = "Php/Php80RemovedDirective";
analyzer[] = "Php/Php80RemovedFunctions";
analyzer[] = "Php/Php80RemovesResources";
analyzer[] = "Php/Php80UnionTypehint";
analyzer[] = "Php/Php80VariableSyntax";
analyzer[] = "Php/PhpErrorMsgUsage";
analyzer[] = "Php/RawPostDataUsage";
analyzer[] = "Php/ReflectionExportIsDeprecated";
analyzer[] = "Php/ReturnTypehintUsage";
analyzer[] = "Php/ScalarAreNotArrays";
analyzer[] = "Php/ScalarTypehintUsage";
analyzer[] = "Php/ShouldUseCoalesce";
analyzer[] = "Php/SignatureTrailingComma";
analyzer[] = "Php/SpreadOperatorForArray";
analyzer[] = "Php/StrtrArguments";
analyzer[] = "Php/SuperGlobalUsage";
analyzer[] = "Php/ThrowUsage";
analyzer[] = "Php/ThrowWasAnExpression";
analyzer[] = "Php/TrailingComma";
analyzer[] = "Php/TriggerErrorUsage";
analyzer[] = "Php/TryCatchUsage";
analyzer[] = "Php/TryMultipleCatch";
analyzer[] = "Php/TypedPropertyUsage";
analyzer[] = "Php/UseAttributes";
analyzer[] = "Php/UseBrowscap";
analyzer[] = "Php/UseCli";
analyzer[] = "Php/UseContravariance";
analyzer[] = "Php/UseCookies";
analyzer[] = "Php/UseCovariance";
```

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```
analyzer[] = "Php/UseMatch";
analyzer[] = "Php/UseNullSafeOperator";
analyzer[] = "Php/UseNullableType";
analyzer[] = "Php/UseObjectApi";
analyzer[] = "Php/UsePathinfo";
analyzer[] = "Php/UseTrailingUseComma";
analyzer[] = "Php/UseWeb";
analyzer[] = "Php/UsesEnv";
analyzer[] = "Php/WrongTypeForNativeFunction";
analyzer[] = "Php/YieldFromUsage";
analyzer[] = "Php/YieldUsage";
analyzer[] = "Psr/Psr11Usage";
analyzer[] = "Psr/Psr13Usage";
analyzer[] = "Psr/Psr16Usage";
analyzer[] = "Psr/Psr3Usage";
analyzer[] = "Psr/Psr6Usage";
analyzer[] = "Psr/Psr7Usage";
analyzer[] = "Security/CantDisableClass";
analyzer[] = "Security/CantDisableFunction";
analyzer[] = "Security/DontEchoError";
analyzer[] = "Security/ShouldUsePreparedStatement";
analyzer[] = "Structures/AddZero";
analyzer[] = "Structures/AlteringForeachWithoutReference";
analyzer[] = "Structures/ArrayMapPassesByValue";
analyzer[] = "Structures/AssigneAndCompare";
analyzer[] = "Structures/AutoUnsetForeach";
analyzer[] = "Structures/BooleanStrictComparison";
analyzer[] = "Structures/CastingTernary";
analyzer[] = "Structures/CheckJson";
analyzer[] = "Structures/CoalesceAndConcat";
analyzer[] = "Structures/ComplexExpression";
analyzer[] = "Structures/ConstDefineFavorite";
analyzer[] = "Structures/ConstantScalarExpression";
analyzer[] = "Structures/CouldUseDir";
analyzer[] = "Structures/CouldUseShortAssignation";
analyzer[] = "Structures/CouldUseStrrepeat";
analyzer[] = "Structures/CurlVersionNow";
analyzer[] = "Structures/DanglingArrayReferences";
analyzer[] = "Structures/DereferencingAS";
analyzer[] = "Structures/DirThenSlash";
analyzer[] = "Structures/DontReadAndWriteInOneExpression";
analyzer[] = "Structures/DropElseAfterReturn";
analyzer[] = "Structures/DynamicCalls";
analyzer[] = "Structures/DynamicCode";
analyzer[] = "Structures/ElseIfElseif";
analyzer[] = "Structures/ElseUsage";
analyzer[] = "Structures/EmptyBlocks";
analyzer[] = "Structures/ErrorMessages";
analyzer[] = "Structures/ErrorReportingWithInteger";
analyzer[] = "Structures/EvalUsage";
analyzer[] = "Structures/EvalWithoutTry";
analyzer[] = "Structures/ExitUsage";
```

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```
analyzer[] = "Structures/FailingSubstrComparison";
analyzer[] = "Structures/FileUploadUsage";
analyzer[] = "Structures/FileUsage";
analyzer[] = "Structures/ForeachReferenceIsNotModified";
analyzer[] = "Structures/ForgottenWhiteSpace";
analyzer[] = "Structures/FunctionSubscripting";
analyzer[] = "Structures/GlobalInGlobal";
analyzer[] = "Structures/GlobalUsage";
analyzer[] = "Structures/Htmlentitiescall";
analyzer[] = "Structures/IdenticalConditions";
analyzer[] = "Structures/IdenticalOnBothSides";
analyzer[] = "Structures/IfWithSameConditions";
analyzer[] = "Structures/ImpliedIf";
analyzer[] = "Structures/ImplodeArgsOrder";
analyzer[] = "Structures/IncludeUsage";
analyzer[] = "Structures/IndicesAreIntOrString";
analyzer[] = "Structures/InvalidPackFormat";
analyzer[] = "Structures/InvalidRegex";
analyzer[] = "Structures/IsZero";
analyzer[] = "Structures/ListOmissions";
analyzer[] = "Structures/LogicalMistakes";
analyzer[] = "Structures/LoneBlock";
analyzer[] = "Structures/MailUsage";
analyzer[] = "Structures/MbstringThirdArg";
analyzer[] = "Structures/MbstringUnknownEncoding";
analyzer[] = "Structures/MergeIfThen";
analyzer[] = "Structures/MissingParenthesis";
analyzer[] = "Structures/MultipleCatch";
analyzer[] = "Structures/MultipleDefinedCase";
analyzer[] = "Structures/MultiplyByOne";
analyzer[] = "Structures/NegativePow";
analyzer[] = "Structures/NestedLoops";
analyzer[] = "Structures/NestedTernary";
analyzer[] = "Structures/NeverNegative";
analyzer[] = "Structures/NextMonthTrap";
analyzer[] = "Structures/NoChoice";
analyzer[] = "Structures/NoDirectAccess";
analyzer[] = "Structures/NoEmptyRegex";
analyzer[] = "Structures/NoIssetWithEmpty";
analyzer[] = "Structures/NoParenthesisForLanguageConstruct";
analyzer[] = "Structures/NoReferenceOnLeft";
analyzer[] = "Structures/NoSubstrOne";
analyzer[] = "Structures/NonBreakableSpaceInNames";
analyzer[] = "Structures/Noscream";
analyzer[] = "Structures/NotEqual";
analyzer[] = "Structures/NotNot";
analyzer[] = "Structures/ObjectReferences";
analyzer[] = "Structures/OnceUsage";
analyzer[] = "Structures/OpensslRandomPseudoByteSecondArg";
analyzer[] = "Structures/OrDie";
analyzer[] = "Structures/PrintAndDie";
analyzer[] = "Structures/PrintWithoutParenthesis";
```

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```
analyzer[] = "Structures/PrintfArguments";
analyzer[] = "Structures/RepeatedPrint";
analyzer[] = "Structures/RepeatedRegex";
analyzer[] = "Structures/ResourcesUsage";
analyzer[] = "Structures/ResultMayBeMissing";
analyzer[] = "Structures/ReturnTrueFalse";
analyzer[] = "Structures/SameConditions";
analyzer[] = "Structures/ShellUsage";
analyzer[] = "Structures/ShortTags";
analyzer[] = "Structures/ShouldChainException";
analyzer[] = "Structures/ShouldMakeTernary";
analyzer[] = "Structures/ShouldUseExplodeArgs";
analyzer[] = "Structures/StripTagsSkipsClosedTag";
analyzer[] = "Structures/StrposCompare";
analyzer[] = "Structures/SwitchWithoutDefault";
analyzer[] = "Structures/TernaryInConcat";
analyzer[] = "Structures/ThrowsAndAssign";
analyzer[] = "Structures/TimestampDifference";
analyzer[] = "Structures/TryFinally";
analyzer[] = "Structures/UncheckedResources";
analyzer[] = "Structures/UnconditionLoopBreak";
analyzer[] = "Structures/UnknownPregOption";
analyzer[] = "Structures/UnsupportedTypesWithOperators";
analyzer[] = "Structures/UseConstant";
analyzer[] = "Structures/UseDebug";
analyzer[] = "Structures/UseInstanceof";
analyzer[] = "Structures/UseSystemTmp";
analyzer[] = "Structures/UselessBrackets";
analyzer[] = "Structures/UselessCasting";
analyzer[] = "Structures/UselessCheck";
analyzer[] = "Structures/UselessInstruction";
analyzer[] = "Structures/UselessParenthesis";
analyzer[] = "Structures/UselessUnset";
analyzer[] = "Structures/VardumpUsage";
analyzer[] = "Structures/WhileListEach";
analyzer[] = "Structures/pregOptionE";
analyzer[] = "Traits/IsExtTrait";
analyzer[] = "Traits/Php";
analyzer[] = "Traits/TraitUsage";
analyzer[] = "Traits/Traitnames";
analyzer[] = "Traits/UndefinedInsteadof";
analyzer[] = "Traits/UndefinedTrait";
analyzer[] = "Traits/UselessAlias";
analyzer[] = "Type/ArrayIndex";
analyzer[] = "Type/Binary";
analyzer[] = "Type/Email";
analyzer[] = "Type/GPCIndex";
analyzer[] = "Type/Heredoc";
analyzer[] = "Type/Hexadecimal";
analyzer[] = "Type/Md5String";
analyzer[] = "Type/NoRealComparison";
analyzer[] = "Type/Nowdoc";
```

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```
analyzer[] = "Type/Octal";
analyzer[] = "Type/OneVariableStrings";
analyzer[] = "Type/Pack";
analyzer[] = "Type/Path";
analyzer[] = "Type/Printf";
analyzer[] = "Type/Protocols";
analyzer[] = "Type/Regex";
analyzer[] = "Type/Shellcommands";
analyzer[] = "Type/ShouldTypecast";
analyzer[] = "Type/SilentlyCastInteger";
analyzer[] = "Type/Sql";
analyzer[] = "Type/StringWithStrangeSpace";
analyzer[] = "Type/Url";
analyzer[] = "Typehints/CouldBeArray";
analyzer[] = "Typehints/CouldBeBoolean";
analyzer[] = "Typehints/CouldBeCIT";
analyzer[] = "Typehints/CouldBeFloat";
analyzer[] = "Typehints/CouldBeInt";
analyzer[] = "Typehints/CouldBeNull";
analyzer[] = "Typehints/CouldBeString";
analyzer[] = "Typehints/MissingReturntype";
analyzer[] = "Variables/References";
analyzer[] = "Variables/SelfTransform";
analyzer[] = "Variables/StaticVariables";
analyzer[] = "Variables/UncommonEnvVar";
analyzer[] = "Variables/UndefinedVariable";
analyzer[] = "Variables/VariableLong";
analyzer[] = "Variables/VariableUsedOnceByContext";
analyzer[] = "Variables/VariableVariables";
analyzer[] = "Vendors/Codeigniter";
analyzer[] = "Vendors/Concrete5";
analyzer[] = "Vendors/Drupal";
analyzer[] = "Vendors/Ez";
analyzer[] = "Vendors/Fuel";
analyzer[] = "Vendors/Joomla";
analyzer[] = "Vendors/Laravel";
analyzer[] = "Vendors/Phalcon";
analyzer[] = "Vendors/Symfony";
analyzer[] = "Vendors/Typo3";
analyzer[] = "Vendors/Wordpress";
analyzer[] = "Vendors/Yii";
```

CE for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```yaml
rulesets:
  'CE':
   - 'Arrays/ArrayNSUsage'
   - 'Arrays/Arrayindex'
   - 'Arrays/Multidimensional'
   - 'Arrays/MultipleIdenticalKeys'
   - 'Arrays/NegativeStart'
   - 'Arrays/Phparrayindex'
   - 'Arrays/WithCallback'
   - 'Classes/Abstractclass'
   - 'Classes/Abstractmethods'
   - 'Classes/Anonymous'
   - 'Classes/CheckOnCallUsage'
   - 'Classes/ClassAliasUsage'
   - 'Classes/Classnames'
   - 'Classes/CloningUsage'
   - 'Classes/ConstantClass'
   - 'Classes/ConstantDefinition'
   - 'Classes/DefinedConstants'
   - 'Classes/DefinedProperty'
   - 'Classes/DirectCallToMagicMethod'
   - 'Classes/DontUnsetProperties'
   - 'Classes/DynamicClass'
   - 'Classes/DynamicConstantCall'
   - 'Classes/DynamicMethodCall'
   - 'Classes/DynamicNew'
   - 'Classes/DynamicPropertyCall'
   - 'Classes/FinalPrivate'
   - 'Classes/HasMagicProperty'
   - 'Classes/ImmutableSignature'
   - 'Classes/IsNotFamily'
   - 'Classes/IsaMagicProperty'
   - 'Classes/MagicMethod'
   - 'Classes/MultipleClassesInFile'
   - 'Classes/MultipleDeclarations'
   - 'Classes/MultipleTraitOrInterface'
   - 'Classes/NoMagicWithArray'
   - 'Classes/NoParent'
   - 'Classes/NonPpp'
   - 'Classes/NonStaticMethodsCalledStatic'
   - 'Classes/OldStyleConstructor'
   - 'Classes/OverwrittenConst'
   - 'Classes/RedefinedConstants'
   - 'Classes/RedefinedDefault'
   - 'Classes/RedefinedMethods'
   - 'Classes/StaticContainsThis'
   - 'Classes/StaticMethods'
   - 'Classes/StaticMethodsCalledFromObject'
```

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```
  - 'Classes/StaticProperties'
  - 'Classes/TestClass'
  - 'Classes/ThrowInDestruct'
  - 'Classes/UndeclaredStaticProperty'
  - 'Classes/UndefinedConstants'
  - 'Classes/UndefinedProperty'
  - 'Classes/UndefinedStaticclass'
  - 'Classes/UseClassOperator'
  - 'Classes/UseInstanceof'
  - 'Classes/UselessFinal'
  - 'Classes/VariableClasses'
  - 'Classes/WrongTypedPropertyInit'
  - 'Complete/CreateCompactVariables'
  - 'Complete/CreateMagicProperty'
  - 'Complete/FollowClosureDefinition'
  - 'Complete/MakeClassConstantDefinition'
  - 'Complete/MakeFunctioncallWithReference'
  - 'Complete/OverwrittenConstants'
  - 'Complete/OverwrittenProperties'
  - 'Complete/SetArrayClassDefinition'
  - 'Complete/SetParentDefinition'
  - 'Composer/Autoload'
  - 'Composer/UseComposer'
  - 'Composer/UseComposerLock'
  - 'Constants/CaseInsensitiveConstants'
  - 'Constants/ConstRecommended'
  - 'Constants/ConstantStrangeNames'
  - 'Constants/ConstantUsage'
  - 'Constants/Constantnames'
  - 'Constants/CustomConstantUsage'
  - 'Constants/DynamicCreation'
  - 'Constants/IsExtConstant'
  - 'Constants/IsPhpConstant'
  - 'Constants/MagicConstantUsage'
  - 'Constants/MultipleConstantDefinition'
  - 'Constants/PhpConstantUsage'
  - 'Constants/UndefinedConstants'
  - 'Constants/VariableConstant'
  - 'Dump/CallOrder'
  - 'Dump/CollectAtomCounts'
  - 'Dump/CollectClassChanges'
  - 'Dump/CollectClassChildren'
  - 'Dump/CollectClassConstantCounts'
  - 'Dump/CollectClassDepth'
  - 'Dump/CollectClassInterfaceCounts'
  - 'Dump/CollectClassTraitsCounts'
  - 'Dump/CollectClassesDependencies'
  - 'Dump/CollectDefinitionsStats'
  - 'Dump/CollectFilesDependencies'
  - 'Dump/CollectForeachFavorite'
  - 'Dump/CollectGlobalVariables'
  - 'Dump/CollectLiterals'
```

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```
  - 'Dump/CollectLocalVariableCounts'
  - 'Dump/CollectMbstringEncodings'
  - 'Dump/CollectMethodCounts'
  - 'Dump/CollectNativeCallsPerExpressions'
  - 'Dump/CollectParameterCounts'
  - 'Dump/CollectParameterNames'
  - 'Dump/CollectPhpStructures'
  - 'Dump/CollectPropertyCounts'
  - 'Dump/CollectReadability'
  - 'Dump/CollectUseCounts'
  - 'Dump/CollectVariables'
  - 'Dump/ConstantOrder'
  - 'Dump/CyclomaticComplexity'
  - 'Dump/DereferencingLevels'
  - 'Dump/EnvironnementVariables'
  - 'Dump/FossilizedMethods'
  - 'Dump/Inclusions'
  - 'Dump/IndentationLevels'
  - 'Dump/NewOrder'
  - 'Dump/ParameterArgumentsLinks'
  - 'Dump/TypehintingStats'
  - 'Dump/Typehintorder'
  - 'Exceptions/DefinedExceptions'
  - 'Exceptions/MultipleCatch'
  - 'Exceptions/OverwriteException'
  - 'Exceptions/ThrowFunctioncall'
  - 'Exceptions/ThrownExceptions'
  - 'Exceptions/UselessCatch'
  - 'Extensions/Extamqp'
  - 'Extensions/Extapache'
  - 'Extensions/Extapc'
  - 'Extensions/Extapcu'
  - 'Extensions/Extarray'
  - 'Extensions/Extast'
  - 'Extensions/Extbcmath'
  - 'Extensions/Extbzip2'
  - 'Extensions/Extcalendar'
  - 'Extensions/Extcmark'
  - 'Extensions/Extcom'
  - 'Extensions/Extcrypto'
  - 'Extensions/Extctype'
  - 'Extensions/Extcurl'
  - 'Extensions/Extdate'
  - 'Extensions/Extdb2'
  - 'Extensions/Extdba'
  - 'Extensions/Extdecimal'
  - 'Extensions/Extdio'
  - 'Extensions/Extdom'
  - 'Extensions/Extds'
  - 'Extensions/Exteaccelerator'
  - 'Extensions/Exteio'
  - 'Extensions/Extenchant'
```

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```
  - 'Extensions/Extev'
  - 'Extensions/Extevent'
  - 'Extensions/Extexif'
  - 'Extensions/Extexpect'
  - 'Extensions/Extfam'
  - 'Extensions/Extfann'
  - 'Extensions/Extffi'
  - 'Extensions/Extfile'
  - 'Extensions/Extfileinfo'
  - 'Extensions/Extfilter'
  - 'Extensions/Extfpm'
  - 'Extensions/Extftp'
  - 'Extensions/Extgd'
  - 'Extensions/Extgearman'
  - 'Extensions/Extgender'
  - 'Extensions/Extgeoip'
  - 'Extensions/Extgettext'
  - 'Extensions/Extgmagick'
  - 'Extensions/Extgmp'
  - 'Extensions/Extgnupg'
  - 'Extensions/Extgrpc'
  - 'Extensions/Exthash'
  - 'Extensions/Exthrtime'
  - 'Extensions/Exthttp'
  - 'Extensions/Extibase'
  - 'Extensions/Exticonv'
  - 'Extensions/Extigbinary'
  - 'Extensions/Extimagick'
  - 'Extensions/Extimap'
  - 'Extensions/Extinfo'
  - 'Extensions/Extinotify'
  - 'Extensions/Extintl'
  - 'Extensions/Extjson'
  - 'Extensions/Extjudy'
  - 'Extensions/Extldap'
  - 'Extensions/Extleveldb'
  - 'Extensions/Extlibsodium'
  - 'Extensions/Extlibxml'
  - 'Extensions/Extlua'
  - 'Extensions/Extlzf'
  - 'Extensions/Extmail'
  - 'Extensions/Extmailparse'
  - 'Extensions/Extmath'
  - 'Extensions/Extmbstring'
  - 'Extensions/Extmcrypt'
  - 'Extensions/Extmemcache'
  - 'Extensions/Extmemcached'
  - 'Extensions/Extmongo'
  - 'Extensions/Extmongodb'
  - 'Extensions/Extmsgpack'
  - 'Extensions/Extmssql'
  - 'Extensions/Extmysql'
```

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```
  - 'Extensions/Extmysqli'
  - 'Extensions/Extncurses'
  - 'Extensions/Extnewt'
  - 'Extensions/Extnsapi'
  - 'Extensions/Extob'
  - 'Extensions/Extoci8'
  - 'Extensions/Extodbc'
  - 'Extensions/Extopcache'
  - 'Extensions/Extopencensus'
  - 'Extensions/Extopenssl'
  - 'Extensions/Extparle'
  - 'Extensions/Extpassword'
  - 'Extensions/Extpcntl'
  - 'Extensions/Extpcov'
  - 'Extensions/Extpcre'
  - 'Extensions/Extpdo'
  - 'Extensions/Extpgsql'
  - 'Extensions/Extphalcon'
  - 'Extensions/Extphar'
  - 'Extensions/Extposix'
  - 'Extensions/Extpspell'
  - 'Extensions/Extpsr'
  - 'Extensions/Extrar'
  - 'Extensions/Extrdkafka'
  - 'Extensions/Extreadline'
  - 'Extensions/Extredis'
  - 'Extensions/Extreflection'
  - 'Extensions/Extsdl'
  - 'Extensions/Extseaslog'
  - 'Extensions/Extsem'
  - 'Extensions/Extsession'
  - 'Extensions/Extshmop'
  - 'Extensions/Extsimplexml'
  - 'Extensions/Extsnmp'
  - 'Extensions/Extsoap'
  - 'Extensions/Extsockets'
  - 'Extensions/Extsphinx'
  - 'Extensions/Extspl'
  - 'Extensions/Extsqlite'
  - 'Extensions/Extsqlite3'
  - 'Extensions/Extsqlsrv'
  - 'Extensions/Extssh2'
  - 'Extensions/Extstandard'
  - 'Extensions/Extstats'
  - 'Extensions/Extstring'
  - 'Extensions/Extsuhosin'
  - 'Extensions/Extsvm'
  - 'Extensions/Extswoole'
  - 'Extensions/Exttidy'
  - 'Extensions/Exttokenizer'
  - 'Extensions/Exttokyotyrant'
  - 'Extensions/Exttrader'
```

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```
  - 'Extensions/Extuopz'
  - 'Extensions/Extuuid'
  - 'Extensions/Extv8js'
  - 'Extensions/Extvarnish'
  - 'Extensions/Extvips'
  - 'Extensions/Extwasm'
  - 'Extensions/Extwddx'
  - 'Extensions/Extweakref'
  - 'Extensions/Extxattr'
  - 'Extensions/Extxdebug'
  - 'Extensions/Extxdiff'
  - 'Extensions/Extxhprof'
  - 'Extensions/Extxml'
  - 'Extensions/Extxmlreader'
  - 'Extensions/Extxmlrpc'
  - 'Extensions/Extxmlwriter'
  - 'Extensions/Extxsl'
  - 'Extensions/Extxxtea'
  - 'Extensions/Extyaml'
  - 'Extensions/Extzendmonitor'
  - 'Extensions/Extzip'
  - 'Extensions/Extzlib'
  - 'Extensions/Extzmq'
  - 'Extensions/Extzookeeper'
  - 'Files/IsCliScript'
  - 'Files/NotDefinitionsOnly'
  - 'Functions/AliasesUsage'
  - 'Functions/CallbackNeedsReturn'
  - 'Functions/CantUse'
  - 'Functions/Closures'
  - 'Functions/ConditionedFunctions'
  - 'Functions/DeepDefinitions'
  - 'Functions/DynamicCode'
  - 'Functions/Dynamiccall'
  - 'Functions/FallbackFunction'
  - 'Functions/Functionnames'
  - 'Functions/FunctionsUsingReference'
  - 'Functions/IsExtFunction'
  - 'Functions/IsGenerator'
  - 'Functions/KillsApp'
  - 'Functions/MismatchParameterName'
  - 'Functions/MultipleDeclarations'
  - 'Functions/MustReturn'
  - 'Functions/NoLiteralForReference'
  - 'Functions/NullableWithConstant'
  - 'Functions/Recursive'
  - 'Functions/RedeclaredPhpFunction'
  - 'Functions/ShouldYieldWithKey'
  - 'Functions/TypehintMustBeReturned'
  - 'Functions/TypehintedReferences'
  - 'Functions/Typehints'
  - 'Functions/UnbindingClosures'
```

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```
  - 'Functions/UndefinedFunctions'
  - 'Functions/UnknownParameterName'
  - 'Functions/UnusedInheritedVariable'
  - 'Functions/UseArrowFunctions'
  - 'Functions/UseConstantAsArguments'
  - 'Functions/UsesDefaultArguments'
  - 'Functions/VariableArguments'
  - 'Functions/WrongNumberOfArguments'
  - 'Functions/WrongOptionalParameter'
  - 'Functions/WrongReturnedType'
  - 'Functions/WrongTypeWithCall'
  - 'Interfaces/CantImplementTraversable'
  - 'Interfaces/Interfacenames'
  - 'Interfaces/IsExtInterface'
  - 'Interfaces/IsNotImplemented'
  - 'Interfaces/UndefinedInterfaces'
  - 'Namespaces/Alias'
  - 'Namespaces/EmptyNamespace'
  - 'Namespaces/HiddenUse'
  - 'Namespaces/MultipleAliasDefinitionPerFile'
  - 'Namespaces/MultipleAliasDefinitions'
  - 'Namespaces/NamespaceUsage'
  - 'Namespaces/Namespacesnames'
  - 'Namespaces/ShouldMakeAlias'
  - 'Patterns/CourrierAntiPattern'
  - 'Patterns/DependencyInjection'
  - 'Patterns/Factory'
  - 'Performances/ArrayMergeInLoops'
  - 'Performances/PrePostIncrement'
  - 'Performances/StrposTooMuch'
  - 'Performances/UseArraySlice'
  - 'Php/AlternativeSyntax'
  - 'Php/Argon2Usage'
  - 'Php/ArrayKeyExistsWithObjects'
  - 'Php/AssertionUsage'
  - 'Php/AssignAnd'
  - 'Php/AutoloadUsage'
  - 'Php/BetterRand'
  - 'Php/CastUnsetUsage'
  - 'Php/CastingUsage'
  - 'Php/Coalesce'
  - 'Php/ConcatAndAddition'
  - 'Php/CryptoUsage'
  - 'Php/DeclareEncoding'
  - 'Php/DeclareStrict'
  - 'Php/DeclareStrictType'
  - 'Php/DeclareTicks'
  - 'Php/Deprecated'
  - 'Php/DetectCurrentClass'
  - 'Php/DirectivesUsage'
  - 'Php/DlUsage'
  - 'Php/EchoTagUsage'
```

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```
  - 'Php/EllipsisUsage'
  - 'Php/ErrorLogUsage'
  - 'Php/FilterToAddSlashes'
  - 'Php/FopenMode'
  - 'Php/Gotonames'
  - 'Php/GroupUseDeclaration'
  - 'Php/Haltcompiler'
  - 'Php/HashAlgos74'
  - 'Php/IdnUts46'
  - 'Php/Incompilable'
  - 'Php/IntegerSeparatorUsage'
  - 'Php/InternalParameterType'
  - 'Php/IsAWithString'
  - 'Php/IsINF'
  - 'Php/IsNAN'
  - 'Php/IsnullVsEqualNull'
  - 'Php/Labelnames'
  - 'Php/ListShortSyntax'
  - 'Php/ListWithKeys'
  - 'Php/LogicalInLetters'
  - 'Php/MiddleVersion'
  - 'Php/MissingSubpattern'
  - 'Php/NestedTernaryWithoutParenthesis'
  - 'Php/NoClassInGlobal'
  - 'Php/NoMoreCurlyArrays'
  - 'Php/NoReferenceForTernary'
  - 'Php/OveriddenFunction'
  - 'Php/PearUsage'
  - 'Php/Php74Deprecation'
  - 'Php/Php74NewClasses'
  - 'Php/Php74NewConstants'
  - 'Php/Php74NewFunctions'
  - 'Php/Php74RemovedDirective'
  - 'Php/Php74RemovedFunctions'
  - 'Php/Php74ReservedKeyword'
  - 'Php/Php74mbstrrpos3rdArg'
  - 'Php/Php7RelaxedKeyword'
  - 'Php/Php80NamedParameterVariadic'
  - 'Php/Php80NewFunctions'
  - 'Php/Php80OnlyTypeHints'
  - 'Php/Php80RemovedConstant'
  - 'Php/Php80RemovedDirective'
  - 'Php/Php80RemovedFunctions'
  - 'Php/Php80RemovesResources'
  - 'Php/Php80UnionTypehint'
  - 'Php/Php80VariableSyntax'
  - 'Php/PhpErrorMsgUsage'
  - 'Php/RawPostDataUsage'
  - 'Php/ReflectionExportIsDeprecated'
  - 'Php/ReturnTypehintUsage'
  - 'Php/ScalarAreNotArrays'
  - 'Php/ScalarTypehintUsage'
```

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```
  - 'Php/ShouldUseCoalesce'
  - 'Php/SignatureTrailingComma'
  - 'Php/SpreadOperatorForArray'
  - 'Php/StrtrArguments'
  - 'Php/SuperGlobalUsage'
  - 'Php/ThrowUsage'
  - 'Php/ThrowWasAnExpression'
  - 'Php/TrailingComma'
  - 'Php/TriggerErrorUsage'
  - 'Php/TryCatchUsage'
  - 'Php/TryMultipleCatch'
  - 'Php/TypedPropertyUsage'
  - 'Php/UseAttributes'
  - 'Php/UseBrowscap'
  - 'Php/UseCli'
  - 'Php/UseContravariance'
  - 'Php/UseCookies'
  - 'Php/UseCovariance'
  - 'Php/UseMatch'
  - 'Php/UseNullSafeOperator'
  - 'Php/UseNullableType'
  - 'Php/UseObjectApi'
  - 'Php/UsePathinfo'
  - 'Php/UseTrailingUseComma'
  - 'Php/UseWeb'
  - 'Php/UsesEnv'
  - 'Php/WrongTypeForNativeFunction'
  - 'Php/YieldFromUsage'
  - 'Php/YieldUsage'
  - 'Psr/Psr11Usage'
  - 'Psr/Psr13Usage'
  - 'Psr/Psr16Usage'
  - 'Psr/Psr3Usage'
  - 'Psr/Psr6Usage'
  - 'Psr/Psr7Usage'
  - 'Security/CantDisableClass'
  - 'Security/CantDisableFunction'
  - 'Security/DontEchoError'
  - 'Security/ShouldUsePreparedStatement'
  - 'Structures/AddZero'
  - 'Structures/AlteringForeachWithoutReference'
  - 'Structures/ArrayMapPassesByValue'
  - 'Structures/AssigneAndCompare'
  - 'Structures/AutoUnsetForeach'
  - 'Structures/BooleanStrictComparison'
  - 'Structures/CastingTernary'
  - 'Structures/CheckJson'
  - 'Structures/CoalesceAndConcat'
  - 'Structures/ComplexExpression'
  - 'Structures/ConstDefineFavorite'
  - 'Structures/ConstantScalarExpression'
  - 'Structures/CouldUseDir'
```

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```
  - 'Structures/CouldUseShortAssignation'
  - 'Structures/CouldUseStrrepeat'
  - 'Structures/CurlVersionNow'
  - 'Structures/DanglingArrayReferences'
  - 'Structures/DereferencingAS'
  - 'Structures/DirThenSlash'
  - 'Structures/DontReadAndWriteInOneExpression'
  - 'Structures/DropElseAfterReturn'
  - 'Structures/DynamicCalls'
  - 'Structures/DynamicCode'
  - 'Structures/ElseIfElseif'
  - 'Structures/ElseUsage'
  - 'Structures/EmptyBlocks'
  - 'Structures/ErrorMessages'
  - 'Structures/ErrorReportingWithInteger'
  - 'Structures/EvalUsage'
  - 'Structures/EvalWithoutTry'
  - 'Structures/ExitUsage'
  - 'Structures/FailingSubstrComparison'
  - 'Structures/FileUploadUsage'
  - 'Structures/FileUsage'
  - 'Structures/ForeachReferenceIsNotModified'
  - 'Structures/ForgottenWhiteSpace'
  - 'Structures/FunctionSubscripting'
  - 'Structures/GlobalInGlobal'
  - 'Structures/GlobalUsage'
  - 'Structures/Htmlentitiescall'
  - 'Structures/IdenticalConditions'
  - 'Structures/IdenticalOnBothSides'
  - 'Structures/IfWithSameConditions'
  - 'Structures/ImpliedIf'
  - 'Structures/ImplodeArgsOrder'
  - 'Structures/IncludeUsage'
  - 'Structures/IndicesAreIntOrString'
  - 'Structures/InvalidPackFormat'
  - 'Structures/InvalidRegex'
  - 'Structures/IsZero'
  - 'Structures/ListOmissions'
  - 'Structures/LogicalMistakes'
  - 'Structures/LoneBlock'
  - 'Structures/MailUsage'
  - 'Structures/MbstringThirdArg'
  - 'Structures/MbstringUnknownEncoding'
  - 'Structures/MergeIfThen'
  - 'Structures/MissingParenthesis'
  - 'Structures/MultipleCatch'
  - 'Structures/MultipleDefinedCase'
  - 'Structures/MultiplyByOne'
  - 'Structures/NegativePow'
  - 'Structures/NestedLoops'
  - 'Structures/NestedTernary'
  - 'Structures/NeverNegative'
```

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```
  - 'Structures/NextMonthTrap'
  - 'Structures/NoChoice'
  - 'Structures/NoDirectAccess'
  - 'Structures/NoEmptyRegex'
  - 'Structures/NoIssetWithEmpty'
  - 'Structures/NoParenthesisForLanguageConstruct'
  - 'Structures/NoReferenceOnLeft'
  - 'Structures/NoSubstrOne'
  - 'Structures/NonBreakableSpaceInNames'
  - 'Structures/Noscream'
  - 'Structures/NotEqual'
  - 'Structures/NotNot'
  - 'Structures/ObjectReferences'
  - 'Structures/OnceUsage'
  - 'Structures/OpensslRandomPseudoByteSecondArg'
  - 'Structures/OrDie'
  - 'Structures/PrintAndDie'
  - 'Structures/PrintWithoutParenthesis'
  - 'Structures/PrintfArguments'
  - 'Structures/RepeatedPrint'
  - 'Structures/RepeatedRegex'
  - 'Structures/ResourcesUsage'
  - 'Structures/ResultMayBeMissing'
  - 'Structures/ReturnTrueFalse'
  - 'Structures/SameConditions'
  - 'Structures/ShellUsage'
  - 'Structures/ShortTags'
  - 'Structures/ShouldChainException'
  - 'Structures/ShouldMakeTernary'
  - 'Structures/ShouldUseExplodeArgs'
  - 'Structures/StripTagsSkipsClosedTag'
  - 'Structures/StrposCompare'
  - 'Structures/SwitchWithoutDefault'
  - 'Structures/TernaryInConcat'
  - 'Structures/ThrowsAndAssign'
  - 'Structures/TimestampDifference'
  - 'Structures/TryFinally'
  - 'Structures/UncheckedResources'
  - 'Structures/UnconditionLoopBreak'
  - 'Structures/UnknownPregOption'
  - 'Structures/UnsupportedTypesWithOperators'
  - 'Structures/UseConstant'
  - 'Structures/UseDebug'
  - 'Structures/UseInstanceof'
  - 'Structures/UseSystemTmp'
  - 'Structures/UselessBrackets'
  - 'Structures/UselessCasting'
  - 'Structures/UselessCheck'
  - 'Structures/UselessInstruction'
  - 'Structures/UselessParenthesis'
  - 'Structures/UselessUnset'
  - 'Structures/VardumpUsage'
```

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```
  - 'Structures/WhileListEach'
  - 'Structures/pregOptionE'
  - 'Traits/IsExtTrait'
  - 'Traits/Php'
  - 'Traits/TraitUsage'
  - 'Traits/Traitnames'
  - 'Traits/UndefinedInsteadof'
  - 'Traits/UndefinedTrait'
  - 'Traits/UselessAlias'
  - 'Type/ArrayIndex'
  - 'Type/Binary'
  - 'Type/Email'
  - 'Type/GPCIndex'
  - 'Type/Heredoc'
  - 'Type/Hexadecimal'
  - 'Type/Md5String'
  - 'Type/NoRealComparison'
  - 'Type/Nowdoc'
  - 'Type/Octal'
  - 'Type/OneVariableStrings'
  - 'Type/Pack'
  - 'Type/Path'
  - 'Type/Printf'
  - 'Type/Protocols'
  - 'Type/Regex'
  - 'Type/Shellcommands'
  - 'Type/ShouldTypecast'
  - 'Type/SilentlyCastInteger'
  - 'Type/Sql'
  - 'Type/StringWithStrangeSpace'
  - 'Type/Url'
  - 'Typehints/CouldBeArray'
  - 'Typehints/CouldBeBoolean'
  - 'Typehints/CouldBeCIT'
  - 'Typehints/CouldBeFloat'
  - 'Typehints/CouldBeInt'
  - 'Typehints/CouldBeNull'
  - 'Typehints/CouldBeString'
  - 'Typehints/MissingReturntype'
  - 'Variables/References'
  - 'Variables/SelfTransform'
  - 'Variables/StaticVariables'
  - 'Variables/UncommonEnvVar'
  - 'Variables/UndefinedVariable'
  - 'Variables/VariableLong'
  - 'Variables/VariableUsedOnceByContext'
  - 'Variables/VariableVariables'
  - 'Vendors/Codeigniter'
  - 'Vendors/Concrete5'
  - 'Vendors/Drupal'
  - 'Vendors/Ez'
  - 'Vendors/Fuel'
```

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```
  - 'Vendors/Joomla'
  - 'Vendors/Laravel'
  - 'Vendors/Phalcon'
  - 'Vendors/Symfony'
  - 'Vendors/Typo3'
  - 'Vendors/Wordpress'
  - 'Vendors/Yii'
```

10.5.6 CI-checks

CI-checks for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CI-checks]
  analyzer[] = "Arrays/MultipleIdenticalKeys";
  analyzer[] = "Classes/CheckOnCallUsage";
  analyzer[] = "Classes/DirectCallToMagicMethod";
  analyzer[] = "Classes/DontUnsetProperties";
  analyzer[] = "Classes/MultipleDeclarations";
  analyzer[] = "Classes/MultipleTraitOrInterface";
  analyzer[] = "Classes/NoMagicWithArray";
  analyzer[] = "Classes/NoParent";
  analyzer[] = "Classes/NonPpp";
  analyzer[] = "Classes/NonStaticMethodsCalledStatic";
  analyzer[] = "Classes/RedefinedConstants";
  analyzer[] = "Classes/RedefinedDefault";
  analyzer[] = "Classes/StaticContainsThis";
  analyzer[] = "Classes/StaticMethodsCalledFromObject";
  analyzer[] = "Classes/ThrowInDestruct";
  analyzer[] = "Classes/UndeclaredStaticProperty";
  analyzer[] = "Classes/UndefinedConstants";
  analyzer[] = "Classes/UndefinedProperty";
  analyzer[] = "Classes/UndefinedStaticclass";
  analyzer[] = "Classes/UseClassOperator";
  analyzer[] = "Classes/UseInstanceof";
  analyzer[] = "Classes/UselessFinal";
  analyzer[] = "Classes/WrongTypedPropertyInit";
  analyzer[] = "Constants/ConstRecommended";
  analyzer[] = "Constants/ConstantStrangeNames";
  analyzer[] = "Constants/MultipleConstantDefinition";
  analyzer[] = "Constants/UndefinedConstants";
  analyzer[] = "Exceptions/OverwriteException";
  analyzer[] = "Exceptions/ThrowFunctioncall";
  analyzer[] = "Exceptions/UselessCatch";
  analyzer[] = "Functions/AliasesUsage";
  analyzer[] = "Functions/CallbackNeedsReturn";
  analyzer[] = "Functions/MustReturn";
  analyzer[] = "Functions/NoLiteralForReference";
  analyzer[] = "Functions/RedeclaredPhpFunction";
  analyzer[] = "Functions/ShouldYieldWithKey";
```

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```
analyzer[] = "Functions/TypehintMustBeReturned";
analyzer[] = "Functions/TypehintedReferences";
analyzer[] = "Functions/UndefinedFunctions";
analyzer[] = "Functions/UnknownParameterName";
analyzer[] = "Functions/UnusedInheritedVariable";
analyzer[] = "Functions/UseConstantAsArguments";
analyzer[] = "Functions/UsesDefaultArguments";
analyzer[] = "Functions/WrongArgumentNameWithPhpFunction";
analyzer[] = "Functions/WrongNumberOfArguments";
analyzer[] = "Functions/WrongOptionalParameter";
analyzer[] = "Functions/WrongReturnedType";
analyzer[] = "Functions/WrongTypeWithCall";
analyzer[] = "Interfaces/CantImplementTraversable";
analyzer[] = "Interfaces/IsNotImplemented";
analyzer[] = "Interfaces/UndefinedInterfaces";
analyzer[] = "Namespaces/EmptyNamespace";
analyzer[] = "Namespaces/HiddenUse";
analyzer[] = "Namespaces/MultipleAliasDefinitionPerFile";
analyzer[] = "Namespaces/MultipleAliasDefinitions";
analyzer[] = "Namespaces/ShouldMakeAlias";
analyzer[] = "Performances/ArrayMergeInLoops";
analyzer[] = "Performances/PrePostIncrement";
analyzer[] = "Performances/StrposTooMuch";
analyzer[] = "Performances/UseArraySlice";
analyzer[] = "Php/AssignAnd";
analyzer[] = "Php/BetterRand";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/Deprecated";
analyzer[] = "Php/FopenMode";
analyzer[] = "Php/InternalParameterType";
analyzer[] = "Php/IsAWithString";
analyzer[] = "Php/IsnullVsEqualNull";
analyzer[] = "Php/LogicalInLetters";
analyzer[] = "Php/MissingSubpattern";
analyzer[] = "Php/NoClassInGlobal";
analyzer[] = "Php/NoReferenceForTernary";
analyzer[] = "Php/ScalarAreNotArrays";
analyzer[] = "Php/ShouldUseCoalesce";
analyzer[] = "Php/StrtrArguments";
analyzer[] = "Php/UseObjectApi";
analyzer[] = "Php/UsePathinfo";
analyzer[] = "Php/WrongTypeForNativeFunction";
analyzer[] = "Security/DontEchoError";
analyzer[] = "Security/ShouldUsePreparedStatement";
analyzer[] = "Structures/AddZero";
analyzer[] = "Structures/AlteringForeachWithoutReference";
analyzer[] = "Structures/AssigneAndCompare";
analyzer[] = "Structures/AutoUnsetForeach";
analyzer[] = "Structures/BooleanStrictComparison";
analyzer[] = "Structures/CastingTernary";
analyzer[] = "Structures/CheckJson";
analyzer[] = "Structures/CoalesceAndConcat";
```

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```
analyzer[] = "Structures/CouldUseDir";
analyzer[] = "Structures/CouldUseShortAssignation";
analyzer[] = "Structures/CouldUseStrrepeat";
analyzer[] = "Structures/DanglingArrayReferences";
analyzer[] = "Structures/DirThenSlash";
analyzer[] = "Structures/DropElseAfterReturn";
analyzer[] = "Structures/ElseIfElseif";
analyzer[] = "Structures/EmptyBlocks";
analyzer[] = "Structures/ErrorReportingWithInteger";
analyzer[] = "Structures/EvalWithoutTry";
analyzer[] = "Structures/ExitUsage";
analyzer[] = "Structures/FailingSubstrComparison";
analyzer[] = "Structures/ForeachReferenceIsNotModified";
analyzer[] = "Structures/ForgottenWhiteSpace";
analyzer[] = "Structures/Htmlentitiescall";
analyzer[] = "Structures/HtmlentitiescallDefaultFlag";
analyzer[] = "Structures/IdenticalConditions";
analyzer[] = "Structures/IdenticalOnBothSides";
analyzer[] = "Structures/IfWithSameConditions";
analyzer[] = "Structures/ImpliedIf";
analyzer[] = "Structures/ImplodeArgsOrder";
analyzer[] = "Structures/IndicesAreIntOrString";
analyzer[] = "Structures/InvalidPackFormat";
analyzer[] = "Structures/InvalidRegex";
analyzer[] = "Structures/IsZero";
analyzer[] = "Structures/ListOmissions";
analyzer[] = "Structures/LogicalMistakes";
analyzer[] = "Structures/LoneBlock";
analyzer[] = "Structures/MbstringThirdArg";
analyzer[] = "Structures/MbstringUnknownEncoding";
analyzer[] = "Structures/MergeIfThen";
analyzer[] = "Structures/MissingParenthesis";
analyzer[] = "Structures/MultipleDefinedCase";
analyzer[] = "Structures/MultiplyByOne";
analyzer[] = "Structures/NegativePow";
analyzer[] = "Structures/NestedTernary";
analyzer[] = "Structures/NeverNegative";
analyzer[] = "Structures/NextMonthTrap";
analyzer[] = "Structures/NoChoice";
analyzer[] = "Structures/NoEmptyRegex";
analyzer[] = "Structures/NoIssetWithEmpty";
analyzer[] = "Structures/NoParenthesisForLanguageConstruct";
analyzer[] = "Structures/NoReferenceOnLeft";
analyzer[] = "Structures/NoSubstrOne";
analyzer[] = "Structures/Noscream";
analyzer[] = "Structures/NotEqual";
analyzer[] = "Structures/NotNot";
analyzer[] = "Structures/ObjectReferences";
analyzer[] = "Structures/OrDie";
analyzer[] = "Structures/PrintAndDie";
analyzer[] = "Structures/PrintWithoutParenthesis";
analyzer[] = "Structures/PrintfArguments";
```

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```
  analyzer[] = "Structures/RepeatedPrint";
  analyzer[] = "Structures/RepeatedRegex";
  analyzer[] = "Structures/ResultMayBeMissing";
  analyzer[] = "Structures/ReturnTrueFalse";
  analyzer[] = "Structures/SameConditions";
  analyzer[] = "Structures/ShouldChainException";
  analyzer[] = "Structures/ShouldMakeTernary";
  analyzer[] = "Structures/ShouldUseExplodeArgs";
  analyzer[] = "Structures/StripTagsSkipsClosedTag";
  analyzer[] = "Structures/StrposCompare";
  analyzer[] = "Structures/SwitchWithoutDefault";
  analyzer[] = "Structures/TernaryInConcat";
  analyzer[] = "Structures/ThrowsAndAssign";
  analyzer[] = "Structures/TimestampDifference";
  analyzer[] = "Structures/UncheckedResources";
  analyzer[] = "Structures/UnconditionLoopBreak";
  analyzer[] = "Structures/UseConstant";
  analyzer[] = "Structures/UseInstanceof";
  analyzer[] = "Structures/UseSystemTmp";
  analyzer[] = "Structures/UselessBrackets";
  analyzer[] = "Structures/UselessCasting";
  analyzer[] = "Structures/UselessCheck";
  analyzer[] = "Structures/UselessInstruction";
  analyzer[] = "Structures/UselessParenthesis";
  analyzer[] = "Structures/UselessUnset";
  analyzer[] = "Structures/VardumpUsage";
  analyzer[] = "Structures/WhileListEach";
  analyzer[] = "Structures/pregOptionE";
  analyzer[] = "Traits/UndefinedInsteadof";
  analyzer[] = "Traits/UndefinedTrait";
  analyzer[] = "Traits/UselessAlias";
  analyzer[] = "Type/NoRealComparison";
  analyzer[] = "Type/OneVariableStrings";
  analyzer[] = "Type/ShouldTypecast";
  analyzer[] = "Type/SilentlyCastInteger";
  analyzer[] = "Type/StringWithStrangeSpace";
  analyzer[] = "Typehints/MissingReturntype";
  analyzer[] = "Variables/UndefinedVariable";
```

CI-checks for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CI-checks':
   - 'Arrays/MultipleIdenticalKeys'
   - 'Classes/CheckOnCallUsage'
   - 'Classes/DirectCallToMagicMethod'
   - 'Classes/DontUnsetProperties'
   - 'Classes/MultipleDeclarations'
```

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```
  - 'Classes/MultipleTraitOrInterface'
  - 'Classes/NoMagicWithArray'
  - 'Classes/NoParent'
  - 'Classes/NonPpp'
  - 'Classes/NonStaticMethodsCalledStatic'
  - 'Classes/RedefinedConstants'
  - 'Classes/RedefinedDefault'
  - 'Classes/StaticContainsThis'
  - 'Classes/StaticMethodsCalledFromObject'
  - 'Classes/ThrowInDestruct'
  - 'Classes/UndeclaredStaticProperty'
  - 'Classes/UndefinedConstants'
  - 'Classes/UndefinedProperty'
  - 'Classes/UndefinedStaticclass'
  - 'Classes/UseClassOperator'
  - 'Classes/UseInstanceof'
  - 'Classes/UselessFinal'
  - 'Classes/WrongTypedPropertyInit'
  - 'Constants/ConstRecommended'
  - 'Constants/ConstantStrangeNames'
  - 'Constants/MultipleConstantDefinition'
  - 'Constants/UndefinedConstants'
  - 'Exceptions/OverwriteException'
  - 'Exceptions/ThrowFunctioncall'
  - 'Exceptions/UselessCatch'
  - 'Functions/AliasesUsage'
  - 'Functions/CallbackNeedsReturn'
  - 'Functions/MustReturn'
  - 'Functions/NoLiteralForReference'
  - 'Functions/RedeclaredPhpFunction'
  - 'Functions/ShouldYieldWithKey'
  - 'Functions/TypehintMustBeReturned'
  - 'Functions/TypehintedReferences'
  - 'Functions/UndefinedFunctions'
  - 'Functions/UnknownParameterName'
  - 'Functions/UnusedInheritedVariable'
  - 'Functions/UseConstantAsArguments'
  - 'Functions/UsesDefaultArguments'
  - 'Functions/WrongArgumentNameWithPhpFunction'
  - 'Functions/WrongNumberOfArguments'
  - 'Functions/WrongOptionalParameter'
  - 'Functions/WrongReturnedType'
  - 'Functions/WrongTypeWithCall'
  - 'Interfaces/CantImplementTraversable'
  - 'Interfaces/IsNotImplemented'
  - 'Interfaces/UndefinedInterfaces'
  - 'Namespaces/EmptyNamespace'
  - 'Namespaces/HiddenUse'
  - 'Namespaces/MultipleAliasDefinitionPerFile'
  - 'Namespaces/MultipleAliasDefinitions'
  - 'Namespaces/ShouldMakeAlias'
  - 'Performances/ArrayMergeInLoops'
```

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```
  - 'Performances/PrePostIncrement'
  - 'Performances/StrposTooMuch'
  - 'Performances/UseArraySlice'
  - 'Php/AssignAnd'
  - 'Php/BetterRand'
  - 'Php/ConcatAndAddition'
  - 'Php/Deprecated'
  - 'Php/FopenMode'
  - 'Php/InternalParameterType'
  - 'Php/IsAWithString'
  - 'Php/IsnullVsEqualNull'
  - 'Php/LogicalInLetters'
  - 'Php/MissingSubpattern'
  - 'Php/NoClassInGlobal'
  - 'Php/NoReferenceForTernary'
  - 'Php/ScalarAreNotArrays'
  - 'Php/ShouldUseCoalesce'
  - 'Php/StrtrArguments'
  - 'Php/UseObjectApi'
  - 'Php/UsePathinfo'
  - 'Php/WrongTypeForNativeFunction'
  - 'Security/DontEchoError'
  - 'Security/ShouldUsePreparedStatement'
  - 'Structures/AddZero'
  - 'Structures/AlteringForeachWithoutReference'
  - 'Structures/AssigneAndCompare'
  - 'Structures/AutoUnsetForeach'
  - 'Structures/BooleanStrictComparison'
  - 'Structures/CastingTernary'
  - 'Structures/CheckJson'
  - 'Structures/CoalesceAndConcat'
  - 'Structures/CouldUseDir'
  - 'Structures/CouldUseShortAssignation'
  - 'Structures/CouldUseStrrepeat'
  - 'Structures/DanglingArrayReferences'
  - 'Structures/DirThenSlash'
  - 'Structures/DropElseAfterReturn'
  - 'Structures/ElseIfElseif'
  - 'Structures/EmptyBlocks'
  - 'Structures/ErrorReportingWithInteger'
  - 'Structures/EvalWithoutTry'
  - 'Structures/ExitUsage'
  - 'Structures/FailingSubstrComparison'
  - 'Structures/ForeachReferenceIsNotModified'
  - 'Structures/ForgottenWhiteSpace'
  - 'Structures/Htmlentitiescall'
  - 'Structures/HtmlentitiescallDefaultFlag'
  - 'Structures/IdenticalConditions'
  - 'Structures/IdenticalOnBothSides'
  - 'Structures/IfWithSameConditions'
  - 'Structures/ImpliedIf'
  - 'Structures/ImplodeArgsOrder'
```

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```
  - 'Structures/IndicesAreIntOrString'
  - 'Structures/InvalidPackFormat'
  - 'Structures/InvalidRegex'
  - 'Structures/IsZero'
  - 'Structures/ListOmissions'
  - 'Structures/LogicalMistakes'
  - 'Structures/LoneBlock'
  - 'Structures/MbstringThirdArg'
  - 'Structures/MbstringUnknownEncoding'
  - 'Structures/MergeIfThen'
  - 'Structures/MissingParenthesis'
  - 'Structures/MultipleDefinedCase'
  - 'Structures/MultiplyByOne'
  - 'Structures/NegativePow'
  - 'Structures/NestedTernary'
  - 'Structures/NeverNegative'
  - 'Structures/NextMonthTrap'
  - 'Structures/NoChoice'
  - 'Structures/NoEmptyRegex'
  - 'Structures/NoIssetWithEmpty'
  - 'Structures/NoParenthesisForLanguageConstruct'
  - 'Structures/NoReferenceOnLeft'
  - 'Structures/NoSubstrOne'
  - 'Structures/Noscream'
  - 'Structures/NotEqual'
  - 'Structures/NotNot'
  - 'Structures/ObjectReferences'
  - 'Structures/OrDie'
  - 'Structures/PrintAndDie'
  - 'Structures/PrintWithoutParenthesis'
  - 'Structures/PrintfArguments'
  - 'Structures/RepeatedPrint'
  - 'Structures/RepeatedRegex'
  - 'Structures/ResultMayBeMissing'
  - 'Structures/ReturnTrueFalse'
  - 'Structures/SameConditions'
  - 'Structures/ShouldChainException'
  - 'Structures/ShouldMakeTernary'
  - 'Structures/ShouldUseExplodeArgs'
  - 'Structures/StripTagsSkipsClosedTag'
  - 'Structures/StrposCompare'
  - 'Structures/SwitchWithoutDefault'
  - 'Structures/TernaryInConcat'
  - 'Structures/ThrowsAndAssign'
  - 'Structures/TimestampDifference'
  - 'Structures/UncheckedResources'
  - 'Structures/UnconditionLoopBreak'
  - 'Structures/UseConstant'
  - 'Structures/UseInstanceof'
  - 'Structures/UseSystemTmp'
  - 'Structures/UselessBrackets'
  - 'Structures/UselessCasting'
```

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```
  - 'Structures/UselessCheck'
  - 'Structures/UselessInstruction'
  - 'Structures/UselessParenthesis'
  - 'Structures/UselessUnset'
  - 'Structures/VardumpUsage'
  - 'Structures/WhileListEach'
  - 'Structures/pregOptionE'
  - 'Traits/UndefinedInsteadof'
  - 'Traits/UndefinedTrait'
  - 'Traits/UselessAlias'
  - 'Type/NoRealComparison'
  - 'Type/OneVariableStrings'
  - 'Type/ShouldTypecast'
  - 'Type/SilentlyCastInteger'
  - 'Type/StringWithStrangeSpace'
  - 'Typehints/MissingReturntype'
  - 'Variables/UndefinedVariable'
```

10.5.7 Changed Behavior

Changed Behavior for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Changed Behavior]
  analyzer[] = "Arrays/AmbiguousKeys";
  analyzer[] = "Arrays/AppendAndAssignArrays";
  analyzer[] = "Arrays/ArrayNSUsage";
  analyzer[] = "Arrays/Arrayindex";
  analyzer[] = "Arrays/EmptySlots";
  analyzer[] = "Arrays/FloatConversionAsIndex";
  analyzer[] = "Arrays/GettingLastElement";
  analyzer[] = "Arrays/NegativeStart";
  analyzer[] = "Arrays/NoSpreadForHash";
  analyzer[] = "Arrays/NonConstantArray";
  analyzer[] = "Arrays/WeakType";
  analyzer[] = "Arrays/WithCallback";
  analyzer[] = "Attributes/Friend";
  analyzer[] = "Attributes/InjectableVersion";
  analyzer[] = "Attributes/MissingAttributeAttribute";
  analyzer[] = "Attributes/ModifyImmutable";
  analyzer[] = "Attributes/NestedAttributes";
  analyzer[] = "Attributes/PhpNativeAttributes";
  analyzer[] = "Classes/AbstractConstants";
  analyzer[] = "Classes/AbstractOrImplements";
  analyzer[] = "Classes/AbstractStatic";
  analyzer[] = "Classes/Abstractclass";
  analyzer[] = "Classes/AmbiguousVisibilities";
  analyzer[] = "Classes/CannotBeReadonly";
  analyzer[] = "Classes/CheckAfterNullSafeOperator";
  analyzer[] = "Classes/CouldBeIterable";
```

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```
analyzer[] = "Classes/CouldBeProtectedConstant";
analyzer[] = "Classes/CouldBeProtectedMethod";
analyzer[] = "Classes/CouldBeProtectedProperty";
analyzer[] = "Classes/CouldBeReadonlyProperty";
analyzer[] = "Classes/CouldInjectParam";
analyzer[] = "Classes/CouldSetPropertyDefault";
analyzer[] = "Classes/CouldUseClassOperator";
analyzer[] = "Classes/DefinedParentMP";
analyzer[] = "Classes/ExportProperty";
analyzer[] = "Classes/ExtendsStdclass";
analyzer[] = "Classes/IncompatibleConstructor";
analyzer[] = "Classes/MethodPropertyConfusion";
analyzer[] = "Classes/MissingVisibility";
analyzer[] = "Classes/MultiplePropertyDeclaration";
analyzer[] = "Classes/MultipleTraitOrInterface";
analyzer[] = "Classes/NoMagicWithArray";
analyzer[] = "Classes/NoNullWithNullSafeOperator";
analyzer[] = "Classes/NoPSSOutsideClass";
analyzer[] = "Classes/NoParent";
analyzer[] = "Classes/NoReadonlyAssignationInGlobal";
analyzer[] = "Classes/PromotedProperties";
analyzer[] = "Classes/PssWithoutClass";
analyzer[] = "Classes/RaisedAccessLevel";
analyzer[] = "Classes/ReadonlyUsage";
analyzer[] = "Classes/RedefinedConstants";
analyzer[] = "Classes/RedefinedDefault";
analyzer[] = "Classes/RedefinedMethods";
analyzer[] = "Classes/ThisIsForClasses";
analyzer[] = "Classes/ThisIsNotAnArray";
analyzer[] = "Classes/TooManyDereferencing";
analyzer[] = "Classes/TooManyFinds";
analyzer[] = "Classes/TooManyInjections";
analyzer[] = "Classes/TypehintCyclicDependencies";
analyzer[] = "Classes/UndefinedConstants";
analyzer[] = "Classes/UndefinedProperty";
analyzer[] = "Classes/UndefinedStaticMP";
analyzer[] = "Classes/UndefinedStaticclass";
analyzer[] = "Classes/UninitedProperty";
analyzer[] = "Classes/UnitializedProperties";
analyzer[] = "Classes/UnreachableConstant";
analyzer[] = "Classes/UnreachableMethod";
analyzer[] = "Classes/UnresolvedCatch";
analyzer[] = "Classes/UnresolvedClasses";
analyzer[] = "Classes/UnresolvedInstanceof";
analyzer[] = "Classes/UnusedClass";
analyzer[] = "Classes/UnusedConstant";
analyzer[] = "Classes/UnusedMethods";
analyzer[] = "Classes/UnusedPrivateMethod";
analyzer[] = "Classes/UnusedProtectedMethods";
analyzer[] = "Classes/UnusedPublicMethod";
analyzer[] = "Classes/UseClassOperator";
analyzer[] = "Classes/UseInstanceof";
```

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```
analyzer[] = "Classes/UseThis";
analyzer[] = "Classes/UsedClass";
analyzer[] = "Classes/UsedMethods";
analyzer[] = "Classes/UsedOnceProperty";
analyzer[] = "Classes/UsedPrivateMethod";
analyzer[] = "Classes/UsedProtectedMethod";
analyzer[] = "Classes/UselessAbstract";
analyzer[] = "Classes/UselessAssignationOfPromotedProperty";
analyzer[] = "Classes/UselessConstructor";
analyzer[] = "Classes/UselessFinal";
analyzer[] = "Classes/UselessNullSafeOperator";
analyzer[] = "Classes/UselessTypehint";
analyzer[] = "Classes/UsingThisOutsideAClass";
analyzer[] = "Classes/VariableClasses";
analyzer[] = "Classes/WeakType";
analyzer[] = "Classes/toStringPss";
analyzer[] = "Complete/CreateCompactVariables";
analyzer[] = "Complete/CreateDefaultValues";
analyzer[] = "Complete/CreateForeachDefault";
analyzer[] = "Complete/CreateMagicMethod";
analyzer[] = "Complete/CreateMagicProperty";
analyzer[] = "Complete/ExtendedTypehints";
analyzer[] = "Complete/FollowClosureDefinition";
analyzer[] = "Complete/MakeClassConstantDefinition";
analyzer[] = "Complete/MakeClassMethodDefinition";
analyzer[] = "Complete/OverwrittenProperties";
analyzer[] = "Complete/PhpExtStubPropertyMethod";
analyzer[] = "Complete/PhpNativeReference";
analyzer[] = "Complete/PropagateConstants";
analyzer[] = "Complete/ReturnTypehint";
analyzer[] = "Complete/SetArrayClassDefinition";
analyzer[] = "Complete/SetClassMethodRemoteDefinition";
analyzer[] = "Complete/SetClassPropertyDefinitionWithTypehint";
analyzer[] = "Complete/SetClassRemoteDefinitionWithGlobal";
analyzer[] = "Complete/SetClassRemoteDefinitionWithInjection";
analyzer[] = "Complete/SetClassRemoteDefinitionWithLocalNew";
analyzer[] = "Complete/SetClassRemoteDefinitionWithReturnTypehint";
analyzer[] = "Complete/SetClassRemoteDefinitionWithTypehint";
analyzer[] = "Complete/SetCloneLink";
analyzer[] = "Complete/SetMethodFnp";
analyzer[] = "Complete/SetParentDefinition";
analyzer[] = "Complete/SolveTraitConstants";
analyzer[] = "Complete/SolveTraitMethods";
analyzer[] = "Complete/VariableTypehint";
analyzer[] = "Constants/ConstDefinePreference";
analyzer[] = "Constants/CouldUseConstant";
analyzer[] = "Constants/CreatedOutsideItsNamespace";
analyzer[] = "Constants/CustomConstantUsage";
analyzer[] = "Constants/DefineInsensitivePreference";
analyzer[] = "Constants/DynamicCreation";
analyzer[] = "Constants/InconsistantCase";
analyzer[] = "Constants/InvalidName";
```

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```
analyzer[] = "Constants/IsExtConstant";
analyzer[] = "Constants/IsGlobalConstant";
analyzer[] = "Constants/IsPhpConstant";
analyzer[] = "Constants/MagicConstantUsage";
analyzer[] = "Constants/MultipleConstantDefinition";
analyzer[] = "Constants/PhpConstantUsage";
analyzer[] = "Constants/StrangeName";
analyzer[] = "Constants/UndefinedConstants";
analyzer[] = "Constants/UnusedConstants";
analyzer[] = "Constants/VariableConstant";
analyzer[] = "Custom/MethodUsage";
analyzer[] = "Dump/CallOrder";
analyzer[] = "Dump/ClassInjectionCount";
analyzer[] = "Dump/CollectCalls";
analyzer[] = "Dump/CollectCatch";
analyzer[] = "Dump/CollectClassChanges";
analyzer[] = "Dump/CollectClassChildren";
analyzer[] = "Dump/CollectClassDepth";
analyzer[] = "Dump/CollectClassInterfaceCounts";
analyzer[] = "Dump/CollectClassTraitsCounts";
analyzer[] = "Dump/CollectDependencyExtension";
analyzer[] = "Dump/CollectGraphTriplets";
analyzer[] = "Dump/CollectLocalVariableCounts";
analyzer[] = "Dump/CollectMethodCounts";
analyzer[] = "Dump/CollectNativeCallsPerExpressions";
analyzer[] = "Dump/CollectParameterCounts";
analyzer[] = "Dump/CollectPropertyCounts";
analyzer[] = "Dump/CollectPropertyUsage";
analyzer[] = "Dump/CollectReadability";
analyzer[] = "Dump/CollectSetLocale";
analyzer[] = "Dump/CollectStructures";
analyzer[] = "Dump/CollectUseCounts";
analyzer[] = "Dump/CombinedCalls";
analyzer[] = "Dump/CyclomaticComplexity";
analyzer[] = "Dump/EnvironnementVariables";
analyzer[] = "Dump/FossilizedMethods";
analyzer[] = "Dump/Inclusions";
analyzer[] = "Dump/IndentationLevels";
analyzer[] = "Dump/NewOrder";
analyzer[] = "Dump/ParameterArgumentsLinks";
analyzer[] = "Dump/PublicReach";
analyzer[] = "Dump/TypehintingStats";
analyzer[] = "Dump/Typehintorder";
analyzer[] = "Exceptions/AlreadyCaught";
analyzer[] = "Exceptions/CantThrow";
analyzer[] = "Exceptions/CatchE";
analyzer[] = "Exceptions/CatchUndefinedVariable";
analyzer[] = "Exceptions/CaughtButNotThrown";
analyzer[] = "Exceptions/CaughtExceptions";
analyzer[] = "Exceptions/CouldDropVariable";
analyzer[] = "Exceptions/DefinedExceptions";
analyzer[] = "Exceptions/ForgottenThrown";
```

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```
analyzer[] = "Exceptions/IsPhpException";
analyzer[] = "Exceptions/LargeTryBlock";
analyzer[] = "Exceptions/LongPreparation";
analyzer[] = "Exceptions/MultipleCatch";
analyzer[] = "Exceptions/OverwriteException";
analyzer[] = "Exceptions/PossibleTypeError";
analyzer[] = "Exceptions/Rethrown";
analyzer[] = "Exceptions/SetChainingException";
analyzer[] = "Exceptions/ThrowFunctioncall";
analyzer[] = "Exceptions/TryNoCatch";
analyzer[] = "Exceptions/UncaughtExceptions";
analyzer[] = "Exceptions/Unthrown";
analyzer[] = "Exceptions/UnusedExceptionVariable";
analyzer[] = "Exceptions/UselessCatch";
analyzer[] = "Exceptions/UselessTry";
analyzer[] = "Extensions/Extamqp";
analyzer[] = "Extensions/Extapache";
analyzer[] = "Extensions/Extapc";
analyzer[] = "Extensions/Extapcu";
analyzer[] = "Extensions/Extarray";
analyzer[] = "Extensions/Extast";
analyzer[] = "Extensions/Extbcmath";
analyzer[] = "Extensions/Extbzip2";
analyzer[] = "Extensions/Extcalendar";
analyzer[] = "Extensions/Extpcov";
analyzer[] = "Extensions/Extsqlite";
analyzer[] = "Extensions/Extsqlite3";
analyzer[] = "Functions/AddDefaultValue";
analyzer[] = "Functions/AliasesUsage";
analyzer[] = "Functions/AvoidBooleanArgument";
analyzer[] = "Functions/CancelledParameter";
analyzer[] = "Functions/CannotUseStaticForClosure";
analyzer[] = "Functions/CantUse";
analyzer[] = "Functions/Closure2String";
analyzer[] = "Functions/Closures";
analyzer[] = "Functions/ConditionedFunctions";
analyzer[] = "Functions/CouldBeCallable";
analyzer[] = "Functions/CouldBeStaticClosure";
analyzer[] = "Functions/CouldCentralize";
analyzer[] = "Functions/CouldTypehint";
analyzer[] = "Functions/DynamicCode";
analyzer[] = "Functions/ExceedingTypehint";
analyzer[] = "Functions/GeneratorCannotReturn";
analyzer[] = "Functions/HasNotFluentInterface";
analyzer[] = "Functions/IsGenerator";
analyzer[] = "Functions/MismatchParameterName";
analyzer[] = "Functions/MismatchTypeAndDefault";
analyzer[] = "Functions/MustReturn";
analyzer[] = "Functions/NoLiteralForReference";
analyzer[] = "Functions/NullTypeFavorite";
analyzer[] = "Functions/Recursive";
analyzer[] = "Functions/TypeDodging";
```

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```
analyzer[] = "Functions/TypehintMustBeReturned";
analyzer[] = "Functions/UseArrowFunctions";
analyzer[] = "Functions/UselessDefault";
analyzer[] = "Functions/UselessReferenceArgument";
analyzer[] = "Functions/VariableParameterAmbiguityInArrowFunction";
analyzer[] = "Functions/VoidIsNotAReference";
analyzer[] = "Functions/WrongOptionalParameter";
analyzer[] = "Functions/funcGetArgModified";
analyzer[] = "Interfaces/AlreadyParentsInterface";
analyzer[] = "Interfaces/AvoidSelfInInterface";
analyzer[] = "Interfaces/CantImplementTraversable";
analyzer[] = "Interfaces/CantOverloadConstants";
analyzer[] = "Interfaces/CouldUseInterface";
analyzer[] = "Interfaces/EmptyInterface";
analyzer[] = "Interfaces/InterfaceMethod";
analyzer[] = "Interfaces/InterfaceUsage";
analyzer[] = "Interfaces/Interfacenames";
analyzer[] = "Interfaces/IsExtInterface";
analyzer[] = "Interfaces/IsNotImplemented";
analyzer[] = "Interfaces/NoGaranteeForPropertyConstant";
analyzer[] = "Interfaces/Php";
analyzer[] = "Interfaces/PossibleInterfaces";
analyzer[] = "Interfaces/RepeatedInterface";
analyzer[] = "Interfaces/UndefinedInterfaces";
analyzer[] = "Interfaces/UnusedInterfaces";
analyzer[] = "Interfaces/UsedInterfaces";
analyzer[] = "Interfaces/UselessInterfaces";
analyzer[] = "Namespaces/Alias";
analyzer[] = "Namespaces/AliasConfusion";
analyzer[] = "Namespaces/ConstantFullyQualified";
analyzer[] = "Namespaces/CouldUseAlias";
analyzer[] = "Namespaces/CouldUseMagicConstant";
analyzer[] = "Namespaces/EmptyNamespace";
analyzer[] = "Namespaces/GlobalImport";
analyzer[] = "Namespaces/HiddenUse";
analyzer[] = "Namespaces/MultipleAliasDefinitionPerFile";
analyzer[] = "Namespaces/MultipleAliasDefinitions";
analyzer[] = "Namespaces/NamespaceUsage";
analyzer[] = "Namespaces/Namespacesnames";
analyzer[] = "Namespaces/NoKeywordInNamespace";
analyzer[] = "Namespaces/ShouldMakeAlias";
analyzer[] = "Namespaces/UnresolvedUse";
analyzer[] = "Namespaces/UnusedUse";
analyzer[] = "Namespaces/UseFunctionsConstants";
analyzer[] = "Namespaces/UseWithFullyQualifiedNS";
analyzer[] = "Namespaces/UsedUse";
analyzer[] = "Namespaces/WrongCase";
analyzer[] = "Patterns/AbstractAway";
analyzer[] = "Patterns/CourrierAntiPattern";
analyzer[] = "Patterns/DependencyInjection";
analyzer[] = "Patterns/Factory";
analyzer[] = "Patterns/GetterSetter";
```

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```
analyzer[] = "Performances/ArrayKeyExistsSpeedup";
analyzer[] = "Performances/ArrayMergeInLoops";
analyzer[] = "Performances/Autoappend";
analyzer[] = "Performances/AvoidArrayPush";
analyzer[] = "Performances/CacheVariableOutsideLoop";
analyzer[] = "Performances/ClassOperator";
analyzer[] = "Performances/CountToAppend";
analyzer[] = "Performances/DoInBase";
analyzer[] = "Performances/DoubleArrayFlip";
analyzer[] = "Performances/EllipsisMerge";
analyzer[] = "Performances/FetchOneRowFormat";
analyzer[] = "Performances/IssetWholeArray";
analyzer[] = "Performances/LogicalToInArray";
analyzer[] = "Performances/MakeOneCall";
analyzer[] = "Performances/MbStringInLoop";
analyzer[] = "Performances/MemoizeMagicCall";
analyzer[] = "Performances/NoConcatInLoop";
analyzer[] = "Performances/NoGlob";
analyzer[] = "Performances/NotCountNull";
analyzer[] = "Performances/OptimizeExplode";
analyzer[] = "Performances/PHP7EncapsedStrings";
analyzer[] = "Performances/Php74ArrayKeyExists";
analyzer[] = "Performances/PreCalculateUse";
analyzer[] = "Performances/PrePostIncrement";
analyzer[] = "Performances/RegexOnArrays";
analyzer[] = "Performances/RegexOnCollector";
analyzer[] = "Performances/SimpleSwitch";
analyzer[] = "Performances/SkipEmptyArray";
analyzer[] = "Performances/SlowFunctions";
analyzer[] = "Performances/StrposTooMuch";
analyzer[] = "Performances/SubstrFirst";
analyzer[] = "Performances/SubstrInLoops";
analyzer[] = "Performances/TooManyExtractions";
analyzer[] = "Performances/UseArraySlice";
analyzer[] = "Performances/UseBlindVar";
analyzer[] = "Performances/timeVsstrtotime";
analyzer[] = "Php/ArrayKeyExistsWithObjects";
analyzer[] = "Php/AssertFunctionIsReserved";
analyzer[] = "Php/Assumptions";
analyzer[] = "Php/AutoloadUsage";
analyzer[] = "Php/AvoidGetobjectVars";
analyzer[] = "Php/AvoidMbDectectEncoding";
analyzer[] = "Php/AvoidReal";
analyzer[] = "Php/AvoidSetErrorHandlerContextArg";
analyzer[] = "Php/BetterRand";
analyzer[] = "Php/CallingStaticTraitMethod";
analyzer[] = "Php/CantUseReturnValueInWriteContext";
analyzer[] = "Php/CaseForPSS";
analyzer[] = "Php/CastingUsage";
analyzer[] = "Php/ClassConstWithArray";
analyzer[] = "Php/ClassFunctionConfusion";
analyzer[] = "Php/CloseTagsConsistency";
```

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```
analyzer[] = "Php/ClosureThisSupport";
analyzer[] = "Php/Coalesce";
analyzer[] = "Php/CoalesceEqual";
analyzer[] = "Php/CompactInexistant";
analyzer[] = "Php/ComparisonOnDifferentTypes";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/ConstWithArray";
analyzer[] = "Php/ConstantScalarExpression";
analyzer[] = "Php/CookiesVariables";
analyzer[] = "Php/CouldUseIsCountable";
analyzer[] = "Php/Crc32MightBeNegative";
analyzer[] = "Php/CryptoUsage";
analyzer[] = "Php/DateFormats";
analyzer[] = "Php/DeclareEncoding";
analyzer[] = "Php/DeclareStrict";
analyzer[] = "Php/DeclareStrictType";
analyzer[] = "Php/DetectCurrentClass";
analyzer[] = "Php/DirectivesUsage";
analyzer[] = "Php/DlUsage";
analyzer[] = "Php/ExitNoArg";
analyzer[] = "Php/FilesFullPath";
analyzer[] = "Php/FilterToAddSlashes";
analyzer[] = "Php/FinalConstant";
analyzer[] = "Php/FlexibleHeredoc";
analyzer[] = "Php/FopenMode";
analyzer[] = "Php/ForeachDontChangePointer";
analyzer[] = "Php/ForeachObject";
analyzer[] = "Php/GlobalWithoutSimpleVariable";
analyzer[] = "Php/GlobalsVsGlobal";
analyzer[] = "Php/Gotonames";
analyzer[] = "Php/GroupUseDeclaration";
analyzer[] = "Php/GroupUseTrailingComma";
analyzer[] = "Php/HashAlgos71";
analyzer[] = "Php/HashAlgos74";
analyzer[] = "Php/HashUsesObjects";
analyzer[] = "Php/ImplodeOneArg";
analyzer[] = "Php/IncomingValues";
analyzer[] = "Php/IntegerSeparatorUsage";
analyzer[] = "Php/InternalParameterType";
analyzer[] = "Php/IsAWithString";
analyzer[] = "Php/IsINF";
analyzer[] = "Php/IsNAN";
analyzer[] = "Php/IsnullVsEqualNull";
analyzer[] = "Php/IssetMultipleArgs";
analyzer[] = "Php/JsonSerializeReturnType";
analyzer[] = "Php/Labelnames";
analyzer[] = "Php/LetterCharsLogicalFavorite";
analyzer[] = "Php/ListShortSyntax";
analyzer[] = "Php/ListWithAppends";
analyzer[] = "Php/ListWithKeys";
analyzer[] = "Php/MethodCallOnNew";
analyzer[] = "Php/MiddleVersion";
```

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```
analyzer[] = "Php/MissingMagicIsset";
analyzer[] = "Php/MissingSubpattern";
analyzer[] = "Php/MultipleDeclareStrict";
analyzer[] = "Php/MustCallParentConstructor";
analyzer[] = "Php/NamedArgumentAndVariadic";
analyzer[] = "Php/NativeClassTypeCompatibility";
analyzer[] = "Php/NestedTernaryWithoutParenthesis";
analyzer[] = "Php/NeverKeyword";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NewExponent";
analyzer[] = "Php/NoCastToInt";
analyzer[] = "Php/NoClassInGlobal";
analyzer[] = "Php/NoListWithString";
analyzer[] = "Php/NoNullForNative";
analyzer[] = "Php/NoReferenceForStaticProperty";
analyzer[] = "Php/NoSubstrMinusOne";
analyzer[] = "Php/NotScalarType";
analyzer[] = "Php/OnlyVariablePassedByReference";
analyzer[] = "Php/OpensslEncryptAlgoChange";
analyzer[] = "Php/PHP70scalartypehints";
analyzer[] = "Php/PHP71scalartypehints";
analyzer[] = "Php/PHP72scalartypehints";
analyzer[] = "Php/PHP73LastEmptyArgument";
analyzer[] = "Php/PHP80scalartypehints";
analyzer[] = "Php/PHP81scalartypehints";
analyzer[] = "Php/ParenthesisAsParameter";
analyzer[] = "Php/Password55";
analyzer[] = "Php/PathinfoReturns";
analyzer[] = "Php/PearUsage";
analyzer[] = "Php/Php54RemovedFunctions";
analyzer[] = "Php/Php71microseconds";
analyzer[] = "Php/Php72NewClasses";
analyzer[] = "Php/Php72NewConstants";
analyzer[] = "Php/Php74mbstrrpos3rdArg";
analyzer[] = "Php/Php80OnlyTypeHints";
analyzer[] = "Php/Php81NewTypes";
analyzer[] = "Php/Php81RemovesResources";
analyzer[] = "Php/Php82NewFunctions";
analyzer[] = "Php/Php82NewTypes";
analyzer[] = "Php/Php83NewClasses";
analyzer[] = "Php/Php83NewFunctions";
analyzer[] = "Php/PhpErrorMsgUsage";
analyzer[] = "Php/PregMatchAllFlag";
analyzer[] = "Php/Prints";
analyzer[] = "Php/ReflectionExportIsDeprecated";
analyzer[] = "Php/ReservedKeywords7";
analyzer[] = "Php/ReservedMethods";
analyzer[] = "Php/ReservedNames";
analyzer[] = "Php/RestrictGlobalUsage";
analyzer[] = "Php/ReturnTypehintUsage";
analyzer[] = "Php/ReturnWithParenthesis";
analyzer[] = "Php/SafePhpvars";
```

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```
analyzer[] = "Php/ScalarAreNotArrays";
analyzer[] = "Php/ScalarTypehintUsage";
analyzer[] = "Php/SerializeMagic";
analyzer[] = "Php/SessionVariables";
analyzer[] = "Php/SetExceptionHandlerPHP7";
analyzer[] = "Php/SetHandlers";
analyzer[] = "Php/ShellFavorite";
analyzer[] = "Php/ShortOpenTagRequired";
analyzer[] = "Php/ShortTernary";
analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
analyzer[] = "Php/StringIntComparison";
analyzer[] = "Php/StrposWithIntegers";
analyzer[] = "Php/ThrowWasAnExpression";
analyzer[] = "Php/UnicodeEscapePartial";
analyzer[] = "Php/UpperCaseKeyword";
analyzer[] = "Php/UseAttributes";
analyzer[] = "Php/UseNullSafeOperator";
analyzer[] = "Php/UsortSorting";
analyzer[] = "Security/CurlOptions";
analyzer[] = "Security/DirectInjection";
analyzer[] = "Security/DontEchoError";
analyzer[] = "Security/DynamicDl";
analyzer[] = "Security/EncodedLetters";
analyzer[] = "Security/FilterInputSource";
analyzer[] = "Security/FilterNotRaw";
analyzer[] = "Security/GPRAliases";
analyzer[] = "Security/IncompatibleTypesWithIncoming";
analyzer[] = "Security/IndirectInjection";
analyzer[] = "Security/IntegerConversion";
analyzer[] = "Security/KeepFilesRestricted";
analyzer[] = "Security/MinusOneOnError";
analyzer[] = "Security/MkdirDefault";
analyzer[] = "Security/MoveUploadedFile";
analyzer[] = "Security/NoEntIgnore";
analyzer[] = "Security/NoNetForXmlLoad";
analyzer[] = "Security/NoSleep";
analyzer[] = "Security/NoWeakSSLCrypto";
analyzer[] = "Security/RegisterGlobals";
analyzer[] = "Security/SafeHttpHeaders";
analyzer[] = "Security/SensitiveArgument";
analyzer[] = "Security/SessionCachedData";
analyzer[] = "Security/SessionLazyWrite";
analyzer[] = "Security/SetCookieArgs";
analyzer[] = "Security/ShouldUsePreparedStatement";
analyzer[] = "Security/ShouldUseSessionRegenerateId";
analyzer[] = "Security/Sqlite3RequiresSingleQuotes";
analyzer[] = "Structures/AlwaysFalse";
analyzer[] = "Structures/ArrayAccessOnLiteralArray";
analyzer[] = "Structures/ArrayMergeArrayArray";
analyzer[] = "Structures/Bracketless";
analyzer[] = "Structures/CheckDivision";
analyzer[] = "Structures/CoalesceNullCoalesce";
```

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```
analyzer[] = "Structures/ConstantScalarExpression";
analyzer[] = "Structures/CouldBeArrayCombine";
analyzer[] = "Structures/CouldBeStatic";
analyzer[] = "Structures/CouldCastToArray";
analyzer[] = "Structures/CouldUseShortAssignation";
analyzer[] = "Structures/CouldUseStrContains";
analyzer[] = "Structures/CouldUseYieldFrom";
analyzer[] = "Structures/CountIsNotNegative";
analyzer[] = "Structures/CryptWithoutSalt";
analyzer[] = "Structures/CurlVersionNow";
analyzer[] = "Structures/DateTimePreference";
analyzer[] = "Structures/DeprecatedMbEncoding";
analyzer[] = "Structures/DereferencingAS";
analyzer[] = "Structures/DirThenSlash";
analyzer[] = "Structures/DontUseTheTypeAsVariable";
analyzer[] = "Structures/DoubleObjectAssignation";
analyzer[] = "Structures/EmptyJsonError";
analyzer[] = "Structures/EmptyLoop";
analyzer[] = "Structures/EmptyWithExpression";
analyzer[] = "Structures/EvalWithoutTry";
analyzer[] = "Structures/FilePutContentsDataType";
analyzer[] = "Structures/ForWithFunctioncall";
analyzer[] = "Structures/FunctionPreSubscripting";
analyzer[] = "Structures/GtOrLtFavorite";
analyzer[] = "Structures/HtmlentitiescallDefaultFlag";
analyzer[] = "Structures/IdenticalCase";
analyzer[] = "Structures/ImplodeArgsOrder";
analyzer[] = "Structures/IndicesAreIntOrString";
analyzer[] = "Structures/InitThenIf";
analyzer[] = "Structures/InvalidCast";
analyzer[] = "Structures/InvalidPackFormat";
analyzer[] = "Structures/InvalidRegex";
analyzer[] = "Structures/IsZero";
analyzer[] = "Structures/IssetWithConstant";
analyzer[] = "Structures/LoneBlock";
analyzer[] = "Structures/MbStringNonEncodings";
analyzer[] = "Structures/McryptcreateivWithoutOption";
analyzer[] = "Structures/MergeIfThen";
analyzer[] = "Structures/MissingAssignation";
analyzer[] = "Structures/MissingNew";
analyzer[] = "Structures/MissingParenthesis";
analyzer[] = "Structures/MisusedYield";
analyzer[] = "Structures/MultilineExpressions";
analyzer[] = "Structures/MultipleSimilarCalls";
analyzer[] = "Structures/NestedMatch";
analyzer[] = "Structures/NoChoice";
analyzer[] = "Structures/NoEmptyStringWithExplode";
analyzer[] = "Structures/NoMaxOnEmptyArray";
analyzer[] = "Structures/NoNullForIndex";
analyzer[] = "Structures/NoParenthesisForLanguageConstruct";
analyzer[] = "Structures/NonIntStringAsIndex";
analyzer[] = "Structures/OneLineTwoInstructions";
```

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```
analyzer[] = "Structures/OnlyFirstByte";
analyzer[] = "Structures/PlusEgalOne";
analyzer[] = "Structures/RecalledCondition";
analyzer[] = "Structures/RepeatedPrint";
analyzer[] = "Structures/ReturnVoid";
analyzer[] = "Structures/ShortOrCompleteComparison";
analyzer[] = "Structures/StrposLessThanOne";
analyzer[] = "Structures/ThrowsAndAssign";
analyzer[] = "Structures/UnreachableCode";
analyzer[] = "Structures/UnusedLabel";
analyzer[] = "Structures/UseArrayFunctions";
analyzer[] = "Structures/UseCaseValue";
analyzer[] = "Structures/UseCountRecursive";
analyzer[] = "Structures/UseDebug";
analyzer[] = "Structures/UseFileAppend";
analyzer[] = "Structures/UseInstanceof";
analyzer[] = "Structures/UseListWithForeach";
analyzer[] = "Structures/UselessCoalesce";
analyzer[] = "Structures/UselessShortTernary";
analyzer[] = "Structures/UselessTrailingComma";
analyzer[] = "Structures/WhileListEach";
analyzer[] = "Structures/WrongPrecedenceInExpression";
analyzer[] = "Structures/toStringThrowsException";
analyzer[] = "Traits/ConstantsInTraits";
analyzer[] = "Traits/CouldUseTrait";
analyzer[] = "Traits/DependantTrait";
analyzer[] = "Traits/EmptyTrait";
analyzer[] = "Traits/IncompatibleProperty";
analyzer[] = "Traits/IsExtTrait";
analyzer[] = "Traits/LocallyUsedProperty";
analyzer[] = "Traits/MethodCollisionTraits";
analyzer[] = "Traits/MultipleUsage";
analyzer[] = "Traits/NoPrivateAbstract";
analyzer[] = "Traits/Php";
analyzer[] = "Traits/SelfUsingTrait";
analyzer[] = "Traits/TraitMethod";
analyzer[] = "Traits/TraitNotFound";
analyzer[] = "Traits/TraitUsage";
analyzer[] = "Traits/Traitnames";
analyzer[] = "Traits/UndefinedInsteadof";
analyzer[] = "Traits/UndefinedTrait";
analyzer[] = "Traits/UnusedClassTrait";
analyzer[] = "Traits/UnusedTrait";
analyzer[] = "Traits/UsedTrait";
analyzer[] = "Traits/UselessAlias";
analyzer[] = "Type/ArrayIndex";
analyzer[] = "Type/Binary";
analyzer[] = "Type/CharString";
analyzer[] = "Type/DuplicateLiteral";
analyzer[] = "Type/Email";
analyzer[] = "Type/HttpStatus";
analyzer[] = "Type/Ip";
```

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```
  analyzer[] = "Type/Printf";
  analyzer[] = "Type/StringInterpolation";
  analyzer[] = "Typehints/CouldBeResource";
  analyzer[] = "Typehints/StandaloneTypeTFN";
  analyzer[] = "Utils/Selector";
  analyzer[] = "Variables/AmbiguousTypes";
  analyzer[] = "Variables/CloseNaming";
  analyzer[] = "Variables/InconsistentUsage";
  analyzer[] = "Variables/InheritedStaticVariable";
  analyzer[] = "Variables/InterfaceArguments";
  analyzer[] = "Variables/IsLocalConstant";
  analyzer[] = "Variables/References";
  analyzer[] = "Variables/SelfTransform";
  analyzer[] = "Variables/StaticVariableInitialisation";
```

Changed Behavior for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Changed Behavior':
   - 'Arrays/AmbiguousKeys'
   - 'Arrays/AppendAndAssignArrays'
   - 'Arrays/ArrayNSUsage'
   - 'Arrays/Arrayindex'
   - 'Arrays/EmptySlots'
   - 'Arrays/FloatConversionAsIndex'
   - 'Arrays/GettingLastElement'
   - 'Arrays/NegativeStart'
   - 'Arrays/NoSpreadForHash'
   - 'Arrays/NonConstantArray'
   - 'Arrays/WeakType'
   - 'Arrays/WithCallback'
   - 'Attributes/Friend'
   - 'Attributes/InjectableVersion'
   - 'Attributes/MissingAttributeAttribute'
   - 'Attributes/ModifyImmutable'
   - 'Attributes/NestedAttributes'
   - 'Attributes/PhpNativeAttributes'
   - 'Classes/AbstractConstants'
   - 'Classes/AbstractOrImplements'
   - 'Classes/AbstractStatic'
   - 'Classes/Abstractclass'
   - 'Classes/AmbiguousVisibilities'
   - 'Classes/CannotBeReadonly'
   - 'Classes/CheckAfterNullSafeOperator'
   - 'Classes/CouldBeIterable'
   - 'Classes/CouldBeProtectedConstant'
   - 'Classes/CouldBeProtectedMethod'
   - 'Classes/CouldBeProtectedProperty'
```

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```
  - 'Classes/CouldBeReadonlyProperty'
  - 'Classes/CouldInjectParam'
  - 'Classes/CouldSetPropertyDefault'
  - 'Classes/CouldUseClassOperator'
  - 'Classes/DefinedParentMP'
  - 'Classes/ExportProperty'
  - 'Classes/ExtendsStdclass'
  - 'Classes/IncompatibleConstructor'
  - 'Classes/MethodPropertyConfusion'
  - 'Classes/MissingVisibility'
  - 'Classes/MultiplePropertyDeclaration'
  - 'Classes/MultipleTraitOrInterface'
  - 'Classes/NoMagicWithArray'
  - 'Classes/NoNullWithNullSafeOperator'
  - 'Classes/NoPSSOutsideClass'
  - 'Classes/NoParent'
  - 'Classes/NoReadonlyAssignationInGlobal'
  - 'Classes/PromotedProperties'
  - 'Classes/PssWithoutClass'
  - 'Classes/RaisedAccessLevel'
  - 'Classes/ReadonlyUsage'
  - 'Classes/RedefinedConstants'
  - 'Classes/RedefinedDefault'
  - 'Classes/RedefinedMethods'
  - 'Classes/ThisIsForClasses'
  - 'Classes/ThisIsNotAnArray'
  - 'Classes/TooManyDereferencing'
  - 'Classes/TooManyFinds'
  - 'Classes/TooManyInjections'
  - 'Classes/TypehintCyclicDependencies'
  - 'Classes/UndefinedConstants'
  - 'Classes/UndefinedProperty'
  - 'Classes/UndefinedStaticMP'
  - 'Classes/UndefinedStaticclass'
  - 'Classes/UninitedProperty'
  - 'Classes/UnitializedProperties'
  - 'Classes/UnreachableConstant'
  - 'Classes/UnreachableMethod'
  - 'Classes/UnresolvedCatch'
  - 'Classes/UnresolvedClasses'
  - 'Classes/UnresolvedInstanceof'
  - 'Classes/UnusedClass'
  - 'Classes/UnusedConstant'
  - 'Classes/UnusedMethods'
  - 'Classes/UnusedPrivateMethod'
  - 'Classes/UnusedProtectedMethods'
  - 'Classes/UnusedPublicMethod'
  - 'Classes/UseClassOperator'
  - 'Classes/UseInstanceof'
  - 'Classes/UseThis'
  - 'Classes/UsedClass'
  - 'Classes/UsedMethods'
```

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```
  - 'Classes/UsedOnceProperty'
  - 'Classes/UsedPrivateMethod'
  - 'Classes/UsedProtectedMethod'
  - 'Classes/UselessAbstract'
  - 'Classes/UselessAssignationOfPromotedProperty'
  - 'Classes/UselessConstructor'
  - 'Classes/UselessFinal'
  - 'Classes/UselessNullSafeOperator'
  - 'Classes/UselessTypehint'
  - 'Classes/UsingThisOutsideAClass'
  - 'Classes/VariableClasses'
  - 'Classes/WeakType'
  - 'Classes/toStringPss'
  - 'Complete/CreateCompactVariables'
  - 'Complete/CreateDefaultValues'
  - 'Complete/CreateForeachDefault'
  - 'Complete/CreateMagicMethod'
  - 'Complete/CreateMagicProperty'
  - 'Complete/ExtendedTypehints'
  - 'Complete/FollowClosureDefinition'
  - 'Complete/MakeClassConstantDefinition'
  - 'Complete/MakeClassMethodDefinition'
  - 'Complete/OverwrittenProperties'
  - 'Complete/PhpExtStubPropertyMethod'
  - 'Complete/PhpNativeReference'
  - 'Complete/PropagateConstants'
  - 'Complete/ReturnTypehint'
  - 'Complete/SetArrayClassDefinition'
  - 'Complete/SetClassMethodRemoteDefinition'
  - 'Complete/SetClassPropertyDefinitionWithTypehint'
  - 'Complete/SetClassRemoteDefinitionWithGlobal'
  - 'Complete/SetClassRemoteDefinitionWithInjection'
  - 'Complete/SetClassRemoteDefinitionWithLocalNew'
  - 'Complete/SetClassRemoteDefinitionWithReturnTypehint'
  - 'Complete/SetClassRemoteDefinitionWithTypehint'
  - 'Complete/SetCloneLink'
  - 'Complete/SetMethodFnp'
  - 'Complete/SetParentDefinition'
  - 'Complete/SolveTraitConstants'
  - 'Complete/SolveTraitMethods'
  - 'Complete/VariableTypehint'
  - 'Constants/ConstDefinePreference'
  - 'Constants/CouldUseConstant'
  - 'Constants/CreatedOutsideItsNamespace'
  - 'Constants/CustomConstantUsage'
  - 'Constants/DefineInsensitivePreference'
  - 'Constants/DynamicCreation'
  - 'Constants/InconsistantCase'
  - 'Constants/InvalidName'
  - 'Constants/IsExtConstant'
  - 'Constants/IsGlobalConstant'
  - 'Constants/IsPhpConstant'
```

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```
  - 'Constants/MagicConstantUsage'
  - 'Constants/MultipleConstantDefinition'
  - 'Constants/PhpConstantUsage'
  - 'Constants/StrangeName'
  - 'Constants/UndefinedConstants'
  - 'Constants/UnusedConstants'
  - 'Constants/VariableConstant'
  - 'Custom/MethodUsage'
  - 'Dump/CallOrder'
  - 'Dump/ClassInjectionCount'
  - 'Dump/CollectCalls'
  - 'Dump/CollectCatch'
  - 'Dump/CollectClassChanges'
  - 'Dump/CollectClassChildren'
  - 'Dump/CollectClassDepth'
  - 'Dump/CollectClassInterfaceCounts'
  - 'Dump/CollectClassTraitsCounts'
  - 'Dump/CollectDependencyExtension'
  - 'Dump/CollectGraphTriplets'
  - 'Dump/CollectLocalVariableCounts'
  - 'Dump/CollectMethodCounts'
  - 'Dump/CollectNativeCallsPerExpressions'
  - 'Dump/CollectParameterCounts'
  - 'Dump/CollectPropertyCounts'
  - 'Dump/CollectPropertyUsage'
  - 'Dump/CollectReadability'
  - 'Dump/CollectSetLocale'
  - 'Dump/CollectStructures'
  - 'Dump/CollectUseCounts'
  - 'Dump/CombinedCalls'
  - 'Dump/CyclomaticComplexity'
  - 'Dump/EnvironnementVariables'
  - 'Dump/FossilizedMethods'
  - 'Dump/Inclusions'
  - 'Dump/IndentationLevels'
  - 'Dump/NewOrder'
  - 'Dump/ParameterArgumentsLinks'
  - 'Dump/PublicReach'
  - 'Dump/TypehintingStats'
  - 'Dump/Typehintorder'
  - 'Exceptions/AlreadyCaught'
  - 'Exceptions/CantThrow'
  - 'Exceptions/CatchE'
  - 'Exceptions/CatchUndefinedVariable'
  - 'Exceptions/CaughtButNotThrown'
  - 'Exceptions/CaughtExceptions'
  - 'Exceptions/CouldDropVariable'
  - 'Exceptions/DefinedExceptions'
  - 'Exceptions/ForgottenThrown'
  - 'Exceptions/IsPhpException'
  - 'Exceptions/LargeTryBlock'
  - 'Exceptions/LongPreparation'
```

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```
  - 'Exceptions/MultipleCatch'
  - 'Exceptions/OverwriteException'
  - 'Exceptions/PossibleTypeError'
  - 'Exceptions/Rethrown'
  - 'Exceptions/SetChainingException'
  - 'Exceptions/ThrowFunctioncall'
  - 'Exceptions/TryNoCatch'
  - 'Exceptions/UncaughtExceptions'
  - 'Exceptions/Unthrown'
  - 'Exceptions/UnusedExceptionVariable'
  - 'Exceptions/UselessCatch'
  - 'Exceptions/UselessTry'
  - 'Extensions/Extamqp'
  - 'Extensions/Extapache'
  - 'Extensions/Extapc'
  - 'Extensions/Extapcu'
  - 'Extensions/Extarray'
  - 'Extensions/Extast'
  - 'Extensions/Extbcmath'
  - 'Extensions/Extbzip2'
  - 'Extensions/Extcalendar'
  - 'Extensions/Extpcov'
  - 'Extensions/Extsqlite'
  - 'Extensions/Extsqlite3'
  - 'Functions/AddDefaultValue'
  - 'Functions/AliasesUsage'
  - 'Functions/AvoidBooleanArgument'
  - 'Functions/CancelledParameter'
  - 'Functions/CannotUseStaticForClosure'
  - 'Functions/CantUse'
  - 'Functions/Closure2String'
  - 'Functions/Closures'
  - 'Functions/ConditionedFunctions'
  - 'Functions/CouldBeCallable'
  - 'Functions/CouldBeStaticClosure'
  - 'Functions/CouldCentralize'
  - 'Functions/CouldTypehint'
  - 'Functions/DynamicCode'
  - 'Functions/ExceedingTypehint'
  - 'Functions/GeneratorCannotReturn'
  - 'Functions/HasNotFluentInterface'
  - 'Functions/IsGenerator'
  - 'Functions/MismatchParameterName'
  - 'Functions/MismatchTypeAndDefault'
  - 'Functions/MustReturn'
  - 'Functions/NoLiteralForReference'
  - 'Functions/NullTypeFavorite'
  - 'Functions/Recursive'
  - 'Functions/TypeDodging'
  - 'Functions/TypehintMustBeReturned'
  - 'Functions/UseArrowFunctions'
  - 'Functions/UselessDefault'
```

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```
  - 'Functions/UselessReferenceArgument'
  - 'Functions/VariableParameterAmbiguityInArrowFunction'
  - 'Functions/VoidIsNotAReference'
  - 'Functions/WrongOptionalParameter'
  - 'Functions/funcGetArgModified'
  - 'Interfaces/AlreadyParentsInterface'
  - 'Interfaces/AvoidSelfInInterface'
  - 'Interfaces/CantImplementTraversable'
  - 'Interfaces/CantOverloadConstants'
  - 'Interfaces/CouldUseInterface'
  - 'Interfaces/EmptyInterface'
  - 'Interfaces/InterfaceMethod'
  - 'Interfaces/InterfaceUsage'
  - 'Interfaces/Interfacenames'
  - 'Interfaces/IsExtInterface'
  - 'Interfaces/IsNotImplemented'
  - 'Interfaces/NoGaranteeForPropertyConstant'
  - 'Interfaces/Php'
  - 'Interfaces/PossibleInterfaces'
  - 'Interfaces/RepeatedInterface'
  - 'Interfaces/UndefinedInterfaces'
  - 'Interfaces/UnusedInterfaces'
  - 'Interfaces/UsedInterfaces'
  - 'Interfaces/UselessInterfaces'
  - 'Namespaces/Alias'
  - 'Namespaces/AliasConfusion'
  - 'Namespaces/ConstantFullyQualified'
  - 'Namespaces/CouldUseAlias'
  - 'Namespaces/CouldUseMagicConstant'
  - 'Namespaces/EmptyNamespace'
  - 'Namespaces/GlobalImport'
  - 'Namespaces/HiddenUse'
  - 'Namespaces/MultipleAliasDefinitionPerFile'
  - 'Namespaces/MultipleAliasDefinitions'
  - 'Namespaces/NamespaceUsage'
  - 'Namespaces/Namespacesnames'
  - 'Namespaces/NoKeywordInNamespace'
  - 'Namespaces/ShouldMakeAlias'
  - 'Namespaces/UnresolvedUse'
  - 'Namespaces/UnusedUse'
  - 'Namespaces/UseFunctionsConstants'
  - 'Namespaces/UseWithFullyQualifiedNS'
  - 'Namespaces/UsedUse'
  - 'Namespaces/WrongCase'
  - 'Patterns/AbstractAway'
  - 'Patterns/CourrierAntiPattern'
  - 'Patterns/DependencyInjection'
  - 'Patterns/Factory'
  - 'Patterns/GetterSetter'
  - 'Performances/ArrayKeyExistsSpeedup'
  - 'Performances/ArrayMergeInLoops'
  - 'Performances/Autoappend'
```

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```
  - 'Performances/AvoidArrayPush'
  - 'Performances/CacheVariableOutsideLoop'
  - 'Performances/ClassOperator'
  - 'Performances/CountToAppend'
  - 'Performances/DoInBase'
  - 'Performances/DoubleArrayFlip'
  - 'Performances/EllipsisMerge'
  - 'Performances/FetchOneRowFormat'
  - 'Performances/IssetWholeArray'
  - 'Performances/LogicalToInArray'
  - 'Performances/MakeOneCall'
  - 'Performances/MbStringInLoop'
  - 'Performances/MemoizeMagicCall'
  - 'Performances/NoConcatInLoop'
  - 'Performances/NoGlob'
  - 'Performances/NotCountNull'
  - 'Performances/OptimizeExplode'
  - 'Performances/PHP7EncapsedStrings'
  - 'Performances/Php74ArrayKeyExists'
  - 'Performances/PreCalculateUse'
  - 'Performances/PrePostIncrement'
  - 'Performances/RegexOnArrays'
  - 'Performances/RegexOnCollector'
  - 'Performances/SimpleSwitch'
  - 'Performances/SkipEmptyArray'
  - 'Performances/SlowFunctions'
  - 'Performances/StrposTooMuch'
  - 'Performances/SubstrFirst'
  - 'Performances/SubstrInLoops'
  - 'Performances/TooManyExtractions'
  - 'Performances/UseArraySlice'
  - 'Performances/UseBlindVar'
  - 'Performances/timeVsstrtotime'
  - 'Php/ArrayKeyExistsWithObjects'
  - 'Php/AssertFunctionIsReserved'
  - 'Php/Assumptions'
  - 'Php/AutoloadUsage'
  - 'Php/AvoidGetobjectVars'
  - 'Php/AvoidMbDectectEncoding'
  - 'Php/AvoidReal'
  - 'Php/AvoidSetErrorHandlerContextArg'
  - 'Php/BetterRand'
  - 'Php/CallingStaticTraitMethod'
  - 'Php/CantUseReturnValueInWriteContext'
  - 'Php/CaseForPSS'
  - 'Php/CastingUsage'
  - 'Php/ClassConstWithArray'
  - 'Php/ClassFunctionConfusion'
  - 'Php/CloseTagsConsistency'
  - 'Php/ClosureThisSupport'
  - 'Php/Coalesce'
  - 'Php/CoalesceEqual'
```

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```
  - 'Php/CompactInexistant'
  - 'Php/ComparisonOnDifferentTypes'
  - 'Php/ConcatAndAddition'
  - 'Php/ConstWithArray'
  - 'Php/ConstantScalarExpression'
  - 'Php/CookiesVariables'
  - 'Php/CouldUseIsCountable'
  - 'Php/Crc32MightBeNegative'
  - 'Php/CryptoUsage'
  - 'Php/DateFormats'
  - 'Php/DeclareEncoding'
  - 'Php/DeclareStrict'
  - 'Php/DeclareStrictType'
  - 'Php/DetectCurrentClass'
  - 'Php/DirectivesUsage'
  - 'Php/DlUsage'
  - 'Php/ExitNoArg'
  - 'Php/FilesFullPath'
  - 'Php/FilterToAddSlashes'
  - 'Php/FinalConstant'
  - 'Php/FlexibleHeredoc'
  - 'Php/FopenMode'
  - 'Php/ForeachDontChangePointer'
  - 'Php/ForeachObject'
  - 'Php/GlobalWithoutSimpleVariable'
  - 'Php/GlobalsVsGlobal'
  - 'Php/Gotonames'
  - 'Php/GroupUseDeclaration'
  - 'Php/GroupUseTrailingComma'
  - 'Php/HashAlgos71'
  - 'Php/HashAlgos74'
  - 'Php/HashUsesObjects'
  - 'Php/ImplodeOneArg'
  - 'Php/IncomingValues'
  - 'Php/IntegerSeparatorUsage'
  - 'Php/InternalParameterType'
  - 'Php/IsAWithString'
  - 'Php/IsINF'
  - 'Php/IsNAN'
  - 'Php/IsnullVsEqualNull'
  - 'Php/IssetMultipleArgs'
  - 'Php/JsonSerializeReturnType'
  - 'Php/Labelnames'
  - 'Php/LetterCharsLogicalFavorite'
  - 'Php/ListShortSyntax'
  - 'Php/ListWithAppends'
  - 'Php/ListWithKeys'
  - 'Php/MethodCallOnNew'
  - 'Php/MiddleVersion'
  - 'Php/MissingMagicIsset'
  - 'Php/MissingSubpattern'
  - 'Php/MultipleDeclareStrict'
```

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```
  - 'Php/MustCallParentConstructor'
  - 'Php/NamedArgumentAndVariadic'
  - 'Php/NativeClassTypeCompatibility'
  - 'Php/NestedTernaryWithoutParenthesis'
  - 'Php/NeverKeyword'
  - 'Php/NeverTypehintUsage'
  - 'Php/NewExponent'
  - 'Php/NoCastToInt'
  - 'Php/NoClassInGlobal'
  - 'Php/NoListWithString'
  - 'Php/NoNullForNative'
  - 'Php/NoReferenceForStaticProperty'
  - 'Php/NoSubstrMinusOne'
  - 'Php/NotScalarType'
  - 'Php/OnlyVariablePassedByReference'
  - 'Php/OpensslEncryptAlgoChange'
  - 'Php/PHP70scalartypehints'
  - 'Php/PHP71scalartypehints'
  - 'Php/PHP72scalartypehints'
  - 'Php/PHP73LastEmptyArgument'
  - 'Php/PHP80scalartypehints'
  - 'Php/PHP81scalartypehints'
  - 'Php/ParenthesisAsParameter'
  - 'Php/Password55'
  - 'Php/PathinfoReturns'
  - 'Php/PearUsage'
  - 'Php/Php54RemovedFunctions'
  - 'Php/Php71microseconds'
  - 'Php/Php72NewClasses'
  - 'Php/Php72NewConstants'
  - 'Php/Php74mbstrrpos3rdArg'
  - 'Php/Php80OnlyTypeHints'
  - 'Php/Php81NewTypes'
  - 'Php/Php81RemovesResources'
  - 'Php/Php82NewFunctions'
  - 'Php/Php82NewTypes'
  - 'Php/Php83NewClasses'
  - 'Php/Php83NewFunctions'
  - 'Php/PhpErrorMsgUsage'
  - 'Php/PregMatchAllFlag'
  - 'Php/Prints'
  - 'Php/ReflectionExportIsDeprecated'
  - 'Php/ReservedKeywords7'
  - 'Php/ReservedMethods'
  - 'Php/ReservedNames'
  - 'Php/RestrictGlobalUsage'
  - 'Php/ReturnTypehintUsage'
  - 'Php/ReturnWithParenthesis'
  - 'Php/SafePhpvars'
  - 'Php/ScalarAreNotArrays'
  - 'Php/ScalarTypehintUsage'
  - 'Php/SerializeMagic'
```

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```
  - 'Php/SessionVariables'
  - 'Php/SetExceptionHandlerPHP7'
  - 'Php/SetHandlers'
  - 'Php/ShellFavorite'
  - 'Php/ShortOpenTagRequired'
  - 'Php/ShortTernary'
  - 'Php/StaticVariableDefaultCanBeAnyExpression'
  - 'Php/StringIntComparison'
  - 'Php/StrposWithIntegers'
  - 'Php/ThrowWasAnExpression'
  - 'Php/UnicodeEscapePartial'
  - 'Php/UpperCaseKeyword'
  - 'Php/UseAttributes'
  - 'Php/UseNullSafeOperator'
  - 'Php/UsortSorting'
  - 'Security/CurlOptions'
  - 'Security/DirectInjection'
  - 'Security/DontEchoError'
  - 'Security/DynamicDl'
  - 'Security/EncodedLetters'
  - 'Security/FilterInputSource'
  - 'Security/FilterNotRaw'
  - 'Security/GPRAliases'
  - 'Security/IncompatibleTypesWithIncoming'
  - 'Security/IndirectInjection'
  - 'Security/IntegerConversion'
  - 'Security/KeepFilesRestricted'
  - 'Security/MinusOneOnError'
  - 'Security/MkdirDefault'
  - 'Security/MoveUploadedFile'
  - 'Security/NoEntIgnore'
  - 'Security/NoNetForXmlLoad'
  - 'Security/NoSleep'
  - 'Security/NoWeakSSLCrypto'
  - 'Security/RegisterGlobals'
  - 'Security/SafeHttpHeaders'
  - 'Security/SensitiveArgument'
  - 'Security/SessionCachedData'
  - 'Security/SessionLazyWrite'
  - 'Security/SetCookieArgs'
  - 'Security/ShouldUsePreparedStatement'
  - 'Security/ShouldUseSessionRegenerateId'
  - 'Security/Sqlite3RequiresSingleQuotes'
  - 'Structures/AlwaysFalse'
  - 'Structures/ArrayAccessOnLiteralArray'
  - 'Structures/ArrayMergeArrayArray'
  - 'Structures/Bracketless'
  - 'Structures/CheckDivision'
  - 'Structures/CoalesceNullCoalesce'
  - 'Structures/ConstantScalarExpression'
  - 'Structures/CouldBeArrayCombine'
  - 'Structures/CouldBeStatic'
```

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```
  - 'Structures/CouldCastToArray'
  - 'Structures/CouldUseShortAssignation'
  - 'Structures/CouldUseStrContains'
  - 'Structures/CouldUseYieldFrom'
  - 'Structures/CountIsNotNegative'
  - 'Structures/CryptWithoutSalt'
  - 'Structures/CurlVersionNow'
  - 'Structures/DateTimePreference'
  - 'Structures/DeprecatedMbEncoding'
  - 'Structures/DereferencingAS'
  - 'Structures/DirThenSlash'
  - 'Structures/DontUseTheTypeAsVariable'
  - 'Structures/DoubleObjectAssignation'
  - 'Structures/EmptyJsonError'
  - 'Structures/EmptyLoop'
  - 'Structures/EmptyWithExpression'
  - 'Structures/EvalWithoutTry'
  - 'Structures/FilePutContentsDataType'
  - 'Structures/ForWithFunctioncall'
  - 'Structures/FunctionPreSubscripting'
  - 'Structures/GtOrLtFavorite'
  - 'Structures/HtmlentitiescallDefaultFlag'
  - 'Structures/IdenticalCase'
  - 'Structures/ImplodeArgsOrder'
  - 'Structures/IndicesAreIntOrString'
  - 'Structures/InitThenIf'
  - 'Structures/InvalidCast'
  - 'Structures/InvalidPackFormat'
  - 'Structures/InvalidRegex'
  - 'Structures/IsZero'
  - 'Structures/IssetWithConstant'
  - 'Structures/LoneBlock'
  - 'Structures/MbStringNonEncodings'
  - 'Structures/McryptcreateivWithoutOption'
  - 'Structures/MergeIfThen'
  - 'Structures/MissingAssignation'
  - 'Structures/MissingNew'
  - 'Structures/MissingParenthesis'
  - 'Structures/MisusedYield'
  - 'Structures/MultilineExpressions'
  - 'Structures/MultipleSimilarCalls'
  - 'Structures/NestedMatch'
  - 'Structures/NoChoice'
  - 'Structures/NoEmptyStringWithExplode'
  - 'Structures/NoMaxOnEmptyArray'
  - 'Structures/NoNullForIndex'
  - 'Structures/NoParenthesisForLanguageConstruct'
  - 'Structures/NonIntStringAsIndex'
  - 'Structures/OneLineTwoInstructions'
  - 'Structures/OnlyFirstByte'
  - 'Structures/PlusEgalOne'
  - 'Structures/RecalledCondition'
```

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```
  - 'Structures/RepeatedPrint'
  - 'Structures/ReturnVoid'
  - 'Structures/ShortOrCompleteComparison'
  - 'Structures/StrposLessThanOne'
  - 'Structures/ThrowsAndAssign'
  - 'Structures/UnreachableCode'
  - 'Structures/UnusedLabel'
  - 'Structures/UseArrayFunctions'
  - 'Structures/UseCaseValue'
  - 'Structures/UseCountRecursive'
  - 'Structures/UseDebug'
  - 'Structures/UseFileAppend'
  - 'Structures/UseInstanceof'
  - 'Structures/UseListWithForeach'
  - 'Structures/UselessCoalesce'
  - 'Structures/UselessShortTernary'
  - 'Structures/UselessTrailingComma'
  - 'Structures/WhileListEach'
  - 'Structures/WrongPrecedenceInExpression'
  - 'Structures/toStringThrowsException'
  - 'Traits/ConstantsInTraits'
  - 'Traits/CouldUseTrait'
  - 'Traits/DependantTrait'
  - 'Traits/EmptyTrait'
  - 'Traits/IncompatibleProperty'
  - 'Traits/IsExtTrait'
  - 'Traits/LocallyUsedProperty'
  - 'Traits/MethodCollisionTraits'
  - 'Traits/MultipleUsage'
  - 'Traits/NoPrivateAbstract'
  - 'Traits/Php'
  - 'Traits/SelfUsingTrait'
  - 'Traits/TraitMethod'
  - 'Traits/TraitNotFound'
  - 'Traits/TraitUsage'
  - 'Traits/Traitnames'
  - 'Traits/UndefinedInsteadof'
  - 'Traits/UndefinedTrait'
  - 'Traits/UnusedClassTrait'
  - 'Traits/UnusedTrait'
  - 'Traits/UsedTrait'
  - 'Traits/UselessAlias'
  - 'Type/ArrayIndex'
  - 'Type/Binary'
  - 'Type/CharString'
  - 'Type/DuplicateLiteral'
  - 'Type/Email'
  - 'Type/HttpStatus'
  - 'Type/Ip'
  - 'Type/Printf'
  - 'Type/StringInterpolation'
  - 'Typehints/CouldBeResource'
```

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```
  - 'Typehints/StandaloneTypeTFN'
  - 'Utils/Selector'
  - 'Variables/AmbiguousTypes'
  - 'Variables/CloseNaming'
  - 'Variables/InconsistentUsage'
  - 'Variables/InheritedStaticVariable'
  - 'Variables/InterfaceArguments'
  - 'Variables/IsLocalConstant'
  - 'Variables/References'
  - 'Variables/SelfTransform'
  - 'Variables/StaticVariableInitialisation'
```

10.5.8 Class Review

Class Review for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Class Review]
  analyzer[] = "Classes/AbstractConstants";
  analyzer[] = "Classes/AvoidOptionArrays";
  analyzer[] = "Classes/CancelCommonMethod";
  analyzer[] = "Classes/CannotBeReadonly";
  analyzer[] = "Classes/CantInstantiateNonClass";
  analyzer[] = "Classes/CantOverwriteFinalConstant";
  analyzer[] = "Classes/ClassInvasion";
  analyzer[] = "Classes/ConstantClass";
  analyzer[] = "Classes/CouldBeAbstractClass";
  analyzer[] = "Classes/CouldBeClassConstant";
  analyzer[] = "Classes/CouldBeFinal";
  analyzer[] = "Classes/CouldBeParentMethod";
  analyzer[] = "Classes/CouldBePrivate";
  analyzer[] = "Classes/CouldBePrivateConstante";
  analyzer[] = "Classes/CouldBePrivateMethod";
  analyzer[] = "Classes/CouldBeProtectedConstant";
  analyzer[] = "Classes/CouldBeProtectedMethod";
  analyzer[] = "Classes/CouldBeProtectedProperty";
  analyzer[] = "Classes/CouldBeReadonly";
  analyzer[] = "Classes/CouldBeReadonlyProperty";
  analyzer[] = "Classes/CouldBeStatic";
  analyzer[] = "Classes/CouldBeStringable";
  analyzer[] = "Classes/CouldInjectParam";
  analyzer[] = "Classes/CouldSetPropertyDefault";
  analyzer[] = "Classes/CyclicReferences";
  analyzer[] = "Classes/DependantAbstractClass";
  analyzer[] = "Classes/DifferentArgumentCounts";
  analyzer[] = "Classes/DisconnectedClasses";
  analyzer[] = "Classes/ExportProperty";
  analyzer[] = "Classes/FinalByOcramius";
  analyzer[] = "Classes/FinalPrivate";
  analyzer[] = "Classes/Finalclass";
```

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```
analyzer[] = "Classes/Finalmethod";
analyzer[] = "Classes/FossilizedMethod";
analyzer[] = "Classes/HiddenNullable";
analyzer[] = "Classes/IncompatibleConstructor";
analyzer[] = "Classes/InheritedPropertyMustMatch";
analyzer[] = "Classes/InsufficientPropertyTypehint";
analyzer[] = "Classes/LoweredAccessLevel";
analyzer[] = "Classes/MagicMethodReturntypes";
analyzer[] = "Classes/MismatchProperties";
analyzer[] = "Classes/MissingAbstractMethod";
analyzer[] = "Classes/MissingVisibility";
analyzer[] = "Classes/MultiplePropertyDeclaration";
analyzer[] = "Classes/MutualExtension";
analyzer[] = "Classes/NewThenCall";
analyzer[] = "Classes/NoNullWithNullSafeOperator";
analyzer[] = "Classes/NoParent";
analyzer[] = "Classes/NoReadonlyAssignationInGlobal";
analyzer[] = "Classes/NoSelfReferencingConstant";
analyzer[] = "Classes/NonNullableSetters";
analyzer[] = "Classes/ParentIsNotStatic";
analyzer[] = "Classes/PropertyCouldBeLocal";
analyzer[] = "Classes/PropertyInvasion";
analyzer[] = "Classes/PropertyMethodSameName";
analyzer[] = "Classes/RaisedAccessLevel";
analyzer[] = "Classes/RedefinedMethods";
analyzer[] = "Classes/RedefinedProperty";
analyzer[] = "Classes/RewroteFinalClassConstant";
analyzer[] = "Classes/ShouldUseSelf";
analyzer[] = "Classes/StaticCannotCallNonStatic";
analyzer[] = "Classes/UndeclaredStaticProperty";
analyzer[] = "Classes/UndefinedMethod";
analyzer[] = "Classes/UnfinishedObject";
analyzer[] = "Classes/UninitedProperty";
analyzer[] = "Classes/UnreachableConstant";
analyzer[] = "Classes/UnreachableMethod";
analyzer[] = "Classes/UntypedNoDefaultProperties";
analyzer[] = "Classes/UnusedConstant";
analyzer[] = "Classes/UselessAssignationOfPromotedProperty";
analyzer[] = "Classes/UselessConstantOverwrite";
analyzer[] = "Classes/UselessNullSafeOperator";
analyzer[] = "Classes/UselessTypehint";
analyzer[] = "Classes/WrongTypedPropertyInit";
analyzer[] = "Enums/NoMagicMethod";
analyzer[] = "Enums/UndefinedEnumcase";
analyzer[] = "Exceptions/SetChainingException";
analyzer[] = "Functions/ExceedingTypehint";
analyzer[] = "Functions/ModifyTypedParameter";
analyzer[] = "Functions/NullableWithoutCheck";
analyzer[] = "Functions/TypeDodging";
analyzer[] = "Functions/WrongReturnedType";
analyzer[] = "Interfaces/AvoidSelfInInterface";
analyzer[] = "Interfaces/IsNotImplemented";
```

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```
  analyzer[] = "Interfaces/NoConstructorInInterface";
  analyzer[] = "Interfaces/NoGaranteeForPropertyConstant";
  analyzer[] = "Interfaces/UselessInterfaces";
  analyzer[] = "Performances/MemoizeMagicCall";
  analyzer[] = "Performances/StaticCallWithSelf";
  analyzer[] = "Php/MissingMagicIsset";
  analyzer[] = "Structures/CouldBeStatic";
  analyzer[] = "Structures/DoubleObjectAssignation";
  analyzer[] = "Traits/IncompatibleProperty";
  analyzer[] = "Traits/SelfUsingTrait";
  analyzer[] = "Traits/SidelinedMethod";
  analyzer[] = "Traits/TraitIsNotAType";
  analyzer[] = "Traits/UnusedClassTrait";
  analyzer[] = "Traits/UsedOnceTrait";
  analyzer[] = "Typehints/WrongTypeWithDefault";
  analyzer[] = "Variables/NoStaticVarInMethod";
```

Class Review for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Class Review':
   - 'Classes/AbstractConstants'
   - 'Classes/AvoidOptionArrays'
   - 'Classes/CancelCommonMethod'
   - 'Classes/CannotBeReadonly'
   - 'Classes/CantInstantiateNonClass'
   - 'Classes/CantOverwriteFinalConstant'
   - 'Classes/ClassInvasion'
   - 'Classes/ConstantClass'
   - 'Classes/CouldBeAbstractClass'
   - 'Classes/CouldBeClassConstant'
   - 'Classes/CouldBeFinal'
   - 'Classes/CouldBeParentMethod'
   - 'Classes/CouldBePrivate'
   - 'Classes/CouldBePrivateConstante'
   - 'Classes/CouldBePrivateMethod'
   - 'Classes/CouldBeProtectedConstant'
   - 'Classes/CouldBeProtectedMethod'
   - 'Classes/CouldBeProtectedProperty'
   - 'Classes/CouldBeReadonly'
   - 'Classes/CouldBeReadonlyProperty'
   - 'Classes/CouldBeStatic'
   - 'Classes/CouldBeStringable'
   - 'Classes/CouldInjectParam'
   - 'Classes/CouldSetPropertyDefault'
   - 'Classes/CyclicReferences'
   - 'Classes/DependantAbstractClass'
   - 'Classes/DifferentArgumentCounts'
```

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```
  - 'Classes/DisconnectedClasses'
  - 'Classes/ExportProperty'
  - 'Classes/FinalByOcramius'
  - 'Classes/FinalPrivate'
  - 'Classes/Finalclass'
  - 'Classes/Finalmethod'
  - 'Classes/FossilizedMethod'
  - 'Classes/HiddenNullable'
  - 'Classes/IncompatibleConstructor'
  - 'Classes/InheritedPropertyMustMatch'
  - 'Classes/InsufficientPropertyTypehint'
  - 'Classes/LoweredAccessLevel'
  - 'Classes/MagicMethodReturntypes'
  - 'Classes/MismatchProperties'
  - 'Classes/MissingAbstractMethod'
  - 'Classes/MissingVisibility'
  - 'Classes/MultiplePropertyDeclaration'
  - 'Classes/MutualExtension'
  - 'Classes/NewThenCall'
  - 'Classes/NoNullWithNullSafeOperator'
  - 'Classes/NoParent'
  - 'Classes/NoReadonlyAssignationInGlobal'
  - 'Classes/NoSelfReferencingConstant'
  - 'Classes/NonNullableSetters'
  - 'Classes/ParentIsNotStatic'
  - 'Classes/PropertyCouldBeLocal'
  - 'Classes/PropertyInvasion'
  - 'Classes/PropertyMethodSameName'
  - 'Classes/RaisedAccessLevel'
  - 'Classes/RedefinedMethods'
  - 'Classes/RedefinedProperty'
  - 'Classes/RewroteFinalClassConstant'
  - 'Classes/ShouldUseSelf'
  - 'Classes/StaticCannotCallNonStatic'
  - 'Classes/UndeclaredStaticProperty'
  - 'Classes/UndefinedMethod'
  - 'Classes/UnfinishedObject'
  - 'Classes/UninitedProperty'
  - 'Classes/UnreachableConstant'
  - 'Classes/UnreachableMethod'
  - 'Classes/UntypedNoDefaultProperties'
  - 'Classes/UnusedConstant'
  - 'Classes/UselessAssignationOfPromotedProperty'
  - 'Classes/UselessConstantOverwrite'
  - 'Classes/UselessNullSafeOperator'
  - 'Classes/UselessTypehint'
  - 'Classes/WrongTypedPropertyInit'
  - 'Enums/NoMagicMethod'
  - 'Enums/UndefinedEnumcase'
  - 'Exceptions/SetChainingException'
  - 'Functions/ExceedingTypehint'
  - 'Functions/ModifyTypedParameter'
```

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```
  - 'Functions/NullableWithoutCheck'
  - 'Functions/TypeDodging'
  - 'Functions/WrongReturnedType'
  - 'Interfaces/AvoidSelfInInterface'
  - 'Interfaces/IsNotImplemented'
  - 'Interfaces/NoConstructorInInterface'
  - 'Interfaces/NoGaranteeForPropertyConstant'
  - 'Interfaces/UselessInterfaces'
  - 'Performances/MemoizeMagicCall'
  - 'Performances/StaticCallWithSelf'
  - 'Php/MissingMagicIsset'
  - 'Structures/CouldBeStatic'
  - 'Structures/DoubleObjectAssignation'
  - 'Traits/IncompatibleProperty'
  - 'Traits/SelfUsingTrait'
  - 'Traits/SidelinedMethod'
  - 'Traits/TraitIsNotAType'
  - 'Traits/UnusedClassTrait'
  - 'Traits/UsedOnceTrait'
  - 'Typehints/WrongTypeWithDefault'
  - 'Variables/NoStaticVarInMethod'
```

10.5.9 Classdependencies

Classdependencies for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Classdependencies]
  analyzer[] = "Dump/CollectClassesDependencies";
```

Classdependencies for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Classdependencies':
   - 'Dump/CollectClassesDependencies'
```

10.5.10 Coding conventions

Coding conventions for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Coding conventions]
  analyzer[] = "Arrays/EmptySlots";
  analyzer[] = "Arrays/MistakenConcatenation";
  analyzer[] = "Classes/MultipleClassesInFile";
  analyzer[] = "Classes/MultiplePropertyDeclarationOnOneLine";
  analyzer[] = "Classes/OrderOfDeclaration";
  analyzer[] = "Classes/WrongCase";
  analyzer[] = "Constants/ConstRecommended";
  analyzer[] = "Functions/OneLetterFunctions";
  analyzer[] = "Functions/WrongCase";
  analyzer[] = "Functions/WrongTypehintedName";
  analyzer[] = "Namespaces/UseWithFullyQualifiedNS";
  analyzer[] = "Namespaces/WrongCase";
  analyzer[] = "Php/CloseTags";
  analyzer[] = "Php/ReturnWithParenthesis";
  analyzer[] = "Php/UpperCaseFunction";
  analyzer[] = "Php/UpperCaseKeyword";
  analyzer[] = "Structures/Bracketless";
  analyzer[] = "Structures/ConstantComparisonConsistance";
  analyzer[] = "Structures/DontBeTooManual";
  analyzer[] = "Structures/EchoPrintConsistance";
  analyzer[] = "Structures/HeredocDelimiterFavorite";
  analyzer[] = "Structures/MixedConcatInterpolation";
  analyzer[] = "Structures/PlusEgalOne";
  analyzer[] = "Structures/UselessTrailingComma";
  analyzer[] = "Structures/YodaComparison";
  analyzer[] = "Type/ShouldBeSingleQuote";
  analyzer[] = "Type/SimilarIntegers";
  analyzer[] = "Type/StringInterpolation";
  analyzer[] = "Variables/VariableUppercase";
```

Coding conventions for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Coding conventions':
   - 'Arrays/EmptySlots'
   - 'Arrays/MistakenConcatenation'
   - 'Classes/MultipleClassesInFile'
   - 'Classes/MultiplePropertyDeclarationOnOneLine'
   - 'Classes/OrderOfDeclaration'
   - 'Classes/WrongCase'
   - 'Constants/ConstRecommended'
   - 'Functions/OneLetterFunctions'
```

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```
  - 'Functions/WrongCase'
  - 'Functions/WrongTypehintedName'
  - 'Namespaces/UseWithFullyQualifiedNS'
  - 'Namespaces/WrongCase'
  - 'Php/CloseTags'
  - 'Php/ReturnWithParenthesis'
  - 'Php/UpperCaseFunction'
  - 'Php/UpperCaseKeyword'
  - 'Structures/Bracketless'
  - 'Structures/ConstantComparisonConsistance'
  - 'Structures/DontBeTooManual'
  - 'Structures/EchoPrintConsistance'
  - 'Structures/HeredocDelimiterFavorite'
  - 'Structures/MixedConcatInterpolation'
  - 'Structures/PlusEgalOne'
  - 'Structures/UselessTrailingComma'
  - 'Structures/YodaComparison'
  - 'Type/ShouldBeSingleQuote'
  - 'Type/SimilarIntegers'
  - 'Type/StringInterpolation'
  - 'Variables/VariableUppercase'
```

10.5.11 CompatibilityPHP53

CompatibilityPHP53 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP53]
  analyzer[] = "Arrays/ArrayNSUsage";
  analyzer[] = "Arrays/MixedKeys";
  analyzer[] = "Classes/Anonymous";
  analyzer[] = "Classes/CantInheritAbstractMethod";
  analyzer[] = "Classes/ChildRemoveTypehint";
  analyzer[] = "Classes/ConstVisibilityUsage";
  analyzer[] = "Classes/IntegerAsProperty";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/NonStaticMethodsCalledStatic";
  analyzer[] = "Classes/NullOnNew";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Exceptions/MultipleCatch";
  analyzer[] = "Extensions/Extdba";
  analyzer[] = "Functions/GeneratorCannotReturn";
  analyzer[] = "Functions/MultipleSameArguments";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Interfaces/CantOverloadConstants";
  analyzer[] = "Namespaces/UseFunctionsConstants";
  analyzer[] = "Php/CantUseReturnValueInWriteContext";
  analyzer[] = "Php/CaseForPSS";
  analyzer[] = "Php/ClassAliasSupportsInternalClasses";
  analyzer[] = "Php/ClassConstWithArray";
```

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```
analyzer[] = "Php/CloneConstant";
analyzer[] = "Php/ClosureThisSupport";
analyzer[] = "Php/CoalesceEqual";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/ConstWithArray";
analyzer[] = "Php/ConstantScalarExpression";
analyzer[] = "Php/DefineWithArray";
analyzer[] = "Php/DirectCallToClone";
analyzer[] = "Php/EllipsisUsage";
analyzer[] = "Php/EnumUsage";
analyzer[] = "Php/ExponentUsage";
analyzer[] = "Php/FilesFullPath";
analyzer[] = "Php/FlexibleHeredoc";
analyzer[] = "Php/GroupUseDeclaration";
analyzer[] = "Php/GroupUseTrailingComma";
analyzer[] = "Php/HashAlgos53";
analyzer[] = "Php/HashAlgos71";
analyzer[] = "Php/ListShortSyntax";
analyzer[] = "Php/ListWithKeys";
analyzer[] = "Php/ListWithReference";
analyzer[] = "Php/MethodCallOnNew";
analyzer[] = "Php/NamedParameterUsage";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NoListWithString";
analyzer[] = "Php/NoReferenceForStaticProperty";
analyzer[] = "Php/NoReturnForGenerator";
analyzer[] = "Php/NoStringWithAppend";
analyzer[] = "Php/NoSubstrMinusOne";
analyzer[] = "Php/PHP70scalartypehints";
analyzer[] = "Php/PHP71scalartypehints";
analyzer[] = "Php/PHP72scalartypehints";
analyzer[] = "Php/PHP73LastEmptyArgument";
analyzer[] = "Php/PHP80scalartypehints";
analyzer[] = "Php/PHP81scalartypehints";
analyzer[] = "Php/ParenthesisAsParameter";
analyzer[] = "Php/Php54NewFunctions";
analyzer[] = "Php/Php55NewFunctions";
analyzer[] = "Php/Php56NewFunctions";
analyzer[] = "Php/Php70NewClasses";
analyzer[] = "Php/Php70NewFunctions";
analyzer[] = "Php/Php70NewInterfaces";
analyzer[] = "Php/Php71NewClasses";
analyzer[] = "Php/Php72NewClasses";
analyzer[] = "Php/Php73NewFunctions";
analyzer[] = "Php/Php7RelaxedKeyword";
analyzer[] = "Php/Php81NewTypes";
analyzer[] = "Php/Php82NewTypes";
analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
analyzer[] = "Php/StaticclassUsage";
analyzer[] = "Php/TrailingComma";
analyzer[] = "Php/TypedPropertyUsage";
```

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```
  analyzer[] = "Php/UnicodeEscapePartial";
  analyzer[] = "Php/UnicodeEscapeSyntax";
  analyzer[] = "Php/UnpackingInsideArrays";
  analyzer[] = "Php/UseEnumCaseInConstantExpression";
  analyzer[] = "Php/UseNullableType";
  analyzer[] = "Php/debugInfoUsage";
  analyzer[] = "Structures/Break0";
  analyzer[] = "Structures/ConstantScalarExpression";
  analyzer[] = "Structures/ContinueIsForLoop";
  analyzer[] = "Structures/DereferencingAS";
  analyzer[] = "Structures/ForeachWithList";
  analyzer[] = "Structures/FunctionSubscripting";
  analyzer[] = "Structures/IssetWithConstant";
  analyzer[] = "Structures/NoGetClassNull";
  analyzer[] = "Structures/PHP7Dirname";
  analyzer[] = "Structures/SwitchWithMultipleDefault";
  analyzer[] = "Structures/VariableGlobal";
  analyzer[] = "Traits/FinalTraitsAreFinal";
  analyzer[] = "Traits/NoPrivateAbstract";
  analyzer[] = "Type/Binary";
  analyzer[] = "Type/MalformedOctal";
  analyzer[] = "Variables/Php5IndirectExpression";
  analyzer[] = "Variables/Php7IndirectExpression";
  analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP53 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP53':
   - 'Arrays/ArrayNSUsage'
   - 'Arrays/MixedKeys'
   - 'Classes/Anonymous'
   - 'Classes/CantInheritAbstractMethod'
   - 'Classes/ChildRemoveTypehint'
   - 'Classes/ConstVisibilityUsage'
   - 'Classes/IntegerAsProperty'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/NonStaticMethodsCalledStatic'
   - 'Classes/NullOnNew'
   - 'Classes/TypedClassConstants'
   - 'Exceptions/MultipleCatch'
   - 'Extensions/Extdba'
   - 'Functions/GeneratorCannotReturn'
   - 'Functions/MultipleSameArguments'
   - 'Functions/VoidIsNotAReference'
   - 'Interfaces/CantOverloadConstants'
   - 'Namespaces/UseFunctionsConstants'
   - 'Php/CantUseReturnValueInWriteContext'
```

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```
  - 'Php/CaseForPSS'
  - 'Php/ClassAliasSupportsInternalClasses'
  - 'Php/ClassConstWithArray'
  - 'Php/CloneConstant'
  - 'Php/ClosureThisSupport'
  - 'Php/CoalesceEqual'
  - 'Php/ConcatAndAddition'
  - 'Php/ConstWithArray'
  - 'Php/ConstantScalarExpression'
  - 'Php/DefineWithArray'
  - 'Php/DirectCallToClone'
  - 'Php/EllipsisUsage'
  - 'Php/EnumUsage'
  - 'Php/ExponentUsage'
  - 'Php/FilesFullPath'
  - 'Php/FlexibleHeredoc'
  - 'Php/GroupUseDeclaration'
  - 'Php/GroupUseTrailingComma'
  - 'Php/HashAlgos53'
  - 'Php/HashAlgos71'
  - 'Php/ListShortSyntax'
  - 'Php/ListWithKeys'
  - 'Php/ListWithReference'
  - 'Php/MethodCallOnNew'
  - 'Php/NamedParameterUsage'
  - 'Php/NeverTypehintUsage'
  - 'Php/NoListWithString'
  - 'Php/NoReferenceForStaticProperty'
  - 'Php/NoReturnForGenerator'
  - 'Php/NoStringWithAppend'
  - 'Php/NoSubstrMinusOne'
  - 'Php/PHP70scalartypehints'
  - 'Php/PHP71scalartypehints'
  - 'Php/PHP72scalartypehints'
  - 'Php/PHP73LastEmptyArgument'
  - 'Php/PHP80scalartypehints'
  - 'Php/PHP81scalartypehints'
  - 'Php/ParenthesisAsParameter'
  - 'Php/Php54NewFunctions'
  - 'Php/Php55NewFunctions'
  - 'Php/Php56NewFunctions'
  - 'Php/Php70NewClasses'
  - 'Php/Php70NewFunctions'
  - 'Php/Php70NewInterfaces'
  - 'Php/Php71NewClasses'
  - 'Php/Php72NewClasses'
  - 'Php/Php73NewFunctions'
  - 'Php/Php7RelaxedKeyword'
  - 'Php/Php81NewTypes'
  - 'Php/Php82NewTypes'
  - 'Php/ReadonlyPropertyChangedByCloning'
  - 'Php/StaticVariableDefaultCanBeAnyExpression'
```

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```
  - 'Php/StaticclassUsage'
  - 'Php/TrailingComma'
  - 'Php/TypedPropertyUsage'
  - 'Php/UnicodeEscapePartial'
  - 'Php/UnicodeEscapeSyntax'
  - 'Php/UnpackingInsideArrays'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Php/UseNullableType'
  - 'Php/debugInfoUsage'
  - 'Structures/Break0'
  - 'Structures/ConstantScalarExpression'
  - 'Structures/ContinueIsForLoop'
  - 'Structures/DereferencingAS'
  - 'Structures/ForeachWithList'
  - 'Structures/FunctionSubscripting'
  - 'Structures/IssetWithConstant'
  - 'Structures/NoGetClassNull'
  - 'Structures/PHP7Dirname'
  - 'Structures/SwitchWithMultipleDefault'
  - 'Structures/VariableGlobal'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/NoPrivateAbstract'
  - 'Type/Binary'
  - 'Type/MalformedOctal'
  - 'Variables/Php5IndirectExpression'
  - 'Variables/Php7IndirectExpression'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.12 CompatibilityPHP54

CompatibilityPHP54 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP54]
  analyzer[] = "Arrays/MixedKeys";
  analyzer[] = "Classes/Anonymous";
  analyzer[] = "Classes/CantInheritAbstractMethod";
  analyzer[] = "Classes/ChildRemoveTypehint";
  analyzer[] = "Classes/ConstVisibilityUsage";
  analyzer[] = "Classes/IntegerAsProperty";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/NonStaticMethodsCalledStatic";
  analyzer[] = "Classes/NullOnNew";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Exceptions/MultipleCatch";
  analyzer[] = "Functions/GeneratorCannotReturn";
  analyzer[] = "Functions/MultipleSameArguments";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Interfaces/CantOverloadConstants";
  analyzer[] = "Namespaces/UseFunctionsConstants";
```

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```
analyzer[] = "Php/CantUseReturnValueInWriteContext";
analyzer[] = "Php/CaseForPSS";
analyzer[] = "Php/ClassAliasSupportsInternalClasses";
analyzer[] = "Php/ClassConstWithArray";
analyzer[] = "Php/CloneConstant";
analyzer[] = "Php/CoalesceEqual";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/ConstWithArray";
analyzer[] = "Php/ConstantScalarExpression";
analyzer[] = "Php/DefineWithArray";
analyzer[] = "Php/DirectCallToClone";
analyzer[] = "Php/EllipsisUsage";
analyzer[] = "Php/EnumUsage";
analyzer[] = "Php/ExponentUsage";
analyzer[] = "Php/FilesFullPath";
analyzer[] = "Php/FlexibleHeredoc";
analyzer[] = "Php/GroupUseDeclaration";
analyzer[] = "Php/GroupUseTrailingComma";
analyzer[] = "Php/HashAlgos53";
analyzer[] = "Php/HashAlgos54";
analyzer[] = "Php/HashAlgos71";
analyzer[] = "Php/ListShortSyntax";
analyzer[] = "Php/ListWithKeys";
analyzer[] = "Php/ListWithReference";
analyzer[] = "Php/NamedParameterUsage";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NoListWithString";
analyzer[] = "Php/NoReferenceForStaticProperty";
analyzer[] = "Php/NoReturnForGenerator";
analyzer[] = "Php/NoStringWithAppend";
analyzer[] = "Php/NoSubstrMinusOne";
analyzer[] = "Php/PHP70scalartypehints";
analyzer[] = "Php/PHP71scalartypehints";
analyzer[] = "Php/PHP72scalartypehints";
analyzer[] = "Php/PHP73LastEmptyArgument";
analyzer[] = "Php/PHP80scalartypehints";
analyzer[] = "Php/PHP81scalartypehints";
analyzer[] = "Php/ParenthesisAsParameter";
analyzer[] = "Php/Php54RemovedFunctions";
analyzer[] = "Php/Php55NewFunctions";
analyzer[] = "Php/Php56NewFunctions";
analyzer[] = "Php/Php70NewClasses";
analyzer[] = "Php/Php70NewFunctions";
analyzer[] = "Php/Php70NewInterfaces";
analyzer[] = "Php/Php71NewClasses";
analyzer[] = "Php/Php72NewClasses";
analyzer[] = "Php/Php73NewFunctions";
analyzer[] = "Php/Php7RelaxedKeyword";
analyzer[] = "Php/Php81NewTypes";
analyzer[] = "Php/Php82NewTypes";
analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
```

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```
  analyzer[] = "Php/StaticclassUsage";
  analyzer[] = "Php/TrailingComma";
  analyzer[] = "Php/TypedPropertyUsage";
  analyzer[] = "Php/UnicodeEscapePartial";
  analyzer[] = "Php/UnicodeEscapeSyntax";
  analyzer[] = "Php/UnpackingInsideArrays";
  analyzer[] = "Php/UseEnumCaseInConstantExpression";
  analyzer[] = "Php/UseNullableType";
  analyzer[] = "Php/debugInfoUsage";
  analyzer[] = "Structures/BreakNonInteger";
  analyzer[] = "Structures/CalltimePassByReference";
  analyzer[] = "Structures/ConstantScalarExpression";
  analyzer[] = "Structures/ContinueIsForLoop";
  analyzer[] = "Structures/CryptWithoutSalt";
  analyzer[] = "Structures/DereferencingAS";
  analyzer[] = "Structures/ForeachWithList";
  analyzer[] = "Structures/IssetWithConstant";
  analyzer[] = "Structures/NoGetClassNull";
  analyzer[] = "Structures/PHP7Dirname";
  analyzer[] = "Structures/SwitchWithMultipleDefault";
  analyzer[] = "Structures/VariableGlobal";
  analyzer[] = "Traits/FinalTraitsAreFinal";
  analyzer[] = "Traits/NoPrivateAbstract";
  analyzer[] = "Type/MalformedOctal";
  analyzer[] = "Variables/Php5IndirectExpression";
  analyzer[] = "Variables/Php7IndirectExpression";
  analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP54 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP54':
   - 'Arrays/MixedKeys'
   - 'Classes/Anonymous'
   - 'Classes/CantInheritAbstractMethod'
   - 'Classes/ChildRemoveTypehint'
   - 'Classes/ConstVisibilityUsage'
   - 'Classes/IntegerAsProperty'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/NonStaticMethodsCalledStatic'
   - 'Classes/NullOnNew'
   - 'Classes/TypedClassConstants'
   - 'Exceptions/MultipleCatch'
   - 'Functions/GeneratorCannotReturn'
   - 'Functions/MultipleSameArguments'
   - 'Functions/VoidIsNotAReference'
   - 'Interfaces/CantOverloadConstants'
   - 'Namespaces/UseFunctionsConstants'
```

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```
  - 'Php/CantUseReturnValueInWriteContext'
  - 'Php/CaseForPSS'
  - 'Php/ClassAliasSupportsInternalClasses'
  - 'Php/ClassConstWithArray'
  - 'Php/CloneConstant'
  - 'Php/CoalesceEqual'
  - 'Php/ConcatAndAddition'
  - 'Php/ConstWithArray'
  - 'Php/ConstantScalarExpression'
  - 'Php/DefineWithArray'
  - 'Php/DirectCallToClone'
  - 'Php/EllipsisUsage'
  - 'Php/EnumUsage'
  - 'Php/ExponentUsage'
  - 'Php/FilesFullPath'
  - 'Php/FlexibleHeredoc'
  - 'Php/GroupUseDeclaration'
  - 'Php/GroupUseTrailingComma'
  - 'Php/HashAlgos53'
  - 'Php/HashAlgos54'
  - 'Php/HashAlgos71'
  - 'Php/ListShortSyntax'
  - 'Php/ListWithKeys'
  - 'Php/ListWithReference'
  - 'Php/NamedParameterUsage'
  - 'Php/NeverTypehintUsage'
  - 'Php/NoListWithString'
  - 'Php/NoReferenceForStaticProperty'
  - 'Php/NoReturnForGenerator'
  - 'Php/NoStringWithAppend'
  - 'Php/NoSubstrMinusOne'
  - 'Php/PHP70scalartypehints'
  - 'Php/PHP71scalartypehints'
  - 'Php/PHP72scalartypehints'
  - 'Php/PHP73LastEmptyArgument'
  - 'Php/PHP80scalartypehints'
  - 'Php/PHP81scalartypehints'
  - 'Php/ParenthesisAsParameter'
  - 'Php/Php54RemovedFunctions'
  - 'Php/Php55NewFunctions'
  - 'Php/Php56NewFunctions'
  - 'Php/Php70NewClasses'
  - 'Php/Php70NewFunctions'
  - 'Php/Php70NewInterfaces'
  - 'Php/Php71NewClasses'
  - 'Php/Php72NewClasses'
  - 'Php/Php73NewFunctions'
  - 'Php/Php7RelaxedKeyword'
  - 'Php/Php81NewTypes'
  - 'Php/Php82NewTypes'
  - 'Php/ReadonlyPropertyChangedByCloning'
  - 'Php/StaticVariableDefaultCanBeAnyExpression'
```

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```
  - 'Php/StaticclassUsage'
  - 'Php/TrailingComma'
  - 'Php/TypedPropertyUsage'
  - 'Php/UnicodeEscapePartial'
  - 'Php/UnicodeEscapeSyntax'
  - 'Php/UnpackingInsideArrays'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Php/UseNullableType'
  - 'Php/debugInfoUsage'
  - 'Structures/BreakNonInteger'
  - 'Structures/CalltimePassByReference'
  - 'Structures/ConstantScalarExpression'
  - 'Structures/ContinueIsForLoop'
  - 'Structures/CryptWithoutSalt'
  - 'Structures/DereferencingAS'
  - 'Structures/ForeachWithList'
  - 'Structures/IssetWithConstant'
  - 'Structures/NoGetClassNull'
  - 'Structures/PHP7Dirname'
  - 'Structures/SwitchWithMultipleDefault'
  - 'Structures/VariableGlobal'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/NoPrivateAbstract'
  - 'Type/MalformedOctal'
  - 'Variables/Php5IndirectExpression'
  - 'Variables/Php7IndirectExpression'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.13 CompatibilityPHP55

CompatibilityPHP55 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP55]
  analyzer[] = "Classes/Anonymous";
  analyzer[] = "Classes/CantInheritAbstractMethod";
  analyzer[] = "Classes/ChildRemoveTypehint";
  analyzer[] = "Classes/ConstVisibilityUsage";
  analyzer[] = "Classes/IntegerAsProperty";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/NonStaticMethodsCalledStatic";
  analyzer[] = "Classes/NullOnNew";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Exceptions/MultipleCatch";
  analyzer[] = "Extensions/Extapc";
  analyzer[] = "Extensions/Extmysql";
  analyzer[] = "Functions/GeneratorCannotReturn";
  analyzer[] = "Functions/MultipleSameArguments";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Interfaces/CantOverloadConstants";
```

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```
analyzer[] = "Namespaces/UseFunctionsConstants";
analyzer[] = "Php/ClassAliasSupportsInternalClasses";
analyzer[] = "Php/ClassConstWithArray";
analyzer[] = "Php/CloneConstant";
analyzer[] = "Php/CoalesceEqual";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/ConstWithArray";
analyzer[] = "Php/ConstantScalarExpression";
analyzer[] = "Php/DefineWithArray";
analyzer[] = "Php/DirectCallToClone";
analyzer[] = "Php/EllipsisUsage";
analyzer[] = "Php/EnumUsage";
analyzer[] = "Php/ExponentUsage";
analyzer[] = "Php/FilesFullPath";
analyzer[] = "Php/FlexibleHeredoc";
analyzer[] = "Php/GroupUseDeclaration";
analyzer[] = "Php/GroupUseTrailingComma";
analyzer[] = "Php/HashAlgos53";
analyzer[] = "Php/HashAlgos54";
analyzer[] = "Php/HashAlgos71";
analyzer[] = "Php/ListShortSyntax";
analyzer[] = "Php/ListWithKeys";
analyzer[] = "Php/ListWithReference";
analyzer[] = "Php/NamedParameterUsage";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NoListWithString";
analyzer[] = "Php/NoReferenceForStaticProperty";
analyzer[] = "Php/NoReturnForGenerator";
analyzer[] = "Php/NoStringWithAppend";
analyzer[] = "Php/NoSubstrMinusOne";
analyzer[] = "Php/PHP70scalartypehints";
analyzer[] = "Php/PHP71scalartypehints";
analyzer[] = "Php/PHP72scalartypehints";
analyzer[] = "Php/PHP73LastEmptyArgument";
analyzer[] = "Php/PHP80scalartypehints";
analyzer[] = "Php/PHP81scalartypehints";
analyzer[] = "Php/ParenthesisAsParameter";
analyzer[] = "Php/Password55";
analyzer[] = "Php/Php55RemovedFunctions";
analyzer[] = "Php/Php56NewFunctions";
analyzer[] = "Php/Php70NewClasses";
analyzer[] = "Php/Php70NewFunctions";
analyzer[] = "Php/Php70NewInterfaces";
analyzer[] = "Php/Php71NewClasses";
analyzer[] = "Php/Php72NewClasses";
analyzer[] = "Php/Php73NewFunctions";
analyzer[] = "Php/Php7RelaxedKeyword";
analyzer[] = "Php/Php81NewTypes";
analyzer[] = "Php/Php82NewTypes";
analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
analyzer[] = "Php/TrailingComma";
```

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```
  analyzer[] = "Php/TypedPropertyUsage";
  analyzer[] = "Php/UnicodeEscapePartial";
  analyzer[] = "Php/UnicodeEscapeSyntax";
  analyzer[] = "Php/UnpackingInsideArrays";
  analyzer[] = "Php/UseEnumCaseInConstantExpression";
  analyzer[] = "Php/UseNullableType";
  analyzer[] = "Php/debugInfoUsage";
  analyzer[] = "Structures/ConstantScalarExpression";
  analyzer[] = "Structures/ContinueIsForLoop";
  analyzer[] = "Structures/IssetWithConstant";
  analyzer[] = "Structures/NoGetClassNull";
  analyzer[] = "Structures/PHP7Dirname";
  analyzer[] = "Structures/SwitchWithMultipleDefault";
  analyzer[] = "Structures/VariableGlobal";
  analyzer[] = "Traits/FinalTraitsAreFinal";
  analyzer[] = "Traits/NoPrivateAbstract";
  analyzer[] = "Type/MalformedOctal";
  analyzer[] = "Variables/Php5IndirectExpression";
  analyzer[] = "Variables/Php7IndirectExpression";
  analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP55 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP55':
   - 'Classes/Anonymous'
   - 'Classes/CantInheritAbstractMethod'
   - 'Classes/ChildRemoveTypehint'
   - 'Classes/ConstVisibilityUsage'
   - 'Classes/IntegerAsProperty'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/NonStaticMethodsCalledStatic'
   - 'Classes/NullOnNew'
   - 'Classes/TypedClassConstants'
   - 'Exceptions/MultipleCatch'
   - 'Extensions/Extapc'
   - 'Extensions/Extmysql'
   - 'Functions/GeneratorCannotReturn'
   - 'Functions/MultipleSameArguments'
   - 'Functions/VoidIsNotAReference'
   - 'Interfaces/CantOverloadConstants'
   - 'Namespaces/UseFunctionsConstants'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/ClassConstWithArray'
   - 'Php/CloneConstant'
   - 'Php/CoalesceEqual'
   - 'Php/ConcatAndAddition'
   - 'Php/ConstWithArray'
```

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```
  - 'Php/ConstantScalarExpression'
  - 'Php/DefineWithArray'
  - 'Php/DirectCallToClone'
  - 'Php/EllipsisUsage'
  - 'Php/EnumUsage'
  - 'Php/ExponentUsage'
  - 'Php/FilesFullPath'
  - 'Php/FlexibleHeredoc'
  - 'Php/GroupUseDeclaration'
  - 'Php/GroupUseTrailingComma'
  - 'Php/HashAlgos53'
  - 'Php/HashAlgos54'
  - 'Php/HashAlgos71'
  - 'Php/ListShortSyntax'
  - 'Php/ListWithKeys'
  - 'Php/ListWithReference'
  - 'Php/NamedParameterUsage'
  - 'Php/NeverTypehintUsage'
  - 'Php/NoListWithString'
  - 'Php/NoReferenceForStaticProperty'
  - 'Php/NoReturnForGenerator'
  - 'Php/NoStringWithAppend'
  - 'Php/NoSubstrMinusOne'
  - 'Php/PHP70scalartypehints'
  - 'Php/PHP71scalartypehints'
  - 'Php/PHP72scalartypehints'
  - 'Php/PHP73LastEmptyArgument'
  - 'Php/PHP80scalartypehints'
  - 'Php/PHP81scalartypehints'
  - 'Php/ParenthesisAsParameter'
  - 'Php/Password55'
  - 'Php/Php55RemovedFunctions'
  - 'Php/Php56NewFunctions'
  - 'Php/Php70NewClasses'
  - 'Php/Php70NewFunctions'
  - 'Php/Php70NewInterfaces'
  - 'Php/Php71NewClasses'
  - 'Php/Php72NewClasses'
  - 'Php/Php73NewFunctions'
  - 'Php/Php7RelaxedKeyword'
  - 'Php/Php81NewTypes'
  - 'Php/Php82NewTypes'
  - 'Php/ReadonlyPropertyChangedByCloning'
  - 'Php/StaticVariableDefaultCanBeAnyExpression'
  - 'Php/TrailingComma'
  - 'Php/TypedPropertyUsage'
  - 'Php/UnicodeEscapePartial'
  - 'Php/UnicodeEscapeSyntax'
  - 'Php/UnpackingInsideArrays'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Php/UseNullableType'
  - 'Php/debugInfoUsage'
```

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```
  - 'Structures/ConstantScalarExpression'
  - 'Structures/ContinueIsForLoop'
  - 'Structures/IssetWithConstant'
  - 'Structures/NoGetClassNull'
  - 'Structures/PHP7Dirname'
  - 'Structures/SwitchWithMultipleDefault'
  - 'Structures/VariableGlobal'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/NoPrivateAbstract'
  - 'Type/MalformedOctal'
  - 'Variables/Php5IndirectExpression'
  - 'Variables/Php7IndirectExpression'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.14 CompatibilityPHP56

CompatibilityPHP56 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP56]
  analyzer[] = "Classes/Anonymous";
  analyzer[] = "Classes/CantInheritAbstractMethod";
  analyzer[] = "Classes/ChildRemoveTypehint";
  analyzer[] = "Classes/ConstVisibilityUsage";
  analyzer[] = "Classes/IntegerAsProperty";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/NonStaticMethodsCalledStatic";
  analyzer[] = "Classes/NullOnNew";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Exceptions/MultipleCatch";
  analyzer[] = "Functions/GeneratorCannotReturn";
  analyzer[] = "Functions/MultipleSameArguments";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Interfaces/CantOverloadConstants";
  analyzer[] = "Php/ClassAliasSupportsInternalClasses";
  analyzer[] = "Php/CloneConstant";
  analyzer[] = "Php/CoalesceEqual";
  analyzer[] = "Php/ConcatAndAddition";
  analyzer[] = "Php/ConstantScalarExpression";
  analyzer[] = "Php/DefineWithArray";
  analyzer[] = "Php/DirectCallToClone";
  analyzer[] = "Php/EnumUsage";
  analyzer[] = "Php/FilesFullPath";
  analyzer[] = "Php/FlexibleHeredoc";
  analyzer[] = "Php/GroupUseDeclaration";
  analyzer[] = "Php/GroupUseTrailingComma";
  analyzer[] = "Php/HashAlgos53";
  analyzer[] = "Php/HashAlgos54";
  analyzer[] = "Php/HashAlgos71";
  analyzer[] = "Php/ListShortSyntax";
```

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```
analyzer[] = "Php/ListWithKeys";
analyzer[] = "Php/ListWithReference";
analyzer[] = "Php/NamedParameterUsage";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NoListWithString";
analyzer[] = "Php/NoReferenceForStaticProperty";
analyzer[] = "Php/NoReturnForGenerator";
analyzer[] = "Php/NoStringWithAppend";
analyzer[] = "Php/NoSubstrMinusOne";
analyzer[] = "Php/PHP70scalartypehints";
analyzer[] = "Php/PHP71scalartypehints";
analyzer[] = "Php/PHP72scalartypehints";
analyzer[] = "Php/PHP73LastEmptyArgument";
analyzer[] = "Php/PHP80scalartypehints";
analyzer[] = "Php/PHP81scalartypehints";
analyzer[] = "Php/ParenthesisAsParameter";
analyzer[] = "Php/Php70NewClasses";
analyzer[] = "Php/Php70NewFunctions";
analyzer[] = "Php/Php70NewInterfaces";
analyzer[] = "Php/Php71NewClasses";
analyzer[] = "Php/Php72NewClasses";
analyzer[] = "Php/Php73NewFunctions";
analyzer[] = "Php/Php7RelaxedKeyword";
analyzer[] = "Php/Php80OnlyTypeHints";
analyzer[] = "Php/Php81NewTypes";
analyzer[] = "Php/Php82NewTypes";
analyzer[] = "Php/RawPostDataUsage";
analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
analyzer[] = "Php/TrailingComma";
analyzer[] = "Php/TypedPropertyUsage";
analyzer[] = "Php/UnicodeEscapePartial";
analyzer[] = "Php/UnicodeEscapeSyntax";
analyzer[] = "Php/UnpackingInsideArrays";
analyzer[] = "Php/UseEnumCaseInConstantExpression";
analyzer[] = "Php/UseNullableType";
analyzer[] = "Structures/ContinueIsForLoop";
analyzer[] = "Structures/IssetWithConstant";
analyzer[] = "Structures/NoGetClassNull";
analyzer[] = "Structures/PHP7Dirname";
analyzer[] = "Structures/SwitchWithMultipleDefault";
analyzer[] = "Structures/VariableGlobal";
analyzer[] = "Traits/FinalTraitsAreFinal";
analyzer[] = "Traits/NoPrivateAbstract";
analyzer[] = "Type/MalformedOctal";
analyzer[] = "Variables/Php5IndirectExpression";
analyzer[] = "Variables/Php7IndirectExpression";
analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP56 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP56':
   - 'Classes/Anonymous'
   - 'Classes/CantInheritAbstractMethod'
   - 'Classes/ChildRemoveTypehint'
   - 'Classes/ConstVisibilityUsage'
   - 'Classes/IntegerAsProperty'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/NonStaticMethodsCalledStatic'
   - 'Classes/NullOnNew'
   - 'Classes/TypedClassConstants'
   - 'Exceptions/MultipleCatch'
   - 'Functions/GeneratorCannotReturn'
   - 'Functions/MultipleSameArguments'
   - 'Functions/VoidIsNotAReference'
   - 'Interfaces/CantOverloadConstants'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/CloneConstant'
   - 'Php/CoalesceEqual'
   - 'Php/ConcatAndAddition'
   - 'Php/ConstantScalarExpression'
   - 'Php/DefineWithArray'
   - 'Php/DirectCallToClone'
   - 'Php/EnumUsage'
   - 'Php/FilesFullPath'
   - 'Php/FlexibleHeredoc'
   - 'Php/GroupUseDeclaration'
   - 'Php/GroupUseTrailingComma'
   - 'Php/HashAlgos53'
   - 'Php/HashAlgos54'
   - 'Php/HashAlgos71'
   - 'Php/ListShortSyntax'
   - 'Php/ListWithKeys'
   - 'Php/ListWithReference'
   - 'Php/NamedParameterUsage'
   - 'Php/NeverTypehintUsage'
   - 'Php/NoListWithString'
   - 'Php/NoReferenceForStaticProperty'
   - 'Php/NoReturnForGenerator'
   - 'Php/NoStringWithAppend'
   - 'Php/NoSubstrMinusOne'
   - 'Php/PHP70scalartypehints'
   - 'Php/PHP71scalartypehints'
   - 'Php/PHP72scalartypehints'
   - 'Php/PHP73LastEmptyArgument'
   - 'Php/PHP80scalartypehints'
   - 'Php/PHP81scalartypehints'
   - 'Php/ParenthesisAsParameter'
```

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```
  - 'Php/Php70NewClasses'
  - 'Php/Php70NewFunctions'
  - 'Php/Php70NewInterfaces'
  - 'Php/Php71NewClasses'
  - 'Php/Php72NewClasses'
  - 'Php/Php73NewFunctions'
  - 'Php/Php7RelaxedKeyword'
  - 'Php/Php80OnlyTypeHints'
  - 'Php/Php81NewTypes'
  - 'Php/Php82NewTypes'
  - 'Php/RawPostDataUsage'
  - 'Php/ReadonlyPropertyChangedByCloning'
  - 'Php/StaticVariableDefaultCanBeAnyExpression'
  - 'Php/TrailingComma'
  - 'Php/TypedPropertyUsage'
  - 'Php/UnicodeEscapePartial'
  - 'Php/UnicodeEscapeSyntax'
  - 'Php/UnpackingInsideArrays'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Php/UseNullableType'
  - 'Structures/ContinueIsForLoop'
  - 'Structures/IssetWithConstant'
  - 'Structures/NoGetClassNull'
  - 'Structures/PHP7Dirname'
  - 'Structures/SwitchWithMultipleDefault'
  - 'Structures/VariableGlobal'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/NoPrivateAbstract'
  - 'Type/MalformedOctal'
  - 'Variables/Php5IndirectExpression'
  - 'Variables/Php7IndirectExpression'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.15 CompatibilityPHP70

CompatibilityPHP70 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP70]
  analyzer[] = "Classes/CantInheritAbstractMethod";
  analyzer[] = "Classes/ChildRemoveTypehint";
  analyzer[] = "Classes/ConstVisibilityUsage";
  analyzer[] = "Classes/IntegerAsProperty";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Classes/toStringPss";
  analyzer[] = "Exceptions/MultipleCatch";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Functions/funcGetArgModified";
  analyzer[] = "Interfaces/CantOverloadConstants";
```

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```
analyzer[] = "Php/ClassAliasSupportsInternalClasses";
analyzer[] = "Php/CloneConstant";
analyzer[] = "Php/CoalesceEqual";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/EmptyList";
analyzer[] = "Php/EnumUsage";
analyzer[] = "Php/FilesFullPath";
analyzer[] = "Php/FinalConstant";
analyzer[] = "Php/FlexibleHeredoc";
analyzer[] = "Php/ForeachDontChangePointer";
analyzer[] = "Php/GlobalWithoutSimpleVariable";
analyzer[] = "Php/GroupUseTrailingComma";
analyzer[] = "Php/HashAlgos53";
analyzer[] = "Php/HashAlgos54";
analyzer[] = "Php/HashAlgos71";
analyzer[] = "Php/ListShortSyntax";
analyzer[] = "Php/ListWithAppends";
analyzer[] = "Php/ListWithKeys";
analyzer[] = "Php/ListWithReference";
analyzer[] = "Php/NamedParameterUsage";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NoReferenceForStaticProperty";
analyzer[] = "Php/NoSubstrMinusOne";
analyzer[] = "Php/PHP71scalartypehints";
analyzer[] = "Php/PHP72scalartypehints";
analyzer[] = "Php/PHP73LastEmptyArgument";
analyzer[] = "Php/PHP80scalartypehints";
analyzer[] = "Php/PHP81scalartypehints";
analyzer[] = "Php/Php70RemovedDirective";
analyzer[] = "Php/Php70RemovedFunctions";
analyzer[] = "Php/Php71NewClasses";
analyzer[] = "Php/Php72NewClasses";
analyzer[] = "Php/Php73NewFunctions";
analyzer[] = "Php/Php80OnlyTypeHints";
analyzer[] = "Php/Php80UnionTypehint";
analyzer[] = "Php/Php81NewTypes";
analyzer[] = "Php/Php82NewTypes";
analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
analyzer[] = "Php/ReservedKeywords7";
analyzer[] = "Php/SetExceptionHandlerPHP7";
analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
analyzer[] = "Php/TrailingComma";
analyzer[] = "Php/TypedPropertyUsage";
analyzer[] = "Php/UnpackingInsideArrays";
analyzer[] = "Php/UseEnumCaseInConstantExpression";
analyzer[] = "Php/UseNullableType";
analyzer[] = "Php/UsortSorting";
analyzer[] = "Structures/BreakOutsideLoop";
analyzer[] = "Structures/ContinueIsForLoop";
analyzer[] = "Structures/McryptcreateivWithoutOption";
analyzer[] = "Structures/NoGetClassNull";
analyzer[] = "Structures/SetlocaleNeedsConstants";
```

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```
  analyzer[] = "Structures/pregOptionE";
  analyzer[] = "Traits/FinalTraitsAreFinal";
  analyzer[] = "Traits/NoPrivateAbstract";
  analyzer[] = "Type/HexadecimalString";
  analyzer[] = "Variables/Php7IndirectExpression";
  analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP70 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP70':
   - 'Classes/CantInheritAbstractMethod'
   - 'Classes/ChildRemoveTypehint'
   - 'Classes/ConstVisibilityUsage'
   - 'Classes/IntegerAsProperty'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/TypedClassConstants'
   - 'Classes/toStringPss'
   - 'Exceptions/MultipleCatch'
   - 'Functions/VoidIsNotAReference'
   - 'Functions/funcGetArgModified'
   - 'Interfaces/CantOverloadConstants'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/CloneConstant'
   - 'Php/CoalesceEqual'
   - 'Php/ConcatAndAddition'
   - 'Php/EmptyList'
   - 'Php/EnumUsage'
   - 'Php/FilesFullPath'
   - 'Php/FinalConstant'
   - 'Php/FlexibleHeredoc'
   - 'Php/ForeachDontChangePointer'
   - 'Php/GlobalWithoutSimpleVariable'
   - 'Php/GroupUseTrailingComma'
   - 'Php/HashAlgos53'
   - 'Php/HashAlgos54'
   - 'Php/HashAlgos71'
   - 'Php/ListShortSyntax'
   - 'Php/ListWithAppends'
   - 'Php/ListWithKeys'
   - 'Php/ListWithReference'
   - 'Php/NamedParameterUsage'
   - 'Php/NeverTypehintUsage'
   - 'Php/NoReferenceForStaticProperty'
   - 'Php/NoSubstrMinusOne'
   - 'Php/PHP71scalartypehints'
   - 'Php/PHP72scalartypehints'
   - 'Php/PHP73LastEmptyArgument'
```

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```
  - 'Php/PHP80scalartypehints'
  - 'Php/PHP81scalartypehints'
  - 'Php/Php70RemovedDirective'
  - 'Php/Php70RemovedFunctions'
  - 'Php/Php71NewClasses'
  - 'Php/Php72NewClasses'
  - 'Php/Php73NewFunctions'
  - 'Php/Php80OnlyTypeHints'
  - 'Php/Php80UnionTypehint'
  - 'Php/Php81NewTypes'
  - 'Php/Php82NewTypes'
  - 'Php/ReadonlyPropertyChangedByCloning'
  - 'Php/ReservedKeywords7'
  - 'Php/SetExceptionHandlerPHP7'
  - 'Php/StaticVariableDefaultCanBeAnyExpression'
  - 'Php/TrailingComma'
  - 'Php/TypedPropertyUsage'
  - 'Php/UnpackingInsideArrays'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Php/UseNullableType'
  - 'Php/UsortSorting'
  - 'Structures/BreakOutsideLoop'
  - 'Structures/ContinueIsForLoop'
  - 'Structures/McryptcreateivWithoutOption'
  - 'Structures/NoGetClassNull'
  - 'Structures/SetlocaleNeedsConstants'
  - 'Structures/pregOptionE'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/NoPrivateAbstract'
  - 'Type/HexadecimalString'
  - 'Variables/Php7IndirectExpression'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.16 CompatibilityPHP71

CompatibilityPHP71 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP71]
  analyzer[] = "Arrays/StringInitialization";
  analyzer[] = "Classes/CantInheritAbstractMethod";
  analyzer[] = "Classes/ChildRemoveTypehint";
  analyzer[] = "Classes/IntegerAsProperty";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Classes/UsingThisOutsideAClass";
  analyzer[] = "Extensions/Extmcrypt";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Interfaces/CantOverloadConstants";
  analyzer[] = "Namespaces/NoKeywordInNamespace";
```

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```
analyzer[] = "Php/BetterRand";
analyzer[] = "Php/ClassAliasSupportsInternalClasses";
analyzer[] = "Php/CloneConstant";
analyzer[] = "Php/CoalesceEqual";
analyzer[] = "Php/ConcatAndAddition";
analyzer[] = "Php/EnumUsage";
analyzer[] = "Php/FilesFullPath";
analyzer[] = "Php/FinalConstant";
analyzer[] = "Php/FlexibleHeredoc";
analyzer[] = "Php/GroupUseTrailingComma";
analyzer[] = "Php/HashAlgos53";
analyzer[] = "Php/HashAlgos54";
analyzer[] = "Php/ListWithReference";
analyzer[] = "Php/NamedParameterUsage";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NoReferenceForStaticProperty";
analyzer[] = "Php/PHP72scalartypehints";
analyzer[] = "Php/PHP73LastEmptyArgument";
analyzer[] = "Php/PHP80scalartypehints";
analyzer[] = "Php/PHP81scalartypehints";
analyzer[] = "Php/Php70RemovedDirective";
analyzer[] = "Php/Php70RemovedFunctions";
analyzer[] = "Php/Php71NewFunctions";
analyzer[] = "Php/Php71RemovedDirective";
analyzer[] = "Php/Php71microseconds";
analyzer[] = "Php/Php72NewClasses";
analyzer[] = "Php/Php73NewFunctions";
analyzer[] = "Php/Php80OnlyTypeHints";
analyzer[] = "Php/Php80UnionTypehint";
analyzer[] = "Php/Php81NewTypes";
analyzer[] = "Php/Php82NewTypes";
analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
analyzer[] = "Php/SignatureTrailingComma";
analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
analyzer[] = "Php/TrailingComma";
analyzer[] = "Php/TypedPropertyUsage";
analyzer[] = "Php/UnpackingInsideArrays";
analyzer[] = "Php/UseEnumCaseInConstantExpression";
analyzer[] = "Structures/ArrayMergeWithEllipsis";
analyzer[] = "Structures/ContinueIsForLoop";
analyzer[] = "Structures/NoGetClassNull";
analyzer[] = "Structures/NoSubstrOne";
analyzer[] = "Structures/pregOptionE";
analyzer[] = "Traits/FinalTraitsAreFinal";
analyzer[] = "Traits/NoPrivateAbstract";
analyzer[] = "Type/HexadecimalString";
analyzer[] = "Type/OctalInString";
analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP71 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP71':
   - 'Arrays/StringInitialization'
   - 'Classes/CantInheritAbstractMethod'
   - 'Classes/ChildRemoveTypehint'
   - 'Classes/IntegerAsProperty'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/TypedClassConstants'
   - 'Classes/UsingThisOutsideAClass'
   - 'Extensions/Extmcrypt'
   - 'Functions/VoidIsNotAReference'
   - 'Interfaces/CantOverloadConstants'
   - 'Namespaces/NoKeywordInNamespace'
   - 'Php/BetterRand'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/CloneConstant'
   - 'Php/CoalesceEqual'
   - 'Php/ConcatAndAddition'
   - 'Php/EnumUsage'
   - 'Php/FilesFullPath'
   - 'Php/FinalConstant'
   - 'Php/FlexibleHeredoc'
   - 'Php/GroupUseTrailingComma'
   - 'Php/HashAlgos53'
   - 'Php/HashAlgos54'
   - 'Php/ListWithReference'
   - 'Php/NamedParameterUsage'
   - 'Php/NeverTypehintUsage'
   - 'Php/NoReferenceForStaticProperty'
   - 'Php/PHP72scalartypehints'
   - 'Php/PHP73LastEmptyArgument'
   - 'Php/PHP80scalartypehints'
   - 'Php/PHP81scalartypehints'
   - 'Php/Php70RemovedDirective'
   - 'Php/Php70RemovedFunctions'
   - 'Php/Php71NewFunctions'
   - 'Php/Php71RemovedDirective'
   - 'Php/Php71microseconds'
   - 'Php/Php72NewClasses'
   - 'Php/Php73NewFunctions'
   - 'Php/Php80OnlyTypeHints'
   - 'Php/Php80UnionTypehint'
   - 'Php/Php81NewTypes'
   - 'Php/Php82NewTypes'
   - 'Php/ReadonlyPropertyChangedByCloning'
   - 'Php/SignatureTrailingComma'
   - 'Php/StaticVariableDefaultCanBeAnyExpression'
   - 'Php/TrailingComma'
```

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```
  - 'Php/TypedPropertyUsage'
  - 'Php/UnpackingInsideArrays'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Structures/ArrayMergeWithEllipsis'
  - 'Structures/ContinueIsForLoop'
  - 'Structures/NoGetClassNull'
  - 'Structures/NoSubstrOne'
  - 'Structures/pregOptionE'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/NoPrivateAbstract'
  - 'Type/HexadecimalString'
  - 'Type/OctalInString'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.17 CompatibilityPHP72

CompatibilityPHP72 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP72]
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Constants/UndefinedConstants";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Interfaces/CantOverloadConstants";
  analyzer[] = "Namespaces/NoKeywordInNamespace";
  analyzer[] = "Php/AvoidSetErrorHandlerContextArg";
  analyzer[] = "Php/ClassAliasSupportsInternalClasses";
  analyzer[] = "Php/CloneConstant";
  analyzer[] = "Php/CoalesceEqual";
  analyzer[] = "Php/ConcatAndAddition";
  analyzer[] = "Php/EnumUsage";
  analyzer[] = "Php/FilesFullPath";
  analyzer[] = "Php/FinalConstant";
  analyzer[] = "Php/FlexibleHeredoc";
  analyzer[] = "Php/HashAlgos53";
  analyzer[] = "Php/HashAlgos54";
  analyzer[] = "Php/HashUsesObjects";
  analyzer[] = "Php/ListWithReference";
  analyzer[] = "Php/NamedParameterUsage";
  analyzer[] = "Php/NeverTypehintUsage";
  analyzer[] = "Php/NoReferenceForStaticProperty";
  analyzer[] = "Php/PHP73LastEmptyArgument";
  analyzer[] = "Php/PHP80scalartypehints";
  analyzer[] = "Php/PHP81scalartypehints";
  analyzer[] = "Php/Php72Deprecation";
  analyzer[] = "Php/Php72NewClasses";
  analyzer[] = "Php/Php72NewConstants";
  analyzer[] = "Php/Php72NewFunctions";
  analyzer[] = "Php/Php72ObjectKeyword";
```

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```
analyzer[] = "Php/Php72RemovedFunctions";
analyzer[] = "Php/Php73NewFunctions";
analyzer[] = "Php/Php80OnlyTypeHints";
analyzer[] = "Php/Php80UnionTypehint";
analyzer[] = "Php/Php81NewTypes";
analyzer[] = "Php/Php82NewTypes";
analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
analyzer[] = "Php/SignatureTrailingComma";
analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
analyzer[] = "Php/ThrowWasAnExpression";
analyzer[] = "Php/TrailingComma";
analyzer[] = "Php/TypedPropertyUsage";
analyzer[] = "Php/UnpackingInsideArrays";
analyzer[] = "Php/UseEnumCaseInConstantExpression";
analyzer[] = "Structures/ArrayMergeWithEllipsis";
analyzer[] = "Structures/CanCountNonCountable";
analyzer[] = "Structures/ContinueIsForLoop";
analyzer[] = "Structures/NoGetClassNull";
analyzer[] = "Structures/pregOptionE";
analyzer[] = "Traits/FinalTraitsAreFinal";
analyzer[] = "Traits/NoPrivateAbstract";
analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP72 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP72':
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/TypedClassConstants'
   - 'Constants/UndefinedConstants'
   - 'Functions/VoidIsNotAReference'
   - 'Interfaces/CantOverloadConstants'
   - 'Namespaces/NoKeywordInNamespace'
   - 'Php/AvoidSetErrorHandlerContextArg'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/CloneConstant'
   - 'Php/CoalesceEqual'
   - 'Php/ConcatAndAddition'
   - 'Php/EnumUsage'
   - 'Php/FilesFullPath'
   - 'Php/FinalConstant'
   - 'Php/FlexibleHeredoc'
   - 'Php/HashAlgos53'
   - 'Php/HashAlgos54'
   - 'Php/HashUsesObjects'
   - 'Php/ListWithReference'
   - 'Php/NamedParameterUsage'
   - 'Php/NeverTypehintUsage'
```

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```
  - 'Php/NoReferenceForStaticProperty'
  - 'Php/PHP73LastEmptyArgument'
  - 'Php/PHP80scalartypehints'
  - 'Php/PHP81scalartypehints'
  - 'Php/Php72Deprecation'
  - 'Php/Php72NewClasses'
  - 'Php/Php72NewConstants'
  - 'Php/Php72NewFunctions'
  - 'Php/Php72ObjectKeyword'
  - 'Php/Php72RemovedFunctions'
  - 'Php/Php73NewFunctions'
  - 'Php/Php80OnlyTypeHints'
  - 'Php/Php80UnionTypehint'
  - 'Php/Php81NewTypes'
  - 'Php/Php82NewTypes'
  - 'Php/ReadonlyPropertyChangedByCloning'
  - 'Php/SignatureTrailingComma'
  - 'Php/StaticVariableDefaultCanBeAnyExpression'
  - 'Php/ThrowWasAnExpression'
  - 'Php/TrailingComma'
  - 'Php/TypedPropertyUsage'
  - 'Php/UnpackingInsideArrays'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Structures/ArrayMergeWithEllipsis'
  - 'Structures/CanCountNonCountable'
  - 'Structures/ContinueIsForLoop'
  - 'Structures/NoGetClassNull'
  - 'Structures/pregOptionE'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/NoPrivateAbstract'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.18 CompatibilityPHP73

CompatibilityPHP73 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP73]
  analyzer[] = "Attributes/NestedAttributes";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Constants/CaseInsensitiveConstants";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Interfaces/CantOverloadConstants";
  analyzer[] = "Namespaces/NoKeywordInNamespace";
  analyzer[] = "Php/AssertFunctionIsReserved";
  analyzer[] = "Php/ClassAliasSupportsInternalClasses";
  analyzer[] = "Php/CloneConstant";
  analyzer[] = "Php/CoalesceEqual";
  analyzer[] = "Php/CompactInexistant";
```

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```
  analyzer[] = "Php/ConcatAndAddition";
  analyzer[] = "Php/EnumUsage";
  analyzer[] = "Php/FilesFullPath";
  analyzer[] = "Php/FinalConstant";
  analyzer[] = "Php/IntegerSeparatorUsage";
  analyzer[] = "Php/NamedParameterUsage";
  analyzer[] = "Php/NeverTypehintUsage";
  analyzer[] = "Php/NewInitializers";
  analyzer[] = "Php/PHP80scalartypehints";
  analyzer[] = "Php/PHP81scalartypehints";
  analyzer[] = "Php/Php73NewFunctions";
  analyzer[] = "Php/Php73RemovedFunctions";
  analyzer[] = "Php/Php74NewDirective";
  analyzer[] = "Php/Php80OnlyTypeHints";
  analyzer[] = "Php/Php80UnionTypehint";
  analyzer[] = "Php/Php81NewTypes";
  analyzer[] = "Php/Php82NewTypes";
  analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
  analyzer[] = "Php/SignatureTrailingComma";
  analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
  analyzer[] = "Php/ThrowWasAnExpression";
  analyzer[] = "Php/TypedPropertyUsage";
  analyzer[] = "Php/UnknownPcre2Option";
  analyzer[] = "Php/UnpackingInsideArrays";
  analyzer[] = "Php/UseEnumCaseInConstantExpression";
  analyzer[] = "Structures/ArrayMergeWithEllipsis";
  analyzer[] = "Structures/ContinueIsForLoop";
  analyzer[] = "Structures/DontReadAndWriteInOneExpression";
  analyzer[] = "Traits/FinalTraitsAreFinal";
  analyzer[] = "Traits/NoPrivateAbstract";
  analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP73 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP73':
   - 'Attributes/NestedAttributes'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/TypedClassConstants'
   - 'Constants/CaseInsensitiveConstants'
   - 'Functions/VoidIsNotAReference'
   - 'Interfaces/CantOverloadConstants'
   - 'Namespaces/NoKeywordInNamespace'
   - 'Php/AssertFunctionIsReserved'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/CloneConstant'
   - 'Php/CoalesceEqual'
   - 'Php/CompactInexistant'
```

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```
  - 'Php/ConcatAndAddition'
  - 'Php/EnumUsage'
  - 'Php/FilesFullPath'
  - 'Php/FinalConstant'
  - 'Php/IntegerSeparatorUsage'
  - 'Php/NamedParameterUsage'
  - 'Php/NeverTypehintUsage'
  - 'Php/NewInitializers'
  - 'Php/PHP80scalartypehints'
  - 'Php/PHP81scalartypehints'
  - 'Php/Php73NewFunctions'
  - 'Php/Php73RemovedFunctions'
  - 'Php/Php74NewDirective'
  - 'Php/Php80OnlyTypeHints'
  - 'Php/Php80UnionTypehint'
  - 'Php/Php81NewTypes'
  - 'Php/Php82NewTypes'
  - 'Php/ReadonlyPropertyChangedByCloning'
  - 'Php/SignatureTrailingComma'
  - 'Php/StaticVariableDefaultCanBeAnyExpression'
  - 'Php/ThrowWasAnExpression'
  - 'Php/TypedPropertyUsage'
  - 'Php/UnknownPcre2Option'
  - 'Php/UnpackingInsideArrays'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Structures/ArrayMergeWithEllipsis'
  - 'Structures/ContinueIsForLoop'
  - 'Structures/DontReadAndWriteInOneExpression'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/NoPrivateAbstract'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.19 CompatibilityPHP74

CompatibilityPHP74 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP74]
  analyzer[] = "Attributes/NestedAttributes";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Functions/UnbindingClosures";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Interfaces/CantOverloadConstants";
  analyzer[] = "Namespaces/NoKeywordInNamespace";
  analyzer[] = "Php/ArrayKeyExistsWithObjects";
  analyzer[] = "Php/AvoidGetobjectVars";
  analyzer[] = "Php/ClassAliasSupportsInternalClasses";
  analyzer[] = "Php/CloneConstant";
  analyzer[] = "Php/ConcatAndAddition";
```

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```
analyzer[] = "Php/DetectCurrentClass";
analyzer[] = "Php/EnumUsage";
analyzer[] = "Php/FilesFullPath";
analyzer[] = "Php/FilterToAddSlashes";
analyzer[] = "Php/FinalConstant";
analyzer[] = "Php/HashAlgos74";
analyzer[] = "Php/IdnUts46";
analyzer[] = "Php/NamedParameterUsage";
analyzer[] = "Php/NestedTernaryWithoutParenthesis";
analyzer[] = "Php/NeverTypehintUsage";
analyzer[] = "Php/NewInitializers";
analyzer[] = "Php/NoMoreCurlyArrays";
analyzer[] = "Php/PHP80scalartypehints";
analyzer[] = "Php/PHP81scalartypehints";
analyzer[] = "Php/Php74Deprecation";
analyzer[] = "Php/Php74NewClasses";
analyzer[] = "Php/Php74NewConstants";
analyzer[] = "Php/Php74NewFunctions";
analyzer[] = "Php/Php74RemovedDirective";
analyzer[] = "Php/Php74RemovedFunctions";
analyzer[] = "Php/Php74ReservedKeyword";
analyzer[] = "Php/Php74mbstrrpos3rdArg";
analyzer[] = "Php/Php80NewFunctions";
analyzer[] = "Php/Php80OnlyTypeHints";
analyzer[] = "Php/Php80UnionTypehint";
analyzer[] = "Php/Php80VariableSyntax";
analyzer[] = "Php/Php81NewTypes";
analyzer[] = "Php/Php82NewTypes";
analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
analyzer[] = "Php/ReflectionExportIsDeprecated";
analyzer[] = "Php/ScalarAreNotArrays";
analyzer[] = "Php/SignatureTrailingComma";
analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
analyzer[] = "Php/ThrowWasAnExpression";
analyzer[] = "Php/UseEnumCaseInConstantExpression";
analyzer[] = "Php/UseMatch";
analyzer[] = "Structures/CurlVersionNow";
analyzer[] = "Structures/DontReadAndWriteInOneExpression";
analyzer[] = "Structures/OpensslRandomPseudoByteSecondArg";
analyzer[] = "Traits/ConstantsInTraits";
analyzer[] = "Traits/FinalTraitsAreFinal";
analyzer[] = "Traits/NoPrivateAbstract";
analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP74 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP74':
   - 'Attributes/NestedAttributes'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/TypedClassConstants'
   - 'Functions/UnbindingClosures'
   - 'Functions/VoidIsNotAReference'
   - 'Interfaces/CantOverloadConstants'
   - 'Namespaces/NoKeywordInNamespace'
   - 'Php/ArrayKeyExistsWithObjects'
   - 'Php/AvoidGetobjectVars'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/CloneConstant'
   - 'Php/ConcatAndAddition'
   - 'Php/DetectCurrentClass'
   - 'Php/EnumUsage'
   - 'Php/FilesFullPath'
   - 'Php/FilterToAddSlashes'
   - 'Php/FinalConstant'
   - 'Php/HashAlgos74'
   - 'Php/IdnUts46'
   - 'Php/NamedParameterUsage'
   - 'Php/NestedTernaryWithoutParenthesis'
   - 'Php/NeverTypehintUsage'
   - 'Php/NewInitializers'
   - 'Php/NoMoreCurlyArrays'
   - 'Php/PHP80scalartypehints'
   - 'Php/PHP81scalartypehints'
   - 'Php/Php74Deprecation'
   - 'Php/Php74NewClasses'
   - 'Php/Php74NewConstants'
   - 'Php/Php74NewFunctions'
   - 'Php/Php74RemovedDirective'
   - 'Php/Php74RemovedFunctions'
   - 'Php/Php74ReservedKeyword'
   - 'Php/Php74mbstrrpos3rdArg'
   - 'Php/Php80NewFunctions'
   - 'Php/Php80OnlyTypeHints'
   - 'Php/Php80UnionTypehint'
   - 'Php/Php80VariableSyntax'
   - 'Php/Php81NewTypes'
   - 'Php/Php82NewTypes'
   - 'Php/ReadonlyPropertyChangedByCloning'
   - 'Php/ReflectionExportIsDeprecated'
   - 'Php/ScalarAreNotArrays'
   - 'Php/SignatureTrailingComma'
   - 'Php/StaticVariableDefaultCanBeAnyExpression'
   - 'Php/ThrowWasAnExpression'
```

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```
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Php/UseMatch'
  - 'Structures/CurlVersionNow'
  - 'Structures/DontReadAndWriteInOneExpression'
  - 'Structures/OpensslRandomPseudoByteSecondArg'
  - 'Traits/ConstantsInTraits'
  - 'Traits/FinalTraitsAreFinal'
  - 'Traits/NoPrivateAbstract'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.20 CompatibilityPHP80

CompatibilityPHP80 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP80]
  analyzer[] = "Arrays/NegativeStart";
  analyzer[] = "Attributes/NestedAttributes";
  analyzer[] = "Classes/FinalPrivate";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/OldStyleConstructor";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Functions/MismatchParameterName";
  analyzer[] = "Functions/NullableWithConstant";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Functions/WrongOptionalParameter";
  analyzer[] = "Interfaces/CantOverloadConstants";
  analyzer[] = "Php/AvoidGetobjectVars";
  analyzer[] = "Php/CastUnsetUsage";
  analyzer[] = "Php/ClassAliasSupportsInternalClasses";
  analyzer[] = "Php/CloneConstant";
  analyzer[] = "Php/ConcatAndAddition";
  analyzer[] = "Php/EnumUsage";
  analyzer[] = "Php/FinalConstant";
  analyzer[] = "Php/MixedKeyword";
  analyzer[] = "Php/NamedArgumentAndVariadic";
  analyzer[] = "Php/NeverTypehintUsage";
  analyzer[] = "Php/NewInitializers";
  analyzer[] = "Php/PHP81scalartypehints";
  analyzer[] = "Php/Php74RemovedDirective";
  analyzer[] = "Php/Php80NamedParameterVariadic";
  analyzer[] = "Php/Php80RemovedConstant";
  analyzer[] = "Php/Php80RemovedDirective";
  analyzer[] = "Php/Php80RemovedFunctions";
  analyzer[] = "Php/Php80RemovesResources";
  analyzer[] = "Php/Php81NewTypes";
  analyzer[] = "Php/Php81RemovesResources";
  analyzer[] = "Php/Php82NewTypes";
  analyzer[] = "Php/PhpErrorMsgUsage";
  analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
```

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```
  analyzer[] = "Php/ReservedMatchKeyword";
  analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
  analyzer[] = "Php/StringIntComparison";
  analyzer[] = "Php/UseEnumCaseInConstantExpression";
  analyzer[] = "Structures/ArrayMapPassesByValue";
  analyzer[] = "Structures/MultipleTypeCasesInSwitch";
  analyzer[] = "Structures/NoMaxOnEmptyArray";
  analyzer[] = "Structures/UnsupportedTypesWithOperators";
  analyzer[] = "Traits/ConstantsInTraits";
  analyzer[] = "Traits/FinalTraitsAreFinal";
  analyzer[] = "Variables/RedeclaredStaticVariable";
```

CompatibilityPHP80 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP80':
   - 'Arrays/NegativeStart'
   - 'Attributes/NestedAttributes'
   - 'Classes/FinalPrivate'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/OldStyleConstructor'
   - 'Classes/TypedClassConstants'
   - 'Functions/MismatchParameterName'
   - 'Functions/NullableWithConstant'
   - 'Functions/VoidIsNotAReference'
   - 'Functions/WrongOptionalParameter'
   - 'Interfaces/CantOverloadConstants'
   - 'Php/AvoidGetobjectVars'
   - 'Php/CastUnsetUsage'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/CloneConstant'
   - 'Php/ConcatAndAddition'
   - 'Php/EnumUsage'
   - 'Php/FinalConstant'
   - 'Php/MixedKeyword'
   - 'Php/NamedArgumentAndVariadic'
   - 'Php/NeverTypehintUsage'
   - 'Php/NewInitializers'
   - 'Php/PHP81scalartypehints'
   - 'Php/Php74RemovedDirective'
   - 'Php/Php80NamedParameterVariadic'
   - 'Php/Php80RemovedConstant'
   - 'Php/Php80RemovedDirective'
   - 'Php/Php80RemovedFunctions'
   - 'Php/Php80RemovesResources'
   - 'Php/Php81NewTypes'
   - 'Php/Php81RemovesResources'
   - 'Php/Php82NewTypes'
```

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```
  - 'Php/PhpErrorMsgUsage'
  - 'Php/ReadonlyPropertyChangedByCloning'
  - 'Php/ReservedMatchKeyword'
  - 'Php/StaticVariableDefaultCanBeAnyExpression'
  - 'Php/StringIntComparison'
  - 'Php/UseEnumCaseInConstantExpression'
  - 'Structures/ArrayMapPassesByValue'
  - 'Structures/MultipleTypeCasesInSwitch'
  - 'Structures/NoMaxOnEmptyArray'
  - 'Structures/UnsupportedTypesWithOperators'
  - 'Traits/ConstantsInTraits'
  - 'Traits/FinalTraitsAreFinal'
  - 'Variables/RedeclaredStaticVariable'
```

10.5.21 CompatibilityPHP81

CompatibilityPHP81 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP81]
  analyzer[] = "Arrays/FloatConversionAsIndex";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Functions/NoReferencedVoid";
  analyzer[] = "Functions/VoidIsNotAReference";
  analyzer[] = "Php/CallingStaticTraitMethod";
  analyzer[] = "Php/ClassAliasSupportsInternalClasses";
  analyzer[] = "Php/FalseToArray";
  analyzer[] = "Php/JsonSerializeReturnType";
  analyzer[] = "Php/MixedKeyword";
  analyzer[] = "Php/NamedArgumentAndVariadic";
  analyzer[] = "Php/NativeClassTypeCompatibility";
  analyzer[] = "Php/NeverKeyword";
  analyzer[] = "Php/NoNullForNative";
  analyzer[] = "Php/OpensslEncryptAlgoChange";
  analyzer[] = "Php/Php74RemovedDirective";
  analyzer[] = "Php/Php80RemovedDirective";
  analyzer[] = "Php/Php81NewFunctions";
  analyzer[] = "Php/Php81NewTypes";
  analyzer[] = "Php/Php81RemovedConstant";
  analyzer[] = "Php/Php81RemovedDirective";
  analyzer[] = "Php/Php81RemovedFunctions";
  analyzer[] = "Php/Php82NewTypes";
  analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
  analyzer[] = "Php/RestrictGlobalUsage";
  analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
  analyzer[] = "Php/UseEnumCaseInConstantExpression";
  analyzer[] = "Php/VersionCompareOperator";
  analyzer[] = "Traits/CannotCallTraitMethod";
  analyzer[] = "Traits/ConstantsInTraits";
```

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```
  analyzer[] = "Traits/FinalTraitsAreFinal";
  analyzer[] = "Variables/InheritedStaticVariable";
  analyzer[] = "Variables/RedeclaredStaticVariable";
  analyzer[] = "Variables/StaticVariableInitialisation";
```

CompatibilityPHP81 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP81':
   - 'Arrays/FloatConversionAsIndex'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/TypedClassConstants'
   - 'Functions/NoReferencedVoid'
   - 'Functions/VoidIsNotAReference'
   - 'Php/CallingStaticTraitMethod'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/FalseToArray'
   - 'Php/JsonSerializeReturnType'
   - 'Php/MixedKeyword'
   - 'Php/NamedArgumentAndVariadic'
   - 'Php/NativeClassTypeCompatibility'
   - 'Php/NeverKeyword'
   - 'Php/NoNullForNative'
   - 'Php/OpensslEncryptAlgoChange'
   - 'Php/Php74RemovedDirective'
   - 'Php/Php80RemovedDirective'
   - 'Php/Php81NewFunctions'
   - 'Php/Php81NewTypes'
   - 'Php/Php81RemovedConstant'
   - 'Php/Php81RemovedDirective'
   - 'Php/Php81RemovedFunctions'
   - 'Php/Php82NewTypes'
   - 'Php/ReadonlyPropertyChangedByCloning'
   - 'Php/RestrictGlobalUsage'
   - 'Php/StaticVariableDefaultCanBeAnyExpression'
   - 'Php/UseEnumCaseInConstantExpression'
   - 'Php/VersionCompareOperator'
   - 'Traits/CannotCallTraitMethod'
   - 'Traits/ConstantsInTraits'
   - 'Traits/FinalTraitsAreFinal'
   - 'Variables/InheritedStaticVariable'
   - 'Variables/RedeclaredStaticVariable'
   - 'Variables/StaticVariableInitialisation'
```

10.5.22 CompatibilityPHP82

CompatibilityPHP82 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP82]
  analyzer[] = "Arrays/FloatConversionAsIndex";
  analyzer[] = "Classes/ChecksPropertyExistence";
  analyzer[] = "Classes/ExtendsStdclass";
  analyzer[] = "Classes/NewDynamicConstantSyntax";
  analyzer[] = "Classes/TypedClassConstants";
  analyzer[] = "Classes/UndefinedProperty";
  analyzer[] = "Functions/DeprecatedCallable";
  analyzer[] = "Interfaces/InheritedClassConstantVisibility";
  analyzer[] = "Php/ClassAliasSupportsInternalClasses";
  analyzer[] = "Php/DeprecateDollarCurly";
  analyzer[] = "Php/FalseToArray";
  analyzer[] = "Php/Php82NewFunctions";
  analyzer[] = "Php/ReadonlyPropertyChangedByCloning";
  analyzer[] = "Php/StaticVariableDefaultCanBeAnyExpression";
  analyzer[] = "Php/Utf8EncodeDeprecated";
  analyzer[] = "Php/VersionCompareOperator";
  analyzer[] = "Structures/DeprecatedMbEncoding";
  analyzer[] = "Traits/CannotCallTraitMethod";
  analyzer[] = "Traits/ConstantsInTraits";
  analyzer[] = "Traits/FinalTraitsAreFinal";
  analyzer[] = "Variables/RedeclaredStaticVariable";
  analyzer[] = "Variables/StaticVariableInitialisation";
```

CompatibilityPHP82 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP82':
   - 'Arrays/FloatConversionAsIndex'
   - 'Classes/ChecksPropertyExistence'
   - 'Classes/ExtendsStdclass'
   - 'Classes/NewDynamicConstantSyntax'
   - 'Classes/TypedClassConstants'
   - 'Classes/UndefinedProperty'
   - 'Functions/DeprecatedCallable'
   - 'Interfaces/InheritedClassConstantVisibility'
   - 'Php/ClassAliasSupportsInternalClasses'
   - 'Php/DeprecateDollarCurly'
   - 'Php/FalseToArray'
   - 'Php/Php82NewFunctions'
   - 'Php/ReadonlyPropertyChangedByCloning'
   - 'Php/StaticVariableDefaultCanBeAnyExpression'
   - 'Php/Utf8EncodeDeprecated'
```

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```
  - 'Php/VersionCompareOperator'
  - 'Structures/DeprecatedMbEncoding'
  - 'Traits/CannotCallTraitMethod'
  - 'Traits/ConstantsInTraits'
  - 'Traits/FinalTraitsAreFinal'
  - 'Variables/RedeclaredStaticVariable'
  - 'Variables/StaticVariableInitialisation'
```

10.5.23 CompatibilityPHP83

CompatibilityPHP83 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[CompatibilityPHP83]
  analyzer[] = "Interfaces/InheritedClassConstantVisibility";
  analyzer[] = "Php/Php83NewClasses";
  analyzer[] = "Php/Php83NewFunctions";
  analyzer[] = "Structures/GetClassWithoutArg";
  analyzer[] = "Traits/ConstantsInTraits";
```

CompatibilityPHP83 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'CompatibilityPHP83':
   - 'Interfaces/InheritedClassConstantVisibility'
   - 'Php/Php83NewClasses'
   - 'Php/Php83NewFunctions'
   - 'Structures/GetClassWithoutArg'
   - 'Traits/ConstantsInTraits'
```

10.5.24 Dead code

Dead code for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Dead code]
  analyzer[] = "Classes/CantExtendFinal";
  analyzer[] = "Classes/LocallyUnusedProperty";
  analyzer[] = "Classes/UnreachableMethod";
  analyzer[] = "Classes/UnresolvedCatch";
  analyzer[] = "Classes/UnresolvedInstanceof";
  analyzer[] = "Classes/UnusedClass";
  analyzer[] = "Classes/UnusedMethods";
```

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```
  analyzer[] = "Classes/UnusedPrivateMethod";
  analyzer[] = "Classes/UnusedPrivateProperty";
  analyzer[] = "Classes/UnusedProtectedMethods";
  analyzer[] = "Constants/UnusedConstants";
  analyzer[] = "Enums/UnusedEnumCase";
  analyzer[] = "Exceptions/AlreadyCaught";
  analyzer[] = "Exceptions/CaughtButNotThrown";
  analyzer[] = "Exceptions/CouldDropVariable";
  analyzer[] = "Exceptions/Rethrown";
  analyzer[] = "Exceptions/Unthrown";
  analyzer[] = "Functions/UnusedFunctions";
  analyzer[] = "Functions/UnusedInheritedVariable";
  analyzer[] = "Functions/UnusedReturnedValue";
  analyzer[] = "Functions/UselessTypeCheck";
  analyzer[] = "Interfaces/UnusedInterfaces";
  analyzer[] = "Namespaces/EmptyNamespace";
  analyzer[] = "Namespaces/UnusedUse";
  analyzer[] = "Structures/EmptyLines";
  analyzer[] = "Structures/IdenticalElseif";
  analyzer[] = "Structures/UnreachableCode";
  analyzer[] = "Structures/UnsetInForeach";
  analyzer[] = "Structures/UnusedLabel";
  analyzer[] = "Structures/UseVariableInsideLoop";
  analyzer[] = "Traits/EmptyTrait";
  analyzer[] = "Traits/SelfUsingTrait";
  analyzer[] = "Variables/StaticVariableInNamespace";
```

Dead code for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Dead code':
   - 'Classes/CantExtendFinal'
   - 'Classes/LocallyUnusedProperty'
   - 'Classes/UnreachableMethod'
   - 'Classes/UnresolvedCatch'
   - 'Classes/UnresolvedInstanceof'
   - 'Classes/UnusedClass'
   - 'Classes/UnusedMethods'
   - 'Classes/UnusedPrivateMethod'
   - 'Classes/UnusedPrivateProperty'
   - 'Classes/UnusedProtectedMethods'
   - 'Constants/UnusedConstants'
   - 'Enums/UnusedEnumCase'
   - 'Exceptions/AlreadyCaught'
   - 'Exceptions/CaughtButNotThrown'
   - 'Exceptions/CouldDropVariable'
   - 'Exceptions/Rethrown'
   - 'Exceptions/Unthrown'
```

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```
  - 'Functions/UnusedFunctions'
  - 'Functions/UnusedInheritedVariable'
  - 'Functions/UnusedReturnedValue'
  - 'Functions/UselessTypeCheck'
  - 'Interfaces/UnusedInterfaces'
  - 'Namespaces/EmptyNamespace'
  - 'Namespaces/UnusedUse'
  - 'Structures/EmptyLines'
  - 'Structures/IdenticalElseif'
  - 'Structures/UnreachableCode'
  - 'Structures/UnsetInForeach'
  - 'Structures/UnusedLabel'
  - 'Structures/UseVariableInsideLoop'
  - 'Traits/EmptyTrait'
  - 'Traits/SelfUsingTrait'
  - 'Variables/StaticVariableInNamespace'
```

10.5.25 Deprecated

Deprecated for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Deprecated]
  analyzer[] = "Constants/CaseInsensitiveConstants";
  analyzer[] = "Functions/IsExtFunction";
  analyzer[] = "Functions/NoReferencedVoid";
  analyzer[] = "Php/AssertFunctionIsReserved";
  analyzer[] = "Php/CallingStaticTraitMethod";
  analyzer[] = "Php/JsonSerializeReturnType";
  analyzer[] = "Php/NestedTernaryWithoutParenthesis";
  analyzer[] = "Php/NoNullForNative";
```

Deprecated for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Deprecated':
   - 'Constants/CaseInsensitiveConstants'
   - 'Functions/IsExtFunction'
   - 'Functions/NoReferencedVoid'
   - 'Php/AssertFunctionIsReserved'
   - 'Php/CallingStaticTraitMethod'
   - 'Php/JsonSerializeReturnType'
   - 'Php/NestedTernaryWithoutParenthesis'
   - 'Php/NoNullForNative'
```

10.5.26 Dump

Dump for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Dump]
  analyzer[] = "Dump/ArgumentCountsPerCalls";
  analyzer[] = "Dump/CallOrder";
  analyzer[] = "Dump/ClassInjectionCount";
  analyzer[] = "Dump/CollectAtomCounts";
  analyzer[] = "Dump/CollectBlockSize";
  analyzer[] = "Dump/CollectCalls";
  analyzer[] = "Dump/CollectCatch";
  analyzer[] = "Dump/CollectClassChanges";
  analyzer[] = "Dump/CollectClassChildren";
  analyzer[] = "Dump/CollectClassConstantCounts";
  analyzer[] = "Dump/CollectClassDepth";
  analyzer[] = "Dump/CollectClassInterfaceCounts";
  analyzer[] = "Dump/CollectClassTraitsCounts";
  analyzer[] = "Dump/CollectClassesDependencies";
  analyzer[] = "Dump/CollectDefinitionsStats";
  analyzer[] = "Dump/CollectDependencyExtension";
  analyzer[] = "Dump/CollectFilesDependencies";
  analyzer[] = "Dump/CollectForeachFavorite";
  analyzer[] = "Dump/CollectGlobalVariables";
  analyzer[] = "Dump/CollectGraphTriplets";
  analyzer[] = "Dump/CollectLiterals";
  analyzer[] = "Dump/CollectLocalVariableCounts";
  analyzer[] = "Dump/CollectMbstringEncodings";
  analyzer[] = "Dump/CollectMethodCounts";
  analyzer[] = "Dump/CollectMethodsThrowingExceptions";
  analyzer[] = "Dump/CollectNativeCallsPerExpressions";
  analyzer[] = "Dump/CollectParameterCounts";
  analyzer[] = "Dump/CollectParameterNames";
  analyzer[] = "Dump/CollectPhpStructures";
  analyzer[] = "Dump/CollectPropertyCounts";
  analyzer[] = "Dump/CollectPropertyUsage";
  analyzer[] = "Dump/CollectReadability";
  analyzer[] = "Dump/CollectSetLocale";
  analyzer[] = "Dump/CollectStructures";
  analyzer[] = "Dump/CollectStubStructures";
  analyzer[] = "Dump/CollectThrow";
  analyzer[] = "Dump/CollectUseCounts";
  analyzer[] = "Dump/CollectVariables";
  analyzer[] = "Dump/CollectVendorStructures";
  analyzer[] = "Dump/CollectsNames";
  analyzer[] = "Dump/CombinedCalls";
  analyzer[] = "Dump/ConstantOrder";
  analyzer[] = "Dump/CouldBeAConstant";
  analyzer[] = "Dump/CyclomaticComplexity";
  analyzer[] = "Dump/DereferencingLevels";
  analyzer[] = "Dump/DumpComparedLiterals";
```

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```
analyzer[] = "Dump/EnvironnementVariables";
analyzer[] = "Dump/FossilizedMethods";
analyzer[] = "Dump/Inclusions";
analyzer[] = "Dump/IndentationLevels";
analyzer[] = "Dump/NewOrder";
analyzer[] = "Dump/TypehintingStats";
analyzer[] = "Dump/Typehintorder";
analyzer[] = "Exceptions/CaughtExceptions";
analyzer[] = "Exceptions/TryNoCatch";
analyzer[] = "Php/ComparisonOnDifferentTypes";
```

Dump for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Dump':
   - 'Dump/ArgumentCountsPerCalls'
   - 'Dump/CallOrder'
   - 'Dump/ClassInjectionCount'
   - 'Dump/CollectAtomCounts'
   - 'Dump/CollectBlockSize'
   - 'Dump/CollectCalls'
   - 'Dump/CollectCatch'
   - 'Dump/CollectClassChanges'
   - 'Dump/CollectClassChildren'
   - 'Dump/CollectClassConstantCounts'
   - 'Dump/CollectClassDepth'
   - 'Dump/CollectClassInterfaceCounts'
   - 'Dump/CollectClassTraitsCounts'
   - 'Dump/CollectClassesDependencies'
   - 'Dump/CollectDefinitionsStats'
   - 'Dump/CollectDependencyExtension'
   - 'Dump/CollectFilesDependencies'
   - 'Dump/CollectForeachFavorite'
   - 'Dump/CollectGlobalVariables'
   - 'Dump/CollectGraphTriplets'
   - 'Dump/CollectLiterals'
   - 'Dump/CollectLocalVariableCounts'
   - 'Dump/CollectMbstringEncodings'
   - 'Dump/CollectMethodCounts'
   - 'Dump/CollectMethodsThrowingExceptions'
   - 'Dump/CollectNativeCallsPerExpressions'
   - 'Dump/CollectParameterCounts'
   - 'Dump/CollectParameterNames'
   - 'Dump/CollectPhpStructures'
   - 'Dump/CollectPropertyCounts'
   - 'Dump/CollectPropertyUsage'
   - 'Dump/CollectReadability'
   - 'Dump/CollectSetLocale'
```

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```
  - 'Dump/CollectStructures'
  - 'Dump/CollectStubStructures'
  - 'Dump/CollectThrow'
  - 'Dump/CollectUseCounts'
  - 'Dump/CollectVariables'
  - 'Dump/CollectVendorStructures'
  - 'Dump/CollectsNames'
  - 'Dump/CombinedCalls'
  - 'Dump/ConstantOrder'
  - 'Dump/CouldBeAConstant'
  - 'Dump/CyclomaticComplexity'
  - 'Dump/DereferencingLevels'
  - 'Dump/DumpComparedLiterals'
  - 'Dump/EnvironnementVariables'
  - 'Dump/FossilizedMethods'
  - 'Dump/Inclusions'
  - 'Dump/IndentationLevels'
  - 'Dump/NewOrder'
  - 'Dump/TypehintingStats'
  - 'Dump/Typehintorder'
  - 'Exceptions/CaughtExceptions'
  - 'Exceptions/TryNoCatch'
  - 'Php/ComparisonOnDifferentTypes'
```

10.5.27 First

First for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[First]
  analyzer[] = "Complete/ReturnTypehint";
  analyzer[] = "Complete/VariableTypehint";
  analyzer[] = "Variables/IsLocalConstant";
```

First for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'First':
   - 'Complete/ReturnTypehint'
   - 'Complete/VariableTypehint'
   - 'Variables/IsLocalConstant'
```

10.5.28 Inventory

Inventory for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Inventory]
  analyzer[] = "Classes/ExtendsStdclass";
  analyzer[] = "Classes/MagicProperties";
  analyzer[] = "Classes/PromotedProperties";
  analyzer[] = "Constants/Constantnames";
  analyzer[] = "Functions/MultipleIdenticalClosure";
  analyzer[] = "Php/CookiesVariables";
  analyzer[] = "Php/DateFormats";
  analyzer[] = "Php/IncomingVariables";
  analyzer[] = "Php/SessionVariables";
  analyzer[] = "Structures/Fallthrough";
  analyzer[] = "Structures/InitThenIf";
  analyzer[] = "Type/ArrayIndex";
  analyzer[] = "Type/Binary";
  analyzer[] = "Type/CharString";
  analyzer[] = "Type/Email";
  analyzer[] = "Type/GPCIndex";
  analyzer[] = "Type/Heredoc";
  analyzer[] = "Type/Hexadecimal";
  analyzer[] = "Type/HexadecimalString";
  analyzer[] = "Type/HttpHeader";
  analyzer[] = "Type/HttpStatus";
  analyzer[] = "Type/IncomingDateFormat";
  analyzer[] = "Type/Ip";
  analyzer[] = "Type/Md5String";
  analyzer[] = "Type/MimeType";
  analyzer[] = "Type/OctalInString";
  analyzer[] = "Type/OpensslCipher";
  analyzer[] = "Type/Pack";
  analyzer[] = "Type/Pcre";
  analyzer[] = "Type/Ports";
  analyzer[] = "Type/Printf";
  analyzer[] = "Type/Regex";
  analyzer[] = "Type/SpecialIntegers";
  analyzer[] = "Type/Sql";
  analyzer[] = "Type/UdpDomains";
  analyzer[] = "Type/UnicodeBlock";
  analyzer[] = "Type/Url";
```

Inventory for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```yaml
rulesets:
  'Inventory':
   - 'Classes/ExtendsStdclass'
   - 'Classes/MagicProperties'
   - 'Classes/PromotedProperties'
   - 'Constants/Constantnames'
   - 'Functions/MultipleIdenticalClosure'
   - 'Php/CookiesVariables'
   - 'Php/DateFormats'
   - 'Php/IncomingVariables'
   - 'Php/SessionVariables'
   - 'Structures/Fallthrough'
   - 'Structures/InitThenIf'
   - 'Type/ArrayIndex'
   - 'Type/Binary'
   - 'Type/CharString'
   - 'Type/Email'
   - 'Type/GPCIndex'
   - 'Type/Heredoc'
   - 'Type/Hexadecimal'
   - 'Type/HexadecimalString'
   - 'Type/HttpHeader'
   - 'Type/HttpStatus'
   - 'Type/IncomingDateFormat'
   - 'Type/Ip'
   - 'Type/Md5String'
   - 'Type/MimeType'
   - 'Type/OctalInString'
   - 'Type/OpensslCipher'
   - 'Type/Pack'
   - 'Type/Pcre'
   - 'Type/Ports'
   - 'Type/Printf'
   - 'Type/Regex'
   - 'Type/SpecialIntegers'
   - 'Type/Sql'
   - 'Type/UdpDomains'
   - 'Type/UnicodeBlock'
   - 'Type/Url'
```

10.5.29 IsExt

IsExt for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[IsExt]
  analyzer[] = "Classes/AccessProtected";
  analyzer[] = "Classes/CantExtendFinal";
  analyzer[] = "Classes/DefinedConstants";
  analyzer[] = "Classes/IsInterfaceMethod";
  analyzer[] = "Classes/LoweredAccessLevel";
  analyzer[] = "Classes/NonStaticMethodsCalledStatic";
  analyzer[] = "Classes/RedefinedPrivateProperty";
  analyzer[] = "Classes/StaticMethodsCalledFromObject";
  analyzer[] = "Enums/UndefinedEnumcase";
  analyzer[] = "Functions/DontUseVoid";
  analyzer[] = "Functions/OnlyVariablePassedByReference";
  analyzer[] = "Functions/UsesDefaultArguments";
  analyzer[] = "Functions/WrongArgumentNameWithPhpFunction";
  analyzer[] = "Functions/WrongNumberOfArguments";
  analyzer[] = "Namespaces/OverloadExistingNames";
  analyzer[] = "Php/OveriddenFunction";
  analyzer[] = "Php/TooManyNativeCalls";
  analyzer[] = "Php/UpperCaseFunction";
  analyzer[] = "Structures/ArrayMapPassesByValue";
```

IsExt for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'IsExt':
   - 'Classes/AccessProtected'
   - 'Classes/CantExtendFinal'
   - 'Classes/DefinedConstants'
   - 'Classes/IsInterfaceMethod'
   - 'Classes/LoweredAccessLevel'
   - 'Classes/NonStaticMethodsCalledStatic'
   - 'Classes/RedefinedPrivateProperty'
   - 'Classes/StaticMethodsCalledFromObject'
   - 'Enums/UndefinedEnumcase'
   - 'Functions/DontUseVoid'
   - 'Functions/OnlyVariablePassedByReference'
   - 'Functions/UsesDefaultArguments'
   - 'Functions/WrongArgumentNameWithPhpFunction'
   - 'Functions/WrongNumberOfArguments'
   - 'Namespaces/OverloadExistingNames'
   - 'Php/OveriddenFunction'
   - 'Php/TooManyNativeCalls'
   - 'Php/UpperCaseFunction'
   - 'Structures/ArrayMapPassesByValue'
```

10.5.30 IsPHP

IsPHP for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[IsPHP]
  analyzer[] = "Classes/AccessProtected";
  analyzer[] = "Classes/CantExtendFinal";
  analyzer[] = "Classes/DefinedConstants";
  analyzer[] = "Classes/IsInterfaceMethod";
  analyzer[] = "Classes/LoweredAccessLevel";
  analyzer[] = "Classes/NonStaticMethodsCalledStatic";
  analyzer[] = "Classes/RedefinedPrivateProperty";
  analyzer[] = "Classes/StaticMethodsCalledFromObject";
  analyzer[] = "Enums/UndefinedEnumcase";
  analyzer[] = "Functions/DontUseVoid";
  analyzer[] = "Functions/OnlyVariablePassedByReference";
  analyzer[] = "Functions/UsesDefaultArguments";
  analyzer[] = "Functions/WrongArgumentNameWithPhpFunction";
  analyzer[] = "Functions/WrongNumberOfArguments";
  analyzer[] = "Namespaces/OverloadExistingNames";
  analyzer[] = "Php/OveriddenFunction";
  analyzer[] = "Php/TooManyNativeCalls";
  analyzer[] = "Php/UpperCaseFunction";
  analyzer[] = "Structures/ArrayMapPassesByValue";
```

IsPHP for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'IsPHP':
   - 'Classes/AccessProtected'
   - 'Classes/CantExtendFinal'
   - 'Classes/DefinedConstants'
   - 'Classes/IsInterfaceMethod'
   - 'Classes/LoweredAccessLevel'
   - 'Classes/NonStaticMethodsCalledStatic'
   - 'Classes/RedefinedPrivateProperty'
   - 'Classes/StaticMethodsCalledFromObject'
   - 'Enums/UndefinedEnumcase'
   - 'Functions/DontUseVoid'
   - 'Functions/OnlyVariablePassedByReference'
   - 'Functions/UsesDefaultArguments'
   - 'Functions/WrongArgumentNameWithPhpFunction'
   - 'Functions/WrongNumberOfArguments'
   - 'Namespaces/OverloadExistingNames'
   - 'Php/OveriddenFunction'
   - 'Php/TooManyNativeCalls'
   - 'Php/UpperCaseFunction'
   - 'Structures/ArrayMapPassesByValue'
```

10.5.31 IsStub

IsStub for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[IsStub]
  analyzer[] = "Classes/AccessProtected";
  analyzer[] = "Classes/CantExtendFinal";
  analyzer[] = "Classes/DefinedConstants";
  analyzer[] = "Classes/IsInterfaceMethod";
  analyzer[] = "Classes/LoweredAccessLevel";
  analyzer[] = "Classes/NonStaticMethodsCalledStatic";
  analyzer[] = "Classes/RedefinedPrivateProperty";
  analyzer[] = "Classes/StaticMethodsCalledFromObject";
  analyzer[] = "Enums/UndefinedEnumcase";
  analyzer[] = "Functions/DontUseVoid";
  analyzer[] = "Functions/OnlyVariablePassedByReference";
  analyzer[] = "Functions/UsesDefaultArguments";
  analyzer[] = "Functions/WrongArgumentNameWithPhpFunction";
  analyzer[] = "Functions/WrongNumberOfArguments";
  analyzer[] = "Namespaces/OverloadExistingNames";
  analyzer[] = "Php/OveriddenFunction";
  analyzer[] = "Structures/ArrayMapPassesByValue";
```

IsStub for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'IsStub':
   - 'Classes/AccessProtected'
   - 'Classes/CantExtendFinal'
   - 'Classes/DefinedConstants'
   - 'Classes/IsInterfaceMethod'
   - 'Classes/LoweredAccessLevel'
   - 'Classes/NonStaticMethodsCalledStatic'
   - 'Classes/RedefinedPrivateProperty'
   - 'Classes/StaticMethodsCalledFromObject'
   - 'Enums/UndefinedEnumcase'
   - 'Functions/DontUseVoid'
   - 'Functions/OnlyVariablePassedByReference'
   - 'Functions/UsesDefaultArguments'
   - 'Functions/WrongArgumentNameWithPhpFunction'
   - 'Functions/WrongNumberOfArguments'
   - 'Namespaces/OverloadExistingNames'
   - 'Php/OveriddenFunction'
   - 'Structures/ArrayMapPassesByValue'
```

10.5.32 LintButWontExec

LintButWontExec for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[LintButWontExec]
  analyzer[] = "Classes/AbstractOrImplements";
  analyzer[] = "Classes/CantOverwriteFinalConstant";
  analyzer[] = "Classes/CloneWithNonObject";
  analyzer[] = "Classes/CouldBeStringable";
  analyzer[] = "Classes/Finalclass";
  analyzer[] = "Classes/Finalmethod";
  analyzer[] = "Classes/ImplementedMethodsArePublic";
  analyzer[] = "Classes/IncompatibleSignature";
  analyzer[] = "Classes/InheritedPropertyMustMatch";
  analyzer[] = "Classes/MethodSignatureMustBeCompatible";
  analyzer[] = "Classes/MismatchProperties";
  analyzer[] = "Classes/MutualExtension";
  analyzer[] = "Classes/NoMagicWithArray";
  analyzer[] = "Classes/NoPSSOutsideClass";
  analyzer[] = "Classes/NoSelfReferencingConstant";
  analyzer[] = "Classes/RaisedAccessLevel";
  analyzer[] = "Classes/ThisIsForClasses";
  analyzer[] = "Classes/UndefinedConstants";
  analyzer[] = "Classes/UsingThisOutsideAClass";
  analyzer[] = "Classes/WrongTypedPropertyInit";
  analyzer[] = "Enums/NoMagicMethod";
  analyzer[] = "Exceptions/CantThrow";
  analyzer[] = "Functions/DeprecatedCallable";
  analyzer[] = "Functions/DuplicateNamedParameter";
  analyzer[] = "Functions/MismatchTypeAndDefault";
  analyzer[] = "Functions/MustReturn";
  analyzer[] = "Functions/OnlyVariableForReference";
  analyzer[] = "Functions/TypehintMustBeReturned";
  analyzer[] = "Functions/WrongReturnedType";
  analyzer[] = "Interfaces/AvoidSelfInInterface";
  analyzer[] = "Interfaces/CantImplementTraversable";
  analyzer[] = "Interfaces/CantOverloadConstants";
  analyzer[] = "Interfaces/IsNotImplemented";
  analyzer[] = "Interfaces/RepeatedInterface";
  analyzer[] = "Interfaces/UndefinedInterfaces";
  analyzer[] = "Php/CloneConstant";
  analyzer[] = "Php/FalseToArray";
  analyzer[] = "Php/JsonSerializeReturnType";
  analyzer[] = "Php/OnlyVariablePassedByReference";
  analyzer[] = "Structures/ImplicitConversionToInt";
  analyzer[] = "Structures/InvalidCast";
  analyzer[] = "Traits/MethodCollisionTraits";
  analyzer[] = "Traits/TraitNotFound";
  analyzer[] = "Traits/UndefinedInsteadof";
  analyzer[] = "Traits/UndefinedTrait";
  analyzer[] = "Traits/UselessAlias";
```

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```
analyzer[] = "Typehints/WrongTypeWithDefault";
```

LintButWontExec for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'LintButWontExec':
   - 'Classes/AbstractOrImplements'
   - 'Classes/CantOverwriteFinalConstant'
   - 'Classes/CloneWithNonObject'
   - 'Classes/CouldBeStringable'
   - 'Classes/Finalclass'
   - 'Classes/Finalmethod'
   - 'Classes/ImplementedMethodsArePublic'
   - 'Classes/IncompatibleSignature'
   - 'Classes/InheritedPropertyMustMatch'
   - 'Classes/MethodSignatureMustBeCompatible'
   - 'Classes/MismatchProperties'
   - 'Classes/MutualExtension'
   - 'Classes/NoMagicWithArray'
   - 'Classes/NoPSSOutsideClass'
   - 'Classes/NoSelfReferencingConstant'
   - 'Classes/RaisedAccessLevel'
   - 'Classes/ThisIsForClasses'
   - 'Classes/UndefinedConstants'
   - 'Classes/UsingThisOutsideAClass'
   - 'Classes/WrongTypedPropertyInit'
   - 'Enums/NoMagicMethod'
   - 'Exceptions/CantThrow'
   - 'Functions/DeprecatedCallable'
   - 'Functions/DuplicateNamedParameter'
   - 'Functions/MismatchTypeAndDefault'
   - 'Functions/MustReturn'
   - 'Functions/OnlyVariableForReference'
   - 'Functions/TypehintMustBeReturned'
   - 'Functions/WrongReturnedType'
   - 'Interfaces/AvoidSelfInInterface'
   - 'Interfaces/CantImplementTraversable'
   - 'Interfaces/CantOverloadConstants'
   - 'Interfaces/IsNotImplemented'
   - 'Interfaces/RepeatedInterface'
   - 'Interfaces/UndefinedInterfaces'
   - 'Php/CloneConstant'
   - 'Php/FalseToArray'
   - 'Php/JsonSerializeReturnType'
   - 'Php/OnlyVariablePassedByReference'
   - 'Structures/ImplicitConversionToInt'
   - 'Structures/InvalidCast'
   - 'Traits/MethodCollisionTraits'
```

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```
  - 'Traits/TraitNotFound'
  - 'Traits/UndefinedInsteadof'
  - 'Traits/UndefinedTrait'
  - 'Traits/UselessAlias'
  - 'Typehints/WrongTypeWithDefault'
```

10.5.33 NoDoc

NoDoc for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[NoDoc]
  analyzer[] = "Complete/CreateCompactVariables";
  analyzer[] = "Complete/CreateDefaultValues";
  analyzer[] = "Complete/CreateForeachDefault";
  analyzer[] = "Complete/CreateMagicMethod";
  analyzer[] = "Complete/CreateMagicProperty";
  analyzer[] = "Complete/ExtendedTypehints";
  analyzer[] = "Complete/FollowClosureDefinition";
  analyzer[] = "Complete/IsExtStructure";
  analyzer[] = "Complete/IsPhpStructure";
  analyzer[] = "Complete/IsStubStructure";
  analyzer[] = "Complete/MakeAllStatics";
  analyzer[] = "Complete/MakeClassConstantDefinition";
  analyzer[] = "Complete/MakeClassMethodDefinition";
  analyzer[] = "Complete/MakeFunctioncallWithReference";
  analyzer[] = "Complete/OverwrittenConstants";
  analyzer[] = "Complete/OverwrittenMethods";
  analyzer[] = "Complete/OverwrittenProperties";
  analyzer[] = "Complete/PhpExtStubPropertyMethod";
  analyzer[] = "Complete/PhpNativeReference";
  analyzer[] = "Complete/PropagateConstants";
  analyzer[] = "Complete/ReturnTypehint";
  analyzer[] = "Complete/SetArrayClassDefinition";
  analyzer[] = "Complete/SetClassAliasDefinition";
  analyzer[] = "Complete/SetClassMethodRemoteDefinition";
  analyzer[] = "Complete/SetClassPropertyDefinitionWithTypehint";
  analyzer[] = "Complete/SetClassRemoteDefinitionWithGlobal";
  analyzer[] = "Complete/SetClassRemoteDefinitionWithInjection";
  analyzer[] = "Complete/SetClassRemoteDefinitionWithLocalNew";
  analyzer[] = "Complete/SetClassRemoteDefinitionWithParenthesis";
  analyzer[] = "Complete/SetClassRemoteDefinitionWithReturnTypehint";
  analyzer[] = "Complete/SetClassRemoteDefinitionWithTypehint";
  analyzer[] = "Complete/SetCloneLink";
  analyzer[] = "Complete/SetParentDefinition";
  analyzer[] = "Complete/SolveTraitMethods";
  analyzer[] = "Complete/VariableTypehint";
  analyzer[] = "Variables/IsLocalConstant";
```

NoDoc for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```yaml
rulesets:
  'NoDoc':
   - 'Complete/CreateCompactVariables'
   - 'Complete/CreateDefaultValues'
   - 'Complete/CreateForeachDefault'
   - 'Complete/CreateMagicMethod'
   - 'Complete/CreateMagicProperty'
   - 'Complete/ExtendedTypehints'
   - 'Complete/FollowClosureDefinition'
   - 'Complete/IsExtStructure'
   - 'Complete/IsPhpStructure'
   - 'Complete/IsStubStructure'
   - 'Complete/MakeAllStatics'
   - 'Complete/MakeClassConstantDefinition'
   - 'Complete/MakeClassMethodDefinition'
   - 'Complete/MakeFunctioncallWithReference'
   - 'Complete/OverwrittenConstants'
   - 'Complete/OverwrittenMethods'
   - 'Complete/OverwrittenProperties'
   - 'Complete/PhpExtStubPropertyMethod'
   - 'Complete/PhpNativeReference'
   - 'Complete/PropagateConstants'
   - 'Complete/ReturnTypehint'
   - 'Complete/SetArrayClassDefinition'
   - 'Complete/SetClassAliasDefinition'
   - 'Complete/SetClassMethodRemoteDefinition'
   - 'Complete/SetClassPropertyDefinitionWithTypehint'
   - 'Complete/SetClassRemoteDefinitionWithGlobal'
   - 'Complete/SetClassRemoteDefinitionWithInjection'
   - 'Complete/SetClassRemoteDefinitionWithLocalNew'
   - 'Complete/SetClassRemoteDefinitionWithParenthesis'
   - 'Complete/SetClassRemoteDefinitionWithReturnTypehint'
   - 'Complete/SetClassRemoteDefinitionWithTypehint'
   - 'Complete/SetCloneLink'
   - 'Complete/SetParentDefinition'
   - 'Complete/SolveTraitMethods'
   - 'Complete/VariableTypehint'
   - 'Variables/IsLocalConstant'
```

10.5.34 One Liners

One Liners for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[One Liners]
  analyzer[] = "Functions/UseArrowFunctions";
  analyzer[] = "Php/Coalesce";
  analyzer[] = "Php/ShortTernary";
  analyzer[] = "Php/ThrowWasAnExpression";
  analyzer[] = "Php/UseNullSafeOperator";
```

One Liners for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'One Liners':
   - 'Functions/UseArrowFunctions'
   - 'Php/Coalesce'
   - 'Php/ShortTernary'
   - 'Php/ThrowWasAnExpression'
   - 'Php/UseNullSafeOperator'
```

10.5.35 PHP recommendations

PHP recommendations for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[PHP recommendations]
  analyzer[] = "Attributes/MissingAttributeAttribute";
  analyzer[] = "Classes/CouldBeStringable";
  analyzer[] = "Classes/ThrowInDestruct";
  analyzer[] = "Constants/BadConstantnames";
  analyzer[] = "Interfaces/NoConstructorInInterface";
  analyzer[] = "Namespaces/UseWithFullyQualifiedNS";
  analyzer[] = "Performances/AvoidArrayPush";
  analyzer[] = "Php/Crc32MightBeNegative";
  analyzer[] = "Php/ImplodeOneArg";
  analyzer[] = "Php/NoCastToInt";
  analyzer[] = "Php/NotScalarType";
  analyzer[] = "Php/ReservedMethods";
  analyzer[] = "Php/ReturnWithParenthesis";
  analyzer[] = "Structures/DanglingArrayReferences";
  analyzer[] = "Structures/EvalUsage";
  analyzer[] = "Structures/NoIssetWithEmpty";
  analyzer[] = "Structures/ShortTags";
  analyzer[] = "Structures/StrposCompare";
```

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```
  analyzer[] = "Structures/UnsupportedOperandTypes";
  analyzer[] = "Structures/UseConstant";
  analyzer[] = "Structures/UselessCasting";
  analyzer[] = "Type/NoRealComparison";
```

PHP recommendations for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'PHP recommendations':
   - 'Attributes/MissingAttributeAttribute'
   - 'Classes/CouldBeStringable'
   - 'Classes/ThrowInDestruct'
   - 'Constants/BadConstantnames'
   - 'Interfaces/NoConstructorInInterface'
   - 'Namespaces/UseWithFullyQualifiedNS'
   - 'Performances/AvoidArrayPush'
   - 'Php/Crc32MightBeNegative'
   - 'Php/ImplodeOneArg'
   - 'Php/NoCastToInt'
   - 'Php/NotScalarType'
   - 'Php/ReservedMethods'
   - 'Php/ReturnWithParenthesis'
   - 'Structures/DanglingArrayReferences'
   - 'Structures/EvalUsage'
   - 'Structures/NoIssetWithEmpty'
   - 'Structures/ShortTags'
   - 'Structures/StrposCompare'
   - 'Structures/UnsupportedOperandTypes'
   - 'Structures/UseConstant'
   - 'Structures/UselessCasting'
   - 'Type/NoRealComparison'
```

10.5.36 Performances

Performances for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Performances]
  analyzer[] = "Arrays/GettingLastElement";
  analyzer[] = "Arrays/SliceFirst";
  analyzer[] = "Classes/MakeMagicConcrete";
  analyzer[] = "Classes/UseClassOperator";
  analyzer[] = "Functions/Closure2String";
  analyzer[] = "Performances/ArrayKeyExistsSpeedup";
  analyzer[] = "Performances/ArrayMergeInLoops";
  analyzer[] = "Performances/Autoappend";
```

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```
analyzer[] = "Performances/AvoidArrayPush";
analyzer[] = "Performances/CacheVariableOutsideLoop";
analyzer[] = "Performances/ClassOperator";
analyzer[] = "Performances/CountToAppend";
analyzer[] = "Performances/CsvInLoops";
analyzer[] = "Performances/DoInBase";
analyzer[] = "Performances/DoubleArrayFlip";
analyzer[] = "Performances/EllipsisMerge";
analyzer[] = "Performances/FetchOneRowFormat";
analyzer[] = "Performances/IssetWholeArray";
analyzer[] = "Performances/JoinFile";
analyzer[] = "Performances/MakeOneCall";
analyzer[] = "Performances/MbStringInLoop";
analyzer[] = "Performances/NoConcatInLoop";
analyzer[] = "Performances/NoGlob";
analyzer[] = "Performances/NotCountNull";
analyzer[] = "Performances/OptimizeExplode";
analyzer[] = "Performances/PHP7EncapsedStrings";
analyzer[] = "Performances/Php74ArrayKeyExists";
analyzer[] = "Performances/PreCalculateUse";
analyzer[] = "Performances/PrePostIncrement";
analyzer[] = "Performances/RegexOnArrays";
analyzer[] = "Performances/RegexOnCollector";
analyzer[] = "Performances/ShouldCacheLocal";
analyzer[] = "Performances/SimpleSwitch";
analyzer[] = "Performances/SimplifyForeach";
analyzer[] = "Performances/SkipEmptyArray";
analyzer[] = "Performances/SlowFunctions";
analyzer[] = "Performances/StaticCallDontNeedObjects";
analyzer[] = "Performances/SubstrFirst";
analyzer[] = "Performances/SubstrInLoops";
analyzer[] = "Performances/TooManyExtractions";
analyzer[] = "Performances/UseBlindVar";
analyzer[] = "Performances/timeVsstrtotime";
analyzer[] = "Php/ShouldUseArrayColumn";
analyzer[] = "Php/ShouldUseFunction";
analyzer[] = "Php/UsePathinfoArgs";
analyzer[] = "Structures/CouldUseShortAssignation";
analyzer[] = "Structures/CouldUseYieldFrom";
analyzer[] = "Structures/EchoWithConcat";
analyzer[] = "Structures/EvalUsage";
analyzer[] = "Structures/ForWithFunctioncall";
analyzer[] = "Structures/GlobalOutsideLoop";
analyzer[] = "Structures/NestedLoops";
analyzer[] = "Structures/NoArrayUnique";
analyzer[] = "Structures/NoAssignationInFunction";
analyzer[] = "Structures/NoSubstrOne";
analyzer[] = "Structures/Noscream";
analyzer[] = "Structures/RecalledCondition";
analyzer[] = "Structures/SimplePreg";
analyzer[] = "Structures/Unpreprocessed";
analyzer[] = "Structures/WhileListEach";
```

Performances for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Performances':
   - 'Arrays/GettingLastElement'
   - 'Arrays/SliceFirst'
   - 'Classes/MakeMagicConcrete'
   - 'Classes/UseClassOperator'
   - 'Functions/Closure2String'
   - 'Performances/ArrayKeyExistsSpeedup'
   - 'Performances/ArrayMergeInLoops'
   - 'Performances/Autoappend'
   - 'Performances/AvoidArrayPush'
   - 'Performances/CacheVariableOutsideLoop'
   - 'Performances/ClassOperator'
   - 'Performances/CountToAppend'
   - 'Performances/CsvInLoops'
   - 'Performances/DoInBase'
   - 'Performances/DoubleArrayFlip'
   - 'Performances/EllipsisMerge'
   - 'Performances/FetchOneRowFormat'
   - 'Performances/IssetWholeArray'
   - 'Performances/JoinFile'
   - 'Performances/MakeOneCall'
   - 'Performances/MbStringInLoop'
   - 'Performances/NoConcatInLoop'
   - 'Performances/NoGlob'
   - 'Performances/NotCountNull'
   - 'Performances/OptimizeExplode'
   - 'Performances/PHP7EncapsedStrings'
   - 'Performances/Php74ArrayKeyExists'
   - 'Performances/PreCalculateUse'
   - 'Performances/PrePostIncrement'
   - 'Performances/RegexOnArrays'
   - 'Performances/RegexOnCollector'
   - 'Performances/ShouldCacheLocal'
   - 'Performances/SimpleSwitch'
   - 'Performances/SimplifyForeach'
   - 'Performances/SkipEmptyArray'
   - 'Performances/SlowFunctions'
   - 'Performances/StaticCallDontNeedObjects'
   - 'Performances/SubstrFirst'
   - 'Performances/SubstrInLoops'
   - 'Performances/TooManyExtractions'
   - 'Performances/UseBlindVar'
   - 'Performances/timeVsstrtotime'
   - 'Php/ShouldUseArrayColumn'
   - 'Php/ShouldUseFunction'
   - 'Php/UsePathinfoArgs'
   - 'Structures/CouldUseShortAssignation'
```

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```
  - 'Structures/CouldUseYieldFrom'
  - 'Structures/EchoWithConcat'
  - 'Structures/EvalUsage'
  - 'Structures/ForWithFunctioncall'
  - 'Structures/GlobalOutsideLoop'
  - 'Structures/NestedLoops'
  - 'Structures/NoArrayUnique'
  - 'Structures/NoAssignationInFunction'
  - 'Structures/NoSubstrOne'
  - 'Structures/Noscream'
  - 'Structures/RecalledCondition'
  - 'Structures/SimplePreg'
  - 'Structures/Unpreprocessed'
  - 'Structures/WhileListEach'
```

10.5.37 Preferences

Preferences for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Preferences]
  analyzer[] = "Arrays/ArrayBracketConsistence";
  analyzer[] = "Arrays/EmptyFinal";
  analyzer[] = "Classes/NewOnFunctioncallOrIdentifier";
  analyzer[] = "Classes/PPPDeclarationStyle";
  analyzer[] = "Constants/ConstDefinePreference";
  analyzer[] = "Constants/DefineInsensitivePreference";
  analyzer[] = "Constants/InconsistantCase";
  analyzer[] = "Exceptions/CatchE";
  analyzer[] = "Functions/NullTypeFavorite";
  analyzer[] = "Namespaces/ConstantWithUseFavorite";
  analyzer[] = "Php/CloseTagsConsistency";
  analyzer[] = "Php/DeclareEncoding";
  analyzer[] = "Php/DeclareStrict";
  analyzer[] = "Php/DeclareStrictType";
  analyzer[] = "Php/DeclareTicks";
  analyzer[] = "Php/GlobalsVsGlobal";
  analyzer[] = "Php/LetterCharsLogicalFavorite";
  analyzer[] = "Php/ShellFavorite";
  analyzer[] = "Php/UnsetOrCast";
  analyzer[] = "Structures/ArrayCountTripleEqual";
  analyzer[] = "Structures/CastFavorite";
  analyzer[] = "Structures/ComparisonFavorite";
  analyzer[] = "Structures/ConcatenationInterpolationFavorite";
  analyzer[] = "Structures/ConstantComparisonConsistance";
  analyzer[] = "Structures/DateTimePreference";
  analyzer[] = "Structures/DieExitConsistance";
  analyzer[] = "Structures/DifferencePreference";
  analyzer[] = "Structures/EchoPrintConsistance";
  analyzer[] = "Structures/GtOrLtFavorite";
```

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```
  analyzer[] = "Structures/HeredocDelimiterFavorite";
  analyzer[] = "Structures/IfThenReturnFavorite";
  analyzer[] = "Structures/IsAVersusInstanceof";
  analyzer[] = "Structures/NewLineStyle";
  analyzer[] = "Structures/NotOrNot";
  analyzer[] = "Structures/OneExpressionBracketsConsistency";
  analyzer[] = "Structures/RegexDelimiter";
  analyzer[] = "Structures/ShortOrCompleteComparison";
  analyzer[] = "Structures/StrictInArrayFavorite";
  analyzer[] = "Structures/StringInterpolationFavorite";
  analyzer[] = "Structures/strOrMbFavorite";
```

Preferences for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Preferences':
   - 'Arrays/ArrayBracketConsistence'
   - 'Arrays/EmptyFinal'
   - 'Classes/NewOnFunctioncallOrIdentifier'
   - 'Classes/PPPDeclarationStyle'
   - 'Constants/ConstDefinePreference'
   - 'Constants/DefineInsensitivePreference'
   - 'Constants/InconsistantCase'
   - 'Exceptions/CatchE'
   - 'Functions/NullTypeFavorite'
   - 'Namespaces/ConstantWithUseFavorite'
   - 'Php/CloseTagsConsistency'
   - 'Php/DeclareEncoding'
   - 'Php/DeclareStrict'
   - 'Php/DeclareStrictType'
   - 'Php/DeclareTicks'
   - 'Php/GlobalsVsGlobal'
   - 'Php/LetterCharsLogicalFavorite'
   - 'Php/ShellFavorite'
   - 'Php/UnsetOrCast'
   - 'Structures/ArrayCountTripleEqual'
   - 'Structures/CastFavorite'
   - 'Structures/ComparisonFavorite'
   - 'Structures/ConcatenationInterpolationFavorite'
   - 'Structures/ConstantComparisonConsistance'
   - 'Structures/DateTimePreference'
   - 'Structures/DieExitConsistance'
   - 'Structures/DifferencePreference'
   - 'Structures/EchoPrintConsistance'
   - 'Structures/GtOrLtFavorite'
   - 'Structures/HeredocDelimiterFavorite'
   - 'Structures/IfThenReturnFavorite'
   - 'Structures/IsAVersusInstanceof'
```

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```
  - 'Structures/NewLineStyle'
  - 'Structures/NotOrNot'
  - 'Structures/OneExpressionBracketsConsistency'
  - 'Structures/RegexDelimiter'
  - 'Structures/ShortOrCompleteComparison'
  - 'Structures/StrictInArrayFavorite'
  - 'Structures/StringInterpolationFavorite'
  - 'Structures/strOrMbFavorite'
```

10.5.38 Rector

Rector for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Rector]
  analyzer[] = "Arrays/MultipleIdenticalKeys";
  analyzer[] = "Functions/Closure2String";
  analyzer[] = "Functions/NeverUsedParameter";
  analyzer[] = "Php/IsAWithString";
  analyzer[] = "Structures/AddZero";
  analyzer[] = "Structures/CouldUseShortAssignation";
  analyzer[] = "Structures/CouldUseStrContains";
  analyzer[] = "Structures/ElseIfElseif";
  analyzer[] = "Structures/ForWithFunctioncall";
  analyzer[] = "Structures/ImpliedIf";
  analyzer[] = "Structures/MultipleDefinedCase";
  analyzer[] = "Structures/MultiplyByOne";
  analyzer[] = "Structures/NoChoice";
  analyzer[] = "Structures/ShouldPreprocess";
  analyzer[] = "Type/ShouldTypecast";
```

Rector for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Rector':
   - 'Arrays/MultipleIdenticalKeys'
   - 'Functions/Closure2String'
   - 'Functions/NeverUsedParameter'
   - 'Php/IsAWithString'
   - 'Structures/AddZero'
   - 'Structures/CouldUseShortAssignation'
   - 'Structures/CouldUseStrContains'
   - 'Structures/ElseIfElseif'
   - 'Structures/ForWithFunctioncall'
   - 'Structures/ImpliedIf'
   - 'Structures/MultipleDefinedCase'
```

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```
  - 'Structures/MultiplyByOne'
  - 'Structures/NoChoice'
  - 'Structures/ShouldPreprocess'
  - 'Type/ShouldTypecast'
```

10.5.39 Security

Security for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Security]
  analyzer[] = "Functions/HardcodedPasswords";
  analyzer[] = "Php/BetterRand";
  analyzer[] = "Security/AnchorRegex";
  analyzer[] = "Security/AvoidThoseCrypto";
  analyzer[] = "Security/CompareHash";
  analyzer[] = "Security/ConfigureExtract";
  analyzer[] = "Security/CryptoKeyLength";
  analyzer[] = "Security/CurlOptions";
  analyzer[] = "Security/DirectInjection";
  analyzer[] = "Security/DontEchoError";
  analyzer[] = "Security/DynamicDl";
  analyzer[] = "Security/EncodedLetters";
  analyzer[] = "Security/FilterInputSource";
  analyzer[] = "Security/FilterNotRaw";
  analyzer[] = "Security/IncompatibleTypesWithIncoming";
  analyzer[] = "Security/IndirectInjection";
  analyzer[] = "Security/IntegerConversion";
  analyzer[] = "Security/KeepFilesRestricted";
  analyzer[] = "Security/MinusOneOnError";
  analyzer[] = "Security/MkdirDefault";
  analyzer[] = "Security/MoveUploadedFile";
  analyzer[] = "Security/NoEntIgnore";
  analyzer[] = "Security/NoNetForXmlLoad";
  analyzer[] = "Security/NoSleep";
  analyzer[] = "Security/NoWeakSSLCrypto";
  analyzer[] = "Security/RegisterGlobals";
  analyzer[] = "Security/SafeHttpHeaders";
  analyzer[] = "Security/SessionCachedData";
  analyzer[] = "Security/SessionLazyWrite";
  analyzer[] = "Security/SetCookieArgs";
  analyzer[] = "Security/ShouldUsePreparedStatement";
  analyzer[] = "Security/ShouldUseSessionRegenerateId";
  analyzer[] = "Security/Sqlite3RequiresSingleQuotes";
  analyzer[] = "Security/UnserializeSecondArg";
  analyzer[] = "Security/UploadFilenameInjection";
  analyzer[] = "Security/parseUrlWithoutParameters";
  analyzer[] = "Structures/EvalUsage";
  analyzer[] = "Structures/EvalWithoutTry";
  analyzer[] = "Structures/Fallthrough";
```

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```
  analyzer[] = "Structures/NoHardcodedHash";
  analyzer[] = "Structures/NoHardcodedIp";
  analyzer[] = "Structures/NoHardcodedPort";
  analyzer[] = "Structures/NoReturnInFinally";
  analyzer[] = "Structures/PhpinfoUsage";
  analyzer[] = "Structures/RandomWithoutTry";
  analyzer[] = "Structures/VardumpUsage";
  analyzer[] = "Structures/pregOptionE";
```

Security for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Security':
   - 'Functions/HardcodedPasswords'
   - 'Php/BetterRand'
   - 'Security/AnchorRegex'
   - 'Security/AvoidThoseCrypto'
   - 'Security/CompareHash'
   - 'Security/ConfigureExtract'
   - 'Security/CryptoKeyLength'
   - 'Security/CurlOptions'
   - 'Security/DirectInjection'
   - 'Security/DontEchoError'
   - 'Security/DynamicDl'
   - 'Security/EncodedLetters'
   - 'Security/FilterInputSource'
   - 'Security/FilterNotRaw'
   - 'Security/IncompatibleTypesWithIncoming'
   - 'Security/IndirectInjection'
   - 'Security/IntegerConversion'
   - 'Security/KeepFilesRestricted'
   - 'Security/MinusOneOnError'
   - 'Security/MkdirDefault'
   - 'Security/MoveUploadedFile'
   - 'Security/NoEntIgnore'
   - 'Security/NoNetForXmlLoad'
   - 'Security/NoSleep'
   - 'Security/NoWeakSSLCrypto'
   - 'Security/RegisterGlobals'
   - 'Security/SafeHttpHeaders'
   - 'Security/SessionCachedData'
   - 'Security/SessionLazyWrite'
   - 'Security/SetCookieArgs'
   - 'Security/ShouldUsePreparedStatement'
   - 'Security/ShouldUseSessionRegenerateId'
   - 'Security/Sqlite3RequiresSingleQuotes'
   - 'Security/UnserializeSecondArg'
   - 'Security/UploadFilenameInjection'
```

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```
  - 'Security/parseUrlWithoutParameters'
  - 'Structures/EvalUsage'
  - 'Structures/EvalWithoutTry'
  - 'Structures/Fallthrough'
  - 'Structures/NoHardcodedHash'
  - 'Structures/NoHardcodedIp'
  - 'Structures/NoHardcodedPort'
  - 'Structures/NoReturnInFinally'
  - 'Structures/PhpinfoUsage'
  - 'Structures/RandomWithoutTry'
  - 'Structures/VardumpUsage'
  - 'Structures/pregOptionE'
```

10.5.40 Semantics

Semantics for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Semantics]
  analyzer[] = "Arrays/AmbiguousKeys";
  analyzer[] = "Arrays/WeirdIndex";
  analyzer[] = "Classes/AmbiguousStatic";
  analyzer[] = "Classes/AmbiguousVisibilities";
  analyzer[] = "Classes/MethodPropertyConfusion";
  analyzer[] = "Classes/PropertyMethodSameName";
  analyzer[] = "Classes/StrangeName";
  analyzer[] = "Constants/ConstantStrangeNames";
  analyzer[] = "Constants/CouldBeConstant";
  analyzer[] = "Constants/StrangeName";
  analyzer[] = "Functions/FnArgumentVariableConfusion";
  analyzer[] = "Functions/FunctionCalledWithOtherCase";
  analyzer[] = "Functions/MismatchParameterAndType";
  analyzer[] = "Functions/OneLetterFunctions";
  analyzer[] = "Functions/ParameterHiding";
  analyzer[] = "Functions/PrefixToType";
  analyzer[] = "Functions/SemanticTyping";
  analyzer[] = "Functions/WrongTypehintedName";
  analyzer[] = "Namespaces/AliasConfusion";
  analyzer[] = "Namespaces/OverloadExistingNames";
  analyzer[] = "Php/ClassFunctionConfusion";
  analyzer[] = "Php/ReservedNames";
  analyzer[] = "Structures/ArrayAccessOnLiteralArray";
  analyzer[] = "Structures/DontUseTheTypeAsVariable";
  analyzer[] = "Structures/PropertyVariableConfusion";
  analyzer[] = "Structures/SGVariablesConfusion";
  analyzer[] = "Structures/TooManyChainedCalls";
  analyzer[] = "Structures/WrongLocale";
  analyzer[] = "Type/DuplicateLiteral";
  analyzer[] = "Type/SimilarIntegers";
  analyzer[] = "Variables/AmbiguousTypes";
```

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```
  analyzer[] = "Variables/NoInitialS";
  analyzer[] = "Variables/NoVariableNeeded";
  analyzer[] = "Variables/StrangeName";
  analyzer[] = "Variables/VariableOneLetter";
```

Semantics for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Semantics':
   - 'Arrays/AmbiguousKeys'
   - 'Arrays/WeirdIndex'
   - 'Classes/AmbiguousStatic'
   - 'Classes/AmbiguousVisibilities'
   - 'Classes/MethodPropertyConfusion'
   - 'Classes/PropertyMethodSameName'
   - 'Classes/StrangeName'
   - 'Constants/ConstantStrangeNames'
   - 'Constants/CouldBeConstant'
   - 'Constants/StrangeName'
   - 'Functions/FnArgumentVariableConfusion'
   - 'Functions/FunctionCalledWithOtherCase'
   - 'Functions/MismatchParameterAndType'
   - 'Functions/OneLetterFunctions'
   - 'Functions/ParameterHiding'
   - 'Functions/PrefixToType'
   - 'Functions/SemanticTyping'
   - 'Functions/WrongTypehintedName'
   - 'Namespaces/AliasConfusion'
   - 'Namespaces/OverloadExistingNames'
   - 'Php/ClassFunctionConfusion'
   - 'Php/ReservedNames'
   - 'Structures/ArrayAccessOnLiteralArray'
   - 'Structures/DontUseTheTypeAsVariable'
   - 'Structures/PropertyVariableConfusion'
   - 'Structures/SGVariablesConfusion'
   - 'Structures/TooManyChainedCalls'
   - 'Structures/WrongLocale'
   - 'Type/DuplicateLiteral'
   - 'Type/SimilarIntegers'
   - 'Variables/AmbiguousTypes'
   - 'Variables/NoInitialS'
   - 'Variables/NoVariableNeeded'
   - 'Variables/StrangeName'
   - 'Variables/VariableOneLetter'
```

10.5.41 Suggestions

Suggestions for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Suggestions]
  analyzer[] = "Arrays/RandomlySortedLiterals";
  analyzer[] = "Arrays/ShouldPreprocess";
  analyzer[] = "Arrays/SliceFirst";
  analyzer[] = "Classes/CancelCommonMethod";
  analyzer[] = "Classes/CheckAfterNullSafeOperator";
  analyzer[] = "Classes/CouldBeAbstractMethod";
  analyzer[] = "Classes/CouldBeIterable";
  analyzer[] = "Classes/CouldBeReadonly";
  analyzer[] = "Classes/CouldBeReadonlyProperty";
  analyzer[] = "Classes/CouldSetPropertyDefault";
  analyzer[] = "Classes/CouldUseClassOperator";
  analyzer[] = "Classes/LoweredAccessLevel";
  analyzer[] = "Classes/MagicMethodReturntypes";
  analyzer[] = "Classes/ParentFirst";
  analyzer[] = "Classes/ShouldDeepClone";
  analyzer[] = "Classes/ShouldHaveDestructor";
  analyzer[] = "Classes/ShouldUseSelf";
  analyzer[] = "Classes/TooManyChildren";
  analyzer[] = "Classes/UnitializedProperties";
  analyzer[] = "Classes/UselessTypehint";
  analyzer[] = "Constants/CouldUseConstant";
  analyzer[] = "Enums/CouldBeEnum";
  analyzer[] = "Exceptions/CouldDropVariable";
  analyzer[] = "Exceptions/CouldUseTry";
  analyzer[] = "Exceptions/LargeTryBlock";
  analyzer[] = "Exceptions/LongPreparation";
  analyzer[] = "Exceptions/OverwriteException";
  analyzer[] = "Exceptions/ThrowRawExceptions";
  analyzer[] = "Exceptions/UnusedExceptionVariable";
  analyzer[] = "Functions/AddDefaultValue";
  analyzer[] = "Functions/Closure2String";
  analyzer[] = "Functions/CouldBeStaticClosure";
  analyzer[] = "Functions/CouldCentralize";
  analyzer[] = "Functions/NeverUsedParameter";
  analyzer[] = "Functions/NoReturnUsed";
  analyzer[] = "Functions/TooManyParameters";
  analyzer[] = "Functions/TooMuchIndented";
  analyzer[] = "Functions/UselessDefault";
  analyzer[] = "Interfaces/AlreadyParentsInterface";
  analyzer[] = "Interfaces/UnusedInterfaces";
  analyzer[] = "Namespaces/AliasConfusion";
  analyzer[] = "Namespaces/CouldUseAlias";
  analyzer[] = "Namespaces/CouldUseMagicConstant";
  analyzer[] = "Patterns/AbstractAway";
  analyzer[] = "Performances/ArrayKeyExistsSpeedup";
  analyzer[] = "Performances/IssetWholeArray";
```

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```
analyzer[] = "Performances/SubstrFirst";
analyzer[] = "Php/AvoidReal";
analyzer[] = "Php/CompactInexistant";
analyzer[] = "Php/CouldUseIsCountable";
analyzer[] = "Php/CouldUsePromotedProperties";
analyzer[] = "Php/DetectCurrentClass";
analyzer[] = "Php/ImplodeOneArg";
analyzer[] = "Php/IssetMultipleArgs";
analyzer[] = "Php/LogicalInLetters";
analyzer[] = "Php/NewExponent";
analyzer[] = "Php/PregMatchAllFlag";
analyzer[] = "Php/ReturnWithParenthesis";
analyzer[] = "Php/ShouldPreprocess";
analyzer[] = "Php/ShouldUseArrayColumn";
analyzer[] = "Php/ShouldUseArrayFilter";
analyzer[] = "Php/ShouldUseCoalesce";
analyzer[] = "Php/UseDateTimeImmutable";
analyzer[] = "Php/UseGetDebugType";
analyzer[] = "Php/UseSessionStartOptions";
analyzer[] = "Php/UseStrContains";
analyzer[] = "Structures/ArraySearchMultipleKeys";
analyzer[] = "Structures/BasenameSuffix";
analyzer[] = "Structures/BlindVariableUsedBeyondLoop";
analyzer[] = "Structures/BooleanStrictComparison";
analyzer[] = "Structures/CouldBeArrayCombine";
analyzer[] = "Structures/CouldBeSpaceship";
analyzer[] = "Structures/CouldBeTernary";
analyzer[] = "Structures/CouldCastToArray";
analyzer[] = "Structures/CouldUseArrayFillKeys";
analyzer[] = "Structures/CouldUseArraySum";
analyzer[] = "Structures/CouldUseArrayUnique";
analyzer[] = "Structures/CouldUseCompact";
analyzer[] = "Structures/CouldUseDir";
analyzer[] = "Structures/CouldUseMatch";
analyzer[] = "Structures/CouldUseNullableOperator";
analyzer[] = "Structures/CouldUseStrContains";
analyzer[] = "Structures/DeclareStaticOnce";
analyzer[] = "Structures/DirectlyUseFile";
analyzer[] = "Structures/DontCompareTypedBoolean";
analyzer[] = "Structures/DontLoopOnYield";
analyzer[] = "Structures/DropElseAfterReturn";
analyzer[] = "Structures/EchoWithConcat";
analyzer[] = "Structures/EmptyWithExpression";
analyzer[] = "Structures/FunctionPreSubscripting";
analyzer[] = "Structures/JsonEncodeExceptions";
analyzer[] = "Structures/JsonWithOption";
analyzer[] = "Structures/ListOmissions";
analyzer[] = "Structures/LongBlock";
analyzer[] = "Structures/MismatchedTernary";
analyzer[] = "Structures/MultilineExpressions";
analyzer[] = "Structures/MultipleSimilarCalls";
analyzer[] = "Structures/MultipleUnset";
```

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```
  analyzer[] = "Structures/NamedRegex";
  analyzer[] = "Structures/NoNeedGetClass";
  analyzer[] = "Structures/NoParenthesisForLanguageConstruct";
  analyzer[] = "Structures/NoSubstrOne";
  analyzer[] = "Structures/OneIfIsSufficient";
  analyzer[] = "Structures/PHP7Dirname";
  analyzer[] = "Structures/PossibleIncrement";
  analyzer[] = "Structures/RepeatedPrint";
  analyzer[] = "Structures/ReuseVariable";
  analyzer[] = "Structures/SGVariablesConfusion";
  analyzer[] = "Structures/SetAside";
  analyzer[] = "Structures/ShouldUseForeach";
  analyzer[] = "Structures/ShouldUseMath";
  analyzer[] = "Structures/ShouldUseOperator";
  analyzer[] = "Structures/SubstrLastArg";
  analyzer[] = "Structures/SubstrToTrim";
  analyzer[] = "Structures/TooManyElseif";
  analyzer[] = "Structures/UnreachableCode";
  analyzer[] = "Structures/UseArrayFunctions";
  analyzer[] = "Structures/UseCaseValue";
  analyzer[] = "Structures/UseCountRecursive";
  analyzer[] = "Structures/UseFileAppend";
  analyzer[] = "Structures/UseListWithForeach";
  analyzer[] = "Structures/UseStrEndsWith";
  analyzer[] = "Structures/UseStrStartsWith";
  analyzer[] = "Structures/UseUrlQueryFunctions";
  analyzer[] = "Structures/WhileListEach";
  analyzer[] = "Traits/MultipleUsage";
  analyzer[] = "Variables/ComplexDynamicNames";
  analyzer[] = "Variables/NoStaticVarInMethod";
```

Suggestions for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Suggestions':
   - 'Arrays/RandomlySortedLiterals'
   - 'Arrays/ShouldPreprocess'
   - 'Arrays/SliceFirst'
   - 'Classes/CancelCommonMethod'
   - 'Classes/CheckAfterNullSafeOperator'
   - 'Classes/CouldBeAbstractMethod'
   - 'Classes/CouldBeIterable'
   - 'Classes/CouldBeReadonly'
   - 'Classes/CouldBeReadonlyProperty'
   - 'Classes/CouldSetPropertyDefault'
   - 'Classes/CouldUseClassOperator'
   - 'Classes/LoweredAccessLevel'
   - 'Classes/MagicMethodReturntypes'
```

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```
  - 'Classes/ParentFirst'
  - 'Classes/ShouldDeepClone'
  - 'Classes/ShouldHaveDestructor'
  - 'Classes/ShouldUseSelf'
  - 'Classes/TooManyChildren'
  - 'Classes/UnitializedProperties'
  - 'Classes/UselessTypehint'
  - 'Constants/CouldUseConstant'
  - 'Enums/CouldBeEnum'
  - 'Exceptions/CouldDropVariable'
  - 'Exceptions/CouldUseTry'
  - 'Exceptions/LargeTryBlock'
  - 'Exceptions/LongPreparation'
  - 'Exceptions/OverwriteException'
  - 'Exceptions/ThrowRawExceptions'
  - 'Exceptions/UnusedExceptionVariable'
  - 'Functions/AddDefaultValue'
  - 'Functions/Closure2String'
  - 'Functions/CouldBeStaticClosure'
  - 'Functions/CouldCentralize'
  - 'Functions/NeverUsedParameter'
  - 'Functions/NoReturnUsed'
  - 'Functions/TooManyParameters'
  - 'Functions/TooMuchIndented'
  - 'Functions/UselessDefault'
  - 'Interfaces/AlreadyParentsInterface'
  - 'Interfaces/UnusedInterfaces'
  - 'Namespaces/AliasConfusion'
  - 'Namespaces/CouldUseAlias'
  - 'Namespaces/CouldUseMagicConstant'
  - 'Patterns/AbstractAway'
  - 'Performances/ArrayKeyExistsSpeedup'
  - 'Performances/IssetWholeArray'
  - 'Performances/SubstrFirst'
  - 'Php/AvoidReal'
  - 'Php/CompactInexistant'
  - 'Php/CouldUseIsCountable'
  - 'Php/CouldUsePromotedProperties'
  - 'Php/DetectCurrentClass'
  - 'Php/ImplodeOneArg'
  - 'Php/IssetMultipleArgs'
  - 'Php/LogicalInLetters'
  - 'Php/NewExponent'
  - 'Php/PregMatchAllFlag'
  - 'Php/ReturnWithParenthesis'
  - 'Php/ShouldPreprocess'
  - 'Php/ShouldUseArrayColumn'
  - 'Php/ShouldUseArrayFilter'
  - 'Php/ShouldUseCoalesce'
  - 'Php/UseDateTimeImmutable'
  - 'Php/UseGetDebugType'
  - 'Php/UseSessionStartOptions'
```

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```
  - 'Php/UseStrContains'
  - 'Structures/ArraySearchMultipleKeys'
  - 'Structures/BasenameSuffix'
  - 'Structures/BlindVariableUsedBeyondLoop'
  - 'Structures/BooleanStrictComparison'
  - 'Structures/CouldBeArrayCombine'
  - 'Structures/CouldBeSpaceship'
  - 'Structures/CouldBeTernary'
  - 'Structures/CouldCastToArray'
  - 'Structures/CouldUseArrayFillKeys'
  - 'Structures/CouldUseArraySum'
  - 'Structures/CouldUseArrayUnique'
  - 'Structures/CouldUseCompact'
  - 'Structures/CouldUseDir'
  - 'Structures/CouldUseMatch'
  - 'Structures/CouldUseNullableOperator'
  - 'Structures/CouldUseStrContains'
  - 'Structures/DeclareStaticOnce'
  - 'Structures/DirectlyUseFile'
  - 'Structures/DontCompareTypedBoolean'
  - 'Structures/DontLoopOnYield'
  - 'Structures/DropElseAfterReturn'
  - 'Structures/EchoWithConcat'
  - 'Structures/EmptyWithExpression'
  - 'Structures/FunctionPreSubscripting'
  - 'Structures/JsonEncodeExceptions'
  - 'Structures/JsonWithOption'
  - 'Structures/ListOmissions'
  - 'Structures/LongBlock'
  - 'Structures/MismatchedTernary'
  - 'Structures/MultilineExpressions'
  - 'Structures/MultipleSimilarCalls'
  - 'Structures/MultipleUnset'
  - 'Structures/NamedRegex'
  - 'Structures/NoNeedGetClass'
  - 'Structures/NoParenthesisForLanguageConstruct'
  - 'Structures/NoSubstrOne'
  - 'Structures/OneIfIsSufficient'
  - 'Structures/PHP7Dirname'
  - 'Structures/PossibleIncrement'
  - 'Structures/RepeatedPrint'
  - 'Structures/ReuseVariable'
  - 'Structures/SGVariablesConfusion'
  - 'Structures/SetAside'
  - 'Structures/ShouldUseForeach'
  - 'Structures/ShouldUseMath'
  - 'Structures/ShouldUseOperator'
  - 'Structures/SubstrLastArg'
  - 'Structures/SubstrToTrim'
  - 'Structures/TooManyElseif'
  - 'Structures/UnreachableCode'
  - 'Structures/UseArrayFunctions'
```

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```
  - 'Structures/UseCaseValue'
  - 'Structures/UseCountRecursive'
  - 'Structures/UseFileAppend'
  - 'Structures/UseListWithForeach'
  - 'Structures/UseStrEndsWith'
  - 'Structures/UseStrStartsWith'
  - 'Structures/UseUrlQueryFunctions'
  - 'Structures/WhileListEach'
  - 'Traits/MultipleUsage'
  - 'Variables/ComplexDynamicNames'
  - 'Variables/NoStaticVarInMethod'
```

10.5.42 Surprising

Surprising for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Surprising]
  analyzer[] = "Structures/SequenceInFor";
  analyzer[] = "Structures/StrposLessThanOne";
```

Surprising for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Surprising':
   - 'Structures/SequenceInFor'
   - 'Structures/StrposLessThanOne'
```

10.5.43 Top10

Top10 for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Top10]
  analyzer[] = "Classes/DontUnsetProperties";
  analyzer[] = "Classes/UnitializedProperties";
  analyzer[] = "Classes/UnresolvedInstanceof";
  analyzer[] = "Constants/ConstRecommended";
  analyzer[] = "Functions/ShouldYieldWithKey";
  analyzer[] = "Performances/ArrayMergeInLoops";
  analyzer[] = "Performances/CsvInLoops";
  analyzer[] = "Performances/NoConcatInLoop";
  analyzer[] = "Performances/SubstrFirst";
```

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```
  analyzer[] = "Php/AvoidReal";
  analyzer[] = "Php/ConcatAndAddition";
  analyzer[] = "Php/LetterCharsLogicalFavorite";
  analyzer[] = "Php/LogicalInLetters";
  analyzer[] = "Php/MissingSubpattern";
  analyzer[] = "Structures/CouldUseStrrepeat";
  analyzer[] = "Structures/DanglingArrayReferences";
  analyzer[] = "Structures/FailingSubstrComparison";
  analyzer[] = "Structures/ForWithFunctioncall";
  analyzer[] = "Structures/NextMonthTrap";
  analyzer[] = "Structures/NoChoice";
  analyzer[] = "Structures/NoSubstrOne";
  analyzer[] = "Structures/ObjectReferences";
  analyzer[] = "Structures/QueriesInLoop";
  analyzer[] = "Structures/RepeatedPrint";
  analyzer[] = "Structures/StrposCompare";
  analyzer[] = "Structures/UseListWithForeach";
  analyzer[] = "Type/NoRealComparison";
  analyzer[] = "Variables/VariableUsedOnce";
```

Top10 for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Top10':
   - 'Classes/DontUnsetProperties'
   - 'Classes/UnitializedProperties'
   - 'Classes/UnresolvedInstanceof'
   - 'Constants/ConstRecommended'
   - 'Functions/ShouldYieldWithKey'
   - 'Performances/ArrayMergeInLoops'
   - 'Performances/CsvInLoops'
   - 'Performances/NoConcatInLoop'
   - 'Performances/SubstrFirst'
   - 'Php/AvoidReal'
   - 'Php/ConcatAndAddition'
   - 'Php/LetterCharsLogicalFavorite'
   - 'Php/LogicalInLetters'
   - 'Php/MissingSubpattern'
   - 'Structures/CouldUseStrrepeat'
   - 'Structures/DanglingArrayReferences'
   - 'Structures/FailingSubstrComparison'
   - 'Structures/ForWithFunctioncall'
   - 'Structures/NextMonthTrap'
   - 'Structures/NoChoice'
   - 'Structures/NoSubstrOne'
   - 'Structures/ObjectReferences'
   - 'Structures/QueriesInLoop'
   - 'Structures/RepeatedPrint'
```

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```
  - 'Structures/StrposCompare'
  - 'Structures/UseListWithForeach'
  - 'Type/NoRealComparison'
  - 'Variables/VariableUsedOnce'
```

10.5.44 Typechecks

Typechecks for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[Typechecks]
  analyzer[] = "Classes/ChildRemoveTypehint";
  analyzer[] = "Classes/CouldBeIterable";
  analyzer[] = "Classes/FossilizedMethod";
  analyzer[] = "Exceptions/PossibleTypeError";
  analyzer[] = "Functions/BadTypehintRelay";
  analyzer[] = "Functions/InsufficientTypehint";
  analyzer[] = "Functions/MismatchTypeAndDefault";
  analyzer[] = "Functions/MismatchedDefaultArguments";
  analyzer[] = "Functions/MismatchedTypehint";
  analyzer[] = "Functions/MissingTypehint";
  analyzer[] = "Functions/NoClassAsTypehint";
  analyzer[] = "Functions/ShouldBeTypehinted";
  analyzer[] = "Functions/WrongArgumentType";
  analyzer[] = "Functions/WrongTypeWithCall";
  analyzer[] = "Interfaces/UselessInterfaces";
  analyzer[] = "Php/NotScalarType";
  analyzer[] = "Typehints/CouldBeCallable";
  analyzer[] = "Typehints/CouldBeFloat";
  analyzer[] = "Typehints/CouldBeGenerator";
  analyzer[] = "Typehints/CouldBeInt";
  analyzer[] = "Typehints/CouldBeIterable";
  analyzer[] = "Typehints/CouldBeNever";
  analyzer[] = "Typehints/CouldBeNull";
  analyzer[] = "Typehints/CouldBeParent";
  analyzer[] = "Typehints/CouldBeResource";
  analyzer[] = "Typehints/CouldBeSelf";
  analyzer[] = "Typehints/CouldBeString";
  analyzer[] = "Typehints/CouldBeVoid";
```

Typechecks for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'Typechecks':
   - 'Classes/ChildRemoveTypehint'
   - 'Classes/CouldBeIterable'
   - 'Classes/FossilizedMethod'
   - 'Exceptions/PossibleTypeError'
   - 'Functions/BadTypehintRelay'
   - 'Functions/InsufficientTypehint'
   - 'Functions/MismatchTypeAndDefault'
   - 'Functions/MismatchedDefaultArguments'
   - 'Functions/MismatchedTypehint'
   - 'Functions/MissingTypehint'
   - 'Functions/NoClassAsTypehint'
   - 'Functions/ShouldBeTypehinted'
   - 'Functions/WrongArgumentType'
   - 'Functions/WrongTypeWithCall'
   - 'Interfaces/UselessInterfaces'
   - 'Php/NotScalarType'
   - 'Typehints/CouldBeCallable'
   - 'Typehints/CouldBeFloat'
   - 'Typehints/CouldBeGenerator'
   - 'Typehints/CouldBeInt'
   - 'Typehints/CouldBeIterable'
   - 'Typehints/CouldBeNever'
   - 'Typehints/CouldBeNull'
   - 'Typehints/CouldBeParent'
   - 'Typehints/CouldBeResource'
   - 'Typehints/CouldBeSelf'
   - 'Typehints/CouldBeString'
   - 'Typehints/CouldBeVoid'
```

10.5.45 php-cs-fixable

php-cs-fixable for INI

INI configuration for built-in rulesets. Copy them in config/rulesets.ini, and edit them to your owns.

```
[php-cs-fixable]
  analyzer[] = "Classes/DontUnsetProperties";
  analyzer[] = "Namespaces/UnusedUse";
  analyzer[] = "Php/ImplodeOneArg";
  analyzer[] = "Php/IsnullVsEqualNull";
  analyzer[] = "Php/IssetMultipleArgs";
  analyzer[] = "Php/LogicalInLetters";
  analyzer[] = "Php/NewExponent";
  analyzer[] = "Structures/CouldUseDir";
  analyzer[] = "Structures/ElseIfElseif";
```

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```
  analyzer[] = "Structures/MultipleUnset";
  analyzer[] = "Structures/PHP7Dirname";
  analyzer[] = "Structures/UseConstant";
```

php-cs-fixable for .exakat.yaml

YAML configuration for built-in rulesets. Copy them in your code, with the name .exakat.yaml, and edit them to your owns.

```
rulesets:
  'php-cs-fixable':
   - 'Classes/DontUnsetProperties'
   - 'Namespaces/UnusedUse'
   - 'Php/ImplodeOneArg'
   - 'Php/IsnullVsEqualNull'
   - 'Php/IssetMultipleArgs'
   - 'Php/LogicalInLetters'
   - 'Php/NewExponent'
   - 'Structures/CouldUseDir'
   - 'Structures/ElseIfElseif'
   - 'Structures/MultipleUnset'
   - 'Structures/PHP7Dirname'
   - 'Structures/UseConstant'
```

CHAPTER

ELEVEN

RULE

11.1 Rules

Exakat provides unique 1644 rules to detect BUGS, CODE SMELLS, SECURITY OR QUALITY ISSUES in your PHP code.

Each rule is documented with : * a PHP version : The version of PHP to wich the rule apply * Short Name or Identifier : The Id of the rule necessary in all configuration files * Code example : The illustrative way to explain the issue detected by the rule and the targeted example of the remediated code * Time to Fix : a estimated duration to remediate the code * Severity : the impact level of the issue generated by the rule * Exakat Since : The version of Exakat Engine after which the rule is applicable

Note: The detail of Rules is available in our *REFERENCE GUIDE*.

11.2 Rulesets

A Ruleset is configurable with the -T option, when running exakat in command line. For example :

```
php exakat.phar analyze -p <project> -T <Security>
```

Note: The detail of Rulesets is available in our *REFERENCE GUIDE*.

CHAPTER

TWELVE

REPORT

12.1 Configuring a report before the audit

By default, Exakat builds the 'Ambassador' report for any project. If you want another report, or want to ignore the build of Ambassador, configure it before running the audit.

To do so, open the *projects/<project>/config.ini* file, and mention the list of report like that :

```
project_reports[] = 'Owasp';
project_reports[] = 'Weekly';
```

By configuring the reports before the audit, Exakat processes only the needed analysis, and produces all the reports for each audit.

12.2 Generating a report after the audit

If you have run an audit, but wants to extract another report for a piece of code, you can use the following command :

php exakat.phar report -p <project> -format <format> -file <filename>

Where <format> is one of the format listed in the following section, and <filename> is the target file.

Note that some format requires some specific audits to be run : they will fail if those results are not available. Then, run the audit again, and mention the desired audit in the configuration.

12.3 Common behavior

Default format is Text. Each report has a default filename, that may be configured with the -file option. Each report adds a file extension to the provided filename.

A special value for -file is 'stdout'. Some formats may be output to stdout, such as Text or Json. Not all format are accepting that value : some format, like Ambassador or Sqlite, may only be written to directories.

Each report is stored in its <project> folder, under the requested name.

Reports may be generated at any time, during execution of the analysis (partial results) or later, even if another audit is running.

CHAPTER

THIRTEEN

COBBLER

13.1 What are cobblers

Cobblers mend PHP code. They apply a transformation to it.

Cobblers are a complement to code analysis : the analysis spot code to be fixed, the cobbler mends the code. Later, the analysis doesn't find those issues anymore.

13.2 Cobbler command

To run a cobbler, use the *cobble* command.

```
php exakat cobble -p <project> <write-options> -P <Cobbler/Name>
```

The <project> parameter is the project on which the cobbler is run. It must have been *init*-ed with Exakat.

<Cobbler/Name> is the name of the cobbler to run. The list of available cobblers are in the documentation.

<write-options> configure the destination of the updated code. The available options are :

- –branch <branch> : the modified code is written in a new branch, called <branch>. The branch may be configured for each cobbler.
- –inplace : the analyzed code is replaced by the modified code. This cannot be reverted
- -f <filename> : the modified code is written in the <filename> file. Only one file is written.
- -d <dirname> : the modified codes are written in the <directory> folder. Files are written with the original name and path from the root of the repository.
- default behavior : –branch Exakat/Cobbler/Name.

13.3 Analysis and Cobblers

The analysis come first, and then the cobbler. The analysis reads the code, assess the situation and report patterns in the code that should be fixed. Then, the results from the analysis are given to the Cobbler, as a starting point. The cobbler applies various modifications in the code, and then, produce a new code. That code is now free of issues that the analysis found.

13.4 One analysis, one cobbler

For example, Performances/PrePostIncrement is the analysis that reports post-increment that should be converted into pre-increments. This is the base analysis for the Structure/PostToPre cobbler. This cobbler updates the code and turns `$a++` into `++$a`, and `$b--` into `--$b`. The resulting code is then stored into a new VCS branch, so that it may be reviewed before PR.

Cobblers are often created to apply one of the possible fixes related to one analysis. For example, Performances/PrePostIncrement might be fixed by turning the Post increment into a pre-increment, but it may also be replaced by a constant, instead of a literal.

```
<?php

$a++;

// Speed up the code with pre-increment
// ++$a;

// Make the ++ operation configurable
// const C = 1;
// $a = $a + C;

?>
```

It is not possible to apply the two cobblers at the same time, since they do not pursue the same goals. One is a performance improvement, the other one make the code configurable.

13.5 One analysis, multiple cobblers

When one analysis produces results that may be fixed with multiple cobbler, apply the following strategy : + Run the different cobblers, and write the results in different branches + Do a PR with each branch, and cherry pick the transformations

13.6 Multiple analysis, one cobbler

It is possible to apply the same cobbler to the results of multiple analysis : for example, the Structures/RemoveCode may be applied simultaneously to the analysis *Structures/UselessExpressions* and *Classes/UnusedClasses*. Both analysis spot unused code, that may well be removed.

13.7 Cobbler configuration

Cobblers take the following configuration directives :

- Source analysis : the analysis which should be resolved by the cobbler. One or more analysis may be provided. Default values are provided, and available in the documentation.
- Branch name : the branch used in the current VCS, to store the mended code.
- Specific configuration : some cobblers accept customs configuration. They are detailled in the documentation of the cobbler.

13.8 INI configuration example:

```
[Structures/RemoveCode]
analysis[] = "Structures/UselessExpression"
analysis[] = "Classes/UnusedClass"
branch = "code-cleaning"
```

13.9 Cobbler tutorial

13.10 Pre-requisite

We assume that Exakat has been *install*-ed, and that an exakat project is already inited.

The way to run a cobbler is to call the *cobble* command. In this example, exakat removes the noscream @ operator, based on the *Structures/NoScream* analysis, and store the results in the *target-branch* for the *project name*.

```
> php exakat init -p phulp -R <URL> -git
> php exakat cobble -p <project name> -b <target_branch> -P Structures/RemoveNoScream
```

CHAPTER

FOURTEEN

RULES

14.1 Introduction

Exakat provides unique 1644 rules to detect BUGS, CODE SMELLS, SECURITY OR QUALITY ISSUES in your PHP code.

Each rule is documented with code example to allow you to remediate your code. If you want to automate remediation, ours cobblers can are there to fix the issues in your code for your.

14.2 List of Rules

14.2.1 $FILES full_path

> A new index 'full_path' was added to the $_FILES to handle directory <https://www.php.net/`directory>`_ uploads. This was added in PHP 8.1, and is not available before.

```
<?php

// list uploaded files in a directory
print_r($_FILES['full_path']);

?>
```

See also PHP 8.1: $_FILES: New full_path value for directory-uploads.

Specs

Short name	Php/FilesFullPath
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*
Exakat since	2.2.4
PHP Version	With PHP 8.1 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	$_files
Available in	Entreprise Edition, Exakat Cloud

14.2.2 $GLOBALS Or global

Usually, PHP projects make a choice between the global keyword, and the $GLOBALS variable. Sometimes, the project has no recommendations.

When your project use a vast majority of one of the convention, then the analyzer will report all remaining inconsistently cased constant.

```
<?php

global $a, $b, $c, $d, $e, $f, $g, $h, $i, $j, $k, $l, $m;

// This access is inconsistent with the previous usage
$GLOBALS['a'] = 2;

?>
```

Specs

Short name	Php/GlobalsVsGlobal
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	0.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	global
Available in	Entreprise Edition, Exakat Cloud

14.2.3 $HTTP_RAW_POST_DATA Usage

`$HTTP_RAW_POST_DATA` is deprecated, and should be replaced by `php://input`.

`$HTTP_RAW_POST_DATA` is deprecated since PHP 5.6.

It is possible to prepare code to this lack of feature by setting `always_populate_raw_post_data` to -1.

```
<?php

// PHP 5.5 and older
$postdata = $HTTP_RAW_POST_DATA;

// PHP 5.6 and more recent
$postdata = file_get_contents(php://input);

?>
```

See also $HTTP_RAW_POST_DATA variable.

Suggestions

- Use php://input with fopen() instead.

Specs

Short name	Php/RawPostDataUsage
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	$HTTP_RAW_POST_DATA
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.4 $php_errormsg Usage

$php_errormsg is removed since PHP 8.0. $php_errormsg tracks the last error message, with the directive *track_errors*. All was removed in PHP 8.0, and shall be replaced with error_get_last().

```
<?php

function foo() {
    global $php_errormsg;

    echo 'Last error: '.$php_errormsg;

    echo 'Also, last error: '.error_get_last();
}

?>
```

Suggestions

- Use error_get_last() instead.

Specs

Short name	Php/PhpErrorMsgUsage
Rulesets	*All*, *CE*, *Changed Behavior*, *CompatibilityPHP80*
Exakat since	2.1.8
PHP Version	With PHP 8.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	High
Features	$php_errormsg
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.5 $this Belongs To Classes Or Traits

The pseudo-variable $this must be used inside a class or trait, or bound closures.

$this variable represents the current object, inside a class or trait scope

It is a pseudo-variable, and should be used within class's or trait's methods and not outside. It should also not be used in static methods.

PHP 7.1 is stricter and check for $this at several situations.

```
<?php

// as an argument
function foo($this) {
    // Using global
    global $this;
```

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```
    // Using static (not a property)
    static $this;

    // Can't unset it
    unset($this);

    try {
        // inside a foreach
        foreach($a as $this) {  }
        foreach($a as $this => $b) {  }
        foreach($a as $b => $this) {  }
    } catch (Exception $this) {
        // inside a catch
    }

    // with Variable Variable
    $a = this;
    $$a = 42;
}

class foo {
    function bar() {
        // Using references
        $a =& $this;
        $a = 42;

        // Using extract(), parse_str() or similar functions
        extract([this => 42]);  // throw new Error(Cannot re-assign $this)
        var_dump($this);
    }

    static function __call($name, $args) {
        // Using __call
        var_dump($this); // prints object(C)#1 (0) {}, php-7.0 printed NULL
        $this->test();   // prints ops
    }

}
?>
```

See also class.

Suggestions

- Do not use *$this* as a variable name, except for the current object, in a class, trait or closure.

Specs

Short name	Classes/ThisIsForClasses
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	$this, self, parent, static
Examples	*OpenEMR*
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.6 $this Is Not An Array

`$this` variable represents the current object and it is not an array.

This is unless the class (or its parents) has the `ArrayAccess` interface, or extends `ArrayObject` or `SimpleXMLElement`.

```
<?php

// $this is an array
class Foo extends ArrayAccess {
    function bar() {
        ++$this[3];
    }
}

// $this is not an array
class Foo2 {
    function bar() {
        ++$this[3];
    }
}

?>
```

See also ArrayAccess, ArrayObject and The Basics.

Suggestions

- Extends `ArrayObject`, or a class that extends it, to use `$this` as an array too.
- Implements `ArrayAccess` to use `$this` as an array too.
- Use a property in the current class to store the data, instead of $this directly.

Specs

Short name	Classes/ThisIsNotAnArray
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	$this
Available in	Entreprise Edition, Exakat Cloud

14.2.7 $this Is Not For Static Methods

Static methods shouldn't use $this variable.

$this variable represents an object, the current object. It is not compatible with a static method, which may operate without any object.

While executing a static method, $this is actually set to NULL.

```
<?php

class foo {
    static $staticProperty = 1;

    // Static methods should use static properties
    static public function count() {
        return self::$staticProperty++;
    }

    // Static methods can't use $this
    static public function bar() {
        return $this->a;   // No $this usage in a static method
    }
}

?>
```

See also Static Keyword.

Suggestions

- Remove the static keyword on the method, and update all calls to this method to use $this
- Remove the usage of $this in the method, replacing it with static properties
- Make $this an argument (and change its name) : then, make the method a function

Specs

Short name	Classes/ThisIsNotForStatic
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static, method
ClearPHP	no-static-this
Available in	Entreprise Edition, Exakat Cloud

14.2.8 ** For Exponent

The operator ** calculates exponents, also known as power.

Use it instead of the slower function pow(). This operator was introduced in PHP 5.6. Be aware the the '-' operator has lower priority than the ** operator : this leads to the following confusing result. This is due to the parser that processes separately - and the following number. Since ** has priority, the power operation happens first.

Being an operator, ** is faster than pow(). This is a microoptimisation.

```
<?php
    $cube = pow(2, 3); // 8

    $cubeInPHP56 = 2 ** 3; // 8
?>
```

See also Arithmetic Operators.

Suggestions

- Use the ** operator
- For powers of 2, use the bitshift operators
- For literal powers of 2, consider using the `0xFFFFFFFFF` syntax.

Specs

Short name	Php/NewExponent
Rulesets	*All*, *Changed Behavior*, *Suggestions*, *php-cs-fixable*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	exponential
Examples	*Traq*, *TeamPass*
Available in	Entreprise Edition, Exakat Cloud

14.2.9 ::class

> PHP has a special class constant to hold the name of the class : `class` keyword. It represents the class name that is used in the left part of the operator.

Using `\:\:class` is safer than relying on a string. It does adapt if the class's name or its namespace is changed'. It is also faster, though it is a micro-optimisation.

It is introduced in PHP 5.5.

```
<?php

use A\B\C as UsedName;

class foo {
    public function bar( ) {
        echo ClassName::class;
        echo UsedName::class;
    }
}

$f = new Foo( );
$f->bar( );
// displays ClassName
// displays A\B\C

?>
```

Be aware that `\:\:class` is a replacement for __CLASS__ magic constant.

See also Class Constant.

Suggestions

- Use ::class whenever possible. That exclude any dynamic call.

Specs

Short name	Php/StaticclassUsage
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	coalesce
Available in	Entreprise Edition, Exakat Cloud

14.2.10 <?= Usage

Usage of the short echo tab, <?=, that echo's directly the following content.

<?= $variable; ?>

Specs

Short name	Php/EchoTagUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	short-echo-tag
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.11 @ Operator

@ is the 'no scream' operator : it suppresses error output.

```
<?php

// Set x with incoming value, or else null.
$x = @$_GET['x'];

?>
```

This operator is very slow : it processes the error, and finally decides not to display it. It is often faster to check the conditions first, then run the method without @.

You may also set display_error to 0 in the `php.ini` : this avoids user's error display, and keeps the error in the PHP logs, for later processing.

The only situation where `@` is useful is when a native PHP function displays errors messages and there is no way to check it from the code beforehand.

This was the case with fopen(), stream_socket_server(), token_get_all(). As of PHP 7.0, they are all hiding errors when `@` is active.

Name	Default	Type	Description
authorizedFunctions	noscream_functions.json	data	Functions that are authorized to sports a `@`.

See also I scream, you scream, we all scream for `@`, Error Control Operators and Five reasons why the shut-op operator should be avoided.

Suggestions

- Remove the @ operator by default

Specs

Short name	Structures/Noscream
Rulesets	*All*, *Analyze*, *Appinfo*, *CE*, *CI-checks*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
ClearPHP	no-noscream
Examples	*Phinx*, *PhpIPAM*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.12 Abstract Away

> Avoid using PHP native functions that produce data directly in the code. For example, date() or random_int(). They should be abstracted away in a method, that will be replaced later for testing purposes, or even debugging.

To abstract such calls, place them in a method, and add an interface to this method. Then, create and use those objects. This analysis targets two API for abstraction : time and random values. Time and date related functions may be replaced by Carbon, Clock, Chronos. Random values may be replaced with RandomLib or a custom interface.

```
<?php

// abstracted away date
$today = new MyDate();
echo 'Date : '.$today->date('r');

// hard coded date of today : it changes all the time.
```

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```
echo 'Date : '.date('r');

interface MyCalendar{
    function date($format) : string ;
}

class MyDate implements MyCalendar {
    function date($format) : string { return date('r'); }
}

// Valid implementation, reserved for testing purpose
// This prevents from waiting 4 years for a test.
class MyDateForTest implements MyCalendar {
    function date($format) : string { return date('r', strtotime('2016-02-29 12:00:00'));
 ↪ }
}

?>
```

Name	Default	Type	Description
abstractableCalls		ini_hash	Functions that shouldn't be called directly, unless in a method.
abstractableClasses		ini_hash	Classes that shouldn't be instantiated directly, unless in a method.

See also Being in control of time in PHP and How to test non-deterministic code.

Suggestions

- Abstract away the calls to native PHP functions, and upgrade the unit tests

Specs

Short name	Patterns/AbstractAway
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.1.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.13 Abstract Class Constants

Those are class constants which are defined in multiple children, but not in the parent class.

If this class is a feature of the parent class, or shall and must be defined in the children classes, it is recommended to add them in the parent class, and let them overloaded in the children class.

In the illustration below, `CONSTA` is defined in all two children, but not in the parent class. A third children would miss the constants definitions, until an error has been reported.

```
<?php

class A {
    // no constant
}

class A1 extends A {
    public const CONSTA = 1;
}

class A2 extends A {
    public const CONSTA = 2;
}

?>
```

Name	Default	Type	Description
minimum	2	integer	Minimal number of constant found in children to report this as a potential abstract class.

See also I often find myself wishing for abstract constants in PHP.

Suggestions

- Define the constants in the parent class, with some neutral value

Specs

Short name	Classes/AbstractConstants
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.3.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	class-constant, abstract
Available in	Entreprise Edition, Exakat Cloud

14.2.14 Abstract Class Usage

List of all abstract classes defined in the code.

```
<?php

abstract class foo {
    function foobar();
}

class bar extends foo {
    // extended method
    function foobar() {
        // doSomething()
    }

    // extra method
    function barbar() {
        // doSomething()
    }
}
?>
```

See also Classes abstraction.

Specs

Short name	Classes/Abstractclass
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, abstract
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.15 Abstract Methods Usage

List of all abstract methods being used.

```
<?php

// abstract class
abstract class foo {
    // abstract method
    function foobar();
}

class bar extends foo {
```

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```
    // extended abstract method
    function foobar() {
        // doSomething()
    }

    // extra method
    function barbar() {
        // doSomething()
    }
}
?>
```

See also Classes abstraction.

Specs

Short name	Classes/Abstractmethods
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, abstract
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.16 Abstract Or Implements

A class must implements all abstract methods of it parents, or be abstract too.

PHP detect such error when all classes are loaded: in a code source where classes are split by files, such error it won't be detected until execution, where PHP stops with a Fatal Error : `Class BA contains 1 abstract method and must therefore be declared abstract or implement the remaining methods (A\:\:aFoo)`.

```
<?php

abstract class Foo {
    abstract function FooBar();
}

// This is in another file : php -l would detect it right away

class FooFoo extends Foo {
    // The method is not defined.
    // The class must be abstract, just like Foo
}

?>
```

See also Class Abstraction.

Suggestions

- Implements all the abstract methods of the class
- Make the class abstract

Specs

Short name	Classes/AbstractOrImplements
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*
Exakat since	1.3.3
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	abstract, implements, lazy-loading
Examples	*Zurmo*
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.17 Abstract Static Methods

> Methods cannot be both abstract and static. Static methods belong to a class, and will not be overridden by the child class. For normal methods, PHP will start at the object level, then go up the hierarchy to find the method. With static, it is necessary to mention the name, or use Late Static Binding, with self or static. Hence, it is useless to have an abstract static method : it should be a static method.

A child class is able to declare a method with the same name than a static method in the parent, but those two methods will stay independent.

This is not the case anymore in PHP 7.0+.

```
<?php

abstract class foo {
    // This is not possible
    static abstract function bar() ;
}

?>
```

See also Why does PHP 5.2+ disallow abstract static class methods?.

Suggestions

- Remove abstract keyword from the method
- Remove static keyword from the method
- Remove the method

Specs

Short name	Classes/AbstractStatic
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	method, abstract, constant
Available in	Entreprise Edition, Exakat Cloud

14.2.18 Access Protected Structures

It is not allowed to access protected properties, methods or constants from outside the class or its relatives.

```
<?php

class foo {
    protected $bar = 1;
}

$foo = new Foo();
$foo->bar = 2;

?>
```

See also Visibility. and Understanding The Concept Of Visibility In Object Oriented PHP.

Suggestions

- Change 'protected' to 'public' to relax the constraint
- Add a getter method to reach the target value
- Remove the access to the protected value and find it another way

Specs

Short name	Classes/AccessProtected
Rulesets	*All*, *Analyze*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	visibility
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Exakat Cloud

14.2.19 Accessing Private

List of calls to private properties/methods that will compile but yield some fatal error upon execution.

```
<?php

class a {
    private $a;
}

class b extends a {
    function c() {
        $this->a;
    }
}

?>
```

Specs

Short name	Classes/AccessPrivate
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class, private
Available in	Entreprise Edition, Exakat Cloud

14.2.20 Add Default Value

Parameter in methods definition may receive a default value. This allows the called method to set a value when the parameter is omitted.

```
<?php

function foo($i) {
    if (!is_integer($i)) {
        $i = 0;
    }
}

?>
```

See also Function arguments.

Suggestions

- Add a default value for parameters

Specs

Short name	Functions/AddDefaultValue
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	1.4.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	default-value
Examples	*Zurmo*, *Typo3*
Available in	Entreprise Edition, Exakat Cloud

14.2.21 Add Return Typehint

Add returntype to methods, functions, closures and arrow functions. The return types are read from the code and deduced, based on literal values, local types and operations.

```
<?php

// This has no type, but could use int
function foo() {
    return 1;
}

// This has no type, but could use string
function goo(string $a) {
    return $a;
}
```

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```
// This has no type, but could use string
function hoo($a) {
    return $a - 2;
}

?>
```

Specs

Short name	Complete/ReturnTypehint
Rulesets	*All*, *Changed Behavior*, *First*, *NoDoc*
Exakat since	2.3.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.22 Adding Zero

> Adding 0 is useless, as 0 is the neutral element for addition. Besides, when one of the operands is an integer, PHP silently triggers a cast to integer for the other operand.

This rule also report using + with variables, proeprties, etc. which triggers an automated conversion to integer.

It is recommended to make the cast explicit with `(int)`.

```
<?php

// Explicit cast
$a = (int) foo();

// Useless addition
$a = foo() + 0;
$a = 0 + foo();

// Also works with minus
$b = 0 - $c; // drop the 0, but keep the minus
$b = $c - 0; // drop the 0 and the minus

$a += 0;
$a -= 0;

$z = '12';
print +$z + 1;

?>
```

Suggestions

- Remove the +/- 0, may be the whole assignation
- Use an explicit type casting operator (int)

Specs

Short name	Structures/AddZero
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Rector*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	addition, short-assignation
ClearPHP	no-useless-math
Examples	*Thelia*, *OpenEMR*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.23 Aliases

List of all aliases used, to alias namespaces.

```
<?php

// This is an alias
use stdClass as aClass;

// This is not an alias : it is not explicit
use stdClass;

trait t {
    // This is not an alias, it's a trait usage
    use otherTrait;
}

?>
```

See also Using namespaces: Aliasing/Importing and A Complete Guide to PHP Namespaces.

Specs

Short name	Namespaces/Alias
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	namespace
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.24 All Uppercase Variables

Usually, global variables are all in uppercase, so as to differentiate them easily. Though, this is not always the case, with examples like $argc, $argv or $http_response_header.

When using custom variables, try to use lowercase `$variables`, `$camelCase`, `$sturdyCase` or `$snake_case`.

```
<?php

// PHP super global, also identified by the initial _
$localVariable = $_POST;

// PHP globals
$localVariable = $GLOBALS['HTTPS'];

?>
```

See also Predefined Variables.

Specs

Short name	Variables/VariableUppercase
Rulesets	*All*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	variable
Available in	Entreprise Edition, Exakat Cloud

14.2.25 All strings

Strings, heredocs and nowdocs in one place.

```
<?php

$string = 'string';

$query = <<<SQL
Heredoc
SQL;

?>
```

Specs

Short name	Type/CharString
Rulesets	*All*, *Changed Behavior*, *Inventory*
Exakat since	0.10.1
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	string, heredoc, nowdoc
Available in	Entreprise Edition, Exakat Cloud

14.2.26 Already Parents Interface

The same interface is implemented by a class and one of its children.

That way, the child doesn't need to implement the interface, nor define its methods to be an instance of the interface. This analysis may report classes which do not explicitly implements any interfaces : the issue is then coming from the parents.

```
<?php

interface i {
    function i();
}

class A implements i {
    function i() {
        return __METHOD__;
    }
}

// This implements is useless.
class AB extends A implements i {
    // No definition for function i()
}
```

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```
// Implements i is understated
class AB extends A {
    // redefinition of the i method
    function i() {
        return __METHOD__.' ';
    }
}

$x = new AB;
var_dump($x instanceof i);
// true

$x = new AC;
var_dump($x instanceof i);
// true

?>
```

Suggestions

- Keep the implements call in the class that do implements the methods. Remove it from the children classes.

Specs

Short name	Interfaces/AlreadyParentsInterface
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	implements, inheritance
Examples	*WordPress*, *Thelia*
Available in	Entreprise Edition, Exakat Cloud

14.2.27 Already Parents Trait

Trait is already used a parent's class or trait. There is no use to include it a second time, so one of them can be removed.

```
<?php

trait ta {
    use tb;
}

trait t1 {
```

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```
    use ta;
    use tb; // also used by ta
}

class b {
    use t1; // also required by class c
    use ta; // also required by trait t1
}

class c extends b {
    use t1;
}

?>
```

See also Traits.

Suggestions

- Eliminate the trait in the parent class
- Eliminate the trait in the child class

Specs

Short name	Traits/AlreadyParentsTrait
Rulesets	*All*, *Analyze*
Exakat since	1.8.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	trait
Available in	Entreprise Edition, Exakat Cloud

14.2.28 Altering Foreach Without Reference

Foreach() loop that could use a reference as value.

When using a foreach loop that modifies the original source, it is recommended to use referenced variables, rather than access the original value with $source[$index].

Using references is then must faster, and easier to read.

array_walk() and array_map() are also alternative to prevent the use of foreach(), when $key is not used.

```
<?php

// Using references in foreach
foreach($source as $key => &$value) {
```

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```
    $value = newValue($value, $key);
}

// Avoid foreach : use array_map
$source = array_walk($source, 'newValue');
    // Here, $key MUST be the second argument or newValue

// Slow version to update the array
foreach($source as $key => &$value) {
    $source[$key] = newValue($value, $key);
}
?>
```

See also foreach.

Suggestions

- Add the reference on the modified blind variable, and avoid accessing the source array

Specs

Short name	Structures/AlteringForeachWithoutReference
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	foreach, loop
ClearPHP	use-reference-to-alter-in-foreach
Examples	*Contao*, *WordPress*
Related rule	*Dangling Array References*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.29 Alternative Syntax Consistence

PHP allows for two syntax : the alternative syntax, and the classic syntax.

The classic syntax is almost always used. When used, the alternative syntax is used in templates.

This analysis reports files that are using both syntax at the same time. This is confusing.

```
<?php

// Mixing both syntax is confusing.
foreach($array as $item) :
    if ($item > 1) {
        print "$item elementsn";
    } else {
```

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```
        print "$item elementn";
    }
endforeach;

?>
```

Specs

Short name	Structures/AlternativeConsistenceByFile
Rulesets	*All*, *Analyze*
Exakat since	0.11.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	alternative-syntax
Available in	Entreprise Edition, Exakat Cloud

14.2.30 Always Anchor Regex

Unanchored regex finds the requested pattern, and leaves room for malicious content.

Without ^ and $, the regex searches for any pattern that satisfies the criteria, leaving any unused part of the string available for arbitrary content. It is recommended to use both anchor

```
<?php

$birthday = getSomeDate($_GET);

// Permissive version : $birthday = '1970-01-01<script>xss();</script>';
if (!preg_match('/\d{4}-\d{2}-\d{2}/', $birthday) {
    error('Wrong data format for your birthday!');
}

// Restrictive version : $birthday = '1970-01-01';
if (!preg_match('/^\d{4}-\d{2}-\d{2}$/', $birthday) {
    error('Wrong data format for your birthday!');
}

echo 'Your birthday is on '.$birthday;

?>
```

Note that $ may be a line ending, still leaving room after it for injection.

```
<?php

$birthday = '1970-01-01'.PHP_EOL.'<script>xss();</script>';

?>
```

This analysis reports false positive when the regex is used to search a pattern in a much larger string. Check if this rule doesn't apply, though.

See also CWE-625: Permissive Regular Expression.

Suggestions

- Add an anchor to the beginning and ending of the string

Specs

Short name	Security/AnchorRegex
Rulesets	*All*, *Security*
Exakat since	0.12.15
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Features	regex
Available in	Entreprise Edition, Exakat Cloud

14.2.31 Always Positive Comparison

Some PHP native functions, such as count(), strlen(), or abs() only returns positive or null values.

When comparing them to 0, the following expressions are always true and should be avoided.

```
<?php

$a = [1, 2, 3];

var_dump(count($a) >= 0);
var_dump(count($a) < 0);

?>
```

Suggestions

- Compare count() to non-zero values
- Use empty()

Specs

Short name	Structures/NeverNegative
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*Magento*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.32 Always Use Function With array_key_exists()

array_key_exists() has been granted a special virtual machine opcode, and is much faster. This applies to PHP 7.4 and more recent.

It requires that array_key_exists() is statically resolved, either with an initial \, or a `use function` expression. This doesn't affect the global namespace. This analysis is related to Php/ShouldUseFunction, and is a special case, that only concerns array_key_exists().

```
<?php

namespace my/name/space;

// do not forget the 'function' keyword, or it will apply to classes.
use function array_key_exists as foo; // the alias is not necessary, and may be omitted.

// array_key_exists is aliased to foo :
$c = foo($a, $b);

// This call requires a fallback to global, and will be slow.
$c = array_key_exists($a, $b);

?>
```

See also Add array_key_exists to the list of specially compiled functions.

Suggestions

- Use the *use* command for arrray_key_exists(), at the beginning of the script
- Use an initial before array_key_exists()
- Remove the namespace

Specs

Short name	Performances/Php74ArrayKeyExists
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.8.4
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	vm, opcode
Available in	Entreprise Edition, Exakat Cloud

14.2.33 Ambiguous Array Index

Indexes should not be defined with different types than int or string.

Array indices only accept integers and strings, so any other type of literal is reported. In fact, `null` is turned into an empty string, booleans are turned into an integer, and real numbers are truncated (not rounded).

They are indeed distinct, but may lead to confusion.

```
<?php

$x = [ 1  => 1,
      '1' => 2,
      1.0 => 3,
      true => 4];
// $x only contains one element : 1 => 4

// Still wrong, immediate typecast to 1
$x[1.0]  = 5;
$x[true] = 6;

?>
```

See also array.

Suggestions

- Only use string or integer as key for an array.
- Use transtyping operator (string) and (int) to make sure of the type

Specs

Short name	Arrays/AmbiguousKeys
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Semantics*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array
Examples	*PrestaShop*, *Mautic*
Available in	Entreprise Edition, Exakat Cloud

14.2.34 Ambiguous Static

Methods or properties with the same name, are defined static in one class, and not static in another. This is error prone, as it requires a good knowledge of the code to make it static or not.

Try to keep the methods simple and unique. Consider renaming the methods and properties to distinguish them easily. A method and a static method have probably different responsibilities.

```
<?php

class a {
    function mixedStaticMethod() {}
}

class b {
    static function mixedStaticMethod() {}
}

/... a lot more code later .../

$c->mixedStaticMethod();
// or
$c::mixedStaticMethod();

?>
```

Specs

Short name	Classes/AmbiguousStatic
Rulesets	*All*, *Analyze*, *Semantics*
Exakat since	1.0.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	static
Available in	Entreprise Edition, Exakat Cloud

14.2.35 Ambiguous Types With Variables

The same variable is assigned various types, in different methods. This means that one may expect the same named variable to behave differently in different context.

```
<?php

function foo() {
     $i = 1;
     $user = new User();
}

function goo() {
     $i = 2; // $i is always an integer
     $user = new Propect();  // Sometimes $user is a User, and sometimes it is a Propect
}

?>
```

Specs

Short name	Variables/AmbiguousTypes
Rulesets	*All*, *Changed Behavior*, *Semantics*
Exakat since	2.5.0
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.36 Ambiguous Visibilities

The properties have the same name, but have different visibilities, across different classes.

While it is legit to have a property with the same name in different classes, it may easily lead to confusion. As soon as the context is need to understand if the property is accessible or not, the readability suffers.

It is recommended to handle the same properties in the same way across classes, even when the classes are not related.

```
<?php

class person {
    public $name;
    private $address;
}

class gangster {
    private $name;
    public $nickname;
    private $address;
}
```

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```
$someone = Human::load(123);
echo 'Hello, '.$someone->name;

?>
```

Suggestions

- Sync visibilities for both properties, in the different classes
- Use different names for properties with different usages

Specs

Short name	Classes/AmbiguousVisibilities
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Semantics*
Exakat since	1.3.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class, visibility
Examples	*Typo3*
Related rule	*Missing Visibility*
Available in	Entreprise Edition, Exakat Cloud

14.2.37 An OOP Factory

A method or function that implements a factory. A factory is a class that handles the creation of an object, based on parameters. The factory hides the logic that leads to the creation of the object.

```
<?php
    class AutomobileFactory {
        public static function create($make, $model) {
            $className = "\Automaker\Brand$make";
            return new $className($model);
        }
    }

    // The factory is able to build any car, based on their
    $fuego = AutomobileFactory::create('Renault', 'Fuego');

    print_r($fuego->getMakeAndModel()); // outputs "Renault Fuego"
?>
```

See also Factory (object-oriented programming) and Factory.

Specs

Short name	Patterns/Factory
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	1.6.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	pattern
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.38 Anonymous Classes

Anonymous classes.

```
<?php

// Anonymous class, available since PHP 7.0
$object = new class { function __construct() { echo __METHOD__; } };

?>
```

See also Anonymous classes.

Specs

Short name	Classes/Anonymous
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *Compatibility-PHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class, anonymous-class, abstract
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.39 Append And Assign Arrays

This rule reports arrays that are used both with append and direct index assignation. Read access are not considered here.

Array append and direct index assignation have different impact one on the other. In particular, assign a value explicitely and later append values may have an impact on one another.

Specs

Short name	Arrays/AppendAndAssignArrays
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.6.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.40 Argon2 Usage

Argon2 is an optionally compiled password hashing API.

Argon2 has been added to the password hashing API in PHP 7.2.

It is not available in older version. It also requires PHP to be compiled with the –with-password-argon2 option.

```
<?php

// Hashing a password with argon2
$hash = password_hash('password', PASSWORD_ARGON2I, ['memory_cost' => 1<<17,
                                                     'time_cost'   => PASSWORD_ARGON2_
↪DEFAULT_TIME_COST,
                                                     'threads'     => PASSWORD_ARGON2_
↪DEFAULT_THREADS]);

?>
```

See also Argon2 Password Hash.

Specs

Short name	Php/Argon2Usage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.0.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	argon2
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.41 Argument Counts Per Calls

Collects the number of arguments passed to PHP functions.

This is focused on PHP native functions, with optional characters.

```
<?php

// One entry, in_array 2 arguments
$c = in_array($array, $needle);

// One entry, in_array 3 arguments
$c = in_array($array, $needle, true);

?>
```

This helps detect unused or lesser know arguments.

Specs

Short name	Dump/ArgumentCountsPerCalls
Rulesets	*All*, *Dump*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.42 Argument Should Be Typehinted

When a method expects objects as argument, those arguments should be typehinted. This way, it provides early warning that a wrong object is being sent to the method.

The analyzer will detect situations where a class, or the keywords 'array' or 'callable'.

```
<?php

// What are the possible classes that have a 'foo' method?
function foo($bar) {
    return $bar->foo();
}

?>
```

Closure <https://www.php.net/manual/en/class.`closure.php>`_ arguments are omitted.

See also Type declarations.

Suggestions

- Add the typehint to the function arguments

Specs

Short name	Functions/ShouldBeTypehinted
Rulesets	*All*, *Typechecks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	typehint
ClearPHP	always-typehint
Examples	*Dolphin*, *Mautic*
Available in	Entreprise Edition, Exakat Cloud

14.2.43 Array Access On Literal Array

Accessing an element on a literal array makes that array non-reusable.

It is recommended to make this array a constant or a property, for easier reusage. It also make that content more visiblem in the class definitions.

```
<?php

class Suit {
     const NAMES = ['Club' => 1, 'Spade' => 2, 'Heart' => 3, 'Diamond' => 4];

     function __construct($name) {
             if (!isset(self::NAMES[$name]) {
                     throw new Exception('Not a suit color');
             }
     }
}

class HiddenSuitList {
     function __construct($name) {
             if (!isset(['Club' => 1, 'Spade' => 2, 'Heart' => 3, 'Diamond' => 4][
↪$name]) {
                     throw new Exception('Not a suit color');
             }
     }
}

?>
```

Specs

Short name	Structures/ArrayAccessOnLiteralArray
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Semantics*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.44 Array Addition

Addition where one of the operands are arrays.

```
<?php
    $a = [1] + [2 ,3];
?>
```

See also Combining arrays using + versus array_merge in PHP and Array operators.

Specs

Short name	Structures/ArrayAddition
Rulesets	*All*, *Appinfo*
Exakat since	2.4.2
Severity	
Time To Fix	
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.45 Array Index

List of all indexes used in arrays. The indexes are strings or integers. They are accessed with different syntaxes: either the square brackets, or the => operator.

```
<?php

// Index
$x['index'] = 1;

// in array creation
$a = array('index2' => 1);
$a2 = ['index3' => 2];

?>
```

Specs

Short name	Arrays/Arrayindex
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	array
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.46 Array With String Initialization

It used to be possible to initialize a variable with an string, and use it as an array. It is not the case anymore in PHP 7.1.

```
<?php

// Initialize arrays with array()
$a = array();
$a[3] = "4";

// Don't start with a string
$a = '';
$a[3] = "4";
print $a;

// Don't start with a string
if (is_numeric($a)) {
    $a[] = $a;
}

?>
```

See also PHP 7.1 no longer converts string to arrays the first time a value is assigned with square bracket notation.

Suggestions

- Always initialize arrays with an empty array(), not a string.

Specs

Short name	Arrays/StringInitialization
Rulesets	*All*, *CompatibilityPHP71*
Exakat since	1.6.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.47 Array() / [ ] Consistence

array() or [ ] is the favorite.

array() and [ ] have the same functional use.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

It happens that array() or [] are used depending on coding style and files. One file may be consistently using array(), while the others are all using [].

The only drawback to use [] over array() is backward incompatibility.

```
<?php

$a = array(1, 2);
$b = array(array(3, 4), array(5, 6));
$c = array(array(array(7, 8), array(9, 10)), array(11, 12), array(13, 14)));

// be consistent
$d = [1, 3];
?>
```

Name	Default	Type	Description
array_ratio	10	integer	Percentage of arrays in one of the syntaxes, to trigger the other syntax as a violation.

Suggestions

- Use one syntax consistently.

Specs

Short name	Arrays/ArrayBracketConsistence
Rulesets	*All*, *Preferences*
Exakat since	0.8.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.48 Array_Fill() With Objects

array_fill() fills an array with identical objects, not copies nor clones. This means that all the filled objects are a reference to the same object. Changing one of them will change any of them.

Make sure this is the intended effect in the code.

This applies to array_pad() too. It doesn't apply to array_fill_keys(), as objects will be cast to a string before usage in this case.

```
<?php

$x = new StdClass();
$array = array_fill(0, 10, $x);

$array[3]->y = "Set in object #3";

// displays "Set in object #3"
echo $array[5]->y;

?>
```

Suggestions

- Use a loop to fill in the array with cloned() objects.

Specs

Short name	Structures/ArrayFillWithObjects
Rulesets	*All*, *Analyze*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array, object
Available in	Entreprise Edition, Exakat Cloud

14.2.49 Array_Map() Passes By Value

array_map() requires the callback to receive elements by value. Unlike array_walk(), which accepts by value or by reference, depending on the action taken.

PHP 8.0 and more recent emits a Warning

```
<?php
// Example, courtery of Juliette Reinders Folmer
function trimNewlines(&$line, $key) {
    $line = str_replace(array("\n", "\r" ), '', $line);
}

$original = [
    "text\n\n",
    "text\n\r"
];

$array = $original;
array_walk($array, 'trimNewlines');

var_dump($array);

array_map('trimNewlines', $original, [0, 1]);

?>
```

See also array_map.

Suggestions

- Make the callback first argument a reference

Specs

Short name	Structures/ArrayMapPassesByValue
Rulesets	*All*, *Analyze*, *CE*, *CompatibilityPHP80*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	2.2.0
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Medium
Features	array, map, by-value, by-reference
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.50 Array_merge Needs Array Of Arrays

> When collecting data to feed array_merge(), use an array of array as default value. `array(`array()) <https://www.php.net/array>`_` is the neutral value for array_merge();

This analysis also reports when the used types are not an array : array_merge() does not accept scalar values, but only arrays.

Since PHP 7.4, it is possible to call array_merge() without an argument : this means the default value may an empty array.

```
<?php

// safe default value
$a = array(array());

// when $list is empty, this will trigger an error during array_merge()
foreach($list as $l) {
    $a[] = $l;
}
$b = array_merge(...$a);

?>
```

See also array_merge.

Suggestions

- Use `array(array())` or `[[]]` as default value for array_merge()
- Remove any non-array value from the values in the default array

Specs

Short name	Structures/ArrayMergeArrayArray
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.1.4
PHP Version	With PHP 7.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.51 Assert Function Is Reserved

Avoid defining an `assert` function in namespaces.

While they work fine when the assertions are active (`zend.assertions=1`), calls to unqualified `assert` are optimized away when assertions are not active.

Since PHP 7.3, a fatal error is emitted : `Defining a custom `assert() <https://www.php.net/assert>`_ function is deprecated, as the function has special semantics`.

```
<?php
//      Run this with zend.assertions=1 and
// Then run this with zend.assertions=0

namespace Test {
    function assert() {
        global $foo;

        $foo = true;
    }
}

namespace Test {
    assert();

    var_dump(isset($foo));
}

?>
```

See also assert and User-defined assert function is optimized away with zend.assertions=-1.

Suggestions

- Rename the custom function with another name

Specs

Short name	Php/AssertFunctionIsReserved
Rulesets	*All*, *Analyze*, *Changed Behavior*, *CompatibilityPHP73*, *Deprecated*
Exakat since	1.3.9
PHP Version	All
Severity	Critical
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 7.2 - More
Precision	Very high
Features	assertion
Available in	Entreprise Edition, Exakat Cloud

14.2.52 Assertions

Usage of assertions, to add checks within PHP code.

Assertions should be used as a debugging feature only. You may use them for sanity-checks that test for conditions that should always be TRUE and that indicate some programming errors if not or to check for the presence of certain features like extension functions or certain system limits and features.

```
<?php

function foo($string) {
    assert(!empty($string), 'An empty string was provided!');

    echo '['.$string.']';
}

?>
```

See also assert.

Specs

Short name	Php/AssertionUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	assertion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.53 Assign And Compare

Assignation has a lower precedence than comparison. As such, the assignation always happens after the comparison. This leads to the comparison being stored in the variable, and not the value being compared.

```
<?php

if ($id = strpos($string, $needle) !== false) {
    // $id now contains a boolean (true or false), but not the position of the $needle.
}

// probably valid comparison, as $found will end up being a boolean
if ($found = strpos($string, $needle) === false) {
    doSomething();
}

// always valid comparison, with parenthesis
if (($id = strpos($string, $needle)) !== false) {
    // $id now contains a boolean (true or false), but not the position of the $needle.
}

// Being a lone instruction, this is always valid : there is no double usage with if␣
↪condition
$isFound = strpos($string, $needle) !== false;


?>
```

See also Operator Precedence.

Suggestions

- Use parenthesis
- Separate assignation and comparison
- Drop assignation or comparison

Specs

Short name	Structures/AssigneAndCompare
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.6.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	assignation, comparison
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.54 Assign And Lettered Logical Operator Precedence

The lettered logical operators `and`, `or` and `xor` have lower precedence than assignation. It collects less information than expected.

When that precedence is taken into account, this is valid and useful code. Yet, as it is rare and surprising to many developers, it is recommended to avoid it.

It is recommended to use the &&, ^ and || operators, instead of and, or and xor, to prevent confusion.

```
<?php

// The expected behavior is
// The following are equivalent
 $a =  $b  && $c;
 $a = ($b && $c);

// The unexpected behavior is
// The following are equivalent
 $a = $b  and $c;
($a = $b) and $c;

// Here, the result is collected. That result would not make use of the result of the␣
↪throw expression
$a = doSomething() or throw new Exception('Error happened');

?>
```

See also Operator Precedence.

Suggestions

- Use symbolic operators rather than letter ones
- To be safe, add parenthesis to enforce priorities

Specs

Short name	Php/AssignAnd
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.12.4
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	precedence, operator, logical-operator
Examples	*xataface*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.55 Assign Default To Properties

Properties may be assigned default values at declaration time. Such values may be later modified, if needed.

```
<?php

class foo {
    private $propertyWithDefault = 1;
    private $propertyWithoutDefault;
    private $propertyThatCantHaveDefault;

    public function __construct() {
        // Skip this extra line, and give the default value above
        $this->propertyWithoutDefault = 1;

        // Static expressions are available to set up simple computation at definition␣
↪time.
        $this->propertyWithoutDefault = OtherClass::CONSTANT + 1;

        // Arrays, just like scalars, may be set at definition time
        $this->propertyWithoutDefault = [1,2,3];

        // Objects or resources can't be made default. That is OK.
        $this->propertyThatCantHaveDefault = fopen('/path/to/file.txt');
        $this->propertyThatCantHaveDefault = new Fileinfo();
    }
}

?>
```

Default values will save some instructions in the constructor, and makes the value obvious in the code.

See also PHP Default parameters.

Suggestions

- Add a default value whenever possible. This is easy for scalars, and array()

Specs

Short name	Classes/MakeDefault
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	default-value
ClearPHP	use-properties-default-values
Examples	*LiveZilla*, *phpMyAdmin*
Available in	Entreprise Edition, Exakat Cloud

14.2.56 Assigned In One Branch

Report variables that are assigned in one branch, and not in the other.

```
<?php

if ($condition) {
    // $assigned_in_this_branch is assigned in only one of the branches
    $assigned_in_this_branch = 1;
    $also_assigned = 1;
} else {
    // $also_assigned is assigned in the two branches
    $also_assigned = 1;
}

?>
```

Suggestions

- Assign in the second branch
- Assign outside the condition

Specs

Short name	Structures/AssignedInOneBranch
Rulesets	*All*
Exakat since	1.0.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	assignation
Available in	Entreprise Edition, Exakat Cloud

14.2.57 Assigned Twice

The same variable is assigned twice in the same function.

While this is possible and quite common, it is also a good practice to avoid changing a value from one literal to another. It is far better to assign the new value to

Incremental changes to a variables are not reported here.

```
<?php

function foo() {
    // incremental changes of $a;
    $a = 'a';
    $a++;
    $a = uppercase($a);
```

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```
    $b = 1;
    $c = bar($b);
    // B changed its purpose. Why not call it $d?
    $b = array(1,2,3);

    // This is some forgotten debug
    $e = $config->getSomeList();
    $e = array('OneElement');
}

?>
```

Suggestions

- Remove the first assignation
- Remove the second assignation
- Change the name of the variable in one or both cases

Specs

Short name	Variables/AssignedTwiceOrMore
Rulesets	*All*, *Analyze*
Exakat since	0.9.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	variable
Available in	Entreprise Edition, Exakat Cloud

14.2.58 Assumptions

Assumptions in the code, that leads to possible bugs.

Some conditions may be very weak, and lead to errors. For example, the code below checks that the variable *$a* is not null, then uses it as an array. There is no relationship between 'not null' and 'being an array', so this is an assumption.

```
<?php

// Assumption : if $a is not null, then it is an array. This is not always the case.
function foo($a) {
    if ($a !== null) {
        echo $a['name'];
    }
}
```

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```
// Assumption : if $a is not null, then it is an array. Here, the typehint will ensure␣
↪that it is the case.
// Although, a more readable test is is_array()
function foo(?array $a) {
    if ($a !== null) {
        echo $a['name'];
    }
}

?>
```

See also From assumptions to assertions.

Suggestions

- Make the context of the code more explicit
- Use a class to handle specific array index
- Avoid using named index by using foreach()

Specs

Short name	Php/Assumptions
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	assumption
Available in	Entreprise Edition, Exakat Cloud

14.2.59 Autoappend

Appending a variable to itself leads to enormous usage of memory.

```
<?php

// Always append a value to a distinct variable
foreach($a as $b) {
    $c[] = $b;
}

// This copies the array to itself, and double the size each loop
foreach($a as $b) {
    $c[] = $c;
}
?>
```

Suggestions

- Change the variable on the left of the append
- Change the variable on the right of the append

Specs

Short name	Performances/Autoappend
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.8.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.60 Autoloading

Usage of the autoloading feature of PHP.

Defining the __autoload() function is obsolete since PHP 7.2.

```
<?php

spl_autoload_register('my_autoloader');

// Old way to autoload. Deprecated in PHP 7.2
function __autoload($class ) {}

?>
```

See also __autoload.

Specs

Short name	Php/AutoloadUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	autoload
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.61 Avoid Compare Typed Boolean

There is no need to compare explicitly a function call to a boolean, when the definition has a boolean return type.

The analysis checks for equality and identity comparisons. It doesn't check for the not operator usage.

```
<?php

// Sufficient check
if (foo()) {
    doSomething();
}

// Superfluous check
if (foo() === true) {
    doSomething();
}

function foo() : bool {}

?>
```

Suggestions

- Simplify the code and make it short

Specs

Short name	Structures/DontCompareTypedBoolean
Rulesets	*All*, *Suggestions*
Exakat since	2.1.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.62 Avoid Concat In Loop

Concatenations inside a loop generate a lot of temporary variables. They are accumulated and tend to raise the memory usage, leading to slower performances.

It is recommended to store the values in an array, and then use implode() on that array to make the concatenation at once. The effect is positive when the source array has at least 50 elements. The same doesn't apply to addition and multiplication, with array_sum() and array_multiply(), as those operations work on the current memory allocation, and don't need to allocate new memory at each step.

```
<?php
```

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```
// Concatenation in one operation
$tmp = array();
foreach(data_source() as $data) {
    $tmp[] = $data;
}
$final = implode('', $tmp);

// Concatenation in many operations
foreach(data_source() as $data) {
    $final .= $data;
}

?>
```

See also PHP 7 performance improvements (3/5): Encapsed strings optimization.

Suggestions

- Collect all pieces in an array, then implode() the array in one call.

Specs

Short name	Performances/NoConcatInLoop
Rulesets	*All*, *Changed Behavior*, *Performances*, *Top10*
Exakat since	0.12.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	loop
Examples	*SuiteCrm*, *ThinkPHP*
Available in	Entreprise Edition, Exakat Cloud

14.2.63 Avoid Large Array Assignation

Avoid setting large arrays to local variables. This is done every time the function is called.

There are different ways to avoid this : inject the array, build the array once, use a constant or even a global variable.

The effect on small arrays (less than 10 elements) is not significant. Arrays with 10 elements or more are reported here. The effect is also more important on functions that are called often, or within loops.

```
<?php

// with constants, for functions
const ARRAY = array(1,2,3,4,5,6,7,8,9,10,11);
function foo() {
    $array = ARRAY;
    //more code
```

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```
}

// with class constants, for methods
class x {
    const ARRAY = array(1,2,3,4,5,6,7,8,9,10,11);
    function foo() {
        $array = self::ARRAY;
        //more code
    }
}

// with properties, for methods
class x {
    private $array = array(1,2,3,4,5,6,7,8,9,10,11);

    function foo() {
        $array = $this->array;
        //more code
    }
}

// injection, leveraging default values
function foo($array = array(1,2,3,4,5,6,7,8,9,10,11)) {
    //more code
}

// local cache with static
function foo() {
    static $array;
    if ($array === null) {
        $array = array(1,2,3,4,5,6,7,8,9,10,11);
    }

    //more code
}

// Avoid creating the same array all the time in a function
class x {
    function foo() {
        // assign to non local variable is OK.
        // Here, to a property, though it may be better in a __construct or as default␣
↪values
        $this->s = array(1,2,3,4,5,6,7,8,9,10,11);

        // This is wasting resources, as it is done each time.
        $array = array(1,2,3,4,5,6,7,8,9,10,11);
    }
}

?>
```

Suggestions

- Make the literal a global constant or a class constant
- Make the literal an argument, so it can be injected
- Make the literal an property, with the array as default value
- Make the literal an static variable, with the array as default value

Specs

Short name	Structures/NoAssignationInFunction
Rulesets	*All*, *Performances*
Exakat since	0.9.7
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.64 Avoid Optional Properties

Avoid optional properties, to prevent littering the code with existence checks.

When a property has to be checked once for existence, it is safer to check it each time. This leads to a decrease in readability and a lot of checks added to the code.

Either make sure the property is set with an actual object rather than with null, or use a null object. A null object offers the same interface than the expected object, but does nothing. It allows calling its methods, without running into a Fatal error, nor testing it.

```
<?php

// Example is courtesy 'The Coding Machine' : it has been adapted from its original form.␣
↪See link below.

class MyMailer {
    private $logger;

    public function __construct(LoggerInterface $logger = null) {
        $this->logger = $logger;
    }

    private function sendMail(Mail $mail) {
        // Since $this->logger may be null, it must be tested anytime it is used.
        if ($this->logger) {
            $this->logger->info('Mail successfully sent.');
        }
    }
}
```

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```
?>
```

See also Avoid optional services as much as possible, The Null Object Pattern – Polymorphism in Domain Models and Practical PHP Refactoring: Introduce Null Object.

Suggestions

- Use a null object to fill any missing value
- Make sure the property is set at constructor time

Specs

Short name	Classes/AvoidOptionalProperties
Rulesets	*All*, *Analyze*
Exakat since	0.12.0
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	property, null
Examples	*ChurchCRM*, *Dolibarr*
Available in	Entreprise Edition, Exakat Cloud

14.2.65 Avoid Parenthesis With Language Construct

> Avoid Parenthesis for language construct. Languages constructs are a few PHP native elements, that looks like functions but are not.

Among other distinction, those elements cannot be directly used as variable function call, and they may be used with or without parenthesis.

```
<?php

// normal usage of include
include 'file.php';

// This looks like a function and is not
include('file2.php');

?>
```

The usage of parenthesis actually give some feeling of comfort, it won't prevent PHP from combining those argument with any later operators, leading to unexpected results.

Even if most of the time, usage of parenthesis is legit, it is recommended to avoid them.

Suggestions

- Remove the parenthesis

Specs

Short name	Structures/PrintWithoutParenthesis
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	language-construct
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.66 Avoid Real

PHP has two float data type : real and double. `real` is rarely used, and might be deprecated in PHP 7.4.

To prepare code, avoid using is_real() and the `(real)` typecast.

```
<?php

// safe way to check for float
if (!is_float($a)) {
    $a = (float) $a;
}

// Avoid doing that
if (!is_real($a)) {
    $a = (real) $a;
}

?>
```

See also PHP RFC: Deprecations for PHP 7.4.

Suggestions

- Replace is_real() by is_float()
- Replace (real) by (float)

Specs

Short name	Php/AvoidReal
Rulesets	*All*, *Changed Behavior*, *Suggestions*, *Top10*
Exakat since	1.3.9
PHP Version	With PHP 8.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	real
Available in	Entreprise Edition, Exakat Cloud

14.2.67 Avoid Self In Interface

Self and Parent are tricky when used in an interface.

`self` refers to the current interface or its extended parents : as long as the constant is defined in the interface family, this is valid. On the other hand, when `self` refers to the current class, the resolution of names would happen at execution time, leading to undefined errors.

`self` may be used for typing : then, argument types in the host class must use the interface name, and can't use `self` nor the class name, for compatibility reason. `self` can be used for returntype, as expected.

`parent` has the same behavior than `self`, except that it cannot be used inside an interface. This is one of those error that lint but won't execute in certain conditions : namely, when a class implements the interface with parent, but has no parent by itself. This is now a dependency to the host class.

`static` can't be used in an interface, as it needs to be resolved at call time.

```
<?php

interface i extends ii {
    // This 'self' is valid : it refers to the interface i
    public const I = self::I2 + 2;

    // This 'self' is also valid, as it refers to interface ii, which is a part of␣
↪interface i
    public const I2 = self::IP + 4;

    // This makes interface i dependant on the host class
    public const I3 = parent::A;

    // This makes interface i dependant on the host class, where X must be defined.
    // It actually yields an error :  Undefined class constant 'self::I'
    public const I4 = self::X;
}

class x implements k {
    const X = 1;
}
?>
```

See also Scope Resolution Operator (::).

Suggestions

- Use a fully qualified namespace instead of self
- Use a locally defined constant, so self is a valid reference

Specs

Short name	Interfaces/AvoidSelfInInterface
Rulesets	*All*, *Changed Behavior*, *Class Review*, *LintButWontExec*
Exakat since	1.5.4
PHP Version	All
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	Very high
Features	self, interface
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.68 Avoid Substr() One

Use array notation `$string[$position]` to reach a single byte in a string.

There are two ways to access a byte in a string : substr() and `$v[$pos]`.

The second style is more readable. It may be up to four times faster, though it is a micro-optimization. It is recommended to use it.

PHP 7.1 also introduces the support of negative offsets as string index : negative offset are also reported.

```
<?php

$string = 'abcde';

echo substr($string, $pos, 1);
echo $string[$pos];

echo mb_substr($string, $pos, 1);

// when $pos = 1
// displays bbb
// when $pos = 2
// displays ??

?>
```

Beware that substr() and `$v[$pos]` are similar, while mb_substr() is not. The first function works on bytes, while the latter works on characters.

Suggestions

- Replace substr() with the array notations for strings.
- Replace substr() with a call to mb_substr().

Specs

Short name	Structures/NoSubstrOne
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *CompatibilityPHP71*, *Performances*, *Suggestions*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*ChurchCRM*, *LiveZilla*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.69 Avoid Those Hash Functions

The following cryptography algorithms are considered insecure, and should be replaced with new and more modern algorithms.

`MD2`, `MD4`, `MD5`, `SHA0`, `SHA1`, `CRC`, `DES`, `3DES`, `RC2`, `RC4`.

When possible, avoid using them, may it be as PHP functions, or hashing function configurations (mcrypt, hash...).

```
<?php

// Weak cryptographic algorithm
echo md5('The quick brown fox jumped over the lazy dog.');

// Weak cryptographic algorthim, used with a modern PHP extension (easier to update)
echo hash('md5', 'The quick brown fox jumped over the lazy dog.');

// Strong cryptographic algorthim, used with a modern PHP extension
echo hash('sha156', 'The quick brown fox jumped over the lazy dog.');

?>
```

Weak cryptography is commonly used for hashing values when caching them. In such cases, security is not a primary concern. However, it may later become such, when hackers get access to the cache folders, or if the cached identifier is published. As a preventive protection, it is recommended to always use a secure hashing function.

See also Secure Hash Algorithms.

Suggestions

- Keep the current crypto, and add a call to a stronger one.
- Change the crypto for a more modern one and update the related databases

Specs

Short name	Security/AvoidThoseCrypto
Rulesets	*All*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	hash
Available in	Entreprise Edition, Exakat Cloud

14.2.70 Avoid Using stdClass

> `stdClass` is the default class for PHP. It is instantiated when PHP needs to return a object, but no class is specifically available.

It is recommended to avoid instantiating this class. Some PHP or frameworks functions, such as json_encode(), do return them : this is fine, although it is reported here.

If you need a `stdClass` object, it is faster to build it as an array, then cast it, than instantiate `stdClass`. This is a micro-optimisation.

```
<?php

$json = '{"a":1,"b":2,"c":3}';
$object = json_decode($json);
// $object is a stdClass, as returned by json_decode

// Fast building of $o
$a = [];
$a['a'] = 1;
$a['b'] = 2;
$a['c'] = 3;
json_encode( (object) $a);

// Slow building of $o
$o = new stdClass();
$o->a = 1;
$o->b = 2;
$o->c = 3;
json_encode($o);

?>
```

Suggestions

- Create a custom class to handle the properties

Specs

Short name	Php/UseStdclass
Rulesets	*All*, *Analyze*
Exakat since	0.9.1
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	stdclass
Available in	Entreprise Edition, Exakat Cloud

14.2.71 Avoid array_push()

array_push() is slower than the append `[]` operator.

This is also true when the append operator is called several times, while array_push() is be called only once, with an arbitrary number of argument.

Using count after the push is also faster than collecting array_push() return value. It is a micro-optimisation.

```
<?php

$a = [1,2,3];
// Fast version
$a[] = 4;

$a[] = 5;
$a[] = 6;
$a[] = 7;
$count = count($a);

// Slow version
array_push($a, 4);
$count = array_push($a, 5,6,7);

// Multiple version :
$a[] = 1;
$a[] = 2;
$a[] = 3;
array_push($a, 1, 2, 3);

?>
```

Suggestions

- Use the [] operator

Specs

Short name	Performances/AvoidArrayPush
Rulesets	*All*, *Changed Behavior*, *PHP recommendations*, *Performances*
Exakat since	0.9.1
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.72 Avoid array_unique()

The native function array_unique() is much slower than using other alternatives, such as array_count_values(), array_flip()/array_keys(), or even a foreach() loops.

```
<?php

// using array_unique()
$uniques = array_unique($someValues);

// When values are strings or integers
$uniques = array_keys(array_count_values($someValues));
$uniques = array_flip(array_flip($someValues))

//even some loops are faster.
$uniques = [];
foreach($someValues as $s) {
    if (!in_array($uniques, $s)) {
        $uniques[] $s;
    }
}

?>
```

See also array_unique..

Suggestions

- Upgrade to PHP 7.2
- Use an alternative way to make values unique in an array, using array_count_values(), for example.

Specs

Short name	Structures/NoArrayUnique
Rulesets	*All*, *Performances*
Exakat since	0.8.4
PHP Version	With PHP 7.2 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.73 Avoid get_class()

`get_class()` should be replaced with the `instanceof` operator to check the class of an object.

`get_class()` only compares the full namespace name of the object's class, while `instanceof` actually resolves the name, using the local namespace and aliases.

```
<?php

    use Stdclass as baseClass;

    function foo($arg) {
        // Slow and prone to namespace errors
        if (get_class($arg) === 'Stdclass') {
            // doSomething()
        }
    }

    function bar($arg) {
        // Faster, and uses aliases.
        if ($arg instanceof baseClass) {
            // doSomething()
        }
    }
?>
```

See also get_class and Instanceof.

Suggestions

- Replace get_class() with the instanceof operator

Specs

Short name	Structures/UseInstanceof
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class, type
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.74 Avoid get_object_vars()

get_object_vars() changes behavior between PHP 7.3 and 7.4. It also behaves different within and outside a class.

```
<?php

// Illustration courtesy of Doug Bierer
$obj = new ArrayObject(['A' => 1,'B' => 2,'C' => 3]);
var_dump($obj->getArrayCopy());
var_dump(get_object_vars($obj));

?>
```

See also get_object_vars script on 3V4L and The Strange Case of ArrayObject.

Suggestions

- Use ArrayObject and getArrayCopy() method

Specs

Short name	Php/AvoidGetobjectVars
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP74*, *CompatibilityPHP80*
Exakat since	2.2.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	class, arrayobject
Available in	Entreprise Edition, Exakat Cloud

14.2.75 Avoid glob() Usage

> glob() and scandir() sorts results by default. When that kind of sorting is not needed, save some time by requesting `NOSORT` with those functions.

Besides, whenever possible, use scandir() instead of glob(). Using opendir() and a while loop may be even faster.

This analysis skips scandir() and glob() if they are explicitly configured with flags (aka, sorting is explicitly needed).

glob() accepts wildchar, such as *, that may not easily replaced with scandir() or opendir().

```
<?php

// Scandir without sorting is the fastest.
scandir('docs/', SCANDIR_SORT_NONE);

// Scandir sorts files by default. Same as above, but with sorting
scandir('docs/');

// glob sorts files by default. Same as below, but no sorting
glob('docs/*', GLOB_NOSORT);

// glob sorts files by default. This is the slowest version
glob('docs/*');

?>
```

See also Putting glob to the test, How to list files recursively in a directory with PHP iterators and glob://.

Suggestions

- Use `FilesystemIterator` or `DirectoryIterator` classes.
- Use `RegexIterator` to filter any unwanted results from `FilesystemIterator`.
- Use `glob` protocol for files : $it = new DirectoryIterator('glob://path/to/examples/*.php');

Specs

Short name	Performances/NoGlob
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	0.9.6
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	glob, directoryiterator, filesystemiterator
Examples	*Phinx*, *NextCloud*
Available in	Entreprise Edition, Exakat Cloud

14.2.76 Avoid mb_dectect_encoding()

mb_dectect_encoding() is bad at guessing encoding.

For example, UTF-8 and ISO-8859-1 share some common characters : when a string is build with them it is impossible to differentiate the actual encoding.

```
<?php

$encoding = mb_encoding_detect($_GET['name']);

?>
```

See also mb_encoding_detect, PHP vs. The Developer: Encoding Character Sets and DPC2019: Of representation and interpretation: A unified theory - Arnout Boks.

Suggestions

- Store and transmit the data format

Specs

Short name	Php/AvoidMbDectectEncoding
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.8.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	mbstring
Available in	Entreprise Edition, Exakat Cloud

14.2.77 Avoid option arrays in constructors

Avoid option arrays in constructors. Use one parameter per injected element.

```
<?php

class Foo {
    // Distinct arguments, all typehinted if possible
    function __construct(A $a, B $b, C $c, D $d) {
        $this->a = $a;
        $this->b = $b;
        $this->c = $c;
        $this->d = $d;
    }
}

class Bar {
    // One argument, spread over several properties
```

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```
    function __construct(array $options) {
        $this->a = $options['a'];
        $this->b = $options['b'];
        $this->c = $options['c'];
        $this->d = $options['d'];
    }
}

?>
```

See also Avoid option arrays in constructors and PHP RFC: Named Arguments (Type-safe and documented options).

Suggestions

- Spread the options in the argument list, one argument each
- Use a configuration class, that hold all the elements with clear names, instead of an array
- Use named parameters to pass and document the arguments

Specs

Short name	Classes/AvoidOptionArrays
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	1.7.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	constructor
Available in	Entreprise Edition, Exakat Cloud

14.2.78 Avoid set_error_handler $context Argument

Avoid configuring set_error_handler() with a method that accepts 5 arguments. The last argument, `$errcontext`, is deprecated since PHP 7.2, and will be removed later.

```
<?php

// setting error_handler with an incorrect closure
set_error_handler(function($errno, $errstr, $errfile, $errline) {});

// setting error_handler with an incorrect closure
set_error_handler(function($errno, $errstr, $errfile, $errline, $errcontext) {});

?>
```

See also set_error_handler().

Suggestions

- Remove the 6th argument of registered handlers.

Specs

Short name	Php/AvoidSetErrorHandlerContextArg
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP72*
Exakat since	1.0.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	error-handler
Examples	*shopware*, *Vanilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.79 Avoid sleep()/usleep()

sleep() and usleep() help saturate the web server.

Pausing the script for a specific amount of time means that the Web server is also making all related resources sleep, such as database, sockets, session, etc. This may used to set up a DOS on the server. As much as possible, avoid delaying the end of the script.

sleep() and usleep() have less impact in commandline (`CLI`).

```
<?php

$begin = microtime(true);
checkLogin($user, $password);
$end   = microtime(true);

// Making all login checks looks the same
usleep(1000000 - ($end - $begin) * 1000000);

// Any hit on this page now uses 1 second, no matter if load is high or not
// Is it now possible to saturate the webserver in 1 s ?

?>
```

Suggestions

- Add a deadline of usage in the session, and wait past this deadline to start serving again. Until then, abort immediately.
- Use element in the GUI to delay or slow usage.

Specs

Short name	Security/NoSleep
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	sleep, cli
Available in	Entreprise Edition, Exakat Cloud

14.2.80 Bad Constants Names

> PHP's manual recommends that developer do not use constants with the convention `__NAME__`. Those are reserved for PHP future use.

For example, `__TRAIT__` recently appeared in PHP, as a magic constant. In the future, other may appear.

The analyzer will report any constant which name is `__.*.__`, or even `_.*_` (only one underscore).

```
<?php

const __MY_APP_CONST__ = 1;

const __MY_APP_CONST__ = 1;

define('__MY_OTHER_APP_CONST__', 2);

?>
```

See also Constants.

Suggestions

- Avoid using names that doesn't comply with PHP's convention

Specs

Short name	Constants/BadConstantnames
Rulesets	*All*, *Analyze*, *PHP recommendations*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	constant
Examples	*PrestaShop*, *Zencart*
Available in	Entreprise Edition, Exakat Cloud

14.2.81 Bad Type Relay

A bad type relay happens where a types argument is relayed to a parameter with another type. This leads to a Fatal error, and stops execution. This is possibly a piece of dead code.

It is recommended to harmonize the types, so the two methods are compatible.

```
<?php

// the $i argument is relayed to bar, which is expecting a string.
function foo(int $i) : string {
    return bar($i);
}

// the return value for the bar function is not compatible with the one from foo;
function bar(string $s) : int {
    return (int) $string + 1;
}

?>
```

Suggestions

- Harmonize the type so they match one with the other.
- Remove dead code
- Apply type casting before calling the next function, or return value

Specs

Short name	Functions/BadTypehintRelay
Rulesets	*All*, *Typechecks*
Exakat since	1.6.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	type
Available in	Entreprise Edition, Exakat Cloud

14.2.82 Bail Out Early

When using conditions, it is recommended to quit in the current context, and avoid the else clause altogether.

The main benefit is to make clear the method applies a condition, and stop immediately when this condition is not satisfied. The main sequence is then focused on the important code.

This analysis works with the `break`, `continue`, `throw` and `goto` keywords too, depending on situations.

```php
<?php

// Bailing out early, low level of indentation
function foo1($a) {
    if ($a > 0) {
        return false;
    }

    $a++;
    return $a;
}

// Works with continue too
foreach($array as $a => $b) {
    if ($a > 0) {
        continue false;
    }

    $a++;
    return $a;
}

// No need for else
function foo2($a) {
    if ($a > 0) {
        return false;
    } else {
        $a++;
    }

    return $a;
}

// No need for else : return goes into then.
function foo3($a) {
    if ($a < 0) {
        $a++;
    } else {
        return false;
    }

    return $a;
}

// Make a return early, and make the condition visible.
function foo3($a) {
    if ($a < 0) {
        $a++;
        methodcall();
        functioncall();
    }
}
```

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```
?>
```

See also Avoid nesting too deeply and return early (part 1) and Avoid nesting too deeply and return early (part 2).

Suggestions

- Detect errors, and then, return as soon as possible.
- When a if…then branches are unbalanced, test for the small branch, finish it with return. Then keep the other branch as the main code.

Specs

Short name	Structures/BailOutEarly
Rulesets	*All*, *Analyze*
Exakat since	0.8.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	return
Examples	*OpenEMR*, *opencfp*
Available in	Entreprise Edition, Exakat Cloud

14.2.83 Binary Glossary

List of all the integer values using the binary format.

```
<?php

$a = 0b10;
$b = 0B0101;

?>
```

See also Integer syntax and Mastering binary and bitwise in PHP.

Specs

Short name	Type/Binary
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP53*, *Inventory*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	integer, binary-integer
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.84 Blind Variable Used Beyond Loop

Foreach() loops defines variables, which are traditionally used only inside the loop block. Using them beyond that limit often leads to surprises.

```
<?php

foreach($a as $b => $c) {
     echo "$b : $c\n";
}
// $b is set inside the loop, but used beyond
$max = $b;

?>
```

Specs

Short name	Structures/BlindVariableUsedBeyondLoop
Rulesets	*All*, *Suggestions*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.85 Blind Variables

Variables that are used in foreach or for structure, for their managing the loop itself.

```
<?php
    foreach($array as $key => $value) {
        // $key and $value are blind values
    }

?>
```

Specs

Short name	Variables/Blind
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	variable-blind
Available in	Entreprise Edition, Exakat Cloud

14.2.86 Bracketless Blocks

PHP allows one liners as for(), foreach(), while(), do/while() loops, or as then/else expressions.

It is generally considered a bad practice, as readability is lower and there are non-negligible risk of excluding from the loop the next instruction. switch() and match() cannot be without bracket.

```
<?php

// Legit one liner
foreach(range('a', 'z') as $letter) ++$letterCount;

// More readable version, even for a one liner.
foreach(range('a', 'z') as $letter) {
    ++$letterCount;
}

?>
```

Suggestions

- Assign in the second branch
- Assign outside the condition

Specs

Short name	Structures/Bracketless
Rulesets	*All*, *Changed Behavior*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.87 Break Outside Loop

Starting with PHP 7, break or continue that are outside a loop (for, foreach(), do…`while() <https://www.php.net/manual/en/control-structures.while.php>`_, while()) or a switch() statement won't compile anymore.

It is not possible anymore to include a piece of code inside a loop that will then break.

```
<?php

    // outside a loop : This won't compile
    break 1;

    foreach($array as $a) {
        break 1; // Compile OK
```

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```
        break 2; // This won't compile, as this break is in one loop, and not 2
    }

    foreach($array as $a) {
        foreach($array2 as $a2) {
            break 2; // OK in PHP 5 and 7
        }
    }
?>
```

Specs

Short name	Structures/BreakOutsideLoop
Rulesets	*All*, *Analyze*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	break, loop
Available in	Entreprise Edition, Exakat Cloud

14.2.88 Break With 0

It is not possible to break 0 : it makes no sense. Break 1 is the minimum, and is the default value.

```
<?php
    // Can't break 0. Must be 1 or more, depending on the level of nesting.
    for($i = 0; $i < 10; $i++) {
        break 0;
    }

    for($i = 0; $i < 10; $i++) {
        for($j = 0; $j < 10; $j++) {
            break 2;
        }
    }

?>
```

Suggestions

- Remove 0, or the break

Specs

Short name	Structures/Break0
Rulesets	*All*, *CompatibilityPHP53*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.89 Break With Non Integer

When using a break, the argument of the operator must be a positive non-null integer literal or be omitted.

Other values were acceptable in PHP 5.3 and previous version, but this is now reported as an error.

```
<?php
    // Can't break $a, even if it contains an integer.
    $a = 1;
    for($i = 0; $i < 10; $i++) {
        break $a;
    }

    // can't break on float
    for($i = 0; $i < 10; $i++) {
        for($j = 0; $j < 10; $j++) {
            break 2.2;
        }
    }

?>
```

Suggestions

- Only use integer with break

Specs

Short name	Structures/BreakNonInteger
Rulesets	*All*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.90 Buried Assignation

Those assignations are buried in the code, and placed in unexpected situations.

They are difficult to spot, and may be confusing. It is advised to place them in a more visible place.

```
<?php

// $b may be assigned before processing $a
$a = $c && ($b = 2);

// Display property p immeiately, but also, keeps the object for later
echo ($o = new x)->p;

// legit syntax, but the double assignation is not obvious.
for($i = 2, $j = 3; $j < 10; $j++) {

}
?>
```

Suggestions

- Extract the assignation and set it on its own line, prior to the current expression.
- Check if the local variable is necessary

Specs

Short name	Structures/BuriedAssignation
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Examples	*XOOPS*, *Mautic*
Available in	Entreprise Edition, Exakat Cloud

14.2.91 Cache Variable Outside Loop

Avoid recalculating constant values inside the loop.

Do the calculation once, outside the loop, and then reuse the value in the body of the loop.

One of the classic example if doing `count($array)` in a `for` loop : since the source is constant during the loop, the result of count() is always the same.

Depending on the load of the called method, this may increase the speed of the loop from little to enormously.

This analysis works on all the loops: while, do…while, foreach and for.

```
<?php

$path = '/some/path';
$fullpath = realpath("$path/more/dirs/");
foreach($files as $file) {
    // Only moving parts are used in the loop
    copy($file, $fullpath.$file);
}

$path = '/some/path';
foreach($files as $file) {
    // $fullpath is calculated each loop
    $fullpath = realpath("$path/more/dirs/");
    copy($file, $fullpath.$file);
}

?>
```

Suggestions

- Avoid using blind variables outside loops.
- Store blind variables in local variables or properties for later reuse.

Specs

Short name	Performances/CacheVariableOutsideLoop
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.2.8
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.92 Call Order

This is a representation of the code. Each node is a function or method, and each link a is call from a method to another.

The only link is the possible call from a method to the other. All control flow is omitted, including conditional calls and loops. From the above script, the resulting network will display 'foo() -> bar(), foo() -> foobar(), bar() -> foobar()' calls.

```
<?php

    function foo() {
        bar();
        foobar();
    }

    function bar() {
        foobar();
    }

    function foobar() {

    }
?>
```

Specs

Short name	Dump/CallOrder
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.93 Callback Function Needs Return

When used with array_map() functions, the callback must return something. This return may be in the form of a `return` statement, a global variable or a parameter with a reference. All those solutions extract information from the callback.

The following functions are omitted, as they don't require the return :

- forward_static_call_array()
- forward_static_call()
- register_shutdown_function()
- register_tick_function()

```php
<?php

// This filters each element
$filtered = array_filter($array, function ($x) {return $x == 2; });

// This return void for every element
$filtered = array_filter($array, function ($x) {return ; });

// costly array_sum()
$sum = 0;
$filtered = array_filter($array, function ($x) use (&$sum) {$sum += $x; });

// costly array_sum()
global $sum = 0;
$filtered = array_filter($array, function () {global $sum; $sum += $x; });

// register_shutown_function() doesn't require any return
register_shutown_function("my_shutdown");

?>
```

See also array_map.

Suggestions

- Add an explicit return to the callback
- Use *null* to unset elements in an array without destroying the index

Specs

Short name	Functions/CallbackNeedsReturn
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.2.6
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Features	callback
Examples	*Contao*, *Phpdocumentor*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.94 Calling Static Trait Method

Calling directly a static method, defined in a trait is deprecated. It emits a deprecation notice in PHP 8.1.

Calling the same method, from the class point of view is valid.

```
<?php

trait T {
    public static function t() {
        //
    }
}

T::t();

?>
```

See also PHP RFC: Deprecations for PHP 8.1.

Suggestions

- Call the method from one of the class using the trait
- Move the method to a class

Specs

Short name	Php/CallingStaticTraitMethod
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP81*, *Deprecated*
Exakat since	2.2.5
PHP Version	With PHP 8.1 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	trait, static-method
Available in	Entreprise Edition, Exakat Cloud

14.2.95 Calltime Pass By Reference

PHP doesn't allow when a value is turned into a reference at functioncall, since PHP 5.4.

Either the function use a reference in its signature, either the reference won't pass.

```
<?php

function foo($name) {
    $arg = ucfirst(strtolower($name));
    echo 'Hello '.$arg;
}
```

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```
$a = 'name';
foo(&$a);

?>
```

See also Passing by Reference.

Suggestions

- Make the signature of the called method accept references
- Remove the reference from the method call
- Use an object instead of a scalar

Specs

Short name	Structures/CalltimePassByReference
Rulesets	*All*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	by-value, by-reference
Available in	Entreprise Edition, Exakat Cloud

14.2.96 Can't Call Generator

> It is not possible to call directly a generator: a generator <https://www.php.net/`generator>`_ is a method that uses the `yield` or `yield from` keyword.

Such structure shall be used directly in a foreach() structure, or with the function `iterator_to_array()`.

```
<?php

function foo() {
     echo __FUNCTION__;
     yield 1;
}

// Won't display anything, even 'foo'
foo();

// displays both foo and 1
foreach(foo() as $g) {
     print $g;
}

?>
```

Specs

Short name	Functions/CanCallGenerator
Rulesets	*All*, *Analyze*
Exakat since	2.6.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	yield, yield-from, generator
Available in	Entreprise Edition, Exakat Cloud

14.2.97 Can't Count Non-Countable

Count() emits an error when it tries to count scalars or objects what don't implement Countable interface.

```
<?php

// Normal usage
$a = array(1,2,3,4);
echo count($a)." items\n";

// Error emiting usage
$a = '1234';
echo count($a)." chars\n";

// Error emiting usage
echo count($unsetVar)." elements\n";

?>
```

See also Warn when counting non-countable types.

Suggestions

- Add a check before using count such as a type check

Specs

Short name	Structures/CanCountNonCountable
Rulesets	*All*, *CompatibilityPHP72*
Exakat since	1.0.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	countable
Available in	Entreprise Edition, Exakat Cloud

14.2.98 Can't Disable Class

This is the list of potentially dangerous PHP class being used in the code, such as `Phar <https://www.php.net/phar>`_.

```
<?php

// This script uses ftp_connect(), therefore, this function shouldn't be disabled.
$phar = new Phar();

?>
```

This analysis is the base for suggesting values for the `disable_classes` directive.

Specs

Short name	Security/CantDisableClass
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	disable-classes
Related rule	*Can't Disable Function*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.99 Can't Disable Function

This is the list of potentially dangerous PHP functions being used in the code, such as exec() or fsockopen().

eval() is not reported here, as it is not a PHP function, but a language construct : it can't be disabled.

```
<?php

// This script uses ftp_connect(), therefore, this function shouldn't be disabled.
$ftp = ftp_connect($host, 21);

// This script doesn't use imap_open(), therefore, this function may be disabled.

?>
```

This analysis is the base for suggesting values for the `disable_functions` directive.

Specs

Short name	Security/CantDisableFunction
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	disable-functions
Related rule	*Can't Disable Class*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.100 Can't Extend Final

It is not possible to extend final classes.

Since PHP fails with a fatal error, this means that the extending class is probably not used in the rest of the code. Check for dead code.

```
<?php
    // File Foo
    final class foo {
        public final function bar() {
            // doSomething
        }
    }
?>
```

In a separate file :

```
<?php
    // File Bar
    class bar extends foo {

    }
?>
```

See also Final Keyword.

Suggestions

- Remove the final keyword
- Remove the extending class

Specs

Short name	Classes/CantExtendFinal
Rulesets	*All*, *Analyze*, *Dead code*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Instant (5 mins)
Precision	Medium
Features	final
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Exakat Cloud

14.2.101 Can't Implement Traversable

> It is not possible to implement the `Traversable` interface. The alternative is to implement `Iterator` or `IteratorAggregate`, which also implements `Traversable`.

`Traversable` may be useful when used with `instanceof`.

```
<?php

// This lints, but doesn't run
class x implements Traversable {

}

if( $argument instanceof Traversable ) {
    // doSomething
}

?>
```

See also Traversable, Iterator and IteratorAggregate.

Suggestions

- Implement Iterator or IteratorAggregate

Specs

Short name	Interfaces/CantImplementTraversable
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *LintButWontExec*
Exakat since	1.9.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	interface
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.102 Can't Instantiate Class

When constructor is not public, it is not possible to instantiate such a class. Either this is a conception choice, or there are factories to handle that. Either way, it is not possible to call new on such class.

```
<?php

//This is the way to go
$x = X::factory();

//This is not possible
$x = new X();

class X {
    //This is also the case with proctected __construct
    private function __construct() {}

    static public function factory() {
        return new X();
    }
}

?>
```

See also In a PHP5 class, when does a private constructor get called?, Named Constructors in PHP and PHP Constructor Best Practices And The Prototype Pattern.

Suggestions

- Make the constructor public
- Create a factory, as a static method, in that class, to create objects
- Remove the new call

Specs

Short name	Classes/CantInstantiateClass
Rulesets	*All*, *Analyze*
Exakat since	1.2.8
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	High
Features	constructor, visibility
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.103 Can't Overwrite Final Constant

A class constant may be `final`, and can't be overwritten in a child class. `final` is a way to make sure a constant cannot be changed in children classes.

`private` constants can't be made final, as they are not accessible to any other class.

```
<?php

class y extends x {
    const F = 1;
    const P = 2;
}

class x {
    final const F = 3;
    private const PRI = 5; // Private can't be final
    const P = 4;
}

?>
```

Suggestions

- Remove the final keyword in the parent class
- Remove the class constant in the child class
- Rename the class constant in the child class

Specs

Short name	Classes/CantOverwriteFinalConstant
Rulesets	*All*, *Analyze*, *Class Review*, *LintButWontExec*
Exakat since	2.3.9
PHP Version	With PHP 8.1 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	final, overwrite
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.104 Can't Overwrite Final Method

A final method is a method that cannot be overwritten in a child class. This means that no class below the current class may define a method with the same name.

```
<?php

class y extends x {
    function method() {}
}

class x {
    final function method() {}
}

?>
```

Suggestions

- Remove the final keyword in the parent class
- Remove the method in the child class
- Rename the method in the child class

Specs

Short name	Classes/CantOverwriteFinalMethod
Rulesets	*All*
Exakat since	2.4.2
PHP Version	With PHP 5.0 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	final, overwrite
Available in	Entreprise Edition, Exakat Cloud

14.2.105 Can't Throw Throwable

> Classes extending `Throwable` can't be thrown, unless they also extend `Exception`. The same applies to interfaces that extends `Throwable`.

Although such code lints, PHP throws a Fatal error when executing or including it : `Class fooThrowable cannot implement interface `Throwable <https://www.php.net/manual/en/class.`throwable <https://www.php.net/throwable>`_.php>`_, extend `Exception <https://www.php.net/exception>`_ or `Error <https://www.php.net/error>`_ instead.`

```
<?php

// This is the way to go
class fooException extends \Exception { }

// This is not possible and a lot of work
class fooThrowable implements \throwable { }

?>
```

See also Throwable, Exception and Error.

Suggestions

- Extends the Exception class
- Extends the Error class

Specs

Short name	Exceptions/CantThrow
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*
Exakat since	1.3.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	throwable
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.106 Cancel Common Method

A parent method's is too little used in children.

The parent class has a method, which is customised in children classes, though most of the time, those are empty : hence, cancelled.

```
<?php

class x {
    abstract function foo();
    abstract function bar();
}

class y1 extends x {
    function foo() { doSomething(); }
    function bar() { doSomething(); };
}

class y2 extends x {
    // foo is cancelled : it must be written, but has no use.
    function foo() {  }
    function bar() { doSomething(); };
}

?>
```

A threshold of `cancelThreshold` % of the children methods have to be cancelled to report the parent class. By default, it is 75 (or 3 out of 4).

Name	Default	Type	Description
cancelThreshold	75	integer	Minimal number of cancelled methods to suggest the cancellation of the parent.

Suggestions

- Drop the common method, and the cancelled methods in the children
- Fill the children's methods with actual code

Specs

Short name	Classes/CancelCommonMethod
Rulesets	*All*, *Class Review*, *Suggestions*
Exakat since	2.1.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.107 Cancelled Parameter

> A parameter is cancelled, when its value is hardcoded, and cannot be changed by the calling expression. The argument is in the signature, but it is later hardcoded to a literal value : thus, it is not usable, from the caller point of view.

Reference argument are omitted in this rule, as their value changes, however hardcoded, may have an impact on the calling code.

```
<?php

function foo($a, $b) {
    // $b is cancelled, and cannot be changed.
    $b = 3;

    // $a is the only parameter here
    return $a + $b;
}

function bar($a, $b) {
    // $b is actually processed
    $c = $b;
    $c = process($c);

    $b = $c;

    // $a is the only parameter here
    return $a + $b;
}

?>
```

Suggestions

- Remove the parameter in the method signature

Specs

Short name	Functions/CancelledParameter
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.2.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.108 Cannot Call Static Trait Method Directly

From the migration docs : Calling a static method, or accessing a static property directly on a trait is deprecated. Static methods and properties should only be accessed on a class using the trait.

```
<?php
 trait t { static public function t() {}}
 a::t();
// OK
 t::t();
 //Calling static trait method t::t is deprecated, it should only be called on a class␣
↪using the trait

 class a {
    use t;
 }

?>
```

See also Calling a static element on a trait.

Suggestions

- Use the trait in a class, and call the method from the class.

Specs

Short name	Traits/CannotCallTraitMethod
Rulesets	*All*, *Analyze*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.3.1
PHP Version	With PHP 8.1 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	trait, static-method
Available in	Entreprise Edition, Exakat Cloud

14.2.109 Cannot Use Append For Reading

The append operator `[]` is used to add a value to an array. It doesn't provide an existing value to read. Hence, the short assignement operators, or the increment ones should not be used with the append operator. For example, the coalesce operator yields an error when used with append.

```
<?php

$x = [];
$x[] = 1; // normal usage
$x[] += 2; // adds a 2, but should yield an error
$x[]++;    // adds a 1, but should yield an error
// variations with -= *= &= etc.

$x[] ??= 4; // yields a fatal error

?>
```

Suggestions

- Remove the short assignement and build a real expression on the right hand of the assignement to append

Specs

Short name	Structures/CannotUseAppendForReading
Rulesets	*All*, *Analyze*
Exakat since	2.6.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.110 Cannot Use Static For Closure

The reported closures and arrow functions cannot use the static keyword.

Closures that makes use of the $this pseudo-variable cannot use the static keyword, at it prevents the import of the $this context in the closure <https://www.php.net/`closure>`_. It will fail at execution.

Closures that makes use of the bindTo() method, to change the context of execution, also cannot use the static keyword. Even if $this is not used in the closure <https://www.php.net/`closure>`_, the static keyword prevents the call to bindTo().

```
<?php

class x {
    function foo() {
        // Not possible, $this is now undefined in the body of the closure
        static function () { return $this->a;};
    }

    function foo2() {
        // Not possible, $this is now undefined in the body of the arrow function
        static fn () => $this->a;
    }

    function foo3() {
        // Not possible, the closure gets a new context before being called.
        $a = static fn () => $ba;
        $this->foo4($a);
    }

    function foo4($c) {
        $c->bindTo($this);
        $c();
    }

}
?>
```

See also Static anonymous functions.

Suggestions

- Remove the static keyword
- Remove the call to bindTo() method
- Remove the usage of the $this variable

Specs

Short name	Functions/CannotUseStaticForClosure
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.2.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Medium
Features	closure, static
Available in	Entreprise Edition, Exakat Cloud

14.2.111 Cant Inherit Abstract Method

Inheriting abstract methods was made available in PHP 7.2. In previous versions, it emitted a fatal error.

```
<?php

abstract class A           { abstract function bar(stdClass $x);  }
abstract class B extends A { abstract function bar($x): stdClass; }

//   Fatal error: Can't inherit abstract function A::bar()
?>
```

See also PHP RFC: Allow abstract function override.

Suggestions

- Avoid inheriting abstract methods for compatibility beyond 7.2 (and older)

Specs

Short name	Classes/CantInheritAbstractMethod
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*
Exakat since	0.11.8
PHP Version	With PHP 7.2 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	abstract
Available in	Entreprise Edition, Exakat Cloud

14.2.112 Cant Instantiate Non Class

It is not possible to instantiate anything else than a class. Interfaces, enumerations and traits cannot be instantiated.

```
<?php

class c {}

$object = new c;

trait t {}
new t;

?>
```

Specs

Short name	Classes/CantInstantiateNonClass
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.6.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.113 Cant Overload Constants

It was not possible to overload class constants within a class, when the constant was defined in an interface.

```
<?php

interface i {
    const A = 1;
}

//This lints, but doesn't executin in PHP 8.0 and older.
class x implements i {
    const A = 1;
}

?>
```

See also *interface constants <https://www.php.net/manual/en/language.oop5.interfaces.php#language.oop5.interfaces.constants>*.

Suggestions

- Avoid overloading constants
- Define the constants only in the classes

Specs

Short name	Interfaces/CantOverloadConstants
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *LintButWontExec*
Exakat since	2.3.2
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.1 - More
Precision	High
Features	interface, class
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.114 Cant Use Return Value In Write Context

empty() used to work only on data containers, such as variables. Until PHP 5.5, it was not possible to use directly expressions, such as functioncalls, inside an empty() function call : they were met with a 'Can't use function return value in write context' fatal error.

This also applies to methodcalls, static or not.

```
<?php

function foo($boolean) {
    return $boolean;
}

// Valid since PHP 5.5
echo empty(foo(true)) : 'true' : 'false';

?>
```

See also Cant Use Return Value In Write Context.

Specs

Short name	Php/CantUseReturnValueInWriteContext
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	return
Available in	Entreprise Edition, Exakat Cloud

14.2.115 Case Insensitive Constants

PHP constants used to be able to be case insensitive, when defined with define() and the third argument.

This feature is deprecated since PHP 7.3 and is removed since PHP 8.0.

```
<?php

// case sensitive
define('A', 1);

// case insensitive
define('B', 1, true);

echo A;
// This is not possible
//echo a;
```

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```
// both possible
echo B;
echo b;

?>
```

See also define.

Specs

Short name	Constants/CaseInsensitiveConstants
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP73*, *Deprecated*
Exakat since	1.3.9
PHP Version	With PHP 8.0 and older
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	Very high
Features	dynamic-constant, constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.116 Cast To Boolean

This expression may be reduced by casting to boolean type.

```
<?php

$variable = $condition == 'met' ? 1 : 0;
// Same as
$variable = (bool) $condition == 'met';

$variable = $condition == 'met' ? 0 : 1;
// Same as (Note the condition inversion)
$variable = (bool) $condition != 'met';
// also, with an indentical condition
$variable = !(bool) $condition == 'met';

// This also works with straight booleans expressions
$variable = $condition == 'met' ? true : false;
// Same as
$variable = $condition == 'met';

?>
```

Suggestions

- Remove the old expression and use `(bool)` operator instead
- Change the target values from true/false, or 0/1 to non-binary values, like strings or integers beyond 0 and 1.
- Complete the current branches with other commands

Specs

Short name	Structures/CastToBoolean
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	cast
Examples	*MediaWiki*, *Dolibarr*
Available in	Entreprise Edition, Exakat Cloud

14.2.117 Cast Unset Usage

Usage of the *(unset)* cast operator was removed. The operator was deprecated since PHP 7.2.0.

```
<?php

$a = 1;
(unset) $a;

// functioncall is OK
unset($a);

?>
```

See also Unset casting.

Suggestions

- Replace *(unset)* with a call to unset().
- Remove the unset call altogether.
- Set the value to NULL.

Specs

Short name	Php/CastUnsetUsage
Rulesets	*All*, *CE*, *CompatibilityPHP80*
Exakat since	2.1.8
PHP Version	With PHP 8.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	cast, unset
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.118 Cast Usage

List of all cast usage.

PHP does not require (or support) explicit type definition in variable declaration; a variable's type is determined by the context in which the variable is used. Until PHP 7.2, a `(unset)` operator was available. It had the same role as `unset()` as a function.

```
<?php

if (is_int($_GET['x'])) {
    $number = (int) $_GET['x'];
} else {
    error_display('a wrong value was provided for "x"');
}

?>
```

See also Type Juggling and unset.

Specs

Short name	Php/CastingUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	cast
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.119 Casting Ternary

Type casting has a precedence over ternary operator, and is applied first. When this happens, the condition is cast, although it is often useless as PHP will do it if needed.

This applies to the ternary operator, the coalesce operator ?: and the null-coalesce operator ??.

```
<?php
    $a = (string) $b ? 3 : 4;
    $a = (string) $b ?: 4;
    $a = (string) $b ?? 4;
?>
```

The last example generates first an error *Undefined variable: b*, since $b is first cast to a string. The result is then an empty string, which leads to an empty string to be stored into $a. Multiple errors cascade.

See also Operators Precedence.

Suggestions

- Add parenthesis around the ternary operator
- Skip the casting
- Cast in another expression

Specs

Short name	Structures/CastingTernary
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.8.0
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	ternary, cast
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.120 Catch Overwrite Variable

The try/catch structure uses some variables that are also in use in this scope. In case of a caught exception, the exception will be put in the catch variable, and overwrite the current value, loosing some data.

```
<?php

// variables and caught exceptions are distinct
$argument = 1;
try {
    methodThatMayRaiseException($argument);
} (Exception $e) {
    // here, $e has been changed to an exception.
}
```

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```
// variables and caught exceptions are overlapping
$e = 1;
try {
    methodThatMayRaiseException();
} (Exception $e) {
    // here, $e has been changed to an exception.
}

?>
```

It is recommended to use another name for these catch variables.

Suggestions

- Use a standard : only use $e (or else) to catch exceptions. Avoid using them for anything else, parameter, property or local variable.
- Change the variable, and keep the caught exception

Specs

Short name	Structures/CatchShadowsVariable
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	try-catch
ClearPHP	no-catch-overwrite
Examples	*PhpIPAM*, *SuiteCrm*
Available in	Entreprise Edition, Exakat Cloud

14.2.121 Catch With Undefined Variable

Always initialize every variable before the try block, when they are used in a catch block. If the exception is raised before the variable is defined, the catch block may have to handle an undefined variable, leading to more chaos.

```
<?php
    $a = 1;
    try {
        mayThrowAnException();
        $b = 2;
    } catch (\Exception $e) {
        // $a is already defined, as it was done before the try block
        // $b may not be defined, as it was initialized after the exception-throwing␣
↪expression
```

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```
        echo $a + $b;
    }
?>
```

See also catch and Non-capturing exception catches in PHP 8.

Suggestions

- Always define the variable used in the catch clause, before the try block.

Specs

Short name	Exceptions/CatchUndefinedVariable
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.1.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.122 Caught Exceptions

This rule collects the exceptions used in catch clause. Those are the caught exceptions.

Caught exceptions might be thrown from within the code, or from an outside library.

```
<?php

try {
    foo();
} catch (MyException $e) {
    fixException();
} catch (MyOtherException1|MyOtherException2) {
    fixException();
} finally {
    clean();
}

?>
```

Specs

Short name	Exceptions/CaughtExceptions
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	catch
Available in	Entreprise Edition, Exakat Cloud

14.2.123 Caught Expressions

List of caught exceptions.

```
<?php

// This analyzer reports MyException and Exception
try {
    doSomething();
} catch (MyException $e) {
    fixIt();
} catch (\Exception $e) {
    fixIt();
}

?>
```

See also Exceptions.

Specs

Short name	Php/TryCatchUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	catch
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.124 Caught Variable

Catch clauses require an exception and a variable name. Often, the variable name is the same, *$e*, as learnt from the manual.

There seems to be a choice that is not enforced : one form is dominant, (> 90%) while the others are rare.

The analyzed code has less than 10% of one of the three : for consistency reasons, it is recommended to make them all the same.

```
<?php

try {
    // do Something()
}
catch (MyException1 $e)       { $log->log($e->getMessage();}
catch (MyException2 $e)       { $log->log($e->getMessage();}
catch (MyException3 $e)       { $log->log($e->getMessage();}
catch (MyException4 $e)       { $log->log($e->getMessage();}
catch (MyException5 $e)       { $log->log($e->getMessage();}
catch (MyException6 $e)       { $log->log($e->getMessage();}
catch (MyException7 $e)       { $log->log($e->getMessage();}
catch (MyException8 $e)       { $log->log($e->getMessage();}
catch (MyException9 $e)       { $log->log($e->getMessage();}
catch (MyException10 $e)      { $log->log($e->getMessage();}
catch (\RuntimeException $e)  { $log->log($e->getMessage();}
catch (\Error $error)         { $log->log($error->getMessage();}
catch (\Exception $exception) { $log->log($exception->getMessage();}
?>
```

Suggestions

- Make all caught constant consistent, and avoid using them for something else

Specs

Short name	Exceptions/CatchE
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	1.7.6
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	exception
Available in	Entreprise Edition, Exakat Cloud

14.2.125 Check After Null Safe Operator

> Null-safe operator is ?->, which prevents fatal errors in case the object of the call is NULL. The execution continues, though the result of the expression is now NULL too.

While it saves some checks in certain cases, the null-safe operator should be followed by a check on the returned value to process any misfire of the method.

This analysis checks that the result of the expression is collected, and compared to null.

```
<?php

$result = $object?->foo();

if ($result === null) {
     throw new ObjectException(The object could not call $foo\n);
}

?>
```

Suggestions

- Collect and check the result of the expression to null
- Remove the null-safe operator and check before calling the object's method or property

Specs

Short name	Classes/CheckAfterNullSafeOperator
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Suggestions*
Exakat since	2.6.4
PHP Version	With PHP 8.1 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	nullsafe-object-operator
Available in	Entreprise Edition, Exakat Cloud

14.2.126 Check All Types

> When checking for type, avoid using else. Mention explicitly all tested types, and raise an exception when all available options have been exhausted : after all, this is when the code doesn't know how to handle the datatype.

PHP has a short list of scalar types : null, boolean, integer, real, strings, object, resource and array. When a variable is not holding one the the type, then it may be of any other type.

Most of the time, when using a simple is_string() / else test, this is relying on the conception of the code. By construction, the arguments may be one of two types : array or string.

What happens often is that in case of failure in the code (database not working, another class not checking its results), a third type is pushed to the structure, and it ends up breaking the execution.

The safe way is to check the various types all the time, and use the default case (here, the else) to throw exception() or test an assertion and handle the special case.

```
<?php

// hasty version
if (is_array($argument)) {
    $out = $argument;
} else {
    // Here, $argument is NOT an array. What if it is an object ? or a NULL ?
    $out = array($argument);
}

// Safe type checking : do not assume that 'not an array' means that it is the other␣
↪expected type.
if (is_array($argument)) {
    $out = $argument;
} elseif (is_string($argument)) {
    $out = array($argument);
} else {
    assert(false, '$argument is not an array nor a string, as expected!');
}

?>
```

Using is_callable(), is_iterable() with this structure is fine : when variable is callable or not, while a variable is an integer or else.

Using a type test without else is also accepted here. This is a special treatment for this test, and all others are ignored. This aspect may vary depending on situations and projects.

Suggestions

- Include a default case to handle all unknown situations
- Include and process explicit types as much as possible

Specs

Short name	Structures/CheckAllTypes
Rulesets	*All*, *Analyze*
Exakat since	0.10.6
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Medium
Examples	*Zend-Config*, *Vanilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.127 Check Crypto Key Length

Each cryptography algorithm requires a reasonable length. Make sure an up-to-date length is used.

This rule use the following recommendations :

- *OPENSSL_KEYTYPE_RSA* => 3072
- *OPENSSL_KEYTYPE_DSA* => 2048
- *OPENSSL_KEYTYPE_DH* => 2048
- *OPENSSL_KEYTYPE_EC* => 512

The values above are used with the openssl PHP extension.

```
<?php

// Extracted from the documentation

// Generates a new and strong key
$private_key = openssl_pkey_new(array(
    "private_key_type" => OPENSSL_KEYTYPE_EC,
    "private_key_bits" => 1024,
));

// Generates a new and weak key
$private_key = openssl_pkey_new(array(
    "private_key_type" => OPENSSL_KEYTYPE_EC,
    "private_key_bits" => 256,
));

?>
```

See also The Definitive 2019 Guide to Cryptographic Key Sizes and Algorithm Recommendations and Cryptographic Key Length Recommendation.

Suggestions

- Lengthen the cryptographic key

Specs

Short name	Security/CryptoKeyLength
Rulesets	*All*, *Security*
Exakat since	2.1.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	cryptography, openssl
Available in	Entreprise Edition, Exakat Cloud

14.2.128 Check Division By Zero

> Always check before dividing by a value. If that value is cast to 0, PHP might stop the processing with an exception, or keep processing it with 0 as a result. Both will raise problems.

The best practise is to check the incoming value before attempting the division. On possible alternative is to catch the DivisionByZeroError <https://www.php.net/manual/en/class.`divisionbyzeroerror.php>`_ exception, that PHP 8.0 and more recent will raise.

```
<?php

// Check the value before usage
function foo($a = 1) {
    if ($a !== 0) {
        return 42 / $a;
    } else {
        // process an error
    }
}

// Check the value after usage (worse than the above)
function foo($a = 1) {
    try {
        return 42 / $a;
    } catch (DivisionByZero) {
        // fix the situation now
    }
}

// This might fails with a division by 0
function foo($a = 1) {
    return 42 / $a;
}

?>
```

See also DivisionByZeroError.

Specs

Short name	Structures/CheckDivision
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.3.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	exception, arithmeticerror
Related rule	*Could Use Try*
Available in	Entreprise Edition, Exakat Cloud

14.2.129 Check JSON

Check errors whenever JSON is encoded or decoded.

In particular, `NULL` is a valid decoded JSON response. If you want to avoid mistaking NULL for an error, it is recommended to call `json_last_error`.

```
<?php

$encoded = json_encode($incoming);
// Unless JSON must contains some non-null data, this mistakes NULL and error
if(json_last_error() != JSON_ERROR_NONE) {
    die('Error when encoding JSON');
}

$decoded = json_decode($incoming);
// Unless JSON must contains some non-null data, this mistakes NULL and error
if($decoded === null) {
    die('ERROR');
}

?>
```

See also Option to make json_encode and json_decode throw exceptions on errors and json_last_error.

Suggestions

- Always check after JSON operation : encoding or decoding.
- Add a call to json_last_error()
- Configure operations to throw an exception upon error (`JSON_THROW_ON_ERROR`), and catch it.

Specs

Short name	Structures/CheckJson
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.3.0
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	json
Examples	*Woocommerce*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.130 Check On __Call Usage

When using the magic methods __call() and __staticcall(), make sure the method exists before calling it.

If the method doesn't exists, then the same method will be called again, leading to the same failure. Finally, it will crash PHP.

```
<?php

class safeCall {
    function __class($name, $args) {
        // unsafe call, no checks
        if (method_exists($this, $name)) {
            $this->$name(...$args);
        }
    }
}

class unsafeCall {
    function __class($name, $args) {
        // unsafe call, no checks
        $this->$name(...$args);
    }
}

?>
```

See also Method overloading and Magical PHP: __call.

Suggestions

- Add a call to method_exists() before using any method name
- Relay the call to another object that doesn't handle __call() or __callStatic()

Specs

Short name	Classes/CheckOnCallUsage
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.7.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	magic-method
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.131 Checks Property Existence

This analysis reports checks property existence.

In PHP 8.2, non-specified properties are discouraged : they should always be defined in the class code. When this guideline is applied, properties always exists, and a call to property_exists() is now useless.

Some situations are still legit : + When the class is `stdClass`, where no property is initially defined. This may be the case of JSON data, or arrays cast to objects. + When the class uses magic methods, in particular __get(), __set() and __isset().

```
<?php

class x {
    private $a = 1;

    function foo() {
        $this->cache = $this->a + 1;
    }

}

?>
```

In this analysis, isset() and property_exists() are both used to detect this checking behavior. property_exists() is actually the only method to actually check the existence, since isset() will confuse non-existing properties and `null`.

While the behavior is deprecated in PHP 8.2, it is recommended to review older code and remove it. It will both ensure forward compatibility and cleaner, faster local code.

Specs

Short name	Classes/ChecksPropertyExistence
Rulesets	*All*, *CompatibilityPHP82*
Exakat since	2.3.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	stdclass, property
Related rule	*Undefined Properties*
Available in	Entreprise Edition, Exakat Cloud

14.2.132 Child Class Removes Typehint

PHP 7.2 introduced the ability to remove a typehint when overloading a method. This is not valid code for older versions.

```
<?php

class foo {
    function foobar(foo $a) {}
```

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```
}

class bar extends foo {
    function foobar($a) {}
}

?>
```

Specs

Short name	Classes/ChildRemoveTypehint
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *Typechecks*
Exakat since	0.12.4
PHP Version	With PHP 7.2 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.133 Class Const With Array

Constant defined with const keyword may be arrays, starting with PHP 5.6.

```
<?php

const MY_ARRAY = array();

class x {
     const MY_OTHER_ARRAY = [1, 2];
}
?>
```

Suggestions

- Store the array in a variable
- Upgrade to PHP 7.0 or more recent

Specs

Short name	Php/ClassConstWithArray
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and more recent
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	Very high
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.134 Class Could Be Final

Any class that has no extension should be `final` by default.

As stated by `Matthias Noback`: `If a class is not marked final, it has at least one subclass`.

Prevent your classes from being subclassed by making them `final`. Sometimes, classes are not meant or thought to be derivable.

```
<?php

class x {}            // This class is extended
class y extends x {}  // This class is extended
class z extends y {}  // This class is not extended

final class z2 extends y {}  // This class is not extended

?>
```

See also Negative architecture, and assumptions about code and When to declare methods final.

Suggestions

- Make the class final
- Extends the class

Specs

Short name	Classes/CouldBeFinal
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	1.4.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	final
Available in	Entreprise Edition, Exakat Cloud

14.2.135 Class Could Be Readonly

When all properties are readonly, it is possible to set the option at the class. This feature was introduced in PHP 8.2.

```
<?php

// This class could be readonly
class x {
     private readonly A $p;
     private readonly A $p2;
}

?>
```

See also PHP 8.2: readonly Classes.

Suggestions

- Remove readonly from the properties, and add it to the classes.

Specs

Short name	Classes/CouldBeReadonly
Rulesets	*All*, *Class Review*, *Suggestions*
Exakat since	2.5.1
PHP Version	With PHP 8.2 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	readonly
Available in	Entreprise Edition, Exakat Cloud

14.2.136 Class Function Confusion

Avoid classes and functions bearing the same name.

When functions and classes bear the same name, calling them may be confusing. This may also lead to forgotten 'new' keyword.

```
<?php

class foo {}

function foo() {}

// Forgetting the 'new' operator is easy
$object = new foo();
$object = foo();

?>
```

Suggestions

- Use a naming convention to distinguish functions and classes
- Rename the class or the function (or both)
- Use an alias with a *use* expression

Specs

Short name	Php/ClassFunctionConfusion
Rulesets	*All*, *Changed Behavior*, *Semantics*
Exakat since	0.10.2
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	function, class
Available in	Entreprise Edition, Exakat Cloud

14.2.137 Class Has Fluent Interface

Mark a class as such when it contains at least one fluent method. A fluent method is a method that returns $this, for chaining.

```
<?php

class foo {
    private $count = 0;

    function a() {
        ++$this->count;
```

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```
        return $this;
    }

    function b() {
        $this->count += 2;
        return $this;
    }

    function c() {
        return $this->count;
    }
}

$bar = new foo();
print $bar->a()
          ->b()
          ->c();

// display 3 (1 + 2).

?>
```

See also Fluent interface are evil, The basics of Fluent interfaces in PHP and FluentInterface.

Specs

Short name	Classes/HasFluentInterface
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	fluent-interface
Available in	Entreprise Edition, Exakat Cloud

14.2.138 Class Injection Count

Counts the number of arguments in the constructor. Variadic arguments are counted as one. The more injections in a constructor, the harder it is to use it. Although, the threshold for difficulty is probably quite high.

```
<?php

class x {
     function __constructor(A $a, B, $b) {

     }
}
```

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```
?>
```

Specs

Short name	Dump/ClassInjectionCount
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.139 Class Invasion

Class invasion happens when an object access another object's private methods or properties.

This is possible from the scope of the class itself. For example, an cloned object, or a parameter with the same type as the current class.

Class invasion is a PHP feature.

```
<?php

class x {
     private $p = 1;

     function foo(X $x) {
             // This is the normal access to private properties.
             $this->p = 3;
             // This is class invasion, as $x is a distinct object.
             $x->p = 2;
     }
}

?>
```

This applies to properties, constants and methods, static or not.

Specs

Short name	Classes/ClassInvasion
Rulesets	*All*, *Class Review*
Exakat since	2.5.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	class-invasion
Available in	Entreprise Edition, Exakat Cloud

14.2.140 Class Overreach

> An object of class A may reach any private or protected properties, constants or methods in another object of the same class. This is a PHP feature, though seldom known.

This feature is also called class invasion.

```
<?php

class A {
    private $p = 1;

    public function foo(A $a) {
        return $a->p + 1;
    }
}

echo (new A)->foo(new A);

?>
```

See also Visibility from other objects and spatie/invade.

Suggestions

- Use a getter to reach inside the other object private properties

Specs

Short name	Classes/ClassOverreach
Rulesets	*All*, *Appinfo*
Exakat since	2.2.2
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Medium
Features	visibility, class-invasion
Available in	Entreprise Edition, Exakat Cloud

14.2.141 Class Should Be Final By Ocramius

'Make your classes always final, if they implement an interface, and no other public methods are defined'.

When a class should be final, as explained by `Ocramius` (`Marco Pivetta`).

```
<?php

interface i1 {
    function i1() ;
}

// Class should final, as its public methods are in an interface
class finalClass implements i1 {
    // public interface
    function i1 () {}

    // private method
    private function a1 () {}
}

?>
```

See also Final classes by default, why? and When to declare classes final.

Specs

Short name	Classes/FinalByOcramius
Rulesets	*All*, *Class Review*
Exakat since	0.9.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	final
Available in	Entreprise Edition, Exakat Cloud

14.2.142 Class Usage

List of classes being used.

```
<?php

// Class may be used in a use expression
use MyClass as MyAliasedClass;

// class may be aliased with class_alias
class_alias('MyOtherAliasedClass', 'MyClass');

// Class may be instanciated
$o = new MyClass();
```

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```
// Class may be used with instanceof
var_dump($o instanceof \MyClass);

// Class may be used in static calls
MyClass::aConstant;
echo MyClass::$aProperty;
echo MyClass::aMethod( $o );

// Class may be extended
class MyOtherClass {

}

class MyClass extends MyOtherClass {
    const aConstant = 1;

    public static $aProperty = 2;

    // also used as a typehint
    public static function aMethod(MyClass $object) {
        return __METHOD__;
    }
}

?>
```

Specs

Short name	Classes/ClassUsage
Rulesets	*All*
Exakat since	0.8.4
PHP Version	
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.143 Class Without Parent

Classes should not refer to `parent` when it is not extending another class.

In PHP 7.4, it is a Deprecated warning. In PHP 7.3, it was a Fatal error, when the code was eventually executed. In PHP 8.0, PHP detects this error at compile time, except for parent keyword in a closure <https://www.php.net/^closure>`_.

`parent` usage in trait is detected. It is only reported when the trait is used inside a class without parent, as the trait may also be used in another class, which has a parent.

```
<?php

class x {
    function foo() {
        parent::foo();
    }
}
?>
```

Suggestions

- Update the class and make it extends another class
- Change the parent mention with a fully qualified name
- Remove the call to the parent altogether

Specs

Short name	Classes/NoParent
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Class Review*
Exakat since	1.9.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	Very high
Features	parent
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.144 Class, Interface, Enum Or Trait With Identical Names

The following names are used at the same time for classes, interfaces or traits. For example,

```
<?php
    class a     { /* some definitions */ }
    interface a { /* some definitions */ }
    trait a     { /* some definitions */ }
    enum a      { /* some definitions */ } // PHP 8.1
?>
```

Even if they are in different namespaces, identical names makes classes easy to confuse. This is often solved by using alias at import time : this leads to more confusion, as a class suddenly changes its name.

Internally, PHP use the same list for all classes, interfaces and traits. As such, it is not allowed to have both a trait and a class with the same name.

In PHP 4, and PHP 5 before namespaces, it was not possible to have classes with the same name. They were simply included after a check.

Suggestions

- Use distinct names for every class, trait and interface.
- Keep eponymous classes, traits and interfaces in distinct files, for definition but also for usage. When this happens, rename one of them.

Specs

Short name	Classes/CitSameName
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Examples	*shopware*, *NextCloud*
Available in	Entreprise Edition, Exakat Cloud

14.2.145 Class-typed References

> Class-typee arguments have no need for references. Since they are representing an object, they are already a reference.

In fact, adding the & on the argument definition may lead to error like `Only variables should be passed by reference`.

This applies to the `object` type hint, but not the the others, such as `int` or `bool`.

```
<?php
    // a class
    class X {
        public $a = 3;
    }

    // typehinted reference
    //function foo(object &$x) works too
    function foo(X &$x) {
        $x->a = 1;

        return $x;
    }
```

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```
    // Send an object
    $y = foo(new X);

    // This prints 1;
    print $y->a;
?>
```

See also Passing by reference and Objects and references.

Suggestions

- Remove reference for typehinted arguments, unless the typehint is a scalar typehint.

Specs

Short name	Functions/TypehintedReferences
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.2.8
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	reference
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.146 Classes Mutually Extending Each Other

Those classes are extending each other, creating an extension loop. PHP will yield a fatal error at running time, even if it is compiling the code.

```
<?php

// This code is lintable but won't run
class Foo extends Bar { }
class Bar extends Foo { }

// The loop may be quite large
class Foo extends Bar { }
class Bar extends Bar2 { }
class Bar2 extends Foo { }

?>
```

Specs

Short name	Classes/MutualExtension
Rulesets	*All*, *Class Review*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	extends
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.147 Classes Names

List of all classes, as defined in the application.

```
<?php

// foo is in the list
class foo {}

// Anonymous classes are not in the list
$o = class { function foo(){} }

?>
```

See also class.

Specs

Short name	Classes/Classnames
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.148 Clone Constant

> Cloning constant is only possible since PHP 8.1. Until that version, constants could not be an object, and as such, could not be cloned.

This is also valid with default values, however they are assigned to a variable, which falls back to the classic clone usage.

Backward compatibility is OK, since PHP compile such code, and only checks at execution time that the constant is an object.

```
<?php

// new is available in constant definition, since PHP 8.2
const A = new B();
$c = clone A;

?>
```

See also New in initializers.

Specs

Short name	Php/CloneConstant
Rulesets	*All*, *Analyze*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *LintButWontExec*
Exakat since	2.4.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	new, constant
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.149 Clone Usage

List of all clone situations.

```
<?php
    $dateTime = new DateTime();
    echo (clone $dateTime)->format('Y');
?>
```

See also Object cloning.

Specs

Short name	Classes/CloningUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	clone
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.150 Clone With Non-Object

The `clone` keyword must be used on variables, properties or results from a function or method call.

`clone` cannot be used with constants or literals.

```
<?php

class x { }
$x = new x();

// Valid clone
$y = clone $x;

// Invalid clone
$y = clone x;

?>
```

Cloning a non-object lint but won't execute.

See also Object cloning.

Suggestions

- Only clone containers (like variables, properties…)
- Add typehint to injected properties, so they are checked as objects.

Specs

Short name	Classes/CloneWithNonObject
Rulesets	*All*, *Analyze*, *LintButWontExec*
Exakat since	1.7.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	clone
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.151 Close Tags Consistency

PHP scripts may omit the final closing tag.

This is a convention, used to avoid the infamous 'headers already sent' error message, that appears when a script with extra invisible spaces is included before actually emitting the headers.

The PHP manual recommends : "If a file is pure PHP code, it is preferable to omit the PHP closing tag at the end of the file.". (See PHP Tags):

```
.. code-block:: php

   <?php

   class foo {

   }
```

Specs

Short name	Php/CloseTagsConsistency
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	0.9.3
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	close-tag
Available in	Entreprise Edition, Exakat Cloud

14.2.152 Closing Tags

PHP manual recommends that script should be left open, without the final closing ?>. This way, one will avoid the infamous bug `'Header already sent'`, associated with left-over spaces, that are lying after this closing tag.

<?php

// some code

// no closing tag

See also PHP Closing Tag.

Suggestions

- Always leave the last closing tag out

Specs

Short name	Php/CloseTags
Rulesets	*All*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	close-tag
ClearPHP	leave-last-closing-out
Available in	Entreprise Edition, Exakat Cloud

14.2.153 Closure Could Be A Callback

Closure <https://www.php.net/manual/en/class.`closure.php>`_ and arrow function may be simplified to a callback. Callbacks are strings or arrays.

A simple closure <https://www.php.net/`closure>`_ that only returns arguments relayed to another function or method, could be reduced to a simpler expression.

Closure <https://www.php.net/manual/en/class.`closure.php>`_ may be simplified with a string, for functioncall, with an array for methodcalls and static methodcalls.

Performances : simplifying a closure <https://www.php.net/`closure>`_ tends to reduce the call time by 50%.

```
<?php

// Simple and faster call to strtoupper
$filtered = array_map('strtoupper', $array);

// Here the closure doesn't add any feature over strtoupper
$filtered = array_map(function ($x) { return strtoupper($x);}, $array);

// Methodcall example : no fix
```

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```
$filtered = array_map(function ($x) { return $x->strtoupper() ;}, $array);

// Methodcall example  : replace with array($y, 'strtoupper')
$filtered = array_map(function ($x) use ($y) { return $y->strtoupper($x) ;}, $array);

// Static methodcall example
$filtered = array_map(function ($x) { return $x::strtoupper() ;}, $array);

// Static methodcall example   : replace with array('A', 'strtoupper')
$filtered = array_map(function ($x) { return A::strtoupper($x) ;}, $array);

?>
```

See also Closure class and Callbacks / Callables.

Suggestions

- Replace the closure by a string, with the name of the called function
- Replace the closure by an array, with the name of the called method and the object as first element

Specs

Short name	Functions/Closure2String
Rulesets	*All*, *Changed Behavior*, *Performances*, *Rector*, *Suggestions*
Exakat since	1.4.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	closure, callback
Examples	*Tine20*, *NextCloud*
Available in	Entreprise Edition, Exakat Cloud

14.2.154 Closure May Use $this

$this is automatically accessible to closures.

When closures were introduced in PHP, they couldn't use the $this variable, making is cumbersome to access local properties when the closure <https://www.php.net/^closure>`_ was created within an object. This is not the case anymore since PHP 5.4.

```
<?php

// Invalid code in PHP 5.4 and less
class Test
{
    public function testing()
    {
```

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```
        return function() {
            var_dump($this);
        };
    }
}

$object = new Test;
$function = $object->testing();
$function();

?>
```

See also Anonymous functions.

Specs

Short name	Php/ClosureThisSupport
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 5.4 - More
Precision	Very high
Features	closure, $this
Available in	Entreprise Edition, Exakat Cloud

14.2.155 Closures Glossary

List of all the closures in the code.

```
<?php

// A closure is also a unnamed function
$closure = function ($arg) { return 'A'.strtolower($arg); }

?>
```

See also The Closure Class.

Specs

Short name	Functions/Closures
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	closure
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.156 Coalesce

Usage of coalesce operator.

Note that the coalesce operator is a special case of the ternary operator.

```
<?php

// Coalesce operator, since PHP 5.3
$a = $b ?: 'default value';

// Equivalent to $a = $b ? $b : 'default value';

?>
```

See also Ternary Operator.

Specs

Short name	Php/Coalesce
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *One Liners*
Exakat since	0.8.4
PHP Version	With PHP 5.3 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	closure, $this
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.157 Coalesce And Concat

The concatenation operator dot has precedence over the coalesce operator ??.

```
<?php

// Parenthesis are the right solution when in doubt
echo a . ($b ?? 'd') . $e;

// 'a' . $b is evaluated first, leading ot a useless ?? operator
'a' . $b ?? $c;

// 'd' . 'e' is evaluated first, leading to $b OR 'de'.
echo $b ?? 'd' . 'e';

?>
```

Suggestions

- Add parenthesis around ?? operator to avoid misbehavior
- Add parenthesis around the else condition to avoid misbehavior (?? ($a . $b))
- Do not use dot and ?? together in the same expression

Specs

Short name	Structures/CoalesceAndConcat
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.9.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	coalesce, concat, precedence
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.158 Coalesce And Ternary Operators Order

The ternary operator and the null-coalesce operator cannot be used in any order. The ternary operator is wider, so ot should be used last.

In particular, the ternary operator works on truthy values, and NULL is a falsy one. So, NULL might be captured by the ternary operator, and the following coalesce operator has no chance to process it.

On the other hand, the coalesce operator only process NULL, and will leave the false (or any other falsy value) to process to the ternary operator.

```
<?php

// Good order : NULL is processed first, otherwise, false will be processed.
```

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```
$b = $a ?? 'B' ?: 'C';

// Wrong order : this will never use the ??
$b = $a ?: 'C' ?? 'B';

?>
```

Suggestions

- Use the good order of operator : most specific first, then less specific.

Specs

Short name	Structures/CoalesceNullCoalesce
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.0
PHP Version	With PHP 7.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	ternary, null, coalesce
Available in	Entreprise Edition, Exakat Cloud

14.2.159 Coalesce Equal

Usage of coalesce assignment operator. The operator is available in PHP since PHP 7.4.

```
<?php

// Coalesce operator, since PHP 5.3
$a ??= 'default value';

// Equivalent to the line above
$a = $a ?? 'default value';

?>
```

See also Ternary Operator.

Suggestions

- Use the short assignment syntax

Specs

Short name	Php/CoalesceEqual
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*
Exakat since	2.0.4
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	coalesce, short-syntax
Available in	Entreprise Edition, Exakat Cloud

14.2.160 Codeigniter usage

This analysis reports usage of the Codeigniter 4 framework.

Note : Code igniter 3 and older are not reported.

```
<?php

// A code igniter controller
class Blog extends \App\Controllers\Home {

        public function index()
        {
                echo 'Hello World!';
        }
}

?>
```

See also Codeigniter.

Specs

Short name	Vendors/Codeigniter
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.161 Collect Atom Counts

Collects the list of each atom detected in the code by the engine, and the number of occurrences. This gives a good overview of the PHP features in use by that source code.

Specs

Short name	Dump/CollectAtomCounts
Rulesets	*All*, *CE*, *Dump*
Exakat since	2.1.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.162 Collect Block Size

Collect block size for instructions such as for, foreach, while, do…while, ifthen.

This is a starting point for reviewing large blocks of code and extract methods.

```
<?php

foreach($array as $key => $value) {
     // This is a one line block for the foreach
     doSomething();
}

if($a === $b) {
     $a++;
     // This is a two lines block for the ifthen
     doSomething($a, $b);
}

?>
```

Specs

Short name	Dump/CollectBlockSize
Rulesets	*All*, *Dump*
Exakat since	2.2.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion, ifthen, foreach, while, dowhile
Available in	Entreprise Edition, Exakat Cloud

14.2.163 Collect Calls

Collects calls to methods, and functions, and mentions the calling method or function.

The code above produces a link : *foo => goo*.

For methods, the results depends on type detection. Interface types might also limit this analysis.

Closures and arrow functions are omitted, so far.

```
<?php

function foo() {
     goo();
}
?>
```

Specs

Short name	Dump/CollectCalls
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.164 Collect Catch Calls

This analysis collects all catch command usage, along with the exception caught and the calling method.

```
<?php

function foo() {
     try {
             // more code
```

(continues on next page)

(continued from previous page)

```
    } catch (Exception $e) {

    }
}

?>
```

See also Catch.

Specs

Short name	Dump/CollectCatch
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	catch, try
Available in	Entreprise Edition, Exakat Cloud

14.2.165 Collect Class Children Count

Count the number of class children for a class. The more children a class has, the harder it is to update it, as it might impact more other classes.

```
<?php

// 2 children
class a {}

// 1 children
class b extends a {}

// no children
class c extends b {}

// no children
class d extends a {}
?>
```

Specs

Short name	Dump/CollectClassChildren
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.0.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.166 Collect Class Constant Counts

This analysis collects the number of class constants per class or interface.

The count applies to classes, anonymous classes and interfaces. They are considered distinct one from another.

```
<?php

class foo {
    // 3 constant
    const A =1, B =2;
}

interface bar {
    // 3 properties
    const A=1, B=2, C=3;
}

?>
```

Specs

Short name	Dump/CollectClassConstantCounts
Rulesets	*All*, *CE*, *Dump*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.167 Collect Class Depth

This rule count the number of level of extends in classes. Each level is a depth level: the last child has that number of direct parent, which are dependencies.

```
<?php

class a {}

class b extends a {}

class c extends b {}

class d extends a {}
?>
```

Specs

Short name	Dump/CollectClassDepth
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.0.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.168 Collect Class Interface Counts

Collect the number of interfaces implemented per class. A class with more interfaces includes has more responsabilities.

```
<?php

// This class implements 3 interfaces
class x implements i, j, k {
    // Some code
}

?>
```

Specs

Short name	Dump/CollectClassInterfaceCounts
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.0.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.169 Collect Class Traits Counts

This rule counts the number of trait used in a class. The direct traits are counted, not the traits of the traits.

```
<?php

// Use no traits
class x {}

// Use one trait
class y {
    use TraitT;
}

?>
```

Specs

Short name	Dump/CollectClassTraitsCounts
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	trait
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.170 Collect Classes Dependencies

This rule collects class dependencies. Each call to one or the other resource put forward by a class creates a link between two points in the code.

Class dependencies are based on typehint, calls (static or normal), instanceof, catch, attributes, extends.

The result is a graph of dependencies : some classes depends on others, and vice-versa.

Specs

Short name	Dump/CollectClassesDependencies
Rulesets	*All*, *CE*, *Classdependencies*, *Dump*
Exakat since	2.1.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.171 Collect Compared Literals

This collects the different literals (null, integers, floats, strings) that are used in comparisons.

Comparisons include all the comparison operators : <, >, <=, >=, !=, <>, ==.

This analysis also covers switch(), array_keys() and in_array().

Strict searches are omitted. So, ===, !==, match(), in_array() and array_keys() with 3rd parameter are omitted.

Some comparisons are not covered yet : sort().

```
<?php

// Collects '>' and 3
if ($x > 3) {
     // doSomething()
}
?>
```

Specs

Short name	Dump/DumpComparedLiterals
Rulesets	*All*, *Dump*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.172 Collect Definitions Statistics

Collect counts of various structures, such a static constants, static method calls, static properties, method calls and properties.

Specs

Short name	Dump/CollectDefinitionsStats
Rulesets	*All*, *CE*, *Dump*
Exakat since	2.1.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.173 Collect Dependency Extension

This analysis lists the interfaces and classes that are not defined in the current code, yet extended.

This yields a list of external dependencies. It is useful for anyone who would like to update those root classes and interfaces.

```
<?php

class MyClass implements \Composer\EventDispatcher\EventSubscriberInterface {
    //..
}
?>
```

Specs

Short name	Dump/CollectDependencyExtension
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.3.5
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	interface
Available in	Entreprise Edition, Exakat Cloud

14.2.174 Collect Files Dependencies

Collect all dependencies between files, based on definitions and usage.

For example, file *A.php*, which defines de class *A*, is a dependence to a file *B.php*, which makes a call to a method from *A*, or use *A* as a typehint, etc..

Specs

Short name	Dump/CollectFilesDependencies
Rulesets	*All*, *CE*, *Dump*
Exakat since	2.1.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.175 Collect Global Variables

This rule collects the names of the global variables. The global variables are collected from `$GLOBALS` usage, `global` keyword usage and variables in the global space.

```
<?php

global $x;

$GLOBALS['y'] = 3;

?>
```

Specs

Short name	Dump/CollectGlobalVariables
Rulesets	*All*, *CE*, *Dump*
Exakat since	2.1.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	global
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.176 Collect Graph Triplets

Collects the triplets (origin, link, destination) in the graph.

The goal is to provide visibility on the type of used relationship in the code.

Specs

Short name	Dump/CollectGraphTriplets
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.6.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.177 Collect Literals

Collects all literals in the application. Strings, integer, float are collected. Booleans, null and arrays are not.

```
<?php

$a = 1;

// The array is not collected, but the C and 4 are.
$b = ['C' => 4];
?>
```

Specs

Short name	Dump/CollectLiterals
Rulesets	*All*, *CE*, *Dump*
Exakat since	1.9.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.178 Collect Local Variable Counts

This analysis collects the number of local variables used in a method or a function.

The count applies to functions, methods, closures and arrow functions.

Arguments and global variables are not counted. Static variables are.

```
<?php

function foo($arg) {
    global $w;

    // This is a local variable
    $x = rand(1, 2);

    return $x + $arg + $w;
}

?>
```

Specs

Short name	Dump/CollectLocalVariableCounts
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.179 Collect Mbstring Encodings

This analysis collects the encoding names, used by ext/mb functions.

```
<?php

mb_stotolower('PHP', 'iso-8859-1');

mb_stotolower('PHP', 'iso-8859-1');

?>
```

Specs

Short name	Dump/CollectMbstringEncodings
Rulesets	*All*, *CE*, *Dump*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.180 Collect Method Counts

This analysis collects the number of methods per class, trait or interface.

The count applies to classes, anonymous classes, traits and interfaces. They are considered distinct one from another.

```
<?php

class foo {
    // 2 methods
    function __construct() {}
    function foo() {}
}

interface bar {
    // 1 method
    function a() ;
}

class barbar {
    // 3 methods
    function __construct() {}
    function foo() {}
    function a() {}
}

?>
```

Specs

Short name	Dump/CollectMethodCounts
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.181 Collect Methods Throwing Exceptions

This is a list of all the methods and functions that throw exception.

This rule reports explicit throw's, and doesn't list exceptions passing through : for example, when the exception is thrown in a sub-call, but not caught yet.

```
<?php

function foo($a) {
     if ($a % 2) {
             throw new Exception('This is not an even number');
     }
}

?>
```

Specs

Short name	Dump/CollectMethodsThrowingExceptions
Rulesets	*All*, *Dump*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.182 Collect Native Calls Per Expressions

This rule collects the number of PHP native call per expression. The more calls in an expression, the more complex the code.

```
<?php

// 2 calls to PHP native functions in the same expression
$a = hexdec($a) + hexdec($b);

?>
```

Specs

Short name	Dump/CollectNativeCallsPerExpressions
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.183 Collect Parameter Counts

This analysis collects the number of parameter per method.

The count applies to functions, methods, closures and arrow functions.

```
<?php

// parameter count on function : 1
function foo($a) { }

// parameter count on closure : 2
function ($b, $c = 2) {}

// parameter count on method : 0 (none)
class x {
    function moo() { }
}
?>
```

Specs

Short name	Dump/CollectParameterCounts
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	1.9.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.184 Collect Parameter Names

This analysis collects the names of all parameters. It also counts the number of occurrences of each name.

The names are collected from functions, methods, closures and arrow functions. Compulsory and optional parameters are all processed.

```
<?php

// parameter $a
function foo($a) { }

// parameter $b, $c
function ($b, $c = 2) {}

// parameters in interfaces are counted too.
// Here, $a will be counted with the one above.
interfaces x {
    function moo($a);
}
?>
```

Specs

Short name	Dump/CollectParameterNames
Rulesets	*All*, *CE*, *Dump*
Exakat since	2.1.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.185 Collect Php Structures

Collect Php Structures. Constants, functions, classes, traits and interfaces.

Specs

Short name	Dump/CollectPhpStructures
Rulesets	*All*, *CE*, *Dump*
Exakat since	2.1.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.186 Collect Property Counts

This analysis collects the number of properties per class or trait.

The count applies to classes, anonymous classes and traits. They are considered distinct one from another.

Properties may be `static` or not. Visibility, default values and typehints are omitted.

```
<?php

class foo {
    // 3 properties
    private $p1, $p2, $p3;
}

trait foo {
    // 3 properties
    protected $p1;
    public $p2 = 1, $p3;
}

?>
```

Specs

Short name	Dump/CollectPropertyCounts
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	property
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.187 Collect Property Usage

> Collect the level of usage of a property. A property is used in distinct methods. The level of usage is the ratio between the number of methods in which the property is used, divided by the number of total methods.

In the example below, `$p` is used once. `$q` is used in two methods, while being used three times in total.

The level of usage of `$p` is now 1 / 2 = 0.5; The level of usage of `$q` is now 2 / 2 = 1.

```
<?php

class x {
     private $p, $q;

     function foo() {
             $this->p = 1;
             $this->q = 1;
     }

     function goo() {
             $this->q = 2;
             $this->q = 3;
     }
}

?>
```

Specs

Short name	Dump/CollectPropertyUsage
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.188 Collect Readability

Measure readability for methods, functions and closures, then collect them.

Specs

Short name	Dump/CollectReadability
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	readability
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.189 Collect SetLocale

This rule collects the second argument to all the calls to setlocale(). This gives an overview of the which special locales are used in the code.

```
<?php

setlocale(LC_MONEY, 'nl_nl');

?>
```

Specs

Short name	Dump/CollectSetLocale
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.5.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.190 Collect Static Class Changes

Collects changes to constants, methods and properties, within a class hierarchy. It reports changes in visibility, type and values for constants; visibility, type and values for properties.

```
<?php

class x {
    protected $property = 1;
```

(continues on next page)

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```
    protected function method() {}
}

class y extends x {
    // $property is changed
    protected $property = 2;

    // method is not changed
    protected function method() {}
}

?>
```

Specs

Short name	Dump/CollectClassChanges
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.191 Collect Structures

This analyzer collects all defined structures in the source code, with their details.

- Classes
- Enums
- Traits
- Interfaces
- Functions
- Constants

Specs

Short name	Dump/CollectStructures
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.192 Collect Stub Structures

Collect all called structures that are marked as stubs. Functions, constants, interfaces, enums, traits and classes.

Specs

Short name	Dump/CollectStubStructures
Rulesets	*All*, *Dump*
Exakat since	2.4.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.193 Collect Throw Calls

This rule collects all *throw* command usage, along with the exception thrown and the calling method.

```
<?php

function foo() {
     throw Exception();
}

?>
```

Specs

Short name	Dump/CollectThrow
Rulesets	*All*, *Dump*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.194 Collect Use Counts

This rule counts the number of `use` expression in a file. `use` expressions import external classes, interfaces, enums, constant, functions and traits.

A high number of imports may signal a class that is doing to much.

```
<?php

// This count 4 uses
use A as B;
use F\C, F\D, F\E;

?>
```

Specs

Short name	Dump/CollectUseCounts
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	use
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.195 Collect Vendor Structures

Collect the structures (constant, function, classes, interfaces, traits, enums, ...) that are defined as stubs in the configuration.

Name	Default	Type	Description
pdffList	[]	json	List of vendors, their version and related PDFF. {'vendor':['wordpress.5.9.pdff','wordpress.5.8.pdff']}

Specs

Short name	Dump/CollectVendorStructures
Rulesets	*All*, *Dump*
Exakat since	2.4.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.196 Collects Names

> Collects the names used in the code. Names are extracted from namespaces, classes, interfaces, traits, enumerations, variables (parameter and local variable), properties, constants, methods, functions, use expression (with as).

Variables names are trimmed of their `$` sign. Namespaces are kept as a whole. Each name has the type from the code.

The following code provides 3 values ; `parameter`, `foo` and `local`.

```
<?php

function foo($parameter) {
     $local = $parameter;
}

?>
```

Specs

Short name	Dump/CollectsNames
Rulesets	*All*, *Dump*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.197 Collects Variables

This rule collects all variables from the code. Their type is mentionned, as variable, object or array, depending on their usage.

```
<?php

// variable : array
$array[1] = 2;

// variable : variable
$value = 3;

// variable : object
$object->property;

?>
```

Specs

Short name	Dump/CollectVariables
Rulesets	*All*, *CE*, *Dump*
Exakat since	2.1.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	variable
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.198 Combined Calls

This collects all the combined function or method calls. Those are methods that are called in succession.

```
<?php

$a = ucfirst(strtolower($name));

?>
```

Specs

Short name	Dump/CombinedCalls
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.6.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.199 Common Alternatives

In the following conditional structures, expressions were found that are common to both 'then' and 'else'. It may be interesting, though not always possible, to put them both out of the conditional, and reduce line count.

```
<?php
if ($c == 5) {
    $b = strtolower($b[2]);
    $a++;
} else {
    $b = strtolower($b[2]);
    $b++;
}
?>
```

may be rewritten in :

```
<?php

$b = strtolower($b[2]);
if ($c == 5) {
    $a++;
} else {
    $b++;
}

?>
```

Suggestions

- Collect common expressions, and move them before of after the if/then expression.
- Move a prefix and suffixes to a third-party method

Specs

Short name	Structures/CommonAlternatives
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*Dolibarr*, *NextCloud*
Available in	Entreprise Edition, Exakat Cloud

14.2.200 Compare Hash

When comparing hash values, it is important to use the strict comparison : hash_equals(), === or !==.

In a number of situations, the hash value will start with `0e`, and PHP will understand that the comparison involves integers : it will then convert the strings into numbers, and it may end up converting them to 0.

Here is an example :

```
<?php

// The two following passwords hashes matches, while they are not the same.
$hashed_password = 0e462097431906509000000000000;
if (hash('md5','240610708',false) == $hashed_password) {
  print 'Matched.'.PHP_EOL;
}

// hash returns a string, that is mistaken with 0 by PHP
// The strength of the hashing algorithm is not a problem
if (hash('ripemd160','20583002034',false) == '0') {
  print 'Matched.'.PHP_EOL;
}

if (hash('md5','240610708',false) !== $hashed_password) {
  print 'NOT Matched.'.PHP_EOL;
}

// Display true
var_dump(md5('240610708') == md5('QNKCDZO') );

?>
```

You may also use password_hash() and password_verify() : they work together without integer conversion problems, and they can't be confused with a number.

See also Magic Hashes , What is the best way to compare hashed strings? (PHP) and md5('240610708') == md5('QNKCDZO').

Suggestions

- Use dedicated functions for hash comparisons
- Use identity operators (===), and not equality operators (==) to compare hashes
- Compare hashes in the database (or external system), where such confusion is not possible

Specs

Short name	Security/CompareHash
Rulesets	*All*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	cryptography, hash
ClearPHP	strict-comparisons
Examples	*Traq*, *LiveZilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.201 Compared But Not Assigned Strings

Those strings are compared to variables in the code, but those values are never assigned.

```
<?php

// some assigned strings in the code
$a = 'b';

// some compared strings in the code
// Depending on the origin of $b, is this possible?
if ($b === 'c') {

}

?>
```

Specs

Short name	Structures/ComparedButNotAssignedStrings
Rulesets	*All*
Exakat since	1.3.2
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.202 Compared Comparison

Usually, comparison are sufficient, and it is rare to have to compare the result of comparison. Check if this two-stage comparison is really needed.

```
<?php

if ($a === strpos($string, $needle) > 2) {}

// the expression above apply precedence :
// it is equivalent to :
if (($a === strpos($string, $needle)) > 2) {}

?>
```

See also Operators Precedence.

Specs

Short name	Structures/ComparedComparison
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	comparison
Available in	Entreprise Edition, Exakat Cloud

14.2.203 Comparison Is Always The Same

Based on the incoming type of arguments, the comparison always yields the same value. The whole condition might be useless.

```
<?php

function foo(array $a) {
    // This will always fail
    if ($a === 1) {

    } elseif (is_int($a)) {

    }

    // This will always succeed
    if ($a !== null) {

    } elseif (is_null($a)) {

    }
```

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```
}

?>
```

Suggestions

- Remove the constant condition and its corresponding blocks
- Make the constant condition variable

Specs

Short name	Structures/AlwaysFalse
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.9.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	comparison
Available in	Entreprise Edition, Exakat Cloud

14.2.204 Comparison On Different Types

This rule reports comparisons and spaceship operator that are used with distinct types.

```
<?php

1 == 'a';

?>
```

Specs

Short name	Php/ComparisonOnDifferentTypes
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.205 Comparisons Orientation

Maths has two comparisons styles : > or <. Both may include equality : <= and >=.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

It is recommended to always use the same comparison style.

```
<?php

// Always compare in the same direction
if ($a > $c) {

} elseif ($c > $b) {

} else {
    // equality case
}

// Alterning comparison style lead to harder to read code
if ($b > 3) {

} elseif ($b < 3) {

}

?>
```

See also Comparison Operators.

Specs

Short name	Structures/GtOrLtFavorite
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	1.3.2
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	comparison
Available in	Entreprise Edition, Exakat Cloud

14.2.206 Complex Dynamic Names

Avoid using expressions as names for variables or methods.

There are no place for checks or flow control, leading to any rogue value to be used as is. Besides, the expression is often overlooked, and not expected there : this makes the code less readable.

It is recommended to build the name in a separate variable, apply the usual checks for existence and validity, and then use the name.

```
<?php

$a = new foo();

// Code is more readable
$name = strolower($string);
if (!property_exists($a, $name)) {
    throw new missingPropertyexception($name);
}
echo $a->$name;

// This is not check
echo $a->{strtolower($string)};

?>
```

This analysis only accept simple containers, such as variables, properties.

See also Dynamically Access PHP Object Properties with $this.

Suggestions

- Extract the expression from the variable syntax, and make it a separate variable.

Specs

Short name	Variables/ComplexDynamicNames
Rulesets	*All*, *Suggestions*
Exakat since	1.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	dynamic-variable
Available in	Entreprise Edition, Exakat Cloud

14.2.207 Composer Usage

Mark the usage of composer, mostly by having a `composer.json` file.

See also Composer.

Specs

Short name	Composer/UseComposer
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	composer
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.208 Composer's autoload

Report if this code is using the autoload from Composer.

Specs

Short name	Composer/Autoload
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	autoload, composer
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.209 Concat And Addition

Precedence between addition and concatenation has changed. In PHP 7.4, addition has precedence, and before, addition and concatenation had the same precedence.

From the RFC : `Currently the precedence of '.', '+' and '-' operators are equal. Any combination of these operators are simply evaluated left-to-right`.

This is counter-intuitive though: you rarely want to add or subtract concatenated strings which in general are not numbers. However, given PHP's capability of seamlessly converting an integer to a string, concatenation of these values is desired.`` This analysis reports any addition and concatenation that are mixed, without parenthesis. Addition also means substraction here, aka using + or -.

The same applies to bitshift operations, << and >>. There is no RFC for this change.

```php
<?php
// Extracted from the RFC
echo "sum: " . $a + $b;

// current behavior: evaluated left-to-right
echo ("sum: " . $a) + $b;

// desired behavior: addition and subtraction have a higher precendence
echo "sum :" . ($a + $b);

?>
```

See also Change the precedence of the concatenation operator.

Suggestions

- Add parenthesis around the addition to ensure its expected priority
- Move the addition outside the concatenation

Specs

Short name	Php/ConcatAndAddition
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *Top10*
Exakat since	1.8.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	Very high
Features	addition, concatenation
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.210 Concat Empty String

Using a concatenation to make a value a string should be replaced with a type cast.

Type cast to a string is done with `(string)` operator. There is also the function strval(), although it is less recommended.

```
<?php

$a = 3;

// explicite way to cast a value
$b = (string) $a; // $b is a string with the content 3

// Wrong way to cast a value
$c = $a . ''; // $c is a string with the content 3
$c = '' . $a; // $c is a string with the content 3
$a .= '';     // $a is a string with the content 3

// Wrong way to cast a value
$c = $a . '' . $b; // This is not reported. The empty string is useless, but not meant␣
↪to type cast

?>
```

See also Type Casting and PHP Type Casting.

Suggestions

- Avoid concatenating with empty strings
- Use (string) operator to cast to string
- Remove any concatenated empty string

Specs

Short name	Structures/ConcatEmpty
Rulesets	*All*, *Analyze*
Exakat since	1.8.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	string
Available in	Entreprise Edition, Exakat Cloud

14.2.211 Concatenation Interpolation Consistence

Concatenations are done with the . operator or by interpolation inside a string.

Interpolation is a clean way to write concatenation, though it gets messy with long dereferences or with constants. Concatenations are longer to write.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

```
<?php

// be consistent
$a = "$b $c";
$d = "$b $e";
$e = "$b $e";
$d = "$b $f";
$f = "$b $z";
$h = "$b $e";
$y = "$b $e";
$d = "$b $x";
$j = "$b $c";
$d = "$b $g";
$d = "$b $h";

// Be consistent, always use the same syntax
$z = $w.' '.$e;

?>
```

Specs

Short name	Structures/ConcatenationInterpolationFavorite
Rulesets	*All*, *Preferences*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	concatenation
Available in	Entreprise Edition, Exakat Cloud

14.2.212 Concrete5 usage

This analysis reports usage of the Concrete 5 framework.

```
<?php
namespace Application\Controller\PageType;

use Concrete\Core\Page\Controller\PageTypeController;
```

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```
class BlogEntry extends PageTypeController
{

    public function view()
    {
    }
}
?>
```

See also Concrete 5.

Specs

Short name	Vendors/Concrete5
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.213 Conditional Structures

Structures that are defined, but only executed conditionally.

It is possible to create conditioned functions, classes, interfaces, traits and enumerations. Constants have to be defined with define() and can't use the *const* keyword.

Classes elements, such as methods, can't be conditional.

```
<?php

if (!function_exists('array_column')) {
    function array_column($a) {
        // some PHP
    }
}

if (!class_exists('foo')) {
    class foo {

    }
}

?>
```

Suggestions

- Use different names, and apply autoloader.

Specs

Short name	Structures/ConditionalStructures
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	conditional-structure
Available in	Entreprise Edition, Exakat Cloud

14.2.214 Conditioned Constants

Indicates if a constant will be defined only if a condition is met.

```
<?php

if (time() > 1519629617) {
    define('MY_CONST', false);
} else {
    define('MY_CONST', time() - 1519629617);
}

?>
```

Specs

Short name	Constants/ConditionedConstants
Rulesets	*All*, *Appinfo*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	conditioned
Available in	Entreprise Edition, Exakat Cloud

14.2.215 Conditioned Function

Indicates if a function is defined only if a condition is met.

```
<?php

// This is a conditioned function.
// it only exists if the PHP binary doesn't have it already.
if (!function_exists('join')) {
    function join($glue, $array) {
        return implode($glue, $array);
    }

}
?>
```

Specs

Short name	Functions/ConditionedFunctions
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	function
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.216 Configure Extract

The extract() function overwrites local variables when left unconfigured.

Extract imports variables from an array into the local scope. In case of a conflict, that is when a local variable already exists, it overwrites the previous variable.

In fact, extract() may be configured to handle the situation differently : it may skip the conflicting variable, prefix it, prefix it only if it exists, only import overwriting variables… It may also import them as references to the original values.

This analysis reports extract() when it is not configured explicitly. If overwriting is the intended objective, it is not reported.

```
<?php

// ignore overwriting variables
extract($array, EXTR_SKIP);

// prefix all variables explicitly variables with 'php_'
extract($array, EXTR_PREFIX_ALL, 'php_');

// overwrites explicitly variables
```

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```
extract($array, EXTR_OVERWRITE);

// overwrites implicitely variables : do we really want that?
extract($array, EXTR_OVERWRITE);

?>
```

Always avoid using extract() on untrusted sources, such as `$_GET`, `$_POST`, `$_FILES`, or even databases records.

See also extract.

Suggestions

- Always use the second argument of extract(), and avoid using `EXTR_OVERWRITE`

Specs

Short name	Security/ConfigureExtract
Rulesets	*All*, *Security*
Exakat since	1.2.9
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	extract, variable
Examples	*Zurmo*, *Dolibarr*
Available in	Entreprise Edition, Exakat Cloud

14.2.217 Confusing Names

The following variables's name are very close and may lead to confusion.

Variables are 3 letters long (at least). Variables names build with an extra `s` are omitted. Variables may be scattered across the code, or close to each other.

Variables which differ only by case, or by punctuation or by numbers are reported here.

```
<?php

    // Variable names with one letter difference
    $fWScale = 1;
    $fHScale = 1;
    $fScale = 2;

    $oFrame = 3;
    $iFrame = new Foo();

    $v2_norm = array();
    $v1_norm = 'string';
```

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```
    $exept11 = 1;
    $exept10 = 2;
    $exept8 = 3;

    // Variables that differ by punctation
    $locale = 'fr';
    $_locate = 'en';

    // Variables that differ by numbers
    $x11 = 'a';
    $x12 = 'b';

    // Variables that differ by numbers
    $songMP3 = 'a';
    $Songmp3 = 'b';

    // This even looks like a typo
    $privileges  = 1;
    $privilieges = true;

    // This is not reported : Adding extra s is tolerated.
    $rows[] = $row;

?>
```

See also How to pick bad function and variable names.

Suggestions

- Rename the variables

Specs

Short name	Variables/CloseNaming
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	variable, semantics
Available in	Entreprise Edition, Exakat Cloud

14.2.218 Const Or Define

`const` and `define()` have the same functional use : create constants.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

They are almost interchangeable, though not totally : `define()` allows the creation of case-insensitive constants, while `Const` won't.

```
<?php

// be consistent
const A1  = 1 ;
const A2  = 2 ;
const A3  = 3 ;
const A4  = 4 ;
const A5  = 5 ;
const A6  = 6 ;
const A7  = 7 ;
const A8  = 8 ;
const A9  = 9 ;
const A10 = 10;
const A11 = 11;

define('A12', 12); // Be consistent, always use the same.

?>
```

See also define and const.

Specs

Short name	Structures/ConstDefineFavorite
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.12.1
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.219 Const Or Define Preference

`Const` and define() have almost the same functional use : they create constants.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make constant definition consistent.

It is recommended to use `const` for global constants, as this keyword is processed at compile time, while define() is executed.

Note that define() used to allow the creation of case-insensitive constants, but this is deprecated since PHP 7.3 and will be removed in PHP 8.0.

```
<?php

    define('A1', 1);
    define('A2', 1);
    define('A3', 1);
    define('A4', 1);
    define('A5', 1);
    define('A6', 1);
    define('A7', 1);
    define('A8', 1);
    define('A9', 1);
    define('A10',1);

    const B = 3;

?>
```

See also Constant definition and Define.

Specs

Short name	Constants/ConstDefinePreference
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	1.3.9
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	define, const, constant
Available in	Entreprise Edition, Exakat Cloud

14.2.220 Const Visibility Usage

Visibility for class constant controls the accessibility to class constant.

A public constant may be used anywhere in the code; a protected constant usage is restricted to the class and its relatives; a private constant is restricted to itself.

This feature was introduced in PHP 7.1. It is recommended to use explicit visibility, and, whenever possible, make the visibility private.

```
<?php

class x {
    public const a = 1;
    protected const b = 2;
    private const c = 3;
    const d = 4;
}

interface i {
    public const a = 1;
      const d = 4;
}

?>
```

See also Class Constants and PHP RFC: Support Class Constant Visibility.

Suggestions

- Add constant visibility, at least 'public'.

Specs

Short name	Classes/ConstVisibilityUsage
Rulesets	*All*, *Appinfo*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	1.3.0
PHP Version	With PHP 7.1 and more recent
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class-constant-visibility
Available in	Entreprise Edition, Exakat Cloud

14.2.221 Const With Array

The const keyword supports array. This feature was added in PHP 5.6.

The array must be filled with other constants. It may also be build using the '+' operator.

```
<?php

const PRIMES = [2, 3, 5, 7];

class X {
    const TWENTY_THREE = 23;
    const MORE_PRIMES = PRIMES + [11, 13, 17, 19];
    const EVEN_MORE_PRIMES = self::MORE_PRIMES + [self::TWENTY_THREE];
}

?>
```

See also Class Constants and Constants Syntax.

Specs

Short name	Php/ConstWithArray
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	random
Available in	Entreprise Edition, Exakat Cloud

14.2.222 Constant : With Or Without Use

This analysis collects the ways constants are called in the code : with a local import, alias or not, or with their fully qualified name.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

```
<?php

use const AA as BB;

// This is the fully qualified name.
echo \AA;

// If this is used 10 times or more, then it is the standard.
echo BB;

?>
```

Specs

Short name	Namespaces/ConstantWithUseFavorite
Rulesets	*All*, *Preferences*
Exakat since	2.3.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	fully-qualified-name, constant, use
Available in	Entreprise Edition, Exakat Cloud

14.2.223 Constant Case Preference

Define() creates constants which are case sensitive or not.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make constant sensitivity definition consistent.

Note that define() used to allow the creation of case-sensitive constants, but this is deprecated since PHP 7.3 and will be removed in PHP 8.0.

```
<?php

    define('A1', 1);
    define('A2', 1);
    define('A3', 1);
    define('A4', 1);
    define('A5', 1);
    define('A6', 1);
    define('A7', 1);
    define('A8', 1);
    define('A9', 1);
    define('A10',1);

    define('A10',1, true);

?>
```

See also PHP Constants and Constant definition.

Specs

Short name	Constants/DefineInsensitivePreference
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	1.3.8
PHP Version	With PHP 7.0 and older
Severity	
Time To Fix	
Precision	Very high
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.224 Constant Class

A class or an interface only made up of constants. Constants usually have to be used in conjunction of some behavior (methods, class...) and never alone.

```
<?php

class ConstantClass {
    const KBIT = 1000;
    const MBIT = self::KBIT * 1000;
    const GBIT = self::MBIT * 1000;
    const PBIT = self::GBIT * 1000;
}

?>
```

As such, they should be PHP constants (build with define or const), or included in a class with other methods and properties.

See also PHP Classes containing only constants.

Suggestions

- Make the class an interface
- Make the class an abstract class, to avoid its instantiation

Specs

Short name	Classes/ConstantClass
Rulesets	*All*, *CE*, *Class Review*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	class-constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.225 Constant Comparison

Constant to the left or right is a favorite.

Comparisons are commutative : they may be $a == B or B == $a. The analyzed code show less than 10% of one of the two : for consistency reasons, it is recommended to make them all the same.

Putting the constant on the left is also called 'Yoda Comparison', as it mimics the famous characters style of speech. It prevents errors like 'B = $a' where the comparison is turned into an assignation.

The natural way is to put the constant on the right. It is often less surprising.

Every comparison operator is used when finding the favorite.

```
<?php

//
if ($a === B) { doSomething(); }
if ($c > D) { doSomething(); }
if ($e !== G) { doSomething(); }
do { doSomething(); } while ($f === B);
while ($a === B) { doSomething(); }

// be consistent
if (B === $a) {}

// Compari
if (B <= $a) {}

?>
```

Specs

Short name	Structures/ConstantComparisonConsistance
Rulesets	*All*, *Coding conventions*, *Preferences*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	comparison
Available in	Entreprise Edition, Exakat Cloud

14.2.226 Constant Conditions

If/then structures that have constant condition.

The condition doesn't change during execution, and the following blocks are always executed or not. This may also lead to an infinite or a null loop.

When this is the case, the condition may be removed, and dead code may be removed.

```php
<?php

// static if
if (0.8) {
    $a = $x;
} else {
    $a = $y;
}

// static while
while (1) {
    $a = $x;
}

// static do..while
do {
    $a = $x;
} while ('b'. 'c');

// constant for() : No increment
for ($i = 0; $i < 10; ) {
    $a = $x;
}

// constant for() : No final check
for ( $i = 0; ; ++$i) {
    $a = $x;
}


// static ternary
$a = TRUE ? $x : $y;

?>
```

It is advised to remove them, or to make them depend on configuration.

Specs

Short name	Structures/ConstantConditions
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	condition
Available in	Entreprise Edition, Exakat Cloud

14.2.227 Constant Definition

List of class constants being defined.

```
<?php

// traditional way of making constants
define('aConstant', 1);

// modern way of making constants
const anotherConstant = 2;

class foo {
    // Not a constant, a class constant.
    const aClassConstant = 3;
}

?>
```

See also PHP Constants and PHP OOP Constants.

Specs

Short name	Classes/ConstantDefinition
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, class-constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.228 Constant Dynamic Creation

Registering constant with dynamic values. Dynamic values include values read in external sources (files, databases, remote API, ...), random sources (time, rand(), ...)

Dynamic constants are not possible with the `const` keyword, though static constant expression allows for a good range of combinations, including conditions.

```
<?php

$a = range(0, 4);
foreach($array as $i) {
    define("A$i", $i);
    define("N$i", true);
}

define("C", 5);
```

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```
?>
```

See also PHP Constants.

Specs

Short name	Constants/DynamicCreation
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	1.6.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.229 Constant Order

Order of dependency of constants.

Constants, either global or class, may be built using static expression. In turn, this means that constants have now a build order. For example :

```
<?php

// A is an independant global constant
const A = 1;
// B is an dependant global constant : it is built with A
const B = A + 1;

class x {
    // x::C is an dependant class constant : it is built with A
    const C = A + 3;
}

?>
```

The code above leads to the following order : `A` - `B`, `C`. `A` can be built without constraints, while `B` and `C` must be build when `A` is available. Note that `B` and `C` are both dependant on `A`, but are not dependant on each other.

The resulting tree displays the different relationship between the constants.

Note : `define``constants are not considered here. Only ``const` constants, global or class.

Specs

Short name	Dump/ConstantOrder
Rulesets	*All*, *CE*, *Dump*
Exakat since	2.0.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.230 Constant Scalar Expression

Since PHP 5.6, it is possible to use expression with Constants and default values. One may only use simple operators.

```
<?php

const THREE = 1 + 2;
const ARRAY = array(1,2,3);

// dynamic version
define('ARRAY', array(1,2,3));

// constant scalar expression are available for default values
function foo($a = 1 + M_PI) {

}

?>
```

See also New features..

Suggestions

- Upgrade to PHP 7.0
- Use a special value as the default value, and turn it into the actual value at constructor time

Specs

Short name	Php/ConstantScalarExpression
Rulesets	*All*, *Appinfo*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	constant-scalar-expression
Available in	Entreprise Edition, Exakat Cloud

14.2.231 Constant Scalar Expressions

> Define constant with the result of static expressions. This means that constants may be defined with the const keyword, with the help of various operators but without any functioncalls.

This feature was introduced in PHP 5.6. It also supports array(), and expressions in arrays.

Those expressions (using simple operators) may only manipulate other constants, and all values must be known at compile time.

```
<?php

// simple definition
const A = 1;

// constant scalar expression
const B = A * 3;

// constant scalar expression
const C = [A ** 3, '3' => B];

?>
```

See also Constant Scalar Expressions.

Specs

Short name	Structures/ConstantScalarExpression
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 5.6 - More
Precision	Very high
Features	constant-scalar-expression
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.232 Constant Typo Looks Like A Variable

A constant bears the same name as a variable. This might be a typo.

When the constant doesn't exist, PHP 8.0 yields a Fatal Error and stops execution. PHP 7.4 turns the undefined constant into its string equivalent.

```
<?php

// Get an object or null
$object = foo();

// PHP 8.0 stops here, with a Fatal Error
// PHP 7.4 makes this a string, and the condition is always true
if (!empty(object)) {
    // In PHP 7.4, this is not protected by the condition, and may yield an error.
    $object->doSomething();
}

?>
```

This analysis is case sensitive.

Suggestions

- Add a $ sign to the constant
- Use a different name for the variable, or the constant

Specs

Short name	Variables/ConstantTypo
Rulesets	*All*, *Analyze*
Exakat since	2.2.0
PHP Version	With PHP 8.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	constant, variable
Related rule	*Undefined Constants*
Available in	Entreprise Edition, Exakat Cloud

14.2.233 Constant Used Below

Mark class constants that are used in children classes.

```
<?php

class foo {
    // This constant is used in children
    protected PROTECTEDPROPERTY = 1;

    // This constant is not used in children
    protected LOCALPROTECTEDPROPERTY = 1;

    private function foobar() {
        // PROTECTEDPROPERTY is used here, but defined in parent
        echo self::LOCALPROTECTEDPROPERTY;
    }
}

class foofoo extends foo {
    private function bar() {
        // protectedProperty is used here, but defined in parent
        print self::PROTECTEDPROPERTY;
    }
}

?>
```

This analysis marks constants at their definition, not the current class, nor the (grand-)`parent <https://www.php.net/manual/en/language.oop5.paamayim-nekudotayim.php>`_.

Specs

Short name	Classes/ConstantUsedBelow
Rulesets	*All*
Exakat since	0.12.10
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class-constant
Available in	Entreprise Edition, Exakat Cloud

14.2.234 Constants Created Outside Its Namespace

Constants Created Outside Its Namespace.

Using the define() function, it is possible to create constant outside their namespace, but using the fully qualified namespace.

However, this makes the code confusing and difficult to debug. It is recommended to move the constant definition to its namespace.

```
<?php

namespace A\B {
    // define A\B\C as 1
    define('C', 1);
}

namespace D\E {
    // define A\B\C as 1, while outside the A\B namespace
    define('A\B\C', 1);
}

?>
```

Suggestions

- Declare the constant in its namespace

Specs

Short name	Constants/CreatedOutsideItsNamespace
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.235 Constants In Traits

Traits may have their own constants. This feature was introduced in PHP 8.2 and is not backward compatible.

```
<?php

trait t {
     const A = 1;
}

?>
```

See also PHP RFC: Constants in Traits and Ability to use Constants in Traits in PHP 8.2.

Specs

Short name	Traits/ConstantsInTraits
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*, *CompatibilityPHP82*, *CompatibilityPHP83*
Exakat since	2.5.3
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	constant, trait
Available in	Entreprise Edition, Exakat Cloud

14.2.236 Constants Names

List of PHP defined global constants in the source code. Constants are defined with the `define()` functioncall or `const` command.

```
<?php

// with const
const X = 1;

// with define()
define ('Y', 2);

?>
```

See also PHP Constants.

Specs

Short name	Constants/Constantnames
Rulesets	*All*, *CE*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.237 Constants Usage

List of constants in use in the source code. Constants are T_STRING, localised in specific part of the code.

For example, they can't be followed by a parenthesis, as this is a function call; nor preceded by a `new` operator, as this is an object instantiation.

```
<?php

const MY_CONST = 'Hello';

// PHP_EOL (native PHP Constant)
// MY_CONST (custom constant)
echo PHP_EOL . MY_CONST;

// Here, MY_CONST is actually a function name, and is omitted in this analysis
MY_CONST();

?>
```

Specs

Short name	Constants/ConstantUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.238 Constants With Strange Names

List of constants being defined with names that are incompatible with PHP standards.

Constants names are valid when they satisfy the following regex : `^[a-zA-Z_\x80-\xff][a-zA-Z0-9_\x80-\xff]*$`

```
<?php

// Define a valid PHP constant
define('ABC', 1);
const ABCD = 2;

// Define an invalid PHP constant
define('ABC!', 1);
echo defined('ABC!') ? constant('ABC!') : 'Undefined';

// Const doesn't allow illegal names

?>
```

See also PHP Constants.

Suggestions

- Rename constants to be valid constants
- Adopt a naming conversion scheme, to translate names from an incompatible source to PHP's standard (and back).

Specs

Short name	Constants/ConstantStrangeNames
Rulesets	*All*, *CE*, *CI-checks*, *Semantics*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.239 Constructors

Mark methods as constructors.

```
<?php

class x {
    // Normal constructor
    function __construct() {}
}

class y {
    // Old style constructor, obsolete since PHP 7.1
    function y() {}
}

class z {
    // Normal constructor
    function __construct() {}

    // Old style constructor, but with lower priority
    function z() {}
}

?>
```

See also Constructors and Destructors.

Specs

Short name	Classes/Constructor
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, constructor
Available in	Entreprise Edition, Exakat Cloud

14.2.240 Continents

List of all the continents mentioned in the code.

Specs

Short name	Type/Continents
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.241 Continue Is For Loop

break and continue are very similar in PHP : they both break out of loop or switch. Yet, continue should be reserved for loops.

Since PHP 7.3, the execution emits a warning when finding a `continue` inside a `switch` : '"continue" targeting switch is equivalent to "break". Did you mean to use "continue 2"?'

```
<?php

while ($foo) {
    switch ($bar) {
        case 'baz':
            continue; // In PHP: Behaves like 'break;'
                      // In C:   Behaves like 'continue 2;'
    }
}

?>
```

See also Deprecate and remove continue targeting switch.

Suggestions

- Replace continue by break

Specs

Short name	Structures/ContinueIsForLoop
Rulesets	*All*, *Analyze*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*
Exakat since	1.3.9
PHP Version	With PHP 7.3 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	continue, loop
Examples	*XOOPS*
Available in	Entreprise Edition, Exakat Cloud

14.2.242 Converted Exceptions

> Converted exceptions is when an exception is caught, then immediately converted into another one and thrown again.

Sometimes, extra operations take place, such as logging or error couting.

```
<?php

try {
     doSomething();
} catch (MyException $e) {
     log($e->getMessage());
     throw new BadRequestException();
}

?>
```

Specs

Short name	Exceptions/ConvertedExceptions
Rulesets	*All*, *Analyze*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	exception, try
Available in	Entreprise Edition, Exakat Cloud

14.2.243 Cookies Variables

Cookies names, used across the application.

```
<?php

if (isset($_COOKIE['myCookie'])) {
    // Usual method for reading and setting cookies
    $_COOKIE['myCookie']++;
}

// Usual method for writing cookies
setcookie('myCookie', $value);

?>
```

See also setcookie.

Specs

Short name	Php/CookiesVariables
Rulesets	*All*, *Changed Behavior*, *Inventory*
Exakat since	0.12.16
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	cookie
Available in	Entreprise Edition, Exakat Cloud

14.2.244 Could Be A Constant

This analysis detects literal values that make good candidate for constants.

Candidates needs two characteristics :

- Be assigned as a whole to a container (variable, properties, etc.)
- Be later (or somewhere else) compared to a container.

Such literal is used as a token, to handle a state. It is set, then read later. Then, a constant, may it be global or class, is important, so that the relationship between the setting and the reading is maintained throughout the life of the application.

Once the literal is converted into a constant, the value of the literal is not important. It could even be turned into an object.

```
<?php

const SOME_TOKEN = 'abc';

$a = 'some-token';
$b = SOME_TOKEN; // same as above, as a constant

function foo($arg) {
    if ($arg === 'some-token') {

    }

    if ($arg === SOME_TOKEN) {

    }
}

?>
```

Not all literals that are set then read may be turned into a constant : there might be overlap in features by frequently used values (such as true, false, 0, 1,) or simple confusion with a local literal. Also, literals that are used for their value (like 1 in a *$a + 1* expression) are not good candidates.

Name	Default	Type	Description
minOccurences	1	integer	Minimal number of occurrences of the literal.
skipString	,.php	array	List of omitted string values. For example, the empty string.
skipInteger	1,-0,-1	array	List of omitted integer values. By default, 0, 1 and -1.

Suggestions

- Create the constant and replace all connected literals with it.

Specs

Short name	Dump/CouldBeAConstant
Rulesets	*All*, *Dump*
Exakat since	2.4.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.245 Could Be A Static Variable

This global is only used in one function or method. It may be transformed into a 'static' variable, instead of global. This allows you to keep the value between call to the function, but will not be accessible outside this function.

```
<?php
function foo( ) {
    static $variableIsReservedForX; // only accessible within foo( ), even between calls.
    global $variableIsGlobal;       //      accessible everywhere in the application
}
?>
```

Specs

Short name	Structures/CouldBeStatic
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static, static variable
Examples	*Dolphin*, *Contao*
Available in	Entreprise Edition, Exakat Cloud

14.2.246 Could Be Abstract Class

An abstract class is never instantiated, and has children class that are. As such, a 'parent' class that is never instantiated by itself, but has its own children instantiated could be marked as abstract.

That will prevent new code to try to instantiate it.

```
<?php

// Example code would actually be split over multiple files.
```

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```
// That class could be abstract
class motherClass {}

// Those classes shouldn't be abstract
class firstChildren extends motherClass {}
class secondChildren extends motherClass {}
class thirdChildren extends motherClass {}

new firstChildren();
new secondChildren();
new thirdChildren();

//Not a single : new motherClass()

?>
```

See also Class Abstraction and Abstract classes and methods.

Suggestions

- Make this class an abstract class

Specs

Short name	Classes/CouldBeAbstractClass
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	1.3.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	abstract
Examples	*Edusoho*, *shopware*
Available in	Entreprise Edition, Exakat Cloud

14.2.247 Could Be Abstract Method

A method can be made abstract, when all the class's children implement it.

Since the method will also loose its body, it should not be refered in any calls.

```
<?php

class a {
     function foo() {}

     function bar() {}
```

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```
}

// * for several distinct names
class a* extends a {
     function foo() {}
}

// a0 only creates foo(), not bar.
class a0 extends a {
     function foo() {}
}

?>
```

Suggestions

- Add the abstract keyword

Specs

Short name	Classes/CouldBeAbstractMethod
Rulesets	*All*, *Suggestions*
Exakat since	2.4.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	abstract
Available in	Entreprise Edition, Exakat Cloud

14.2.248 Could Be Array Typehint

This rule spots arguments, class constants, properties or return values that may be labeled with the `array` scalar typehint.

```
<?php

// $arg is used as an array in this function, so it may be typed : array
functions foo($arg) {

    // the returned value is always an array, so this function might be typed as : array
    return array($arg[3]);
}

?>
```

See also Type declarations.

Suggestions

- Add *array* typehint to the code.

Specs

Short name	Typehints/CouldBeArray
Rulesets	*All*, *CE*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.249 Could Be Boolean

Reports arguments, properties, return types and class constants that can be typed boolean.

```
<?php

// Accept a boolean as input
function foo($b) {
    // Returns a boolean
    return $b === true;
}

?>
```

See also class.

Suggestions

- Add `bool` typehint to the code.

Specs

Short name	Typehints/CouldBeBoolean
Rulesets	*All*, *CE*
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.250 Could Be CIT

Mark arguments and return types that can be set to a class, interface definition.

```
<?php

// Accept an object as input
function foo($b) {
    // Returns new object
    return new ($b->classname);
}

?>
```

Suggestions

- Add the class or interface typehint to the code.

Specs

Short name	Typehints/CouldBeCIT
Rulesets	*All*, *CE*
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.251 Could Be Callable

Mark arguments and return types that can be set to `callable`.

The analysis also reports properties that could be 'callable', although PHP doesn't allow that configuration.

```
<?php

// Accept a callable as input
function foo($b) {
    // Returns value as return
    return $b();
}

?>
```

Note that properties cannot be callable. It reports a compilation error.

See also Callbacks / callables.

Suggestions

- Add *callable* typehint to arguments or returntypes.

Specs

Short name	Typehints/CouldBeCallable
Rulesets	*All*, *Typechecks*
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	callback, callable
Available in	Entreprise Edition, Exakat Cloud

14.2.252 Could Be Class Constant

> When a property is defined, with a default value, then read, but never modified, it could be turned into a constant.

Such a property may initially be intended to have a value update, but that never turned out in the code.

By making the property a constant, it makes visible its constant nature, and reduce the complexity of the code.

```
<?php

class foo {
    // $this->bar is never modified.
    private $bar = 1;

    // $this->foofoo is modified, at least once
    private $foofoo = 2;

    function method($a) {
        $this->foofoo = $this->bar + $a + $this->foofoo;

        return $this->foofoo;
    }

}

?>
```

See also Class Constants https://www.php.net/manual/en/language.oop5.constants.php.

Suggestions

- Turn the property into a class constant

Specs

Short name	Classes/CouldBeClassConstant
Rulesets	*All*, *Class Review*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class-constant, visibility
Related rule	*Never Called Parameter*
Available in	Entreprise Edition, Exakat Cloud

14.2.253 Could Be Constant

Literals may be replaced by an existing constant.

Constants makes the code easier to read, as they may bear a meaningful name. They also hide implementation values, with a readable name, such as `const READABLE= true;`. Later, upgrading constant values is easier than scouring the code with a new literal.

Not all literal can be replaced by a constant values : sometimes, literal may have the same literal value, but different meanings. Check with your application semantics before changing any literal with a constant.

This analysis currently doesn't support arrays.

This analysis also skips very common values, such as boolean, `0` and `1`. This prevents too many false positive.

```
<?php

const A = 'abc';
define('B', 'ab');

class foo {
    const X = 'abcd';
}

// Could be replaced by B;
$a = 'ab';

// Could be replaced by A;
$a = 'abc';

// Could be replaced by foo::X;
$a = 'abcd';

?>
```

Suggestions

- Turn the literal into an existing constant

Specs

Short name	Constants/CouldBeConstant
Rulesets	*All*, *Semantics*
Exakat since	1.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.254 Could Be Else

Merge opposite conditions into one if/then structure.

When two if/then structures follow each other, using a condition and its opposite, they may be merged into one.

```
<?php

// Short version
if ($a == 1) {
    $b = 2;
} else {
    $b = 1;
}

// Long version
if ($a == 1) {
    $b = 2;
}

if ($a != 1) {
    $b = 3;
}

?>
```

Suggestions

- Merge the two conditions into one structure
- Check if the second condition is still applicable

Specs

Short name	Structures/CouldBeElse
Rulesets	*All*, *Analyze*
Exakat since	1.0.1
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	if-then
Examples	*SugarCrm*, *OpenEMR*
Available in	Entreprise Edition, Exakat Cloud

14.2.255 Could Be Enumeration

This rule detects a potential enumeration. When a property is only and ever assigned a finite number of literals, it may be turned into an enumeration.

```
<?php

class x {
    private $p = 0;

    function foo() {
        if ($this->p === 0) {
            $this->p = 1;
        } else {
            $this->p = 0;
        }
    }
}

?>
```

Currently, the analysis focuses on properties that may have 2 or more values (parameter *minElements*). The property should only be assigned literals, or constants.

Name	Default	Type	Description
minElements	2	integer	Minimal number of elements to consider that a property may be an enumeration.

Specs

Short name	Enums/CouldBeEnum
Rulesets	*All*, *Suggestions*
Exakat since	2.4.4
PHP Version	8.1
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.256 Could Be Float

Mark arguments, class constants, properties and return types that can be set to `float`.

```
<?php

// Accept an int as input
function foo($b) {
    // Returns a float (cubic root of $b);
    return pow($b, 1 / 3);
}

?>
```

Suggestions

- Add *float* typehint to the code.

Specs

Short name	Typehints/CouldBeFloat
Rulesets	*All*, *CE*, *Typechecks*
Exakat since	2.1.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	float
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.257 Could Be Generator

Return value may be typed `generator`.

```
<?php

// Yield makes foo() a generator
function foo() {
    yield 1;
    // Returns an int
    return $b + 8;
}

?>
```

See also class.

Suggestions

- Add *Generator* typehint to the method.

Specs

Short name	Typehints/CouldBeGenerator
Rulesets	*All*, *Typechecks*
Exakat since	2.2.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.258 Could Be Null

Mark arguments, properties, class constants and return types that can be `null`. Null was introduced as a standlone type in PHP 8.2. Before that, null had to be paired with another type.

```
<?php

// Accept null as input, when used as third argument of file_get_contents
function foo($b) {
    $s = file_get_contents(URL, false, $b);

    // Returns a string
    return shell_exec($s);
}

?>
```

Suggestions

- Add *null* typehint to the code (PHP 8.0+).
- Add *?* typehint to the code.

Specs

Short name	Typehints/CouldBeNull
Rulesets	*All*, *CE*, *Typechecks*
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	null, typehint, nullable
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.259 Could Be Parent

Mark arguments, return types and properties that can be set to `parent`.

This analysis works when typehints have already been configured.

```
<?php

class x extends w {
    // Accept a w object as input
    function foo(w $b) : w {
        // Returns a w object
        return $b;
    }
}

?>
```

Suggestions

- Add *parent* typehint to the code.
- Add the literal class/type typehint to the code.

Specs

Short name	Typehints/CouldBeParent
Rulesets	*All*, *Typechecks*
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.260 Could Be Parent Method

A method is defined in several children, but not in a the parent class. It may be worth checking if this method doesn't belong the parent class, as an abstraction.

```
<?php

// The parent class
class x { }

// The children class
class y1 extends x {
    // foo is common to y1 and y2, so it shall be also a method in x
    function foo() {}
    // fooY1 is specific to y1
    function fooY1() {}
}

class y2 extends x {
    function foo() {}
    // fooY2 is specific to y1
    function fooY2() {}
}

?>
```

Only the name of the method is used is for gathering purposes. If the code has grown organically, the signature (default values, typehint, argument names) may have followed different path, and will require a refactorisation.

Name	Default	Type	Description
minChildren	4	integer	Minimal number of children using this method.

Suggestions

- Create an abstract method in the parent
- Create an concrete method in the parent, and move default behavior there by removing it in children classes

Specs

Short name	Classes/CouldBeParentMethod
Rulesets	*All*, *Class Review*
Exakat since	2.1.7
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class, parent
Available in	Entreprise Edition, Exakat Cloud

14.2.261 Could Be Private Class Constant

Class constant may use `private` visibility.

Since PHP 7.1, constants may also have a public/protected/private visibility. This restrict their usage to anywhere, class and children or class.

As a general rule, it is recommended to make constant `private` by default, and to relax this restriction as needed. PHP makes them public by default.

```
<?php

class foo {
    // pre-7.1 style
    const PRE_71_CONSTANT = 1;

    // post-7.1 style
    private const PRIVATE_CONSTANT = 2;
    public const PUBLIC_CONSTANT = 3;

    function bar() {
        // PRIVATE CONSTANT may only be used in its class
        echo self::PRIVATE_CONSTANT;
    }
}

// Other constants may be used anywhere
function x($a = foo::PUBLIC_CONSTANT) {
    echo $a.' '.foo:PRE_71_CONSTANT;
}

?>
```

Constant shall stay `public` when the code has to be compatible with PHP 7.0 and older.

They also have to be public in the case of component : some of those constants have to be used by external actors, in order to configure the component.

See also Class Constants.

Specs

Short name	Classes/CouldBePrivateConstante
Rulesets	*All*, *Class Review*
Exakat since	0.12.10
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility
Examples	*Phinx*
Available in	Entreprise Edition, Exakat Cloud

14.2.262 Could Be Protected Class Constant

Class constant may use 'protected' visibility.

Since PHP 7.1, constants may also have a public/protected/private visibility. This restrict their usage to anywhere, class and children or class.

As a general rule, it is recommended to make constant 'private' by default, and to relax this restriction as needed. PHP makes them public by default.

```
<?php

class foo {
    // pre-7.1 style
    const PRE_71_CONSTANT = 1;

    // post-7.1 style
    protected const PROTECTED_CONSTANT = 2;
    public const PUBLIC_CONSTANT = 3;
}

class foo2 extends foo {
    function bar() {
        // PROTECTED_CONSTANT may only be used in its class or its children
        echo self::PROTECTED_CONSTANT;
    }
}

class foo3 extends foo {
    function bar() {
        // PROTECTED_CONSTANT may only be used in its class or any of its children
        echo self::PROTECTED_CONSTANT;
    }
}
```

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```
// Other constants may be used anywhere
function x($a = foo::PUBLIC_CONSTANT) {
    echo $a.' '.foo:PRE_71_CONSTANT;
}

?>
```

Suggestions

- Use protected visibility with the reported constants.

Specs

Short name	Classes/CouldBeProtectedConstant
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	0.12.11
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility, class-constant
Available in	Entreprise Edition, Exakat Cloud

14.2.263 Could Be Protected Method

Those methods are declared 'public', but are never used publicly. They may be made 'protected'.

These properties may even be made private.

```
<?php

class foo {
    // Public, and used publicly
    public publicMethod() {}

    // Public, but never used outside the class or its children
    public protectedMethod() {}

    private function bar() {
        $this->protectedMethod();
    }
}

$foo = new Foo();
$foo->publicMethod();

?>
```

Suggestions

- Use protected visibility with these methods.

Specs

Short name	Classes/CouldBeProtectedMethod
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	0.12.11
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility, method
Available in	Entreprise Edition, Exakat Cloud

14.2.264 Could Be Protected Property

Those properties are declared public, but are never used publicly. They may be made protected.

This property may even be made private.

```
<?php

class foo {
    // Public, and used publicly
    public $publicProperty;
    // Public, but never used outside the class or its children
    public $protectedProperty;

    function bar() {
        $this->protectedProperty = 1;
    }
}

$foo = new Foo();
$foo->publicProperty = 3;

?>
```

Suggestions

- Use protected visibility with these properties.

Specs

Short name	Classes/CouldBeProtectedProperty
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	0.9.7
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	visibility
Available in	Entreprise Edition, Exakat Cloud

14.2.265 Could Be Readonly Property

This property could be made readonly. For that, the property is set in the constructor, and optionally in the `__clone` magic method, and never modified otherwise.

```
<?php

class x {
     private int $ok, $ok2;

     function __construct() {
             $this->ok = 1;
             $this->ok2 = 1;
     }

     function getOk2() {
             return $this->ko;
     }

     function __clone() {
             $this->ok2 = 1;
     }
}
?>
```

Suggestions

- Add the readonly option to the property definition

Specs

Short name	Classes/CouldBeReadonlyProperty
Rulesets	*All*, *Changed Behavior*, *Class Review*, *Suggestions*
Exakat since	2.6.4
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.266 Could Be Self

Mark arguments, return types and properties that can be set to `self`. This applies only to methods.

This analysis works when typehints have already been configured.

```
<?php

class x {
    // Accept a x object as input
    function foo(x $b) : x {
        // Returns a x object
        return $b;
    }
}

?>
```

Suggestions

- Add *self* typehint to the code.
- Add the literal class/type typehint to the code.

Specs

Short name	Typehints/CouldBeSelf
Rulesets	*All*, *Typechecks*
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	self
Available in	Entreprise Edition, Exakat Cloud

14.2.267 Could Be Spaceship

The spaceship operator compares values and returns 0 for equality, 1 for superior and -1 for inferior.

It is the same as below, and prevents lots of code.

```
<?php

if ($a) {
    return 1;
} elseif ($b) {
    return 0;
} else {
    return -1;
}
?>
```

See also spaceship operator and Remembering what spaceship operator do on comparison in PHP.

Suggestions

- Adopt the spaceship operator

Specs

Short name	Structures/CouldBeSpaceship
Rulesets	*All*, *Analyze*, *Suggestions*
Exakat since	2.4.0
PHP Version	With PHP 7.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	spaceship
Available in	Entreprise Edition, Exakat Cloud

14.2.268 Could Be Static Closure

> Closure <https://www.php.net/manual/en/class.`closure.php>`_ and arrow functions may be static, and prevent the import of `$this`.

By preventing the useless import of `$this`, you avoid useless work.

This also has the added value to prevent the usage of `$this` from the closure <https://www.php.net/`closure>`_. This is a good security practice. This is a micro-optimisation. Apply it in case of intensive usage.

```
<?php

class Foo
{
    function __construct()
    {

        // Not possible to use $this
        $func = static function() {
            var_dump($this);
        };
        $func();

        // Normal import of $this
        $closure = function() {
            var_dump($this);
        };
    }
};
new Foo();

?>
```

See also Anonymous functions, GeneratedHydrator and Static anonymous functions.

Suggestions

- Add the static keyword to the closure.
- Make actual usage of $this in the closure.

Specs

Short name	Functions/CouldBeStaticClosure
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	1.3.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Examples	*Piwigo*
Available in	Entreprise Edition, Exakat Cloud

14.2.269 Could Be String

Mark arguments, properties, constants and return types that can be set to `string`.

```
<?php

// Accept a string as input
function foo($a) {
    // Returns a string
    return $a . 'string';
}

?>
```

Suggestions

- Choose the string typehint, and add it to the code.

Specs

Short name	Typehints/CouldBeString
Rulesets	*All*, *CE*, *Typechecks*
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	string
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.270 Could Be Stringable

`Stringable` is an interface that marks classes with a custom method to cast the object as a string. It was introduced in PHP 8.0.

Classes that defined a __toString() magic method may be turned into a string when the typehint, argument, return or property, requires it. This is not the case when strict_types is activated. Yet, until PHP 8.0, there was nothing to identify a class as such.

```
<?php

// This class may implement Stringable
class x {
    function __tostring() {
        return 'asd';
    }
}

echo (new x);
```

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```
?>
```

See also PHP RFC: Add Stringable interface and The Stringable interface.

Suggestions

- Add implements stringable to the class definition
- Add extends stringable to the interface definition

Specs

Short name	Classes/CouldBeStringable
Rulesets	*All*, *Class Review*, *LintButWontExec*, *PHP recommendations*
Exakat since	2.1.9
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	stringable, string, magic-method
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.271 Could Be Ternary

This control structure may be replaced by a ternary operator.

Th ternary operator may be shorter and easier to read than the full blown if-then-else structure.

```
<?php

// original structure
if (empty($a)) {
    $b = 1;
} else {
    $b = foo();
}

// ternary version :
$b = empty($a) ? 1 : foo();

?>
```

Depending on the situation, the null-ternary and the coalesce operator may also be a good alternative.

See also PHP Shorthand If/Else Using Ternary Operators (?:) https://davidwalsh.name/php-shorthand-if-else-ternary-operators and Shorthand comparisons in PHP https://stitcher.io/blog/shorthand-comparisons-in-php.

Suggestions

- Update the syntax to use the ternary operator

Specs

Short name	Structures/CouldBeTernary
Rulesets	*All*, *Suggestions*
Exakat since	2.3.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	ternary, coalesce, null-ternary, short-assignation
Available in	Entreprise Edition, Exakat Cloud

14.2.272 Could Be Type

This is a generic analysis, that applies common patterns when searching for types. It should not be used directly.

Specs

Short name	Typehints/CouldBeType
Rulesets	none
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.273 Could Be Typehinted Callable

Those arguments may use the callable Typehint.

'callable' is a PHP keyword that represents callback functions. Those may be used in dynamic function call, like $function(); or as callback functions, like with array_map();

callable may be a string representing a function name or a static call (including ::), an array with two elements, (a class or object, and a method), or a closure <https://www.php.net/`closure>`_.

When arguments are used to call a function, but are not marked with 'callable', they are reported by this analysis.

```
<?php

function foo(callable $callable) {
    // very simple callback
    return $callable();
```

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```
}

function foo2($array, $callable) {
    // very simple callback
    return array_map($array, $callable);
}

?>
```

See also Callback / callable.

Suggestions

- Add the typehint callable
- Use the function is_callable() inside the method if 'callable' is too strong.

Specs

Short name	Functions/CouldBeCallable
Rulesets	*All*, *Changed Behavior*
Exakat since	0.10.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	callable
Examples	*Magento*, *PrestaShop*
Available in	Entreprise Edition, Exakat Cloud

14.2.274 Could Be Void

Mark return types that can be set to void.

```
<?php

// No return, this should be void.
function foo() {
    ++$a; // Not useful
}

?>
```

All abstract methods (in classes or in interfaces) are omitted here.

Suggestions

- Add the void typehint to the code.

Specs

Short name	Typehints/CouldBeVoid
Rulesets	*All*, *Typechecks*
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	void
Available in	Entreprise Edition, Exakat Cloud

14.2.275 Could Be array_combine()

This rule suggests using the native function array_combine() to merge two arrays in a hash.

```
foreach($a as $b => $c) {
    $d[$c] = $e[$b];
}
```

See also How to use array_merge() and array_combine() in PHP ?.

Suggestions

- Use array_combine()

Specs

Short name	Structures/CouldBeArrayCombine
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.276 Could Cast To Array

The array cast operator transform a scalar into an array with that scalar. It also keeps an array as an array, so a single call to `(array)` is able to convert scalars to array, while keeping values already in array form intact.

```
<?php

//
if (!is_array($a)) {
     $a = [$a];
}

// equivalent to
$a = (array) $a;

// same, with the else
if (is_array($a)) {
} else {
     $a = array($a);
}

?>
```

See also Mastering the (array) Cast Operator in PHP.

Suggestions

- Use a direct cast to array

Specs

Short name	Structures/CouldCastToArray
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.6.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array, cast
Available in	Entreprise Edition, Exakat Cloud

14.2.277 Could Drop Variable

Suggest removing the variable in catch clause where the variable is not used. The type of the exception is sufficient to make the catch clause work. Although, it is recommended to use the caught exception, for chaining or logging, for example.

```
<?php

try {
     doSomething();
} catch(Exception1 $e) {
     // No usage of $e : just drop it from the clause
} catch(Exception2 $e2) {
     // $e2 is caught and used.
     echo $e2->getMessage();
}

?>
```

Suggestions

- Remove the unused variable

Specs

Short name	Exceptions/CouldDropVariable
Rulesets	*All*, *Changed Behavior*, *Dead code*, *Suggestions*
Exakat since	2.6.4
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	catch
Available in	Entreprise Edition, Exakat Cloud

14.2.278 Could Inject Parameter

The parameter is immediately used to create an object. It could be interesting to replace it with an injection of that object's type to keep the method generic.

```
<?php

class x {

     // The directory is immediately injected
     function foo(Directory $dir) {
             $this->dir = $dir;
     }
```

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```
    // Path is injected, then turned into a directory
    function bar(string $path) {
            $this->dir = new Directory($path);
    }
}
?>
```

Suggestions

- Use the instantiation as the type of the parameter.

Specs

Short name	Classes/CouldInjectParam
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	2.4.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	injection, typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.279 Could Make A Function

> When a function is called across the code with the same arguments often enough, it should be turned into a local API.

This approach is similar to turning literals into constants : it centralize the value, it helps refactoring by updating it. It also makes the code more readable. Moreover, it often highlight common grounds between remote code locations.

The analysis looks for functions calls, and checks the arguments. When the calls occurs more than 4 times, it is reported.

```
<?php

// str_replace is used to clean '&' from strings.
// It should be upgraded to a central function
function foo($arg ) {
    $arg = str_replace('&', '', $arg);
    // do something with $arg
}

class y {
    function bar($database ) {
        $value = $database->queryName();
        $value = str_replace('&', '', $value);
        // $value = removeAmpersand($value);
        // do something with $arg2
    }
```

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```
}

// helper function
function removeAmpersand($string) {
    return str_replace('&', '', $string);
}

?>
```

Name	Default	Type	Description
centralizeThreshold	8	integer	Minimal number of calls of the function with one common argument.

See also Don't repeat yourself (DRY).

Suggestions

- Create a constant for common pieces of data
- Create a function based on context-free repeated elements
- Create a class based on repeated elements with dependent values

Specs

Short name	Functions/CouldCentralize
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Suggestions*
Exakat since	0.11.6
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.280 Could Not Type

Mark arguments, return types and properties that could not be typed.

Arguments, return types and properties that have no explicit typehint, and that could yield no guess from the following analysis, are deemed unable to receive a type.

- *Typehints/CouldBeCIT*
- *Typehints/CouldBeString*
- *Typehints/CouldBeArray*
- *Typehints/CouldBeBoolean*
- *Typehints/CouldBeVoid*
- *Typehints/CouldBeCallable*

`mixed` typehint, which acts as the universal typehint, is not processed here.

There are situation which cannot be typed, and legit : the example below is an illustration. array_fill() is a native PHP example, where the second argument may be of any type. __get() and __set() are also notoriously difficult to type, given the broad usage of arguments.

```
<?php

// Accepts any input, and returns any input
// This may be used, but not typed.
function foo($b) {
    return $b;
}

?>
```

Specs

Short name	Typehints/CouldNotType
Rulesets	*All*
Exakat since	2.1.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Medium
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.281 Could Set Property Default

> When a property is set to a literal in the constructor, the assignation may be moved to the property definition.

It is a micro-optimisation.

```
<?php

class x {
    private $p;
    private $p2;

    function __construct($d) {
        // dynamic default value.
        $this->p = $d;

        $this->p2 = "2";
    }

}

?>
```

Suggestions

- Set the default value to the property declaration, and remove the assignation in the constructor

Specs

Short name	Classes/CouldSetPropertyDefault
Rulesets	*All*, *Changed Behavior*, *Class Review*, *Suggestions*
Exakat since	2.4.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.282 Could Type With Array

That argument may be typed with `array`. Based on usage, it was determined that the only type possible is a array.

```
<?php

// $a is used with a function which requires an int.
function foo($a) {
    return array_keys($a);
}

?>
```

See also Type declarations.

Suggestions

- Add the `array` typehint to the function.
- Add the `iterable` typehint to the function.
- Add the `traversable` typehint to the function.

Specs

Short name	Functions/CouldTypeWithArray
Rulesets	*All*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.283 Could Type With Boolean

That argument, property or method may be typed with `bool`. Based on usage, it was determined that the only type possible is a boolean.

```
<?php

// $a is used with a function which requires a boolean.
function foo($code, $a) {
    return var_dump($code, $a);
}

?>
```

See also Type declarations.

Suggestions

- Add the `bool` typehint to the function.

Specs

Short name	Functions/CouldTypeWithBool
Rulesets	*All*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.284 Could Type With Int

That argument may be typed with `int`.

```
<?php

// $a is used with a function which requires an int.
function foo($a) {
    return chr($a);
}

?>
```

See also Type declarations.

Suggestions

- Add the `int` typehint to the function.

Specs

Short name	Functions/CouldTypeWithInt
Rulesets	*All*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	integer, typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.285 Could Type With Iterable

Suggest using `iterable` typehint for arguments.

`iterable` represents both `array` and objects that implements `Iterator` interface. Both types are coerced, and usable here.

```
<?php

// $s may be both an array or an iterator
function foo($s) : int {
    $t = 0;
    foreach($s as $v) {
        $t += (int) $v;
    }

    return $t;
}

?>
```

See also Iterables.

Suggestions

- Add the iterable type

Specs

Short name	Functions/CouldTypeWithIterable
Rulesets	*All*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	iterable
Available in	Entreprise Edition, Exakat Cloud

14.2.286 Could Type With String

That argument may be typed with `string`.

```
<?php

// $a is used with a function which requires a string.
function foo($a) {
    return strtolower($a);
}

?>
```

See also Type declarations.

Suggestions

- Add the `string` typehint to the function.

Specs

Short name	Functions/CouldTypeWithString
Rulesets	*All*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	string
Available in	Entreprise Edition, Exakat Cloud

14.2.287 Could Typehint

Arguments that are tested with instanceof, is_array(), is_string(), etc. could be modernized with a typehint.

```
<?php

function foo($a, $b) {
    // $a is tested for B with instanceof.
    if (!$a instanceof B) {
        return;
    }

    // More code
}

function foo(B $a, $b) {
    // May omit the initial test

    // More code
}

?>
```

Suggestions

- Add the typehint, remove the test on the type

Specs

Short name	Functions/CouldTypehint
Rulesets	*All*, *Changed Behavior*
Exakat since	0.11.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.288 Could Use Alias

This long name may be reduced by using an available alias.

This applies to classes (as full name or prefix), and to constants and functions.

```
<?php

use a\b\c;
use function a\b\c\foo;
use const a\b\c\D;
```

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```
// This may be reduced with the above alias to c\d()
new a\b\c\d();

// This may be reduced to c\d\e\f
new a\b\c\d\e\f();

// This may be reduced to c()
new a\b\c();

// This may be reduced to D
echo a\b\c\D;

// This may be reduced to D
a\b\c\foo();

// This can't be reduced : it is an absolute name
\a\b\c\foo();

// This can't be reduced : it is no an alias nor a prefix
a\b\d\foo();

?>
```

See also Using namespaces: Aliasing/Importing ¶.

Suggestions

- Use all your aliases so as to make the code shorter and more readable
- Add new aliases for missing path
- Make class names absolute and drop the aliases

Specs

Short name	Namespaces/CouldUseAlias
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	namespace, use-alias
Available in	Entreprise Edition, Exakat Cloud

14.2.289 Could Use Class Operator

The class operator is *::class*. With a class name as left operator, it provides the full class name.

Classes may also be identified with a string, as a fully qualified name. Using the class operator is a more explicit way to do it.

The *::class* operator works with the local use expressions. It also provides a string, which may be further processed. The class operator is also called the 'scope resolution operator'.

```
<?php

use A\B\C;

$a = C::class;
$a = \A\B\C::class; // also valid
$object = new $a(); // object of A\B\C.

// string version
$a = '\a\b\c';
$object = new $a(); // object of A\B\C.

?>
```

See also Scope Resolution Operator (::).

Suggestions

- Replace the string with the class operator

Specs

Short name	Classes/CouldUseClassOperator
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	class-operator
Available in	Entreprise Edition, Exakat Cloud

14.2.290 Could Use Compact

Compact() turns a group of variables into an array. It may be used to simplify expressions.

```
<?php

$a = 1;
$b = 2;

// Compact call
$array = compact('a', 'b');

$array === [1, 2];

// Detailing all the keys and their value
$array = ['a' => $a, 'b' => $b];

?>
```

Note that compact accepts any string, and any undefined variable is not set, without a warning.

See also compact.

Suggestions

- Replace the array() call with a compact() call.

Specs

Short name	Structures/CouldUseCompact
Rulesets	*All*, *Suggestions*
Exakat since	1.1.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	variable
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.291 Could Use Existing Constant

This rule reports literals that have the same value as a constant, and, as such, might be used as a constant, instead of a literal.

Floats are not considered by this rule, for comparison reasons. Also, `true`, `false`, `null`, 0 and 1 are also automatically excluded.

```
<?php

const A = 1;
```

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```
$a = 1;

?>
```

Name	Default	Type	Description
omittedValues		array	Comma-separated list of values that have to be ignored with this analysis. They replace the default values of 0 and 1.

Suggestions

- Use the constant instead of the literal
- Create a new constant for that literal

Specs

Short name	Constants/CouldUseConstant
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.3.5
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Medium
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.292 Could Use Match

The switch() syntax use may be replaced by a match() call.

The simplest case for such refactoring is when each of the switch's case (including default), assign one value to the same variable. See this below :

```
<?php
    switch($a) {
        case 1:
            $b = '1';
            break;
        case 2:
            $b = '3';
            break;
        default:
            $b = '0';
            break;
    }
```

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```
    /*
    $b = match($a) {
        1 => '1',
        2 => '3',
        default => '0'
    };
    */
?>
```

Match() was introduced in PHP 8. It is not valid with older PHP versions.

See also Match().

Suggestions

- Replace switch() with match()

Specs

Short name	Structures/CouldUseMatch
Rulesets	*All*, *Suggestions*
Exakat since	2.2.2
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	match, switch
Available in	Entreprise Edition, Exakat Cloud

14.2.293 Could Use Namespace Magic Constant

Use the __NAMESPACE__ magic constant, instead of hardcoding the current namespace. That way, the namespace is easier to read, and it will change with the namespace expression.

```
<?php

namespace A\B\C {
     class D {}
     $className = 'D';

     // hardcoded namespace, needed to instantiate dynamically the class
     // Don't forget the extra \
print        $fullclassName = '\'.__NAMESPACE__.'\'.$className;
     $object = new $fullclassName;


     // hardcoded namespace, needed to instantiate dynamically the class
     $path = "\A\B\C";
     $fullclassName = $path.$className;
```

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```
    $object = new $fullclassName;

}
?>
```

Suggestions

- Replace the hardcoded namespace with the __NAMESPACE__ constant, and extra separators.

Specs

Short name	Namespaces/CouldUseMagicConstant
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	magic-constant
Available in	Entreprise Edition, Exakat Cloud

14.2.294 Could Use Null-Safe Object Operator

> When the preceding function call has the potential to return null, employing the null-safe object operator can help mitigate fatal errors.

One approach is to assess the returned value prior to utilization, ensuring it is not null, and refraining from invoking methods on a null reference. Alternatively, the null-safe operator can be employed, allowing verification of the end result. If the result is null, it indicates an error.

Another approach is to use the null-safe operator when the intermediate methods returns an object or a null. When chained, the null-safe operator will prevent Fatal Error.

```
<?php

// direct usage, with a check on the final value
$a = foo()?->b() ?? throw new exception('something went wrong when calculating $a');
   // throw as an expression is a PHP 8.0 code


// direct usage, may yield a Fatal error
foo()->b();

// indirect usage, with a check on the returned value
$a = foo();
$c = $a ? $a->b() : null;


function foo() : ?A {
```

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```
    return rand(0, 1) ? new A() : null;
}

class A {
    function b() : string { return '';}
}

?>
```

See also PHP 8.0 feature focus: nullsafe methods and Nullsafe methods and properties.

Suggestions

- Add a check on NULL before using the returned value
- Update the previous method to prevent it from returning null
- Use the null-safe object operator and test the result afterward

Specs

Short name	Structures/CouldUseNullableOperator
Rulesets	*All*, *Suggestions*
Exakat since	2.3.3
PHP Version	With PHP 8.0 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Medium
Features	nullsafe-object-operator, nullable
Available in	Entreprise Edition, Exakat Cloud

14.2.295 Could Use Promoted Properties

> Promoted properties are a syntax notation where the properties are declared as arguments of the constructor.

They reduce PHP code at __construct() time. This feature is available in PHP 8.0.

```
<?php

class x {
    function __construct($a, $b) {
        // $a argument may be promoted to property $c
        $this->c = $a;

        // $b argument cannot be upgraded to property, as it is updated.
        // Move the addition to the new call, or keep the syntax below
        $this->d = $b + 2;
    }
}
```

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```
?>
```

See also PHP 8: Constructor property promotion and PHP RFC: Constructor Property Promotion.

Suggestions

- Update the constructor syntax, and remove the property specification.

Specs

Short name	Php/CouldUsePromotedProperties
Rulesets	*All*, *Suggestions*
Exakat since	2.1.9
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	promoted-property
Available in	Entreprise Edition, Exakat Cloud

14.2.296 Could Use Short Assignation

Use short assignment operator, to speed up code, and keep syntax clear.

Some operators, like * or +, have a compact and fast 'do-and-assign' version. They looks like a compacted version for = and the operator. This syntax is good for readability, and saves some memory in the process.

Depending on the operator, not all permutations of arguments are possible. For example, `$a = $a - 2` can use the -= short operator, but `$a = 2 - $a` doesn't.

Addition and short assignation of addition have a different set of features when applied to arrays. Do not exchange one another in that case.

Short operators are faster than the extended version, though it is a micro-optimization.

```
<?php

$a = 10 + $a;
$a += 10;

$b = $b - 1;
$b -= 1;

$c = $c * 2;
$c *= 2;

$d = $d / 3;
$d /= 3;
```

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```
$e = $e % 4;
$e %= 4;

$f = $f | 5;
$f |= 5;

$g = $g & 6;
$g &= 6;

$h = $h ^ 7;
$h ^= 7;

$i = $i >> 8;
$i >>= 8;

$j = $j << 9;
$j <<= 9;

// PHP 7.4 and more recent
$l = $l ?? 'value';
$l ??= 'value';

?>
```

See also Assignation Operators.

Suggestions

- Change the expression to use the short assignation

Specs

Short name	Structures/CouldUseShortAssignation
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Performances*, *Rector*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	short-assignation
ClearPHP	use-short-assignations
Examples	*ChurchCRM*, *Thelia*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.297 Could Use Trait

> The following classes have been found implementing all of a trait's methods : it could use this trait, and remove duplicated code.

The comparison between the class methods' and the trait's methods are based on token. They may yield some false-positives.

```
<?php

trait t {
    function t1() {}
    function t2() {}
    function t3() {}
}

// t1, t2, t3 method could be dropped, and replaced with 'use t'
class foo1 {
    function t1() {}
    function t2() {}
    function t3() {}

    function j() {}
}

// foo2 is just the same as foo1
class foo2 {
    use t;

    function j() {}
}

?>
```

See also *Forgotten Interface*.

Suggestions

- Use trait, and remove duplicated code

Specs

Short name	Traits/CouldUseTrait
Rulesets	*All*, *Changed Behavior*
Exakat since	1.8.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	trait
Available in	Entreprise Edition, Exakat Cloud

14.2.298 Could Use Try

Some commands may raise exceptions. It is recommended to use the try/catch block to intercept those exceptions, and process them.

- / : `DivisionByZeroError`
- % : `DivisionByZeroError`
- intdiv() : `DivisionByZeroError`, `ArithmeticError`
- << : `ArithmeticError`
- >> : `ArithmeticError`
- `Phar\:\:mungserver` : `PharException`
- `Phar\:\:webphar` : `PharException`

Some exceptions have an extra analysis, due to special detection condition : `ParseError`, with eval() and `DivisionByZeroError`.

```
<?php

function division(int $a, int $b) {
     // This expression might generate a DivisionByZeroError, and require a try/catch␣
↪for error handling purposes.
     return $a / $b;
}

?>
```

See also Predefined Exceptions and PharException.

Suggestions

- Add a try/catch clause around those commands
- Add a check on the values used with those operator : for example, check a dividend is not 0, or a bitshift is not negative

Specs

Short name	Exceptions/CouldUseTry
Rulesets	*All*, *Suggestions*
Exakat since	1.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	try-catch, exception, arithmeticerror, divisionbyzeroerror, imagickexception, imagickpixelexception, invalidargumentexception, jsonexception, mysqli_sql_exception, pdoexception, pharexception, reflectionexception, svmexception, typerror, unexpectedvalueexception
Examples	*Mautic*
Related rule	*eval() Without Try*, *Check Division By Zero*
Available in	Entreprise Edition, Exakat Cloud

14.2.299 Could Use Yield From

`Yield from` can be applied to an array or another generator <https://www.php.net/`generator>`_. It replaces a loop and a `yield` call. The resulting syntax is shorter and faster.

```
<?php

foreach(foo() as $f) {
     doSomething($f);
}

// using yield and a loop to yield all elements
function foo() {
     foreach(goo() as $g) {
             yield $g;
     }
}
```

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```
// using yield from to yield all elements
function foo2() {
     yield from goo();
}

function goo() : array {
     return [1,2,3];
}

?>
```

Suggestions

- Use `yield from` keyword and shorten the syntax

Specs

Short name	Structures/CouldUseYieldFrom
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Performances*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	yield-from
Available in	Entreprise Edition, Exakat Cloud

14.2.300 Could Use __DIR__

Use __DIR__ constant to access the current file's parent directory <https://www.php.net/`directory>`_.

Avoid using dirname() on __FILE__.

```
<?php

// Better way
$fp = fopen(__DIR__.'/myfile.txt', 'r');

// compatible, but slow way
$fp = fopen(dirname(__FILE__).'/myfile.txt', 'r');

// Since PHP 5.3
assert(dirname(__FILE__) == __DIR__);

?>
```

__DIR__ has been introduced in PHP 5.3.0.

See also Magic Constants.

Suggestions

- Use __DIR__ instead of `dirname(__FILE__);`

Specs

Short name	Structures/CouldUseDir
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Suggestions*, *php-cs-fixable*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	magic-constant
Examples	*Woocommerce*, *Piwigo*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.301 Could Use array_fill_keys

> array_fill_keys() is a native PHP function that creates an array from keys. It gets the list of keys, and a constant value to assign to each keys.

This is twice faster than doing the same with a loop.

Note that is possible to use an object as initializing value : every element of the final array will be pointing to the same value. And, also, using an object as initializing value means that the same object will be used for each key : the object will not be cloned for each value.

```
<?php

$array = range('a', 'z');

// Fast way to build the array
$b = array_fill_keys($a, 0);

// Fast way to build the array, but every element will be the same object
$b = array_fill_keys($a, new Stdclass());

// Slow way to build the array
foreach($array as $a) {
    $b[$a] = 0;
}

// Setting everything to null, slowly
$array = array_map(function() {}, $array);

?>
```

See also array_fill_keys.

Suggestions

- Use array_fill_keys()

Specs

Short name	Structures/CouldUseArrayFillKeys
Rulesets	*All*, *Suggestions*
Exakat since	1.1.7
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Examples	*ChurchCRM*, *PhpIPAM*
Available in	Entreprise Edition, Exakat Cloud

14.2.302 Could Use array_sum()

These loops could use array_sum(). array_sum() loops over the array and sum all of its elements. It is a native PHP function, faster to execute and easier to read.

```
<?php

$total = 0;
foreach($array as $b) {
    $total = $total + $b;
}

?>
```

When the added elements are, in fact, arrays, use array_merge() instead of array_sum().

This is a micro-optimisation : it will speed up the code, but won't bring large improvements.

Suggestions

- Replace the loop with a call to array_sum().

Specs

Short name	Structures/CouldUseArraySum
Rulesets	*All*, *Suggestions*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.303 Could Use array_unique

Use array_unique() to collect unique elements from an array.

Always try to use native PHP functions, instead of rebuilding them with custom PHP code.

```
<?php

    $unique = array();
    foreach ($array as $b) {
        if (!in_array($b, $unique)) {
            /*  May be more code */
            $unique[] = $b;
        }
    }
?>
```

See also array_unique.

Suggestions

- Turn the foreach() and its condition into a call to array_unique()
- Extract the condition from the foreach() and add a separate call to array_unique()

Specs

Short name	Structures/CouldUseArrayUnique
Rulesets	*All*, *Suggestions*
Exakat since	1.2.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*Dolibarr*, *OpenEMR*
Available in	Entreprise Edition, Exakat Cloud

14.2.304 Could Use self

`self` keyword refers to the current class, or any of its parents. Using it is just as fast as the full class name, it is as readable and it is will not be changed upon class or namespace change.

It is also routinely used in traits : there, `self` represents the class in which the trait is used, or the trait itself.

```
<?php

class x {
    const FOO = 1;

    public function bar() {
        return self::FOO;
```

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```
// same as return x::FOO;
    }
}

?>
```

See also Scope Resolution Operator (::).

Suggestions

- Replace the explicit name with `self`

Specs

Short name	Classes/ShouldUseSelf
Rulesets	*All*, *Analyze*, *Class Review*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	self, class
Examples	*WordPress*, *LiveZilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.305 Could Use str_repeat()

Use str_repeat() or str_pad() instead of making a loop.

Making a loop to repeat the same concatenation is actually much longer than using str_repeat(). As soon as the loop repeats more than twice, str_repeat() is much faster. With arrays of 30, the difference is significant, though the whole operation is short by itself.

```
<?php

// This adds 7 'e' to $x
$x .= str_repeat('e', 7);

// This is the same as above,
for($a = 3; $a < 10; ++$a) {
    $x .= 'e';
}

// here, $default must contains 7 elements to be equivalent to the previous code
foreach($default as $c) {
    $x .= 'e';
}

?>
```

Suggestions

- Use strrepeat() whenever possible

Specs

Short name	Structures/CouldUseStrrepeat
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Top10*
Exakat since	0.11.0
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	string
Examples	*Zencart*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.306 Could Use strcontains()

> PHP 8 introduced the strcontains() function, which is a replacement for strpos(). strcontains() checks if a string is found inside a string, and returns a boolean.

When strpos() is used as a boolean, or compared to a boolean, strcontains() is a good replacement. When strpos() is actually used to calculate a position inside a string, it should not be replaced.

strcontains() is not backward compatible, so it should be be used before PHP 8.0. Polyfills are available.

```
<?php

// Could use strcontains()
if (strpos($haystack, $needle) !== false) { }

// Not a possible replacement
$position = strpos($haystack, $needle);
$haystack[$position + 1] = 'A';

?>
```

Suggestions

- Replace strpos() by strcontains()

Specs

Short name	Structures/CouldUseStrContains
Rulesets	*All*, *Changed Behavior*, *Rector*, *Suggestions*
Exakat since	2.6.4
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.307 Count() Is Not Negative

This rule reports when the Countable method `count` is poised to return a negative value.

It also reports when a call to `count()` is compared to a value that might be negative.

```
<?phpVersion

// count() shall not be below 0, so === is preferable here
if (count($array) <= 0) { }

?>
```

Specs

Short name	Structures/CountIsNotNegative
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.6.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.308 Count() To Array Append

The array append operator is able to generate a sane index, without relying on the count() function. This is faster, and safer.

```
<?php

$newArray  = [];
foreach($array as $value) {
     // count is overkill here
     $newArray[count($newArray)] = $value;
}

?>
```

Suggestions

- Remove the call to count()

Specs

Short name	Performances/CountToAppend
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	2.6.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	append
Available in	Entreprise Edition, Exakat Cloud

14.2.309 Courier Anti-Pattern

> The courier anti-pattern is the storage of a dependency by a class, in order to create an instance that requires this dependency.

The class itself doesn't actually need this dependency, but has a dependency to a class that requires it. The alternative here is to inject Foo instead of Bar.

```
<?php

// The foo class requires bar
class Foo {
    public function __construct(Bar $b) {
    }
}

// Class A doesn't depends on Bar, but depends on Foo
// Class A never uses Bar, but only uses Foo.
class A {
    private $courier;

    public function __construct(Bar $courier) {
        $this->courier = $courier;
    }

    public function Afoo() {
        $b = new Foo($this->courier);
    }

}

?>
```

See also Courier Anti-pattern.

Specs

Short name	Patterns/CourrierAntiPattern
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	pattern
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.310 Crc32() Might Be Negative

crc32() may return a negative number, on 32 bits platforms.

According to the manual : Because PHP's integer type is signed many `CRC32` checksums will result in negative integers on 32 bits platforms. On 64 bits installations, all crc32() results will be positive integers though.

```
<?php

// display the checksum with %u, to make it unsigned
echo sprintf('%u', crc32($str));

// turn the checksum into an unsigned hexadecimal
echo dechex(crc32($str));

// avoid concatenating crc32 to a string, as it may be negative on 32bits platforms
echo 'prefix'.crc32($str);

?>
```

See also crc32().

Specs

Short name	Php/Crc32MightBeNegative
Rulesets	*All*, *Analyze*, *Changed Behavior*, *PHP recommendations*
Exakat since	0.11.0
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	crc32
Available in	Entreprise Edition, Exakat Cloud

14.2.311 Create Compact Variables

This command creates Variable definitions, based on usage of compact().

This only works when compact() is used with literal values, or with constants. Dynamic values are not reported.

```
<?php

function foo() {
    $a = 1;
    return compact('a');
}
?>
```

Specs

Short name	Complete/CreateCompactVariables
Rulesets	*All*, *CE*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	compact, dynamic-variable
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.312 Create Default Values

This commands adds a link between variables, property definitions and any assignation to this container.

Variables have no definition expression in PHP. Exakat holds their definition with the *Variabledefinition* node.

Properties have definitions, and non-compulsory default values. This command creates multiple DEFINITION link for them.

DEFAULT is convenient in the case of *null* value, which will be assigned an object at execution time. Short assignations, such as += are not considered default value. It needs to be a full assignation

```
<?php

function foo() {
    // local Variabledefinition links to this expression
    $a = 1;
}

class x {
    // 1 is a default value
    private $p = 1;

    function __construct() {
        // 2 is also a default value for this.
        // This default value is different from the above as it is a part of an␣
```

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```
↪assignation
        $this->p = 2;
    }
}

?>
```

Specs

Short name	Complete/CreateDefaultValues
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.313 Create Foreach Default

This command adds DEFAULT link from the blind variables to the literal definitions, when they are available. This adds sources for static loops, which are based on hardcoded list of data. Dynamic loops are not affected.

```
<?php

// $a may b e 1, 2 or 3
foreach([1,2,3] as $a) {
    echo $a;
}

?>
```

Specs

Short name	Complete/CreateForeachDefault
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.9
PHP Version	All
Severity	
Time To Fix	
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.314 Create Magic Method

> This command creates a link DEFINITION between a `__call()` and `__callStatic()` calls, and its equivalent magic method.

This command may not detect all possible link for the `__get()` and `__set()` call. It may be missing information about the nature of the object. `Self`, `static`, `parent` and simple variables are detected.

```
<?php

class x {
    function foo() {
        // This is linked to __call
        $this->c();

        // This is linked to __callStatic
        return $this::C();
    }

    function __call($name, $args) {
        // Normal method call
    }

    function __callStatic($name, $args) {
        // Static method call
    }
}

?>
```

See also Magic Methods.

Specs

Short name	Complete/CreateMagicMethod
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	magic-method
Available in	Entreprise Edition, Exakat Cloud

14.2.315 Create Magic Property

> This command creates a link DEFINITION between a `__get` and `__set` calls, and its equivalent magic method.

It also adds links between `__invoke` and `__toString` in adapted situations. This command may not detect all possible link for the `__get` and `__set` call. It may be missing information about the nature of the object.

```
<?php

class x {
    function foo() {
        // This is linked to __set
        $this->a = 1;

        // This is linked to __get
        return $this->b;
    }

    function __get($name) {
        return 1;
    }

    function __set($name, $value) {
        // Store the value
    }
}

?>
```

Specs

Short name	Complete/CreateMagicProperty
Rulesets	*All*, *CE*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	magic-property
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.316 Crypto Usage

Usage of cryptography and hashes functions.

The functions listed are the native PHP functions, and do not belong to a specific extension, like `OpenSSL`, `mcrypt` or `mhash`.

Cryptography and hashes are mainly used for storing sensitive data, such as passwords, or to verify authenticity of data. They may also be used for name-randomization with cache.

```
<?php

if (md5($_POST['password']) === $row['password_hash']) {
    user_login($user);
} else {
    error('Wrong password');
}
?>
```

See also Cryptography Extensions.

Specs

Short name	Php/CryptoUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	1.0.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	crypto
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.317 Custom Class Usage

List of usage of custom classes throughout the code. This might be important when it is time to refactor or remove such usage, before removing the class itself.

```
<?php

class x {}

// This is a class usage
$a = new X();

?>
```

Name	Default	Type	Description
forbiddenClasses		ini_hash	List of classes to be avoided

Specs

Short name	Classes/AvoidUsing
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.318 Custom Constant Usage

The code is using constants that are not defined in PHP extensions or PHP itself. This may lead to a fatal error.

```
<?php

// display MY_CONSTANT : MY_CONSTANT is a user constant.
echo MY_CONSTANT;

// display PHP version : PHP_VERSION is a native PHP constant.
echo PHP_VERSION;

// MY_CONSTANT definition.
const MY_CONSTANT;

?>
```

See also PHP Constants.

Specs

Short name	Constants/CustomConstantUsage
Rulesets	*All*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.319 Cyclic References

Avoid cyclic references.

Cyclic references happen when an object points to another object, which reciprocate. This is particularly possible with classes, when the child class has to keep a reference to the parent class.

```
<?php

class a {
    private $p = null;

    function foo() {
        $this->p = new b();
        // the current class is stored in the child class
        $this->p->m($this);
    }
}

class b {
    private $pb = null;

    function n($a) {
        // the current class keeps a link to its parent
        $this->pb = $a;
    }
}
?>
```

Cyclic references, or circular references, are memory intensive : only the garbage collector can understand when they may be flushed from memory, which is a costly operation. On the other hand, in an acyclic reference code, the reference counter will know immediately know that an object is free or not.

See also About circular references in PHP and A Journey to find a memory leak.

Suggestions

- Use a different object when calling the child objects.
- Refactor your code to avoid the cyclic reference.

Specs

Short name	Classes/CyclicReferences
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.1.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class, extends
Available in	Entreprise Edition, Exakat Cloud

14.2.320 Cyclomatic Complexity

This rules calculates cyclomatic complexity for each method, function, and closures.

```
<?php

// cyclomatic complexity of 2
function foo() {
     if ($a) {

     } else {

     }
}

?>
```

See also Cyclomatic complexity.

Specs

Short name	Dump/CyclomaticComplexity
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	1.9.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	cyclomatic-complexity
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.321 DI Cyclic Dependencies

When injecting dependencies, classes that mutually depend on each other is a code smell.

Dependency injection should be organized as an acyclic tree-like structure

```
<?php

// Classes A and B depends on each other.
class A {
    protected $b;

    public function __construct(B $b) {
        $this->b = $b;
    }
}

class B {
    public $a;
```

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```
    protected function setA(A $a) {
        $this->a = $a;
    }
}
?>
```

See also Dependency Injection Smells.

Specs

Short name	Classes/TypehintCyclicDependencies
Rulesets	*All*, *Changed Behavior*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	injection
Available in	Entreprise Edition, Exakat Cloud

14.2.322 Dangling Array References

Always unset a referenced-variable used in a loop.

It is highly recommended to unset blind variables when they are set up as references after a loop.

```
<?php

$array = array(1,2,3,4);

foreach($array as &$a) {
    $a += 1;
}
// This only unset the reference, not the value
unset($a);


// Dangling array problem
foreach($array as &$a) {
    $a += 1;
}
//$array === array(3,4,5,6);

// This does nothing (apparently)
// $a is already a reference, even if it doesn't show here.
foreach($array as $a) {}
//$array === array(3,4,5,5);

?>
```

When omitting this step, the next loop that will also require this variable will deal with garbage values, and produce unexpected results.

See also No Dangling Reference, PHP foreach pass-by-reference: Do it right, or better not at all, How does PHP 'foreach' actually work? and References and foreach.

Suggestions

- Avoid using the reference altogether : sometimes, the reference is not needed.
- Add unset() right after the loop, to avoid reusing the reference.

Specs

Short name	Structures/DanglingArrayReferences
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *PHP recommendations*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	loop
ClearPHP	no-dangling-reference
Examples	*Typo3*, *SugarCrm*
Related rule	*Altering Foreach Without Reference*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.323 Date Formats

Inventory of date formats used in the code.

Date format are detected with calls to date(), strftime(), gmstrftime(), date_format() functions and to the format() method on `Datetime` and `DatetimeImmutable`.

```
<?php

$time = time();
// This is a formated date
echo date('r', $time);

?>
```

See also Date and Time.

Specs

Short name	Php/DateFormats
Rulesets	*All*, *Changed Behavior*, *Inventory*
Exakat since	0.12.16
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	date
Available in	Entreprise Edition, Exakat Cloud

14.2.324 DateTimeImmutable Is Not Immutable

`DateTimeImmutable` is not really immutable because its internal state can be modified after instantiation.

```
<?php

$dt = new DateTimeImmutable('now');
echo $dt->getTimestamp() . "\n";

$dt->__construct('tomorrow');
echo $dt->getTimestamp() . "\n";

?>
```

Inspired by the article from `Matthias Noback`.

See also Effective immutability with PHPStan.

Suggestions

- Remove the call to the constructor after instantation of a DateTimeImmutable object

Specs

Short name	Php/DateTimeNotImmutable
Rulesets	*All*, *Analyze*
Exakat since	2.4.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.325 Declare Global Early

Static and global keywords should be used as early as possible in a method.

Performance wise, it is better to call `global` or `static` only before using the variable.

Human-wise, it is recommended to put `global` or `static` at the beginning of the method, for better readability.

```
<?php

function foo() {
    // $a is not global yet. It is a local variable
    $a = 1;
    // Same for static variables
    $s = 5;

    // Now $a is global
    global $a;
    $a = 3;

    // Now $s is static
    static $s;
    $s = 55;
}

?>
```

See also Using static variables and The global keyword.

Suggestions

- Use static and global at the beginning of the method
- Move static and global to the first usage of the variable
- Remove any access to the variable before static and global

Specs

Short name	Structures/VariableMayBeNonGlobal
Rulesets	*All*
Exakat since	1.5.3
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	static-variable, global-variable
Available in	Entreprise Edition, Exakat Cloud

14.2.326 Declare Static Once

Global and static variables should be declared only once in a method. It is also recommended to configure it at the beginning of the method. This could be refined by defining the variable at the last common moment, though it lacks readability.

```
<?php

function foo() {
    if (rand(0, 1)) {
        static $x;

        ++$x;
    } else {
        static $x;

        --$x;
    }
}

?>
```

Defining static or global methods late is a micro-optimisation.

Suggestions

- Remove duplicate static and global calls
- Move the static and global calls to the beginning of the method
- Refactor the static and global variable to properties

Specs

Short name	Structures/DeclareStaticOnce
Rulesets	*All*, *Suggestions*
Exakat since	2.2.1
PHP Version	With PHP 8.3 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static
Available in	Entreprise Edition, Exakat Cloud

14.2.327 Declare strict_types Usage

Usage of `strict_types`. By default, PHP attempts to change the original type to match the type specified by the type-declaration. With an explicit `strict_types` declaration, PHP ensures that the incoming argument has the exact type.

`strict_types` were introduced in PHP 7.0.

```
<?php

// Setting strict_types;
    declare(strict_types = 1);

    function foo(int $i) {
        echo $i;
    }

    // Always valid : displays 1
    foo(1);
    // with strict types, this emits an error
    // without strict types, this displays 1
    foo(1.7);

?>
```

See also declare.

Specs

Short name	Php/DeclareStrictType
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *Preferences*
Exakat since	0.12.1
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	declare
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.328 Deep Definitions

Structures, such as functions, classes, interfaces, traits, enum, etc. may be defined anywhere in the code, including inside functions. This is legit code for PHP.

Since the availability of autoload, with spl_register_autoload(), there is no need for that kind of code. Structures should be defined, and accessible to the autoloading. Inclusions and deep definitions should be avoided, as they compel code to load some definitions, while autoloading will only load them if needed.

```
<?php

class X {
```

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```
    function init() {
        // myFunction is defined when and only if X::init() is called.
        if (!function_exists('myFunction'){
            function myFunction($a) {
                return $a + 1;
            }
        })
    }
}

?>
```

Functions are excluded from autoload, but shall be gathered in libraries, and not hidden inside other code.

Constants definitions are tolerated inside functions : they may be used for avoiding repeat, or noting the usage of such function.

Definitions inside a if/then statement, that include PHP version check are accepted here.

See also Autoloading Classes.

Suggestions

- Move function definitions to the global space : outside structures, and method.

Specs

Short name	Functions/DeepDefinitions
Rulesets	*All*, *Analyze*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Examples	*Dolphin*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.329 Default Then Discard

Discard the value before assigning it.

In the code below, the variable is assigned a default value. Then, this value is immediately tested and discarded.

It is more readable to test the value, and discard it, or assign it later, rather than assign first then discard it later.

```
<?php

$a = $a ?? null;
if ($a === null) {
     throw new Exception();
```

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```
}
doSomething();

// Alternative code

if (!isset($a) || $a === null) {
     throw new Exception();
}
// $a has a valid value for the purpose

doSomething();

?>
```

Suggestions

- Test the value and bail out if it is not valid before assigning it

Specs

Short name	Structures/DefaultThenDiscard
Rulesets	*All*, *Analyze*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	default
Available in	Entreprise Edition, Exakat Cloud

14.2.330 Define Constants With Array

PHP has the ability to define an array as a constant, using the define() native call. This was not possible until that version, only with the const keyword.

This was introduced in PHP 7.0. It also applies to the `const` keyword and to class constants.

```
<?php

//Defining an array as a constant
define('MY_PRIMES', [2, 3, 5, 7, 11]);

const MY_OTHER_NUMBERS =  [12, 13, 15, 17, 111];

?>
```

Specs

Short name	Php/DefineWithArray
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	Very high
Features	define, const, static-constant-expression
Available in	Entreprise Edition, Exakat Cloud

14.2.331 Defined Class Constants

Checks if class constants are defined. This includes class constants, one level of parent (extended) or interfaces (implemented).

This analysis takes into account native PHP, extension and stubs class definitions.

```
<?php

class X {
    const Y = 2;

    function foo() {
        // This is defined on the line above
        echo self::Y;

        // This is not defined in the current code
        echo X::X;
    }
}

?>
```

Specs

Short name	Classes/DefinedConstants
Rulesets	*All*, *CE*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class-constant
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.332 Defined Exceptions

This is the list of defined exceptions. Those exceptions are custom to the code, and shall be thrown at one point or more in the code.

```
<?php

class myException extends \Exception {}

// A defined exception
throw new myException();

// not a defined exception : it is already defined.
throw new \RuntimeException();

?>
```

See also Predefined Exceptions and Exceptions.

Specs

Short name	Exceptions/DefinedExceptions
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	predefined-exception, exception
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.333 Defined Parent MP

This rule reports when a static call with *parent*, where the parent has an actual definition.

```
<?php

class foo {
    protected function parentDefined() {}
    protected function unusedParentMethod() {}

    // visibility is checked too
    protected function unusuableParentMethod() {}
}

class bar extends foo {

    private function someMethod() {
        // reported
        parent::parentDefined();
```

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```
        // not reported, as method is unreachable in parent
        parent::unusuableParentMethod();

        // not reported, as method is undefined in parent
        parent::parentUndefined();

    }

    protected function parentDefined2() {}
}

?>
```

Specs

Short name	Classes/DefinedParentMP
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.334 Defined Properties

List of properties that are explicitly defined in the class, its parents or traits.

```
<?php

class foo {
    // property definition
    private bar = 2;
}

?>
```

See also Properties.

Specs

Short name	Classes/DefinedProperty
Rulesets	*All*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.335 Defined static:: Or self::

List of all defined static and self properties and methods.

```
<?php

class x {
    static public function definedStatic() {}
    private definedStatic = 1;

    public function method() {
        self::definedStatic();
        self::undefinedStatic();

        static::definedStatic;
        static::undefinedStatic;
    }
}

?>
```

Specs

Short name	Classes/DefinedStaticMP
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.336 Definitions Only

File is definition only.

Definition-only files only include structure definitions : class, functions, traits, interfaces, constants, global, declare(), use and include().

Some functioncalls are also considered definition only, as they configure PHP, but don't process data : * ini_set() * error_reporting * register_shutdown_function() * set_session_handler() * set_error_handler() * spl_autoload_register()

File A :

```
<?php

// This file has only definitions
function foo() {}

define('a', 1);

class bar {}

?>
```

File B :

```
<?php

// This file has only definitions
function foo() {}

define('a', 1);

class bar {}

?>
```

Specs

Short name	Files/DefinitionsOnly
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	definition
Available in	Entreprise Edition, Exakat Cloud

14.2.337 Dependant Abstract Classes

> Abstract classes should be autonomous. It is recommended to avoid depending on methods, constant or properties that should be made available in inheriting classes, without explicitly abstracting them.

The following abstract classes make usage of constant, methods and properties, static or not, that are not defined in the class. This means the inheriting classes must provide those constants, methods and properties, but there is no way to enforce this.

This may also lead to dead code : when the abstract class is removed, the host class have unused properties and methods.

```
<?php

// autonomous abstract class : all it needs is within the class
abstract class c {
    private $p = 0;

    function foo() {
        return ++$this->p;
    }
}

// dependant abstract class : the inheriting classes needs to provide some properties or␣
↪methods
abstract class c2 {
    function foo() {
        // $p must be provided by the extending class
        return ++$this->p;
    }
}

class c3 extends c2 {
    private $p = 0;
}
?>
```

See also *Dependant Trait*.

Suggestions

- Make the class only use its own resources
- Split the class in autonomous classes
- Add local property definitions to make the class independent

Specs

Short name	Classes/DependantAbstractClass
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	1.8.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	abstract
Available in	Entreprise Edition, Exakat Cloud

14.2.338 Dependant Trait

> Traits should be autonomous. It is recommended to avoid depending on methods or properties that should be in the using class.

The following traits make usage of methods and properties, static or not, that are not defined in the trait. This means the host class must provide those methods and properties, but there is no way to enforce this.

This may also lead to dead code : when the trait is removed, the host class have unused properties and methods.

```
<?php

// autonomous trait : all it needs is within the trait
trait t {
    private $p = 0;

    function foo() {
        return ++$this->p;
    }
}

// dependant trait : the host class needs to provide some properties or methods
trait t2 {
    function foo() {
        return ++$this->p;
    }
}

class x {
    use t2;

    private $p = 0;
}
?>
```

See also *Dependant Abstract Classes*.

Suggestions

- Add local property definitions to make the trait independent
- Make the trait only use its own resources
- Split the trait in autonomous traits

Specs

Short name	Traits/DependantTrait
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	trait
Examples	*Zencart*
Available in	Entreprise Edition, Exakat Cloud

14.2.339 Dependency Injection

A dependency injection is a typehinted argument, that is stored in a property by the constructor.

```
<?php

// Classic dependency injection
class foo {
    private $bar;

    public function __construct(Bar $bar) {
        $this->bar = $bar;
    }

    public function doSomething($args) {
        return $this->bar->barbar($args);
    }
}

// Without typehint, this is not a dependency injection
class foo {
    private $bar;

    public function __construct($bar) {
        $this->bar = $bar;
    }
}

?>
```

See also Understanding Dependency Injection.

Specs

Short name	Patterns/DependencyInjection
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	dependency-injection, pattern
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.340 Deprecated Callable

> Callable functions that are supported by `call_user_func($callable)`, but not with the `$callable()` syntax are deprecated.

One important aspect is the loss of context : 'self::method' may be created anywhere in the code, while *self::class* can only be used inside a class, and, in that case, inside the target class.

```
<?php

class x {
    // This will fail
    function foo(callable $callable) {
        $callable();
    }

    function method() {

    }
}

$x = new x;
$x->foo('self::method');
?>
```

It is recommended to update the code with any PHP version, to prepare for the future removal of the feature.

See also PHP RFC: Deprecate partially supported callables.

Suggestions

- Replace the keyword (such as self) by the full class name, with self::class.
- Use a variable and the $s(...) syntax.

Specs

Short name	Functions/DeprecatedCallable
Rulesets	*All*, *CompatibilityPHP82*, *LintButWontExec*
Exakat since	2.3.1
PHP Version	With PHP 8.2 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	callable
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.341 Deprecated Mb_string Encodings

Some encodings, available in the mb_string extensions, are deprecated. Starting with PHP 8.2, the following encodings emits a warning:

- BASE64
- UUENCODE
- HTML-ENTITIES
- html
- Quoted-Printable
- qprint

This applies to the mb_detect_encoding() and mb_convert_encoding() functions.

```
<?php

// recommended version
$base64Encoded = base64_encode('test'));

// Deprecated version
mb_convert_encoding('test', 'base64'));

?>
```

See also PHP 8.2: Mbstring: Base64, Uuencode, QPrint, and HTML Entity encodings are deprecated.

Suggestions

- Use uuencode() and uudecode() functions.

Specs

Short name	Structures/DeprecatedMbEncoding
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP82*
Exakat since	2.5.2
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	encoding
Available in	Entreprise Edition, Exakat Cloud

14.2.342 Deprecated PHP Functions

The following functions are deprecated. It is recommended to stop using them now and replace them with a durable equivalent.

Note that these functions may be still usable : they generate warning that help tracking their usage in the log. To eradicate their usage, watch the logs, and update any deprecated warning. This way, the code won't be stuck when the function is actually removed from PHP.

```
<?php

// This is the current function
list($day, $month, $year) = explode('/', '08/06/1995');

// This is deprecated
list($day, $month, $year) = split('/', '08/06/1995');

?>
```

Suggestions

- Replace those deprecated with modern syntax
- Stop using deprecated syntax

Specs

Short name	Php/Deprecated
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	crypto
ClearPHP	no-deprecated
Examples	*Dolphin*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.343 Dereferencing Levels

This is the counts of level of dereferencing.

Every time a -> object operator or ?-> null-safe object operator are used, this count as one level of dereferencing.

Fluent interfaces tends to have very high levels of deferencing.

```
<?php

// one level of dereferencing
$a->b;
$c->d();

// four levels of dereferencing
$a->b->c()->d->e();

// also four levels of dereferencing
$a->b?->c()->d->e();

?>
```

Specs

Short name	Dump/DereferencingLevels
Rulesets	*All*, *CE*, *Dump*
Exakat since	1.9.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	dereferencing
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.344 Dereferencing String And Arrays

PHP allows the direct dereferencing of strings and arrays, from array literals and returned array.

This was added in PHP 5.5. There is no need anymore for an intermediate variable between a string and array (or any expression generating such value) and accessing an index.

```
<?php
$x = array(4,5,6);
$y = $x[2] ; // is 6

//May be replaced by
$y = array(4,5,6)[2];
$y = [4,5,6][2];
?>
```

Specs

Short name	Structures/DereferencingAS
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.3 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	dereferencing
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.345 Detect Current Class

Detecting the current class should be done with *self::class* or *static::class* operator.

__CLASS__ may be replaced by `self\:\:class`. get_called_class() may be replaced by `static\:\:class`.

__CLASS__ and get_called_class() are set to be deprecated in PHP 7.4.

```
<?php

class X {
    function foo() {
        echo __CLASS__."\n";           // X
        echo self::class."\n";         // X

        echo get_called_class()."\n";  // Y
        echo static::class."\n";       // Y
    }
}

class Y extends X {}

$y = new Y();
$y->foo();

?>
```

See also PHP RFC: Deprecations for PHP 7.4.

Suggestions

- Use the self::class operator to detect the current class name, instead of __CLASS__ and get_class().
- Use the static::class operator to detect the current called class name, instead of get_called_class().

Specs

Short name	Php/DetectCurrentClass
Rulesets	*All*, *CE*, *Changed Behavior*, *CompatibilityPHP74*, *Suggestions*
Exakat since	1.3.8
PHP Version	With PHP 8.0 and older
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.346 Die Exit Consistence

Die and Exit have the same functional use.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

It happens that die or exit are used depending on coding style and files. One file may be consistently using exit, while the others are all using exit.

Using die or exit is also the target of other analysis.

```
<?php

// be consistent
switch ($a) {
    case 1 :
        exit;
    case 2 :
        exit;
    case 3 :
        exit;
    case 4 :
        exit;
    case 5 :
        exit;
    case 6 :
        exit;
    case 7 :
        exit;
    case 8 :
        exit;
    case 9 :
        exit;
    case 10 :
        exit;
    default :
        die();   // Be consistent, always use the same.
}

?>
```

Suggestions

- Adopt one of the two syntaxes

Specs

Short name	Structures/DieExitConsistance
Rulesets	*All*, *Preferences*
Exakat since	0.8.9
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	die
Available in	Entreprise Edition, Exakat Cloud

14.2.347 Difference Consistence

There are two operators to check a difference : <> and !=.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

It happens that != and <> are used depending on coding style and files. One file may be consistently using <>, while the others are all using !=.

```
<?php

// Both != and <> are used in the code
// When one of them is used less than 10%, it is reported as a consistence issue.
if ($a != $b) {

} elseif ($c <> $d) {

}

?>
```

<> and != are the two only comparison operators that are identical.

See also Comparison Operators.

Specs

Short name	Structures/DifferencePreference
Rulesets	*All*, *Preferences*
Exakat since	0.11.1
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	operator
Available in	Entreprise Edition, Exakat Cloud

14.2.348 Different Argument Counts

> Two methods with the same name shall have the same number of compulsory argument. PHP accepts different number of arguments between two methods, if the extra arguments have default values. Basically, they shall be called interchangeably with the same number of arguments.

The number of compulsory arguments is often mistaken for the same number of arguments. When this is the case, it leads to confusion between the two signatures. It will also create more difficulties when refactoring the signature.

While this code is legit, it is recommended to check if the two signatures could be synchronized, and reduce future surprises.

```
<?php

class x {
    function foo($a ) {}
}

class y extends x {
    // This method is compatible with the above, its signature is different
    function foo($a, $b = 1) {}
}

?>
```

Suggestions

- Extract the extra arguments into other methods
- Remove the extra arguments
- Add the extra arguments to all the signatures

Specs

Short name	Classes/DifferentArgumentCounts
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.1.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.349 Different Constructors

PHP allows different signatures for constructors. This is a legacy feature.

Only constructors are allowed to have different signatures : all other methods must be compatible with the parent methods.

```
<?php

class x {
     function __construct($a) {
     }
}

class y extends x {
     function __construct($a, $b) {
             $this->b = $a;
             parent::__construct($a);
     }
}

?>
```

Suggestions

- Synchronize the methods signatures
- Make use of named constructors to have different signatures when building objects

Specs

Short name	Classes/IncompatibleConstructor
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.350 Direct Call To __clone()

Direct call to magic method `__clone()` was forbidden. It is allowed since PHP 7.0.

From the RFC : `Doing calls like $obj->`__clone(<https://www.php.net/manual/en/language.oop5.magic.php>`_ ) is now allowed. This was the only magic method that had a compile-time check preventing some calls to it, which doesn't make sense. If we allow all other magic methods to be called, there's no reason to forbid this one.`

```
<?php

    class Foo {
        function __clone() {}
    }

    $a = new Foo;
    $a->__clone();
?>
```

See also Directly calling __clone is allowed.

Suggestions

- Use the clone operator to call the __clone magic method

Specs

Short name	Php/DirectCallToClone
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	1.4.8
PHP Version	With PHP 7.0 and more recent
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	High
Features	clone, magic-method
Available in	Entreprise Edition, Exakat Cloud

14.2.351 Direct Injection

The following code act directly upon PHP incoming variables like $_GET and $_POST. This makes those snippets very unsafe.

```
<?php

// Direct injection
echo "Hello ".$_GET['user'].", welcome.";

// less direct injection
foo($_GET['user']);
function foo($user) {
    echo "Hello ".$user.", welcome.";
}

?>
```

See also Cross-Site Scripting (XSS).

Suggestions

- Validate input : make sure the incoming data are what you expect from them.
- Escape output : prepare outgoing data for the next system to use.

Specs

Short name	Security/DirectInjection
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	injection
Available in	Entreprise Edition, Exakat Cloud

14.2.352 Directives Usage

This rule lists the directives mentioned in the code. When the directives are accessed in the code, it signals that they must be configured in PHP.ini first.

```
<?php

//accessing the configuration to change it
ini_set('timelimit', -1);

//accessing the configuration to check it
ini_get('safe_mode');
```

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```
?>
```

See also ini_set().

Specs

Short name	Php/DirectivesUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	directive
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.353 Directly Use File

Some PHP functions have a close cousin that work directly on files. This is faster and less code to write.

- md5() => md5_file()
- highlight_string() => highlight_file(), show_source()
- parsekit_compile_string() => parsekit_compile_file()
- parse_ini_string() => parse_ini_file()
- sha1() => sha1_file()
- simplexml_load_string() => simplexml_load_file()
- yaml_parse() => yaml_parse_file()
- hash() => hash_file()
- hash_hmac() => hash_mac_file()
- hash_update() => hash_update_file()
- recode() => recode_file()
- recode_string() => recode_file()

```
<?php

// Good way
$file_hash = hash_file('sha512', 'example.txt');

// Slow way
$file_hash = hash('sha512', file_get_contents('example.txt'));

?>
```

Suggestions

- hash_file

Specs

Short name	Structures/DirectlyUseFile
Rulesets	*All*, *Suggestions*
Exakat since	1.5.5
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.354 Disconnected Classes

> One class is extending the other, but they do not use any features from one another. Basically, those two classes are using extends, but they are completely independent and may be separated.

When using the 'extends' keyword, the newly created classes are now acting together and making one. This should be visible in calls from one class to the other, or simply by property usage : they can't live without each other.

On the other hand, two completely independent classes that are merged, although they should be kept separated.

```
<?php

class A {
    private $pa = 1;

    function fooA() {
        $this->pa = 2;
    }
}

// class B and Class A are totally independent
class B extends A {
    private $pb = 1;

    function fooB() {
        $this->pb = 2;
    }
}


// class C makes use of class A : it is dependent on the parent class
class C extends A {
    private $pc = 1;

    function fooB() {
        $this->pc = 2 + $this->fooA();
```

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```
    }
}
?>
```

Suggestions

- Remove the extension
- Make actual usage of the classes, at least from one of them

Specs

Short name	Classes/DisconnectedClasses
Rulesets	*All*, *Class Review*
Exakat since	1.8.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	class
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.355 Displays Text

Function calls that displays something to the output.

```
<?php

// Displays de the content of $a
print $a;

// Displays de the content of $b
print_r($b);

// Returns de the content of $b, no display.
$c = var_export($b, true);

?>
```

Specs

Short name	Php/Prints
Rulesets	*All*, *Changed Behavior*
Exakat since	0.10.9
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	print
Available in	Entreprise Edition, Exakat Cloud

14.2.356 Dl() Usage

Dynamically load PHP extensions with dl().

```
<?php

    // dynamically loading ext/vips
     dl('vips.' . PHP_SHLIB_SUFFIX);

?>
```

See also dl.

Specs

Short name	Php/DlUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	1.0.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	extension, dynamic-loading
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.357 Do In Base

Use SQL expression to compute aggregates in the database. By doing so, the data don't have to be transfered from the database to PHP, which saves a lot of operations. Such operations are also often faster in the database, because of optimized code.

```
<?php

// Efficient way
$res = $db->query('SELECT sum(e) AS sumE FROM table WHERE condition');
```

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```
// The sum is already done
$row = $res->fetchArray();
$c += $row['sumE'];

// Slow way
$res = $db->query('SELECT e FROM table WHERE condition');

// This aggregates the column e in a slow way
while($row = $res->fetchArray()) {
    $c += $row['e'];
}

?>
```

Suggestions

- Rework the query to move the calculations in the database

Specs

Short name	Performances/DoInBase
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.2.8
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	csv
Available in	Entreprise Edition, Exakat Cloud

14.2.358 Do Not Cast To Int

> Do not cast floats values to int. Uses conversion functions like intval(), round(), floor() or ceil() to convert the value to integer, with known behavior.

Use functions like floor(), round() or ceil() : they use an explicit method for rounding, that helps keeping the side effects under control.

```
<?php

    // echoes 7!
    echo (int) ( (0.1 + 0.7) * 10 );

?>
```

See also Integers.

Suggestions

- Upgrade PHP version to 8.0, as those behavior are now the same
- Use one of the dedicated function : intval(), round(), floor() or ceil()

Specs

Short name	Php/NoCastToInt
Rulesets	*All*, *Analyze*, *Changed Behavior*, *PHP recommendations*
Exakat since	0.10.6
PHP Version	With PHP 8.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	cast, integer, float
Available in	Entreprise Edition, Exakat Cloud

14.2.359 Dollar Curly Interpolation Is Deprecated

Among the different variable interpolation is strings, ```` is deprecated. It is made obsolete in PHP 8.2, and should disappear in PHP 9.0.

There are still several interpolation ways : variables, array elements (one index-level) and curly brackets. It is also possible to use string concatenation.

```
<?php

$a = 'a';
$a2 = 'surprise!';

$b = "\\$\\{$a . 2}\";

echo $b;
// display 'surprise!'

?>
```

See also https://wiki.php.net/rfc/deprecate_dollar_brace_string_interpolation.

Suggestions

- Use another interpolation style
- Use string concatenation
- Use a templating engine
- Use string replacement tool, such as str_replace()

Specs

Short name	Php/DeprecateDollarCurly
Rulesets	*All*, *CompatibilityPHP82*
Exakat since	2.4.1
PHP Version	With PHP 8.2 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	string, string-interpolation
Available in	Entreprise Edition, Exakat Cloud

14.2.360 Don't Add Seconds

Avoid adding seconds to a date, and use `DateTime\:\:modify` to add an interval.

This method will handle situations like daylight savings, leap seconds and even leap days.

```
<?php

// Tomorrow, same time
$tomorrow = new DateTime('now')->modify('+1 day');

// Tomorrow, but may be not at the same hour
$tomorrow = date('now') + 86400;

?>
```

See also DateTime::modify and datetime.

Specs

Short name	Structures/DontAddSeconds
Rulesets	*All*, *Analyze*
Exakat since	2.3.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	date
Available in	Entreprise Edition, Exakat Cloud

14.2.361 Don't Be Too Manual

> Adapt the examples from the PHP manual to the code. Don't reuse directly the same names in the source: be more specific about what to expect in those variables.

Here are the variables names that are classic with specific functions:

- `for($i = 0; $i < 10; ++$i) {}`, `$j`, `$k`
- `catch(`Exception <https://www.php.net/exception>`_ $e)`
- `$fp = fopen(`...) <https://www.php.net/manual/en/functions.arguments.php#functions.variable-arg-list>`_`, `$fh`
- `$conn = new `PDO(<https://www.php.net/pdo>`_...)`:, `$dbh`, `$fh`, `$conn`, `$link`
- `$stmt = mysql_prepare(`...) <https://www.php.net/manual/en/functions.arguments.php#functions.variable-arg-list>`_`, `$sth`
- `$row = $`pdo <https://www.php.net/pdo>`_->fetchArray(`...) <https://www.php.net/manual/en/functions.arguments.php#functions.variable-arg-list>`_`, `$`result <https://www.php.net/result>`_`, `$line`, `$record`
- `preg_match(`... <https://www.php.net/manual/en/functions.arguments.php#functions.variable-arg-list>`_`, `... <https://www.php.net/manual/en/functions.arguments.php#functions.variable-arg-list>`_`, `$r)`, `$matches`
- `str_contains($haystack, $needle)` and `strpos`

```
<?php

// Search for phone numbers in a text
preg_match_all('/((\d{3})-(\d{3})-(\d{4}))/', $string, $phoneNumber);

// Search for phone numbers in a text
preg_match_all('/(\d{3})-(\d{3})-(\d{4})/', $string, $matches);

?>
```

Suggestions

- Use precise and adapted name with your variables

Specs

Short name	Structures/DontBeTooManual
Rulesets	*All*, *Coding conventions*
Exakat since	1.6.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.362 Don't Change Incomings

PHP hands over a lot of information using special variables like $_GET, $_POST, etc… Modifying those variables and those values inside variables means that the original content is lost, while it will still look like raw data, and, as such, will be untrustworthy.

```
<?php

// filtering and keeping the incoming value.
$_DATA'id'] = (int) $_GET['id'];

// filtering and changing the incoming value.
$_GET['id'] = strtolower($_GET['id']);

?>
```

It is recommended to put the modified values in another variable, and keep the original one intact.

Suggestions

- Set the value to another variable and apply modifications to that variable

Specs

Short name	Structures/NoChangeIncomingVariables
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	incoming-data, outgoing-data
Available in	Entreprise Edition, Exakat Cloud

14.2.363 Don't Change The Blind Var

When using a foreach(), the blind variables hold a copy of the original value. It is confusing to modify them, as it seems that the original value may be changed.

When actually changing the original value, use the reference in the foreach definition to make it obvious, and save the final reassignation.

When the value has to be prepared before usage, then save the filtered value in a separate variable. This makes the clean value obvious, and preserve the original value for a future usage.

```
<?php

// $bar is duplicated and kept
$foo = [1, 2, 3];
foreach($foo as $bar) {
    // $bar is updated but its original value is kept
```

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```
    $nextBar = $bar + 1;
    print $bar . ' => ' . ($nextBar) . PHP_EOL;
    foobar($nextBar);
}

// $bar is updated and lost
$foo = [1, 2, 3];
foreach($foo as $bar) {
    // $bar is updated but its final value is lost
    print $bar . ' => ' . (++$bar) . PHP_EOL;
    // Now that $bar is reused, it is easy to confuse its value
    foobar($bar);
}

// $bar is updated and kept
$foo = [1, 2, 3];
foreach($foo as &$bar) {
    // $bar is updated and keept
    print $bar . ' => ' . (++$bar) . PHP_EOL;
    foobar($bar);
}

?>
```

Specs

Short name	Structures/DontChangeBlindKey
Rulesets	*All*, *Analyze*
Exakat since	0.8.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	loop, blind-key
Available in	Entreprise Edition, Exakat Cloud

14.2.364 Don't Collect Void

When a method returns void, there is no need to collect the result. The collected value is always `null`.

With a `void` return type, the method is intented to be without return value. This analysis also include methods which are not returning anything, and could be completed with a `void` returntype.

```
<?php

function foo() : void {
    // doSomething()
}
```

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```
// This is useless
$result = foo();

// This is useless. It looks like this is a left over from code refactoring
echo foo();

?>
```

Suggestions

- Move the call to the function to its own expression with a semi-colon.
- Remove assignation of the result of such calls.

Specs

Short name	Functions/DontUseVoid
Rulesets	*All*, *Analyze*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	2.0.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	void
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Exakat Cloud

14.2.365 Don't Echo Error

It is recommended to avoid displaying error messages directly to the browser.

PHP's uses the `display_errors` directive to control display of errors to the browser. This must be kept to `off` when in production. Error messages should be logged, but not displayed.

```
<?php

// Inside a 'or' test
mysql_connect('localhost', $user, $pass) or die(mysql_error());

// Inside a if test
$result = pg_query( $db, $query );
if( !$result )
{
     echo Erreur SQL: . pg_error();
     exit;
}

// Changing PHP configuration
ini_set('display_errors', 1);
```

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```
// This is also a security error : 'false' means actually true.
ini_set('display_errors', 'false');

?>
```

See also Error reporting and List of php.ini directives.

Suggestions

- Remove any echo, print, printf() call built with error messages from an exception, or external source.

Specs

Short name	Security/DontEchoError
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Security*
Exakat since	0.8.7
PHP Version	All
Severity	Critical
Time To Fix	Instant (5 mins)
Precision	High
Examples	*ChurchCRM*, *Phpdocumentor*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.366 Don't Loop On Yield

Use `yield from`, instead of looping on a generator <https://www.php.net/`generator>`_ with `yield`.

`yield from` delegate the yielding to another generator <https://www.php.net/`generator>`_, and keep calling that generator <https://www.php.net/`generator>`_ until it is finished. It also works with implicit generator <https://www.php.net/`generator>`_ datastructure, like arrays.

```
<?php

function generator() {
    for($i = 0; $i < 10; ++$i) {
        yield $i;
    }
}

function delegatingGenerator() {
    yield from generator();
}

// Too much code here
function generator2() {
    foreach(generator() as $g) {
        yield $g;
    }
}
```

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```
?>
```

There is a performance gain when delegating, over looping manually on the generator <https://www.php.net/`generator>`_. You may even consider writing the loop to store all values in an array, then `yield from` the array.

See also Generator delegation via yield from.

Suggestions

- Use *yield from* instead of the whole foreach() loop

Specs

Short name	Structures/DontLoopOnYield
Rulesets	*All*, *Suggestions*
Exakat since	1.5.3
PHP Version	With PHP 7.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	yield
Examples	*Dolibarr*, *Tikiwiki*
Available in	Entreprise Edition, Exakat Cloud

14.2.367 Don't Mix ++

++ operators, pre and post, have two distinct behaviors, and should be used separately.

When mixed in a larger expression, they are difficult to read, and may lead to unwanted behaviors.

```
<?php

    // Clear and defined behavior
    $i++;
    $a[$i] = $i;

    // The index is also incremented, as it is used AFTP the incrementation
    // With $i = 2; $a is array(3 => 3)
    $a[$i] = ++$i;

    // $i is actually modified twice
    $i = --$i + 1;
?>
```

See also EXP30-C. Do not depend on the order of evaluation for side effects.

Suggestions

- Extract the increment from the expression, and put it on a separate line.

Specs

Short name	Structures/DontMixPlusPlus
Rulesets	*All*, *Analyze*
Exakat since	1.3.2
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Examples	*Contao*, *Typo3*
Available in	Entreprise Edition, Exakat Cloud

14.2.368 Don't Pollute Global Space

Avoid creating definitions in the global name space.

The global namespace is the default namespace, where all functions, classes, constants, traits and interfaces live. The global namespace is also known as the root namespace.

In particular, PHP native classes usually live in that namespace. By creating functions in that namespace, the code may encounter naming conflict, when the PHP group decides to use a name that the code also uses. This already happened in PHP version 5.1.1, where a `Date` native class was introduced, and had to be disabled in the following minor version.

Nowadays, conflicts appear between components, which claim the same name.

```
<?php

// This is not polluting the global namespace
namespace My/Namespace {
     class X {}
}

// This is polluting the global namespace
// It might be in conflict with PHP classes in the future
namespace {
     class X {}
}

?>
```

See also Using namespaces: fallback to global function/constant.

Suggestions

- Create a namespace for your code, and store your definition there.

Specs

Short name	Php/DontPolluteGlobalSpace
Rulesets	*All*, *Analyze*
Exakat since	2.1.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	global-space
Available in	Entreprise Edition, Exakat Cloud

14.2.369 Don't Read And Write In One Expression

Avoid giving value and using it at the same time, in one expression. This is an undefined behavior of PHP, and may change without warning.

One of those changes happens between PHP 7.2 and 7.3 :

```
<?php

$arr = [1];
$ref =& $arr[0];
var_dump($arr[0] + ($arr[0] = 2));
// PHP 7.2: int(4)
// PHP 7.3: int(3)

?>
```

See also UPGRADING 7.3.

Suggestions

- Split the expression in two separate expressions

Specs

Short name	Structures/DontReadAndWriteInOneExpression
Rulesets	*All*, *Analyze*, *CE*, *CompatibilityPHP73*, *CompatibilityPHP74*
Exakat since	1.4.9
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.370 Don't Reuse Foreach Source

It is dangerous to reuse the same variable inside a loop that use it as a source.

PHP actually takes a copy of the source, so the foreach() loop is not affected by the modification. On the other hand, the source of the loop is modified after the loop (and actually, also during), which may come as a surprise to a later coder.

```
<?php

$properties = [];
foreach ($values as $i => $vars) {

    // $values is used again here, now as a blind variable
    foreach ($vars as $class => $values) {
        foreach ($values as $name => $v) {
            $properties[$class][$name][$i] = $v;
        }
    }
}

?>
```

Suggestions

- Do not reuse the source as another variable
- Use different names to disambiguate their purpose

Specs

Short name	Structures/DontReuseForeachSource
Rulesets	*All*, *Analyze*
Exakat since	2.3.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	foreach
Available in	Entreprise Edition, Exakat Cloud

14.2.371 Don't Send $this In Constructor

Don't use `$this` as an argument while in the __construct(). Until the constructor is finished, the object is not finished, and may be in an unstable state. Providing it to another code may lead to error.

This is true when the receiving structure puts the incoming object immediately to work, and don't store it for later use.

```
<?php

// $this is only provided when Foo is constructed
```

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```
class Foo {
    private $bar = null;
    private $data = array();

    static public function build($data) {
        $foo = new Foo($data);
        // Can't build in one call. Must make it separate.
        $foo->finalize();
    }

    private function __construct($data) {
        // $this is provided too early
        $this->data = $data;
    }

    function finalize() {
        $this->bar = new Bar($this);
    }
}

// $this is provided too early, leading to error in Bar
class Foo2 extends Foo {
    private $bar = null;
    private $data = array();

    function __construct($data) {
        // $this is provided too early
        $this->bar = new Bar($this);
        $this->data = $data;
    }
}

class Bar {
    function __construct(Foo $foo) {
        // the cache is now initialized with a wrong
        $this->cache = $foo->getIt();
    }
}

?>
```

See also Don't pass this out of a constructor.

Suggestions

- Finish the constructor first, then call an external object.
- Sending $this should be made accessible in a separate method, so external objects may call it.
- Sending the current may be the responsibility of the method creating the object.

Specs

Short name	Classes/DontSendThisInConstructor
Rulesets	*All*, *Analyze*
Exakat since	1.0.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	$this, constructor
Examples	*Woocommerce*, *Contao*
Available in	Entreprise Edition, Exakat Cloud

14.2.372 Don't Unset Properties

Don't unset properties. They would go undefined, and raise warnings of undefined properties, even though the property is explicitly defined in the original class.

When getting rid of a property, assign it to *null*. This keeps the property defined in the object, yet allows existence check without errors.

```
<?php

class Foo {
    public $a = 1;
}

$a = new Foo();

var_dump((array) $a) ;
// la propriété est reportée, et null
// ['a' => null]

unset($a->a);

var_dump((array) $a) ;
//Empty []

// Check if a property exists
var_dump($a->b === null);

// Same result as above, but with a warning
var_dump($a->c === null);
```

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```
?>
```

This analysis works on properties and static properties. It also reports magic properties being unset.

Thanks for Benoit Burnichon for the original idea.

Suggestions

- Set the property to null or its default value
- Make the property an array, and set/unset its index

Specs

Short name	Classes/DontUnsetProperties
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Top10*, *php-cs-fixable*
Exakat since	1.2.3
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	property
Examples	*Vanilla*, *Typo3*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.373 Don't Use The Type As Variable Name

When it is difficult to find a good name, it is very tempting to use the type.

Such a name should carry its actual usage, as the type is already hold by the data.

This rule check for parameters and variables which uses the type as name. It also report instantiation which hold the same name than the instantiated class.

```
<?php

$sqlite3 = new Sqlite3();

function foo(int $int) : array {
     $array = [];
     return $array;
}
?>
```

Suggestions

- Use another name than the class or the type

Specs

Short name	Structures/DontUseTheTypeAsVariable
Rulesets	*All*, *Changed Behavior*, *Semantics*
Exakat since	2.6.2
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	semantics
Available in	Entreprise Edition, Exakat Cloud

14.2.374 Double Assignation

This happens when a container (variable, property, array index) is assigned with values twice in a row. One of them is probably a debug instruction, that was forgotten.

```
<?php

// Normal assignation
$a = 1;

// Double assignation
$b = 2;
$b = 3;

?>
```

Specs

Short name	Structures/DoubleAssignation
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	assignation
Available in	Entreprise Edition, Exakat Cloud

14.2.375 Double Checks

> Double checks happen when data is checked at one point, and then, checked again, with the same test, in a following call.

Some of the testing may be pushed to the type system, for example is_int() and `int` type. Others can't, as the check is not integrated in the type system, such as is_readable() and `string`, for a path.

The check may be removed from the method, when the method is not called elsewhere without protection.

```
<?php

if (is_writeable($path)) {
     foo($path);
}

function foo(string $path) {
     // This was already tested
     if (!is_writeable($path)) {
             return;
     }
}

?>
```

Cleaning such structure leads to micro-optimisation.

Suggestions

- Remove the check in the method
- Remove the check in the caller code
- Use type system

Specs

Short name	Structures/DoubleChecks
Rulesets	*All*, *Analyze*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.376 Double Instructions

Twice the same call in a row. This might be a typo, and the second call is useless.

It may also be an non-idempotent method: that is, a method which has a different result when called with the same arguments. For example, `rand()` or `fgets()`.

```
<?php

// repetition of the same command, with the same effect each time.
$a = array_merge($b, $c);
$a = array_merge($b, $c);

// false positive : commands are identical, but the effect is compounded
$a = array_merge($a, $c);
$a = array_merge($a, $c);

?>
```

Suggestions

- Remove double work
- Avoid repetition by using loops, variadic or quantifiers *(dirname($path, 2))*

Specs

Short name	Structures/DoubleInstruction
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	idempotent
Available in	Entreprise Edition, Exakat Cloud

14.2.377 Double Object Assignation

The same object is assigned to two distinct variables. Given that objects are actually references to the same data, this is usually not necessary. Make sure that this is the intended purpose.

```
<?php

// $x and $y are the same object, as they both hold a reference to the same object.
// This means that changing $x, also changes $y.
$x = $y = new Z();

// $a and $b are distinct values, by default
$a = $b = 1;
```

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```
?>
```

See also class.

Suggestions

- Split the double assignation to two distinct instantiations.
- Split the double assignation to two distinct lines.

Specs

Short name	Structures/DoubleObjectAssignation
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.378 Double array_flip()

Avoid double array_flip() to gain speed. While array_flip() alone is usually useful, a double call to array_flip() is made to make values and keys unique.

```
<?php

// without array_flip
function foo($array, $value) {
    $key = array_search($array, $value);

    if ($key !== false) {
        unset($array[$key]);
    }

    return $array;
}

// double array_flip
// array_flip() usage means that $array's values are all unique
function foo($array, $value) {
    $flipped = array_flip($value);
    unset($flipped[$value]);
    return array_flip($flipped);
}
```

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```
?>
```

Suggestions

- Use array_unique() or array_count_values().
- Use array_flip() once, and let PHP garbage collect it later.
- Keep the original values in a separate variable.

Specs

Short name	Performances/DoubleArrayFlip
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.1.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*NextCloud*
Available in	Entreprise Edition, Exakat Cloud

14.2.379 Drop Else After Return

Avoid else clause when the then clause returns, but not the else. And vice-versa.

This way, the else block disappears, and is now the main sequence of the function.

This is also true if else has a return, and then not. When doing so, don't forget to reverse the condition.

```
<?php

// drop the else
if ($a) {
    return $a;
} else {
    doSomething();
}

// drop the then
if ($b) {
    doSomething();
} else {
    return $a;
}

// return in else and then
if ($a3) {
    return $a;
```

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```
} else {
    $b = doSomething();
    return $b;
}

?>
```

Suggestions

- Remove the else clause and move its code to the main part of the method

Specs

Short name	Structures/DropElseAfterReturn
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Suggestions*
Exakat since	0.8.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	return
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.380 Drop Substr Last Arg

Substr() works till the end of the string when the last argument is omitted. There is no need to calculate string size to make this work.

```
<?php

$string = 'abcdef';

// Extract the end of the string
$cde = substr($string, 2);

// Too much work
$cde = substr($string, 2, strlen($string));

?>
```

Suggestions

- Use negative length
- Omit the last argument to get the string till its end

Specs

Short name	Structures/SubstrLastArg
Rulesets	*All*, *Suggestions*
Exakat since	1.2.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*SuiteCrm*, *Tine20*
Available in	Entreprise Edition, Exakat Cloud

14.2.381 Drupal Usage

This analysis reports usage of the Drupal CMS. The report is based on the usage of Drupal namespace.

```
<?php

namespace Drupal\example\Controller;

use Drupal\Core\Controller\ControllerBase;

/**
 * An example controller.
 */
class ExampleController extends ControllerBase {

  /**
   * {@inheritdoc}
   */
  public function content() {
    $build = array(
      '#type' => 'markup',
      '#markup' => t('Hello World!'),
    );
    return $build;
  }

}

?>
```

See also Drupal.

Specs

Short name	Vendors/Drupal
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.0.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.382 Duplicate Calls

Duplicate calls within the same context. They should be called once, and then stashed in a variable for reuse. This saves a lot of time.

```
<?php

function foo($name) {
    // The name decoration on the string is done twice. Once should be cached in a␣
↪variable.
    echo "Hello, ".ucfirst(strtolower($name))."<br />";

    $query = 'Insert into visitors values ("'.ucfirst(strtolower($name)).'")';
    $res = $db->query($query);
}

?>
```

See also Userland naming Guide.

Specs

Short name	Structures/DuplicateCalls
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	calls
ClearPHP	no-duplicated-code
Available in	Entreprise Edition, Exakat Cloud

14.2.383 Duplicate Literal

Report literals that are repeated across the code. The minimum replication is 5, and is configurable with `maxDuplicate`.

Repeated literals should be considered a prime candidate for constants.

Integer, reals and strings are considered here. Boolean, Null and Arrays are omitted. 0, 1, 2, 10 and the empty string are all omitted, as too common. This list of omitted constants may be configured with the `ignoreList` parameter : a comma separated list of values.

```
<?php
    // array index are omitted
    $x[3] = 'b';

    // constanst are omitted
    const X = 11;
    define('Y', 'string')

    // 0, 1, 2, 10 are omitted
    $x = 0;

?>
```

Name	Default	Type	Description
minDuplicate	15	integer	Minimal number of duplication before the literal is reported.
ignoreList	0,1,2,10	array	Common values that have to be ignored. Comma separated list.

Suggestions

- Create a constant and use it in place of the literal
- Create a class constant and use it in place of the literal

Specs

Short name	Type/DuplicateLiteral
Rulesets	*All*, *Changed Behavior*, *Semantics*
Exakat since	1.9.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	literal
Available in	Entreprise Edition, Exakat Cloud

14.2.384 Duplicate Named Parameter

Two parameters have the same name in a method call. This will yield a Fatal error at execution time.

```
<?php

function foo($a, $b) {}

// parameters are all distinct
foo(a:1, b:2);

// parameter a is double
foo(a:1, a:1);

?>
```

See also Function arguments.

Suggestions

- Review the parameters names and remove the duplicates
- Review the parameters names and makes the names unique

Specs

Short name	Functions/DuplicateNamedParameter
Rulesets	*All*, *Analyze*, *LintButWontExec*
Exakat since	2.2.3
PHP Version	With PHP 7.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	named-parameter
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.385 Dynamic Calls

List of dynamic calls. They will probably need to be reviewed manually.

```
<?php

$a = 'b';

// Dynamic call of a constant
echo constant($a);

// Dynamic variables
$$a = 2;
```

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```
echo $b;

// Dynamic call of a function
$a('b');

// Dynamic call of a method
$object->$a('b');

// Dynamic call of a static method
A::$a('b');

?>
```

Specs

Short name	Structures/DynamicCalls
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	dynamic-call
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.386 Dynamic Class Constant

This is the list of dynamic calls to class constants.

Constant may be dynamically called with the constant() function. In PHP 8.3, they may also be called with a new dedicated syntax.

```
<?php
    // Dynamic access to 'E_ALL'
    echo constant('E_ALL');

    interface i {
        const MY_CONSTANT  = 1;
    }

    // Dynamic access to 'E_ALL'
    $constantName = 'MY_CONSTANT';
    echo constant('i::'.$constantName);

    // With PHP 8.3 :
    echo i::{$constantName};

?>
```

Specs

Short name	Classes/DynamicConstantCall
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	dynamic-constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.387 Dynamic Classes

Dynamic calls of classes.

```
<?php

class x {
    static function staticMethod() {}
}

$class = 'x';
$class::staticMethod();

?>
```

Specs

Short name	Classes/DynamicClass
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	dynamic-class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.388 Dynamic Code

List of instructions that were left during analysis, as they rely on dynamic data.

Any further analysis will need to start from here.

```
<?php

// Dynamic call to 'method';
$name = 'method';
$object->$name();

// Hard coded call to 'method';
$object->method();

?>
```

See also Variable functions.

Specs

Short name	Structures/DynamicCode
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	dynamic-call
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.389 Dynamic Function Call

Mark a functioncall made with a variable name. This means the function is only known at execution time, since it depends on the content of the variable.

```
<?php

// function definition
function foo() {}

// function name is in a variable, as a string.
$var = 'foo';

// dynamic call of a function
$var();

call_user_func($var);

?>
```

Specs

Short name	Functions/Dynamiccall
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	dynamic-call
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.390 Dynamic Library Loading

Loading a variable dynamically requires a lot of care in the preparation of the library name.

In case of injection in the variable, the dynamic loading of a library gives a lot of power to an intruder.

```
<?php

    // dynamically loading a library
     dl($library. PHP_SHLIB_SUFFIX);

    // dynamically loading ext/vips
     dl('vips.' . PHP_SHLIB_SUFFIX);

    // static loading ext/vips (unix only)
     dl('vips.so');

?>
```

See also dl.

Suggestions

- Use a switch structure, to make the dl() calls static.
- Avoid using dl() and make the needed extension always available in PHP binary.

Specs

Short name	Security/DynamicDl
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.1.7
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	library-loading
Available in	Entreprise Edition, Exakat Cloud

14.2.391 Dynamic Methodcall

Dynamic calls to class methods.

```
<?php

class x {
    static public function foo() {}
           public function bar() {}
}

$staticmethod = 'foo';
// dynamic static method call to x::foo()
x::$staticmethod();

$method = 'bar';
// dynamic method call to bar()
$object = new x();
$object->$method();

?>
```

Specs

Short name	Classes/DynamicMethodCall
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	dynamic-call, method
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.392 Dynamic New

Dynamic instantiation of classes. It happens when the name of the class is an executable expression, and, as such, only known at execution time.

```
<?php

    $classname = foo();
    $object = new $classname();

    $object = new (foo());
?>
```

Specs

Short name	Classes/DynamicNew
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	new, parenthesis, dynamic-call
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.393 Dynamic Property

Dynamic access to class property. This is when the the name of the property is stored in a variable (or other container), rather than statically provided.

```
<?php

class x {
    static public $foo = 1;
           public $bar = 2;
}

$staticproperty = 'foo';
// dynamic static property call to x::$foo
echo x::${$staticproperty};

$property = 'bar';
// dynamic property call to bar()
$object = new x();
$object->$property = 4;

?>
```

See also class.

Specs

Short name	Classes/DynamicPropertyCall
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.394 Dynamic Self Calls

A class that calls itself dynamically. This may be property or methods.

Calling itself dynamically happens when a class is configured to call various properties (container) or methods.

```
<?php

class x {
    function foo() {
        $f = 'goo';
        return $this->$f();
    }

    function goo() {
        return rand(1, 10);
    }
}
?>
```

This rule is mostly useful internally, to side some special situations.

Specs

Short name	Classes/DynamicSelfCalls
Rulesets	*All*
Exakat since	2.1.1
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.395 Dynamically Called Classes

This rule reports when a class is called dynamically. To call dynamically a class, one must use a variable at instantiation time, or with the objects syntaxes.

```
<?php

// This class is called dynamically
class X {
    const CONSTANTE = 1;
}

$classe = 'X';

$x = new $classe();

echo $x::CONSTANTE;
```

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```
?>
```

Specs

Short name	Classes/VariableClasses
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, dynamic-class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.396 Echo Or Print

Echo and print have the same functional use. <?= and printf() are also considered in this analysis.

There seems to be a choice that is not enforced : one form is dominant, (> 90%) while the others are rare.

The analyzed code has less than 10% of one of the three : for consistency reasons, it is recommended to make them all the same.

It happens that print, echo or <?= are used depending on coding style and files. One file may be consistently using print, while the others are all using echo.

```
<?php

echo 'a';
echo 'b';
echo 'c';
echo 'd';
echo 'e';
echo 'f';
echo 'g';
echo 'h';
echo 'i';
echo 'j';
echo 'k';

// This should probably be written 'echo';
print 'l';

?>
```

Specs

Short name	Structures/EchoPrintConsistance
Rulesets	*All*, *Coding conventions*, *Preferences*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	echo, print
Available in	Entreprise Edition, Exakat Cloud

14.2.397 Echo With Concat

Optimize your `echo`'s by avoiding concatenating at `echo` time, but serving all argument separated. This will save PHP a memory copy.

If values, literals and variables, are small enough, this won't have visible impact. Otherwise, this is less work and less memory waste.

```
<?php
  echo $a, ' b ', $c;
?>
```

instead of

```
<?php
  echo  $a . ' b ' . $c;
  echo $a b $c;
?>
```

It is a micro-optimisation.

Suggestions

- Turn the concatenation into a list of argument, by replacing the dots by commas.

Specs

Short name	Structures/EchoWithConcat
Rulesets	*All*, *Analyze*, *Performances*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	echo
ClearPHP	no-unnecessary-string-concatenation
Examples	*Phpdocumentor*, *TeamPass*
Available in	Entreprise Edition, Exakat Cloud

14.2.398 Ellipsis Merge

Ellipsis are slower than array_merge().

This is a micro optimisation. The larger and numerous the arrays, the better the speed gain.

The speed up is significative when the merge happen inside a loop. There, array_merge() is an order of magnitude faster.

```
<?php

// slow
$all = array_merge($array1, $array2);

// very slow
$all = array(...$array1, ...$array2);

?>
```

Suggestions

- Use array_merge()

Specs

Short name	Performances/EllipsisMerge
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	merge, ellipsis, micro-optimisation
Available in	Entreprise Edition, Exakat Cloud

14.2.399 Ellipsis Usage

Usage of the ellipsis keyword. The keyword is three dots : `...` . It is also named variadic or splat operator.

It may be in function definitions and function calls; it may be in arrays; it is also usable with parenthesis.

`...` allows for packing or unpacking arguments into an array.

```
<?php

$args = [1, 2, 3];
foo(...$args);
// Identical to foo(1,2,3);

function bar(...$a) {
    // Identical to : $a = func_get_args();
```

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```
}
?>
```

See also PHP RFC: Syntax for variadic functions, PHP 5.6 and the Splat Operator and Variable-length argument lists.

Specs

Short name	Php/EllipsisUsage
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	ellipsis
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.400 Else If Versus Elseif

Always use elseif instead of else and if.

The keyword elseif SHOULD be used instead of else if so that all control keywords look like single words". Quoted from the PHP-FIG documentation

```
<?php

// Using elseif
if ($a == 1) { doSomething(); }
elseif ($a == 2) { doSomethingElseIf(); }
else { doSomethingElse(); }

// Using else if
if ($a == 1) { doSomething(); }
else if ($a == 2) { doSomethingElseIf(); }
else { doSomethingElse(); }

// Using else if, no {}
if ($a == 1)  doSomething();
else if ($a == 2) doSomethingElseIf();
else  doSomethingElse();

?>
```

See also elseif/else if.

Suggestions

- Merge else and if into elseif
- Turn the else expression into a block, and have more than the second if in this block
- Turn the if / else if / else into a switch structure

Specs

Short name	Structures/ElseIfElseif
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Rector*, *php-cs-fixable*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	if-then
Examples	*TeamPass*, *Phpdocumentor*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.401 Else Usage

Else can be avoided by various means.

For example, defaulting values before using a condition; returning early in the method, thus skipping long else blocks; using a ternary operator to assign values conditionnaly.

Else is the equivalent of the default clause in a switch statement. When the if/then structure can be replaced with a switch can (albeit, a 2-case switch seems strange), then else usage is a good solution.

```
<?php

// $a is always set
$a = 'default';
if ($condition) {
    $a = foo($condition);
}

// Don't use else for default : set default before
if ($condition) {
    $a = foo($condition);
} else {
    $a = 'default';
}

// Use then to exit
if ( ! $condition) {
    return;
}
$a = foo($condition);
```

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```
// don't use else to return
if ($condition) {
    $a = foo($condition);
} else {
    return;
}

?>
```

See also Avoid Else, Return Early and Why does clean code forbid else expression.

Specs

Short name	Structures/ElseUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.402 Email Addresses

List of all the email addresses that were found in the code.

Emails are detected with regex : `[_A-Za-z0-9-]+(\.[_A-Za-z0-9-]+)*`@ <https://www.php.net/manual/en/language.operators.errorcontrol.php>`_[A-Za-z0-9]+(\.[A-Za-z0-9]+)*(\.[A-Za-z]{2,})`

```
<?php

$email = 'contact@exakat.io';

?>
```

Specs

Short name	Type/Email
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	email
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.403 Empty Array Detection

Empty arrays may be detected with different solutions.

```
<?php

// comparison to empty array
$array === [];

// comparison of count()
count($array) === 0;

?>
```

This analysis includes comparison to 0 with count, with ==, ===, != and !==, and comparison to empty arrays. Constants are not handled.

Specs

Short name	Structures/ArrayCountTripleEqual
Rulesets	*All*, *Preferences*
Exakat since	2.4.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.404 Empty Blocks

Full empty block, part of a control structures.

It is recommended to remove those blocks, so as to reduce confusion in the code.

```
<?php

foreach($foo as $bar) ; // This block seems erroneous
    $foobar++;

if ($a === $b) {
    doSomething();
} else {
    // Empty block. Remove this
}

// Blocks containing only empty expressions are also detected
for($i = 0; $i < 10; $i++) {
    ;
}

// Although namespaces are not control structures, they are reported here
```

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```
namespace A;
namespace B;

?>
```

Suggestions

- Fill the block with a command
- Fill the block with a comment that explain the situation
- Remove the block and its commanding operator

Specs

Short name	Structures/EmptyBlocks
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	block
Examples	*Cleverstyle*, *PhpIPAM*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.405 Empty Classes

Classes that do no define anything at all : no property, method nor constant. This is possibly dead code.

Empty classes are sometimes used to group classes; an interface may be used here for the same purpose, without inserting an extra level in the class hierarchy.

```
<?php

//Empty class
class foo extends bar {}

//Not an empty class
class foo2 extends bar {
    const FOO = 2;
}

//Not an empty class, as derived from Exception
class barException extends \Exception {}

?>
```

Classes that are directly derived from an exception are omitted.

See also class.

Suggestions

- Remove the empty class: it is possibly dead code.
- Add some code to the class to make it concrete.
- Turn the class into an interface.

Specs

Short name	Classes/EmptyClass
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.406 Empty Final Element In Array

The array() construct allows for the empty last element.

By putting an element on each line, and adding the final comma, it is possible to reduce the size of the diff when comparing code with the previous version.

```
<?php

// Array definition with final empty element
$array = [1,
          2,
          3,
          ];

// New version of the code above
// This array definition has only one line of diff with the previous array : the line␣
↪with '4,'
$array = [1,
          2,
          3,
          4,
          ];

// New version of the first code above
// This array definition is totally different from the first array : VCS will identify 3␣
↪removed lines, and one modified.
$array = [1, 2, 3, 4];

?>
```

See also Array, Zend Framework Coding Standard and How clean is your code? How clean are your diffs?.

Specs

Short name	Arrays/EmptyFinal
Rulesets	*All*, *Preferences*
Exakat since	0.11.0
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	trailing-comma
Available in	Entreprise Edition, Exakat Cloud

14.2.407 Empty Function

Function or method whose body is empty.

Such functions or methods are rarely useful. As a bare minimum, the function should return some useful value, even if constant.

A method is considered empty when it contains nothing, or contains expressions without impact.

```
<?php

// classic empty function
function emptyFunction() {}

class bar {
    // classic empty method
    function emptyMethod() {}

    // classic empty function
    function emptyMethodWithParent() {}
}

class barbar extends bar {
    // NOT an empty method : it overwrites the parent method
    function emptyMethodWithParent() {}
}

?>
```

Methods which overwrite another methods are omitted. Methods which are the concrete version of an abstract method are considered.

Suggestions

- Fill the function with actual code
- Remove any usage of the function, then remove the function

Specs

Short name	Functions/EmptyFunction
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	function
Examples	*Contao*
Available in	Entreprise Edition, Exakat Cloud

14.2.408 Empty Instructions

Empty instructions are part of the code that have no instructions.

This may be trailing semi-colon or empty blocks for if-then structures.

Comments that explains the reason of the situation are not taken into account.

```
<?php
    $condition = 3;;;;
    if ($condition) { }
?>
```

Suggestions

- Remove the empty lines
- Fill the empty lines

Specs

Short name	Structures/EmptyLines
Rulesets	*All*, *Analyze*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Examples	*Zurmo*, *ThinkPHP*
Available in	Entreprise Edition, Exakat Cloud

14.2.409 Empty Interfaces

Empty interfaces are a code smell. Interfaces should contains at least a method or a constant, and not be totally empty.

```
<?php

// an empty interface
interface empty {}

// an normal interface
interface normal {
    public function i() ;
}

// a constants interface
interface constantsOnly {
    const FOO = 1;
}

?>
```

See also Empty interfaces are bad practice and Blog : Are empty interfaces code smell?.

Suggestions

- Remove the interface
- Add some methods or constants to the interface

Specs

Short name	Interfaces/EmptyInterface
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	interface
Available in	Entreprise Edition, Exakat Cloud

14.2.410 Empty Json Error

json_last_error() keeps the last error that was generated while decoding a JSON string. To reset this cache to empty, one must run a call to json_decode() that succeed. This leads some code to make an apparently pointless call, just to empty the error cache, and avoid confusing the message with the one of a previous call.

```
<?php

// This generates an error
$json = json_decode([);

$json = json_decode($valid_json);

echo json_last_error(); // This error is confused for the last call, not the first one.

// pointless call, except to empty the cache.
$json = json_decode([]);

$json = json_decode($valid_json);

echo json_last_error(); // This error is dedicated to the last call

?>
```

Specs

Short name	Structures/EmptyJsonError
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.6.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.411 Empty List

Empty list() are not allowed anymore in PHP 7. There must be at least one variable in the list call.

```
<?php

//Not accepted since PHP 7.0
list() = array(1,2,3);

//Still valid PHP code
list(,$x) = array(1,2,3);

?>
```

Suggestions

- Remove empty list() calls

Specs

Short name	Php/EmptyList
Rulesets	*All*, *Analyze*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	list
Available in	Entreprise Edition, Exakat Cloud

14.2.412 Empty Loop

This rule reports empty loop. An empty loop has no operation in its main block.

Some empty loop may have features: they are calling methods in the condition, which may change the status of a resource.

Empty loop may come from a typo, where a semi colon detach the block from its loop.

```
<?php

$i = 0;
// sneaky semi-colon behind the while
while($i < 10) ; {
     $i++;
}

// another sneaky semicolon
foreach($a as $b) ;
{
     $i++;
}

// This skips the first empty lines
$fp = fopen('/path/to/file', 'r');
while(!($row = fgets($fp))) {

}

?>
```

Suggestions

- Remove the extra semicolon
- Fill the loop with a payload

Specs

Short name	Structures/EmptyLoop
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.0
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	loop
Available in	Entreprise Edition, Exakat Cloud

14.2.413 Empty Namespace

Declaring a namespace in the code and not using it for structure declarations or global instructions is useless.

Using simple style : Using bracket-style syntax :

```
<?php

namespace Y;

class foo {}


namespace X;
// This is useless

?>
```

Suggestions

- Remove the namespace
- Fill the namespace with some definition

Specs

Short name	Namespaces/EmptyNamespace
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	namespace
ClearPHP	no-empty-namespace
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.414 Empty Slots In Arrays

PHP allows the last element of an array to be empty. It doesn't allow any other element to be empty: it should at least be an explicit NULL value.

```
<?php
    $a = array( 1, 2, 3, );
    $b =      [ 4, 5, ];
?>
```

Specs

Short name	Arrays/EmptySlots
Rulesets	*All*, *Changed Behavior*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.415 Empty Traits

List of all empty trait defined in the code.

Such traits may be reserved for future use. They may also be forgotten, and dead code.

```
<?php

// empty trait
trait t { }

// Another empty trait
trait t2 {
```

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```
    use t;
}

?>
```

Suggestions

- Add some code to the trait
- Remove the trait

Specs

Short name	Traits/EmptyTrait
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	trait
Available in	Entreprise Edition, Exakat Cloud

14.2.416 Empty Try Catch

The code does try, then catch errors but do no act upon the error.

At worst, the error should be logged, so as to measure the actual usage of the catch expression.

`catch( `Exception <https://www.php.net/exception>`_ $e)` (PHP 5) or `catch(`Throwable <https://www.php.net/manual/en/class.`throwable <https://www.php.net/throwable>`_.php>`_ $e)` with empty catch block should be banned. They ignore any error and proceed as if nothing happened. At worst, the event should be logged for future analysis.

```
<?php

try {
    doSomething();
} catch (Throwable $e) {
    // ignore this
}

?>
```

See also Empty Catch Clause.

Suggestions

- Add some logging in the catch
- Add a comment to mention why the catch is empty
- Change the exception, chain it and throw again

Specs

Short name	Structures/EmptyTryCatch
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	try
Examples	*LiveZilla*, *Mautic*
Available in	Entreprise Edition, Exakat Cloud

14.2.417 Empty With Expression

empty() doesn't accept expressions until PHP 5.5. Until then, it is necessary to store the result of the expression in a variable and then, test it with empty().

```
<?php

// PHP 5.5+ empty() usage
if (empty(strtolower($b . $c))) {
    doSomethingWithoutA();
}

// Compatible empty() usage
$a = strtolower($b . $c);
if (empty($a)) {
    doSomethingWithoutA();
}

?>
```

See also empty.

Suggestions

- Use the compatible syntax, and store the result in a local variable before testing it with empty

Specs

Short name	Structures/EmptyWithExpression
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 5.5 - More
Precision	Very high
Features	empty
Examples	*HuMo-Gen*
Available in	Entreprise Edition, Exakat Cloud

14.2.418 Encoded Simple Letters

Some simple letters are written in escape sequence.

Usually, escape sequences are made to encode unusual characters. Using escape sequences for simple characters, like letters or numbers is suspicious.

This analysis also detects Unicode codepoint with superfluous leading zeros.

```
<?php

// This escape sequence makes eval hard to spot
$a = "ev\101l";
$a('php_info();');

// With a PHP 7.0 unicode code point sequence
$a = "ev\u{000041}l";
$a('php_info();');

// With a PHP 5.0+ hexadecimal sequence
$a = "ev\x41l";
$a('php_info();');

?>
```

Suggestions

- Make all simple letter appear clearly
- Add comments about why this code is encoded

Specs

Short name	Security/EncodedLetters
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.10.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	string-sequence
Examples	*Zurmo*
Available in	Entreprise Edition, Exakat Cloud

14.2.419 Encoding Usage

Usage of declare(encoding =);.

```
<?php

// Setting encoding for the file;
    declare(encoding = 'UTF-8');

?>
```

See also declare.

Specs

Short name	Php/DeclareEncoding
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *Preferences*
Exakat since	0.12.1
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	encoding
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.420 Enum Case Values

Adds a DEFINITION`link between a `static Enumeration case and its actual defined value.

No link is added when no value is defined.

```
<?php

enum E: string {
   case Foo = 'foo';
}

// Constants
const C = E::Foo->name;

?>
```

Specs

Short name	Complete/EnumCaseValues
Rulesets	*All*
Exakat since	2.4.7
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	enum, enum-backed
Available in	Entreprise Edition, Exakat Cloud

14.2.421 Enum Usage

PHP's enumeration. Introduced in PHP 8.1.

```
<?php

enum X {
    case A;
    case B;
}

?>
```

See also Enumerations in PHP.

Specs

Short name	Php/EnumUsage
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*
Exakat since	2.2.2
PHP Version	With PHP 8.1 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	enum
Available in	Entreprise Edition, Exakat Cloud

14.2.422 Environment Variable Usage

> This rule collects all environment variables used in the application, for inventory purposes. Environment variables are detected with the usage of the `$_SERVER` superglobal variable, or calls to the getenv() and setenv() native functions.

This helps catalog the interactions between the application and its host environment.

```
<?php

echo $_SERVER['MY_GLOBAL'];

print getenv('DB_HOST');

setenv('SPECIAL_KEY', $calculatedKey);

?>
```

See also Variable scope.

Specs

Short name	Dump/EnvironnementVariables
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	1.9.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.423 Environment Variables

Collect all used Environment variables.

Specs

Short name	Dump/EnvironmentVariables
Rulesets	none
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.424 Environment Variables

Environment variables are used to interact with the hosting system.

They often provides configuration parameter that are set by the host of the application to be used. That way, information is not hardcoded in the application, and may be changed at production.

```php
<?php

//ENVIRONMENT set the production context
if (getenv('ENVIRONMENT') === 'Production') {
    $sshKey = getenv('HOST_KEY');
} elseif (getenv('ENVIRONMENT') === 'Developper') {
    $sshKey = 'NO KEY';
} else {
    header('No website here.');
    die();
}

?>
```

See also $_ENV.

Specs

Short name	Variables/UncommonEnvVar
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.0.5
PHP Version	All
Severity	
Time To Fix	
Precision	Medium
Features	environment-variable
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.425 Error Messages

Error message when an error is reported in the code. Those messages will be read by whoever is triggering the error, and it has to be helpful.

It is a good exercise to read the messages out of context, and try to understand what is about.

```
<?php

// Not so helpful messages
die('Here be monsters');
exit('An error happened');
throw new Exception('Exception thrown at runtime');

?>
```

Error messages are spotted via die, exit, trigger_error() or throw.

Specs

Short name	Structures/ErrorMessages
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	error, die, exception
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.426 Error_Log() Usage

Usage of error_log() function. This leads to checking the configuration of `error_log` in the PHP configuration directives.

```
<?php

error_log("logging message\n");

?>
```

Specs

Short name	Php/ErrorLogUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.10.0
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	log
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.427 Eval() Usage

Using eval() is evil.

Using eval() is bad for performances (compilation time), for caches (it won't be compiled), and for security (if it includes external data).

```
<?php
    // Avoid using incoming data to build the eval() expression : any filtering error␣
↪leads to PHP injection
    $mathExpression = $_GET['mathExpression'];
    $mathExpression = preg_replace('#[^0-9+-*/(/)]#is', '', $mathExpression); //␣
↪expecting 1+2
    $literalCode = '$a = '.$mathExpression.';';
    eval($literalCode);
    echo $a;

    // If the code code given to eval() is known at compile time, it is best to put it␣
↪inline
    $literalCode = 'phpinfo();';
    eval($literalCode);

?>
```

Most of the time, it is possible to replace the code by some standard PHP, like variable variable for accessing a variable for which you have the name. At worse, including a pregenerated file is faster and cacheable.

There are several situations where eval() is actually the only solution :

For PHP 7.0 and later, it is important to put eval() in a try..catch expression.

See also eval and The Land Where PHP Uses eval().

Suggestions

- Use a dynamic feature of PHP to replace the dynamic code
- Store the code on the disk, and use include
- Replace create_function() with a closure!

Specs

Short name	Structures/EvalUsage
Rulesets	*All*, *Analyze*, *Appinfo*, *CE*, *PHP recommendations*, *Performances*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	eval
ClearPHP	no-eval
Examples	*XOOPS*, *Mautic*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.428 Exceeding Typehint

The typehint is not fully used in the method. Some of the defined methods in the typehint are unused. A tighter typehint could be used, to avoid method pollution.

Tight typehint prevents the argument from doing too much. They also require more maintenance : creation of dedicated interfaces, method management to keep all typehint tight.

```
<?php

interface i {
    function i1();
    function i2();
}

interface j {
    function j1();
    function j2();
}

function foo(i $a, j $b) {
    // the i typehint is totally used
    $a->i1();
    $a->i2();

    // the i typehint is not totally used : j2() is not used.
```

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```
    $b->j1();
}

?>
```

See also *Insufficient Typehint*.

Suggestions

- Keep the typehint tight, do not inject more than needed.

Specs

Short name	Functions/ExceedingTypehint
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.0.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.429 Exception Order

When catching exception, the most specialized exceptions must be in the early catch, and the most general exceptions must be in the later catch. Otherwise, the general catches intercept the exception, and the more specialized will not be read.

```
<?php

class A extends \Exception {}
class B extends A {}

try {
    throw new A();
}
catch(A $a1) { }
catch(B $b2 ) {
    // Never reached, as previous Catch is catching the early worm
}

?>
```

Suggestions

- Remove one of the catch clause

Specs

Short name	Exceptions/AlreadyCaught
Rulesets	*All*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	exception
Examples	*Woocommerce*
Available in	Entreprise Edition, Exakat Cloud

14.2.430 Excimer

Excimer is a PHP 7.1+ extension that provides an interrupting timer and a low-overhead sampling profiler.

```
<?php

$timer = new ExcimerTimer;
$timer->setInterval( 10 /* seconds */ );
$timer->setCallback( function () {
    throw new Exception( "The allowed time has been exceeded" );
} );
$timer->start();
do_expensive_thing();

?>
```

See also Excimer.

Specs

Short name	Extensions/Extexcimer
Rulesets	*All*, *Appinfo*
Exakat since	2.4.2
PHP Version	With PHP 7.1 and more recent
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.431 Exit Without Argument

This rule reports usage of die and exit without arguments, nor parenthesis. These commands are not functions, and are allowed to be used without parenthesis: by default, they use the 0 status.

```
<?php

exit;

die;

?>
```

Specs

Short name	Php/ExitNoArg
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.6.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	exit
Available in	Entreprise Edition, Exakat Cloud

14.2.432 Exit() Usage

Using exit or die() in the code makes the code untestable (it will break unit tests). Moreover, if there is no reason or string to display, it may take a long time to spot where the application is stuck.

```
<?php

// Throw an exception, that may be caught somewhere
throw new Exception('error');

// Dying with error message.
die('error');

function foo() {
    //exiting the function but not dying
    if (somethingWrong()) {
        return true;
    }
}
?>
```

Try exiting the function/class with return, or throw exception that may be caught later in the code.

Suggestions

- Avoid exit and die. Let the script finish.
- Throw an exception and let it be handled before finishing

Specs

Short name	Structures/ExitUsage
Rulesets	*All*, *Analyze*, *Appinfo*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	exit
ClearPHP	no-exit
Examples	*Traq*, *ThinkPHP*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.433 Exit-like Methods

Those methods terminate the execution.

They are detected when they do call exit() or die(). They may also be identified with the PHP 8.0 `#[NoReturn]` attribute, or the PHPdoc `@noreturn` (case insensitive).

If they are called, they will stop the application. They are a user-land equivalent of exit() or die().

```
<?php

// This function anytime the code has finished its processing.
function finish() {
    global $html;

    echo $html;
    die();
}

?>
```

See also PhpStorm 2020.3 EAP #4: Custom PHP 8 Attributes.

Specs

Short name	Functions/KillsApp
Rulesets	*All*, *Attributes*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Medium
Features	exit
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.434 Exponent Usage

Usage of the ** operator or **=, to make exponents.

```
<?php

$eight = 2 ** 3;

$sixteen = 4;
$sixteen \*\*\= 2;

?>
```

See also Arithmetic Operators.

Suggestions

- Use the operator when no literal negative number is in the expression

Specs

Short name	Php/ExponentUsage
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and more recent
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	exponent
Available in	Entreprise Edition, Exakat Cloud

14.2.435 Extended Typehints

Produces all the definition links between typehints (arguments, return types, properties) and the definitions that are valid with the typehint.

```
<?php

function foo(A $A) {}

// This is the raw definition of the above typehint
interface A {}

// This is valid definition of the above typehint
class X implements A {}
// This is valid definition of the above typehint
class Y extends X {}

// This is not related to the typehint
class Z {}

?>
```

Specs

Short name	Complete/ExtendedTypehints
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	2.1.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.436 Extends stdClass

Those classes extends `stdClass`.

Traditionally, classes are defined independently, without any native class extension.

In PHP 8.2, dynamic properties are deprecated, and yield a warning in the logs. Adding 'extends `stdClass <https://www.php.net/stdclass>`_' to classes signature removes this warning, as stdclass is the empty class, without any method, property nor constants.

```
<?php

class myClass extends \stdClass {
    function __set($a, $b) {
        $this->$a = $b;
    }
}
```

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```
?>
```

Specs

Short name	Classes/ExtendsStdclass
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP82*, *Inventory*
Exakat since	2.3.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	stdclass, dynamic-property
Available in	Entreprise Edition, Exakat Cloud

14.2.437 Extensions yar

yar : Yet Another RPC framework.

```
<?php

/* assume this page can be accessed by http://example.com/operator.php */

class Operator {

    /**
     * Add two operands
     * @param interge
     * @return interge
     */
    public function add($a, $b) {
        return $this->_add($a, $b);
    }

    /**
     * Sub
     */
    public function sub($a, $b) {
        return $a - $b;
    }

    /**
     * Mul
     */
    public function mul($a, $b) {
        return $a * $b;
    }

    /**
```

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```
     * Protected methods will not be exposed
     * @param interge
     * @return interge
     */
    protected function _add($a, $b) {
        return $a + $b;
    }
}

$server = new Yar_Server(new Operator());
$server->handle();
?>
```

Specs

Short name	Extensions/Extyar
Rulesets	*All*, *Appinfo*
Exakat since	2.4.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	rpc
Available in	Entreprise Edition, Exakat Cloud

14.2.438 Extensions/Exttaint

Taint is a extension used to detect and track tainted string. It follows each assignation of the code and keeps track of its taint. And also can be used to spot sql injection vulnerabilities, shell inject, etc.

```
<?php
$a = trim($_GET['a']);

$file_name = '/tmp' .  $a;
$output    = "Welcome, {$a} !!!";

//Warning: main() [function.echo]: Attempt to echo a string that might be tainted

?>
```

See also taint and taint on github.

Specs

Short name	Extensions/Exttaint
Rulesets	*All*, *Appinfo*
Exakat since	2.4.4
PHP Version	With PHP 7.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	taint
Available in	Entreprise Edition, Exakat Cloud

14.2.439 External Config Files

List services being used in this code repository, based on configuration files that are committed.

For example, a .git folder is an artefact of a GIT repository.

Specs

Short name	Files/Services
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.440 Ez cms usage

This analysis reports usage of the Ez CMS.

```
<?php
namespace My\Bundle\With\Controller;

use eZ\Bundle\EzPublishCoreBundle\Controller;
use Symfony\Component\HttpFoundation\Request;

class DemoController extends Controller {
    public function demoCreateContentAction(Request $request) {
        //
    }
}

?>
```

See also Ez.

Specs

Short name	Vendors/Ez
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.441 Failed Substr() Comparison

The extracted string must be of the size of the compared string.

This is also true for negative lengths.

```
<?php

// Possible comparison : strings and substr results are the same
if (substr($a, 0, 3) === 'abc') { }
if (substr($b, 4, 3) === 'abc') { }

// Always failing : substr will probably provide a longer string
if (substr($a, 0, 3) === 'ab') { }
if (substr($a, 3, -3) === 'ab') { }

// Omitted in this analysis
if (substr($a, 0, 3) !== 'ab') { }

?>
```

This rule raise a false positive when the variable is already smaller than the expected substr() results.

This rule doesn't apply to mb_substr() and iconv_substr() : those functions use the character size, not the byte size.

Suggestions

- Fix the string
- Fix the length of the string
- Put the string in a constant, and use strlen() or mb_strlen()
- Put the string in a constant, and use strlen() or mb_strlen()

Specs

Short name	Structures/FailingSubstrComparison
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	string
Examples	*Zurmo*, *MediaWiki*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.442 Failing Analysis

This is a dummy analysis. It is made to fail, for testing purposes.

Specs

Short name	Php/FailingAnalysis
Rulesets	*All*
Exakat since	1.2.8
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.443 Fallback Function

A function that is called with its name alone, and whose definition is in the global scope.

```
<?php

namespace {
    // global definition
    function foo() {}
}

namespace Bar {
    // local definition
    function foo2() {}

    foo(); // definition is in the global namespace
    foo2(); // definition is in the Bar namespace
}

?>
```

See also Using namespaces: fallback to global function/constant.

Specs

Short name	Functions/FallbackFunction
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.1.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	function, fallback-function
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.444 False To Array Conversion

The auto vivification of false is deprecated. This feature is the automagical conversion of a boolean into an array, if needed.

```
<?php

$a = false;

//valid in PHP
$a[3] = 1;

?>
```

Until PHP 8.1, this was possible. This feature is deprecated in PHP 8.1, and will be removed in PHP 9.0.

See also Autovivification from false.

Suggestions

- Change the typehints from bool or false to array
- Validate the type returned values of an functioncall before using it

Specs

Short name	Php/FalseToArray
Rulesets	*All*, *Analyze*, *CompatibilityPHP81*, *CompatibilityPHP82*, *LintButWontExec*
Exakat since	2.3.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.445 Favorite Casting Method

> There are two methods for casting : the cast operators, or the conversion functions. The cast operators are `int`, `float` and `string`. The conversion functions are `intval()`, `floatval()` and `strval()`.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

It happens that casting operators or conversion functions are used depending on coding style and files.

```
<?php

// be consistent
$a = (int) $_GET['a'];
$b = (float) $_GET['b'];
$c = (int) $_GET['c'];
$d = (int) $_GET['d'];
$e = (string) $_GET['e'];
$f = (int) $_GET['f'];
$g = (int) $_GET['g'];
$i = (int) $_GET['i'];
$j = (int) $_GET['j'];
$k = (int) $_GET['k'];
$l = intval($_GET['l']);

?>
```

Suggestions

- Choose one of the two syntaxes

Specs

Short name	Structures/CastFavorite
Rulesets	*All*, *Preferences*
Exakat since	2.6.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	cast
Available in	Entreprise Edition, Exakat Cloud

14.2.446 Feast usage

This analysis reports usage of the Feast framework.

FEAST is a radically different PHP Framework that was built from the ground up to be an alternative to the dependency-heavy frameworks that exist already. Its goal is a light-weight footprint that just lets you get stuff done.

```
<?php

$this->httpRequest->postJson(self::URL . '/subscribers');
$this->httpRequest->addArguments($data);
$this->httpRequest->authenticate($this->apiKey, '');
$this->httpRequest->makeRequest();
$response = $this-httpRequest->getResponseAsJson();

?>
```

See also Feast and **`Feast on github<https://github.com/feastframework/framework>`_**.

Specs

Short name	Vendors/Feast
Rulesets	*All*, *Appinfo*
Exakat since	2.4.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Exakat Cloud

14.2.447 Fetch One Row Format

When reading results with ext/Sqlite3, it is recommended to explicitly request `SQLITE3_NUM` or `SQLITE3_ASSOC`, while avoiding the default value and `SQLITE3_BOTH`.

This is a micro-optimisation. The difference may be visible with 200k rows fetches, and measurable with 10k.

```
<?php

$res = $database->query($query);

// Fastest version, but less readable
$row = $res->fetchArray(\SQLITE3_NUM);
// Almost the fastest version, and more readable
$row = $res->fetchArray(\SQLITE3_ASSOC);

// Default version. Quite slow
$row = $res->fetchArray();

// Worse case
```

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```
$row = $res->fetchArray(\SQLITE3_BOTH);

?>
```

Suggestions

- Specify the result format when reading rows from a Sqlite3 database

Specs

Short name	Performances/FetchOneRowFormat
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	0.9.6
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	csv
Available in	Entreprise Edition, Exakat Cloud

14.2.448 File Is Component

Check that a file only contains definition elements, such as traits, interfaces, enumerations, declare, classes, constants, global variables, use or inclusions.

Such a file is a component, that may be included in other code and there, used. By itself, it doesn't execute any code.

```
<?php

declare(strict_types=1);

class x {
     // more code
}

?>
```

Specs

Short name	Files/IsComponent
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.449 File Is Not Definitions Only

An included file should only provide definitions and declarations, or executable code : not both.

With definitions only files, their inclusion provide new features, and keep the current execution untouched, and in control of the flow.

```
<?php
// This whole script is a file

// It contains definitions and global code
class foo {
    static public $foo = null;
}
//This can be a singleton creation
foo::$foo = new foo();

trait t {}

class bar {}

?>
```

Within this context, globals, use, and namespaces instructions are not considered a warning.

Suggestions

- Remove the executable code from the file
- Remove the definitions from the file

Specs

Short name	Files/NotDefinitionsOnly
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.450 File Uploads

This code makes usage of file upload features of PHP.

Upload file feature is detected through the usage of specific functions :

```
<?php
$uploaddir = '/var/www/uploads/';
$uploadfile = $uploaddir . basename($_FILES['userfile']['name']);

echo '<pre>';
if (move_uploaded_file($_FILES['userfile']['tmp_name'], $uploadfile)) {
    echo 'File is valid, and was successfully uploaded.'.PHP_EOL;
} else {
    echo 'Possible file upload attack!'.PHP_EOL;
}

echo 'Here is some more debugging info:';
print_r($_FILES);

print '</pre>';

?>
```

See also Handling file uploads.

Specs

Short name	Structures/FileUploadUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	file-upload
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.451 File Usage

The application makes usage of files on the system (read, write, delete, etc.).

Files usage is based on the usage of file functions.

```
<?php
    $fp = fopen('/tmp/file.txt', 'w+');
    // ....
?>
```

See also filesystem.

Specs

Short name	Structures/FileUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	file
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.452 File_Put_Contents Using Array Argument

file_put_contents() accepts a second argument as an array, and stores it in the file with an implicit implode. This is a documented behavior, though it is rarely used.

```
<?php

file_put_contents('/tmp/file.txt', [1, 2, 3, 4]);

print file_get_contents('/tmp/file.txt');
// displays 1234

?>
```

See also file_put_contents().

Specs

Short name	Structures/FilePutContentsDataType
Rulesets	*All*, *Appinfo*, *Changed Behavior*
Exakat since	2.6.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	silent
Available in	Entreprise Edition, Exakat Cloud

14.2.453 Filter Not Raw

Report usage of filter functions with the `FILTER_RAW_UNSAFE` option. This option is the default one.

```
<?php

// default to FILTER_RAW_UNSAFE
filter_var($a);

// explicit no filter
filter_var($a, FILTER_RAW_UNSAFE);

?>
```

Suggestions

- Use a different filter to validate those data.

Specs

Short name	Security/FilterNotRaw
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	2.5.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	filter
Available in	Entreprise Edition, Exakat Cloud

14.2.454 Filter To add_slashes()

`FILTER_SANITIZE_MAGIC_QUOTES` is deprecated. In PHP 7.4, it should be replaced with addslashes()

According to the migration RDFC : 'Magic quotes were deprecated all the way back in PHP 5.3 and later removed in PHP 5.4. The filter extension implements a sanitization filter that mimics this behavior of magic_quotes by calling addslashes() on the input in question.' addslashes() used to filter data while building SQL queries, to prevent injections. Nowadays, prepared queries are a better option.

```
<?php

// Deprecated way to filter input
$var = filter_input($input, FILTER_SANITIZE_MAGIC_QUOTES);

// Alternative way to filter input
$var = addslashes($input);

?>
```

See also Deprecations for PHP 7.4.

Suggestions

- Replace `FILTER_SANITIZE_MAGIC_QUOTES` with addslashes()
- Replace `FILTER_SANITIZE_MAGIC_QUOTES` with an adapted escaping system

Specs

Short name	Php/FilterToAddSlashes
Rulesets	*All*, *CE*, *Changed Behavior*, *CompatibilityPHP74*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.455 Final Class Usage

List of all final classes being used.

final may be applied to classes and methods.

```
<?php
class BaseClass {
   public function test() {
       echo 'BaseClass::test() called'.PHP_EOL;
   }

   final public function moreTesting() {
       echo 'BaseClass::moreTesting() called'.PHP_EOL;
   }
}

class ChildClass extends BaseClass {
   public function moreTesting() {
       echo 'ChildClass::moreTesting() called'.PHP_EOL;
   }
}
// Results in Fatal error: Cannot override final method BaseClass::moreTesting()
?>
```

See also Final Keyword.

Specs

Short name	Classes/Finalclass
Rulesets	*All*, *Class Review*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	final
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.456 Final Constant

Final modifier for class constants.

```
<?php

class MyClass {
    final const X = 1; // This constant cannot be redefined

    const Y = 2; // This constant might be redefined in a child

    private const Z = 3; // This private, and can't be made final, because it is not␣
↪available anyway
}

?>
```

See also https://www.php.net/manual/en/language.oop5.final.php and https://php.watch/versions/8.1/final-class-const.

Specs

Short name	Php/FinalConstant
Rulesets	*All*, *Appinfo*, *Changed Behavior*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*
Exakat since	2.3.0
PHP Version	With PHP 8.1 and more recent
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	final-class-constant
Available in	Entreprise Edition, Exakat Cloud

14.2.457 Final Methods Usage

List of all final methods being used.

final may be applied to classes and methods in classes and traits.

```
<?php
class BaseClass {
   public function test() {
       echo 'BaseClass::test() called'.PHP_EOL;
   }

   final public function moreTesting() {
       echo 'BaseClass::moreTesting() called'.PHP_EOL;
   }
}

class ChildClass extends BaseClass {
   public function moreTesting() {
       echo 'ChildClass::moreTesting() called'.PHP_EOL;
   }
}
// Results in Fatal error: Cannot override final method BaseClass::moreTesting()
?>
```

See also Final Keyword.

Specs

Short name	Classes/Finalmethod
Rulesets	*All*, *Class Review*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.458 Final Private Methods

PHP's private methods cannot be overwritten, as they are dedicated to the current class. That way, the `final` keyword is useless.

PHP 8.0 warns when it finds such a method.

```
<?php

class foo {
    // Final and private both prevent child classes to overwrite the method
    final private function bar() {}

    // Final and protected (or public) keep this method available, but not overwritable
    final protected function bar() {}
}

?>
```

See also Final Keyword.

Suggestions

- Remove the final keyword
- Relax visibility

Specs

Short name	Classes/FinalPrivate
Rulesets	*All*, *CE*, *Class Review*, *CompatibilityPHP80*
Exakat since	2.2.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	final
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.459 Final Traits Are Final

A final method in a trait is also final when in its importing class. This means that the importing class may redefine it, but not the children.

```
<?php

trait t {
     final function FFinal() {}
     final function FNotFinalInClass() {}
     function FNotFinal() {}     // This is a normal method
}

class x {
     use t;

     function FNotFinalInClass() {}

}

class y extends x  {
     function FFinal() {}            // This is KO, as it is final in the trait
     function FNotFinalInClass() {}  // This is OK, the class as priority
     function FNotFinal() {}
}
?>
```

Specs

Short name	Traits/FinalTraitsAreFinal
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.5.3
PHP Version	With PHP 8.3 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.460 Find Key Directly

There is no need to use foreach() to search for a key.

PHP offers two solutions : array_search() and array_keys(). Array_search() finds the first key that fits a value, and array_keys() returns all the keys.

```
<?php

$array = ['a', 'b', 'c', 'd', 'e'];

print array_search($array, 'c');
// print 2 => 'c';

print_r(array_keys($array, 'c'));
// print 2 => 'c';

?>
```

See also array_search and array_keys.

Suggestions

- Use array_search()
- Use array_keys()

Specs

Short name	Structures/GoToKeyDirectly
Rulesets	*All*
Exakat since	1.1.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.461 First Class Callable

A syntax using ellipsis was introduced to make it easy to make a method into a callable.

```
<?php

// Using ellipsis as the only argument
$a = $object->method(...);

// Old style equivalent
$a = array($object, 'method');
```

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```
// calling the closure.
$a();

?>
```

See also PHP RFC: First-class callable syntax.

Specs

Short name	Php/FirstClassCallable
Rulesets	*All*, *Appinfo*
Exakat since	2.3.0
PHP Version	With PHP 8.1 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	first-class-callable
Available in	Entreprise Edition, Exakat Cloud

14.2.462 Flexible Heredoc

Flexible syntax for Heredoc.

The new flexible syntax for heredoc and nowdoc enable the closing marker to be indented, and remove the new line requirement after the closing marker.

It was introduced in PHP 7.3. This syntax is backward incompatible : once adopted in the code, previous versions won't compile it.

```
<?php

// PHP 7.3 and newer
foo($a = <<<END

    flexible syntax
    with extra indentation

    END);

// All PHP versions
$a = <<<END

    Normal syntax

END;


?>
```

See also Heredoc and Flexible Heredoc and Nowdoc Syntaxes.

Specs

Short name	Php/FlexibleHeredoc
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*
Exakat since	1.2.9
PHP Version	With PHP 7.3 and more recent
Severity	Critical
Time To Fix	Instant (5 mins)
Precision	Very high
Features	heredoc
Available in	Entreprise Edition, Exakat Cloud

14.2.463 Float Conversion As Index

> Only integers and strings are possible types when used for array index. Until PHP 8.1, floats were converted to integer by truncation. Since PHP 8.1, a deprecated message is emitted.

The implicit conversion of float to int which leads to a loss in precision is now deprecated. This affects array keys, int type declarations in coercive mode, and operators working on integers.

```
<?php
$a = [];
$a[15.5]; // deprecated, as key value loses the 0.5 component
$a[15.0]; // ok, as 15.0 == 15
?>
```

See also Implicit incompatible float to int conversions.

Specs

Short name	Arrays/FloatConversionAsIndex
Rulesets	*All*, *Analyze*, *Changed Behavior*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.3.1
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.464 Fn Argument Variable Confusion

Avoid using local variables as arrow function arguments.

When a local variable name is used as an argument's name in an arrow function, the local variable from the original scope is not imported. They are now two distinct variables.

When the local variable is not listed as argument, it is then imported in the arrow function.

```
<?php

function foo() {
    $locale = 1;

    // Actually ignores the argument, and returns the local variable ``$locale``.
    $fn2 = fn ($argument) => $locale;

    // Seems similar to above, but returns the incoming argument
    $fn2 = fn ($locale) => $locale;
}

?>
```

See also Arrow functions.

Suggestions

- Change the name of the local variable
- Change the name of the argument

Specs

Short name	Functions/FnArgumentVariableConfusion
Rulesets	*All*, *Analyze*, *Semantics*
Exakat since	2.1.0
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	arrow-function
Available in	Entreprise Edition, Exakat Cloud

14.2.465 Follow Closure Definition

This command adds DEFINITION link between closure <https://www.php.net/`closure>`_ and arrow functions definitions and their usage.

Local usage of the closure <https://www.php.net/`closure>`_, in the same scope, are detected. Relayed closure <https://www.php.net/`closure>`_, when they are transmitted to another method for usage, is detected, for one jump.

This also supports first class callable, when the callable is defined in the code code (aka, not with native PHP functions or external libraries).

```
<?php

function foo() {
    $closure = function () {};
    // Local usage
    echo $closure();
}

function bar(Closure $x) {
    // relayed usage
    echo $x();
}


?>
```

Specs

Short name	Complete/FollowClosureDefinition
Rulesets	*All*, *CE*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	closure, arrow-function
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.466 Fopen Binary Mode

Use explicit b when opening files.

fopen() supports a b option in the second parameter, to make sure the read is binary. This is the recommended way when writing portable applications, between Linux and Windows.

```
<?php

// This opens file with binary reads on every OS
$fp = fopen('path/to/file.doc', 'wb');
```

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```
// This may not open files with binary mode on Windows
$fp = fopen('path/to/file.doc', 'w');

?>
```

Also, Windows PHP does support a `t` option, that translates automatically line endings to the right value. As this is Windows only, this should be avoided for portability reasons.

See also fopen.

Suggestions

- Add the *b* option when opening files

Specs

Short name	Portability/FopenMode
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	file
Available in	Entreprise Edition, Exakat Cloud

14.2.467 For Using Functioncall

It is recommended to avoid functioncall in the for() statement.

This is true with any kind of functioncall that returns the same value throughout the loop.

Make sure that the functioncall doesn't change with the loop.

```
<?php

// Fastest way
$nb = count($array);
for($i = 0; $i < $nb; ++$i) {
    doSomething($i);
}

// Same as above, but slow
for($i = 0; $i < count($array); ++$i) {
    doSomething($i);
}

// Same as above, but slow
foreach($portions as &$portion) {
    // here, array_sum() doesn't depends on the $grade. It should be out of the loop
```

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```
    $portion = $portion / array_sum($portions);
}

$total = array_sum($portion);
foreach($portion as &$portion) {
    $portion = $portion / $total;
}

?>
```

See also PHP for loops and counting arrays.

Suggestions

- Call the function once, before the loop
- Replace by a foreach structure

Specs

Short name	Structures/ForWithFunctioncall
Rulesets	*All*, *Changed Behavior*, *Performances*, *Rector*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	for
ClearPHP	no-functioncall-in-loop
Available in	Entreprise Edition, Exakat Cloud

14.2.468 Foreach Don't Change Pointer

foreach() loops use their own internal cursor.

A foreach loop won't change the internal pointer of the array, as it works on a copy of the source. Hence, applying array pointer's functions such as current() or next() to the source array won't have the same behavior in PHP 5 than PHP 7.

This only applies when a foreach() by reference is used.

```
<?php

$numbers = range(1, 10);
next($numbers);
foreach($numbers as &$number){
    print $number;
    print current($numbers)."\n"; // Always
}

?>
```

See also foreach no longer changes the internal array pointer.

Suggestions

- Do not change the pointer on the source array while in the loop

Specs

Short name	Php/ForeachDontChangePointer
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 7.0 - More
Precision	High
Features	foreach
Available in	Entreprise Edition, Exakat Cloud

14.2.469 Foreach Needs Reference Array

> When using foreach with a reference as value, the source must be a referenced array, which is a variable (or array or property or static property).

When the array is the result of an expression, the array is not kept in memory after the foreach loop, and any change made with & are lost.

This will do nothing

```
<?php
    foreach(array(1,2,3) as &$value) {
        $value *= 2;
    }
?>
```

This will have an actual effect

```
<?php
    $array = array(1,2,3);
    foreach($array as &$value) {
        $value *= 2;
    }
?>
```

Suggestions

- Use a referenced array when applying modifications inside a foreach loop

Specs

Short name	Structures/ForeachNeedReferencedSource
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	foreach, reference
Available in	Entreprise Edition, Exakat Cloud

14.2.470 Foreach On Object

Foreach on object looks like a typo. This is particularly true when both object and member are variables.

Foreach on an object member is a legit PHP syntax, though it is very rare : blind variables rarely have to be securing in an object to be processed.

```
<?php

// This is the real thing
foreach($array as $o => $b) {
    doSomething();
}

// Looks suspicious
foreach($array as $o -> $b) {
    doSomething();
}

?>
```

Specs

Short name	Php/ForeachObject
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.1.6
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Features	foreach, loop
Available in	Entreprise Edition, Exakat Cloud

14.2.471 Foreach Reference Is Not Modified

Foreach statement may loop using a reference, especially when the loop has to change values of the array it is looping on.

In the spotted loop, reference are used but never modified. They may be removed.

```
<?php

$letters = range('a', 'z');

// $letter is not used here
foreach($letters as &$letter) {
    $alphabet .= $letter;
}

// $letter is actually used here
foreach($letters as &$letter) {
    $letter = strtoupper($letter);
}

?>
```

Suggestions

- Remove the reference from the foreach
- Actually modify the content of the reference

Specs

Short name	Structures/ForeachReferenceIsNotModified
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	foreach, reference
Examples	*Dolibarr*, *Vanilla*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.472 Foreach With list()

Foreach loops have the ability to use list() (or []) as blind variables. This syntax assign directly array elements to various variables.

PHP 5.5 introduced the usage of list in foreach() loops. Until PHP 7.1, it was not possible to use non-numerical arrays as list() wouldn't support string-indexed arrays.

```
<?php
    // PHP 5.5 and later, with numerically-indexed arrays
    foreach($array as list($a, $b)) {
        // do something
    }


    // PHP 7.1 and later, with arrays
    foreach($array as list('col1' => $a, 'col3' => $b)) { // 'col2 is ignored'
        // do something
    }
?>
```

Previously, it was compulsory to extract() the data from the blind array :

```
<?php
    foreach($array as $c) {
        list($a, $b) = $c;
        // do something
    }
?>
```

See also The list function & practical uses of array destructuring in PHP and Array destructuring in PHP.

Specs

Short name	Structures/ForeachWithList
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and more recent
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	foreach
Available in	Entreprise Edition, Exakat Cloud

14.2.473 Foreach() Favorite

Collect the name used in foreach() loops. Then, sorts them in order of popularity.

```
<?php

// collect $k, $v
foreach($array as $k => $v) { }

// collect $k, $v1, $v2
foreach($array as $k => [$v1, $v2]) { }

?>
```

Specs

Short name	Dump/CollectForeachFavorite
Rulesets	*All*, *CE*, *Dump*
Exakat since	1.9.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	foreach
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.474 Forgotten Interface

The following classes have been found implementing an interface's methods, though it doesn't explicitly implements this interface. This may have been forgotten.

```
<?php

interface i {
    function i();
}

// i is not implemented and declared
class foo {
    function i() {}
    function j() {}
}

// i is implemented and declared
class foo implements i {
    function i() {}
    function j() {}
}

?>
```

See also *Could Use Trait*.

Suggestions

- Mention interfaces explicitly whenever possible

Specs

Short name	Interfaces/CouldUseInterface
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.11.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	interface, ducktyping
Available in	Entreprise Edition, Exakat Cloud

14.2.475 Forgotten Thrown

This rule reports when an exception is instantiated, but not thrown. Often, this is a case of forgotten throw.

```
<?php

class MyException extends \Exception { }

if ($error !== false) {
    // This looks like 'throw' was omitted
    new MyException();
}

?>
```

Suggestions

- Remove the instantiation expression.
- Add the throw to the new expression.

Specs

Short name	Exceptions/ForgottenThrown
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.10.2
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	throw, exception
Available in	Entreprise Edition, Exakat Cloud

14.2.476 Forgotten Visibility

Some classes elements (property, method, constant) are missing their explicit visibility.

By default, it is public. It should at least be mentioned as public, or may be reviewed as protected or private.

Class constants support also visibility since PHP 7.1.

final, static and abstract are not counted as visibility. Only public, private and protected. The PHP 4 var keyword is counted as undefined.

Traits, classes and interfaces are checked.

```
<?php

// Explicit visibility
class X {
    protected sconst NO_VISIBILITY_CONST = 1; // For PHP 7.2 and later

    private $noVisibilityProperty = 2;

    public function Method() {}
}

// Missing visibility
class X {
    const NO_VISIBILITY_CONST = 1; // For PHP 7.2 and later

    var $noVisibilityProperty = 2; // Only with var

    function NoVisibilityForMethod() {}
}

?>
```

See also Visibility and Understanding The Concept Of Visibility In Object Oriented PHP.

Suggestions

- Always add explicit visibility to methods and constants in a class
- Always add explicit visibility to properties in a class, after PHP 7.4

Specs

Short name	Classes/NonPpp
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	visibility
ClearPHP	always-have-visibility
Examples	*FuelCMS*, *LiveZilla*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.477 Forgotten Whitespace

Forgotten whitespaces brings unexpected error messages.

White spaces have been left at either end of a file : before the PHP opening tag, or after the closing tag.

Usually, such whitespaces are forgotten, and may end up summoning the infamous 'headers already sent' error. It is better to remove them.

```
<?php
    // This script has no forgotten whitespace, not at the beginning
    function foo() {}

    // This script has no forgotten whitespace, not at the end
?>
```

See also How to fix Headers already sent error in PHP.

Suggestions

- Remove all whitespaces before and after a script. This doesn't apply to template, which may need to use those spaces.
- Remove the final tag, to prevent any whitespace to be forgotten at the end of the file. This doesn't apply to the opening PHP tag, which is always necessary.

Specs

Short name	Structures/ForgottenWhiteSpace
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	whitespace
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.478 Fossilized Method

> A method is fossilized when it is overwritten so often that changing a default value, a return type or an argument type is getting difficult.

This happens when a class is extended. When a method is overwritten once, it may be easy to update the signature in two places. The more methods are overwriting a parent method, the more difficult it is to update it.

This analysis counts the number of times a method is overwritten, and report any method that is overwritten more than 6 times. This threshold may be configured.

```
<?php

class x1 {
    // foo1() is never overwritten. It is easy to update.
    function foo1() {}

    // foo7() is overwritten seven times. It is hard to update.
    function foo7() {}
}

// classes x2 to x7, all overwrite foo7();
// Only x2 is presente here.
class x2 extends x1 {
    function foo7() {}
}

?>
```

Name	Default	Type	Description
fossilizationThreshold	6	integer	Minimal number of overwriting methods to consider a method difficult to update.

See also *Method fossilization <https://www.exakat.io/en/method-fossilisation/>_*.

Specs

Short name	Classes/FossilizedMethod
Rulesets	*All*, *Class Review*, *Typechecks*
Exakat since	2.0.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	fossilized-method
Available in	Entreprise Edition, Exakat Cloud

14.2.479 Fossilized Methods List

This is the list of fossilized methods. Those methods appears when they get tightly couple with a child or parent class, and cannot evolve anymore without making the rest of the family evolve also. They are now very difficult to update and usually, become inert.

```
<?php

class x {
    function foo(int $a) : string {
        //...
    }
}

class y extends x {
    // this methods is fossilized, as its modification will trigger an update in the␣
↪parent class
    function foo(int $a) : string {
        //...
    }
}

?>
```

Specs

Short name	Dump/FossilizedMethods
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.1.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	fossilized-method
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.480 Friend Attribute

A method or class can supply via a #[Friend] attribute a list of classes. Only these classes can call the method. This is loosely based on the C++ friend feature.

- Multiple classes can be specified. E.g. #[Friend(Foo::class, Bar::class)]
- A class can have a #[Friend] attribute, classes listed here are applied to every method.
- The #[Friend] attribute is additive. If a class and a method have the #[Friend] the method can be called from any of the classes listed. E.g.
- This is is currently limited to method calls (including __construct).
- The Attribute is limited to the exact classes, the family hierarchy is not searched.
- Multiple attributes can be specified to add more classes. E.g. #[Friend(Foo::class)] #[Friend(Bar::class)]

Based on the specificiations from Dave Liddament.

```
<?php

class Person
{
    #[Friend(PersonBuilder::class)]
    public function __construct()
    {
        // Some implementation
    }
}


class PersonBuilder
{
    public function build(): Person
    {
        $person = new Person(): // OK as PersonBuilder is allowed to call Person's␣
↪construct method.
        // set up Person
        return $person;
    }
}


// ERROR Call to Person::__construct is not from PersonBuilder
$person = new Person();

?>
```

See also Friend and php-language-extension.

Suggestions

- Add the reported classes as friend to the original class
- Remove the call to the class from the reported classes

Specs

Short name	Attributes/Friend
Rulesets	*All*, *Attributes*, *Changed Behavior*
Exakat since	2.6.2
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	attribute
Available in	Entreprise Edition, Exakat Cloud

14.2.481 Fuel PHP Usage

This analysis reports usage of the Fuel PHP Framework.

```
<?php
// file located in APPPATH/classes/presenter.php
class Presenter extends \Fuel\Core\Presenter
{
    // namespace prefix
    protected static $ns_prefix = 'Presenter\\';
}
?>
```

Do not confuse fuelPHP and fuelCMS

See also FuelPHP.

Specs

Short name	Vendors/Fuel
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.0.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.482 Fully Qualified Constants

Constants defined with their namespace.

When defining constants with define() function, it is possible to include the actual namespace : However, the name should be fully qualified without the initial . Here, abc constant will never be accessible as a namespace constant, though it will be accessible via the constant() function.

Also, the namespace will be absolute, and not a relative namespace of the current one.

```
<?php

define('a\b\c', 1);

?>
```

Suggestions

- Drop the initial when creating constants with define() : for example, use trim($x, ''), which removes anti-slashes before and after.

Specs

Short name	Namespaces/ConstantFullyQualified
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	namespace
Available in	Entreprise Edition, Exakat Cloud

14.2.483 Function Called With Other Case Than Defined

Functions and methods are defined with a specific case. Often, this is done on purpose,

either to distinguish the method from others, such as PHP natives functions, or to follow a naming convention.

PHP functions are case insensitive, which leads to situations like :

```
<?php
  function myUtility($arg) {
    /* some code here */
  }

   myutility($var);
?>
```

It is recommended to use the same casing in the function call and the function definition.

Suggestions

- Use the same case for the function and its call.

Specs

Short name	Functions/FunctionCalledWithOtherCase
Rulesets	*All*, *Semantics*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	function
Available in	Entreprise Edition, Exakat Cloud

14.2.484 Function Subscripting

> It is possible to use the result of a methodcall directly as an array, without storing the result in a temporary variable.

This works, given that the method actually returns an array.

This syntax was not possible until PHP 5.4. Until then, it was compulsory to store the result in a variable first. Although this is now superfluous, it has been a standard syntax in PHP, and is still being used.

```
<?php

function foo() {
    return array(1 => 'a', 'b', 'c');
}

echo foo()[1]; // displays 'a';

// Function subscripting, the old way
function foo() {
    return array(1 => 'a', 'b', 'c');
}

$x = foo();
echo $x[1]; // displays 'a';

?>
```

Storing the result in a variable is still useful if the result is actually used more than once.

See also Accessing array elements with square bracket syntax.

Specs

Short name	Structures/FunctionSubscripting
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP53*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and more recent
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	subscripting
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.485 Function Subscripting, Old Style

It is possible use function results as an array, and read directly its element. This was added in PHP 5.4.

```
<?php

function foo() {
    return array(1 => 'a', 'b', 'c');
}

echo foo()[1]; // displays 'a';

// Function subscripting, the old way
function foo() {
    return array(1 => 'a', 'b', 'c');
}

$x = foo();
echo $x[1]; // displays 'a';

?>
```

Suggestions

- Skip the local variable and directly use the return value from the function

Specs

Short name	Structures/FunctionPreSubscripting
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and more recent
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	function-subscripting
Examples	*OpenConf*
Available in	Entreprise Edition, Exakat Cloud

14.2.486 Function With Dynamic Code

> Mark a method, function, closure <https://www.php.net/`closure>`_, arrow function that includes dynamic code.

Dynamic code is based on usage of include(), require(), require_once() and include(), extract() and eval().

This is a support rule, to help omits some special cases in other rules.

```
<?php

// Function with dynamic code
function foo($x) {
    include $x;
    return $y;
}

// Static coe Function
function foo($x) {
    return $y + $x;
}

?>
```

Specs

Short name	Functions/DynamicCode
Rulesets	*All*, *CE*, *Changed Behavior*
Exakat since	2.1.8
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	dynamic-call
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.487 Functioncall Is Global

Marks a functioncall when it is from the global scope. It is not located in another function, class or trait.

```
<?php

function foo() {
     // This is not a global functioncall
     goo();
}

// This is a global functioncall
foo();

?>
```

See also class.

Specs

Short name	Functions/IsGlobal
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.488 Functions Glossary

List of all the defined functions in the code.

```
<?php

// A function
function aFunction() {}

// Closures (not reported)
$closure = function ($arg) {  }

// Methods
class foo {
    function aMethod() {}
}

?>
```

Specs

Short name	Functions/Functionnames
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	function
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.489 Functions In Loop Calls

The following functions call each-other in a loop fashion : A -> B -> A.

When those functions have no other interaction, the code is useless and should be dropped.

Loops of size 2, 3 and 4 function are supported by this analyzer.

```
<?php

function foo1($a) {
    if ($a < 1000) {
        return foo2($a + 1);
    }
    return $a;
}

function foo2($a) {
    if ($a < 1000) {
        return foo1($a + 1);
    }
    return $a;
}

// if foo1 nor foo2 are called, then this is dead code.
// if foo1 or foo2 are called, this recursive call should be investigated.

?>
```

Suggestions

- Drop all the functions in the loop, as they are dead code

Specs

Short name	Functions/LoopCalling
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	function, recursion
Available in	Entreprise Edition, Exakat Cloud

14.2.490 Functions Removed In PHP 5.4

Those functions were removed in PHP 5.4.

- ereg()
- ereg_replace()
- eregi()
- eregi_replace()
- split()
- spliti()
- sql_regcase()
- magic_quotes_runtime()
- set_magic_quotes_runtime
- call_user_method()
- call_user_method_array()
- set_socket_blocking()
- mcrypt_ecb()
- mcrypt_cbc()
- mcrypt_cfb()
- mcrypt_ofb()
- datefmt_set_timezone_id()
- imagepsbbox()
- imagepsencodefont()
- imagepsextendfont()
- imagepsfreefont()
- imagepsloadfont()
- imagepsslantfont()
- imagepstext()

See also Deprecated features in PHP 5.4.x.

Specs

Short name	Php/Php54RemovedFunctions
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function
Available in	Entreprise Edition, Exakat Cloud

14.2.491 Functions Removed In PHP 5.5

Those functions were removed in PHP 5.5.

- php_logo_guid()
- php_egg_logo_guid()
- php_real_logo_guid()
- zend_logo_guid()
- mcrypt_cbc()
- mcrypt_cfb()
- mcrypt_ecb()
- mcrypt_ofb()

```
<?php

echo '<img src="' . $_SERVER['PHP_SELF'] .
     '?=' . php_logo_guid() . '" alt="PHP Logo !" />';

?>
```

See also Deprecated features in PHP 5.5.x.

Suggestions

- Stop using those functions

Specs

Short name	Php/Php55RemovedFunctions
Rulesets	*All*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	deprecated
Available in	Entreprise Edition, Exakat Cloud

14.2.492 Functions Using Reference

Functions and methods using references in their signature.

```
<?php

function usingReferences( &$a) {}

class foo {
    public function methodUsingReferences($b, &$c = 1) {}
}
?>
```

Specs

Short name	Functions/FunctionsUsingReference
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	function, reference
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.493 GLOB_BRACE Usage

GLOB_BRACE is not always available on every underlying operating system. This is the case on Solaris OS, and on Alpine OS, used for Docker.

```
<?php

// glob uses GLOB_BRACE
$abcFiles = glob($path.'/{a,b,c}*', GLOB_BRACE);

// avoiding usage of GLOB_BRACE
```

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```
$abcFiles = array_merge(glob($path.'/a*'),
                        glob($path.'/b*'),
                        glob($path.'/c*'),
                       );

?>
```

It is possible to check the support for GLOB_BRACE by checking the presence of the constant.

See also Alpine Linux, GLOB_BRACE breaks Sulu on Alpine Linux and [performance] Symfony Kernel::boot() in dev mode on Alpine #35009.

Suggestions

- Create as many glob() calls at there are alternative in the braces
- Use another tool to search the system on names
- Do not use glob brace

Specs

Short name	Portability/GlobBraceUsage
Rulesets	*All*
Exakat since	2.1.6
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	glob
Available in	Entreprise Edition, Exakat Cloud

14.2.494 GPRC Aliases

The following variables are holding the content of $_GET, $_POST, $_REQUEST or $_COOKIE. They shouldn't be trusted, just like their original variables.

```
<?php

$post = $_POST;

foreach($post as $key => $var)  {
     print $var;
}

?>
```

See also Superglobals.

Specs

Short name	Security/GPRAliases
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	superglobal
Available in	Entreprise Edition, Exakat Cloud

14.2.495 Generator Cannot Return

Generators could not use return and yield at the same time. In PHP 7.0, generator <https://www.php.net/^generator>`_ can now use both of them.

```
<?php

// This is not allowed until PHP 7.0
function foo() {
    yield 1;
    return 'b';
}

?>
```

Suggestions

- Remove the return

Specs

Short name	Functions/GeneratorCannotReturn
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	1.8.7
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	generator
Available in	Entreprise Edition, Exakat Cloud

14.2.496 Geospatial

PHP Extension to handle common geospatial functions. The extension currently has implementations of the Haversine and Vincenty's formulas for calculating distances, an initial bearing calculation function, a Helmert transformation function to transfer between different supported datums, conversions between polar and Cartesian coordinates, conversions between Degree/Minute/Seconds and decimal degrees, a method to simplify linear geometries, as well as a method to calculate intermediate points on a LineString.

```
<?php
$from = array(
    'type' => 'Point',
    'coordinates' => array( -104.88544, 39.06546 )
);
$to = array(
    'type' => 'Point',
    'coordinates' => array( -104.80, 39.06546 )
);
var_dump(haversine($to, $from));
?>
```

NB : description and exemples are extracted from the extension source code.

See also *geospatial - PHP Geospatial Extension <https://github.com/php-geospatial/geospatial>*.

Specs

Short name	Extensions/Extgeospatial
Rulesets	*All*, *Appinfo*
Exakat since	2.4.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.497 Getter And Setter

A getter is a method whose purpose is to read the internal value of a class; a setter is a method whose purpose is to write a value inside a class.

Exakat marks simple setters and getters : their content only writes (resp. reads) on property at a time. More refined getters/setters might appear in the future, when formatting and filter is detected and omitted.

```
<?php

class x {
    private $p = 1;

    // getter
    function getP() {
        return $this->p;
```

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```
    }

    // setter
    function setP($a) {
        $this->p = $a;
    }
}

?>
```

See also PHP: Getters and Setters.

Specs

Short name	Patterns/GetterSetter
Rulesets	*All*, *Changed Behavior*
Exakat since	2.3.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	getter, setter
Available in	Entreprise Edition, Exakat Cloud

14.2.498 Getting Last Element

Getting the last element of an array relies on array_key_last().

array_key_last() was added in PHP 7.3. Before that, other ways had to be used, such as reaching the `count() - 1` elements, or via `array_pop(`array_keys()) <https://www.php.net/array_keys>`_`.

```
<?php

$array = ['a' => 1, 'b' => 2, 'c' => 3];

// Best solutions, by far
$last = $array[array_key_last($array)];

// Best solutions, just as fast as each other
$last = $array[count($array) - 1];
$last = end($array);

// Bad solutions

// popping, but restoring the value.
$last = array_pop($array);
$array[] = $last;

// array_unshift would be even worse
```

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```
// reversing array
$last = array_reverse($array)[0];

// slicing the array
$last = array_slice($array, -1)[0]',
$last = current(array_slice($array, -1));
);

?>
```

Suggestions

- Use PHP native function : array_key_last(), when using PHP 7.4 and later
- Use PHP native function : array_pop()
- Organise the code to put the last element in the first position (array_unshift() instead of append operator [])

Specs

Short name	Arrays/GettingLastElement
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	0.9.0
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	array
Examples	*Thelia*
Available in	Entreprise Edition, Exakat Cloud

14.2.499 Global Code Only

This rule reports files that only contain global code.

```
<?php

include 'another_file.pnp';

// This sets an options, but does not execute anything
set_memory_limit(-1);

// Some definitions, no code
const A = 1;

function foo() {}

class x {}
```

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```
?>
```

Specs

Short name	Files/GlobalCodeOnly
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	global-code
Available in	Entreprise Edition, Exakat Cloud

14.2.500 Global Definitions

Sets the definitions of global variables across the application.

It creates a Virtualglobal atom, which links to all definitions of that variables, using `global $a` or `$GLOBALS['a']`.

It currently doesn't work with variables in the global space, as it is not known how to detect them : they might be included at some point.

```
<?php

function foo() {
     global $a;

     $a = 'PHP';
}

function goo() {
     echo $GLOBALS['a'];
}


?>
```

Specs

Short name	Complete/GlobalDefinitions
Rulesets	*All*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	global, globals
Available in	Entreprise Edition, Exakat Cloud

14.2.501 Global Import

Mark a Use statement that is importing a global class in the current file.

```
<?php

namespace Foo {
    // This is a global import
    use Stdclass;
}
?>
```

Specs

Short name	Namespaces/GlobalImport
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	namespace
Available in	Entreprise Edition, Exakat Cloud

14.2.502 Global In Global

List of global variables. There are the global variables, defined with the global keyword, and the implicit global variables, defined in the global scope.

```
<?php
    global $explicitGlobal; // in global namespace

    $implicitGlobal = 1; // in global namespace, variables are automatically global

    function foo() {
        global $explicitGlobalInFoo; // in functions, globals must be declared with␣
```

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```
↪global
    }
?>
```

See also Variable Scope.

Specs

Short name	Structures/GlobalInGlobal
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	global
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.503 Global Inside Loop

The global and static keywords must be used outside loops. Otherwise, they are evaluated at each loop, slowing the whole process.

```
<?php

// Here, global is used once
global $total;
foreach($a as $b) {
    $total += $b;
}

// Global is called each time : this is slow.
foreach($a as $b) {
    global $total;
    $total += $b;
}
?>
```

This is a micro-optimisation.

Suggestions

- Move the global keyword outside the loop

Specs

Short name	Structures/GlobalOutsideLoop
Rulesets	*All*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.504 Global Usage

List usage of globals variables, with global keywords or direct access to $GLOBALS.

```
<?php
$a = 1; /* global scope */

function test()
{
    echo $a; /* reference to local scope variable */
}

test();

?>
```

It is recommended to avoid using global variables, at it makes it very difficult to track changes in values across the whole application.

See also Variable scope.

Specs

Short name	Structures/GlobalUsage
Rulesets	*All*, *Analyze*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	global
ClearPHP	no-global
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.505 Globals

Global variables.

```
<?php

// global via global keyword
global $a, $b;

// global via $GLOBALS variable
$GLOBALS['c'] = 1;

?>
```

See also Global keyword.

Specs

Short name	Variables/Globals
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	global, global-variable
Available in	Entreprise Edition, Exakat Cloud

14.2.506 Goto Names

List of all goto labels used in the code.

```
<?php

GOTO_NAME_1:

// reports the usage of GOTO_NAME_1
goto GOTO_NAME_1;

UNUSED_GOTO_NAME_1:

?>
```

See also goto.

Specs

Short name	Php/Gotonames
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	goto, label
ClearPHP	no-goto
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.507 Group Use Declaration

This rule reports when a group use declaration is used. This is PHP feature since version 7.0, yet it is seldom used.

```
<?php

// Adapted from the RFC documentation
// Pre PHP 7 code
use some\name_space\ClassA;
use some\name_space\ClassB;
use some\name_space\ClassC as C;

use function some\name_space\fn_a;
use function some\name_space\fn_b;
use function some\name_space\fn_c;

use const some\name_space\ConstA;
use const some\name_space\ConstB;
use const some\name_space\ConstC;

// PHP 7+ code
use some\name_space\{ClassA, ClassB, ClassC as C};
use function some\name_space\{fn_a, fn_b, fn_c};
use const some\name_space\{ConstA, ConstB, ConstC};

?>
```

See also Group Use Declaration RFC and Using namespaces: Aliasing/Importing.

Specs

Short name	Php/GroupUseDeclaration
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.10.7
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	use
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.508 Group Use Trailing Comma

> The usage of a final empty slot in array() was allowed with use statements. This works in PHP 7.2 and more recent.

Although this empty instruction is ignored at execution, this allows for clean presentation of code, and short diff when committing in a VCS.

```
<?php

// Valid in PHP 7.2 and more recent.
use a\b\{c,
         d,
         e,
         f,
        };

// This won't compile in 7.1 and older.

?>
```

See also Trailing Commas In List Syntax and Revisit trailing commas in function arguments.

Specs

Short name	Php/GroupUseTrailingComma
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*
Exakat since	0.12.3
PHP Version	With PHP 7.2 and more recent
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	use
Available in	Entreprise Edition, Exakat Cloud

14.2.509 HTTP Status Code

List of all the HTTP status codes mentioned in the code.

```
<?php

http_response_code(418);

header('HTTP/1.1 418 I\'m a teapot');

?>
```

See also List of HTTP status codes.

Specs

Short name	Type/HttpStatus
Rulesets	*All*, *Changed Behavior*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	http
Available in	Entreprise Edition, Exakat Cloud

14.2.510 Handle Arrays With Callback

Use functions like array_map().

```
<?php

// Handles arrays with callback
$uppercase = array_map('strtoupper', $source);

// Handles arrays with foreach
foreach($source as &$s) {
    $s = uppercase($s);
}

?>
```

See also array_map.

Specs

Short name	Arrays/WithCallback
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	1.3.7
PHP Version	All
Severity	
Time To Fix	
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.511 Hardcoded Passwords

Hardcoded passwords in the code.

Hardcoding passwords is a bad idea. Not only it make the code difficult to change, but it is an information leak. It is better to hide this kind of information out of the code.

```
<?php

$ftp_server = '300.1.2.3';   // yes, this doesn't exists, it's an example
$conn_id = ftp_connect($ftp_server);

// login with username and password
$login_result = ftp_login($conn_id, 'login', 'password');

?>
```

Name	Default	Type	Description
passwordsKeys	password_keys.json	data	List of array index and property names that shall be checked for potential secret key storages.

See also 10 GitHub Security Best Practices and Git How-To: Remove Your Password from a Repository.

Suggestions

- Remove all passwords from the code. Also, check for history if you are using a VCS.

Specs

Short name	Functions/HardcodedPasswords
Rulesets	*All*, *Analyze*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	password, hard-coded
ClearPHP	no-hardcoded-credential
Available in	Entreprise Edition, Exakat Cloud

14.2.512 Has Magic Method

The class has defined one of the magic methods.

The magic methods are : __call(), __callStatic(), __get(), __set(), __isset(), __unset(), __sleep(), __wakeup(), __toString(), __invoke(), __set_state(), __clone() and __debugInfo().

__construct() and __destruct() are omitted here.

```
<?php

class WithMagic {
    // some more methods, const or properties

    public function __get() {
        // doSomething();
    }
}

?>
```

See also Property overloading..

Specs

Short name	Classes/HasMagicProperty
Rulesets	*All*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	magic-method
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.513 Has Variable Arguments

Indicates if this function or method accept an arbitrary number of arguments, based on func_get_args(), func_get_arg() and func_num_args() usage.

```
<?php

// Fixed number of arguments
function fixedNumberOfArguments($a, $b) {
    if (func_num_args() > 2) {
        $c = func_get_args();
        array_shift($c); // $a
        array_shift($c); // $b
    }
    // do something
}

// Fixed number of arguments
function fixedNumberOfArguments($a, $b, $c = 1) {}

?>
```

Specs

Short name	Functions/VariableArguments
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.514 Hash Algorithms

There is a long but limited list of hashing algorithm available to PHP. The one found doesn't seem to be existing.

```
<?php

// This hash has existed in PHP. Check with hash_algos() if it is available on your␣
↪system.
echo hash('ripmed160', 'The quick brown fox jumped over the lazy dog.');

// This hash doesn't exist
echo hash('ripemd160', 'The quick brown fox jumped over the lazy dog.');

?>
```

See also hash_algos.

Suggestions

- Use a hash algorithm that is available on several PHP versions
- Fix the name of the hash algorithm

Specs

Short name	Php/HashAlgos
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	hash
Available in	Entreprise Edition, Exakat Cloud

14.2.515 Hash Algorithms Incompatible With PHP 5.3

List of hash algorithms incompatible with PHP 5.3.

```
<?php

// Compatible only with 5.3 and more recent
echo hash('md2', 'The quick brown fox jumped over the lazy dog.');

// Always compatible
echo hash('ripemd320', 'The quick brown fox jumped over the lazy dog.');

?>
```

See also hash_algos.

Specs

Short name	Php/HashAlgos53
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*
Exakat since	0.8.4
PHP Version	With PHP 5.3 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.516 Hash Algorithms Incompatible With PHP 5.4/5.5

List of hash algorithms incompatible with PHP 5.4 and 5.5.

```
<?php

// Compatible only with 5.4 and more recent
echo hash('fnv132', 'The quick brown fox jumped over the lazy dog.');

// Always compatible
echo hash('ripemd320', 'The quick brown fox jumped over the lazy dog.');

?>
```

See also hash_algos.

Specs

Short name	Php/HashAlgos54
Rulesets	*All*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.517 Hash Algorithms Incompatible With PHP 7.1-

List of hash algorithms incompatible with PHP 7.1 and more recent. At the moment of writing, this is compatible up to 7.3.

The hash algorithms were introduced in PHP 7.1.

```
<?php

// Compatible only with 7.1 and more recent
echo hash('sha512/224', 'The quick brown fox jumped over the lazy dog.');

// Always compatible
echo hash('ripemd320', 'The quick brown fox jumped over the lazy dog.');

?>
```

See also hash_algos.

Specs

Short name	Php/HashAlgos71
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	1.3.4
PHP Version	With PHP 7.1 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.518 Hash Algorithms Incompatible With PHP 7.4-

List of hash algorithms incompatible with PHP 7.3 and older recent. At the moment of writing, this is compatible up to 7.4s.

The hash algorithms were introduced in PHP 7.4s.

```
<?php

// Compatible only with 7.1 and more recent
echo hash('crc32cs', 'The quick brown fox jumped over the lazy dog.');

// Always compatible
echo hash('ripemd320', 'The quick brown fox jumped over the lazy dog.');

?>
```

See also hash_algos.

Specs

Short name	Php/HashAlgos74
Rulesets	*All*, *CE*, *Changed Behavior*, *CompatibilityPHP74*
Exakat since	1.3.4
PHP Version	With PHP 7.4 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.519 Hash Will Use Objects

The ext/hash extension used resources, and is being upgraded to use resources.

```
<?php

// Post 7.2 code
    $hash = hash_init('sha256');
    if (!is_object($hash)) {
        trigger_error('error');
    }
    hash_update($hash, $message);

// Pre-7.2 code
    $hash = hash_init('md5');
    if (!is_resource($hash)) {
        trigger_error('error');
    }
    hash_update($hash, $message);

?>
```

See also Move ext/hash from resources to objects.

Specs

Short name	Php/HashUsesObjects
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP72*
Exakat since	1.0.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	hash, object
Available in	Entreprise Edition, Exakat Cloud

14.2.520 Heredoc Delimiter

Heredoc and Nowdoc expressions may use a variety of delimiters.

There seems to be a standard delimiter in the code, and some exceptions : one or several forms are dominant (> 90%), while the others are rare.

The analyzed code has less than 10% of the rare delimiters. For consistency reasons, it is recommended to make them all the same.

Generally, one or two delimiters are used, with generic value. It is recommended to use a humanly readable delimiter : SQL, HTML, XML, GREMLIN, etc. This helps readability in the code.

```
<?php

echo <<<SQL
SELECT * FROM table1;
SQL;

echo <<<SQL
SELECT * FROM table2;
SQL;

echo <<<SQL
SELECT * FROM table3;
SQL;

echo <<<SQL
SELECT * FROM table4;
SQL;

echo <<<SQL
SELECT * FROM table5;
SQL;

echo <<<SQL
SELECT * FROM table11;
SQL;

echo <<<SQL
SELECT * FROM table12;
SQL;

echo <<<SQL
SELECT * FROM table13;
SQL;

// Nowdoc
echo <<<'SQL'
SELECT * FROM table14;
SQL;

echo <<<SQL
SELECT * FROM table15;
SQL;
```

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```
echo <<<HEREDOC
SELECT * FROM table215;
HEREDOC;

?>
```

Specs

Short name	Structures/HeredocDelimiterFavorite
Rulesets	*All*, *Coding conventions*, *Preferences*
Exakat since	0.12.0
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	heredoc
Available in	Entreprise Edition, Exakat Cloud

14.2.521 Heredoc Delimiter Glossary

List of all the delimiters used to build a Heredoc string.

In the example below, `EOD` is the delimiter.

```
<?php

$a = <<<EOD
heredoc
EOD;

?>
```

See also Heredoc.

Specs

Short name	Type/Heredoc
Rulesets	*All*, *Appinfo*, *CE*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	heredoc
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.522 Hexadecimal Glossary

List of all the integer values, written in the hexadecimal format.

```
<?php

$hexadecimal = 0x10;

$anotherHexadecimal =0XAF;

?>
```

See also Integer Syntax.

Specs

Short name	Type/Hexadecimal
Rulesets	*All*, *Appinfo*, *CE*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	hexadecimal-integer
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.523 Hexadecimal In String

Mark strings that may be confused with hexadecimal.

Until PHP 7.0, PHP recognizes hexadecimal numbers inside strings, and converts them accordingly.

PHP 7.0 and until 7.1, converts the string to 0, silently.

PHP 7.1 and later, emits a 'A non-numeric value encountered' warning, and convert the string to 0.

```
<?php
    $a = '0x0030';
    print $a + 1;
    // Print 49

    $c = '0x0030zyc';
    print $c + 1;
    // Print 49

    $b = 'b0x0030';
    print $b + 1;
    // Print 0
?>
```

See also Integer Syntax.

Specs

Short name	Type/HexadecimalString
Rulesets	*All*, *CompatibilityPHP70*, *CompatibilityPHP71*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	hexadecimal
Available in	Entreprise Edition, Exakat Cloud

14.2.524 Hidden Nullable Typehint

> Argument with default value of null are nullable. It works both with the `null` typehint (PHP 8.0), or the ? operator are not used, setting the default value to null is allowed, and makes the argument nullable.

This works with single types, both classes and scalars; it works with union types but not with intersection types.

This doesn't happen with properties : they must be defined with the nullable type to accept a ``null``value as default value.

This doesn't happen with constant, which can't be typehinted.

```
<?php

// explicit nullable parameter $s
function bar(?string $s = null) {

// implicit nullable parameter $s
function foo(string $s = null) {
    echo $s ?? 'NULL-value';
}

// both display NULL-value
foo();
foo(null);

?>
```

See also Nullable types, Type declaration and Deprecate implicit nullable parameters #3535.

Suggestions

- Change the default value to a compatible literal : for example, `string $s = ''`
- Add the explicit ? nullable operator, or ``null``with PHP 8.0
- Remove the default value

Specs

Short name	Classes/HiddenNullable
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.1.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint, nullable
Available in	Entreprise Edition, Exakat Cloud

14.2.525 Hidden Use Expression

The use expression for namespaces should always be at the beginning of the namespace block.

It is where everyone expect them, and it is less confusing than having them at various levels.

```
<?php

// This is visible
use A;

class B {}

// This is hidden
use C as D;

class E extends D {
    use traitT; // This is a use for a trait

    function foo() {
        // This is a use for a closure
        return function ($a) use ($b) {}
    }
}

?>
```

Suggestions

- Group all uses together, at the beginning of the namespace or class

Specs

Short name	Namespaces/HiddenUse
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	use
Examples	*Tikiwiki*, *OpenEMR*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.526 Htmlentities Calls

htmlentities() and htmlspecialchars() are used to prevent injecting special characters in HTML code. As a bare minimum, they take a string and encode it for HTML.

The second argument of the functions is the type of protection. The protection may apply to quotes or not, to HTML 4 or 5, etc. It is highly recommended to set it explicitly.

The third argument of the functions is the encoding of the string. In PHP 5.3, it is `ISO-8859-1`, in 5.4, was `UTF-8`, and in 5.6, it is now default_charset, a `php.ini` configuration that has the default value of `UTF-8`. It is highly recommended to set this argument too, to avoid distortions from the configuration.

```
<?php
$str = 'A quote is <b>bold</b>';

// Outputs, without depending on the php.ini: A &#039;quote&#039; is &lt;b&gt;bold&lt;/b&
↪gt;
echo htmlentities($str, ENT_QUOTES, 'UTF-8');

// Outputs, while depending on the php.ini: A quote is &lt;b&gt;bold&lt;/b&gt;
echo htmlentities($str);

?>
```

Also, note that arguments 2 and 3 are constants and string, respectively, and should be issued from the list of values available in the manual. Other values than those will make PHP use the default values.

See also htmlentities and htmlspecialchars.

Suggestions

- Always use the third argument with htmlentities()

Specs

Short name	Structures/Htmlentitiescall
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	html-entity
Related rule	*Htmlentities Using Default Flag*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.527 Htmlentities Using Default Flag

htmlspecialchars(), htmlentities(), htmlspecialchars_decode(), html_entity_decode() and get_html_translation_table(), are used to prevent injecting special characters in HTML code. As a bare minimum, they take a string and encode it for HTML.

The second argument of the functions is the type of protection. The protection may apply to quotes or not, to HTML 4 or 5, etc. It is highly recommended to set it explicitly.

In PHP 8.1, the default value of this parameter has changed. It used to be `ENT_COMPAT` and is now `ENT_QUOTES | `ENT_SUBSTITUTE <https://www.php.net/ENT_SUBSTITUTE>`_. The main difference between the different configuration is that the single quote, which was left intact so far, is now protected HTML style.

```
<?php
$str = 'A quote in <b>bold</b> : \' and """';

// PHP 8.0 outputs, without depending on the php.ini: A quote in &lt;b&gt;bold&lt;/b&gt;␣
↪: ' and &quot;
echo htmlentities($str);

// PHP 8.1 outputs, while depending on the php.ini: A quote in &lt;b&gt;bold&lt;/b&gt; :␣
↪&#039; and &quot;
echo htmlentities($str);

?>
```

See also htmlentities and htmlspecialchars.

Suggestions

- Always use the second argument to explicitly set the desired protection

Specs

Short name	Structures/HtmlentitiescallDefaultFlag
Rulesets	*All*, *Analyze*, *CI-checks*, *Changed Behavior*
Exakat since	2.2.3
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.1 - More
Precision	High
Features	escape-sequence, html-entity, class
Related rule	*Htmlentities Calls*
Available in	Entreprise Edition, Exakat Cloud

14.2.528 Http Headers

List of HTTP headers use in the code.

```
<?php

header('Location: http://www.example.com/');

// Parseable headers are also reported
header('Location: http://www.example.com/');

// UnParseable headers are not reported
header('GarbagexxxxXXXXxxxGarbagexxxxXXXXxxx');
header($header);

?>
```

Those headers are mostly used with header() function to send to browser.

See also List of HTTP header fields.

Specs

Short name	Type/HttpHeader
Rulesets	*All*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	http, http-header
Available in	Entreprise Edition, Exakat Cloud

14.2.529 Ice framework

Ice - simple, fast and open-source PHP framework frozen in C-extension.

See also ice framework and ice framework : Hello world tutorial.

Specs

Short name	Extensions/Extice
Rulesets	*All*, *Appinfo*
Exakat since	2.4.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Exakat Cloud

14.2.530 Iconv With Translit

The transliteration feature of iconv() depends on the underlying system to support it.

```
<?php

$string = iconv('utf-8', 'utf-8//TRANSLIT', $source);

?>
```

See also iconv().

Suggestions

- Use an OS that supports TRANSLIT with iconv
- Remove the usage of TRANSLIT

Specs

Short name	Portability/IconvTranslit
Rulesets	*All*
Exakat since	2.1.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	iconv
Available in	Entreprise Edition, Exakat Cloud

14.2.531 Identical Case In Switch

In a switch() or match() statement, when there are identical cases, it means that multiple case labels that have the same code block.

This can happen by mistake or design. They may be merged together.

```
<?php

switch($a) {
     case 1:
             $b = 2;
             break;

     case 2:
             $b = 12;
             break;

     // Identical to case 1
     case 3:
             $b = 2;
             break;
}

?>
```

Suggestions

- Merge the cases and reduce the size of code
- Review the cases code and make them different

Specs

Short name	Structures/IdenticalCase
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	dry
Available in	Entreprise Edition, Exakat Cloud

14.2.532 Identical Conditions

These logical expressions contain members that are identical.

This means those expressions may be simplified.

```
<?php

// twice $a
if ($a || $b || $c || $a) {  }

// Hiding in parenthesis is bad
if (($a) ^ ($a)) {}

// expressions may be large
if ($a === 1 && 1 === $a) {}

?>
```

Suggestions

- Merge the two structures into one unique test
- Add extra expressions between the two structures
- Nest the structures, to show that different attempts are made

Specs

Short name	Structures/IdenticalConditions
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	High
Examples	*WordPress*, *Dolibarr*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.533 Identical Consecutive Expression

Identical consecutive expressions might be double code. They are worth being checked.

They may be a copy/paste with unmodified content. When the content has to be duplicated, it is recommended to avoid executing the expression again, and just access the cached result.

```
<?php

$current  = $array[$i];
$next     = $array[$i + 1];
$nextnext = $array[$i + 1]; // OOps, nextnext is wrong.
```

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```
// Initialization
$previous = foo($array[1]); // previous is initialized with the first value on purpose
$next     = foo($array[1]); // the second call to foo() with the same arguments should␣
↪be avoided
// the above can be rewritten as :
$next     = $previous; // save the processing.

for($i = 1; $i < 200; ++$i) {
    $next = doSomething();
}
?>
```

Suggestions

- Check if the expression needs to be used twice.

Specs

Short name	Structures/IdenticalConsecutive
Rulesets	*All*, *Analyze*
Exakat since	1.0.8
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	expression
Available in	Entreprise Edition, Exakat Cloud

14.2.534 Identical Elseif

In a long if/elseif/then structures, identical conditions are mutually exclusive. The first one will happen, and the second will be ignored.

This is similar to having multiple cases in the same switch or match expression.

```
<?php

if ($a === 1) { }
elseif ($a === 2) { }
elseif ($a === 3) { }
elseif ($a === 4) { }
elseif ($a === 2) { }
else {}

?>
```

Suggestions

- Remove the extra elseif() clause
- Fixed the condition of the extra elseif() clause
- Use a switch() or match() expression

Specs

Short name	Structures/IdenticalElseif
Rulesets	*All*, *Dead code*
Exakat since	2.3.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	if-then
Available in	Entreprise Edition, Exakat Cloud

14.2.535 Identical Methods

When the parent class and the child class have the same method, the child might omit it. This reduces code duplication.

Duplicate code in methods is often the results of code evolution, where a method was copied with the hierarchy, but the original wasn't removed.

This doesn't apply to *private* methods, which are reserved for one class.

```
<?php

class a {
    public function foo() {
        return rand(0, 100);
    }
}

class b extends a {
    public function foo() {
        return rand(0, 100);
    }
}

?>
```

Suggestions

- Drop the method from the parent class, in particular if only one child uses the method.
- Drop the method from the child class, in particular if there are several children class
- Use an abstract method, and make sure every child has its own implementation
- Modify one of the methods so they are different

Specs

Short name	Classes/IdenticalMethods
Rulesets	*All*
Exakat since	1.8.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.536 Identical On Both Sides

Operands should be different when comparing or making a logical combination. Of course, the value each operand holds may be identical. When the same operand appears on both sides of the expression, the result is know before execution.

```
<?php

// Trying to confirm consistency
if ($login == $login) {
    doSomething();
}

// Works with every operators
if ($object->login( ) !== $object->login()) {
    doSomething();
}

if ($sum >= $sum) {
    doSomething();
}

//
if ($mask && $mask) {
    doSomething();
}

if ($mask || $mask) {
    doSomething();
}
```

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```
?>
```

Suggestions

- Remove one of the alternative, and remove the logical link
- Modify one of the alternative, and make it different from the other

Specs

Short name	Structures/IdenticalOnBothSides
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.0.8
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	if-then
Examples	*phpMyAdmin*, *HuMo-Gen*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.537 Identical Variables In Foreach

Do not use the same variable names as a foreach() source and one of its blind variables.

Foreach() makes a copy of the original data while working on it : this prevents any interference. Yet, when the source and the blind variable is the same, the source will have changed after the loop.

```
<?php

// classic way to use a foreach loop
foreach($array as $key => $value) {
    // doSomething with $key and $value
}

// unusual way to end up with a name conflict
foreach($a as $a => [$b, $c, $a]) {
    // doSomething with $a and $a, $b, $c
}


// classic way to use a foreach loop
foreach($a as $a => $b) {
    // doSomething with $a and $a
}
// Now, after the loop, $a is an integer or a string!

?>
```

Suggestions

- Use a different name for the source of the array and the blind values

Specs

Short name	Structures/IdenticalVariablesInForeach
Rulesets	*All*, *Analyze*
Exakat since	2.3.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	foreach
Available in	Entreprise Edition, Exakat Cloud

14.2.538 Identity

This method, function or closure <https://www.php.net/`closure>`_ returns one of its argument, without modification.

```
<?php

function foo($a) {
    return $a;
}

?>
```

Specs

Short name	Functions/Identity
Rulesets	*All*
Exakat since	2.4.2
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	identity
Available in	Entreprise Edition, Exakat Cloud

14.2.539 If Then Return Favorite

Show of hands: which syntax would you prefer in a PHP function - A, B or C?

```
<?php

// Format A : double return
if ($condition) {
    return A;
} else {
    return B;
}

// Format B : early bailout
if ($condition) {
    return A;
}
return B;

// Format C : ternary
return  $condition ? A : B;

?>
```

Based on a tweet from Povilas Korop : Show of hands: which syntax would you prefer in a PHP function - A, B or C?

Specs

Short name	Structures/IfThenReturnFavorite
Rulesets	*All*, *Preferences*
Exakat since	2.4.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.540 If With Same Conditions

Successive If / then structures that have the same condition may be either merged or have one of the condition changed.

```
<?php

if ($a == 1) {
    doSomething();
}

if ($a == 1) {
    doSomethingElse();
```

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```
}

// May be replaced by
if ($a == 1) {
    doSomething();
    doSomethingElse();
}

?>
```

Note that if the values used in the condition have been modified in the first if/then structure, the two distinct conditions may be needed.

```
<?php

// May not be merged
if ($a == 1) {
    // Check that this is really the situation
    $a = checkSomething();
}

if ($a == 1) {
    doSomethingElse();
}

?>
```

Suggestions

- Merge the two conditions so the condition is used once.
- Change one of the condition, so they are different
- Make it obvious that the first condition is a try, preparing the normal conditions.

Specs

Short name	Structures/IfWithSameConditions
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Examples	*phpMyAdmin*, *Phpdocumentor*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.541 Iffectations

Affectations that appears in a condition.

Iffectations are a way to do both a test and an affectations. They may also be typos, such as if ($x = 3) { ... }, leading to a constant condition.

```
<?php

// an iffectation : assignation in a If condition
if($connexion = mysql_connect($host, $user, $pass)) {
    $res = mysql_query($connexion, $query);
}

// Iffectation may happen in while too.
while($row = mysql_fetch($res)) {
    $store[] = $row;
}

?>
```

Suggestions

- Move the assignation inside the loop, and make an existence test in the condition.
- Move the assignation before the if/then, make an existence test in the condition.

Specs

Short name	Structures/Iffectation
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	assignation
Available in	Entreprise Edition, Exakat Cloud

14.2.542 Illegal Name For Method

PHP has reserved usage of methods starting with __ for magic methods. It is recommended to avoid using this prefix, to prevent confusions.

```
<?php

class foo{
    // Constructor
    function __construct() {}
```

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```
    // Constructor's typo
    function __constructor() {}

    // Illegal function name, even as private
    private function __bar() {}
}

?>
```

See also Magic Methods.

Suggestions

- Avoid method names starting with a double underscore : __
- Use method visibilities to ensure that methods are only available to the current class or its children

Specs

Short name	Classes/WrongName
Rulesets	*All*, *Analyze*
Exakat since	0.9.2
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	method
Examples	*PrestaShop*, *Magento*
Available in	Entreprise Edition, Exakat Cloud

14.2.543 Immutable Signature

> Overwrites makes refactoring a method signature difficult. PHP enforces compatible signature, by checking if arguments have the same type, reference and default values.

In PHP 7.3, typehint had to be the same, or dropped. In PHP 7.4, typehint may be contravariant (arguments), or covariant (returntype).

This analysis may be configured with `maxOverwrite`. By default, a minimum of 8 overwritten methods is considered difficult to update.

```
<?php

// Changing any of the four foo() method signature will trigger a PHP warning
class a {
    function foo($a) {}
}

class ab1 extends a {
    // four foo() methods have to be refactored at the same time!
```

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```
    function foo($ab1) {}
}

class ab2 extends a {
    function foo($ab2) {}
}

class ab3 extends ab1 {
    function foo($abc1) {}
}

?>
```

When refactoring a method, all the related methodcall may have to be updated too. Adding a type, a default value, or a new argument with default value won't affect the calls, but only the definitions. Otherwise, calls will also have to be updated.

IDE may help with signature refactoring, such as Refactoring code.

Name	Default	Type	Description
maxOverwrite	8	integer	Minimal number of method overwrite to consider that any refactor on the method signature is now hard.

See also Covariance and contravariance (computer science) and extends.

Specs

Short name	Classes/ImmutableSignature
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	overwrite
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.544 Implemented Methods Must Be Public

Class methods that are defined in an interface must be public. They cannot be either private, nor protected.

```
<?php

interface i {
    function foo();
}

class X {
```

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```
    // This method is defined in the interface : it must be public
    protected function foo() {}

    // other methods may be private
    private function bar() {}
}

?>
```

This error is not reported by lint, and is reported at execution time.

See also Interfaces and Interfaces - the next level of abstraction.

Suggestions

- Make the implemented method public

Specs

Short name	Classes/ImplementedMethodsArePublic
Rulesets	*All*, *Analyze*, *LintButWontExec*
Exakat since	0.11.5
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	method, visibility
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.545 Implements Is For Interface

With class heritage, implements should be used for interfaces, and extends with classes.

PHP defers the implements check until execution : the code in example does lint, but won,t run.

```
<?php

class x {
    function foo() {}
}

interface y {
    function foo();
}

// Use implements with an interface
class z implements y {}
```

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```
// Implements is for an interface, not a class
class z implements x {}

?>
```

Suggestions

- Create an interface from the class, and use it with the implements keyword

Specs

Short name	Classes/ImplementIsForInterface
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	implements, interface
Available in	Entreprise Edition, Exakat Cloud

14.2.546 Implicit Conversion To Int

PHP warns when a value is implicitely converted from float to int. This usually leads to a loss of precision and unexpected values.

The conversion happens in various situations in PHP lifecycle (extracted from the wiki article):

- Bitwise OR operator |
- Bitwise AND operator &
- Bitwise XOR operator ^
- Shift right and left operators
- Modulo operator
- The combined assignment operators of the above operators
- Assignment to a typed property of type int in coercive typing mode
- Argument for a parameter of type int for both internal and custom functions in coercive typing mode
- Returning such a value for custom functions declared with a return type of int in coercive typing mode
- Bitwise NOT operator ~
- As an array key

This features is applied to PHP 8.1 and later, yet it is also applicable to older versions of PHP.

```
<?php

function foo(int $i) {}

//Implicit conversion from float 1.2 to int loses precision
foo(1.2);

?>
```

See also PHP RFC: Deprecate implicit non-integer-compatible float to int conversions.

Suggestions

- Add an explicit cast *(int)* operator

Specs

Short name	Structures/ImplicitConversionToInt
Rulesets	*All*, *Analyze*, *LintButWontExec*
Exakat since	2.4.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	type-juggling
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.547 Implicit Global

Global variables, that are used in local scope with global keyword, but are not declared as global in the global scope. They may be mistaken with distinct values, while, in PHP, variables in the global scope are truly global.

```
<?php

// This is implicitely global
$implicitGlobal = 1;

global $explicitGlobal;
$explicitGlobal = 2;

foo();
echo $explicitFunctionGlobal;

function foo() {
    // This global is needed, but not the one in the global space
    global $implicitGlobal, $explicitGlobal, $explicitFunctionGlobal;
```

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```
    // This won't be a global, as it must be 'global' in a function scope
    $notImplicitGlobal = 3;
    $explicitFunctionGlobal = 3;
}

?>
```

Specs

Short name	Structures/ImplicitGlobal
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	global
Available in	Entreprise Edition, Exakat Cloud

14.2.548 Implied If

It is confusing to emulate if/then with boolean operators.

It is possible to emulate a if/then structure by using the operators 'and' and 'or'. Since optimizations will be applied to them : when the left operand of 'and' is false, the right one is not executed, as its result is useless; when the left operand of 'or' is true, the right one is not executed, as its result is useless;

However, such structures are confusing. It is easy to misread them as conditions, and ignore an important logic step.

```
<?php

// Either connect, or die
mysql_connect('localhost', $user, $pass) or die();

// Defines a constant if not found.
defined('SOME_CONSTANT') and define('SOME_CONSTANT', 1);

// Defines a default value if provided is empty-ish
// Warning : this is
$user = $_GET['user'] || 'anonymous';

?>
```

It is recommended to use a real 'if then' structures, to make the condition readable.

Suggestions

- Replace this expression by an explicit if-then structure

Specs

Short name	Structures/ImpliedIf
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Rector*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
ClearPHP	no-implied-if
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.549 Implode One Arg

implode() may be called with one arg. It is recommended to avoid it.

Using two arguments makes it less surprising to new comers, and consistent with explode() syntax.

```
<?php

$array = range('a', 'c');

// empty string is the glue
print implode('', $array);

// only the array : PHP uses the empty string as glue.
// Avoid this
print implode($array);

?>
```

See also implode.

Suggestions

- Add an empty string as first argument

Specs

Short name	Php/ImplodeOneArg
Rulesets	*All*, *Changed Behavior*, *PHP recommendations*, *Suggestions*, *php-cs-fixable*
Exakat since	1.7.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.550 Implode() Arguments Order

implode() used to accept two signatures, but is only recommending one. Both types orders of string then array, and array then string have been possible until PHP 7.4.

In PHP 7.4, the order array then string is deprecated, and emits a warning. It will be removed in PHP 8.0.

```
<?php

$glue = ',';
$pieces = range(0, 4);

// documented argument order
$s = implode($glue, $pieces);

// Pre 7.4 argument order
$s = implode($pieces, $glue);

// both produces 0,1,2,3,4

?>
```

See also implode().

Suggestions

- Always use the array as the second argument

Specs

Short name	Structures/ImplodeArgsOrder
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.4 - More
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.551 Inclusion Wrong Case

Inclusion should follow exactly the case of included files and path. This prevents the infamous case-sensitive filesystem bug, where files are correctly included in a case-insensitive system, and failed to be when moved to production.

```
<?php

// There must exist a path called "path/to" and a file "library.php" with this case
include "path/to/library.php";

// Error on the case, while the file does exist
include "path/to/LIBRARY.php";

// Error on the case, on the PATH
include "path/TO/library.php";

?>
```

See also include_once.

Suggestions

- Make the inclusion string identical to the file name.
- Change the name of the file to reflect the actual inclusion. This is the best way when a naming convention has been set up for the project, and the file doesn't adhere to it. Remember to change all other inclusion.

Specs

Short name	Files/InclusionWrongCase
Rulesets	*All*, *Analyze*
Exakat since	1.1.1
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	include
Available in	Entreprise Edition, Exakat Cloud

14.2.552 Inclusions

Collect inclusions of files. This is based on include(), require(), include_once() and require_once() keywords.

```
<?php
// This is file 'A.php';

include 'B.php';
```

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```
// Here, B.php includes A.php

?>
```

Specs

Short name	Dump/Inclusions
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.0.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.553 Inclusions

List of all inclusions. Inclusions are made with include(), include_once(), require() and require_once().

```
<?php

include 'library.php';

// display is a function defined in 'library.php';
display('Message');

?>
```

See also Include and Require.

Specs

Short name	Structures/IncludeUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.554 Incoming Date Formats

This is the list of format string used when creating dates.

This is particularly interesting for relative time strings inventories.

```
<?php

echo strtotime("now"), "\n";

?>
```

This doesn't collect the dynamical dates, built from strings. strtotime() and date::createFromFormat() are used.

See also DateTimeImmutable::createFromFormat.

Specs

Short name	Type/IncomingDateFormat
Rulesets	*All*, *Inventory*
Exakat since	2.4.2
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	date-format
Available in	Entreprise Edition, Exakat Cloud

14.2.555 Incoming Values

The names of the variables that are passed via the superglobals.

```
<?php

$x = $_GET['y']; // y is the incoming variable

?>
```

Specs

Short name	Php/IncomingValues
Rulesets	*All*, *Changed Behavior*
Exakat since	1.7.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.556 Incoming Variable Index Inventory

This collects all the index used in incoming variables : $_GET, $_POST, $_REQUEST, $_COOKIE.

```
<?php

// x is collected
echo $_GET['x'];

// y is collected, but no z.
echo $_POST['y']['z'];

// a is not collected
echo $_ENV['s'];

?>
```

Specs

Short name	Type/GPCIndex
Rulesets	*All*, *Appinfo*, *CE*, *Inventory*
Exakat since	1.0.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	super-global
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.557 Incoming Variables

Incoming names, used across the application.

Incoming variables are first-level index in `$_POST`, `$_GET`, `$_COOKIE`, `$_REQUEST` and `$_FILE`;

`$_SESSION` and `$_ENV` are not reported as incoming data, as they are not supposed to be manipulated by normal user.

Dynamic names are not reported too.

```
<?php

$name = $_GET['name'];
$cookie = $_COOKIE['cookie'];

// 'archive' is the incoming variable, not 'file_name'
$file_name = $_FILE['archive']['file_name'];

// This is not reported, because it is from $_ENV.
$db_pass = $_ENV['DB_PASS'];

// This is not reported, because it is dynamic
```

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```
$x = 'userId';
$userId = $_GET[$x];

?>
```

Specs

Short name	Php/IncomingVariables
Rulesets	*All*, *Inventory*
Exakat since	2.2.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.558 Incompatible Property Between Class And Trait

Reports a property definition that doesn't fit the importing class. The property definition should be identical in the trait and in the class.

```
<?php

trait t {
     private Invalid $property1;

     private Valid $property2;
}

class xt {
     use t;

     // This is incompatible with the trait
     private OtherType $property1;

     // This is compatible with the trait
     private Valid $property2;
}

?>
```

Suggestions

- Make sure the property is defined identically in the class and the trait.
- Change the property definition in the class and make it distinct with the one in the trait.
- Change the property definition in the trait and make it distinct with the one in the class.

Specs

Short name	Traits/IncompatibleProperty
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.5.3
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.559 Incompatible Signature Methods

Methods should have the same signature when being overwritten.

The same signatures means the children class must have :

- the same name
- the same visibility or less restrictive
- the same typehint or removed
- the same default value or removed
- a reference like its parent

This problem emits a fatal error, for abstract methods, or a warning error, for normal methods. Yet, it is difficult to lint, because classes are often stored in different files. As such, PHP do lint each file independently, as unknown parent classes are not checked if not present. Yet, when executing the code, PHP lint the actual code and may encounter a fatal error.

```
<?php

class a {
    public function foo($a = 1) {}
}

class ab extends a {
    // foo is overloaded and now includes a default value for $a
    public function foo($a) {}
}

?>
```

See also Object Inheritance.

Suggestions

- Make signatures compatible again

Specs

Short name	Classes/IncompatibleSignature
Rulesets	*All*, *Analyze*, *LintButWontExec*
Exakat since	1.3.3
PHP Version	With PHP 7.4 and older
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Medium
Examples	*SuiteCrm*
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.560 Incompatible Signature Methods With Covariance

Methods should have the compatible signature when being overwritten.

The same signatures means the children class must have :

- the same name
- the same visibility or less restrictive
- the same contravariant typehint or removed
- the same covariant return typehint or removed
- the same default value or removed
- a reference like its parent

This problem emits a fatal error, for abstract methods, or a warning error, for normal methods. Yet, it is difficult to lint, because classes are often stored in different files. As such, PHP do lint each file independently, as unknown parent classes are not checked if not present. Yet, when executing the code, PHP lint the actual code and may encounter a fatal error.

```
<?php

class a {
    public function foo($a = 1) {}
}

class ab extends a {
    // foo is overloaded and now includes a default value for $a
    public function foo($a) {}
}

?>
```

See also Object Inheritance, PHP RFC: Covariant Returns and Contravariant Parameters and *Incompatible Signature Methods*.

Suggestions

- Make signatures compatible again

Specs

Short name	Classes/IncompatibleSignature74
Rulesets	*All*, *Analyze*
Exakat since	1.3.3
PHP Version	With PHP 7.4 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Medium
Features	type-covariance, type-contravariance
Examples	*SuiteCrm*
Available in	Entreprise Edition, Exakat Cloud

14.2.561 Incompatible Types With Incoming Values

> This analysis report invalid type used when extracting data from an HTTP request, and using them with typed method.

This currently is based on symfonycomponenthttpfoundationrequest class, and its related *get*()* methods.

The analysis also checks usage of superglobals and their related types.

```
<?php

function foo(\Symfony\Component\HttpFoundation\Request $request) {
     // This is valid and typed
     $object = new X($request->getInt('value'));

     // This is wrong : value is a string, or even an array
     $object = new X($request->get('value'));
}

class X {
     function __construct(int $a) {}
}

foo($_GET['a']);
// This is missing null type
function foo(array|string $arg) {}

?>
```

Suggestions

- Add restriction before calling the methods
- Add possible types in the method definition

Specs

Short name	Security/IncompatibleTypesWithIncoming
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.562 Incompilable Files

> Files that cannot be compiled, and, as such, be run by PHP. Scripts are linted against various versions of PHP.

This is usually undesirable, as all code must compile before being executed. It may be that such files are not compilable because they are not yet ready for an upcoming PHP version.

Code that is not compilable with older PHP versions means that the code is breaking backward compatibility : good or bad is project decision.

When the code is used as a template for PHP code generation, for example at installation time, it is recommended to use a distinct file extension, so as to distinguish them from actual PHP code.

```
<?php

// Can't compile this : Print only accepts one argument
print $a, $b, $c;

?>
```

Suggestions

- If this file is a template for PHP code, change the extension to something else than .php
- Fix the syntax so it works with various versions of PHP

Specs

Short name	Php/Incompilable
Rulesets	*All*, *Analyze*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	Very high
ClearPHP	no-incompilable
Examples	*xataface*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.563 Inconsistent Concatenation

> Concatenations happens within a string or using the dot operator. Using both is an inconsistent way of writing concatenations.

Switching methods of concatenation, sometimes in the same expression, is error prone. The reader gets confused, and may miss important information.

There are some situations where using concatenation are compulsory : when calling a constant, or a function, or make use of the escape sequence. Those are ignored in this analysis.

```
<?php

    //Concatenation
  $consistent = $a . 'b'. $c;

    //Interpolation
  $consistentToo = "{$a}b$c";

    // Concatenation and interpolation
  $inconsistent = $a . "b$c";

    // Concatenation and interpolation too
  $consistentThree = <<<CONSISTENT
{$a}b$c
CONSISTENT;

    // Concatenation and interpolation collisions
  $collision = theClass::CONSTANTE . "b{$c}".number_format($t, 2).' $CAD'."\n";

?>
```

Specs

Short name	Structures/InconsistentConcatenation
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	concat
Examples	*FuelCMS*
Available in	Entreprise Edition, Exakat Cloud

14.2.564 Inconsistent Elseif

> Chaining if/elseif requires a consistent string of conditions. The conditions are executed one after the other, and the conditions shouldn't overlap.

This analysis reports chains of elseif that don't share a common variable (or array, or property, etc..). As such, testing different conditions are consistent.

```
<?php

// $a is always common, so situations are mutually exclusive
if ($a === 1) {
    doSomething();
} else if ($a > 1) {
    doSomethingElse();
} else {
    doSomethingDefault();
}

// $a is always common, so situations are mutually exclusive
// although, it may be worth checking the consistency here
if ($a->b === 1) {
    doSomething();
} else if ($a->c > 1) {
    doSomethingElse();
} else {
    doSomethingDefault();
}

// if $a === 1, then $c doesn't matter?
// This happens, but then logic doesn't appear in the code.
if ($a === 1) {
    doSomething();
} else if ($c > 1) {
    doSomethingElse();
} else {
    doSomethingDefault();
}
```

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```
?>
```

Specs

Short name	Structures/InconsistentElseif
Rulesets	*All*
Exakat since	1.4.3
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	if-then
Available in	Entreprise Edition, Exakat Cloud

14.2.565 Inconsistent Variable Usage

Those variables are used in various and inconsistent ways. It is difficult to understand if they are an array, an object or a scalar variable.

```
<?php

// $a is an array, then $b is a string.
$a = ['a', 'b', 'c'];
$b = implode('-', $a);

// $a is an array, then it is a string.
$a = ['a', 'b', 'c'];
$a = implode('-', $a);

?>
```

Suggestions

- Keep one type for each variable. This keeps the code readable.
- Give different names to variables with different types.

Specs

Short name	Variables/InconsistentUsage
Rulesets	*All*, *Changed Behavior*
Exakat since	1.6.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.566 Indentation Levels

Collect all level of indentations for methods and functions. Inside methods, indentation level raises for structures such as switch, match(), closures, ifthen, and loops. It is recommended to avoid going too high in the levels, as the code becomes less readable.

```
<?php

function foo() {
    $a = 1; // level 1
    if ($b == 2) {
        $c = 1; // level 2
    }
    $d = 4; // level 1
}

?>
```

Specs

Short name	Dump/IndentationLevels
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	indentation, inclusion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.567 Indices Are Int Or String

Indices in an array notation such as `$array['indice']` may only be integers or string.

Boolean, Null or float will be converted to their integer or string equivalent.

Decimal numbers are rounded to the closest integer; Null is transtyped to '' (empty string); true is 1 and false is 0; Integers in strings are transtyped, while partial numbers or decimals are not analyzed in strings.

As a general rule of thumb, only use integers or strings that don't look like integers.

This analyzer may find constant definitions, when available.

Note also that PHP detects integer inside strings, and silently turn them into integers. Partial and octal numbers are not transformed.

```
<?php
    $a = [true => 1,
          1.0  => 2,
          1.2  => 3,
          1    => 4,
          '1'  => 5,
          0.8  => 6,
          0x1  => 7,
          01   => 8,

          null  => 1,
          ''    => 2,

          false => 1,
          0     => 2,

          '0.8' => 3,
          '01'  => 4,
          '2a'  => 5
          ];

    print_r($a);

/*
The above displays
Array
(
    [1] => 8
    [0] => 2
    [] => 2
    [0.8] => 3
    [01] => 4
    [2a] => 5
)
*/
?>
```

See also Arrays syntax.

Suggestions

- Do not use any type but string or integer
- Force typecast the keys when building an array

Specs

Short name	Structures/IndicesAreIntOrString
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	array
Examples	*Zencart*, *Mautic*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.568 Indirect Injection

This rule reports injections through indirect usage of $_GET, $_POST, $_REQUEST, $_COOKIE values. The injection is indirect, as the incoming data may be stored in different container before reaching the sensitive call.

Sensitive parameters are identified with Security/SensitiveParameter rule.

```
<?php

$a = $_GET['a'];
echo $a;

function foo($b) {
    echo $b;
}
foo($_POST['c']);  // $_POST is propagated to the foo function

?>
```

Suggestions

- Always validate incoming values before using them.

Specs

Short name	Security/IndirectInjection
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	High
Features	injection
Available in	Entreprise Edition, Exakat Cloud

14.2.569 Infinite Recursion

A method is calling itself, with unchanged arguments. This might repeat indefinitely.

This rules applies to recursive functions without any condition. This also applies to function which inject the incoming arguments, without modifications.

```
<?php

function foo($a, $b) {
    if ($a > 10) {
        return;
    }
    foo($a, $b);
}

function foo2($a, $b) {
    ++$a;   // $a is modified
    if ($a > 10) {
        return;
    }
    foo2($a, $b);
}

?>
```

Suggestions

- Modify arguments before injecting them again in the same method
- Use different values when calling the same method

Specs

Short name	Structures/InfiniteRecursion
Rulesets	*All*, *Analyze*
Exakat since	1.8.6
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	loop, recursion, infinite
Available in	Entreprise Edition, Exakat Cloud

14.2.570 Inherited Class Constant Visibility

Visibility of class constant must be public, even when overwritten.

This was not checked until PHP 8.3, where it is now a Fatal Error. When the interface and the class are defined in different files, the error appears at execution time.

```
<?php

interface i {
     public const I = 1;
     public const J = 2;
}

class x implements i {
     // This should not be possible
     private const I = 10;
     public const J = 20;
}

?>
```

Suggestions

- Set the constant visibility in the class to public
- Remove the visibility of the constant in the class

Specs

Short name	Interfaces/InheritedClassConstantVisibility
Rulesets	*All*, *CompatibilityPHP82*, *CompatibilityPHP83*
Exakat since	2.5.3
PHP Version	8.2
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility, lazy-loading
Available in	Entreprise Edition, Exakat Cloud

14.2.571 Inherited Property Type Must Match

Properties that are inherited between classes must match.

This affect public and protected properties. Private properties are immune to this rule, as they actually are distinct properties.

```
<?php

class A {
    private A $a;
    protected array $b;
    public $c;
}

class B extends A {
    private A $a;       // OK, as it is private
    protected int $b;   // type must match with the previous definition
    public $c;          // no type behaves just like a type : it must match too.
}

?>
```

See also Properties.

Suggestions

- Remove the definition in the child class
- Synchronize the definition of the property in the child class

Specs

Short name	Classes/InheritedPropertyMustMatch
Rulesets	*All*, *Analyze*, *Class Review*, *LintButWontExec*
Exakat since	2.2.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	inheritance, property
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.572 Inherited Static Variable

Static variables are distinct when used in an inherited static method. In PHP 8.1, the static variable will also be inherited, and shared between the two methods, like a static property.

```
<?php

// Code extracted from the RFC
class A {
    public static function counter() {
        static $i = 0;
        return ++$i;
    }
}
class B extends A {}

var_dump(A::counter()); // int(1)
var_dump(A::counter()); // int(2)
var_dump(B::counter()); // int(1)
var_dump(B::counter()); // int(2)

?>
```

See also PHP RFC: Static variables in inherited methods.

Suggestions

- Define the method in the child class to enforce the distinct behavior
- Replace the static variable by a static property to make this PHP 8.1 ready

Specs

Short name	Variables/InheritedStaticVariable
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP81*
Exakat since	2.2.2
PHP Version	With PHP 8.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.1 - More
Precision	Medium
Features	static-variable, inheritance
Available in	Entreprise Edition, Exakat Cloud

14.2.573 Init Then Update

> This is a structure where the variable is initialized in the main sequence of the code, then adapted to another value in a subsequent if structure.

This analysis reports such structures, based on assignation of constant values in the initial statement.

```
<?php

$a = 1;
if ($b === 2) {
     $a = 2;
}

?>
```

Specs

Short name	Structures/InitThenIf
Rulesets	*All*, *Changed Behavior*, *Inventory*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	initialisation
Available in	Entreprise Edition, Exakat Cloud

14.2.574 Injectable Version

> The Injectable Version attribute mark a class in a class hierarchy to be the one to use when giving a type to a parameter, return type or property.

For constructor, it is an implicit check. For other methods, the method has to be marked as `CheckInjectableMethod` to be checked. In case no attribute is provided, both for `InjectableVersion` and `CheckInjectableVersion`, no error is returned.

The `InjectableVersion` allows to mark a specific class in a class hierarchy as the class to use in injections.

The check applies to the whole method.

The specifications include namespaces which are exempt from checking the attribute, namely test. This is not supported yet.

```
<?php

#[InjectableVersion]
abstract class Injectable {}

class NotInjectable extends Injectable {}

class x {
     // CheckInjectableMethod is implicit for constructors
     function __construct(Injectable $good, NotInjectable $wrong) {}

     #[CheckInjectableVersion]
     function good(Injectable $good, NotInjectable $wrong) {}
}



?>
```

Name	Default	Type	Description
injectableVersion	injectableversion	string	The FQN for the InjectableVersion attribute. By default, it is in the global space
checkInjectableVersion	checkinjectableversion	string	The FQN for the CheckInjectableVersion attribute. By default, it is in the global space

Specs

Short name	Attributes/InjectableVersion
Rulesets	*All*, *Changed Behavior*
Exakat since	2.6.4
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.575 Insecure Integer Validation

Comparing incoming variables to integer may lead to injection.

When comparing a variable to an integer, PHP applies type juggling, and transform the variable in an integer too. When the value converts smoothly to an integer, this means the validation may pass and yet, the value may carry an injection. This analysis spots situations where an incoming value is compared to an integer. The usage of the validated value is not analyzed further.

```
<?php

// This is safe :
if ($_GET['x'] === "2") {
    echo $_GET['x'];
}

// Using (int) for validation and for display
if ((int) $_GET['x'] === 2) {
    echo (int) $_GET['x'];
}

// This is an injection
// '2 <script>' == 2, then echo will make the injection
if ($_GET['x'] == 2) {
    echo $_GET['x'];
}

// This is unsafe, as $_GET['x']  is tested as an integer, but echo'ed raw
if ((int) $_GET['x'] === 2) {
    echo $_GET['x'];
}

?>
```

See also Type Juggling Authentication Bypass Vulnerability in CMS Made Simple, PHP STRING COMPARISON VULNERABILITIES and PHP Magic Tricks: Type Juggling.

Suggestions

- Add the typecasting to all read access to the incoming variable
- Add the typecasting when writing the incoming value to a local variable

Specs

Short name	Security/IntegerConversion
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.7.7
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	validation
Available in	Entreprise Edition, Exakat Cloud

14.2.576 Instantiating Abstract Class

PHP cannot instantiate an abstract class.

The classes are actually abstract classes, and should be derived into a concrete class to be instantiated.

```
<?php

abstract class Foo {
    protected $a;
}

class Bar extends Foo {
    protected $b;
}

// instantiating a concrete class.
new Bar();

// instantiating an abstract class.
// In real life, this is not possible also because the definition and the instantiation␣
↪are in the same file
new Foo();

?>
```

See also Class Abstraction.

Suggestions

- Make the class non abstract
- Extends that class with a new class that is not abstract. Instantiate that second class.
- Find an existing concrete class

Specs

Short name	Classes/InstantiatingAbstractClass
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	abstract, concrete
Available in	Entreprise Edition, Exakat Cloud

14.2.577 Insufficient Property Typehint

The typehint used for a class property doesn't cover all it usage.

The typehint is insufficient when a undefined method or constant is called, or if members are accessed while the typehint is an interface.

```
<?php

class A {
    function a1() {}
}

// PHP 7.4 and more recent
class B {
    private A $a = null;

    function b2() {
        // this method is available in A
        $this->a->a1();
        // this method is NOT available in A
        $this->a->a2();
    }
}

// Supported by all PHP versions
class C {
    private $a = null;

    function __construct(A $a) {
        $this->a = $a;
    }

    function b2() {
        // this method is available in A
        $this->a->a1();
        // this method is NOT available in A
        $this->a->a2();
    }
```

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```
}

?>
```

This analysis relies on typehinted properties, as introduced in PHP 7.4. It also relies on typehinted assignations at construct time : the typehint of the assigned argument will be used as the property typehint. Getters and setters are not considered here.

Suggestions

- Change the typehint to match the actual usage of the object in the class.

Specs

Short name	Classes/InsufficientPropertyTypehint
Rulesets	*All*, *Class Review*
Exakat since	2.0.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.578 Insufficient Typehint

An argument is typehinted, but it actually calls methods that are not listed in the interface.

Classes may be implementing more methods than the one that are listed in the interface they also implements. This means that filtering objects with a typehint, but calling other methods will be solved at execution time : if the method is available, it will be used; if it is not, a fatal error is reported.

```
<?php

class x implements i {
    function methodI() {}
    function notInI() {}
}

interface i {
    function methodI();
}

function foo(i $x) {
    $x->methodI(); // this call is valid
    $x->notInI();  // this call is not garanteed
}
?>
```

Inspired by discussion with Brandon Savage.

See also Interface segregation principle.

Suggestions

- Extend the interface with the missing called methods
- Change the body of the function to use only the methods that are available in the interface
- Change the used objects so they don't depend on extra methods

Specs

Short name	Functions/InsufficientTypehint
Rulesets	*All*, *Analyze*, *Typechecks*
Exakat since	1.6.6
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Medium
Features	type, interface, abstract-class
Available in	Entreprise Edition, Exakat Cloud

14.2.579 Integer As Property

It is backward incompatible to use integers are property names. This feature was introduced in PHP 7.2.

If the code must be compatible with previous versions, avoid casting arrays to object.

```
<?php

// array to object
$arr = [0 => 1];
$obj = (object) $arr;
var_dump(
    $obj,
    $obj->{'0'}, // PHP 7.2+ accessible
    $obj->{0} // PHP 7.2+ accessible

    $obj->{'b'}, // always been accessible
);
?>
```

See also PHP RFC: Convert numeric keys in object/array casts.

Suggestions

- Add a prefix with letters whenever property's name adaptation is possible

Specs

Short name	Classes/IntegerAsProperty
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*
Exakat since	1.0.4
PHP Version	With PHP 7.2 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.580 Interface Arguments

This rule lists variables that are arguments in an interface.

```
<?php

interface i {
    function interfaceMethod($interfaceArgument) ;
}

class foo extends i {
    // Save function as above, but the variable is not reported
    function interfaceMethod($notAnInterfaceArgument) {}
}

?>
```

Specs

Short name	Variables/InterfaceArguments
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	interface
Available in	Entreprise Edition, Exakat Cloud

14.2.581 Interface Methods

List the names of the methods in an interface.

```
<?php

interface i {
    // This is an interface method name
    function foo() ;
}

?>
```

Specs

Short name	Interfaces/InterfaceMethod
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.582 Interfaces Don't Ensure Properties

When using an interface as a type, properties are not enforced, nor available.

An interface is a template for a class, which specify the minimum amount of methods and constants. Properties are never defined in an interface, and should not be relied upon.

```
<?php

interface i {
    function m () ;
```

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```
}

class x implements i {
    public $p = 1;

    function m() {
        return $this->p;
    }
}

function foo(i $i, x $x) {
    // this is invalid, as $p is not defined in i, so it may be not available
    echo $i->p;

    // this is valid, as $p is defined in $x
    echo $x->p;
}

?>
```

See also Interface And Abstract Class.

Suggestions

- Use classes for type when properties are accessed
- Only use methods and constants which are available in the interface
- Use an abstract class

Specs

Short name	Interfaces/NoGaranteeForPropertyConstant
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	1.9.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	interface
Available in	Entreprise Edition, Exakat Cloud

14.2.583 Interfaces Is Not Implemented

> Classes that implements interfaces, must implements each of the interface's methods. Otherwise, the class shall be marked as `abstract`.

This problem tends to occur in code that splits interfaces and classes by file. This means that PHP's linting will skip the definitions and not find the problem. At execution time, the definitions will be checked, and a Fatal error will occur.

This situation usually detects code that was forgotten during a refactorisation of the interface or the class and its siblings.

```
<?php

class x implements i {
    // This method implements the foo method from the i interface
    function foo() {}

    // The method bar is missing, yet is requested by interface i
    function foo() {}
}

interface i {
    function foo();
    function bar();
}

?>
```

See also Interfaces.

Suggestions

- Implements all the methods from the interfaces
- Remove the class
- Make the class abstract
- Make the missing methods abstract

Specs

Short name	Interfaces/IsNotImplemented
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Class Review*, *LintButWontExec*
Exakat since	1.9.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	interface, abstract, implements
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.584 Interfaces Names

List of all the defined interfaces in the code.

```
<?php

// interfaceName is reported
interface interfaceName {
    function interfaceMethod() ;
}
?>
```

Specs

Short name	Interfaces/Interfacenames
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	interface
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.585 Interfaces Usage

List of used interfaces.

Interfaces are used when mentioned in a class or another interface, with implements keyword; they are used in instanceof expression, in typehints and class constant.

```
<?php

// interface definition
interface i {
    const I = 2;
}

// interface extension
interface i2 extends i {}

// interface implementation
class foo implements i {}

$foo = new foo();

var_dump($foo instanceof i);

function bar( i $arg) { }
bar($foo);
```

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```
// in class constant
echo i::I;

?>
```

Specs

Short name	Interfaces/InterfaceUsage
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	interface
Available in	Entreprise Edition, Exakat Cloud

14.2.586 Internally Used Properties

Properties that are used internally.

```
<?php

class x {
    public $internallyUsedProperty = 1;
    public $externallyUsedProperty = 1;
    public $alsoExternallyUsedProperty = 1;

    function foo() {
        $this->internallyUsedProperty = 2;
    }
}

class y extends x {
    function bar() {
        $this->externallyUsedProperty = 3;
    }
}

$X = new x();
$X->alsoExternallyUsedProperty = 3;

?>
```

Specs

Short name	Classes/PropertyUsedInternally
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.587 Internet Domains

List all internet domain (UDP) used.

See also List of TCP and UDP port numbers.

Specs

Short name	Type/UdpDomains
Rulesets	*All*, *Inventory*
Exakat since	1.9.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.588 Internet Ports

List of all the Internet ports mentioned in the code.

Ports are recognized based on a internal database of port. They are found in Integers.

```
<?php

// 21 is the default port for FTP
$ftp = ftp_connect($host, 21, $timeout = 90);

?>
```

See also List of TCP and UDP port numbers.

Specs

Short name	Type/Ports
Rulesets	*All*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, anonymous-class, abstract
Available in	Entreprise Edition, Exakat Cloud

14.2.589 Interpolation

The following strings contain variables that are will be replaced. However, the following characters are ambiguous, and may lead to confusion.

It is advised to add curly brackets around those structures to make them non-ambiguous.

```
<?php

class b {
    public $b = 'c';
    function __toString() { return __CLASS__; }
}
$x = array(1 => new B());

// -> after the $x[1] looks like a 2nd dereferencing, but it is not.
print "$x[1]->b";
// displays : b->b

print "{$x[1]->b}";
// displays : c

?>
```

See also Double quoted.

Specs

Short name	Type/StringInterpolation
Rulesets	*All*, *Changed Behavior*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	string, interpolation
Available in	Entreprise Edition, Exakat Cloud

14.2.590 Intersection Typehint

Intersection typehints allows the combination of several typehint for the same argument or return value.

Several typehints are specified at the same place as a single one. The different values are separated by a ampersand character &.

Intersection types are a PHP 8.1 new feature.

```
<?php

class Number {
    private A&B $object;
}
?>
```

See also PHP RFC: Pure intersection types, Type declarations and How the New Intersection Types in PHP 8.1 Give You More Flexibility.

Specs

Short name	Php/Php81IntersectionTypehint
Rulesets	*All*, *Appinfo*
Exakat since	2.3.3
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint, union-type
Available in	Entreprise Edition, Exakat Cloud

14.2.591 Invalid Cast

Some cast operations not permitted.

- (string) on an object whose class doesn't have a `__toString` method
- (int) on any object, except certain PHP native ones
- (string) on an array: this will produce the `Array` string, which is useless.

```
<?php

class Foo {}

(string) new Foo();     // Error

print (string) array(); // Array

?>
```

Specs

Short name	Structures/InvalidCast
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*
Exakat since	2.6.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	cast
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.592 Invalid Constant Name

There is a naming convention for PHP constants names.

According to PHP's manual, constant names, ' A valid constant name starts with a letter or underscore, followed by any number of letters, numbers, or underscores.'.

Constant, must follow this regex : `/[a-zA-Z_\x7f-\xff][a-zA-Z0-9_\x7f-\xff]*/`.

In particular when defined using define() function, no error is produced. When using `const`, on the other hand, the name must be valid at linting time.

```
<?php

define('+3', 1); // wrong constant name!

echo constant('+3'); // invalid constant access

// This won't compile, with a syntax error.
// const 3A = 3;

?>
```

See also Constants.

Suggestions

- Change constant name

Specs

Short name	Constants/InvalidName
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	constant
Examples	*OpenEMR*
Available in	Entreprise Edition, Exakat Cloud

14.2.593 Invalid Date Scanning Format

The format string used with Datetime::createFromFormat() method (or similar) contains unknown characters.

This won't raise an error, though the resulting values should be checked.

```
<?php

// format is valid
$date = datetimeimmutable::createFromFormat('d/m/Y', $a);
// When wrong, $date is false
// The errors are in datetimeimmutable::getLastErrors();

// X is not a valid character for
$date = datetimeimmutable::createFromFormat('d/X/Y', $a);

?>
```

Suggestions

- Remove the unknown characters
- Replace the unknown character with the expected one

Specs

Short name	Structures/InvalidDateScanningFormat
Rulesets	*All*, *Analyze*
Exakat since	2.4.5
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	date, external-format
Available in	Entreprise Edition, Exakat Cloud

14.2.594 Invalid Octal In String

Any octal sequence inside a string can't be go 377. Those will be a fatal error at parsing time.

The check is applied to the string, starting with PHP 7.1. In PHP 7.0 and older, those sequences were silently adapted (modulo/% 400).

```
<?php

// A valid octal in a PHP string
echo "\100"; // @

// Emit a warning in PHP 7.1
//Octal escape sequence overflow \500 is greater than \377
echo "\500"; // @

// Silent conversion
echo "\478"; // 8

?>
```

See also Integers.

Suggestions

- Use a double slash to avoid the sequence to be an octal sequence
- Use a function call, such as decoct() to convert larger number to octal notation

Specs

Short name	Type/OctalInString
Rulesets	*All*, *CompatibilityPHP71*, *Inventory*
Exakat since	0.9.1
PHP Version	With PHP 7.1 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.595 Invalid Pack Format

Some characters are invalid in a pack() format string.

pack() and unpack() accept the following format specifiers : `aAhHcCsSnviIlLNVqQJPfgGdeExXZ`.

unpack() also accepts a name after the format specifier and an optional quantifier.

All other situations is not a valid, and produces a warning : `pack(): Type t: unknown format code` Check pack() documentation for format specifiers that were introduced in various PHP version, namely 7.0, 7.1 and 7.2.

```
<?php
    $binarydata = pack("nvc*", 0x1234, 0x5678, 65, 66);

    // the first unsigned short is stored as 'first'. The next matches are names with␣
↪numbers.
    $res = unpack('nfirst/vc*', $binarydata);
?>
```

See also pack and unpack.

Suggestions

- Fix the packing format with correct values

Specs

Short name	Structures/InvalidPackFormat
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.4.9
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	pack
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.596 Invalid Regex

The PCRE regex doesn't compile. It isn't a valid regex.

Several reasons may lead to this situation : syntax error, Unknown modifier, missing parenthesis or reference.

Regex are check with the Exakat version of PHP.

Dynamic regex are only checked for simple values. Dynamic values may eventually generate a compilation error.

```
<?php

// valid regex
preg_match('/[abc]/', $string);

// invalid regex (missing terminating ] for character class
preg_match('/[abc/', $string);

?>
```

Suggestions

- Fix the regex before running it

Specs

Short name	Structures/InvalidRegex
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.0.5
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Examples	*SugarCrm*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.597 Ip

This rule lists hardocded IPs in the source. Such IPs cannot be changed, and may produce unexpected results.

```
<?php

$ip = '123.34.56.227';
$a = '3627734755';
$a = '000000000330.0000000072.00000000326.0343';

?>
```

See also IP converter.

Specs

Short name	Type/Ip
Rulesets	*All*, *Appinfo*, *Changed Behavior*, *Inventory*
Exakat since	2.4.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	ip
Available in	Entreprise Edition, Exakat Cloud

14.2.598 Is A Magic Property

Mark properties usage when they are actually a magic call.

There is no direct mention of it in the syntax, it has to be checked with the definitions of the class.

```
<?php

class magicProperty {
    public $b;

    function __get($name) {
        // do something with the value
    }

    function foo() {
        $this->a;
        $this->b;
    }
}

?>
```

See also Magic Methods.

Specs

Short name	Classes/IsaMagicProperty
Rulesets	*All*, *CE*
Exakat since	0.12.17
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	magic-property
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.599 Is Actually Zero

This addition actually may be simplified because one term is actually negated by another.

This kind of error happens when the expression is very large : the more terms are included, the more chances are that some auto-annihilation happens.

This error may also be a simple typo : for example, calculating the difference between two consecutive terms.

```
<?php

// This is quite obvious
$a = 2 - 2;

// This is obvious too. This may be a typo-ed difference between two consecutive terms.
```

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```
// Could have been $c = $fx[3][4] - $fx[3][3] or $c = $fx[3][5] - $fx[3][4];
$c = $fx[3][4] - $fx[3][4];

// This is less obvious
$a = $b[3] - $c + $d->foo(1,2,3) + $c + $b[3];

?>
```

Suggestions

- Clean the code and remove the null sum
- Fix one of the variable : this expression needs another variable here
- When adding differences, calculate the difference in a temporary variable first.

Specs

Short name	Structures/IsZero
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.12.15
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Examples	*Dolibarr*, *SuiteCrm*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.600 Is An Extension Class

Those classes belongs to a PHP Extensions.

```
<?php

// This is a native PHP class
$o = new Stdclass();

// This is not a native PHP class
$o = new Elephpant();

?>
```

Specs

Short name	Classes/IsExtClass
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, extension
Available in	Entreprise Edition, Exakat Cloud

14.2.601 Is An Extension Constant

Mark a constant if it belongs to a known extension.

```
<?php

// JSON_HEX_AMP is a constant from ext/json
echo json_encode($object, JSON_HEX_AMP);

// JSON_HEX_AMP is a constant from ext/json
echo json_encode($object, JSON_HOAX_AMP);

?>
```

See also Supported PHP Extensions.

Specs

Short name	Constants/IsExtConstant
Rulesets	*All*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.602 Is An Extension Function

This is an extension function.

```
<?php

// range is a native PHP function. It is always available
$array = range(0, 100);

// json_encode is an extension function : it requires that PHP was compile with ext/json
echo json_encode($array);

?>
```

Almost every PHP extension defines extra functions. Nowadays, they are prefixed, like `mysqli_connect`, `ldap_close`, or `zlib_decode`. Sometimes, they are even in a namespace. Refer to the extension itself to learn more about its functions usage.

Specs

Short name	Functions/IsExtFunction
Rulesets	*All*, *CE*, *Deprecated*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	function, extension
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.603 Is An Extension Interface

This is an interface defined in a PHP C extension.

```
<?php

// MyInterface is not recognized as an extension interface
function foo ( MyInterface $a) {
    // \ArrayAccess is recognized as a native PHP extension
    if ($a instanceof \ArrayAccess) {
        // doSomething()
    }
}

?>
```

Specs

Short name	Interfaces/IsExtInterface
Rulesets	*All*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	interface
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.604 Is CLI Script

Mark a file as a CLI script. This means that this code is used in command line. That detection is based on the usage of distinct CLI features, such as `#!` at the beginning of the file.

#!/usr/bin/php

```
<?php
    echo PHP_VERSION;
?>
```

Specs

Short name	Files/IsCliScript
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	cli
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.605 Is Extension Structure

Finish marking atoms with `isExt`, as part of the PHP extension elements. For example, `openssl`, `mysqli`, etc.

Specs

Short name	Complete/IsExtStructure
Rulesets	*All*, *NoDoc*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.606 Is Extension Trait

Indicates if these traits are defined in an extension. Traits that are defined in an extension are available from the start of the application. There are no known extension that defines a trait, at the moment of writing (feb-2024).

Specs

Short name	Traits/IsExtTrait
Rulesets	*All*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	trait
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.607 Is Global Constant

Mark a constant that may fallback to a global const definition, even though it is in a namespace.

This analysis skips PHP and ext's functions, namespaced constants.

```
<?php

namespace X {

    const PHP_VERSION = 1;

    // Local constant
    echo PHP_VERSION;

    // This constant fallsback to \E_ALL, unless DNS_NS is defined in this namespace
    echo E_ALL;

    // This constant is always \DNS_NS
```

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```
    echo \DNS_NS;

    // This is a Notice
    echo UNDEFINED_CONSTANT;
}

?>
```

See also $GLOBALS and Variable scope.

Specs

Short name	Constants/IsGlobalConstant
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.608 Is Interface Method

Mark a method as part of an interface that the current class implements.

```
<?php

interface i {
    function i20();
}

class x implements i {
    // This is an interface method
    function i20() {}

    // This is not an interface method
    function x20() {}
}

?>
```

Specs

Short name	Classes/IsInterfaceMethod
Rulesets	*All*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	interface
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Exakat Cloud

14.2.609 Is Library

Is this project a library (it must be used in a larger project) or a standalone code.

Specs

Short name	Project/IsLibrary
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.610 Is Not Class Family

Mark a static method call as inside the family of classes. Children are not considered here.

```
<?php

class a {
    function familyMethod() {}
}

classs b {
    function foo() {
        self::familyMethod(); // This is a call to a family method
        b::notAFamilyMethod(); // This is a call to a method of a class outside the␣
↪family
    }
}
?>
```

Specs

Short name	Classes/IsNotFamily
Rulesets	*All*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.611 Is PHP Constant

Mark a constant if it is a PHP constant.

```
<?php

// This is an PHP constant
$a = HTML_ENTITIES;

// This is an PHP function
$a = CMS_ORDER;

?>
```

Specs

Short name	Constants/IsPhpConstant
Rulesets	*All*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.612 Is PHP Structure

Finish marking atoms with `isPhp`, as part of the standard PHP elements. For example, `Datetime`, `E_ALL`, etc.

Specs

Short name	Complete/IsPhpStructure
Rulesets	*All*, *NoDoc*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.613 Is Stub Structure

Finish marking atoms with isStub, as part of the custom elements, probably from composer.

Specs

Short name	Complete/IsStubStructure
Rulesets	*All*, *NoDoc*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	stubs
Available in	Entreprise Edition, Exakat Cloud

14.2.614 Is Upper Family

Does the static call is made within the current hierarchy of class, or, is it made in the class, in the children or outside.

This applies to static methodcalls, property accesses and class constants.

```
<?php

class AAA            { function inAAA() {} }   // upper family : grand-parent
class AA extends AAA { function inAA()  {} }   // upper family : parent
class A  extends AA  { function inA()  {} }    // current family
class B  extends A   { function inB()  {} }    // lower family
class C              { function inC()  {} }    // outside family

?>
```

Specs

Short name	Classes/IsUpperFamily
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.615 Is_A() With String

When using is_a() with a string as first argument, the third argument is compulsory. The third argument is `$allow_string`, and is necessary to work on strings.

```
<?php

// is_a() works with string as first argument, when the third argument is 'true'
if (is_a('A', 'B', true)) {}

// is_a() works with object as first argument
if (is_a(new A, 'A')) {}
?>
```

See also is_a.

Suggestions

- Add the third argument, and set it to true
- Use an object as a first argument

Specs

Short name	Php/IsAWithString
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Rector*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	class, interface
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.616 Isset Multiple Arguments

isset() may be used with multiple arguments and acts as a AND.

```
<?php

// isset without and
if (isset($a, $b, $c)) {
    // doSomething()
}

// isset with and
if (isset($a) && isset($b) && isset($c)) {
    // doSomething()
}

?>
```

See also Isset.

Suggestions

- Merge all isset() calls into one

Specs

Short name	Php/IssetMultipleArgs
Rulesets	*All*, *Changed Behavior*, *Suggestions*, *php-cs-fixable*
Exakat since	0.12.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	isset, coalesce
Examples	*ThinkPHP*, *LiveZilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.617 Isset() On The Whole Array

Isset() works quietly on a whole array. There is no need to test all previous index before testing for the target index.

It also works on chained properties. There is a gain in readability, by avoiding long and hard to read logical expression, and reducing them in one simple isset() call.

There is a gain in performances by using one call to isset(), instead of several. It is a micro-optimization.

```
<?php

// Straight to the point
if (isset($a[1]['source'])) {
```

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```
    // Do something with $a[1]['source']
}

// Doing too much work
if (isset($a) && isset($a[1]) && isset($a[1]['source'])) {
    // Do something with $a[1]['source']
}

// Doing too much work
if (isset($object) && isset($object->p1) && isset($object->p1->property)) {
    // Do something with $object->p1->property
}

?>
```

See also Isset.

Suggestions

- Merge all calls in one, and remove all unnecessary calls to isset()

Specs

Short name	Performances/IssetWholeArray
Rulesets	*All*, *Changed Behavior*, *Performances*, *Suggestions*
Exakat since	1.5.6
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	coalesce, isset
Examples	*Tine20*, *ExpressionEngine*
Available in	Entreprise Edition, Exakat Cloud

14.2.618 Joining file()

Use file() to read lines separately.

Applying `join('', )` or `implode('', )` to the result of file() provides the same results than using file_get_contents(), but at a higher cost of memory and processing.

If the delimiter is not `''`, then `implode()` and `file()` are a better solution than `file_get_contents()` and `str_replace()` or `nl2br()`.

Always use `file_get_contents()` to get the content of a file as a string. Consider using readfile() to echo the content directly to the output.

This analysis also checks for the reverse feature: loading a file with `file_get_contents()` and splitting it into rows with `explode()` or an alternative. Such association should be replaced by a single call to `file()`, with may be the `FILE_IGNORE_NEW_LINES`.

```php
<?php

// memory intensive
$content = file_get_contents('path/to/file.txt');

// memory and CPU intensive
$content = join('', file('path/to/file.txt'));

// Consider reading the data line by line and processing it along the way,
// to save memory
$fp = fopen('path/to/file.txt', 'r');
while($line = fget($fp)) {
    // process a line
}
fclose($fp);

// Reverse feature
$file = file_get_contents('/path/to/file.txt');
$rows = explode(PHP_EOL, $file);

?>
```

See also file_get_contents, file and explode.

Suggestions

- Use file_get_contents() instead of implode(file()) to read the whole file at once.
- Use readfile() to echo the content to standard output `stdout` at once.
- Use fopen() to read the lines one by one, generator style.

Specs

Short name	Performances/JoinFile
Rulesets	*All*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	csv
Examples	*WordPress*, *SPIP*
Available in	Entreprise Edition, Exakat Cloud

14.2.619 Joomla usage

This analysis reports usage of the Joomla CMS.

```
<?php

// no direct access
defined('_JEXEC') or die('Restricted access');

jimport('joomla.application.component.controller');
JLoader::import('KBIntegrator', JPATH_PLUGINS . DS . 'kbi');

class MyController extends JController {
     function display($message) {
        echo $message;
    }
}

?>
```

See also Joomla.

Specs

Short name	Vendors/Joomla
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.620 Json_encode() Without Exceptions

json_encode() and json_decode() should use the exception system, to detect invalid JSON syntax.

The second argument is a bitmask, and shall include JSON_THROW_ON_ERROR, so that both function may emit an exception when a parsing error happen. That exception can then be caught with a try/catch structure.

```
<?php

try{
     echo json_encode($response,  JSON_THROW_ON_ERROR | JSON_PRETY_PRINT);
} catch (\JsonException $e) {
     echo "Sorry, an error occured.";
}
?>
```

Alternatively, the error may be check by calling json_last_error() function. It will not be empty if an error is called.

See also json_encode().

Suggestions

- Add the JSON_THROW_ON_ERROR in the second argument.
- Call json_validate() on the data, before parsing it.
- Check json_last_error() after the parsing, to detect any error

Specs

Short name	Structures/JsonEncodeExceptions
Rulesets	*All*, *Suggestions*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	json, error-handling
Available in	Entreprise Edition, Exakat Cloud

14.2.621 Keep Files Access Restricted

> Avoid using 0777 as file or directory <https://www.php.net/`directory>`_ mode. In particular, setting a file or a directory <https://www.php.net/`directory>`_ to 0777 (or universal read-write-execute) may lead to security vulnerabilities, as anything on the server may read, write and even execute

File mode may be changed using the chmod() function, or at directory <https://www.php.net/`directory>`_ creation, with mkdir(). By default, this analysis report universal access (0777). It is possible to make this analysis more restrictive, by providing more forbidden modes in the `filePrivileges` parameter. For example : `511,510,489`. Only use a decimal representation.

```
<?php

file_put_contents($file, $content);

// this file is accessible to the current user, and to his group, for reading and␣
↪writing.
chmod($file, 0550);

// this file is accessible to everyone
chmod($file, 0777);

?>
```

Name	Default	Type	Description
filePrivileges	0777	string	List of forbidden file modes (comma separated). This should be a decimal value : 511 instead of 777. The values will not be converted from octal to decimal.

See also *Mkdir Default* and Least Privilege Violation.

Suggestions

- Set the file mode to a level of restriction as low as possible.

Specs

Short name	Security/KeepFilesRestricted
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	2.1.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.622 Labels

List of all labels used in the code.

```
<?php

// A is label.
goto A:

A:

// A label may be used by several gotos.
goto A:

?>
```

Specs

Short name	Php/Labelnames
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	goto, label
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.623 Laravel usage

This analysis reports usage of the Laravel framework.

```
<?php

namespace App\Http\Controllers;

use App\User;
use App\Http\Controllers\Controller;

class UserController extends Controller
{
    /**
     * Show the profile for the given user.
     *
     * @param  int  $id
     * @return Response
     */
    public function show($id)
    {
        return view('user.profile', ['user' => User::findOrFail($id)]);
    }
}

?>
```

See also Laravel.

Specs

Short name	Vendors/Laravel
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.624 Large Try Block

Try block should enclosing only the expression that may emit an exception.

When writing large blocks of code in a try, it becomes difficult to understand where the expression is coming from. Large blocks may also lead to catch multiples exceptions, with a long list of catch clause.

In particular, the catch clause will resume the execution without knowing where the try was interrupted : there are no indication of achievement, even partial. In fact, catching an exception signals a very dirty situation. This analysis reports try blocks that are 5 lines or more. This threshold may be configured with the directive `tryBlockMaxSize`. Catch clause, and finally are not considered here.

```php
<?php

// try is one expression only
try {
    $database->query($query);
} catch (DatabaseException $e) {
    // process exception
}

// Too many expressions around the one that may actually emit the exception
try {
    $SQL = build_query($arguments);
    $database = new Database($dsn);
    $database->setOption($options);
    $statement = $database->prepareQuery($SQL);
    $result = $statement->query($query);
} catch (DatabaseException $e) {
    // process exception
}

?>
```

Name	Default	Type	Description
tryBlockMaxSize	5	integer	Maximal number of expressions in the try block.

See also Exceptions.

Suggestions

- Reduce the amount of code in the block, by moving it before and after

Specs

Short name	Exceptions/LargeTryBlock
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.1.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	try-catch
Available in	Entreprise Edition, Exakat Cloud

14.2.625 Law of Demeter

The law of Demeter specifies a number of constraints to apply to methodcalls from within an method, so as to keep dependencies to a minimum.

```
<?php

class x {
    function foo($arg) {
        $this->foo();    // calling oneself is OK
        $this->x->bar(); // calling one's property is OK
        $arg->bar2();    // calling arg's methods is OK

        $local = new y();
        $z = $y->bar3();      // calling a local variable is OK

        $z->bar4();      // calling a method on a previous result is wrong
    }
}

?>
```

See also Do your objects talk to strangers? and Law of Demeter.

Specs

Short name	Classes/DemeterLaw
Rulesets	*All*
Exakat since	1.6.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.626 Links Between Parameter And Argument

Collect various stats about arguments and parameter usage.

A parameter is one slot in the method definition. An argument is a slot in the method call. Both are linked by the method and their respective position in the argument list.

- Total number of argument usage, linked to a parameter : this excludes arguments from external libraries and native PHP functions. For reference.
- Number of identical parameter : cases where argument and parameter have the same name.
- Number of different parameter : cases where argument and parameter have the different name.
- Number of expression argument : cases where argument is an expression
- Number of constant argument : cases where the argument is a constant

```php
<?php

function foo($a, $b) {
    // some code
}

// $a is the same as the parameter
// $c is different from the paramter $b
foo($a, $c);

const C = 1;

// Foo is called with a constant (1rst argument)
// Foo is called with a expression (2nd argument)
foo(C, 1+3);

?>
```

Specs

Short name	Dump/ParameterArgumentsLinks
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	2.0.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	parameter, argument
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.627 Linux Only Files

List of files that are only found on Linux style systems. They are making the application depend on the system.

```php
<?php

// Really non-portable system check
$os = shell_exec("cat /proc/version");
echo "You are using $os\n";

?>
```

Specs

Short name	Portability/LinuxOnlyFiles
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	file
Available in	Entreprise Edition, Exakat Cloud

14.2.628 List Short Syntax

Usage of short syntax version of list().

```
<?php

// PHP 7.1 short list syntax
// PHP 7.1 may also use key => value structures with list
[$a, $b, $c] = ['2', 3, '4'];

// PHP 7.0 list syntax
list($a, $b, $c) = ['2', 3, '4'];

?>
```

Specs

Short name	Php/ListShortSyntax
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.1 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	short-syntax
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.629 List With Array Appends

List() behavior has changed in PHP 7.0 and it has impact on the indexing when list is used with the [] operator.

The appended values are created in the same order than in the syntax, while in PHP 5.6, it is in the reverse order. In PHP 7.0, results are ::

```
Array
(
    [0] => 1
    [1] => 2
    [2] => 3
)
```

In PHP 5.6, results are ::

```
Array
(
    [0] => 3
    [1] => 2
    [2] => 1
)
```

```
<?php

$x = array();
list($x[], $x[], $x[]) = [1, 2, 3];

print_r($x);

?>
```

Suggestions

- Refactor code to avoid using append in a list() call

Specs

Short name	Php/ListWithAppends
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	list, append
Available in	Entreprise Edition, Exakat Cloud

14.2.630 List With Keys

Setting keys when using list() is a PHP 7.1 feature.

```
<?php

// PHP 7.1 and later only
list('a' => $a, 'b' => $b) = ['b' => 1, 'c' => 2, 'a' => 3];

?>
```

Specs

Short name	Php/ListWithKeys
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.1 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.1 - More
Precision	Very high
Features	list, keys
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.631 List With Reference

Support for references in list calls is not backward compatible with older versions of PHP. The support was introduced in PHP 7.3.

```
<?php

$array = [1,2,3];

[$c, &$d, $e] = $a;

$d++;
$c++;
print_r($array);
/*
displays
Array
(
    [0] => 1  // Not a reference to $c, unchanged
    [1] => 3  // Reference from $d
    [2] => 3
)
```

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```
*/
?>
```

See also list() Reference Assignment.

Suggestions

- Avoid using references in list for backward compatibility

Specs

Short name	Php/ListWithReference
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*
Exakat since	1.1.6
PHP Version	With PHP 7.3 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	list, reference
Available in	Entreprise Edition, Exakat Cloud

14.2.632 Local Globals

A global variable is used locally in a method.

Either the global keyword has been forgotten, or the local variable should be renamed in a less ambiguous manner.

Having both a global and a local variable with the same name is legit. PHP keeps the contexts separated, and it processes them independently.

However, in the mind of the coder, it is easy to mistake the local variable $x and the global variable $x. May they be given different meaning, and this is an error-prone situation.

It is recommended to keep the global variables's name distinct from the local variables.

```
<?php

// This is actualy a global variable
$variable = 1;
$globalVariable = 2;

function foo() {
```

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```
    global $globalVariable2;

    $variable = 4;
    $localVariable = 3;

    // This always displays 423, instead of 123
    echo $variable .' ' . $globalVariable . ' ' . $localVariable;
}

?>
```

Suggestions

- Add the global keyword for that variable
- Change the name of the variable for another one, which is not a global variable

Specs

Short name	Variables/LocalGlobals
Rulesets	*All*
Exakat since	1.1.2
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	global
Available in	Entreprise Edition, Exakat Cloud

14.2.633 Locally Unused Property

Those properties are defined in a class, and this class doesn't have any method that makes use of them.

While this is syntactically correct, it is unusual that defined resources are used in a child class. It may be worth moving the definition to another class, or to move accessing methods to the class.

```
<?php

class foo {
    public $unused, $used;// property $unused is never used in this class

    function bar() {
        $this->used++; // property $used is used in this method
    }
}

class foofoo extends foo {
    function bar() {
        $this->unused++; // property $unused is used in this method, but defined in the␣
```

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```
↪parent class
    }
}

?>
```

Suggestions

- Move the property definition to the child classes
- Move some of the child method, using the property, to the parent class

Specs

Short name	Classes/LocallyUnusedProperty
Rulesets	*All*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.634 Locally Used Property

List of properties that are used in the class where they are defined.

```
<?php

class foo {
    public $unused, $used;// property $unused is never used in this class

    function bar() {
        $this->used++; // property $used is used in this method
    }
}

$foo = new Foo();
$foo->unused = 'here'; // property $unused is used outside the class definition
?>
```

Specs

Short name	Classes/LocallyUsedProperty
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.635 Locally Used Property In Trait

List of properties that are used in the trait where they are defined. A property should be used at least once in the trait of its definition.

```
<?php

trait foo {
    public $unused, $used;// property $unused is never used in this trait

    function bar() {
        $this->used++; // property $used is used in this method
    }
}

class X {
    use foo;
}

$foo = new X();
$foo->unused = 'here'; // property $unused is used outside the trait definition
?>
```

Specs

Short name	Traits/LocallyUsedProperty
Rulesets	*All*, *Changed Behavior*
Exakat since	1.3.5
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	trait, property
Available in	Entreprise Edition, Exakat Cloud

14.2.636 Logical Mistakes

Avoid logical mistakes within long expressions.

Sometimes, the logic is not what it seems. It is important to check the actual impact of every part of the logical expression. Do not hesitate to make a table with all possible cases. If those cases are too numerous, it may be time to rethink the whole expression.

```
<?php

// Always true
if ($a != 1 || $a != 2) { }

// $a == 1 is useless
if ($a == 1 || $a != 2) {}

// Always false
if ($a == 1 && $a == 2) {}

// $a != 2 is useless
if ($a == 1 && $a != 2) {}

?>
```

Inspired by an article from `Andrey Karpov`.

See also Logical Expressions in C/C++. Mistakes Made by Professionals.

Suggestions

- Change the expressions for them to have a real meaning

Specs

Short name	Structures/LogicalMistakes
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	High
Examples	*Dolibarr*, *Cleverstyle*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.637 Logical Operators Favorite

PHP has two sets of logical operators : letters (and, or, xor) and chars (&&, ||, ^).

The analyzed code has less than 10% of one of the two sets : for consistency reasons, it is recommended to make them all the same.

Warning : the two sets of operators have different precedence levels. Using and or && is not exactly the same, especially and not only, when assigning the results to a variable. Using and or && are also the target of other analysis.

```
<?php

$a1 = $b and $c;
$a1 = $b and $c;
$a1 = $b and $c;
$a1 = $b or $c;
$a1 = $b OR $c;
$a1 = $b and $c;
$a1 = $b and $c;
$a1 = $b and $c;
$a1 = $b or $c;
$a1 = $b OR $c;
$a1 = $b ^ $c;

?>
```

See also Logical Operators and Operators Precedence.

Suggestions

- Pick a favorite, and enforce it

Specs

Short name	Php/LetterCharsLogicalFavorite
Rulesets	*All*, *Changed Behavior*, *Preferences*, *Top10*
Exakat since	0.12.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	logical-operator
Available in	Entreprise Edition, Exakat Cloud

14.2.638 Logical Should Use Symbolic Operators

Logical operators come in two flavors : and / &&, || / or, ^ / xor. However, they are not exchangeable, as && and and have different precedence.

It is recommended to use the symbol operators, rather than the letter ones.

```
<?php

// Avoid lettered operator, as they have lower priority than expected
$a = $b and $c;
// $a === 3 because equivalent to ($a = $b) and $c;

// safe way to write the above :
$a = ($b and $c);

$a = $b && $c;
// $a === 1

?>
```

See also Logical Operators.

Suggestions

- Change the letter operators to the symbol one : and => &&, or => ||, xor => ^. Review the new expressions as processing order may have changed.
- Add parenthesis to make sure that the order is the expected one

Specs

Short name	Php/LogicalInLetters
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Suggestions*, *Top10*, *php-cs-fixable*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	logical
ClearPHP	no-letter-logical
Examples	*Cleverstyle*, *OpenConf*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.639 Logical To in_array

Multiple exclusive comparisons with `or` may be replaced by faster alternative.

- isset() and an array which keys are the target comparisons
- array_key_exists() and an array which keys are the target comparisons
- strpos() call, with all the target values merged into a string
- str_contains() call, with all the target values merged into a string
- switch() call, with each case being an assignation
- match() call
- in_array() call, with each values in an array

While each alternative has its performance gain, they make the code more readable by bringing the alternative values into one simple list.

As little as three `or` comparisons are slower than using an alternative. The more calls, the slower is as string of `or`. Also, the further the target value is in the `or` list, the slower it is to find it. Although, it is not easy to control that value.

This analysis also reports in_array() calls with arrays of a single element : those should be turned into a `or` call, or have more values in the array, or have the array published as a constant. This is a micro-optimisation : speed gain is low, and marginal. Code centralisation is a more significant advantage.

Thanks to Frederic Bouchery for extending the alternatives of that analysis.

```php
<?php

$targetValues = array('a', 'b', 'c', 'd');
$needle = 'd'; // for example

// isset() & array_key_exists()
$targets = array_flip($targetValues); // This might be a slow operation
isset($targs[$a]);
array_key_exists($a, $targs);

// strpos() & str_contains
$targets = implode('', $targeValues);
strpos($targets, $needle) !== 0
str_contains($targets, $needle) !== 0

// switch()
switch($needle) {
     case 'a':  // Lots of typing to do
     case 'b':
     case 'c':
     case 'd':
             $result = true;
             break;

     default:
             $result = false;
             break;
}
```

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```
// match()
// surprisingly, slitghly slower than switch()
$result = match($needle) {
     'a', 'b', 'c', 'd' => true,
     default => false
};

// in_array()
// Set the list of alternative in a variable, property or constant.
$result = in_array($a, $valid_values, true); // use third argument when you can

// slowest and hard to read
$result = $a == 'a' || $a == 'b' || $a == 'c' || $a == 'd');

?>
```

See also in_array(), isset(), match(), switch() and strpos().

Suggestions

- Replace the list of comparisons with a in_array() call on an array filled with the various values
- Replace the list of comparisons with a strpos() call on an string joined with the various values
- Replace the list of comparisons with a match() call on an string joined with the various values
- Replace the list of comparisons with a switch() call on an string joined with the various values
- Replace the list of comparisons with a isset() call on a hash whose keys are the various values

Specs

Short name	Performances/LogicalToInArray
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.12.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*Zencart*
Available in	Entreprise Edition, Exakat Cloud

14.2.640 Lone Blocks

Grouped code without a commanding structure is useless and may be removed.

Blocks are compulsory when defining a structure, such as a class, a function or a switch. They are most often used with flow control instructions, like if then or foreach.

Blocks are also valid syntax that group several instructions together, though they have no effect at all. They are unusual enough to confuse the reader.

Most often, it is a ruin from a previous flow control instruction, whose condition was removed or commented. They should be removed.

```
<?php

    // Lone block without artefact
    {
     $a = 3;
     $c = 4;
    }

    // Lone block with commented out loop
    //foreach($a as $b)
    {
        $b = 1;
    }
?>
```

Suggestions

- Remove the useless curly brackets

Specs

Short name	Structures/LoneBlock
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	block
Examples	*ThinkPHP*, *Tine20*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.641 Long Arguments

Long arguments should be put in variable, to preserve readability.

When literal arguments are too long, they break the hosting structure by moving the next argument too far on the right. Whenever possible, long arguments should be set in a local variable to keep the readability.

```
<?php

// Now the call to foo() is easier to read.
$reallyBigNumber = <<<BIGNUMBER
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123
BIGNUMBER
foo($reallyBigNumber, 2, '1234567890123456789012345678901234567890123456789');

// where are the next arguments ?
foo(
↪'1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
↪', 2, '1234567890123456789012345678901234567890123456789012345678901234567890');

// This is still difficult to read
foo(<<<BIGNUMBER
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123
BIGNUMBER
, 2, '1234567890123456789012345678901234567890123456789012345678901234567890');

?>
```

Literal strings and heredoc strings, including variables, that are over 50 chars longs are reported here.

Name	Default	Type	Description
codeTooLong	100	integer	Minimum size of a functioncall or a methodcall to be considered too long.

Suggestions

- Put the long arguments in a separate variable, and use the variable in the second expression, reducing its total length

Specs

Short name	Structures/LongArguments
Rulesets	*All*, *Analyze*
Exakat since	0.9.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	argument
Examples	*Cleverstyle*, *Contao*
Available in	Entreprise Edition, Exakat Cloud

14.2.642 Long Preparation For Throw

When throwing an exception, move the preparing code in the exception. This will keep the `throw` call simple.

```
<?php

// Examples extracted from Alain Schlesser's blog
public function render( $view ): string {

   if ( ! $this->views->has( $view ) ) {
      switch ( gettype( $view ) ) {
         case 'object':
            $view = get_class( $view );
         case 'string':
            $message = sprintf(
               'The requested View "%s" does not exist.',
               $view
            );
            break;
         default:
            $message = sprintf(
               'An unknown View type of "%s" was requested.',
               $view
            );
      }

      throw new ViewWasNotFound( $message );
   }

   echo $this->views->get( $view )
             ->render();
}

?>
```

Name	Default	Type	Description
preparationLineCount	8	integer	Minimal number of lines before the throw.

See also Structuring PHP Exceptions session and Best practices for handling exceptional behavior.

Suggestions

- Move the preparation into the Exception to keep the throw simple

Specs

Short name	Exceptions/LongPreparation
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.2.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	throw, exception
Available in	Entreprise Edition, Exakat Cloud

14.2.643 Lost References

Either avoid references, or propagate them correctly.

When assigning a referenced variable with another reference, the initial reference is lost, while the intend was to transfer the content.

```
<?php

function foo(&$lostReference, &$keptReference)
{
    $c = 'c';

    // $lostReference was a reference to $bar, but now, it is a reference to $c
    $lostReference =& $c;
    // $keptReference was a reference to $bar : it is still now, though it contains the␣
↪actual value of $c now
    $keptReference = $c;
}

$bar = 'bar';
$bar2 = 'bar';
foo($bar, $bar2);

//displays bar c, instead of bar bar
print $bar. ' '.$bar2;

?>
```

Do not reassign a reference with another reference. Assign new content to the reference to change its value.

Suggestions

- Always assign new value to an referenced argument, and don't reassign a new reference

Specs

Short name	Variables/LostReferences
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	reference
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.644 Lowered Access Level

> A visibility was lowered. While this is a PHP feature, lowering visibility means that the data is now available to more actors than previously set up, and it might yield surprises to part of the code that still rely on the previous visibility.

This applies to all visibility's structures : class constant, properties and methods.

```
<?php

class Foo {
    public $publicProperty;
    protected $protectedProperty;
    private $privateProperty;
}

class Bar extends Foo {
    private $publicProperty;
    private $protectedProperty;
    private $privateProperty;   // This one is OK
}
?>
```

See also Visibility and Understanding the concept of visibility in object oriented php.

Suggestions

- Sync the visibility between the classes
- Use a different name for the public properties

Specs

Short name	Classes/LoweredAccessLevel
Rulesets	*All*, *Class Review*, *IsExt*, *IsPHP*, *IsStub*, *Suggestions*
Exakat since	2.4.2
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Exakat Cloud

14.2.645 Magic Constant Usage

There are eight magical constants that change depending on where they are used. For example, the value of `__LINE__` depends on the line that it's used on in your script. These special constants are case-insensitive.

- `__LINE__`
- `__FILE__`
- `__DIR__`
- `__FUNCTION__`
- `__CLASS__`
- `__TRAIT__`
- `__METHOD__`
- `__NAMESPACE__`

```
<?php

echo 'This code is in file '__FILE__.', line '.__LINE__;

?>
```

See also Magic Constants.

Specs

Short name	Constants/MagicConstantUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	magic-constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.646 Magic Method Returntype Is Restricted

Some magic method have compulsory return types.

- __destruct() : `void`
- __construct() : `void`
- __unserialize() : `void`
- __unset() : `void`
- __set() : `void`
- __serialize() : `array`
- __isset() : `bool`
- __toString() : `string`

The others may use mixed, or a more restrictive one.

See also Magic Methods.

Suggestions

- Use the right return type for the magic method
- Do not use any return type

Specs

Short name	Classes/MagicMethodReturntypes
Rulesets	*All*, *Class Review*, *Suggestions*
Exakat since	2.4.5
PHP Version	With PHP 7.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.647 Magic Methods

List of PHP magic methods being used. The magic methods are

__call(), __callStatic(), __get(), __set(), __isset(), __unset(), __sleep(), __wakeup(), __toString(), __invoke(), __set_state(), __clone() and __debugInfo().

`__construct` and `__destruct` are omitted here, as they are routinely used to create and destroy objects.

```
<?php

class foo{
    // PHP Magic method, called when cloning an object.
    function __clone() {}
}
?>
```

Specs

Short name	Classes/MagicMethod
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	magic-method
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.648 Magic Properties

List of magic properties used in the code. A magic property is a property called on a object, whose class doesn't define that properties, and define the related magic properties `__get` and `__set`. Static properties cannot be magic.

Some classes define the magic methods for magic property, but do not use them.

```
<?php

class x {
     public $normal = 1;

     // Two classic magic properties
     function __get($name) {}

     function __set($name, $value) {}
}

$x = new X;

// Magic propery, so __set is called;
```

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```
$x->magic = 1;

// Not a magic property.
$x->normal = 2;

?>
```

Specs

Short name	Classes/MagicProperties
Rulesets	*All*, *Inventory*
Exakat since	1.9.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	magic-property
Available in	Entreprise Edition, Exakat Cloud

14.2.649 Magic Visibility

Magic methods must be declared with public visibility. They cannot be private or protected.

Magic methods cannot be declared as static. They are always associated with an instance of a class and cannot be called statically.

```
<?php

class foo{
    // magic method must bt public and non-static
    public static function __clone($name) {    }

    // magic method can't be private
    private function __get($name) {    }

    // magic method can't be protected
    private function __set($name, $value) {    }

    // magic method can't be static
    public static function __isset($name) {    }
}

?>
```

See also Magic methods and PHP Magic Methods Explained.

Specs

Short name	Classes/toStringPss
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility, magic-method
Available in	Entreprise Edition, Exakat Cloud

14.2.650 Mail Usage

Report usage of mail from PHP.

The analysis is based on mail() function and various classes used to send mail.

```
<?php
// The message
$message = "Line 1\r\nLine 2\r\nLine 3";

// In case any of our lines are larger than 70 characters, we should use wordwrap\(\)
$message = wordwrap($message, 70, "\r\n");

// Send
mail('caffeinated@example.com', 'My Subject', $message);
?>
```

See also mail.

Specs

Short name	Structures/MailUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	mail
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.651 Make All Statics

This links each *static* keyword to all possible classes definition.

It checks the *::* operator, with for static constant, static properties, static methods and class operator.

It also checks for new calls.

Specs

Short name	Complete/MakeAllStatics
Rulesets	*All*, *NoDoc*
Exakat since	2.4.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static
Available in	Entreprise Edition, Exakat Cloud

14.2.652 Make Class Method Definition

This command links a method call to its method definition.

This command may not detect all possible link for the methods. It may be missing information about the nature of the object.

This command may also produce multiple definitions link, when the definition are ambiguous.

```
<?php

class x {
    function foo() {
        // This links to the bar() method
        return $this->bar();
    }

    function bar() {
        // This links to the link() method
        return $this->bar();
    }
}

?>
```

Specs

Short name	Complete/MakeClassMethodDefinition
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.653 Make Functioncall With Reference

Mark parameters as `isModified` if the functioncall uses reference.

This works on PHP native functions and custom functions.

This doesn't work on dynamic calls nor methods yet.

```
<?php

function foo($a, &$b) {}

// $b is marked as modified
foo($a, $b);

?>
```

Specs

Short name	Complete/MakeFunctioncallWithReference
Rulesets	*All*, *CE*, *NoDoc*
Exakat since	1.9.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	reference
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.654 Make Global A Property

> Calling global (or $GLOBALS) in methods is slower and less testable than setting the global to a property, and using this property.

Using properties is slightly faster than calling global or $GLOBALS, though the gain is not important.

Setting the property in the constructor (or in a factory), makes the class easier to test, as there is now a single point of configuration.

```
<?php

// Wrong way
class fooBad {
    function x() {
        global $a;
        $a->do();
        // Or $GLOBALS['a']->do();
    }
}

class fooGood {
    private $bar = null;

    function __construct() {
        global $bar;
        $this->bar = $bar;
        // Even better, do this via arguments
    }

    function x() {
        $this->a->do();
    }
}

?>
```

Suggestions

- Avoid using global variables, and use properties instead
- Remove the usage of these global variables

Specs

Short name	Classes/MakeGlobalAProperty
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	class, global-variable
Available in	Entreprise Edition, Exakat Cloud

14.2.655 Make Magic Concrete

Speed up execution by replacing magic calls by concrete properties.

Magic properties are managed dynamically, with __get() and __set(). They replace property access by a methodcall, and they are much slower than the first.

When a property name is getting used more often, it is worth creating a concrete property, and skip the method call. The threshold for `magicMemberUsage` is 1, by default.

```
<?php

class x {
    private $values = array('a' => 1,
                            'b' => 2);

    function __get($name) {
        return $this->values[$name] ?? '';
    }
}

$x = new x();
// Access to 'a' is repeated in the code, at least 'magicMemberUsage' time (cf␣
↪configuration below)
echo $x->a;

?>
```

Name	Default	Type	Description
magicMemberUsage	1	integer	Minimal number of magic member usage across the code, to trigger a concrete property.

See also *Memoize MagicCall*.

Suggestions

- Make frequently used properties concrete; keep the highly dynamic as magic

Specs

Short name	Classes/MakeMagicConcrete
Rulesets	*All*, *Performances*
Exakat since	1.8.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	magic-method
Available in	Entreprise Edition, Exakat Cloud

14.2.656 Make One Call With Array

Avoid calling the same functions several times by batching the calls with arrays.

Calling the same function to chain modifications is slower than calling the same function once, with all the transformations at the same time. Some PHP functions accept scalars or arrays, and using the later is more efficient. Potential replacements :

Function	Replacement
str_replace() str_ireplace() substr_replace() preg_replace() preg_replace_callback()	str_replace() str_replace() substr_replace() preg_replace() preg_replace_callback_array()

```
<?php

$string = 'abcdef';

//str_replace() accepts arrays as arguments
$string = str_replace( ['a', 'b', 'c'],
                       ['A', 'B', 'C'],
                       $string);

// Too many calls to str_replace
$string = str_replace( 'a', 'A', $string);
$string = str_replace( 'b', 'B', $string);
$string = str_replace( 'c', 'C', $string);

// Too many nested calls to str_replace
$string = str_replace( 'a', 'A', str_replace( 'b', 'B', str_replace( 'c', 'C',
↪$string)));

?>
```

Suggestions

- Use str_replace() with arrays as arguments.
- Use preg_replace() with arrays as arguments.
- Use preg_replace_callback() for merging multiple complex calls.

Specs

Short name	Performances/MakeOneCall
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	csv
Examples	*HuMo-Gen*, *Edusoho*
Available in	Entreprise Edition, Exakat Cloud

14.2.657 Makes Class Constant Definition

This rule adds DEFINITION link between class constant definitions and their usage. These links are used later to identify the values delivered by the constant.

```
<?php

class x {
    public const A = 1;
}

// Link to the constant definition
echo x::A;

// Cannot find the original class
echo $x::A;

?>
```

Specs

Short name	Complete/MakeClassConstantDefinition
Rulesets	*All*, *CE*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	class-constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.658 Malformed Octal

Those numbers starts with a 0, so they are using the PHP octal convention. Therefore, one can't use 8 or 9 figures in those numbers, as they don't belong to the octal base. The resulting number will be truncated at the first erroneous figure. For example, 090 is actually 0, and 02689 is actually 22.

```
<?php

// A long way to write 0 in PHP 5
$a = 0890;

// A fatal error since PHP 7

?>
```

Also, note that very large octal, usually with more than 21 figures, will be turned into a real number and undergo a reduction in precision.

Suggestions

- Fix the octal
- Use another base to represent the number

Specs

Short name	Type/MalformedOctal
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	octal
Available in	Entreprise Edition, Exakat Cloud

14.2.659 Manipulates INF

This code handles INF situations. INF represents the infinity, when used in a float context. It happens when a calculation returns a number that is much larger than the maximum allowed float (not integer), or a number that is not a Division by 0.

```
<?php

// pow returns INF, as it is equivalent to 1 / 0 ^ 2
$a = pow(0,-2); //

// exp returns an actual value, but won't be able to represent it as a float
$a = exp(PHP_INT_MAX);

// 0 ^ -1 is like 1 / 0 but returns INF.
$a = pow(0, -1);

var_dump(is_infinite($a));

// This yields a Division by zero exception
$a = 1 / 0;

?>
```

See also Math predefined constants.

Specs

Short name	Php/IsINF
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.10.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	class, interface
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.660 Manipulates NaN

This code handles `Not-a-Number` situations. `Not-a-Number`, also called `NaN`, happens when a calculation can't return an actual float.

```
<?php

// acos returns a float, unless it is not possible.
$a = acos(8);

var_dump(is_nan($a));

?>
```

See also Floats.

Suggestions

- Add the third argument, and set it to true

Specs

Short name	Php/IsNAN
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.10.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	float
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.661 Mass Creation Of Arrays

Literal creation of an array, by assigning a lot of index.

```
<?php

$row['name'] = $name;
$row['last'] = $last;
$row['address'] = $address;

?>
```

Specs

Short name	Arrays/MassCreation
Rulesets	*All*
Exakat since	1.1.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.662 Max Level Of Nesting

Avoid nesting structures too deep, as it hurts readability.

Nesting structures are : if/then, switch, for, foreach, while, do…while. Ternary operator, try/catch are not considered a nesting structures.

Closures, and more generally, functions definitions are counted separatedly.

This analysis checks for 4 levels of nesting, by default. This may be changed by configuration.

```
<?php

// 5 levels of indentation
function foo() {
    if (1) {
        if (2) {
            if (3) {
                if (4) {
                    if (5) {
                        51;
                    } else {
                        5;
                    }
                } else {
                    4;
                }
            } else {
                3;
            }
        } else {
            2;
        }
    } else {
        1;
    }
}

// 2 levels of indentation
function foo() {
    if (1) {
        if (2) {
            // 3 levels of indentation
            return function () {
                if (3) {
                    if (4) {
                        if (5) {
                            51;
                        } else {
                            5;
                        }
                    } else {
                        4;
                    }
                } else {
```

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```
                    3;
                }
            }
        } else {
            2;
        }
    } else {
        1;
    }
}


?>
```

Name	Default	Type	Description
maxLevel	4	integer	Maximum level of nesting for control flow structures in one scope.

See also *Indentation and Spacing in PHP <https://courses.cs.washington.edu/courses/cse154/17au/styleguide/php/spacing-indentation-php.html>*.

Suggestions

- Refactor code to avoid nesting
- Export some nested blocks to an external method or function

Specs

Short name	Structures/MaxLevelOfIdentation
Rulesets	*All*, *Analyze*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	indentation
Available in	Entreprise Edition, Exakat Cloud

14.2.663 Maybe Missing New

This functioncall looks like a class instantiation that is missing the new keyword.

Any function definition was found for that function, but a class with that name was. New is probably missing.

```
<?php

// Functioncall
$a = foo();
```

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```
// Class definition
class foo {}
// Function definition
function foo {}


// Functioncall
$a = BAR;

// Function definition
class bar {}
// Constant definition
const BAR = 1;


?>
```

Suggestions

- Add the new
- Rename the class to distinguish it from the function
- Rename the function to distinguish it from the class

Specs

Short name	Structures/MissingNew
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.0.4
PHP Version	All
Severity	Critical
Time To Fix	Instant (5 mins)
Precision	Medium
Features	new
Available in	Entreprise Edition, Exakat Cloud

14.2.664 Mbstring Third Arg

Some mbstring functions use the third argument for offset, not for encoding.

Those are the following functions :

- mb_strrichr()
- mb_stripos()
- mb_strrpos()
- mb_strstr()

- mb_stristr()
- mb_strpos()
- mb_strripos()
- mb_strrchr()
- mb_strrichr()
- mb_substr()

```
<?php

// Display BC
echo mb_substr('ABC', 1 , 2, 'UTF8');

// Yields Warning: mb_substr() expects parameter 3 to be int, string given
// Display 0 (aka, substring from 0, for length (int) 'UTF8' => 0)
echo mb_substr('ABC', 1 ,'UTF8');

?>
```

Suggestions

- Add a third argument
- Use the default encoding (aka, omit both third AND fourth argument)

Specs

Short name	Structures/MbstringThirdArg
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	mbstring
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.665 Mbstring Unknown Encoding

The encoding used is not known to the ext/mbstring extension.

This analysis takes in charge all `mbstring` encoding and aliases. The full list of supported mbstring encoding is available with mb_list_encodings(). Each encoding alias is available with mb_encoding_aliases().

```
<?php

// Invalid encoding
$str = mb_strtolower($str, 'utf_8');
```

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```
// Valid encoding
$str = mb_strtolower($str, 'utf8');
$str = mb_strtolower($str, 'UTF8');
$str = mb_strtolower($str, 'UTF-8');

?>
```

See also ext/mbstring.

Suggestions

- Use a valid mbstring encoding

Specs

Short name	Structures/MbstringUnknownEncoding
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	encoding, mbstring
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.666 Mbstring Unknown Encodings

mbstring functions require one of its supported encoding as parameter.

For example, mb_chr() requires encoding as second parameter. The supported encodings are available with mb_list_encodings() and mb_encoding_aliases().

A wrong encoding generates a fatal error. Here are some of the dropped encodings, depending on PHP versions:

- **PHP 7.0**
  - auto
- **PHP 8.0**
  - pass
- **PHP 8.1**
  - wchar
  - byte2be
  - byte2le
  - byte4be
  - byte4le
  - jis-ms

  - cp50220raw
- **PHP 8.2**
  - qprint
  - base64
  - uuencode
  - html-entities

```
<?php

     print mb_chr(128024, 'UTF-8'); // emoji of an elephant

     //Argument #2 ($encoding) must be a valid encoding, "elephpant" given
     print mb_chr($value, 'elephpant'));
}
?>
```

Suggestions

- Use a valid encoding for the PHP version.

Specs

Short name	Structures/MbStringNonEncodings
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.0
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	mbstring, encoding
Available in	Entreprise Edition, Exakat Cloud

14.2.667 Md5 Strings

List of all the MD5 values hard coded in the application.

MD5 values are detected as hexadecimal strings, of length 32. No attempt at recognizing the origin value is made, so any such strings, including dummy '11111111111111111111111111111111' are reported.

```
<?php
    // 32
   $a = '0cc175b9c0f1b6a831c399e269771111';

?>
```

See also MD5.

Specs

Short name	Type/Md5String
Rulesets	*All*, *Appinfo*, *CE*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	md5
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.668 Memoize MagicCall

Cache calls to magic methods in local variable. Local cache is faster than calling again the magic method as soon as the second call, provided that the value hasn't changed.

`__get` is slower, as it turns a simple member access into a full method call. The caching is not possible if the processing of the object changes the value of the property.

```
<?php

class x {
    private $values = array();

    function __get($name) {
        return $this->values[$name];
    }
    // more code to set values to this class
}

function foo(x $b) {
    $a = $b->a;
    $c = $b->c;

    $d = $c;     // using local cache, no new access to $b->__get($name)
    $e = $b->a;  // Second access to $b->a, through __get
}

function bar(x $b) {
    $a = $b->a;
    $c = $b->c;

    $b->bar2(); // this changes $b->a and $b->c, but we don't see it

    $d = $b->c;
    $e = $b->a;  // Second access to $b->a, through __get
}

?>
```

Name	Default	Type	Description
minMagicCallsToGet	2	integer	Minimal number of calls of a magic property to make it worth locally caching.

See also __get performance questions with PHP, *Make Magic Concrete* and Benchmarking magic.

Suggestions

- Cache the value in a local variable, and reuse that variable
- Make the property concrete in the class, so as to avoid __get() altogether

Specs

Short name	Performances/MemoizeMagicCall
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	1.8.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	memoization
Available in	Entreprise Edition, Exakat Cloud

14.2.669 Merge If Then

Two successive if/then into one, by merging the two conditions.

```
<?php

// two merge conditions
if ($a == 1 && $b == 2) {
    // doSomething()
}

// two distinct conditions
// two nesting
if ($a == 1) {
    if ($b == 2) {
        // doSomething()
    }
}

?>
```

Suggestions

- Merge the two structures into one

Specs

Short name	Structures/MergeIfThen
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	if-then
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.670 Method Collision Traits

Two or more traits are included in the same class, and they have methods collisions.

Those collisions should be solved with a `use` expression. When they are not, PHP stops execution with a fatal error : `Trait method M has not been applied, because there are collisions with other trait methods on C`.

The code shown lints, but doesn't execute.

```
<?php

trait A {
    public function A() {}
    public function M() {}
}

trait B {
    public function B() {}
    public function M() {}
}

class C {
    use  A, B;
}

class D {
    use  A, B{
        B::M insteadof A;
    };
}

?>
```

See also Traits.

Specs

Short name	Traits/MethodCollisionTraits
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*
Exakat since	1.4.2
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	High
Features	method, trait, method-collision
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.671 Method Could Be Private Method

The following methods are never used outside their class of definition. Given the analyzed code, they could be set as private.

```
<?php

class foo {
    public function couldBePrivate() {}
    public function cantdBePrivate() {}

    function bar() {
        // couldBePrivate is used internally.
        $this->couldBePrivate();
    }
}

class foo2 extends foo {
    function bar2() {
        // cantdBePrivate is used in a child class.
        $this->cantdBePrivate();
    }
}

//couldBePrivate() is not used outside
$foo = new foo();

//cantdBePrivate is used outside the class
$foo->cantdBePrivate();

?>
```

Note that dynamic properties (such as $x->$y) are not taken into account.

Specs

Short name	Classes/CouldBePrivateMethod
Rulesets	*All*, *Class Review*
Exakat since	0.12.11
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	private, method
Available in	Entreprise Edition, Exakat Cloud

14.2.672 Method Could Be Static

A method that doesn't make any usage of $this could be turned into a static method.

While static methods are usually harder to handle, recognizing the static status is a first step before turning the method into a standalone function.

```
<?php

class foo {
    static $property = 1;

    // legit static method
    static function staticMethod() {
        return self::$property;
    }

    // This is not using $this, and could be static
    function nonStaticMethod() {
        return self::$property;
    }

    // This is not using $this nor self, could be a standalone function
    function nonStaticMethod() {
        return self::$property;
    }
}

?>
```

Suggestions

- Make the method static
- Make the method a standalone function
- Make use of $this in the method : may be it was forgotten.

Specs

Short name	Classes/CouldBeStatic
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	1.5.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static
Examples	*FuelCMS*, *ExpressionEngine*
Available in	Entreprise Edition, Exakat Cloud

14.2.673 Method Has Fluent Interface

Mark a method when it only returns $this.

Fluent interfaces allows for chaining methods calls. This implies that $this is always returned, so that the next method call is done on the same object.

```
<?php

$object = new foo();
$object->this()
       ->is()
       ->a()
       ->fluent()
       ->interface();

class foo {
    function this() {
        // doSomething
        return $this;
    }

    function is() {
        // doSomethingElse
        return $this;
    }

    /// Etc. for a(), fluent(), interface()...
}

?>
```

See also Fluent Interfaces in PHP and Fluent Interfaces are Evil.

Specs

Short name	Functions/HasFluentInterface
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.674 Method Is A Generator

This rule marks functions, methods, ... that are using `yield` and `yield from` keywords. The usage of that keyword makes them Generator <https://www.php.net/manual/en/class.`generator.php>`_, as is show by the compulsory return type of `Generator`.

```
<?php

function generator() {
    yield from generator2();

    return 3;
}

function generator2() {
    yield 1;
    yield 2;
}

?>
```

See also Generators overview.

Specs

Short name	Functions/IsGenerator
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	generator, yield, yield-from
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.675 Method Is Not An If

When a method consists only in one if statement, it might be worth refactoring.

Each of the blocks of the if/then structure may be turned into their own method, so has to keep operations distinct.

Then, the condition can be used as part of a larger method.

```
<?php

function foo($a) {
     if ($a === 1) {
             return 1;
     } else {
             return 2;
     }
}

?>
```

Suggestions

- Export the blocks to distinct functions
- Bail out early

Specs

Short name	Functions/MethodIsNotAnIf
Rulesets	*All*, *Analyze*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.676 Method Is Not For Fluent Interface

Mark a method when it contains at least one return that doesn't return $this. Such method cannot be used for fluent interface, which always require the current object to be returned.

Null is not accepted here: it would break the execution of the method call chains if it was returned.

```
<?php

class x {
     // fluent interface : $this is chainable
     function foo() {
             return $this;
     }
```

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```
    // Not for fluent interface : the method may return something else
    function goo($a) {
            if ($a == true) {
                    return $this;
            } else {
                    return 3;
            }
    }
}

?>
```

Specs

Short name	Functions/HasNotFluentInterface
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	method, fluent-interface
Available in	Entreprise Edition, Exakat Cloud

14.2.677 Method Is Overwritten

This rule marks a method that is overwritten in a child class.

```
<?php

class A {
    function intactMethodA() {}         // Not overwritten in any children
    function overwrittenMethodInAA() {} // overwritten in AA
}

class AA extends A {
    function intactMethodAA() {}        // Not overwritten, because no extends
    function overwrittenMethodInAA() {} // Not overwritten, because no extends
}

?>
```

Specs

Short name	Classes/MethodIsOverwritten
Rulesets	*All*
Exakat since	0.10.9
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	inheritance
Available in	Entreprise Edition, Exakat Cloud

14.2.678 Method Property Confusion

There might be confusion between a property and a method when they bear the same name. While it is a valid PHP syntax, using the same name for properties and methods leads to possible confusion in the code.

```
<?php

class x {
     private $query = 1;

     function query() : void {}

     function foo() {
             // The property is useless : it may be a call to the method, in fact
             $this->query;

             // The method call returns nothing : PHP replaces it with NULL.
             $c = $this->query();
     }
}

?>
```

Suggestions

- Change the name : either the property, or the method

Specs

Short name	Classes/MethodPropertyConfusion
Rulesets	*All*, *Changed Behavior*, *Semantics*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.679 Method Signature Must Be Compatible

Make sure methods signature are compatible.

PHP generates the infamous Fatal error at execution : `Declaration of FooParent\:\:Bar() must be compatible with FooChildren\:\:Bar()`

```
<?php

class x {
    function xa() {}
}

class xxx extends xx {
    function xa($a) {}
}

?>
```

Suggestions

- Fix the child class method() signature.
- Fix the parent class method() signature, after checking that it won't affect the other children.

Specs

Short name	Classes/MethodSignatureMustBeCompatible
Rulesets	*All*, *Analyze*, *LintButWontExec*
Exakat since	1.2.9
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	High
Features	typehint, type-covariance, type-contravariance
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.680 Method Usage

This rule reports method usages. The methods that are monitored are set with the parameter `searchFor`.

```
<?php

// searchFor = \X::foo
function bar(X $arg) {
     $arg->foo();
}

?>
```

Name	Default	Type	Description
searchFor		string	Method to report in the codes : use static syntax to describe them : a::foo(); abc::goo().

Specs

Short name	Custom/MethodUsage
Rulesets	*All*, *Changed Behavior*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.681 Method Used Below

Mark methods that are used in children classes.

```
<?php

class foo {
    // This method is used in children
    protected function protectedMethod() {}

    // This method is not used in children
    protected function localProtectedMethod() {}

    private function foobar() {
        // protectedMethod is used here, but defined in parent
        $this->localProtectedMethod();
    }
}

class foofoo extends foo {
```

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```
    private function bar() {
        // protectedMethod is used here, but defined in parent
        $this->protectedMethod();
    }
}

?>
```

This doesn't mark the current class, nor the (grand-)`parent <https://www.php.net/manual/en/language.oop5.paamayim-nekudotayim.php>`_ ones.

See also inheritance.

Specs

Short name	Classes/MethodUsedBelow
Rulesets	*All*
Exakat since	0.12.11
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.682 Methodcall On New

It is possible to call a method right at object instantiation.

This syntax was added in PHP 5.4+. Before, this was not possible : the object had to be stored in a variable first. This syntax is interesting when the object is not reused, and may be discarded

```
<?php

// Data is collected
$data = data_source();

// Data is saved, but won't be reused from this databaseRow object. It may be ignored.
$result = (new databaseRow($data))->save();

// The actual result of the save() is collected and tested.
if ($result !== true) {
    processSaveError($data);
}

?>
```

Specs

Short name	Php/MethodCallOnNew
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*
Exakat since	0.8.4
PHP Version	With PHP 5.4 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 5.4 - More
Precision	Very high
Features	new, methodcall
Available in	Entreprise Edition, Exakat Cloud

14.2.683 Methods That Should Not Be Used

> These methods and functions only throw an exception, or raise an error. As such, they are a warning that such function or method shouldn't be used.

Those functions could also be marked as deprecated, with an attribute or a phpdoc. This is not taken into account by this analysis.

```
<?php

function obsoleteFoo() {
    throw new exception('Don\'t use obsoleteFoo() but rather the new version of foo().');
}
?>
```

Specs

Short name	Functions/CantUse
Rulesets	*All*, *CE*, *Changed Behavior*
Exakat since	1.8.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, deprecated
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.684 Methods Without Return

List of all the functions, closures, methods that have no explicit return.

Functions with the `void` or `never` return types, are omitted.

```
<?php

// With return null : Explicitly not returning
function withExplicitReturn($a = 1) {
    $a++;
    return null;
}

// Without indication
function withoutExplicitReturn($a = 1) {
    $a++;
}

// With return type void : Explicitly not returning
function withExplicitReturnType($a = 1) : void {
    $a++;
}

?>
```

See also return.

Suggestions

- Add the returntype 'void' to make this explicit behavior

Specs

Short name	Functions/WithoutReturn
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	return, never
Available in	Entreprise Edition, Exakat Cloud

14.2.685 Mime Types

List of Mime Types that are mentioned in the code.

```
<?php

$mimeType = 'multipart/form-data';
$mimeType = 'image/jpeg';
$mimeType = 'application/zip';

header('Content-Type: '.$mimeType);

?>
```

See also Media Type and MIME..

Specs

Short name	Type/MimeType
Rulesets	*All*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.686 Minus One On Error

Some PHP native functions return -1 on error. They also return 1 in case of success, and 0 in case of failure. This leads to confusions.

In case the native function is used as a condition without explicit comparison, PHP type cast the return value to a boolean. In this case, -1 and 1 are both converted to true, and the condition applies. This means that an error situation is mistaken for a successful event. This analysis searches for if/then structures, ternary operators inside while() / do…`while() <https://www.php.net/manual/en/control-structures.while.php>`_ loops.

```
<?php

// Proper check of the return value
if (openssl_verify($data, $signature, $public) === 1) {
    $this->loginAsUser($user);
}

// if this call fails, it returns -1, and is confused with true
if (openssl_verify($data, $signature, $public)) {
    $this->loginAsUser($user);
}
?>
```

See also Can you spot the vulnerability? (openssl_verify) and Incorrect Signature Verification.

Suggestions

- Compare explicitly the return value to 1

Specs

Short name	Security/MinusOneOnError
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.8.0
PHP Version	All
Severity	Critical
Time To Fix	Instant (5 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.687 Mismatch Parameter And Type

When the name of the parameter contradicts the type of the parameter.

This is mostly semantics, so it will affect the coder and the auditor of the code. PHP is immune to those errors.

```
<?php

// There is a discrepancy between the typehint and the name of the variable
function foo(int $string) { }

// The parameter name is practising coding convention typehints
function bar(int $int) { }

?>
```

Suggestions

- Synch the name of the parameter and the typehint.

Specs

Short name	Functions/MismatchParameterAndType
Rulesets	*All*, *Semantics*
Exakat since	2.1.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	parameter, type, semantics
Available in	Entreprise Edition, Exakat Cloud

14.2.688 Mismatch Parameter Name

> Parameter name change in overwritten method. This may lead to errors when using PHP 8.0 named arguments.

PHP use the name of the parameter in the method whose code is executed. When the name change between the method and the overwritten method, the consistency is broken.

Here is another example, in early PHP 8.0 (courtesy of Carnage).

```php
<?php

class x {
    function getValue($name) {}
}

class y extends x {
    // consistent with the method above
    function getValue($name) {}
}

class z extends x {
    // inconsistent with the method above
    function getValue($label) {}
}

?>
```

Suggestions

- Make sure all the names are the same, between methods

Specs

Short name	Functions/MismatchParameterName
Rulesets	*All*, *Analyze*, *CE*, *Changed Behavior*, *CompatibilityPHP80*
Exakat since	2.1.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	named-parameter
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.689 Mismatch Properties Typehints

Properties must match within the same family.

When a property is declared both in a parent class, and a child class, they must have the same type. The same type includes a possible null value.

This doesn't apply to private properties, which are only visible locally.

```
<?php

// property $p is declared as an object of type a
class x {
    protected A $p;
}

// property $p is declared again, this time without a type
class a extends x {
    protected $p;
}
?>
```

This code will lint, but not execute.

Suggestions

- Remove some of the property declarations, and only keep it in the highest ranking parent
- Match the typehints of the property declarations
- Make the properties private
- Remove the child class (or the parent class)

Specs

Short name	Classes/MismatchProperties
Rulesets	*All*, *Analyze*, *Class Review*, *LintButWontExec*
Exakat since	2.1.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	property
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.690 Mismatch Type And Default

The argument typehint and its default value don't match.

The code may lint and load, and even work when the arguments are provided. Though, PHP won't eventually execute it.

Most of the mismatch problems are caught by PHP at linting time. It displays the following error message : 'Argument 1 passed to foo() must be of the type integer, string given'.

The default value may be a constant (normal or class constant) : as such, PHP might find its value only at execution time, from another include. As such, PHP doesn't report anything about the situation at compile time.

The default value may also be a constant scalar expression : since PHP 7, some of the simple operators such as +, -, , %, `* <https://www.php.net/manual/en/language.operators.arithmetic.php>`_, etc. are available to build default values. Among them, the ternary operator and Coalesce. Again, those expression may be only evaluated at execution time, when the value of the constants are known.

PHP reports typehint and default mismatch at compilation time, unless there is a static expression that can't be resolved within the compiled file : then it is checked only at runtime, leading to a Fatal error.

```
<?php

// bad definition : the string is actually an integer
const STRING = 3;

function foo(string $s = STRING) {
    echo $s;
}

// works without problem
foo('string');

// Fatal error at compile time
foo();

// Fail only at execution time (missing D), and when default is needed
function foo2(string $s = D ? null : array()) {
    echo $s;
}

?>
```

See also Type declarations, *Wrong Type Returned*, *Mismatch Type And Default* and *Wrong Typed Property Default*.

Suggestions

- Match the typehint with the default value
- Do not rely on PHP type juggling to change the type on the fly

Specs

Short name	Functions/MismatchTypeAndDefault
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*, *Typechecks*
Exakat since	1.2.9
PHP Version	All
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	Medium
Features	type, default
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.691 Mismatched Default Arguments

Arguments are relayed from one method to the other, and the arguments have different default values.

Although it is possible to have different default values, it is worth checking why this is actually the case.

```
<?php

function foo($a = null, $b = array() ) {
    // foo method calls directly bar.
    // When argument are provided, it's OK
    // When argument are omited, the default value is not the same as the next method
    bar($a, $b);
}

function bar($c = 1, $d = array() ) {

}

?>
```

This analysis reports the original arguments. Starting from it, follow the usage of the argument in its method, and find calls to other methods.

This analysis omits reporting argument when one of them does not have a default value.

Suggestions

- Synchronize default values to avoid surprises
- Drop some of the default values

Specs

Short name	Functions/MismatchedDefaultArguments
Rulesets	*All*, *Analyze*, *Typechecks*
Exakat since	0.12.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint, parameter
Examples	*SPIP*
Available in	Entreprise Edition, Exakat Cloud

14.2.692 Mismatched Ternary Alternatives

A ternary operator should yield the same type on both branches.

Ternary operator applies a condition, and yield two different results. Those results will then be processed by code that expects the same types. It is recommended to match the types on both branches of the ternary operator.

```
<?php

// $object may end up in a very unstable state
$object = ($type == 'Type') ? new $type() : null;

//same result are provided by both alternative, though process is very different
$result = ($type == 'Addition') ? $a + $b : $a * $b;

//Currently, this is omitted
$a = 1;
$result = empty($condition) ? $a : 'default value';
$result = empty($condition) ? $a : getDefaultValue();

?>
```

Suggestions

- Use compatible data type in both branch of the alternative
- Turn the ternary into a if/then, with different processing

Specs

Short name	Structures/MismatchedTernary
Rulesets	*All*, *Analyze*, *Suggestions*
Exakat since	0.12.1
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Examples	*phpadsnew*, *OpenEMR*
Available in	Entreprise Edition, Exakat Cloud

14.2.693 Mismatched Typehint

Relayed arguments don't have the same typehint.

Typehint acts as a filter method. When an object is checked with a first class, and then checked again with a second distinct class, the whole process is always false : $a can't be of two different classes at the same time.

```
<?php

// Foo() calls bar()
function foo(A $a, B $b) {
    bar($a, $b);
}

// $a is of A typehint in both methods, but
// $b is of B then BB typehing
function bar(A $a, BB $b) {

}

?>
```

Note : This analysis currently doesn't check generalisation of classes : for example, when B is a child of BB, it is still reported as a mismatch.

Suggestions

- Ensure that the default value match the expected typehint.

Specs

Short name	Functions/MismatchedTypehint
Rulesets	*All*, *Analyze*, *Typechecks*
Exakat since	0.12.3
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	typehint
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.694 Missing Abstract Method

Abstract methods must have a non-abstract version for the class to be complete. A class that is missing one abstract definition cannot be instantiated.

```
<?php

// This is a valid definition
class b extends a {
    function foo() {}
    function bar() {}
}

// This compiles, but will emit a fatal error if instantiated
class c extends a {
    function bar() {}
}

// This illustration lint but doesn't run.
// moving this class at the beginning of the code will make lint fail
abstract class a {
    abstract function foo() ;
}

?>
```

See also Classes Abstraction.

Suggestions

- Implement the missing methods
- Remove the partially implemented class
- Mark the partially implemented class abstract

Specs

Short name	Classes/MissingAbstractMethod
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.1.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	abstract
Available in	Entreprise Edition, Exakat Cloud

14.2.695 Missing Assignation In Command

A variable is assigned in one of the branch, but not the other. Such variable might be needed later, and not available.

elseif() and branches that returns or goto somewhere else are omitted.

```
<?php

if ($condition) {
  $a = 1;
  $b = 2;
} else {
  $a = 3;
}

// $b might be missing
?>
```

Specs

Short name	Structures/MissingAssignation
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	wip
Available in	Entreprise Edition, Exakat Cloud

14.2.696 Missing Attribute Attribute

> A class that servers as attribute, should have the attribute #[`Attribute <https://www.php.net/attribute>`_].

While not strictly required, it is still recommended to create an actual class for every attribute.

```
<?php

namespace Example;

use Attribute;

#[Attribute]
class MyAttribute
{
}

#Missing the above attribute
class MyOtherAttribute
{
}

?>
```

See also Declaring Attribute Classes.

Suggestions

- Add the Attribute attribute to those classes

Specs

Short name	Attributes/MissingAttributeAttribute
Rulesets	*All*, *Analyze*, *Attributes*, *Changed Behavior*, *PHP recommendations*
Exakat since	2.2.4
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	attribute
Available in	Entreprise Edition, Exakat Cloud

14.2.697 Missing Cases In Switch

It seems that some cases are missing in this switch structure.

When comparing two different switch() structures, it appears that some cases are missing in one of them. The set of cases are almost identical, but one of the values are missing.

Switch() structures using strings as literals are compared in this analysis. When the discrepancy between two lists is below 25%, both switches are reported.

```
<?php

// This switch operates on a, b, c, d and default
switch($a) {
    case 'a': doSomethingA(); break 1;
    case 'b': doSomethingB(); break 1;
    case 'c': doSomethingC(); break 1;
    case 'd': doSomethingD(); break 1;
    default: doNothing();
}

// This switch operates on a, b, d and default
switch($o->p) {
    case 'a': doSomethingA(); break 1;
    case 'b': doSomethingB(); break 1;

    case 'd': doSomethingD(); break 1;
    default: doNothing();
}

?>
```

In the example, one may argue that the 'c' case is actually handled by the 'default' case. Otherwise, business logic may request that omission.

Suggestions

- Add the missing cases
- Add comments to mention that missing cases are processed in the default case

Specs

Short name	Structures/MissingCases
Rulesets	*All*, *Analyze*
Exakat since	0.10.7
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Examples	*Tikiwiki*
Available in	Entreprise Edition, Exakat Cloud

14.2.698 Missing Include

The included files doesn't exists in the repository. The inclusions target a files that doesn't exist.

The analysis works with every type of inclusion : include(), require(), include_once() and require_once(). It also works with parenthesis when used as parameter delimiter.

The analysis doesn't take into account `include_path`. This may yield false positives.

```
<?php

include 'non_existent.php';

// variables are not resolved. This won't be reported.
require ($path.'non_existent.php');

?>
```

Missing included files may lead to a fatal error, a warning or other error later in the execution.

Name	Default	Type	Description
constant_or	100	integer	Literal value to be used when including files. For example, by configuring 'Files_MissingInclude["HOME_DIR"] = "/tmp/myDir/";', then 'include HOME_DIR . "my_class.php"; will be actually be used as '/tmp/myDir/my_class.php'. Constants must be configured with their correct case. Variable must be configured with their initial '$'. Configure any number of variable and constant names.

Specs

Short name	Files/MissingInclude
Rulesets	*All*, *Analyze*
Exakat since	1.1.2
PHP Version	All
Severity	Critical
Time To Fix	Instant (5 mins)
Precision	Very high
Features	include
Available in	Entreprise Edition, Exakat Cloud

14.2.699 Missing Parenthesis

Adding parenthesis to addition expressions make them more readable and to prevent bugs.

In the expressions below, the code is legit, although it is prone to misunderstanding.

```
<?php

// Missing some parenthesis!!
if (!$a instanceof Stdclass) {
    print "Not\n";
```

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```
} else {
    print "Is\n";
}

// Could this addition be actually,
$c = -$a + $b;

// this one ?
$c = -($a + $b);

// or this one ?
$c = $b - $a;

?>
```

See also Operators Precedence.

Suggestions

- Use parenthesis to show intent in the addition expression

Specs

Short name	Structures/MissingParenthesis
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.2.6
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Features	parenthesis, readability
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.700 Missing Some Returntype

The specified typehints are not compatible with the returned values.

The code of the method may return other types, which are not specified and will lead to a PHP fatal error. It is the case for insufficient typehints, when a typehint is missing, or inconsistent typehints, when the method returns varied types.

```
<?php

// correct return typehint
function fooSN() : ?string  {
    return shell_exec('ls -hla');
}

// insufficient return typehint
// shell_exec() may return null or string. Here, only string in specified for fooS, and␣
```

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```
↪that may lead to a Fatal error
function fooS() : string  {
    return shell_exec('ls -hla');
}

// inconsistent return typehint
function bar() : int {
    return rand(0, 10) ? 1 : "b";
}

?>
```

The analysis reports a method when it finds other return types than the one expected. In the case of multiple typehints, as for the last example, the PHP code may require an upgrade to PHP 8.0.

Suggestions

- Update the typehint to accept more types
- Update the code of the method to fit the expected returntype

Specs

Short name	Typehints/MissingReturntype
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	2.1.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	return-typehint
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.701 Missing Type In Definition

This rule reports any missing typehints, on parameters, return value, property or class constants. It is recommended to add types to all possible structures to make the type system more efficient.

__construct() and __destruct() should not use typehints, and are omitted.

Class constants are typed starting with PHP 8.3

```
<?php

// No type on return type
// n type on parameter
function missing($parameter) {
    /// code
}
```

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```
?>
```

Suggestions

- Add a useful typehint
- Add the mixed typehint

Specs

Short name	Typehints/MissingTypehints
Rulesets	*All*
Exakat since	2.3.6
PHP Version	With PHP 7.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	parameter, property, return-value
Available in	Entreprise Edition, Exakat Cloud

14.2.702 Missing Typehint

No typehint was found for a parameter, a return type for a method or a property.

void is considered a specified typehint, and is not reported here.

```
<?php

class x {
    private $no_property;

    function foo($no_typehint) : void {}

    function no_return_type() {}
}
?>
```

See also Type Declaration.

Suggestions

- Add a type to the argument, property or method

Specs

Short name	Functions/MissingTypehint
Rulesets	*All*, *Typechecks*
Exakat since	2.0.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.703 Missing Visibility

> Class constants, properties and methods usage may be controlled by the visibility option. When omitted, it is by default public.

When omitted, it should be added to make its configuration explicit.

```
<?php

class x {
    // property is private
    private $property = 1;

    // This method is public, and should bear the 'public' option
    function foo() {}
}

?>
```

See also Visibility.

Suggestions

- Add the public visibility
- Actually review the code and set a pragmatic visibility
- Set the visibility to private and wait for a request of access

Specs

Short name	Classes/MissingVisibility
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.3.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility
Related rule	*Ambiguous Visibilities*
Available in	Entreprise Edition, Exakat Cloud

14.2.704 Missing __isset() Method

When using empty() on magic properties, the magic method __isset() must be implemented.

```
<?php

class foo {
    function __get($name) { return 'foo'; }
    // No __isset method
}

// Return TRUE, until __isset() exists
var_dump(
   empty((new foo)->bar);
);

?>
```

See also When empty is not empty.

Suggestions

- Implement __isset() method when using empty on magic properties

Specs

Short name	Php/MissingMagicIsset
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	2.2.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	magic-method, isset
Available in	Entreprise Edition, Exakat Cloud

14.2.705 Mistaken Concatenation

A unexpected structure is built for initialization. It may be a typo that creates an unwanted expression.

```
<?php

// This 'cd' is unexpected. Isn't it 'c', 'd' ?
$array = array('a', 'b', 'c'. 'd');
$array = array('a', 'b', 'c', 'd');

// This 4.5 is unexpected. Isn't it 4, 5 ?
$array = array(1, 2, 3, 4.5);
$array = array(1, 2, 3, 4, 5);

?>
```

Specs

Short name	Arrays/MistakenConcatenation
Rulesets	*All*, *Coding conventions*
Exakat since	1.0.8
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	array, concatenation
Available in	Entreprise Edition, Exakat Cloud

14.2.706 Misused Yield

When chaining generator <https://www.php.net/`generator>`_, one must use the yield from keyword.

Forgetting the yield from keyword cancels the generator <https://www.php.net/`generator>`_ nature of the functioncall and nothing is emited.

Using `yield` on a generator <https://www.php.net/`generator>`_, yields ... the generator <https://www.php.net/`generator>`_, not the values of the generator <https://www.php.net/`generator>`_.

It is legit to yield a generator <https://www.php.net/`generator>`_, for later usage. This is just very uncommon, and worth a check.

```
<?php

function foo() {
     yield 1;
     // Goo is called, but not run as a generator
     goo();
}

function hoo() {
     yield 1;
```

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```
    // Goo is yield, but not run as a generator
    yield goo();
}

function goo() {
    yield 3;
}

?>
```

Suggestions

- Use the yield from keyword

Specs

Short name	Structures/MisusedYield
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	yield-from
Available in	Entreprise Edition, Exakat Cloud

14.2.707 Mixed Concat And Interpolation

> Mixed usage of concatenation and string interpolation is error prone. It is harder to read, and leads to overlooking the concatenation or the interpolation.

Fixing this issue has no impact on the output. It makes code less error prone.

There are some situations where using concatenation are compulsory : when using a constant, calling a function, running a complex expression or make use of the escape sequence. You may also consider pushing the storing of such expression in a local variable.

```
<?php

// Concatenation string
$a = $b . 'c' . $d;

// Interpolation strings
$a = "{$b}c{$d}";   // regular form
$a = "{$b}c$d";     // irregular form

// Mixed Concatenation and Interpolation string
$a = "{$b}c" . $d;
$a = $b . "c$d";
```

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```
$a = $b . "c{$d}";

// Mixed Concatenation and Interpolation string with constant
$a = "{$b}c" . CONSTANT;

?>
```

Suggestions

- Only use one type of variable usage : either interpolation, or concatenation

Specs

Short name	Structures/MixedConcatInterpolation
Rulesets	*All*, *Analyze*, *Coding conventions*
Exakat since	0.11.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	interpolation, concat
Examples	*SuiteCrm*, *Edusoho*
Available in	Entreprise Edition, Exakat Cloud

14.2.708 Mixed Keys In Array

Avoid mixing constants and literals in array keys.

When defining default values in arrays, it is recommended to avoid mixing constants and literals, as PHP may mistake them and overwrite the previous with the latter.

Either switch to a newer version of PHP (5.5 or newer), or make sure the resulting array hold the expected data. If not, reorder the definitions.

```
<?php

const ONE = 1;

$a = [ 1   => 2,
       ONE => 3];

?>
```

Suggestions

- Use only literals or constants when building the array

Specs

Short name	Arrays/MixedKeys
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and more recent
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.709 Mixed Keyword

> Never becomes a PHP keyword. It is used for typing functions which never returns anything (either dies or throw an exception).

It should be avoided in classes, traits and interfaces. Methods, anonymous classes (sic), namespaces and functions are OK.

Setting a *never* class in a namespaces doesn't make it legit.

```
<?php

// This is OK
function never() { }

// This is no OK
class never {  }

?>
```

See also mixed.

Suggestions

- Rename the classes, traits and interfaces with a different name.

Specs

Short name	Php/MixedKeyword
Rulesets	*All*, *CompatibilityPHP80*, *CompatibilityPHP81*
Exakat since	2.3.0
PHP Version	With PHP 8.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	mixed
Available in	Entreprise Edition, Exakat Cloud

14.2.710 Mixed Typehint Usage

Usage of the mixed typehint.

```
<?php

function foo() : mixed {
    switch(rand(0, 3)) {
        case 0:
            return false;

        case 1:
            return 'a';

        case 2:
            return [];

        default:
            return null;
    }
}

?>
```

See also Type declarations.

Specs

Short name	Php/MixedUsage
Rulesets	*All*, *Appinfo*
Exakat since	2.3.0
PHP Version	With PHP 8.1 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	mixed
Available in	Entreprise Edition, Exakat Cloud

14.2.711 Mkdir Default

mkdir() gives universal access to created folders, by default. It is recommended to gives limited set of rights (0755, 0700), or to explicitly set the rights to 0777.

```
<?php

// By default, this dir is 777
mkdir('/path/to/dir');

// Explicitely, this is wanted. It may also be audited easily
mkdir('/path/to/dir', 0777);

// This dir is limited to the current user.
mkdir('/path/to/dir', 0700);

?>
```

See also Why 777 Folder Permissions are a Security Risk.

Suggestions

- Always use the lowest possible privileges on folders
- Don't use the PHP default : at least, make it explicit that the 'universal' rights are voluntary

Specs

Short name	Security/MkdirDefault
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.12.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	dir
Examples	*Mautic*, *OpenEMR*
Available in	Entreprise Edition, Exakat Cloud

14.2.712 Modernize Empty With Expression

empty() accepts expressions as argument. This feature was added in PHP 5.5.

There is no need to store the expression in a variable before testing, unless it is reused later.

```
<?php

// PHP 5.5+ empty() usage
if (empty(foo($b . $c))) {
    doSomethingWithoutA();
}
```

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```
// Compatible empty() usage
$a = foo($b . $c);
if (empty($a)) {
    doSomethingWithoutA();
}

// $a2 is reused, storage is legit
$a2 = strtolower($b . $c);
if (empty($a2)) {
    doSomething();
} else {
    echo $a2;
}

?>
```

See also empty() and empty() supports arbitrary expressions.

Suggestions

- Avoid the temporary variable, and use directly empty()

Specs

Short name	Structures/ModernEmpty
Rulesets	*All*, *Analyze*
Exakat since	0.8.6
PHP Version	With PHP 5.5 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	empty
Available in	Entreprise Edition, Exakat Cloud

14.2.713 Modified Typed Parameter

Reports modified parameters, which have a non-scalar typehint. Such variables should not be changed within the body of the method. Unlike typed properties, which always hold the expected type, typed parameters are only guaranteed type at the beginning of the method block.

```
<?php

class x {

    function foo(Y $y) {
        // $y is type Y
```

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```
        // A cast version of $y is stored into $yAsString. $y is untouched.
        $yAsString = (string) $y;

        // $y is of type 'int', now.
        $y = 1;

        // Some more code

        // display the string version.
        echo $yAsString;
        // so, Y $y is now raising an error
        echo $y->name;
    }
}

?>
```

This problem doesn't apply to scalar types : by default, PHP pass scalar parameters by value, not by reference. Class types are always passed by reference.

This problem is similar to *Don't Unset Properties* : the static specification of the property may be unset, leading to confusing 'undefined property', while the class hold the property definition.

Suggestions

- Use different variable names when converting a parameter to a different type.
- Only use methods and properties calls on a typed parameter.

Specs

Short name	Functions/ModifyTypedParameter
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint, parameter
Available in	Entreprise Edition, Exakat Cloud

14.2.714 Modify Immutable

A class, marked as immutable, is being modified.

This attribute is supported as a PHPdoc comment, @immutable, and as a PHP 8.0 `attribute.

```
<?php

/** @Immutable */
#[Immutable]
class x {
    public $x = 1, $y, $z;
}

$x = new X;
// $x->x is modified, while it should not
$x->x = 2 + $x->z;

// $x->z is read only, as expected

?>
```

See also phpstorm-stubs/meta/attributes/Immutable.php and PhpStorm 2020.3 EAP #4: Custom PHP 8 Attributes.

Suggestions

- Removed the modification
- Clone the immutable object

Specs

Short name	Attributes/ModifyImmutable
Rulesets	*All*, *Analyze*, *Attributes*, *Changed Behavior*
Exakat since	2.2.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	attribute
Available in	Entreprise Edition, Exakat Cloud

14.2.715 Mono Or Multibytes Favorite

> PHP handles strings wity bytes, and also support multibytes with the mbstring extension. This analysis reports when the mono or the multi byte version has dominance.

The dominant one is reported when it has over 90% of usage. The remaining cases should be uniformed, so has to make this code consistent.

```
<?php

echo strlen($string) . PHP_EOL;

echo mb_strlen($string) . PHP_EOL;

?>
```

Sometimes, the same code may make usage of both the versions, depending on the manipulated string. For example, array index as single bytes strings, while user labels as multi-bytes.

The following functions are used for the analysis :

- mb_substr() => substr()()
- mb_strtolower() => strtolower()
- mb_strtoupper() => strtoupper()
- mb_strlen() => strlen()
- mb_strpos() => strpos()
- mb_strrpos() => strrpos()
- mb_stripos() => stripos()
- mb_strripos() => strripos()
- mb_strstr() => strstr()
- mb_stristr() => stristr()
- mb_strrchr() => strrchr()
- mb_substr_count() => substr_count()
- mb_chr() => chr()
- mb_ord() => ord()
- mb_parse_str() => parse_str()

This rule doesn't detect mb_string overloading, which remplace some of the mono-bytes functions by their mbstring counterpart, without changing the calls in the code.

Suggestions

- Make the code uniform by using one of the two versions of string functions

Specs

Short name	Structures/strOrMbFavorite
Rulesets	*All*, *Preferences*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.716 More Than One Level Of Indentation

According to PHP Object Calisthenics, one level of indentation is sufficient.

It helps to abide by the Single Responsibility rule and increase reuse.

```
<?php

class foo {
    function multipleLevels($array) {
        $return = array();
        foreach($array as $b) {

            // This is a second level of indentation
            if ($this->check($b)) { continue; }
            $return[] = $b;
        }
        return $return;
    }

    function oneLevel($array) {
        $return = array_filter($array, array($this, 'check'));
        return $return;
    }

}

?>
```

Specs

Short name	Structures/OneLevelOfIndentation
Rulesets	*All*
Exakat since	0.8.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	indentation
Available in	Entreprise Edition, Exakat Cloud

14.2.717 Multidimensional Arrays

Multidimensional arrays are arrays of arrays. Each level of array is called a dimension. The number of dimensions is arbitrary, though it is recommende not to abuse it beyond 4.

```
<?php
    $x[1][2] = $x[2][3][4];
?>
```

See also Type array and Using Multidimensional Arrays in PHP.

Specs

Short name	Arrays/Multidimensional
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	array, multidimensional-array
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.718 Multiline Expressions

List of expressions that are spread across several lines. The default is 2.

Structures that commonly accept several lines, like match(), switch(), classes, functions, closures, constant definitions, etc. are omitted.

Multiline expressions, like complex expressions, tend to be less readable. Although, some multiline expressions are written to make them more readable, compared to a one-line complex expression.

```
<?php

// foo is not reported for the multiline expression
function foo() {
```

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```
    // this echo is reported
    echo $a .
             $b .
             $c;
}


?>
```

Name	Default	Type	Description
min	2	integer	Minimal number of lines in an expression to report.

Suggestions

- Reduce the size of the expression by moving it to a method
- Reduce the size of the expression by splitting it into several ones

Specs

Short name	Structures/MultilineExpressions
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.6.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Related rule	*Too Complex Expression*
Available in	Entreprise Edition, Exakat Cloud

14.2.719 Multiple Alias Definitions

Some aliases are representing different classes across the repository. This leads to potential confusion.

Across an application, it is recommended to use the same namespace for one alias. Failing to do this lead to the same keyword to represent different values in different files, with different behavior. Those are hard to find bugs.

```
<?php

namespace A {
    use d\d; // aka D
}

// Those are usually in different files, rather than just different namespaces.

namespace B {
    use b\c as D; // also D. This could be named something else
}
```

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```
?>
```

Suggestions

- Give more specific names to classes
- Use an alias 'use AB ac BC' to give locally another name

Specs

Short name	Namespaces/MultipleAliasDefinitions
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*ChurchCRM*, *Phinx*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.720 Multiple Alias Definitions Per File

Avoid aliasing the same name with different aliases. This leads to confusion.

```
<?php

// first occurrence
use name\space\ClasseName;

// when this happens, several other uses are mentioned

// name\space\ClasseName has now two names
use name\space\ClasseName as anotherName;

?>
```

See also **:ref:`No title for `Namespaces/MultipleAliasDefinition`_** <No anchor for **`Namespaces/MultipleAliasDefinition`_**>`.

Specs

Short name	Namespaces/MultipleAliasDefinitionPerFile
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.10.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	alias
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.721 Multiple Catch

Indicates if a try structure have several catch statement.

```
<?php

// This try has several catch
try {
    doSomething();
} catch (RuntimeException $e) {
    processRuntimeException();
} catch (OtherException $e) {
    processOtherException();
}

?>
```

Specs

Short name	Structures/MultipleCatch
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	try
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.722 Multiple Class Declarations

It is possible to declare several times the same class in the code. PHP will not mention it until execution time, since declarations may be conditional.

```
<?php

$a = 1;

// Conditional declaration
if ($a == 1) {
    class foo {
        function method() { echo 'class 1';}
    }
} else {
    class foo {
        function method() { echo 'class 2';}
    }
}

(new foo())->method();
?>
```

It is recommended to avoid declaring several times the same class in the code. The best practice is to separate them with namespaces, they are for here for that purpose. In case those two classes are to be used interchangeably, the best is to use an abstract class or an interface.

See also class.

Suggestions

- Store classes with different names in different namespaces
- Change the name of the classes and give them a common interface to allow from common behavior

Specs

Short name	Classes/MultipleDeclarations
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.723 Multiple Classes In One File

> It is regarded as a bad practice to store several classes in the same file. This is usually done to make life of __autoload() easier.

It is often unexpected to find class `foo` in the `bar.php` file. This is also the case for interfaces and traits.

One good reason to have multiple classes in one file is to reduce include time by providing everything into one nice include.

```
<?php

// three classes in the same file
class foo {}
class bar {}
class foobar{}

?>
```

See also Is it a bad practice to have multiple classes in the same file?.

Suggestions

- Split the file into smaller files, one for each class

Specs

Short name	Classes/MultipleClassesInFile
Rulesets	*All*, *Appinfo*, *CE*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.724 Multiple Constant Definition

> Some constants are defined several times in your code. This will lead to a fatal error, if they are defined during the same execution.

Multiple definitions may happens at bootstrap, when the application code is collecting information about the current environment. It may also happen at inclusion time, which one set of constant being loaded, while other definition are not, avoiding conflict. Both are false positive.

```
<?php

// OS is defined twice.
if (PHP_OS == 'Windows') {
    define('OS', 'Win');
```

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```
} else {
    define('OS', 'Other');
}

?>
```

See also class.

Suggestions

- Move the constants to a class, and include the right class based on control flow.
- Give different names to the constants, and keep the condition close to utilisation.
- Move the constants to an external configuration file : it will be easier to identify that those constants may change.

Specs

Short name	Constants/MultipleConstantDefinition
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Examples	*Dolibarr*, *OpenConf*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.725 Multiple Declaration Of Strict_types

At least two declare() commands are declaring *strict_types* in one file. Only one is sufficient, and should be the first expression in the file.

Indeed, any *strict_types* set to 1 will have the final word. Setting *strict_types* to 0 will not revert the configuration, wherever is this call made.

```
<?php
declare(strict_types=1);
declare(strict_types=1);

// rest of the code

?>
```

See also Declare.

Suggestions

- Remove all but one of them. Keep the first one.

Specs

Short name	Php/MultipleDeclareStrict
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.1.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	declare, strict_types
Available in	Entreprise Edition, Exakat Cloud

14.2.726 Multiple Definition Of The Same Argument

A method's signature is holding twice (or more) the same argument. For example, function x ($a, $a) { ... }.

This is accepted as is by PHP 5, and the last parameter's value will be assigned to the variable. PHP 7.0 and more recent has dropped this feature, and reports a fatal error when linting the code.

```
<?php
  function x ($a, $a) { print $a; };
  x(1,2); => display 2

    // special case with a closure :
  function ($a) use ($a) { print $a; };
  x(1,2); => display 2

?>
```

However, this is not common programming practise : all arguments should be named differently.

See also Prepare for PHP 7 error messages (part 3).

Suggestions

- Give different names to different parameters

Specs

Short name	Functions/MultipleSameArguments
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	class
ClearPHP	all-unique-arguments
Available in	Entreprise Edition, Exakat Cloud

14.2.727 Multiple Exceptions Catch()

It is possible to have several distinct exceptions class caught by the same catch, preventing code repetition.

This is a new feature since PHP 7.1. This is a backward incompatible feature of PHP 7.1.

```
<?php

// PHP 7.1 and more recent
try {
    throw new someException();
} catch (Single $s) {
    doSomething();
} catch (oneType | anotherType $s) {
    processIdentically();
} finally {

}

// PHP 7.0 and older
try {
    throw new someException();
} catch (Single $s) {
    doSomething();
} catch (oneType $s) {
    processIdentically();
} catch (anotherType $s) {
    processIdentically();
} finally {

}

?>
```

Specs

Short name	Exceptions/MultipleCatch
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	try-catch, exception
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.728 Multiple Functions Declarations

Some functions are declared multiple times in the code.

PHP accepts multiple definitions for the same functions, as long as they are not in the same file (linting error), or not included simultaneously during the execution.

This creates to several situations in which the same functions are defined multiple times : the function may be compatible with various PHP version, but their implementation may not. Or the function is part of a larger library, and sometimes only need without the rest of the library.

It is recommended to avoid having several functions with the same name in one repository. Turn those functions into methods and load them when needed.

```
<?php

namespace a {
    function foo() {}
}

// Other file
namespace a {
    function foo() {}
    function bar() {}
}


?>
```

Specs

Short name	Functions/MultipleDeclarations
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.12.0
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	declaration
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.729 Multiple Identical Closure

Several closures are defined with the same code.

It may be interesting to check if a named function could be defined from them.

```
<?php

// the first squares, with closure
$squares= array_map(function ($a) {return $a * $a; }, range(0, 10) );

// later, in another file...
// another identical closure
$squaring = function ($x) { return $x * $x; };
foo($x, $squaring);

?>
```

This analysis also reports functions and methods that look like the closures : they may be considered for switch.

See also class.

Suggestions

- Create a function with the body of those closures, and replace the closures by the function's name.

Specs

Short name	Functions/MultipleIdenticalClosure
Rulesets	*All*, *Inventory*
Exakat since	1.5.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Medium
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.730 Multiple Identical Trait Or Interface

There is no need to use the same trait, or implements the same interface more than once in a class.

Up to PHP 7.4, this doesn't raise any warning. Traits are only imported once, and interfaces may be implemented as many times as wanted.

Since PHP 7.4, multiple implementations of the same interface in one class is reported at compilation time. It is possible to repeat the implementation in various levels of a class hierarchy (aka, same implements in a class and a parent).

This only applies in a single class: there are no checks in a class, or interface hierarchy.

```
<?php

class foo {
    use aTrait, aTrait, aTrait;
    use aTrait;
}

class bar implements anInterface, anInterface, anInterface {

}

?>
```

See also *Already Parents Interface*.

Suggestions

- Remove the duplicate trait or interface

Specs

Short name	Classes/MultipleTraitOrInterface
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	trait
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.731 Multiple Index Definition

Indexes that are defined multiple times in the same array.

They are indeed overwriting each other. This is most probably a typo.

```
<?php
    // Multiple identical keys
    $x = array(1 => 2,
               2 => 3,
               1 => 3);

    // Multiple identical keys (sneaky version)
    $x = array(1 => 2,
               1.1 => 3,
               true => 4);

    // Multiple identical keys (automated version)
    $x = array(1 => 2,
               3,        // This will be index 2
               2 => 4);  // this index is overwritten
?>
```

Name	Default	Type	Description
arrayMaxSize	15000	integer	Maximal size of arrays to be analyzed. This will speed up analysis, and leave the largest arrays untouched.

Suggestions

- Review your code and check that arrays only have keys defined once.
- Review carefully your code and check indirect values, like constants, static constants.

Specs

Short name	Arrays/MultipleIdenticalKeys
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Rector*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	array, index
Examples	*Magento*, *MediaWiki*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.732 Multiple Property Declaration

> The same property is declared in various classes, at least two, in the same class hierarchy. The declarations must be compatible one another, and one of them should be sufficient.

Generally, the higher declaration should be the one to stay.

Keeping one definition makes it clear which class is responsible for that property. It also keep the code more flexible in case of an update on the property: only one place to change it.

```
<?php

class x {
     // redeclared in y
     public $p = 1;

     // declared only in x;
     public $q;
}

class y extends x {
     // redeclared in x
     public $p = 2;

     // declared only in y;
     public $q;
}

?>
```

Suggestions

- Remove all but one of the declarations
- Change the name of some of the properties, to keep their meaning separate

Specs

Short name	Classes/MultiplePropertyDeclaration
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.6.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	dry
Available in	Entreprise Edition, Exakat Cloud

14.2.733 Multiple Property Declaration On One Line

Multiple properties are defined on the same line. They could be defined independently, on separate expressions.

Keeping properties separate helps documenting and refactoring them independently.

```
<?php

// multiple definition on one expression
class point {
    private $x, $y, $z;

    // more code
}

// one line, one definition
class point2 {
    private $x;

    private $y;

    private $z;

    // more code
}

?>
```

Suggestions

- Split the definitions to one by line

Specs

Short name	Classes/MultiplePropertyDeclarationOnOneLine
Rulesets	*All*, *Coding conventions*
Exakat since	2.2.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.734 Multiple Returns

Functions and methods that have multiple return statement.

This makes it difficult to maintain : since the function may be short-circuited early, some later instruction may be omitted.

Ideally, guard clauses, which check if arguments are valid or not at the beginning of the method are the only exception to this rule.

```
<?php

function foo() {
    // This is a guard clause, that checks arguments.
    if ($a < 0) {
        return false;
    }

    $b = 0;
    for($i = 0; $i < $a; $i++) {
        $b += bar($i);
    }

    return $b;
}
?>
```

Currently, the engine doesn't spot guard clauses.

See also Single Function Exit Point.

Specs

Short name	Functions/MultipleReturn
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	return
Available in	Entreprise Edition, Exakat Cloud

14.2.735 Multiple Similar Calls

Several calls are made to functions or methods in a row. They may have different arguments, though having a lot of similar calls in a row may indicate that a loop is needed.

Alternatively, some native PHP functions use an arbitrary number of arguments to avoid multiple calls to the same function. For example, it is possible to call array_merge() once, or a loop on .= may be replaced with a call to implode().

```
<?php

echo $a[1];
echo $a[2];
echo $a[3];
echo $a[4];
echo $a[5];

// This could be
foreach($a as $v) {
    echo $v;
}

if (isset($a) && isset($b) && isset($c) && isset($d)) { }

// This could be coded as
if (isset($a, $b, $c, $d)) { }

?>
```

Suggestions

- Move the calls to a loop
- Tactically use one call to a function with multiple arguments. For example, isset() with multiple arguments.

Specs

Short name	Structures/MultipleSimilarCalls
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.3.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.736 Multiple Type Cases In Switch

This reports switch() instructions, which have several types in cases.

This might generate compatibility errors, as the comparison may succeed in different ways, depending on PHP versions. This is particularly the case for PHP 8.0, and values such as '0', '', 0, null, and false.

```
<?php

switch($a) {
     case 1:
             break;
```

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```
    case 'a':
            break;
}

?>
```

This situation doesn't affect match(), as it uses a strict type comparison, unlike switch().

Suggestions

- Make all the types identical in the cases.
- Switch to match() call, to include a type check

Specs

Short name	Structures/MultipleTypeCasesInSwitch
Rulesets	*All*, *CompatibilityPHP80*
Exakat since	2.5.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	switch
Available in	Entreprise Edition, Exakat Cloud

14.2.737 Multiple Type Variable

Avoid using the same variable with different types of data.

It is recommended to use different names for differently typed data, while processing them. This prevents errors where one believe the variable holds the former type, while it has already been cast to the later.

Incrementing variables, with math operations or concatenation, is OK : the content changes, but not the type. And casting the variable without storing it in itself is OK.

```
<?php

// $x is an array
$x = range('a', 'z');
// $x is now a string
$x = join('', $x);
$c = count($x); // $x is not an array anymore


// $letters is an array
$letters = range('a', 'z');
// $alphabet is a string
$alphabet = join('', $letters);
```

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```
// Here, $letters is cast by PHP, but the variable is changed.
if ($letters) {
    $count = count($letters); // $letters is still an array
}

?>
```

Suggestions

- Use a class that accepts one type of argument, and exports another type of argument.
- Use different variable for each type of data format : $rows (for array), $list (for implode(‘’, $rows))
- Pass the final result as argument to another method, avoiding the temporary variable

Specs

Short name	Structures/MultipleTypeVariable
Rulesets	*All*, *Analyze*
Exakat since	0.12.15
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	variable, type
Examples	*Typo3*, *Vanilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.738 Multiple Unset()

Unset() accepts multiple arguments, unsetting them one after each other. It is more efficient to call unset() once, than multiple times.

```
<?php

// One call to unset only
unset($a, $b, $c, $d);

// Too many calls to unset
unset($a);
unset($b);
unset($c);
unset($d);

?>
```

See also unset.

Suggestions

- Merge all unset into one call

Specs

Short name	Structures/MultipleUnset
Rulesets	*All*, *Suggestions*, *php-cs-fixable*
Exakat since	1.7.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	unset
Available in	Entreprise Edition, Exakat Cloud

14.2.739 Multiple Usage Of Same Trait

The same trait is used several times. One trait usage is sufficient.

PHP doesn't raise any error when traits are included multiple times.

```
<?php

// C is used twice, and could be dropped from B
trait A { use B, C;}
trait B { use C;}

?>
```

See also Traits.

Suggestions

- Remove any multiple traits from use expressions
- Review the class tree, and remove any trait mentioned multiple times

Specs

Short name	Traits/MultipleUsage
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	1.5.7
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	trait
Examples	*NextCloud*
Available in	Entreprise Edition, Exakat Cloud

14.2.740 Multiples Identical Case

Some cases are defined multiple times, but only one will be processed. Check the list of cases, and remove the extra one.

Exakat finds the value of the cases as much as possible, and ignore any dynamic cases (using variables).

```
<?php

const A = 1;

case ($x) {
    case 1 :
        break;
    case true:    // This is a duplicate of the previous
        break;
    case 1 + 0:   // This is a duplicate of the previous
        break;
    case 1.0 :    // This is a duplicate of the previous
        break;
    case A :      // The A constant is actually 1
        break;
    case $y  :    // This is not reported.
        break;
    default:

}
?>
```

It is also possible to write a valid switch statement, with all identical cases, and yet, different meaning each time. This is considered an edge case, and shall be manually removed.

```
<?php
$a = 10;

switch (13) {
    case ++$a:
        echo '1) '. $a;
        break;

    case ++$a:
        echo '2) '. $a;
        break;

    case ++$a:
        echo '3) '. $a;
        break;
}
?>
```

Suggestions

- Remove the double case
- Change the case to another and rightful value

Specs

Short name	Structures/MultipleDefinedCase
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Rector*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	switch
ClearPHP	no-duplicate-case
Examples	*SugarCrm*, *ExpressionEngine*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.741 Multiply By One

Multiplying by 1 is a fancy type cast.

If it is used to type cast a value to number, then casting (int) or (float) is clearer. This behavior may change with PHP 7.1, which has unified the behavior of all hidden casts.

```
<?php

// Still the same value than $m, but now cast to integer or float
$m = $m * 1;

// Still the same value than $m, but now cast to integer or float
$n *= 1;

// make typecasting clear, and merge it with the producing call.
$n = (int) $n;

?>
```

See also Type Juggling.

Suggestions

- Typecast to (int) or (float) for better readability
- Skip useless math operation altogether

Specs

Short name	Structures/MultiplyByOne
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Rector*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	neutral-element
ClearPHP	no-useless-math
Examples	*SugarCrm*, *Edusoho*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.742 Must Call Parent Constructor

> Some PHP native classes require a call to `parent\:\:`__construct() <https://www.php.net/manual/en/language.oop5.decon.php>`_` to be stable.

As of PHP 7.3, two classes currently need that call : `SplTempFileObject` and `SplFileObject`.

The error is only emitted if the class is instantiated, and a parent class is called.

```
<?php

class mySplFileObject extends \SplFileObject {
    public function __construct()    {
        // Forgottent call to parent::__construct()
    }
}

(new mySplFileObject())->passthru();
?>
```

See also Why, php? WHY???.

Suggestions

- Add a call to the parent's constructor
- Remove the extension of the parent class

Specs

Short name	Php/MustCallParentConstructor
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.4.1
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	parent
Available in	Entreprise Edition, Exakat Cloud

14.2.743 Must Return Methods

The following methods are expected to return a value that will be used later. Without return, they are useless.

Methods that must return are : __get(), __isset(), __sleep(), __toString(), __set_state(), __invoke(), __debugInfo().

Methods that may not return, but are often expected to : __call(), __callStatic().

```
<?php

class foo {
    public function __isset($a) {
        // returning something useful
        return isset($this->$var[$a]);
    }

    public function __get($a) {
        $this->$a++;
        // not returning...
    }

    public function __call($name, $args) {
        $this->$name(...$args);
        // not returning anything, but that's OK
    }

}
?>
```

Suggestions

- Add a return expression, with a valid data type
- Remove the return typehint

Specs

Short name	Functions/MustReturn
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	magic-method
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.744 Named Argument And Variadic

Variadic argument must be the last in the list of arguments. Since PHP 8.1, it is possible to use named arguments after a variadic argument.

```
<?php
  // named arguments may be after the variadic
  foo(...$a, a: 1);

  // positional arguments MUST be before the variadic
  foo(...$a,  1);

  // Normal way
  foo( 1, ...$a);
?>
```

Suggestions

- Always put the variadic at the end of the argument list

Specs

Short name	Php/NamedArgumentAndVariadic
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP80*, *CompatibilityPHP81*
Exakat since	2.5.0
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.745 Named Parameter Usage

> Named parameters is a way to call a method, by specifying the name of the argument, instead of their position order.

Named parameters works for both custom methods and PHP native functions.

```
<?php

// named parameters
foo(a : 1, b : 2);
foo(b : 2, a : 1);

// positional parameters
foo(1, 2);

function foo($a, $b) { }

?>
```

Specs

Short name	Php/NamedParameterUsage
Rulesets	*All*, *Appinfo*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*
Exakat since	2.3.0
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	named-parameter
Available in	Entreprise Edition, Exakat Cloud

14.2.746 Named Regex

Captured subpatterns may be named, for easier reference.

From the manual : It is possible to name a subpattern using the syntax `(?P<name>pattern)`. This subpattern will then be indexed in the matches array by its normal numeric position and also by name. PHP 5.2.2 introduced two alternative syntaxes `(?<name>pattern)` and `(?'name'pattern)`.

Naming subpatterns makes it easier to know what is read from the results of the subpattern : for example, `$r['name']` has more meaning than `$r[1]`.

Named subpatterns may also be shifted in the regex without impact on the resulting array.

```
<?php

$x = 'abc';
preg_match_all('/(?<name>a)/', $x, $r);
print_r($r[1]);
print_r($r['name']);

preg_match("/(?<name>a)(?'sub'b)/", $x, $s);
print $s[2];
print $s['sub'];

?>
```

See also Subpatterns.

Suggestions

- Use named regex, and stop using integer-named subpatterns

Specs

Short name	Structures/NamedRegex
Rulesets	*All*, *Suggestions*
Exakat since	1.4.9
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	regex
Examples	*Phinx*, *shopware*
Available in	Entreprise Edition, Exakat Cloud

14.2.747 Namespaces

Inventory of all namespaces.

```
<?php

namespace My/Personal/Name;

class Name {}
?>
```

Specs

Short name	Namespaces/NamespaceUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.748 Namespaces Glossary

List of all the defined namespaces in the code, using the namespace keyword.

Global namespaces are mentioned when they are explicitly used.

```
<?php

// One reported namespace
namespace one\name\space {}

// This global namespace is reported, as it is explicit
namespace { }

?>
```

Specs

Short name	Namespaces/Namespacesnames
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.749 Native Alias Functions Usage

PHP manual recommends to avoid function aliases.

Some PHP native functions have several names, and both may be used the same way. However, one of the names is the main name, and the others are aliases. Aliases may be removed or change or dropped in the future. Even if this is not forecast, it is good practice to use the main name, instead of the aliases. Aliases are compiled in PHP, and do not provide any performances over the normal function.

Aliases are more likely to be removed later, but they have been around for a long time.

```
<?php

// official way to count an array
$n = count($array);

// official way to count an array
$n = sizeof($array);

?>
```

See also List of function aliases.

Suggestions

- Always use PHP recommended functions

Specs

Short name	Functions/AliasesUsage
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	native
ClearPHP	no-aliases
Examples	*Cleverstyle*, *phpMyAdmin*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.750 Negative Power

The power operator ** has higher precedence than the sign operators + and -.

This means that -2 ** 2 == -4. It is in fact, -(2 ** 2).

When using negative power, it is clearer to add parenthesis or to use the pow() function, which has no such ambiguity :

```
<?php

// -2 to the power of 2 (a square)
```

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```
pow(-2, 2) == 4;

// minus 2 to the power of 2 (a negative square)
-2 ** 2 == -(2 ** 2) == 4;

?>
```

Suggestions

- Avoid negative number, as operands of **
- Use parenthesis with negative numbers and **

Specs

Short name	Structures/NegativePow
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	power
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.751 Negative Start Index In Array

Negative starting index in arrays changed in PHP 8.0. Until then, they were ignored, and automatic index started always at 0. Since PHP 8.0, the next index is calculated.

The behavior will break code that relies on automatic index in arrays, when a negative index is used for a starter.

```
<?php

$x = [-5 => 2];
$x[] = 3;

print_r($x);

/*
PHP 7.4 and older
Array
(
    [-5] => 2
    [0] => 3
)
*/

/*
```

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```
PHP 8.0 and more recent
Array
(
    [-5] => 2
    [-4] => 3
)
*/

?>
```

See also PHP RFC: Arrays starting with a negative index.

Suggestions

- Explicitly create the index, instead of using the automatic indexing
- Add an explicit index of 0 in the initial array, to set the automatic process in the right track
- Avoid using specified index in array, conjointly with automatic indexing.

Specs

Short name	Arrays/NegativeStart
Rulesets	*All*, *CE*, *Changed Behavior*, *CompatibilityPHP80*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	Very high
Features	index
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.752 Nested Attributes

Nested attribute are attribute in attributes.

```
<?php
// Extracted from PHP 8.1 addendum (https://www.php.net/releases/8.1/en.php#new_in_
↪initializers)
class User
{
    #[\Assert\All(
        new \Assert\NotNull,
        new \Assert\Length(min: 6))
    ]
    public string $name = '';
}
?>
```

Nested attributes are not available in PHP 8.0 and older. It is reported as an invalid constant expression.

See also PHP RFC: New in initializers and *New initializers*.

Specs

Short name	Attributes/NestedAttributes
Rulesets	*All*, *Appinfo*, *Changed Behavior*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*
Exakat since	2.3.1
PHP Version	With PHP 8.1 and more recent
Severity	
Time To Fix	
Changed Behavior	PHP 8.1 - More
Precision	Very high
Features	new-in-initializer, nested-attribute
Available in	Entreprise Edition, Exakat Cloud

14.2.753 Nested Ifthen

Three levels of ifthen is too much. The method should be split into smaller functions.

```
<?php

function foo($a, $b) {
    if ($a == 1) {
        // Second level, possibly too much already
        if ($b == 2) {

        }
    }
}

function bar($a, $b, $c) {
    if ($a == 1) {
        // Second level.
        if ($b == 2) {
            // Third level level.
            if ($c == 3) {
                // Too much
            }
        }
    }
}

?>
```

Name	Default	Type	Description
nestedIfthen	3	integer	Maximal number of acceptable nesting of if-then structures

See also No title for Structures/TooManyIf.

Specs

Short name	Structures/NestedIfthen
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	if-then
Examples	*LiveZilla*, *MediaWiki*
Available in	Entreprise Edition, Exakat Cloud

14.2.754 Nested Loops

Nested loops happens when a loop (while, do..while, for, foreach), is used inside another loop.

```
<?php

// Nested loops
foreach($array as $a) {
    foreach ($letters as $b) {
        // This is performed count($array) * count($letters) times.
        doSomething();
    }
}

?>
```

Such structure tends to require a lot of processing, as the size of both loops have to be multiplied to estimate the actual payload. They should be avoided as much as possible. This may no be always possible, though.

Nested loops are worth a check for performances reasons, as they will process a lot of times the same instructions.

Specs

Short name	Structures/NestedLoops
Rulesets	*All*, *Appinfo*, *CE*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	nesting
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.755 Nested Match

Nested match calls makes the code difficult to read. It is recommended to avoid nesting match calls.

```
<?php

$a = match($b) {
     1 => 3,
     3 => 'ab',
     5 => match($c) {
             6 => new X,
             7 => [],
     }
     default => false,
};

?>
```

Suggestions

- Merge the two match() in one.
- Replace the nested match call by a method call.

Specs

Short name	Structures/NestedMatch
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.6.5
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.756 Nested Ternary

Ternary operators should not be nested too deep.

They are a convenient instruction to apply some condition, and avoid a if() structure. It works best when it is simple, like in a one liner.

However, ternary operators tends to make the syntax very difficult to read when they are nested. It is then recommended to use an if() structure, and make the whole code readable.

```
<?php

// Simple ternary expression
echo ($a == 1 ? $b : $c) ;

// Nested ternary expressions
echo ($a === 1 ? $d === 2 ? $b : $d : $d === 3 ? $e : $c) ;
```

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```
echo ($a === 1 ? $d === 2 ? $f ===4 ? $g : $h : $d : $d === 3 ? $e : $i === 5 ? $j : $k)␣
↪;

//Previous expressions, written as a if / Then expression
if ($a === 1) {
    if ($d === 2) {
        echo $b;
    } else {
        echo $d;
    }
} else {
    if ($d === 3) {
        echo $e;
    } else {
        echo $c;
    }
}

if ($a === 1) {
    if ($d === 2) {
        if ($f === 4) {
            echo $g;
        } else {
            echo $h;
        }
    } else {
        echo $d;
    }
} else {
    if ($d === 3) {
        echo $e;
    } else {
        if ($i === 5) {
            echo $j;
        } else {
            echo $k;
        }
    }
}

?>
```

This is a separate analysis from PHP's preventing nested ternaries without parenthesis.

Name	Default	Type	Description
minNestedTernary	2	integer	Minimal number of nested ternary to report.

See also Nested Ternaries are Great and *Nested Ternary Without Parenthesis*.

Suggestions

- Replace ternaries by if/then structures.
- Replace ternaries by a functioncall : this provides more readability, offset the actual code, and gives room for making it different.

Specs

Short name	Structures/NestedTernary
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	ternary
ClearPHP	no-nested-ternary
Examples	*SPIP*, *Zencart*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.757 Nested Ternary Without Parenthesis

It is not allowed to nest ternary operator within itself, without parenthesis. This has been implemented in PHP 7.4.

The reason behind this feature is to keep the code expressive. See the Warning message for more explanations

```
<?php

$a ? 1 : ($b ? 2 : 3);

// Still valid, as not ambiguous
$a ? $b ? 1 : 2 : 3;

// Produces a warning
//Unparenthesized `a ? b : c ? d : e` is deprecated. Use either `(a ? b : c) ? d : e` or␣
↪`a ? b : (c ? d : e)`
$a ? 1 : $b ? 2 : 3;

?>
```

See also PHP RFC: Deprecate left-associative ternary operator.

Suggestions

- Add parenthesis to nested ternary calls

Specs

Short name	Php/NestedTernaryWithoutParenthesis
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP74*, *Deprecated*
Exakat since	1.9.4
PHP Version	With PHP 7.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	ternary, parenthesis
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.758 Never Called Parameter

This analysis reports when a parameter is never used at calltime.

Such parameter has a default value, and always falls back to it. As such, it may be turned into a local variable.

A never called parameter is often planned for future use, though, so far, the code base doesn't make use of it. It also happens that the code use it, but is not part of the analyzed code base, such as a plugin system.

This issue is silent: it doesn't yield any error. It is also difficult to identify, as it requires checking all the usage of the method.

This analysis checks for actual usage of the parameter, from the outside of the method. This is different from checking if the parameter is used inside the method.

```
<?php

// $b may be turned into a local var, it is unused
function foo($a, $b = 1) {
    return $a + $b;
}

// whenever foo is called, the 2nd arg is not mentioned
foo($a);
foo(3);
foo('a');
foo($c);

?>
```

See also *Unused Parameter*, *Cancelled Parameter* and *Parameter Hiding*.

Suggestions

- Drop the unused argument in the method definition
- Actually use the argument when calling the method
- Drop the default value, and check warnings that mention usage of this parameter

Specs

Short name	Functions/NeverUsedParameter
Rulesets	*All*, *Analyze*, *Rector*, *Suggestions*
Exakat since	1.0.6
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	silent
Examples	*Piwigo*
Related rule	*Could Be Class Constant*
Available in	Entreprise Edition, Exakat Cloud

14.2.759 Never Keyword

> Never becomes a PHP keyword. It is used for typing functions which never returns anything (either dies or throw an exception).

It should be avoided in namespaces, classes, traits and interfaces. Methods, constants and functions are OK.

```
<?php

// This is OK
function never() { }

// This is no OK
class never {  }

?>
```

See also never and PHP RFC: noreturn type.

Suggestions

- Rename the classes, traits and interfaces with a different name.

Specs

Short name	Php/NeverKeyword
Rulesets	*All*, *Analyze*, *Appinfo*, *Changed Behavior*, *CompatibilityPHP81*
Exakat since	2.3.0
PHP Version	With PHP 8.1 and older
Severity	Major
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 8.1 - More
Precision	Very high
Features	never
Available in	Entreprise Edition, Exakat Cloud

14.2.760 Never Typehint Usage

Never is a typehint, which characterize methods that never return a value. It will either terminate the execution or throw an exception.

```
<?php

function redirect(string $url): never {
    header('Location: ' . $url);
    exit();
}

?>
```

See also The "never" Return Type for PHP.

Specs

Short name	Php/NeverTypehintUsage
Rulesets	*All*, *Appinfo*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*
Exakat since	2.3.0
PHP Version	With PHP 8.1 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.761 Never Used Properties

Properties that are never used. They are defined in a class or a trait, but they never actually used.

Properties are considered used when they are used locally, in the same class as their definition, or in a parent class : a parent class is always included with the current class.

On the other hand, properties which are defined in a class, but only used in children classes is considered unused, since children may also avoid using it.

```
<?php

class foo {
    public $usedProperty = 1;

    // Never used anywhere
    public $unusedProperty = 2;

    function bar() {
        // Used internally
        ++$this->usedProperty;
    }
}

class foo2  extends foo {
```

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```
    function bar2() {
        // Used in child class
        ++$this->usedProperty;
    }
}

// Used externally
++$this->usedProperty;

?>
```

Suggestions

- Drop unused properties
- Change the name of the unused properties
- Move the properties to children classes
- Find usage for unused properties

Specs

Short name	Classes/PropertyNeverUsed
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	property
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.762 New Constants In PHP 7.2

The following constants are now native in PHP 7.2. It is advised to avoid using such names for constant before moving to this new version.

- `PHP_OS_FAMILY`
- `PHP_FLOAT_DIG`
- `PHP_FLOAT_EPSILON`
- `PHP_FLOAT_MAX`
- `PHP_FLOAT_MIN`
- `SQLITE3_DETERMINISTIC`
- `CURLSSLOPT_NO_REVOKE`
- `CURLOPT_DEFAULT_PROTOCOL`

- CURLOPT_STREAM_WEIGHT
- CURLMOPT_PUSHFUNCTION
- CURL_PUSH_OK
- CURL_PUSH_DENY
- CURL_HTTP_VERSION_2TLS
- CURLOPT_TFTP_NO_OPTIONS
- CURL_HTTP_VERSION_2_PRIOR_KNOWLEDGE
- CURLOPT_CONNECT_TO
- CURLOPT_TCP_FASTOPEN
- DNS_CAA

See also New global constants in 7.2.

Suggestions

- Move the constants to a new namespace
- Remove the old constants
- Rename the old constants

Specs

Short name	Php/Php72NewConstants
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP72*
Exakat since	0.10.7
PHP Version	With PHP 7.2 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.763 New Constants In PHP 7.4

The following constants are now native in PHP 7.4. It is advised to avoid using such names for constant before moving to this new version.

- MB_ONIGURUMA_VERSION
- SO_LABEL
- SO_PEERLABEL
- SO_LISTENQLIMIT
- SO_LISTENQLEN
- SO_USER_COOKIE
- PHP_WINDOWS_EVENT_CTRL_C

- PHP_WINDOWS_EVENT_CTRL_BREAK
- TIDY_TAG_ARTICLE
- TIDY_TAG_ASIDE
- TIDY_TAG_AUDIO
- TIDY_TAG_BDI
- TIDY_TAG_CANVAS
- TIDY_TAG_COMMAND
- TIDY_TAG_DATALIST
- TIDY_TAG_DETAILS
- TIDY_TAG_DIALOG
- TIDY_TAG_FIGCAPTION
- TIDY_TAG_FIGURE
- TIDY_TAG_FOOTER
- TIDY_TAG_HEADER
- TIDY_TAG_HGROUP
- TIDY_TAG_MAIN
- TIDY_TAG_MARK
- TIDY_TAG_MENUITEM
- TIDY_TAG_METER
- TIDY_TAG_NAV
- TIDY_TAG_OUTPUT
- TIDY_TAG_PROGRESS
- TIDY_TAG_SECTION
- TIDY_TAG_SOURCE
- TIDY_TAG_SUMMARY
- TIDY_TAG_TEMPLATE
- TIDY_TAG_TIME
- TIDY_TAG_TRACK
- TIDY_TAG_VIDEO
- STREAM_CRYPTO_METHOD_TLSv1_3_CLIENT
- STREAM_CRYPTO_METHOD_TLSv1_3_SERVER
- STREAM_CRYPTO_PROTO_TLSv1_3
- T_COALESCE_EQUAL
- T_FN

See also New global constants in 7.4.

Suggestions

- Move the constants to a new namespace
- Remove the old constants
- Rename the old constants

Specs

Short name	Php/Php74NewConstants
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	1.8.4
PHP Version	With PHP 7.4 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.764 New Dynamic Class Constant Syntax

There is a dedicated syntax to access dynamically to class constant values.

```
<?php

class x {
     const A = 1;
}

$a = 'A';
echo x::{$a}; // displays 1

?>
```

Specs

Short name	Classes/NewDynamicConstantSyntax
Rulesets	*All*, *Appinfo*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.5.3
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class-constant
Available in	Entreprise Edition, Exakat Cloud

14.2.765 New Functions In PHP 5.4

PHP introduced new functions in PHP 5.4. If there are defined functions with such names, there will be a conflict when upgrading. It is advised to change those functions' name.

- hex2bin()
- http_response_code()
- get_declared_traits()
- getimagesizefromstring()
- stream_set_chunk_size()
- socket_import_stream()
- trait_exists()
- header_register_callback()
- class_uses()
- session_status()
- session_register_shutdown()
- mysqli_error_list()
- mysqli_stmt_error_list()
- libxml_set_external_entity_loader()
- ldap_control_paged_result()

- ldap_control_paged_result_response()
- transliterator_create()
- transliterator_create_from_rules()
- transliterator_create_inverse()
- transliterator_get_error_code()
- transliterator_get_error_message()
- transliterator_list_ids()
- transliterator_transliterate()
- zlib_decode()
- zlib_encode()

```
<?php

$zipped = zlib_encode($longText);

$raw = zlib_decode($zipped);

?>
```

Specs

Short name	Php/Php54NewFunctions
Rulesets	*All*, *CompatibilityPHP53*
Exakat since	0.8.4
PHP Version	With PHP 5.3 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.766 New Functions In PHP 5.5

PHP introduced new functions in PHP 5.5. If you have already defined functions with such names, you will get a conflict when trying to upgrade. It is advised to change those functions' name.

- array_column()
- boolval()
- cli_get_process_title()
- cli_set_process_title()
- curl_escape()
- curl_file_create()
- curl_multi_setopt()
- curl_multi_strerror()

- curl_pause()
- curl_reset()
- curl_share_close()
- curl_share_init()
- curl_share_setopt()
- curl_strerror()
- curl_unescape()
- datefmt_format_object()
- datefmt_get_calendar_object()
- datefmt_get_timezone()
- datefmt_set_timezone()
- hash_pbkdf2()
- imageaffinematrixconcat()
- imageaffinematrixget()
- imagecrop()
- imagecropauto()
- imageflip()
- imagepalettetotruecolor()
- imagescale()
- intlcal_add()
- intlcal_after()
- intlcal_before()
- intlcal_clear()
- intlcal_create_instance()
- intlcal_equals()
- intlcal_field_difference()
- intlcal_from_date_time()
- intlcal_get_actual_maximum()
- intlcal_get_actual_minimum()
- intlcal_get_available_locales()
- intlcal_get_day_of_week_type()
- intlcal_get_error_code()
- intlcal_get_error_message()
- intlcal_get_first_day_of_week()
- intlcal_get_greatest_minimum()
- intlcal_get_keyword_values_for_locale()

- intlcal_get_least_maximum()
- intlcal_get_locale()
- intlcal_get_maximum()
- intlcal_get_minimal_days_in_first_week()
- intlcal_get_minimum()
- intlcal_get_now()
- intlcal_get_repeated_wall_time_option()
- intlcal_get_skipped_wall_time_option()
- intlcal_get_time_zone()
- intlcal_get_time()
- intlcal_get_type()
- intlcal_get_weekend_transition()
- intlcal_get()
- intlcal_in_daylight_time()
- intlcal_is_equivalent_to()
- intlcal_is_lenient()
- intlcal_is_set()
- intlcal_is_weekend()
- intlcal_roll()
- intlcal_set_first_day_of_week()
- intlcal_set_lenient()
- intlcal_set_repeated_wall_time_option()
- intlcal_set_skipped_wall_time_option()
- intlcal_set_time_zone()
- intlcal_set_time()
- intlcal_set()
- intlcal_to_date_time()
- intlgregcal_create_instance()
- intlgregcal_get_gregorian_change()
- intlgregcal_is_leap_year()
- intlgregcal_set_gregorian_change()
- intltz_count_equivalent_ids()
- intltz_create_default()
- intltz_create_enumeration()
- intltz_create_time_zone_id_enumeration()
- intltz_create_time_zone()

- intltz_from_date_time_zone()
- intltz_get_canonical_id()
- intltz_get_display_name()
- intltz_get_dst_savings()
- intltz_get_equivalent_id()
- intltz_get_error_code()
- intltz_get_error_message()
- intltz_get_gmt()
- intltz_get_id()
- intltz_get_offset()
- intltz_get_raw_offset()
- intltz_get_region()
- intltz_get_tz_data_version()
- intltz_get_unknown()
- intltz_has_same_rules()
- intltz_to_date_time_zone()
- intltz_use_daylight_time()
- json_last_error_msg()
- mysqli_begin_transaction()
- mysqli_release_savepoint()
- mysqli_savepoint()
- openssl_pbkdf2()
- password_get_info()
- password_hash()
- password_needs_rehash()
- password_verify()
- pg_escape_identifier()
- pg_escape_literal()
- socket_cmsg_space()
- socket_recvmsg()
- socket_sendmsg()

Specs

Short name	Php/Php55NewFunctions
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.767 New Functions In PHP 5.6

PHP introduced new functions in PHP 5.6. If you have already defined functions with such names, you will get a conflict when trying to upgrade. It is advised to change those functions' name.

- gmp_root()
- gmp_rootrem()
- ldap_escape()
- oci_get_implicit_resultset()
- openssl_x509_fingerprint()
- openssl_spki_new()
- openssl_spki_verify()
- openssl_spki_export_challenge()
- openssl_spki_export()

Specs

Short name	Php/Php56NewFunctions
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.768 New Functions In PHP 7.0

The following functions are now native functions in PHP 7.0. It is advised to change them before moving to this new version.

- get_resources()
- gc_mem_caches()
- preg_replace_callback_array()
- posix_setrlimit()
- random_bytes()
- random_int()
- intdiv()
- error_clear_last()

Specs

Short name	Php/Php70NewFunctions
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	function
Available in	Entreprise Edition, Exakat Cloud

14.2.769 New Functions In PHP 7.1

The following functions are now native functions in PHP 7.1. It is advised to change them before moving to this new version.

- curl_share_strerror()
- curl_multi_errno()
- curl_share_errno()
- mb_ord()
- mb_chr()
- mb_scrub()
- is_iterable()

Suggestions

- Remove usage of the mentioned functions
- Use a polyfill to recreate the feature without relying on the function

Specs

Short name	Php/Php71NewFunctions
Rulesets	*All*, *CompatibilityPHP71*
Exakat since	0.8.4
PHP Version	With PHP 7.1 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	function, native
Available in	Entreprise Edition, Exakat Cloud

14.2.770 New Functions In PHP 7.2

The following functions are now native functions in PHP 7.2. It is advised to change custom functions that are currently created, and using those names, before moving to this new version.

- mb_ord()
- mb_chr()
- mb_scrub()
- stream_isatty()
- proc_nice() (Windows only)

Suggestions

- Move custom functions with the same name to a new namespace
- Change the name of any custom functions with the same name
- Add a condition to the functions definition to avoid conflict

Specs

Short name	Php/Php72NewFunctions
Rulesets	*All*, *CompatibilityPHP72*
Exakat since	0.10.7
PHP Version	With PHP 7.2 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	function, native
Available in	Entreprise Edition, Exakat Cloud

14.2.771 New Functions In PHP 7.3

New functions are added to new PHP version.

The following functions are now native functions in PHP 7.3. It is compulsory to rename any custom function that was created in older versions. One alternative is to move the function to a custom namespace, and update the `use` list at the beginning of the script.

- net_get_interfaces()
- gmp_binomial()
- gmp_lcm()
- gmp_perfect_power()
- gmp_kronecker()
- openssl_pkey_derive()
- is_countable()
- ldap_exop_refresh()

Suggestions

- Move custom functions with the same name to a new namespace
- Change the name of any custom functions with the same name
- Add a condition to the functions definition to avoid conflict

Specs

Short name	Php/Php73NewFunctions
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*
Exakat since	0.10.7
PHP Version	With PHP 7.3 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, native
Available in	Entreprise Edition, Exakat Cloud

14.2.772 New Functions In PHP 7.4

New functions are added to new PHP version.

The following functions are now native functions in PHP 7.4. It is compulsory to rename any custom function that was created in older versions. One alternative is to move the function to a custom namespace, and update the `use` list at the beginning of the script.

- mb_str_split()
- password_algos()

Suggestions

- Move custom functions with the same name to a new namespace
- Change the name of any custom functions with the same name
- Add a condition to the functions definition to avoid conflict

Specs

Short name	Php/Php74NewFunctions
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	1.8.0
PHP Version	With PHP 7.3 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, native
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.773 New Functions In PHP 8.0

New functions are added to new PHP version.

The following functions are now native functions in PHP 8.0. It is compulsory to rename any custom function that was created in older versions. One alternative is to move the function to a custom namespace, and update the `use` list at the beginning of the script.

- str_contains()
- fdiv()
- preg_last_error_msg()

Suggestions

- Move custom functions with the same name to a new namespace
- Change the name of any custom functions with the same name
- Add a condition to the functions definition to avoid conflict

Specs

Short name	Php/Php80NewFunctions
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	2.0.8
PHP Version	With PHP 8.0 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, native
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.774 New Functions In PHP 8.1

New functions are added to new PHP version.

The following functions are now native functions in PHP 8.1. It is compulsory to rename any custom function that was created in older versions. One alternative is to move the function to a custom namespace, and update the use list at the beginning of the script.

- array_is_list()
- enum_exists()
- fsync()
- fdatasync()
- imagecreatefromavif()
- imageavif()
- mysqli_fetch_column()
- sodium_crypto_core_ristretto255_add()
- sodium_crypto_core_ristretto255_from_hash()
- sodium_crypto_core_ristretto255_is_valid_point()
- sodium_crypto_core_ristretto255_random()
- sodium_crypto_core_ristretto255_scalar_add()
- sodium_crypto_core_ristretto255_scalar_complement()
- sodium_crypto_core_ristretto255_scalar_invert()
- sodium_crypto_core_ristretto255_scalar_mul()
- sodium_crypto_core_ristretto255_scalar_negate()
- sodium_crypto_core_ristretto255_scalar_random()

- sodium_crypto_core_ristretto255_scalar_reduce()
- sodium_crypto_core_ristretto255_scalar_sub()
- sodium_crypto_core_ristretto255_sub()
- sodium_crypto_scalarmult_ristretto255()
- sodium_crypto_scalarmult_ristretto255_base()
- sodium_crypto_stream_xchacha20()
- sodium_crypto_stream_xchacha20_keygen()
- sodium_crypto_stream_xchacha20_xor()

Suggestions

- Move custom functions with the same name to a new namespace
- Change the name of any custom functions with the same name
- Add a condition to the functions definition to avoid conflict

Specs

Short name	Php/Php81NewFunctions
Rulesets	*All*, *Analyze*, *CompatibilityPHP81*
Exakat since	2.3.0
PHP Version	With PHP 8.1 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, native
Available in	Entreprise Edition, Exakat Cloud

14.2.775 New Functions In PHP 8.2

New functions are added to new PHP version.

The following functions are now native functions in PHP 8.2. It is compulsory to rename any custom function that was created in older versions. One alternative is to move the function to a custom namespace, and update the use list at the beginning of the script.

- curl_upkeep()
- mysqli_execute_query()
- odbc_connection_string_is_quoted()
- odbc_connection_string_should_quote()
- odbc_connection_string_quote()
- ini_parse_quantity()
- memory_reset_peak_usage()
- sodium_crypto_stream_xchacha20_xor_ic()

```
<?php

// Such function will not be possible in PHP 8.2 anymore
function memory_reset_peak_usage() {}

?>
```

Suggestions

- Move custom functions with the same name to a new namespace
- Change the name of any custom functions with the same name
- Add a condition to the functions definition to avoid conflict

Specs

Short name	Php/Php82NewFunctions
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP82*
Exakat since	2.3.0
PHP Version	With PHP 8.2 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, native
Available in	Entreprise Edition, Exakat Cloud

14.2.776 New Functions In PHP 8.3

New functions are added to new PHP version.

The following functions are now native functions in PHP 8.3. It is compulsory to rename any custom function that was created in older versions. One alternative is to move the function to a custom namespace, and update the use list at the beginning of the script.

- json_validate()
- mysqli_execute_query()
- posix_sysconf()
- posix_pathconf()
- posix_fpathconf()
- socket_atmark()

```
<?php

if (json_validate($json)) {
     $data = json_decode($json);
} else {
     print Error : This is not a valid JSON;
```

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```
}

?>
```

Suggestions

- Move custom functions with the same name to a new namespace
- Change the name of any custom functions with the same name
- Add a condition to the functions definition to avoid conflict

Specs

Short name	Php/Php83NewFunctions
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP83*
Exakat since	2.5.2
PHP Version	With PHP 8.3 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, native
Available in	Entreprise Edition, Exakat Cloud

14.2.777 New Initializers

Parameters, static variables and global constants may be initialized with an object.

```
<?php

function foo( $a = new A) {
    static $static = new B;

}

const A = new C;

?>
```

This feature is available in PHP 8.1 and more recent. It is reported as an invalid constant expression in older PHP versions.

See also PHP RFC: New in initializers and **`Nested Attributes`_**.

Specs

Short name	Php/NewInitializers
Rulesets	*All*, *Appinfo*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*
Exakat since	2.3.1
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	new-in-initializer, nested-attribute
Available in	Entreprise Edition, Exakat Cloud

14.2.778 New Line Style

New lines may be written with the sequence n or with the constant PHP_EOL.

When one of those alternatives is used over 90% of the time, it is considered as standard : the remaining are reported.

n are only located when used alone, in "n" (including the double quotes). When n is used inside a double-quoted string, its replacement with PHP_EOL would be cumbersome : as such, they are ignored by this analyzer.

```
<?php

// This may be repeated over 10 times
$a = "PHP is a great language\n";
$a .= "\n";

// This only appears once in the code : this line is reported.
$b = $a.PHP_EOL.$c;

?>
```

Specs

Short name	Structures/NewLineStyle
Rulesets	*All*, *Preferences*
Exakat since	0.9.8
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.779 New Object Then Immediate Call

This rule reports immediate calls on a new object. This can be simplified with a parenthesis structure, including with the assignation inside the parenthesis.

It is also being discussed to drop the parenthesis altogether.

```
<?php

$a = new Foo();
$a->bar();

($a = new Foo())->bar();

?>
```

See also new MyClass()->method() without parentheses.

Suggestions

- Condense the two expressions into one

Specs

Short name	Classes/NewThenCall
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.6.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.780 New On Functioncall Or Identifier

Object instantiation with new works with or without arguments. Both are valid in PHP.

The analyzed code has less than 10% of one of the two forms : for consistency reasons, it is recommended to make them all the same.

```
<?php

$a = new stdClass();

// Parenthesis are used when arguments are compulsory
$mysql = new MySQLI($host, $user, $pass);

// Parenthesis are omitted when no arguments are available
// That also makes the instantiation look different
$b = new stdClass;
```

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```
?>
```

Name	Default	Type	Description
threshold	10	integer	Maximal percentage for a syntax to be considered to be fixed.

Specs

Short name	Classes/NewOnFunctioncallOrIdentifier
Rulesets	*All*, *Preferences*
Exakat since	0.9.8
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	new
Available in	Entreprise Edition, Exakat Cloud

14.2.781 New Order

Order in which new calls must be called. When a class uses another class type in its constructor, this means the second class must be instantiated before creating the first. This creates an order for classes.

```
<?php

class x {}

// class Y has precedence over class X, as it needs to be called first to get to X
class y {
    function foo() {
        return new x();
    }
}


?>
```

Specs

Short name	Dump/NewOrder
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.0.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	new
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.782 Next Month Trap

Avoid using +1 month with strtotime().

strtotime() calculates the next month by incrementing the month number. For day number that do not exist from one month to the next, strtotime() fixes them by setting them in the next-next month.

This happens to January, March, May, July, August and October. January is also vulnerable for 29 (not every year), 30 and 31.

To use '+1 month', rely on 'first day of next month' or 'last day of next month' to extract the next month's name. For longer interfaces, start from 'first day of next month'.

```
<?php

// Base date is October 31 => 10/31
// +1 month adds +1 to 10 => 11/31
// Since November 31rst doesn't exists, it is corrected to 12/01.
echo date('F', strtotime('+1 month',mktime(0,0,0,$i,31,2017))).PHP_EOL;

// Base date is October 31 => 10/31
echo date('F', strtotime('first day of next month',mktime(0,0,0,$i,31,2017))).PHP_EOL;

?>
```

Note that `Datetime` and `DatetimeImmutable` are also subject to the same trap.

See also It is the 31st again.

Suggestions

- Review strtotime() usage for month additions
- Base your calculations for the next/previous months on the first day of the month (or any day before the 28th)
- Avoid using '+n month' with Datetime() after the 28th of any month (sic)

Specs

Short name	Structures/NextMonthTrap
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Top10*
Exakat since	1.0.1
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Features	date
Examples	*Contao*, *Edusoho*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.783 No Append On Source

Do not append new elements to an array in a foreach loop. Since PHP 7.0, the array is still used as a source, and will be augmented, and used again.

```
<?php

// Relying on the initial copy
$a = [1];
$initial = $a;
foreach($initial as $v) {
    $a[] = $v + 1;
}

// Keep new results aside
$a = [1];
$tmp = [];
foreach($a as $v) {
    $tmp[] = $v + 1;
}
$a = array_merge($a, $tmp);
unset($tmp);

// Example, courtesy of Frederic Bouchery
// This is an infinite loop
$a = [1];
foreach($a as $v) {
    $a[] = $v + 1;
}

?>
```

Thanks to Frederic Bouchery for the reminder.

See also foreach and What will this code return? #PHP.

Suggestions

- Use a copy of the source, to avoid modifying it during the loop
- Store the new values in a separate storage

Specs

Short name	Structures/NoAppendOnSource
Rulesets	*All*, *Analyze*
Exakat since	1.8.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.784 No Boolean As Default

Default values should always be set up with a constant name.

Class constants and constants improve readability when calling the methods or comparing values and statuses.

```
<?php

const CASE_INSENSITIVE = true;
const CASE_SENSITIVE = false;

function foo($case_insensitive = true) {
    // doSomething()
}

// Readable code
foo(CASE_INSENSITIVE);
foo(CASE_SENSITIVE);


// unreadable code  : is true case insensitive or case sensitive ?
foo(true);
foo(false);

?>
```

See also FlagArgument and Clean code: The curse of a boolean parameter.

Suggestions

- Use constants or class constants to give value to a boolean literal
- When constants have been defined, use them when calling the code
- Split the method into two methods, one for each case

Specs

Short name	Functions/NoBooleanAsDefault
Rulesets	*All*, *Analyze*
Exakat since	0.10.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	boolean, default-value
Examples	*OpenConf*
Available in	Entreprise Edition, Exakat Cloud

14.2.785 No Choice

A conditional structure is being used, and both alternatives are the same, leading to the illusion of choice.

Either the condition is useless, and may be removed, or the alternatives need to be distinguished.

```
<?php

if ($condition == 2) {
    doSomething();
} else {
    doSomething();
}

$condition == 2 ?     doSomething() :     doSomething();

?>
```

Suggestions

- Remove the conditional, and call the expression directly
- Replace one of the alternative with a distinct call
- Remove the whole conditional : it may end up being useless
- Extract the common elements of the condition to make them obvious

Specs

Short name	Structures/NoChoice
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Rector*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Examples	*NextCloud*, *Zencart*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.786 No Class As Typehint

> Avoid using concrete classes as typehint : always use interfaces or abstract classes. This way, different classes, or versions of classes may be passed as argument. The typehint is not linked to an implementation, but to signatures.

A class is needed when the object is with properties : interfaces do not allow the specifications of properties.

```
<?php

class X {
    public $p = 1;

    function foo() {}
}

interface i {
    function foo();
}

// X is a class : any update in the code requires changing / subclassing X or the rest␣
↪of the code.
function bar(X $x) {
    $x->foo();
}

// I is an interface : X may implements this interface without refactoring and pass
// later, newer versions of X may get another name, but still implement I, and still pass
function bar2(I $x) {
    $x->foo();
}

function bar3(I $x) {
    echo $x->p;
}

?>
```

See also Type hinting for interfaces.

Suggestions

- Create an interface with the important methods, and use that interface
- Create an abstract class, when public properties are also needed

Specs

Short name	Functions/NoClassAsTypehint
Rulesets	*All*, *Typechecks*
Exakat since	0.11.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint, class
Examples	*Vanilla*, *phpMyAdmin*
Available in	Entreprise Edition, Exakat Cloud

14.2.787 No Class In Global

Avoid defining structures in Global namespace. Always prefer using a namespace. This will come handy later, either when publishing the code, or when importing a library, or even if PHP reclaims that name.

```
<?php

// Code prepared for later
namespace Foo {
    class Bar {}
}

// Code that may conflict with other names.
namespace {
    class Bar {}
}

?>
```

Suggestions

- Use a specific namespace for your classes

Specs

Short name	Php/NoClassInGlobal
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.10.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class, global-scope
Examples	*Dolphin*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.788 No Constructor In Interface

PHP manual recommends not adding constructors to interfaces.

'Although they are supported, including constructors in interfaces is strongly discouraged. Doing so significantly reduces the flexibility of the object implementing the interface. Additionally, constructors are not enforced by inheritance rules, which can cause inconsistent and unexpected behavior.'

```

```

```
<?php

interface with {
    function __construct();
}

?>
```

```

See also Object Interfaces.

### Suggestions

- Remove the constructor from the interface

### Specs

| | |
|---|---|
| Short name | Interfaces/NoConstructorInInterface |
| Rulesets | *All*, *Class Review*, *PHP recommendations* |
| Exakat since | 2.4.0 |
| PHP Version | All |
| Severity | Minor |
| Time To Fix | Quick (30 mins) |
| Precision | Very high |
| Features | interface |
| Available in | Entreprise Edition, Exakat Cloud |
```

14.2.789 No Count With 0

Comparing count(), strlen() or mb_strlen() to 0 is a waste of resources. There are three distinct situations.

When comparing count() with 0, with ===, ==, !==, !=, it is more efficient to use empty(). empty() is a language construct that checks if a value is present, while count() actually load the number of element. When comparing count() strictly with 0 and >, it is more efficient to use `!(empty( ))` Comparing count(), strlen() or mb_strlen() with other values than 0 cannot be replaced with a comparison with empty().

Note that this is a micro-optimisation : since PHP keeps track of the number of elements in arrays (or number of chars in strings), the total computing time of both operations is often lower than a ms. However, both functions tends to be heavily used, and may even be used inside loops.

```
<?php

// Checking if an array is empty
if (count($array) == 0) {
    // doSomething();
}
// This may be replaced with
if (empty($array)) {
    // doSomething();
}

?>
```

See also count, strlen and mb_strlen.

Suggestions

- Use empty() on the data
- Compare the variable with a default value, such as an empty array

Specs

Short name	Performances/NotCountNull
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	count
Examples	*Contao*, *WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.790 No Default For Referenced Parameter

Parameters with reference should not have a default value.

When they have a default value, that default value is not a reference, and it will not have impact on the calling context.

Then, the parameter behaves like a reference when the argument is provided, and not as a reference when the parameter is not provided. This makes sense : no parameter in, no parameter out.

```
<?php

function foo(&$i = 1) {
     ++$i;
}

// $i is 1, but it is not available in the calling context
foo();

// $i is 1, but it is not available in the calling context
$i = 1;
foo($i);

echo $i; // $i is now 2

?>
```

Suggestions

- Remove the reference
- Make that parameter a local variable
- Remove the default value

Specs

Short name	Functions/NoDefaultForReference
Rulesets	*All*, *Analyze*
Exakat since	2.4.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	reference
Available in	Entreprise Edition, Exakat Cloud

14.2.791 No Direct Access

This expression protects files against direct access. It will kill the process if it realizes this is not supposed to be directly accessed.

Those expressions are used in applications and framework, to prevent direct access to definition files.

```
<?php

  // CONSTANT_EXEC is defined in the main file of the application
  defined('CONSTANT_EXEC') or die('Access not allowed'); : Constant used!

?>
```

Specs

Short name	Structures/NoDirectAccess
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.792 No Direct Call To Magic Method

PHP features magic methods, which are methods related to operators.

Magic methods, such as __get(), related to =, or __clone(), related to `clone`, are supposed to be used in an object environment, and not with direct call.

It is recommended to use the magic method with its intended usage, and not to call it directly. For example, typecast to `string` instead of calling the __toString() method.

Accessing those methods in a static way is also discouraged.

```
<?php
// Write
  print $x->a;
// instead of
  print $x->__get('a');

class Foo {
    private $b = "secret";

    public function __toString() {
        return strtoupper($this->b);
    }
}

$bar = new Foo();
```

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```
echo (string) $bar;

?>
```

See also Magical PHP: __call.

Specs

Short name	Classes/DirectCallToMagicMethod
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.793 No Direct Usage

The results of the following functions shouldn't be used directly, but checked first.

For example, glob() returns an array, unless some error happens, in which case it returns a boolean (false). In such case, however rare it is, plugging glob() directly in a foreach() loops will yield errors.

```
<?php
    // Used without check :
    foreach(glob('.') as $file) { /* do Something */ }.

    // Used without check :
    $files = glob('.');
    if (!is_array($files)) {
        foreach($files as $file) { /* do Something */ }.
    }
?>
```

Suggestions

- Check the return of the function before using it, in particular for false, or array().

Specs

Short name	Structures/NoDirectUsage
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Examples	*Edusoho*, *XOOPS*
Available in	Entreprise Edition, Exakat Cloud

14.2.794 No ENT_IGNORE

> Certain characters have special significance in HTML, and should be represented by HTML entities if they are to preserve their meanings.

ENT_IGNORE is a configuration option for htmlspecialchars(), that ignore any needed character replacement. This mean the raw input will now be processed by PHP, or a target browser.

It is recommended to use the other configuration options : `ENT_COMPAT`, `ENT_QUOTES`, `ENT_NOQUOTES`, `ENT_SUBSTITUTE`, `ENT_DISALLOWED`, `ENT_HTML401`, `ENT_XML1`, `ENT_XHTML` or `ENT_HTML5`.

```
<?php

// This produces a valid HTML tag
$new = htmlspecialchars("<a href='test'>Test</a>", ENT_IGNORE);
echo $new; // &lt;a href=&#039;test&#039;&gt;Test&lt;/a&gt;

// This produces a valid string, without any HTML special value
$new = htmlspecialchars("<a href='test'>Test</a>", ENT_QUOTES);
echo $new; // &lt;a href=&#039;test&#039;&gt;Test&lt;/a&gt;

?>
```

See also htmlspecialchars and Deletion of Code Points.

Suggestions

- Use of the the other options

Specs

Short name	Security/NoEntIgnore
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	html-escape
Available in	Entreprise Edition, Exakat Cloud

14.2.795 No Empty Regex

PHP regex don't accept empty regex, nor regex with alphanumeric delimiter.

Most of those errors happen at execution time, when the regex is build dynamically, but still may end empty. At compile time, such error are made when the code is not tested before commit.

```
<?php

// No empty regex
preg_match('', $string, $r);

// Delimiter must be non-alphanumerical
preg_replace('1abc1', $string, $r);

// Delimiter must be non-alphanumerical
preg_replace('1'.$regex.'1', $string, $r);

?>
```

See also PCRE and Delimiters.

Suggestions

- Fix the regex by adding regex delimiters

Specs

Short name	Structures/NoEmptyRegex
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.11.1
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Examples	*Tikiwiki*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.796 No Empty String With explode()

explode() doesn't allow empty strings as separator. Until PHP 8.0, it would make a warning, and return false. After that version, it raises a ValueError.

To break a string into individual characters, it is possible to use the array notation on strings, or to use the str_split() function.

```
<?php

explode('', "a");

?>
```

Suggestions

- Check for empty strings (or equivalent) before using explode()
- Use the array notation to access individual chars
- Use str_split() to break the string into an array

Specs

Short name	Structures/NoEmptyStringWithExplode
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.797 No Hardcoded Hash

Hash should never be hardcoded.

Hashes may be MD5, SHA1, SHA512, Bcrypt or any other. Such values must be easily changed, for security reasons, and the source code is not the safest place to hide it.

```
<?php

    // Those strings may be sha512 hashes.
    // it is recomemdned to check if they are static or should be put into configuration
    $init512 = array( // initial values for SHA512
        '6a09e667f3bcc908', 'bb67ae8584caa73b', '3c6ef372fe94f82b', 'a54ff53a5f1d36f1',
    );

    // strings which are obvious conversion are ignored
    $decimal = intval('87878877', 12);
?>
```

See also Salted Password Hashing - Doing it Right and Hash-Buster.

Suggestions

- Put any hardcoded hash in a configuration file, a database or a environment variable. An external source.

Specs

Short name	Structures/NoHardcodedHash
Rulesets	*All*, *Analyze*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Examples	*shopware*, *SugarCrm*
Available in	Entreprise Edition, Exakat Cloud

14.2.798 No Hardcoded Ip

Do not leave hard coded IP in your code.

It is recommended to move such configuration in external files or databases, for each update. This may also come handy when testing.

```
<?php

// This IPv4 is hardcoded.
$ip = '183.207.224.50';
// This IPv6 is hardcoded.
$ip = '2001:0db8:85a3:0000:0000:8a2e:0370:7334';

// This looks like an IP
$thisIsNotAnIP = '213.187.99.50';
$thisIsNotAnIP = '2133:1387:9393:5330';

?>
```

`127.0.0.1`, `\:\:1` and `\:\:0` are omitted, and not considered as a violation.

See also Use of Hardcoded IPv4 Addresses and Never hard code sensitive information.

Suggestions

- Move the hardcoded IP to an external source : environment variable, configuration file, database.
- Remove the hardcoded IP and ask for it at execution.
- Use a literal value for default messages in form.

Specs

Short name	Structures/NoHardcodedIp
Rulesets	*All*, *Analyze*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	ip
Examples	*OpenEMR*, *NextCloud*
Available in	Entreprise Edition, Exakat Cloud

14.2.799 No Hardcoded Path

> It is not recommended to use hardcoded literals when designating files. Full paths are usually tied to one file system organization. As soon as the organisation changes or must be adapted to any external constraint, the path is not valid anymore.

Either use __FILE__ and __DIR__ to make the path relative to the current file; use a `DOC_ROOT` as a configuration constant that will allow the moving of the script to another folder; finally functions like sys_get_temp_dir() produce a viable temporary folder.

Relative paths are relative to the current execution directory <https://www.php.net/`directory>`_, and not the current file. This means they may differ depending on the location of the start of the application, and are sensitive to chdir() and chroot() usage.

```
<?php

    // This depends on the current executed script
    file_get_contents('token.txt');

    // Exotic protocols are ignored
    file_get_contents('jackalope://file.txt');

    // Some protocols are ignored : http, https, ftp, ssh2, php (with memory)
    file_get_contents('http://www.php.net/');
    file_get_contents('php://memory/');

    // glob() with special chars * and ? are not reported
    glob('./*/foo/bar?.txt');
    // glob() without special chars * and ? are reported
    glob('/foo/bar/');

?>
```

Suggestions

- Add __DIR__ before the path to make it relative to the current file
- Add a configured prefix before the path to point to any file in the system
- Use sys_get_temp_dir() for temporary data
- Use `include_path` argument function, such as fie_get_contents(), to have the file located in configurable directories.

Specs

Short name	Structures/NoHardcodedPath
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	path, hardcoded
ClearPHP	no-hardcoded-path
Examples	*Tine20*, *Thelia*
Available in	Entreprise Edition, Exakat Cloud

14.2.800 No Hardcoded Port

When connecting to a remove server, port is an important information. It is recommended to make this configurable (with constant or configuration), to as to be able to change this value without changing the code.

```
<?php

    // Both configurable IP and hostname
    $connection = ssh2_connect($_ENV['SSH_HOST'], $_ENV['SSH_PORT'], $methods,
↪$callbacks);

    // Both hardcoded IP and hostname
    $connection = ssh2_connect('shell.example.com', 22, $methods, $callbacks);

    if (!$connection) die('Connection failed');
?>
```

Suggestions

- Move the port to a configuration file, an environment variable

Specs

Short name	Structures/NoHardcodedPort
Rulesets	*All*, *Analyze*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	port
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.801 No Initial S In Variable Names

The initial capital S in a variable name, may easily be mistaken with the dollar sign.

```
<?php

$$ocket = $Socket;

?>
```

Suggestions

- Avoid using an initial capital S in variable and static property names.

Specs

Short name	Variables/NoInitialS
Rulesets	*All*, *Semantics*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.802 No Keyword In Namespace

> PHP keywords were not allowed in namespaces' names. As a whole, or as a part of the namespace. The syntax was relaxed in PHP 8.0.

This rule is only useful to keep compatibility with previous versions. It leads to a compilation error.

While some keywords are highly specific to PHP, such as `endswitch` or `__halt_compiler`, others are more common such as empty(), isset(), use, global, function… Usage of PHP keyword was also relaxed for method' name.

```
<?php

namespace if {}
namespace endswitch {}

namespace a\empty\b {}

namespace end {}

?>
```

Suggestions

- Avoid supporting older PHP versions while having keywords in the namespaces
- Change the namespaces to use other words than keywords

Specs

Short name	Namespaces/NoKeywordInNamespace
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*
Exakat since	2.4.9
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Related rule	*Php7 Relaxed Keyword*
Available in	Entreprise Edition, Exakat Cloud

14.2.803 No List With String

list() can't be used anymore to access particular offset in a string. This should be done with substr() or $string[$offset] syntax.

```
<?php

$x = 'abc';
list($a, $b, $c) = $x;

//list($a, $b, $c) = 'abc'; Never works

print $c;
// PHP 5.6- displays 'c'
// PHP 7.0+ displays nothing

?>
```

See also PHP 7.0 Backward incompatible changes.

Suggestions

- Use str_split() to break a string into bytes
- Use substr() or $string[$offset] syntax to access specific bytes in the string

Specs

Short name	Php/NoListWithString
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Features	list
Available in	Entreprise Edition, Exakat Cloud

14.2.804 No Literal For Reference

Method arguments and return values may be by reference. Then, they need to be a valid variable.

Objects are always passed by reference, so there is no need to explicitly declare it.

Expressions, including ternary operator, produce value, and can't be used by reference directly. This is also the case for expression that include one or more reference.

Wrongly passing a value as a reference leads to a PHP Notice.

```
<?php

// variables, properties, static properties, array items are all possible
$a = 1;
foo($a);

//This is not possible, as a literal can't be a reference
foo(1);

function foo(&$int) { return $int; }


// This is not a valid reference
function &bar() { return 2; }
function &bar2() { return 2 + $r; }

?>
```

See also References.

Suggestions

- Remove the reference in the method signature (argument or return value)
- Make the argument an object, by using a typehint (non-scalar)
- Put the value into a variable prior to call (or return) the method

Specs

Short name	Functions/NoLiteralForReference
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.9.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	reference, literal
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.805 No Magic Method For Enum

Enumeration cannot have a magic method, nor a constructor.

```
<?php

enum a {
    function __construct($a) {}
}

?>
```

See also Enumeration Methods.

Suggestions

- Remove the method

Specs

Short name	Enums/NoMagicMethod
Rulesets	*All*, *Analyze*, *Class Review*, *LintButWontExec*
Exakat since	2.4.2
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	enumeration, magic-method
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.806 No Magic Method With Array

Magic method `__set()` doesn't work for array syntax.

When overloading properties, they can only be used for scalar values, excluding arrays. Under the hood, PHP uses `__get()` to reach for the name of the property, and doesn't recognize the following index as an array. It yields an error : "Indirect modification of overloaded property".

It is possible to use the array syntax with a magic property : by making the `__get` returns an array, the syntax will actually extract the expected item in the array.

This is not reported by linting.

In this analysis, only properties that are found to be magic are reported. For example, using the b property outside the class scope is not reported, as it would yield too many false-positives.

```
<?php

class c {
    private $a;
    private $o = array();
```

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```
    function __get($name) {
        return $this->o[$name];
    }

    function foo() {
        // property b doesn't exists
        $this->b['a'] = 3;

        print_r($this);
    }

    // This method has no impact on the issue
    function __set($name, $value) {
        $this->o[$name] = $value;
    }
}

$c = new c();
$c->foo();

?>
```

See also Overload.

Suggestions

- Use a distinct method to append a new value to that property
- Assign the whole array, and not just one of its elements

Specs

Short name	Classes/NoMagicWithArray
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *LintButWontExec*
Exakat since	0.12.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Medium
Features	magic-method
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.807 No Max On Empty Array

Using max() or min() on an empty array leads to a `valueError` exception.

Until PHP 8, max() and min() would return null in case of empty array. This might be confusing with actual values, as an array can contain `null`. `null` has a specific behavior when comparing with other values, and should be avoided with max() and sorts.

```
<?php

// Throws a value error
$a = max([]);

$array = [];
if (empty($array)) {
     $a = null;
} else {
     $a = max($array);
}


var_dump(min([-1,  null])); // NULL
var_dump(max([-1,  null])); // -1
var_dump(max([1,  null]));  // 1

?>
```

Until PHP 8.0, a call on an empty array would return null, and a warning.

Suggestions

- Check the content of the array before giving it to max() or min()

Specs

Short name	Structures/NoMaxOnEmptyArray
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP80*
Exakat since	2.5.2
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.808 No More Curly Arrays

Only use square brackets to access array elements. The usage of curly brackets for array access is deprecated since PHP 7.4.

```
<?php

$array = [1,2,3];

// always valid
echo $array[1];

// deprecated in PHP 7.4
echo $array{1};

?>
```

See also Deprecate curly brace syntax and Deprecate curly brace syntax for accessing array elements and string offsets.

Suggestions

- Always use square brackets to access particular index in an array

Specs

Short name	Php/NoMoreCurlyArrays
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	1.9.2
PHP Version	With PHP 8.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	array-curly-braces
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.809 No Need For Else

Else is not needed when the Then ends with a break. A break may be the following keywords : break, continue, return, goto. Any of these send the execution somewhere in the code. The else block is then executed as the main sequence, only if the condition fails.

```
<?php

function foo() {
    // Else may be in the main sequence.
    if ($a1) {
        return $a1;
    } else {
        $a++;
    }
```

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```
    // Same as above, but negate the condition : if (!$a2) { return $a2; }
    if ($a2) {
        $a++;
    } else {
        return $a2;
    }

    // This is OK
    if ($a3) {
        return;
    }

    // This has no break
    if ($a4) {
        $a++;
    } else {
        $b++;
    }

    // This has no else
    if ($a5) {
        $a++;
    }
}
?>
```

See also Object Calisthenics, rule # 2.

Suggestions

- Remove else block, but keep the code

Specs

Short name	Structures/NoNeedForElse
Rulesets	*All*, *Analyze*
Exakat since	0.10.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	if-then
Examples	*Thelia*, *ThinkPHP*
Available in	Entreprise Edition, Exakat Cloud

14.2.810 No Need For Triple Equal

There is no need for the identity comparison when the methods returns the proper type.

```
<?php

// foo() returns a string.
if ('a' === foo()) {
    // doSomething()
}


function foo() : string {
    return 'a';
}

?>
```

Specs

Short name	Structures/NoNeedForTriple
Rulesets	*All*, *Analyze*
Exakat since	2.1.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.811 No Need For get_class()

There is no need to call get_class() to build a static call. The argument of get_class() may be used directly.

```
<?php

//
$a->b::$c

// This is too much code
get_class($a->b)::$c

?>
```

See also Scope Resolution Operator (::).

Suggestions

- Use get_called_class(), which may carry different class names
- Use self, static or parent keywords, if you are already in the current class
- Use the argument of get_class() directly

Specs

Short name	Structures/NoNeedGetClass
Rulesets	*All*, *Suggestions*
Exakat since	1.8.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.812 No Net For Xml Load

Simplexml and ext/DOM load all external entities from the web, by default. This is dangerous, in particular when loading unknown XML code.

Look at this XML code below : it is valid. It defines an entity `xxe`, that is filled with a file, read on the system and base64 encoded.:

```
&lt;!DOCTYPE replace [&lt;!ENTITY xxe SYSTEM "php://filter/convert.base64-encode/
↪resource=index.php"&gt; ]&gt;
<replace>&xxe;</replace>
```

This file could be processed with the following code : note, you can replace 'index.php' in the above entity by any valid filepath.

Here, PHP tries to load the XML file, finds the entity, then solves the entity by encoding a file called `index.php`. The source code of the file is not used as data in the XML file.

At that point, the example illustrates how a XXE works : by using the XML engine to load external resources, and preprocessing the XML code. in fact, there is only one change to make this XML code arbitrarily injected ::

```
&lt;!DOCTYPE replace [&lt;!ENTITY writer SYSTEM "https://www.example.com/entities.dtd"&
↪gt; ]&gt;
<replace>&xxe;</replace>
```

With the above example, the XML code is static (as, it never changes), but the 'xxe' definitions are loaded from a remove website, and are completely under the attacker control.

```
<?php
    $dom = new DOMDocument();
    $dom->loadXML($xml, LIBXML_NOENT | LIBXML_DTDLOAD);
    $info = simplexml_import_dom($dom);
```

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```
    print base64_decode($info[0]);
?>
```

See also XML External Entity,, XML External Entity (XXE) Processing and Detecting and exploiting XXE in SAML Interfaces.

Suggestions

- Strip out any entity when using external XML
- Forbid any network to the XML engine, by configuring the XML engine without network access

Specs

Short name	Security/NoNetForXmlLoad
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.0.11
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	xml
Available in	Entreprise Edition, Exakat Cloud

14.2.813 No Null For Index

Avoid using `null` value as an index in an array. PHP actually cast it to the empty string. This means that later, it might be impossible to find the `null` in the list of keys.

```
<?php

$a = [];
$a[null] = 1;

print_r(array_keys($a));
// ["] empty string

?>
```

Suggestions

- Always checks for null values. Given it then a valid value.

Specs

Short name	Structures/NoNullForIndex
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.814 No Null For Native PHP Functions

> Null is not acceptable anymore as an argument, for PHP native functions that require a non-nullable argument.

Until PHP 8.1, it was magically turned into an empty string.

```
<?php

$haystack = 'abc';
// $needle was omitted...
echo strpos($haystack, $needle);

?>
```

See also PHP RFC: Deprecate passing null to non-nullable arguments of internal functions.

Specs

Short name	Php/NoNullForNative
Rulesets	*All*, *Analyze*, *Changed Behavior*, *CompatibilityPHP81*, *Deprecated*
Exakat since	2.2.5
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	null
Available in	Entreprise Edition, Exakat Cloud

14.2.815 No Null With Null Safe Operator

When building an expression with a null-safe operator, it may fail and produce a NULL as a result. When the last method of the expression also returns null (or void, which is transformed in null), then it is not possible to differentiate between a failure and a valid execution of the method.

As such, it is recommended to avoid finishing with a method that returns null, in an expression that uses a null-safe operator.

```
<?php

class x {
     function foo($a) : ?int {
             if ($a % 2) {
                     return $a;
             } else {
                     return null;
             }
     }
}

$x = x::getInstance(x::class);
$result = $x?->foo($a);

// Is that an error or a valid result ?
if ($result === null) { }

?>
```

Suggestions

- Avoid using the null-safe operator in that expression
- Make the last property / method in the expression not return null

Specs

Short name	Classes/NoNullWithNullSafeOperator
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	2.6.4
PHP Version	8.1
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	nullsafe-object-operator
Available in	Entreprise Edition, Exakat Cloud

14.2.816 No Object As Index

PHP accepts objects as index, though it will report various error messages when this happens.

```
<?php

$s = 'Hello';
$o = new stdClass();

try {
    $s[$o] = 'A';
} catch (\Throwable $e) {
    echo $e->getMessage(), "\n";
    //Cannot access offset of type stdClass on string
}

?>
```

Thanks to George Peter Banyard for the inspiration.

See also Use an object as an offet.

Suggestions

- Filter values being used as index
- Filter values being used as array

Specs

Short name	Structures/NoObjectAsIndex
Rulesets	*All*, *Analyze*
Exakat since	2.2.2
PHP Version	With PHP 8.1 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	index
Available in	Entreprise Edition, Exakat Cloud

14.2.817 No Parenthesis For Language Construct

Some PHP language constructs, such are `include`, `require`, `include_once`, `require_once`, `print`, `echo` don't need parenthesis. They accept parenthesis, but it is may lead to strange situations.

It it better to avoid using parenthesis with `echo`, `print`, `return`, `throw`, `yield`, `yield from`, `include`, `require`, `include_once`, `require_once`.

```
<?php

// This is an attempt to load 'foo.inc', or kill the script
```

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```
include('foo.inc') or die();
// in fact, this is read by PHP as : include 1
// include  'foo.inc' or die();

?>
```

See also ON PHP LANGUAGE CONSTRUCTS AND PARENTHESES and include.

Suggestions

- Remove parenthesis

Specs

Short name	Structures/NoParenthesisForLanguageConstruct
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	parenthesis, language-construct, return, include
ClearPHP	no-parenthesis-for-language-construct
Examples	*Phpdocumentor*, *phpMyAdmin*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.818 No Plus One

Incrementing a variable should be done with the ++ or – operators. Any other way, may be avoided.

This is a micro optimisation.

```
<?php

// Best way to increment
++$x; --$y;

// Second best way to increment, if the current value is needed :
echo $x++, $y--;

// Good but slow
$x += 1;
$x -= -1;

$y += -1;
$y -= 1;

// even slower
$x = $x + 1;
```

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```
$y = $y - 1;

?>
```

Specs

Short name	Structures/PlusEgalOne
Rulesets	*All*, *Changed Behavior*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.819 No Private Abstract Method In Trait

> Method could not be both abstract and private in traits. This was changed in PHP 8.0 : the class might overwrite the trait's method, since it has precedence of it. And when the class doesn't overwrite it, then the class has an abstract method, and can't be instantiated.

This might be important for backward incompatibility, although it doesn't lint in previous versions.

```
<?php

 trait t { abstract private function foo() ;}

 class x {
    use t;

    // valid
    private function foo() {}
}

// This is a hidden abstract class
class y {
    use t;
}


?>
```

See also Abstract Trait Members.

Specs

Short name	Traits/NoPrivateAbstract
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*
Exakat since	2.4.5
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	Very high
Features	trait, abstract
Available in	Entreprise Edition, Exakat Cloud

14.2.820 No Public Access

The properties below are declared with public access, but are never used publicly. They can be made protected or private.

```
<?php

class foo {
    public $bar = 1;             // Public, and used in public space
    public $neverInPublic = 3;  // Public, but never used in outside the class

    function bar() {
        $neverInPublic++;
    }
}

$x = new foo();
$x->bar = 3;
$x->bar();

?>
```

Specs

Short name	Classes/NoPublicAccess
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility
Available in	Entreprise Edition, Exakat Cloud

14.2.821 No Readonly Assignation In Global

When a property is marked readonly, it may only be assigned within the class of definition.

It cannot be assigned outside this class, in the global scope. It is also immune to class invasion.

```
<?php

class x {
    public readonly int $p;

    function foo() {
        $this->p -= 1; // OK

        $x = new x;
        $x->p = 1;     // Not OK, even if $x is of type x
    }
}

$x = new x;
$x->p = 1;     // Not OK

?>
```

Specs

Short name	Classes/NoReadonlyAssignationInGlobal
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	2.4.2
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	readonly, class-invasion
Available in	Entreprise Edition, Exakat Cloud

14.2.822 No Real Comparison

Avoid comparing decimal numbers with ==, ===, !==, !=. Real numbers have an error margin which is random, and makes it very difficult to match even if the compared value is a literal.

PHP uses an internal representation in base 2 : any number difficult to represent with this base (like 0.1 or 0.7) will have a margin of error.

```
<?php

$a = 1/7;
$b = 2.0;

// 7 * $a is a real, not an integer
var_dump( 7 * $a === 1);

// rounding error leads to wrong comparison
var_dump( (0.1 + 0.7) * 10 == 8);
// although
var_dump( (0.1 + 0.7) * 10);
// displays 8

// precision formula to use with reals. Adapt 0.0001 to your precision needs
var_dump( abs(((0.1 + 0.7) * 10) - 8) < 0.0001);

?>
```

Use precision formulas with abs() to approximate values with a given precision, or avoid reals altogether.

See also Floating point numbers.

Suggestions

- Cast the values to integer before comparing
- Compute the difference, and keep it below a threshold
- Use the `gmp` or the `bcmath` extension to handle high precision numbers
- Change the 'precision' directive of PHP : `ini_set('precision', 30)` to make number larger
- Multiply by a power of ten, before casting to integer for the comparison
- Use floor(), ceil() or round() to compare the numbers, with a specific precision

Specs

Short name	Type/NoRealComparison
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *PHP recommendations*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	real
ClearPHP	no-real-comparison
Examples	*Magento*, *SPIP*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.823 No Reference For Static Property

Static properties used to behave independently when set to a reference value. This was fixed in PHP 7.3.

According to the PHP 7.3 changelog :

In PHP, static properties are shared between inheriting classes, unless the static property is explicitly overridden in a child class. However, due to an implementation artifact it was possible to separate the static properties by assigning a reference. This loophole has been fixed.

```
<?php

        class Test {
            public static $x = 0;
        }
        class Test2 extends Test { }

        Test2::$x = &$x;
        $x = 1;

        var_dump(Test::$x, Test2::$x);
        // Previously: int(0), int(1)
        // Now: int(1), int(1)

?>
```

See also PHP 7.3 UPGRADE NOTES.

Specs

Short name	Php/NoReferenceForStaticProperty
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*
Exakat since	1.4.9
PHP Version	With PHP 7.3 and older
Severity	Major
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 7.3 - More
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.824 No Reference For Ternary

> The ternary operator and the null coalescing operator are both expressions that only return values, and not a reference.

This means that any provided reference will be turned into its value. While this is usually invisible, it will raise a warning when a reference is expected. This is the case with methods returning a reference.

A PHP notice is generated when using a ternary operator or the null coalesce operator : `Only variable references should be returned by reference`. The notice is also emitted when returning objects.

This applies to methods, functions and closures.

```
<?php

// This works
function &foo($a, $b) {
    if ($a === 1) {
        return $b;
    } else {
        return $a;
    }
}

// This raises a warning, as the operator returns a value
function &foo($a, $b) { return $a === 1 ? $b : $a; }

?>
```

See also Null Coalescing Operator and Ternary Operator.

Suggestions

- Drop the reference at assignation time
- Drop the reference in the argument definition
- Drop the reference in the function return definition

Specs

Short name	Php/NoReferenceForTernary
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.0.8
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Examples	*phpadsnew*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.825 No Reference On Left Side

Do not use references as the right element in an assignation.

```
<?php

$b = 2;
$c = 3;

$a = &$b + $c;
// $a === 2 === $b;

$a = $b + $c;
// $a === 5

?>
```

This is the case for most situations : addition, multiplication, bitshift, logical, power, concatenation. Note that PHP won't compile the code if the operator is a short operator (+=, .=, etc.), nor if the & is on the right side of the operator.

See also References Explained and Operator Precedence.

Specs

Short name	Structures/NoReferenceOnLeft
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.11.5
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	reference
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.826 No Referenced Void

There is no point returning a reference with a void type. This is now reported as deprecated in PHP 8.1.

```
<?php

function &test(): void {}

?>
```

See also PHP RFC: Deprecations for PHP 8.1.

Suggestions

- Removes the reference operator from the function definition

Specs

Short name	Functions/NoReferencedVoid
Rulesets	*All*, *Analyze*, *CompatibilityPHP81*, *Deprecated*
Exakat since	2.2.4
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	void, reference
Available in	Entreprise Edition, Exakat Cloud

14.2.827 No Return For Generator

Return is not allowed in a generator <https://www.php.net/`generator>`_ function. In PHP versions 5.5 and 5.6, they yield a fatal Error.

```
<?php

function generatorWithReturn() {
    yield 1;
    return 2;
}

?>
```

See also Generators overview.

Suggestions

- Remove usage of return in the generator
- Update PHP to version 7.0 or later

Specs

Short name	Php/NoReturnForGenerator
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	1.4.9
PHP Version	From PHP 5.5 to 7.0
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	High
Features	generator, yield
Available in	Entreprise Edition, Exakat Cloud

14.2.828 No Return Or Throw In Finally

Avoid using return and throw in a finally block. Both command will interrupt the processing of the try catch block, and any exception that was emitted will not be processed. This leads to unprocessed exceptions, leaving the application in an unstable state.

Note that PHP prevents the usage of goto, break and continue within the finally block at linting phase. This is categorized as a Security problem.

```
<?php
function foo() {
        try {
            // Exception is thrown here
            throw new \Exception();
        } catch (Exception $e) {
            // This is executed AFTER finally
            return 'Exception';
```

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```
        } finally {
            // This is executed BEFORE catch
            return 'Finally';
        }
    }
}

// Displays 'Finally'. No exception
echo foo();

function bar() {
        try {
            // Exception is thrown here
            throw new \Exception();
        } catch (Exception $e) {
            // Process the exception.
            return 'Exception';
        } finally {
            // clean the current situation
            // Keep running the current function
        }
        return 'Finally';
    }
}

// Displays 'Exception', with processed Exception
echo bar();

?>
```

See also Return Inside Finally Block.

Suggestions

- Move the return right after the try/catch/finally call

Specs

Short name	Structures/NoReturnInFinally
Rulesets	*All*, *Security*
Exakat since	0.12.1
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	finally, return
Available in	Entreprise Edition, Exakat Cloud

14.2.829 No Return Used

The return value of the following methods are never used. The return argument may be dropped from the code, as it is dead code.

This analysis supports functions and static methods, when a definition may be found. It doesn't support method calls.

```
<?php

function foo($a = 1) { return 1; }

foo();
foo();
foo();
foo();
foo();
foo();

// This function doesn't return anything.
function foo2() { }

// The following function are used in an expression, thus the return is important
function foo3() {  return 1;}
function foo4() {  return 1;}
function foo5() {  return 1;}

foo3() + 1;
$a = foo4();
foo(foo5());

?>
```

Suggestions

- Remove the return statement in the function
- Actually use the value returned by the method, for test or combination with other values

Specs

Short name	Functions/NoReturnUsed
Rulesets	*All*, *Analyze*, *Suggestions*
Exakat since	0.11.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	return
Examples	*SPIP*, *LiveZilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.830 No Self Referencing Constant

It is not possible to use a constant to define itself in a class. It yields a fatal error at runtime.

The PHP error reads : `Cannot declare `self <https://www.php.net/manual/en/language.oop5.paamayim-nekudotayim.php>`_-referencing constant 'self\:\:C2'`. Unlike PHP which is self-referencing, self referencing variables can't have a value : just don't use that.

```
<?php
    class a {
        const C1 = 1;          // fully defined constant
        const C2 = self::C2;   // self referencing constant
        const C3 = a::C3 + 2;  // self referencing constant
    }
?>
```

The code may access an already declared constant with self or with its class name.

```
<?php
    class a {
        const C1 = 1;
        const C2 = a::C1;
    }
?>
```

This error is not detected by linting. It is only detected at instantiation time : if the class is not used, it won't appear.

Suggestions

- Give a literal value to this constant
- Give a constant value to this constant : other class constants or constant are allowed here.

Specs

Short name	Classes/NoSelfReferencingConstant
Rulesets	*All*, *Analyze*, *Class Review*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	constant
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.831 No Spread For Hash

The spread operator `...` only works on integer-indexed arrays.

```
<?php

// This is valid, as ``"-33"`` is cast to integer by PHP automagically
var_dump(...[1,"-33" => 2, 3]);

// This is not valid
var_dump(...[1,"C" => 2, 3]);

?>
```

See also Variable-length argument lists.

Suggestions

- Add a call to array_values() instead of the hash
- Check the arguments beforehand with array_is_list()
- Upgrade to PHP 8.1

Specs

Short name	Arrays/NoSpreadForHash
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.9.3
PHP Version	With PHP 8.1 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	ellipsis, array, array-spread
Available in	Entreprise Edition, Exakat Cloud

14.2.832 No Static Variable In A Method

Refactor static variables into properties.

Inside a class, it is recommended to use the class properties, static or not, to hold values between calls to the method. Inside a function, or a closure <https://www.php.net/~closure>`_, no such container is available, so static variables may be useful. Although, a refactoring to a class is also recommended here.

Properties have clear definitions, and are less surprising than static variables.

```
<?php

class barbar {
    function foo() {
        static $counter = 0;
```

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```
        // count the number of calls of this method
        return ++$counter;
    }
}

class bar {
    static $counter = 0;

    function foo() {
        // count the number of calls of this method
        return ++self::$counter;
    }
}

?>
```

The static variable is easier to refactor as a static property. It is also possible to refactor it as a property, although it may impact the behavior of the previous code, or require extra work.

Suggestions

- Refactor the variable into a static property
- Refactor the variable into a property and then use dependency injection

Specs

Short name	Variables/NoStaticVarInMethod
Rulesets	*All*, *Class Review*, *Suggestions*
Exakat since	2.2.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static-variable
Available in	Entreprise Edition, Exakat Cloud

14.2.833 No String With Append

PHP 7 doesn't allow the usage of [] with strings. [] is an array-only operator.

This was possible in PHP 5, but is now forbidden in PHP 7.

```
<?php

$string = 'abc';

// Not possible in PHP 7
$string[] = 'd';
```

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```
?>
```

See also class.

Suggestions

- Use the concatenation operator `.` to append strings.
- Use the concatenation short assignement `.=` to append strings.

Specs

Short name	Php/NoStringWithAppend
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	string, append
Available in	Entreprise Edition, Exakat Cloud

14.2.834 No Substr Minus One

Negative index were introduced in PHP 7.1. This syntax is not compatible with PHP 7.0 and older.

```
<?php
$string = 'abc';

echo $string[-1]; // c

echo $string[1]; // a

?>
```

See also Generalize support of negative string offsets.

Suggestions

- Use the -1 index in a string, instead of a call to substr()

Specs

Short name	Php/NoSubstrMinusOne
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	0.12.5
PHP Version	With PHP 7.1 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.835 No Valid Cast

This cast generates an error, as there is no way to convert an object to an int.

The result will be 1.

```
<?php

$a = (int) foo();

function foo() : A {}


?>
```

This rule applies to float and int. This doesn't apply to string cast, as the magic method __toString() allows for such conversions.

Suggestions

- Create a method that convert the original object to the target type

Specs

Short name	Structures/NoValidCast
Rulesets	*All*, *Analyze*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	cast
Available in	Entreprise Edition, Exakat Cloud

14.2.836 No Variable Needed

This analysis reports methods where the local variables are not needed.

Such variables may be used to improve readability.

```
<?php

// The variable is not strictly necessary here
function foo($a) {
     $k = $a->method(1, 0);
     return $k;
}

?>
```

Suggestions

- Remove the variable

Specs

Short name	Variables/NoVariableNeeded
Rulesets	*All*, *Semantics*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.837 No Weak SSL Crypto

When enabling PHP's stream SSL, it is important to use a safe protocol.

All the SSL protocols (1.0, 2.0, 3.0), and TLS (1.0 are unsafe. The best is to use the most recent TLS, version 1.2.

stream_socket_enable_crypto() and curl_setopt() are checked. Using the TLS transport protocol of PHP will choose the version by itself.

```
<?php

// This socket will use SSL v2, which
$socket = 'sslv2://www.example.com';
$fp = fsockopen($socket, 80, $errno, $errstr, 30);

?>
```

See also Insecure Transportation Security Protocol Supported (TLS 1.0), The 2018 Guide to Building Secure PHP Software and Internet Domain: TCP, UDP, SSL, and TLS.

Suggestions

- Use TLS transport, with version 1.2

Specs

Short name	Security/NoWeakSSLCrypto
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.9.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	ssl
Available in	Entreprise Edition, Exakat Cloud

14.2.838 No array_merge() In Loops

array_merge() is memory intensive : every call will duplicate the arguments in memory, before merging them.

To handle arrays that may be quite big, it is recommended to avoid using array_merge() in a loop. Instead, one should use array_merge() with as many arguments as possible, making the merge a on time call. Note that array_merge_recursive() and file_put_contents() are affected and reported the same way.

```
<?php

// A large multidimensional array
$source = ['a' => ['a', 'b', /*...*/],
           'b' => ['b', 'c', 'd', /*...*/],
           /*...*/
           ];

// Faster way
$b = array();
foreach($source as $key => $values) {
    //Collect in an array
    $b[] = $values;
}

// One call to array_merge
$b = call_user_func_array('array_merge', $b);
// or with variadic
$b = call_user_func('array_merge', ..$b);

// Fastest way (with above example, without checking nor data pulling)
$b = call_user_func_array('array_merge', array_values($source))
// or
$b = call_user_func('array_merge', ...array_values($source))

// Slow way to merge it all
```

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```
$b = array();
foreach($source as $key => $values) {
    $b = array_merge($b, $values);
}

?>
```

See also Speed up array_merge().

Suggestions

- Store all intermediate arrays in a temporary variable, and use array_merge() once, with ellipsis or call_user_func_array().

Specs

Short name	Performances/ArrayMergeInLoops
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Performances*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
ClearPHP	no-array_merge-in-loop
Examples	*Tine20*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.839 No get_class() With Null

It is not possible to pass explicitly null to get_class() to get the current's class name. Since PHP 7.2, one must call get_class() without arguments to achieve that result.

```
<?php

class A {
  public function f() {
    // Gets the classname
    $classname = get_class();

    // Gets the classname and a warning
    $classname = get_class(null);
  }
}

$a = new A();
$a->f('get_class');

?>
```

Specs

Short name	Structures/NoGetClassNull
Rulesets	*All*, *Analyze*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*
Exakat since	1.0.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	null
Available in	Entreprise Edition, Exakat Cloud

14.2.840 No isset() With empty()

empty() actually does the job of isset() too.

From the manual : `No warning is generated if the variable does not exist. That means empty() is essentially the concise equivalent to !`isset(<https://www.www.php.net/isset>`_$var) || $var == false.` The main difference is that isset() only works with variables, while empty() works with other structures, such as constants.

```
<?php


// Enough validation
if (!empty($a)) {
    doSomething();
}

// Too many tests
if (isset($a) && !empty($a)) {
    doSomething();
}

?>
```

See also Isset and empty.

Suggestions

- Only use isset(), just drop the empty()
- Only use empty(), just drop the empty()
- Use a null value, so the variable is always set

Specs

Short name	Structures/NoIssetWithEmpty
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *PHP recommendations*
Exakat since	0.8.7
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	class
Examples	*XOOPS*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.841 No mb_substr In Loop

Do not use loops on mb_substr().

mb_substr() always starts at the beginning of the string to search for the nth char, and recalculate everything. This means that the first iterations are as fast as substr() (for comparison), while the longer the string, the slower mb_substr().

The recommendation is to use preg_split() with the *u* option, to split the string into an array. This save multiple recalculations.

```
<?php

// Split the string by characters
$array = preg_split('//u', $string, -1, PREG_SPLIT_NO_EMPTY);
foreach($array as $c) {
    doSomething($c);
}

// Slow version
$nb = mb_strlen($mb);
for($i = 0; $i < $nb; ++$i) {
    // Fetch a character
    $c = mb_substr($string, $i, 1);
    doSomething($c);
}

?>
```

See also Optimization: How I made my PHP code run 100 times faster and How to iterate UTF-8 string in PHP?.

Suggestions

- Use preg_split() and loop on its results.

Specs

Short name	Performances/MbStringInLoop
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.9.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	csv
Available in	Entreprise Edition, Exakat Cloud

14.2.842 Non Ascii Variables

> PHP allows certain characters in variable names. The variable name must only include letters, figures, underscores and ASCII characters from 128 to 255.

In practice, letters outside the scope of the intervalle `[a-zA-Z0-9_]` are rare, and require more care when editing the code or passing it from OS to OS.

Also, certain letter might appear similar to the roman ones, and be part of a different alphabet. This is the case, for example, of the cyrillic alphabet, where (cyrillic A, U+0410) is actually different from *A* (Latin A, U+0041). Some dashes and spaces may be valid in PHP variable names, and look very confusing.

```
<?php

// person, in Simplified Chinese
class  {
    // An actual working class in PHP.
    public function __construct() {
        echo __CLASS__;
    }
}

// people = new person();
$ = new ();

?>
```

See also Variables.

Suggestions

- Make sure those special chars have actual meaning.

Specs

Short name	Variables/VariableNonascii
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Examples	*Magento*
Available in	Entreprise Edition, Exakat Cloud

14.2.843 Non Breakable Space In Names

PHP allows non-breakable spaces in structures names, such as class, interfaces, traits, and variables.

This may be a nice trick to make names more readable outside code context, like long-named methods for tests.

```
<?php

class class with non breakable spaces {}

class ClassWithoutNonBreakableSpaces {}

?>
```

Original post by `Matthieu Napoli`. .

See also Using non-breakable spaces in test method names and PHP Variable Names.

Specs

Short name	Structures/NonBreakableSpaceInNames
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.12.0
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	non-breakable-space
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.844 Non Integer Nor String As Index

Report usage of non-integer and non-string types as index in an array syntax.

PHP arrays only accept integers and strings as keys. PHP convert the other types to integer or string, and that may lead to surprises when reading the arrays.

```
<?php

function foo (float $index, array $array) {
     $array[$index];
}

?>
```

Specs

Short name	Structures/NonIntStringAsIndex
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.6.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Low
Available in	Entreprise Edition, Exakat Cloud

14.2.845 Non Nullable Getters

A getter needs to be nullable when a property is injected.

In particular, if the injection happens with a separate method, there is a time where the object is not consistent, and the property holds a default non-object value.

```
<?php

class Consistent {
    private $db = null;

    function __construct(Db $db) {
        $this->db = $db;
        // Object is immediately consistent
    }

    // Db might be null
    function getDb() {
        return $this->db;
    }
}

class Inconsistent {
    private $db = null;
```

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```
    function __construct() {
        // No initialisation
    }

    // This might be called on time, or not
    // This typehint cannot be nullable, nor use null as default
    function setDb(DB $db) {
        return $this->db;
    }

    // Db might be null
    function getDb() {
        return $this->db;
    }
}
?>
```

Suggestions

- Remove the nullable option and the tests on `null`.

Specs

Short name	Classes/NonNullableSetters
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	1.9.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	injection
Available in	Entreprise Edition, Exakat Cloud

14.2.846 Non Static Methods Called In A Static

Static methods have to be declared as such (using the static keyword). Then, one may call them without instantiating the object.

PHP 7.0, and more recent versions, yield a deprecated error : `Non-`static <https://www.php.net/manual/en/language.oop5.static.php>`_ method A\:\:B() should not be called statically`.

PHP 5 and older doesn't check that a method is static or not : at any point, the code may call one method statically.

```
<?php
    class x {
        static public function sm( ) { echo __METHOD__.\n; }
        public public sm( ) { echo __METHOD__.\n; }
    }
```

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```
    x::sm( ); // echo x::sm

    // Dynamic call
    ['x', 'sm']();
    [\x::class, 'sm']();

    $s = 'x::sm';
    $s();

?>
```

It is a bad idea to call non-static method statically. Such method may make use of special variable $this, which will be undefined. PHP will not check those calls at compile time, nor at running time.

It is recommended to update this situation : make the method actually static, or use it only in object context.

Note that this analysis reports all static method call made on a non-static method, even within the same class or class hierarchy. PHP silently accepts static call to any in-family method.

```
<?php
    class x {
        public function foo( ) { self::bar() }
        public function bar( ) { echo __METHOD__.\n; }
    }
?>
```

See also Static Keyword.

Suggestions

- Call the method the correct way
- Define the method as static

Specs

Short name	Classes/NonStaticMethodsCalledStatic
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	static
Configurable by	php_core, php_extensions, stubs
Examples	*Dolphin*, *Magento*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.847 Non-constant Index In Array

Undefined constants revert as strings in Arrays. They are also called `barewords`.

In `$array[index]`, PHP cannot find index as a constant, but, as a default behavior, turns it into the string `index`.

This default behavior raise concerns when a corresponding constant is defined, either using define() or the const keyword (outside a class). The definition of the index constant will modify the behavior of the index, as it will now use the constant definition, and not the 'index' string.

It is recommended to make index a real string (with ' or "), or to define the corresponding constant to avoid any future surprise.

Note that PHP 7.2 removes the support for this feature.

```
<?php

// assign 1 to the element index in $array
// index will fallback to string
$array[index] = 1;
//PHP Notice:  Use of undefined constant index - assumed 'index'

echo $array[index];      // display 1 and the above error
echo "$array[index]";    // display 1
echo "$array['index']";  // Syntax error


define('index', 2);

 // now 1 to the element 2 in $array
 $array[index] = 1;

?>
```

See also PHP RFC: Deprecate and Remove Bareword (Unquoted) Strings and Syntax.

Suggestions

- Declare the constant to give it an actual value
- Turn the constant name into a string

Specs

Short name	Arrays/NonConstantArray
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	array
Examples	*Dolibarr*, *Zencart*
Available in	Entreprise Edition, Exakat Cloud

14.2.848 Non-lowercase Keywords

> The usual convention is to write PHP keywords (like `as`, `foreach`, `switch`, `case`, `break`, etc.) all in lowercase.

PHP understands them in lowercase, UPPERCASE or WilD Case, so there is nothing compulsory here. Although, it will look strange to many.

Some keywords are missing from this analysis : `extends`, `implements`, `as`. This is due to the internal engine, which doesn't keep track of them in its AST representation.

```
<?php

// usual PHP convention
foreach($array as $element) {
    echo $element;
}

// unusual PHP conventions
Foreach($array AS $element) {
    eCHo $element;
}

?>
```

Suggestions

- Use lowercase only PHP keywords, except for constants such as __CLASS__.

Specs

Short name	Php/UpperCaseKeyword
Rulesets	*All*, *Changed Behavior*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	case
Available in	Entreprise Edition, Exakat Cloud

14.2.849 Nonexistent Variable In compact()

Compact() doesn't warn when it tries to work on an nonexistent variable. It just ignores the variable.

This behavior changed in PHP 7.3, and compact() now emits a warning when the compacted variable doesn't exist. For performances reasons, this analysis only works inside methods and functions.

```
<?php

function foo($b = 2) {
    $a = 1;
    // $c doesn't exists, and is not compacted.
    return compact('a', 'b', 'c');
}
?>
```

See also compact and PHP RFC: Make compact function reports undefined passed variables.

Suggestions

- Fix the name of variable in the compact() argument list
- Remove the name of variable in the compact() argument list

Specs

Short name	Php/CompactInexistant
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP73*, *Suggestions*
Exakat since	1.2.9
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	compact
Available in	Entreprise Edition, Exakat Cloud

14.2.850 Normal Methods

Spot normal Methods.

```
<?php

class foo{
    // Normal method
    private function bar() {}

    // Static method
    private static function barbar() {}
}

?>
```

Specs

Short name	Classes/NormalMethods
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.851 Not A Scalar Type

`int` is the actual PHP scalar type, not `integer`.

PHP 7 introduced several scalar types, in particular `int`, `bool`, `string` and `float`. Those three types are easily mistaken with `integer`, `boolean`, `real` and `double`.

Unless those classes actually exists, PHP emits some strange error messages. Thanks to `Benoit Viguier` for the original idea for this analysis.

```
<?php

// This expects a scalar of type 'integer'
function foo(int $i) {}

// This expects a object of class 'integer'
function abr(integer $i) {}

?>
```

See also Type declarations and PHP RFC: Scalar Type Hints.

Suggestions

- Do not use `int` as a class name, an interface name or a trait name.

Specs

Short name	Php/NotScalarType
Rulesets	*All*, *Changed Behavior*, *PHP recommendations*, *Typechecks*
Exakat since	1.0.7
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	scalar-typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.852 Not Equal Is Not !==

Not and Equal operators, used separately, don't amount to the different operator `!==`.

`!$a == $b` first turns `$a``into the opposite boolean, then compares this boolean value to ``$b`. On the other hand, `$a !== $b` compares the two variables for type and value, and returns a boolean.

```
<?php

if ($string != 'abc') {
    // doSomething()
}
```

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```
// Here, string will be an boolean, leading
if (!$string == 'abc') {
    // doSomething()
}

// operator priority may be confusing
if (!$object instanceof OneClass) {
    // doSomething()
}
?>
```

Note that the `instanceof` operator may be use with this syntax, due to operator precedence.

See also Operator Precedence.

Suggestions

- Use the != or !==
- Use parenthesis

Specs

Short name	Structures/NotEqual
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	2.0.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	comparison
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.853 Not Not

Double not makes a boolean, not a `true`.

This is a wrong casting to boolean. PHP supports `(boolean)` to do the same, faster and cleaner.

```
<?php
    // Explicit code
    $b = (boolean) $x;
    $b = (bool) $x;

    // Wrong type casting
    $b = !!$x;

?>
```

See also Logical Operators and Type Juggling.

Suggestions

- Use `(bool)` casting operator for that
- Don't typecast, and let PHP handle it. This works in situations where the boolean is immediately used.

Specs

Short name	Structures/NotNot
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	logical-operator, cast
ClearPHP	no-implied-cast
Examples	*Cleverstyle*, *Tine20*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.854 Not Or Tilde

> There are two NOT operator in PHP : `!` and `~`. The first is a logical operator, and returns a boolean. The second is a bit-wise operator, and flips each bit.

Although they are distinct operations, there are situations where they provide the same results. In particular, when processing booleans.

Yet, `!` and `~` are not the same. `~` has a higher priority, and will not yield to `instanceof`, while `!` does.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

```
<?php

// be consistent
if (!$condition) {
    doSomething();
}

if (~$condition) {
    doSomething();
}

?>
```

See also Bitwise Operators, Logical Operators and Operators Precedences.

Suggestions

- Use the ! in logical expressions
- Use the ~ in bitwise expressions, with integers for example

Specs

Short name	Structures/NotOrNot
Rulesets	*All*, *Preferences*
Exakat since	1.8.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	logical-operator, bitwise-operator
Available in	Entreprise Edition, Exakat Cloud

14.2.855 Not Same Name As File

The class, interface or trait in this file as a different name, case included, than the file name.

In the following example, the file name is `Foo.php`.

```
<?php

// normal host of this file
class Foo {
    // some code
}

// case-typo this file
class foo {
    // some code
}

// strangely stored class
class foo {
    // some code
}

// This is valid name, but there is also a Foo class, and other classe in this file.
interface Foo {}

?>
```

Specs

Short name	Classes/SameNameAsFile
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.856 Nowdoc Delimiter Glossary

List of all the delimiters used to build a Nowdoc string.

```
<?php
$nowdoc = <<<'EOD'

EOD;

?>
```

See also Nowdoc and Heredoc.

Specs

Short name	Type/Nowdoc
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	nowdoc, heredoc
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.857 Null On New

Until PHP 7, some classes instantiation could yield null, instead of throwing an exception.

After issuing a 'new' with those classes, it was important to check if the returned object were null or not. No exception were thrown.

```
<?php

// Example extracted from the wiki below
$mf = new MessageFormatter('en_US', '{this was made intentionally incorrect}');
if ($mf === null) {
```

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```
    echo 'Surprise!';
}

?>
```

This inconsistency has been cleaned in PHP 7 : see See Internal Constructor Behavior

See also PHP RFC: Constructor behaviour of internal classes.

Suggestions

- Remove the check on null after a new instantiation

Specs

Short name	Classes/NullOnNew
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	class, new, null
Available in	Entreprise Edition, Exakat Cloud

14.2.858 Null Or Boolean Arrays

> Null, int, floats, booleans are valid with PHP array syntx. Yet, they only produces `null` values. They also did not emits any warning until PHP 7.4.

Older code used to initialize variables as null, sometimes explictly, and then, use them as arrays. The current support for this syntax is for backward compatibility.

Illegal keys, such as another array, will also generate a NULL value, instead of a Fatal error.

```
<?php

// outputs NULL
var_dump(null[0]);
var_dump(null[[]]);

const MY_CONSTANT = true;
// outputs NULL
var_dump(MY_CONSTANT[10]);

?>
```

See also Null and True.

Suggestions

- Avoid using the array syntax on null and boolean
- Avoid using null and boolean on constant that are expecting arrays

Specs

Short name	Arrays/NullBoolean
Rulesets	*All*, *Analyze*
Exakat since	1.8.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	null, boolean, float, int, array
Available in	Entreprise Edition, Exakat Cloud

14.2.859 Null Type Favorite

Null typed may be written in two ways : with ? or with union type and null.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

```
<?php

function foo(?A $a) : B|null {
    // some code
}

?>
```

Specs

Short name	Functions/NullTypeFavorite
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	2.3.2
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	null
Available in	Entreprise Edition, Exakat Cloud

14.2.860 Nullable With Constant

Arguments are automatically nullable with a literal null. They used to also be nullable with a constant null, before PHP 8.0.

```
<?php

// Extracted from https://github.com/php/php-src/blob/master/UPGRADING

// Replace
function test(int $arg = CONST_RESOLVING_TO_NULL) {}
// With
function test(?int $arg = CONST_RESOLVING_TO_NULL) {}
// Or
function test(int $arg = null) {}

?>
```

Suggestions

- Use the valid syntax

Specs

Short name	Functions/NullableWithConstant
Rulesets	*All*, *CE*, *CompatibilityPHP80*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.861 Nullable Without Check

Nullable typehinted argument should be checked before usage.

```
<?php

// This will emit a fatal error when $a = null
function foo(?A $a) {
    return $a->m();
}

// This is stable
function foo(?A $a) {
    if ($a === null) {
        return 42;
```

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```
    } else {
        return $a->m();
    }
}

?>
```

See also Null Return Types.

Suggestions

- Add a check on return value

Specs

Short name	Functions/NullableWithoutCheck
Rulesets	*All*, *Class Review*
Exakat since	2.0.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	null, return-typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.862 Numeric Literal Separator

Integer and floats may be written with internal underscores. This way, it is possible to separate large number into smaller groups, and make them more readable.

Numeric Literal Separators were introduced in PHP 7.4 and are not backward compatible.

```
<?php
$a = 1_000_000_000;   // A billion
$a = 1000000000;      // A billion too...

$b = 107_925_284.88; // 6 light minute to kilometers = 107925284.88 kilometers
$b = 107925284.88;   // Same as above
?>
```

See also PHP RFC: Numeric Literal Separator.

Specs

Short name	Php/IntegerSeparatorUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP73*
Exakat since	1.9.0
PHP Version	With PHP 7.4 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	integer-separator
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.863 Objects Don't Need References

> There is no need to add references to parameters for objects, as those are always passed by reference when used as arguments.

Reference operator is needed when the object are replaced inside the method with a new value (or a clone), as whole. Calls to methods or property modifications do not require extra reference.

Reference operator is also needed when one of the types is scalar : this include null, and the hidden null type : that is when the default value is null.

This rule applies to arguments in methods, and to foreach() blind variables.

```
<?php
    $object = new stdClass();
    $object->name = 'a';

    foo($object);
    print $object->name; // Name is 'b'

    // No need to make $o a reference
    function foo(&$o) {
        $o->name = 'b';
    }

    // $o is assigned inside the function : the parameter must have a &, or the new␣
↪object won't make it out of the foo3 scope
    function foo3(&$o) {
        $o = new stdClass;
    }

    $array = array($object);
    foreach($array as &$o) { // No need to make this a reference
        $o->name = 'c';
    }

?>
```

See also Passing by reference.

Suggestions

- Remove the reference
- Assign the argument with a new value

Specs

Short name	Structures/ObjectReferences
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	reference
ClearPHP	no-references-on-objects
Examples	*Zencart*, *XOOPS*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.864 Octal Glossary

List of all the integer values using the octal format : an integer starting with an initial 0.

```
<?php

  $a = 1234; // decimal number
  $a = 0123; // octal number (equivalent to 83 decimal)

  // silently valid for PHP 5.x
  $a = 01283; // octal number (equivalent to 10 decimal)

?>
```

Putting an initial 0 is often innocuous, but in PHP, 0755 and 755 are not the same. The second is actually 1363 in octal, and will not provide the expected privileges.

See also Integers.

Specs

Short name	Type/Octal
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	integer
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.865 Old Style Constructor

> PHP classes used to have the method bearing the same name as the class acts as the constructor. That was PHP 4, and early PHP 5.

The manual issues a warning about this syntax : `Old style constructors are DEPRECATED in PHP 7.0, and will be removed in a future version. You should always use `__construct() <https://www.php.net/manual/en/language.oop5.decon.php>`_ in new code.`

```
<?php

namespace {
    // Global namespace is important
    class foo {
        function foo() {
            // This acts as the old-style constructor, and is reported by PHP
        }
    }

    class bar {
        function __construct() { }
        function bar() {
            // This doesn't act as constructor, as bar has a __construct() method
        }
    }
}

namespace Foo\Bar{
    class foo {
        function foo() {
            // This doesn't act as constructor, as bar is not in the global namespace
        }
    }
}

?>
```

This is no more the case in PHP 5, which relies on `__construct()` to do so. Having this old style constructor may bring in confusion, unless you are also supporting old time PHP 4.

Note that classes with methods bearing the class name, but inside a namespace are not following this convention, as this is not breaking backward compatibility. Those are excluded from the analyze.

See also Constructors and Destructors.

Suggestions

- Remove old style constructor and make it `__construct()`
- Remove old libraries and use a modern component

Specs

Short name	Classes/OldStyleConstructor
Rulesets	*All*, *Analyze*, *Appinfo*, *CE*, *CompatibilityPHP80*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	constructor
ClearPHP	no-php4-class-syntax
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.866 Old Style __autoload()

Avoid __autoload(), only use spl_register_autoload().

__autoload() is deprecated since PHP 7.2 and possibly removed in later versions. spl_register_autoload() was introduced in PHP 5.1.0.

__autoload() may only be declared once, and cannot be modified later. This creates potential conflicts between libraries that try to set up their own autoloading schema.

On the other hand, spl_register_autoload() allows registering and unregistering multiple autoloading functions or methods.

Do not use the old __autoload() function, but rather the new spl_register_autoload() function.

```
<?php

// Modern autoloading.
function myAutoload($class){}
spl_register_autoload('myAutoload');

// Old style autoloading.
function __autoload($class){}

?>
```

See also Autoloading Classes.

Suggestions

- Move to spl_register_autoload()
- Remove usage of the old __autoload() function
- Modernize usage of old libraries

Specs

Short name	Php/oldAutoloadUsage
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	autoload
ClearPHP	use-smart-autoload
Examples	*Piwigo*
Available in	Entreprise Edition, Exakat Cloud

14.2.867 One Dot Or Object Operator Per Line

Rule #4 of Object Calisthenics : Only one -> or . per line.

```
<?php

// Those should be on different lines for readability
$a->foo()->bar()->getFinal();

$a->foo()
  ->bar()
  ->getFinal();

// Those should be on different lines for readability
$concatenation = 'a' . 'b' . $c . 'd';

$concatenation = 'a' .
                 'b' .
                 $c .
                 'd';

?>
```

This analysis will also catch the following cases :

```
<?php
    // set of multiples (concatenations or properties or methodcalls)
    foo('a' . 'b', 'c'. 'd');
    foo('a' . 'b', $c->d);

?>
```

When kept, simple, this rule has some edge cases which are left to the reader.

```
<?php

$a = 'a' . 'b'
```

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```
    .
    'c' . 'd';
$c = $f->g('e' . 'f');

$e = A::B::D;

?>
```

Specs

Short name	Structures/OneDotOrObjectOperatorPerLine
Rulesets	*All*
Exakat since	0.8.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.868 One Expression Brackets Consistency

Brackets around one-line expressions are not consistent.

PHP makes bracket optional when a control structure pilot only one expression. Both are semantically identical.

This analysis reports code that uses brackets while the vast majority of other expressions uses none. Or the contrary.

```
<?php

// One expression with brackets
for($i = 0; $i < 10; $i++) { $c++; }

// One expression without bracket
for($i2 = 0; $i2 < 10; $i2++)  $c++;

?>
```

Another analysis, [Structures/Bracketless], reports the absence of brackets as an error.

Specs

Short name	Structures/OneExpressionBracketsConsistency
Rulesets	*All*, *Preferences*
Exakat since	0.9.5
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.869 One If Is Sufficient

Nested conditions may be rewritten another way, to reduce the amount of code.

Nested conditions are equivalent to an && condition. As such, they may be switched. When one of the condition has no explicit else, then it is lighter to write it as the first condition. This way, it is written once, and not repeated.

```
<?php

// Less conditions are written here.
    if($b == 2) {
        if($a == 1) {
            ++$c;
        }
        else {
            ++$d;
        }
    }

// ($b == 2) is double here
    if($a == 1) {
        if($b == 2) {
            ++$c;
        }
    }
    else {
        if($b == 2) {
            ++$d;
        }
    }
?>
```

Suggestions

- Switch the if…then conditions, to reduce the amount of conditions to read.

Specs

Short name	Structures/OneIfIsSufficient
Rulesets	*All*, *Suggestions*
Exakat since	1.2.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*Tikiwiki*
Available in	Entreprise Edition, Exakat Cloud

14.2.870 One Letter Functions

One letter functions seems to be really short for a meaningful name. This may happens for very high usage functions, so as to keep code short, but such functions should be rare.

```
<?php

// Always use a meaningful name
function addition($a, $b) {
    return $a + $b;
}

// One letter functions are rarely meaningful
function f($a, $b) {
    return $a + $b;
}

?>
```

Suggestions

- Use full names for functions
- Remove the function name altogether : use a closure

Specs

Short name	Functions/OneLetterFunctions
Rulesets	*All*, *Coding conventions*, *Semantics*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, semantics
Examples	*ThinkPHP*, *Cleverstyle*
Available in	Entreprise Edition, Exakat Cloud

14.2.871 One Object Operator Per Line

Avoid using more than one operator -> per line, to prevent information overload.

```
<?php

// Spread operators on multiple lines
$object->firstMethodCall()
       ->property
       ->secondMethodCall();

// This is not readable
```

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```
$object->firstMethodCall()->property->secondMethodCall();

// This is OK, as objects are different.
$a2->b2($c2->d2, $e2->f2);

?>
```

Specs

Short name	Classes/OneObjectOperatorPerLine
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.872 One Variable String

These strings only contains one variable or property or array.

```
<?php

$a = 0;
$b = "$a"; // This is a one-variable string

// Better way to write the above
$b = (string) $a;

// Alternatives :
$b2 = "$a[1]"; // This is a one-variable string
$b3 = "$a->b"; // This is a one-variable string
$c = "d";
$d = "D";
$b4 = "{$$c}";
$b5 = "{$a->foo()}";

?>
```

When the goal is to convert a variable to a string, it is recommended to use the type casting (string) operator : it is then clearer to understand the conversion. It is also marginally faster, though very little.

See also Strings and Type Juggling.

Suggestions

- Drop the surrounding string, keep the variable (or property...)
- Include in the string any concatenation that comes unconditionally after or before
- Convert the variable to a string with the (type) operator

Specs

Short name	Type/OneVariableStrings
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	string, variable, interpolation
Examples	*Tikiwiki*, *NextCloud*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.873 Only First Byte

When assigning a char to a string with an array notation, only the first byte is used.

```
<?php
    $str = 'xy';

    // first letter is now a
    $str[0] = 'a';

    // second letter is now b, c is ignored
    $str[1] = 'bc';
?>
```

See also String access and modification by character.

Suggestions

- Remove extra bytes when assigning to a string
- Use concatenation
- Use strpos() and substr() functions
- Use explode(), implode() functions and array manipulations

Specs

Short name	Structures/OnlyFirstByte
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.2.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.874 Only Static Methods Class

Marks a class that has only static methods.

```
<?php

class x {
    static function foo() {}
    static function goo() {}
    static function hoo() {}
}

?>
```

Specs

Short name	Classes/OnlyStaticMethods
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, static
Available in	Entreprise Edition, Exakat Cloud

14.2.875 Only Variable For Reference

When a method is requesting an argument to be a reference, it cannot be called with a literal value.

The call must be made with a variable, or any assimilated data container : array, property or static property.

```
<?php

// This is not possible
foo(1,2);
```

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```
// This is working
foo($a, $b);

function foo($a, &$b) {}

?>
```

Note that PHP may detect this error at linting time, if the method is defined after being called : at that point, PHP will only check the problem during execution. This is definitely the case for methods, compared to functions or static methods.

See also Passing arguments by reference.

Suggestions

- Put the literal value in a variable before calling the method.
- Omit the arguments, when it won't be used.

Specs

Short name	Functions/OnlyVariableForReference
Rulesets	*All*, *Analyze*, *LintButWontExec*
Exakat since	1.4.6
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Medium
Features	variable, reference
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.876 Only Variable Passed By Reference

> When an argument is expected by reference, it is compulsory to provide a container. A container may be a variable, an array, a property or a static property.

This may be linted by PHP, when the function definition is in the same file as the function usage. This is silently linted if definition and usage are separated, if the call is dynamical or made as a method.

```
<?php

function foo(&$bar) { /**/ }

function &bar() { /**/ }

// This is not possible : strtolower() returns a value
foo(strtolower($string));
```

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```
// This is valid : bar() returns a reference
foo(bar($string));

?>
```

This analysis currently covers functioncalls and static methodcalls, but omits methodcalls.

See also Passing arguments by reference.

Suggestions

- Store the previous result in a variable, and then call the function.

Specs

Short name	Functions/OnlyVariablePassedByReference
Rulesets	*All*, *Analyze*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	0.11.3
PHP Version	All
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	High
Features	reference, parameter
Configurable by	php_core, php_extensions, stubs
Examples	*Dolphin*, *PhpIPAM*
Available in	Entreprise Edition, Exakat Cloud

14.2.877 Only Variable Passed By Reference

> Some methods require a variable as argument. Those arguments are passed by reference, and they must operate on a variable, or any data container (property, array element).

This means that literal values, constants cannot be used as argument. This is also the case of literal values, returned by other methods.

This is also the case of `isset()`, althought with a different error message.

```
<?php

echo end([1,2,3]);

function foo() {
     return [4,5,6];
}

echo end(foo());

?>
```

Suggestions

- Put the value in a variable before using it with the function.

Specs

Short name	Php/OnlyVariablePassedByReference
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*
Exakat since	2.6.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.878 Only Variable Returned By Reference

Function can't return literals by reference.

When a function returns a reference, it is only possible to return variables, properties or static properties.

Anything else, like literals or static expressions, yield a warning at execution time.

```
<?php

// Can't return a literal number
function &foo() {
    return 3 + rand();
}

// bar must return values that are stored in a
function &bar() {
    $a = 3 + rand();
    return $a;
}

?>
```

Specs

Short name	Structures/OnlyVariableReturnedByReference
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	reference
Available in	Entreprise Edition, Exakat Cloud

14.2.879 OpenSSL Ciphers Used

List of all the OpenSSL ciphers used in the code.

It is important to always use valid cipher modes for SSL. In case of non-existent cipher, the cipher and decipher operation will not happen. Ciphers are marked as weak after their security is breached, and shall be removed from OpenSSL, and later, from PHP.

By reviewing this inventory, it is possible to detect forgotten ciphers, and fix them.

The full list of available ciphers for the PHP installation is available with the function openssl_get_cipher_methods().

```
<?php
// PHP documentation example, for PHP 7.1 and more recent
//$key should have been previously generated in a cryptographically safe way, like␣
↪openssl_random_pseudo_bytes
$plaintext = "message to be encrypted";
$cipher = "aes-128-gcm";
if (in_array($cipher, openssl_get_cipher_methods()))
{
    $ivlen = openssl_cipher_iv_length($cipher);
    $iv = openssl_random_pseudo_bytes($ivlen);
    $ciphertext = openssl_encrypt($plaintext, $cipher, $key, $options=0, $iv, $tag);
    //store $cipher, $iv, and $tag for decryption later
    $original_plaintext = openssl_decrypt($ciphertext, $cipher, $key, $options=0, $iv,
↪$tag);
    echo $original_plaintext."\n";
}
?>
```

See also openssl_encrypt() and OpenSSL [PHP manual].

Specs

Short name	Type/OpensslCipher
Rulesets	*All*, *Inventory*
Exakat since	2.1.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	openssl
Available in	Entreprise Edition, Exakat Cloud

14.2.880 Openssl Encrypt Default Algorithm Change

openssl_pkcs7_encrypt() and openssl_cms_encrypt() will now default to using AES-128-CBC rather than RC2-40. The RC2-40 cipher is considered insecure and not enabled by default in OpenSSL 3.

This means that the default argument of OPENSSL_CIPHER_RC2_40 is replaced by OPENSSL_CIPHER_AES_128_CBC.

```
<?php
// extracted from the PHP documentation
// encrypt it
if (openssl_pkcs7_encrypt("msg.txt", "enc.txt", $key,
    array("To" => "nighthawk@example.com", // keyed syntax
          "From: HQ <hq@example.com>", // indexed syntax
          "Subject" => "Eyes only"))) {
    // message encrypted - send it!
    exec(ini_get("sendmail_path") . " < enc.txt");
}
?>
```

Suggestions

- Explicitly set the 5th and 6th argument of the functioncalls to avoid a disruption.
- Update the target service to handle the new cipher algorithm.

Specs

Short name	Php/OpensslEncryptAlgoChange
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP81*
Exakat since	2.2.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	cryptography, openssl
Available in	Entreprise Edition, Exakat Cloud

14.2.881 Optimize Explode()

Limit explode() results at call time. explode() returns an array, after breaking the argument into smaller strings, with a delimiter.

By default, explode() breaks the whole string into smaller strings, and returns the array. When not all the elements of the returned array are necessary, using the third argument of explode() speeds up the process, by removing unnecessary work. Limiting explode() has no effect when the operation is already exact : it simply prevents explode() to cut more than needed if the argument is unexpectedly large.

This optimisation applies to split(), preg_split() and mb_split(), too.

This is a micro optimisation, unless the exploded string is large.

```
<?php

$string = '1,2,3,4,5,';

// explode() returns 2 elements, which are then assigned to the list() call.
list($a, $b) = explode(',', $string, 2);

// explode() returns 6 elements, only two of which are then assigned to the list() call.␣
↪The rest are discarded.
list($a, $b) = explode(',', $string, 2);

// it is not possible to skip the first elements, but it is possible to skip the last␣
↪ones.
echo explode(',', $string, 2)[1];

// This protects PHP, in case $string ends up with a lot of commas
$string = foo(); // usually '1,2' but not known
list($a, $b) = explode(',', $string, 2);
?>
```

See also Cryptography Extensions.

Suggestions

- Add a limit to explode() call

Specs

Short name	Performances/OptimizeExplode
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	crypto
Available in	Entreprise Edition, Exakat Cloud

14.2.882 Optional Parameter

An optional parameter is a method argument that has both a typehint and a default value.

Such argument is optional, as it may be omitted. When this is the case, the code has to differentiate between the default behavior or the actual usage. It is recommended to avoid providing a default value, and use a null object.

```
<?php

class foo {
    function methodWithOptionalArgument(bar $x = null) {
        if ($x === null) {
```

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```
            // default behavior
        } else {
            // normal behavior
        }
    }

    function methodWithCompulsoryArgument(bar $x) {
        // normal behavior
        // $x is always a bar.
    }
}
?>
```

Specs

Short name	Functions/OptionalParameter
Rulesets	*All*
Exakat since	0.12.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	parameter, optional-parameter
Available in	Entreprise Edition, Exakat Cloud

14.2.883 Or Die

Classic old style failed error management.

Interrupting a script will leave the application with a blank page, will make your life miserable for testing. Just don't do that.

```
<?php

// In case the connexion fails, this kills the current script
mysql_connect('localhost', $user, $pass) or die();

?>
```

See also pg_last_error and PDO::exec.

Suggestions

- Throw an exception
- Trigger an error with trigger_error()
- Use your own error mechanism

Specs

Short name	Structures/OrDie
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
ClearPHP	no-implied-if
Examples	*Tine20*, *OpenConf*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.884 Order Of Declaration

The order used to declare members and methods has a great impact on readability and maintenance. However, practices varies greatly. As usual, being consistent is the most important and useful.

The suggested order is the following : traits, constants, properties, methods. Optional characteristics, like final, static... are not specified. Special methods names are not specified.

```
<?php

class x {
    use traits;

    const CONSTANTS = 1;
    const CONSTANTS2 = 1;
    const CONSTANTS3 = 1;

    private $property = 2;
    private $property2 = 2;
    private $property3 = 2;

    public function foo() {}
    public function foo2() {}
    public function foo3() {}
    public function foo4() {}
}

?>
```

Suggestions

- Always declare class elements (traits, constants, properties, methods) in the same order.

Specs

Short name	Classes/OrderOfDeclaration
Rulesets	*All*, *Coding conventions*
Exakat since	0.11.7
PHP Version	All
Severity	
Time To Fix	
Precision	Medium
Features	class, anonymous-class, abstract
Available in	Entreprise Edition, Exakat Cloud

14.2.885 Overload Existing Names

> Imported alias have precedence over existing ones, and as such, may replace existing features with unexpected ones.

This example shows how to replace strtolower() with strtoupper() while keeping the main code intact. This might be very confusing code.

```
<?php

// Replacing a PHP classic with another one
use function strtoupper as strtolower;

echo strtolower('pHp');
// displays PHP

?>
```

This behavior is important for backward compatibility, and also to avoid naming conflicts when the coding has been done with a PHP installation which do not have some specific declaration. For example, a source may define an 'Event' class, which will be in conflict when the ext/event library is installed.

This feature is also useful to mock some native PHP structures, during tests.

This rule relies on the PDFF configuration to check for external existing structures.

Suggestions

- Use another local name than the general name
- Always code in a namespace to avoid conflict

Specs

Short name	Namespaces/OverloadExistingNames
Rulesets	*All*, *Analyze*, *IsExt*, *IsPHP*, *IsStub*, *Semantics*
Exakat since	2.4.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	use-alias
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Exakat Cloud

14.2.886 Override

Override is a native PHP attribute. It was introduced in PHP 8.3, and was not available before.

In fact, static analysis can perform that check on previous versions of PHP.

Override signals that the class has a method which overrides the parent's definition. If there is no such method in a parent, an error is raised.

This analysis is not valid after PHP 8.3, as PHP does that itself.

```
<?php

class x {
     function foo() {}
}

class y extends x {
     // OK, there is a method in the class above
     #[Override]
     function foo() {}

     // KO, there is no such method in the class above
     #[Override]
     function hoo() {}
}


?>
```

See also PHP RFC: Marking overridden methods (#[Override]) and PHP 8.3 RFC: Marking overridden methods (#[Override]).

Suggestions

- Change the name of the current method to match an existing one
- Remove the method
- Remove the attribute

Specs

Short name	Attributes/Override
Rulesets	*All*, *Attributes*
Exakat since	2.6.1
PHP Version	From PHP 8.0 to 8.3
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.887 Overwriting Variable

Replacing the content of a variable by something different is prone to errors. For example, it is not obvious if the $text variable is plain text or HTML text.

```
<?php

// Confusing
$text = htmlentities($text);

// Better
$textHTML = htmlentities($text);

?>
```

Besides, it is possible that the source is needed later, for extra processing.

Note that accumulators, like += .= or [] etc., that are meant to collect lots of values with consistent type are OK.

Specs

Short name	Variables/Overwriting
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	variable
Available in	Entreprise Edition, Exakat Cloud

14.2.888 Overwritten Class Constants

Those class constants are overwriting a parent class's constant. This may lead to confusion, as the value of the constant may change depending on the way it is called.

```
<?php

class foo {
    const C = 1;
}

class bar extends foo {
    const C = 2;

    function x() {
        // depending on the access to C, value is different.
        print self::C.' '.static::C.' '.parent::C;
    }
}

?>
```

Suggestions

- Remove the constant in the interface
- Remove the constant in the class
- Rename one of the constants

Specs

Short name	Classes/OverwrittenConst
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	class-constant, overwrite
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.889 Overwritten Constant

This command adds OVERWRITE link between class constant definitions.

A constant is overwritten by another when it is defined in one of the parent class or parent interface.

The *A* constant will be linked between classes x and y, with an OVERWRITE link.

```
<?php

class x {
    protected const A = 1;
}

class y extends x {
    protected const A = 1;
}

?>
```

Specs

Short name	Complete/OverwrittenConstants
Rulesets	*All*, *CE*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	inheritance, final, class, class-constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.890 Overwritten Exceptions

In catch blocks, it is good practice to avoid overwriting the incoming exception, as information about the exception will be lost.

```
<?php

try {
    doSomething();
} catch (SomeException $e) {
    // $e is overwritten
    $e = new anotherException($e->getMessage());
    throw $e;
} catch (SomeOtherException $e) {
    // $e is chained with the next exception
    $e = new Exception($e->getMessage(), 0, $e);
    throw $e;
}
```

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```
?>
```

Suggestions

- Use another variable name to create new values inside the catch
- Use anonymous catch clause (no variable caught) in PHP 8.0, to make this explicit

Specs

Short name	Exceptions/OverwriteException
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	exception
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.891 Overwritten Foreach Var

When using standard blind variable names, nested foreach may lead to overwriting the variables.

Careful coding may take advantage of that feature. Though, it tends to be error prone, and will generate bugs if the code is refactored.

```
<?php

foreach($array as $key => $value) {
    foreach($array as $key2 => $value) {
        // $value is now the one of the 2nd foreach, not the first.

    }
}

?>
```

Suggestions

- Change the name of one of the blind variable to use a distinct name
- Remove usage of one of the double variable
- Remove the nested foreach()
- Move the nested foreach() to a method

Specs

Short name	Structures/OverwrittenForeachVar
Rulesets	*All*, *Analyze*
Exakat since	2.3.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	foreach
Available in	Entreprise Edition, Exakat Cloud

14.2.892 Overwritten Literals

The same variable is assigned a literal twice. It is possible that one of the assignation is too many.

This analysis doesn't take into account the distance between two assignations : it may report false positives when the variable is actually used for several purposes, and, as such, assigned twice with different values.

```
<?php

function foo() {
    // Two assignations in a short sequence : one is too many.
    $a = 1;
    $a = 2;

    for($i = 0; $i < 10; $i++) {
        $a += $i;
    }
    $b = $a;

    // New assignation. $a is now used as an array.
    $a = array(0);
}

?>
```

Suggestions

- Remove one of the assignation (the earliest)

Specs

Short name	Variables/OverwrittenLiterals
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	literal
Available in	Entreprise Edition, Exakat Cloud

14.2.893 Overwritten Methods

This command adds OVERWRITE link between methods definitions of classes.

The *foo* method will be linked between classes x and y, with an OVERWRITE link.

```
<?php

class x {
    protected function foo() {}
}

class y extends x {
    protected function foo() {}
}

?>
```

Specs

Short name	Complete/OverwrittenMethods
Rulesets	*All*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, inheritance, method
Available in	Entreprise Edition, Exakat Cloud

14.2.894 Overwritten Properties

This command adds OVERWRITE link between property definitions of classes.

The *$p* property will be linked between classes x and y, with an OVERWRITE link.

```
<?php

class x {
    protected $p = 1;
}

class y extends x {
    protected $p = 1;
}

?>
```

Specs

Short name	Complete/OverwrittenProperties
Rulesets	*All*, *CE*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, property, inheritance
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.895 Overwritten Source And Value

In a foreach(), it is best to keep source and values distinct. Otherwise, they overwrite each other.

Since PHP 7.0, PHP makes a copy of the original source, then works on it. This makes possible to use the same name for the source and the values.

```
<?php

// displays 0-1-2-3-3
$array = range(0, 3);
foreach($array as $array) {
    print $array . '-';
}
print_r($array);


/* displays 0-1-2-3-Array
(
    [0] => 0
    [1] => 1
```

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```
    [2] => 2
    [3] => 3
)
*/
$array = range(0, 3);
foreach($array as $v) {
    print $v . '-';
}
print_r($array);

?>
```

When the source is used as the value, the elements in the array are successively assigned to itself. After the loop, the original array has been replaced by its last element.

The same applies to the index, or to any variable in a list() structure, used in a foreach().

Suggestions

- Keep the source, the index and the values distinct

Specs

Short name	Structures/ForeachSourceValue
Rulesets	*All*, *Analyze*
Exakat since	1.8.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	foreach
Examples	*ChurchCRM*, *ExpressionEngine*
Available in	Entreprise Edition, Exakat Cloud

14.2.896 PHP 7.0 New Classes

Those classes are now declared natively in PHP 7.0 and should not be declared in custom code.

There are 8 new classes :

- `Error`
- `ParseError`
- `TypeError`
- `ArithmeticError`
- `DivisionByZeroError`
- `ClosedGeneratorException`
- `ReflectionGenerator`

- `ReflectionType`
- `AssertionError`

```
<?php

namespace {
    // Global namespace
    class Error {
        // Move to a namespace
        // or, remove this class
    }
}

namespace B {
    class Error {
        // This is OK : in a namespace
    }
}

?>
```

See also New Classes and Interfaces.

Suggestions

- Move the current classes with the same names into a distinct domain name
- Change the name of the class

Specs

Short name	Php/Php70NewClasses
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.897 PHP 7.0 New Interfaces

The following interfaces are introduced in PHP 7.0. They shouldn't be defined in custom code.

- Throwable <https://www.php.net/manual/en/class.`throwable.php>`_
- SessionUpdateTimestampHandlerInterface

Specs

Short name	Php/Php70NewInterfaces
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	interface
Available in	Entreprise Edition, Exakat Cloud

14.2.898 PHP 7.0 Removed Directives

List of directives that are removed in PHP 7.0.

See also Removed INI directives.

Suggestions

- Remove the code related to those directives

Specs

Short name	Php/Php70RemovedDirective
Rulesets	*All*, *CompatibilityPHP70*, *CompatibilityPHP71*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	directive
Available in	Entreprise Edition, Exakat Cloud

14.2.899 PHP 7.0 Removed Functions

The following PHP native functions were removed in PHP 7.0.

- ereg()
- ereg_replace()
- eregi()
- eregi_replace()
- split()
- spliti()
- sql_regcase()
- magic_quotes_runtime()
- set_magic_quotes_runtime()
- call_user_method()
- call_user_method_array()
- set_socket_blocking()
- mcrypt_ecb()
- mcrypt_cbc()
- mcrypt_cfb()
- mcrypt_ofb()
- datefmt_set_timezone_id()
- imagepsbbox()
- imagepsencodefont()
- imagepsextendfont()
- imagepsfreefont()
- imagepsloadfont()
- imagepsslantfont()
- imagepstext()

This analysis skips redefined PHP functions : when a replacement for a removed PHP function was created, with condition on the PHP version, then its usage is considered valid.

See also PHP 7.0 Removed Functions.

Suggestions

- Replace the old functions with modern functions
- Remove the usage of the old functions
- Create an alternative function by wiring the old name to a new feature

Specs

Short name	Php/Php70RemovedFunctions
Rulesets	*All*, *CompatibilityPHP70*, *CompatibilityPHP71*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.900 PHP 7.0 Scalar Typehints

New scalar typehints were introduced : `bool`, `int`, `float`, `string`.

They cannot be used before PHP 7.0, and will be confused with classes or interfaces.

```
<?php

function foo(string $name) {
    print "Hello $name";
}

foo("Damien");
// display 'Hello Damien'

foo(33);
// displays an error

?>
```

See also Scalar type declarations and PHP 7 SCALAR TYPE DECLARATIONS.

Specs

Short name	Php/PHP70scalartypehints
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	1.3.5
PHP Version	With PHP 7.0 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.901 PHP 7.1 Microseconds

PHP supports microseconds in `DateTime` class and date_create() function. This was introduced in PHP 7.1.

In previous PHP versions, those dates only used seconds, leading to lazy comparisons :

```
<?php

$now = date_create();
usleep(10);               // wait for 0.001 ms
var_dump($now == date_create());

?>
```

This code displays true in PHP 7.0 and older, (unless the code was run too close from the next second). In PHP 7.1, this is always false.

This is also true with `DateTime` :

```
<?php

$now = new DateTime();
usleep(10);               // wait for 0.001 ms
var_dump((new DateTime())->format('u') == $now->format('u'));

?>
```

This evolution impacts mostly exact comparisons (== and ===). Non-equality (!= and !==) will probably be always true, and should be reviewed.

See also Backward incompatible changes.

Suggestions

- Check direct comparisons of date

Specs

Short name	Php/Php71microseconds
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP71*
Exakat since	0.8.9
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.1 - More
Precision	Very high
Features	microtime
Available in	Entreprise Edition, Exakat Cloud

14.2.902 PHP 7.1 Removed Directives

List of directives that are removed in PHP 7.1.

See also Removed INI directives.

Suggestions

- Remove the code related to those directives

Specs

Short name	Php/Php71RemovedDirective
Rulesets	*All*, *CompatibilityPHP71*
Exakat since	0.8.4
PHP Version	With PHP 7.1 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	directive
Available in	Entreprise Edition, Exakat Cloud

14.2.903 PHP 7.1 Scalar Typehints

A new scalar typehint was introduced : iterable.

It can't be used before PHP 7.1, and will be confused with classes or interfaces.

```
<?php

function foo(iterable $iterable) {
    foreach ($iterable as $value) {
        echo $value.PHP_EOL;
    }
}

foo(range(1,20));
// works with array

foo(new ArrayIterator([1, 2, 3]));
// works with an iterator

foo((function () { yield 1; })() );
// works with a generator

?>
```

See also iterable pseudo-type and The iterable Pseudo-Type.

Specs

Short name	Php/PHP71scalartypehints
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	1.3.5
PHP Version	With PHP 7.1 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.904 PHP 7.2 Deprecations

Several functions are deprecated in PHP 7.2.

- parse_str() with no second argument
- assert() on strings
- Usage of gmp_random(), create_function(), each()
- Usage of (unset)
- Usage of `$php_errormsg`
- directive `mbstring.func_overload` (not supported yet)

Deprecated functions and extensions are reported in a separate analysis.

See also Deprecations for PHP 7.2.

Suggestions

- Remove the deprecated functions, and replace them with a new feature
- Use a replacement function to emulate this old behavior

Specs

Short name	Php/Php72Deprecation
Rulesets	*All*, *CompatibilityPHP72*
Exakat since	0.9.9
PHP Version	With PHP 7.2 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	feature
Available in	Entreprise Edition, Exakat Cloud

14.2.905 PHP 7.2 Object Keyword

'object' is a PHP keyword. It can't be used for class, interface or trait name.

This is the case since PHP 7.2.

```
<?php

// Valid until PHP 7.2
class object {}

// Altough it is really weird anyway...

?>
```

See also List of Keywords.

Specs

Short name	Php/Php72ObjectKeyword
Rulesets	*All*, *CompatibilityPHP72*
Exakat since	0.8.4
PHP Version	With PHP 7.2 and older
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.906 PHP 7.2 Removed Functions

The following PHP native functions were removed in PHP 7.2.

- png2wbmp()
- jpeg2wbmp()
- create_function()
- gmp_random()
- each()

This analysis skips redefined PHP functions : when a replacement for a removed PHP function was created, with condition on the PHP version, then its usage is considered valid.

See also PHP 7.2 Removed Functions and Deprecated features in PHP 7.2.x.

Suggestions

- Replace the old functions with modern functions
- Remove the usage of the old functions
- Create an alternative function by wiring the old name to a new feature

Specs

Short name	Php/Php72RemovedFunctions
Rulesets	*All*, *CompatibilityPHP72*
Exakat since	0.9.9
PHP Version	With PHP 7.2 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.907 PHP 7.2 Scalar Typehints

A new scalar typehint was introduced : object.

It can't be used before PHP 7.2, and will be confused with classes or interfaces.

```
<?php

function test(object $obj) : object
{
    return new SplQueue();
}

test(new StdClass());

?>
```

See also New object type and PHP 7.2 and Object Typehint.

Specs

Short name	Php/PHP72scalartypehints
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*
Exakat since	1.3.5
PHP Version	With PHP 7.2 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.908 PHP 7.3 Last Empty Argument

PHP allows the last element of any functioncall to be empty. The argument is then not send.

This was introduced in PHP 7.3, and is not backward compatible.

The last empty line is easier on the VCS, allowing clearer text diffs.

```
<?php

function foo($a, $b) {
    print_r(func_get_args());
}
```

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```
foo(1,
    2,
    );

foo(1);


?>
```

See also Allow a trailing comma in function calls and Trailing commas.

Specs

Short name	Php/PHP73LastEmptyArgument
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*
Exakat since	1.1.7
PHP Version	With PHP 7.3 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.3 - More
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.909 PHP 7.3 Removed Functions

The following PHP native functions were removed in PHP 7.3.

- image2wbmp()

This analysis skips redefined PHP functions : when a replacement for a removed PHP function was created, with condition on the PHP version, then its usage is considered valid.

See also PHP 7.3 Removed Functions.

Suggestions

- Replace the old functions with modern functions
- Remove the usage of the old functions
- Create an alternative function by wiring the old name to a new feature

Specs

Short name	Php/Php73RemovedFunctions
Rulesets	*All*, *CompatibilityPHP73*
Exakat since	1.4.0
PHP Version	With PHP 7.3 and older
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.910 PHP 7.4 Constant Deprecation

One constant is deprecated in PHP 7.4.

- CURLPIPE_HTTP1

See also Deprecations for PHP 7.2.

Suggestions

- Use CURLPIPE_MULTIPLEX or CURLPIPE_NOTHING

Specs

Short name	Php/Php74Deprecation
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	1.9.3
PHP Version	With PHP 7.4 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.911 PHP 7.4 Removed Directives

List of directives that are removed in PHP 7.4.

- allow_url_include

See also Deprecation allow_url_include.

Suggestions

- Stop using this directive

Specs

Short name	Php/Php74RemovedDirective
Rulesets	*All*, *CE*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*
Exakat since	1.9.3
PHP Version	With PHP 7.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Related rule	*PHP 8.0 Removed Directives*, *PHP 8.1 Removed Directives*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.912 PHP 7.4 Removed Functions

The following PHP native functions were deprecated in PHP 7.4.

- hebrevc()
- convert_cyr_string()
- ezmlm_hash()
- money_format()
- restore_include_path()
- get_magic_quotes_gpc()
- get_magic_quotes_runtime()

This analysis skips redefined PHP functions : when a replacement for a removed PHP function was created, with condition on the PHP version, then its usage is considered valid.

See also PHP 7.4 Removed Functions and PHP 7.4 Deprecations : Introduction.

Specs

Short name	Php/Php74RemovedFunctions
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	1.9.0
PHP Version	With PHP 7.3 and older
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	Very high
Features	function, native
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.913 PHP 7.4 Reserved Keyword

`fn` is a new PHP keyword. In PHP 7.4, it is used to build the arrow functions. When used at an illegal position, `fn` generates a Fatal error at compile time.

As a key word, `fn` is not allowed as constant name, function name, class name or inside namespaces.

```
<?php

// PHP 7.4 usage of fn
function array_values_from_keys($arr, $keys) {
    return array_map(fn($x) => $arr[$x], $keys);
}

// PHP 7.3 usage of fn
const fn = 1;

function fn() {}

class x {
    // This is valid in PHP 7.3 and 7.4
    function fn() {}
}

?>
```

`fn` is fine for method names. It may also be used for constants with define(), and constant() but it is not recommended.

See also PHP RFC: Arrow Functions.

Specs

Short name	Php/Php74ReservedKeyword
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	1.9.2
PHP Version	With PHP 7.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.914 PHP 74 New Directives

List of directives that are new in PHP 7.4.

- `zend.exception_ignore_args` : From the php.ini : `Allows to include or exclude arguments from stack traces generated for exceptions. Default: Off`
- `opcache.preload_user`

See also RFC Preload.

Suggestions

- Do not use those directives with PHP before version 7.4

Specs

Short name	Php/Php74NewDirective
Rulesets	*All*, *CompatibilityPHP73*
Exakat since	1.9.4
PHP Version	With PHP 7.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	directive
Available in	Entreprise Edition, Exakat Cloud

14.2.915 PHP 8.0 Removed Constants

The following PHP native constants were removed in PHP 8.0.

- INTL_IDNA_VARIANT_2003 (See Deprecate and remove INTL_IDNA_VARIANT_2003)
- MB_OVERLOAD_MAIL
- MB_OVERLOAD_STRING
- MB_OVERLOAD_REGEX

Suggestions

- Remove usage of those constants

Specs

Short name	Php/Php80RemovedConstant
Rulesets	*All*, *CE*, *CompatibilityPHP80*
Exakat since	1.6.8
PHP Version	With PHP 8.0 and older
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	directive
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.916 PHP 8.0 Removed Directives

List of directives that are removed in PHP 8.0.

In PHP 8.0, *track_errors* was removed.

You can detect valid directives with ini_get(). This native function will return false, when the directive doesn't exist, while actual directive values will be returned as a string.

See Deprecation `track_errors <https://www.php.net/manual/en/migration80.incompatible.php`_.

Suggestions

- Remove usage of *track_errors*.

Specs

Short name	Php/Php80RemovedDirective
Rulesets	*All*, *CE*, *CompatibilityPHP80*, *CompatibilityPHP81*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	directive
Related rule	*PHP 7.4 Removed Directives*, *PHP 8.1 Removed Directives*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.917 PHP 8.0 Removed Functions

The following PHP native functions were deprecated in PHP 8.0, and will be removed in PHP 9.0.

- image2wbmp()
- png2wbmp()
- jpeg2wbmp()
- ldap_sort()
- hebrevc()
- convert_cyr_string()
- ezmlm_hash()
- money_format()
- get_magic_quotes_gpc()
- get_magic_quotes_gpc_runtime()
- create_function()
- each()
- read_exif_data()
- gmp_random()
- fgetss()
- restore_include_path()
- gzgetss()
- mbregex_encoding()
- mbereg()
- mberegi()
- mbereg_replace()
- mberegi_replace()
- mbsplit()
- mbereg_match()
- mbereg_search()
- mbereg_search_pos()
- mbereg_search_regs()
- mbereg_search_init()
- mbereg_search_getregs()
- mbereg_search_getpos()
- mbereg_search_setpos()

See also Backward Incompatible Changes.

Suggestions

- Remove the code related to those functions

Specs

Short name	Php/Php80RemovedFunctions
Rulesets	*All*, *CE*, *CompatibilityPHP80*
Exakat since	1.6.8
PHP Version	With PHP 8.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	native-function
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.918 PHP 8.0 Resources Turned Into Objects

Multiple PHP native functions now return objects, not resources. Any check on those values with is_resource() is now going to fail.

The affected functions are the following :

- curl_init()
- curl_multi_init()
- curl_share_init()
- deflate_init()
- enchant_broker_init()
- enchant_broker_request_dict()
- enchant_broker_request_pwl_dict()
- inflate_init()
- msg_get_queue()
- openssl_csr_new()
- openssl_csr_sign()
- openssl_pkey_new()
- openssl_x509_read()
- sem_get()
- shm_attach()
- shmop_open()
- socket_accept()
- socket_addrinfo_bind()
- socket_addrinfo_connect()

- socket_create_listen()
- socket_create()
- socket_import_stream()
- socket_wsaprotocol_info_import()
- xml_parser_create_ns()
- xml_parser_create()

See also Resource to object migration.

Suggestions

- Change the condition from is_resource() to instanceof

Specs

Short name	Php/Php80RemovesResources
Rulesets	*All*, *CE*, *CompatibilityPHP80*
Exakat since	2.2.0
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Medium
Features	resource
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.919 PHP 8.0 Typehints

New scalar typehints were introduced : mixed and false.

They can't be used before PHP 8.0, and will be confused with classes or interfaces, or generate a parse error.

```
<?php

function test(mixed $a) : false|other
{
    //....
}

?>
```

See also PHP RFC: noreturn type.

Specs

Short name	Php/PHP80scalartypehints
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*
Exakat since	2.3.0
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	mixed, false, typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.920 PHP 8.1 New Types

This rule reports usage of the new PHP 8.1 types. This is the *never* type.

This type is actually only available in return types in methods. This type is not available before version 8.1: as it was not a reserved keyword, it might be used with a class.

```
<?php

function foo() : never {
     die();
}

?>
```

Specs

Short name	Php/Php81NewTypes
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*
Exakat since	2.6.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	

14.2.921 PHP 8.1 Removed Constants

The following PHP native constants were disabled in PHP 8.1. They are not removed, but they have no more effect.

- MYSQLI_STMT_ATTR_UPDATE_MAX_LENGTH
- MYSQLI_STORE_RESULT_COPY_DATA
- FILE_BINARY
- FILE_TEXT
- FILTER_SANITIZE_STRING

See also PHP RFC: Deprecations for PHP 8.1.

Suggestions

- Remove usage of those constants

Specs

Short name	Php/Php81RemovedConstant
Rulesets	*All*, *CompatibilityPHP81*
Exakat since	1.6.8
PHP Version	With PHP 8.1 and older
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.922 PHP 8.1 Removed Directives

List of directives that are removed in PHP 8.1.

In PHP 8.1, the following directives were removed :

- *mysqlnd.fetch_data_copy*
- *filter.default*
- *filter.default_options*
- *auto_detect_line_endings*
- *oci8.old_oci_close_semantics*

You can detect valid directives with ini_get(). This native function will return false, when the directive doesn't exist, while actual directive values will be returned as a string.

See also PHP RFC: Deprecations for PHP 8.1.

Suggestions

- Remove usage of the directives.

Specs

Short name	Php/Php81RemovedDirective
Rulesets	*All*, *CompatibilityPHP81*
Exakat since	2.2.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Related rule	*PHP 7.4 Removed Directives*, *PHP 8.0 Removed Directives*
Available in	Entreprise Edition, Exakat Cloud

14.2.923 PHP 8.1 Removed Functions

The following PHP native functions were deprecated in PHP 8.1, and will be removed in PHP 9.0.

- image2wbmp()
- png2wbmp()
- jpeg2wbmp()
- ldap_sort()
- hebrevc()
- convert_cyr_string()
- ezmlm_hash()
- money_format()
- get_magic_quotes_gpc()
- get_magic_quotes_gpc_runtime()
- create_function()
- each()
- read_exif_data()
- gmp_random()
- fgetss()
- restore_include_path()
- gzgetss()

Suggestions

- Avoid using those functions anymore

Specs

Short name	Php/Php81RemovedFunctions
Rulesets	*All*, *CompatibilityPHP81*
Exakat since	2.3.0
PHP Version	With PHP 8.1 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	function, native-function
Available in	Entreprise Edition, Exakat Cloud

14.2.924 PHP 8.1 Resources Turned Into Objects

> Multiple PHP native functions now return objects, not resources. Any check on those values with is_resource() is now going to fail.

The affected functions are the following :

- finfo_open()
- ftp_connect()
- imap_open()
- ldap_connect()
- ldap_list()
- ldap_search()
- ldap_first_entry()
- ldap_next_entry ()
- ldap_read()
- pg_connect()
- pg_pconnect()
- pg_query()
- pg_execute ()
- pg_lo_create()
- pspell_config_create()
- pspell_new()
- pspell_new_personal()
- pspell_new_config()

See also UPGRADING PHP 8.1.

Suggestions

- Change the condition from is_resource() to instanceof

Specs

Short name	Php/Php81RemovesResources
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP80*
Exakat since	2.2.0
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.1 - More
Precision	Very high
Features	resource
Available in	Entreprise Edition, Exakat Cloud

14.2.925 PHP 8.1 Typehints

A new scalar typehint was introduced : never.

It can't be used before PHP 8.1, and will be confused with classes or interfaces.

```
<?php

function test() : never
{
    exit();
}

?>
```

See also PHP RFC: noreturn type.

Specs

Short name	Php/PHP81scalartypehints
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*
Exakat since	2.3.0
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	scalar-typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.926 PHP 8.2 New Types

This rule reports usage of the new PHP 8.2 types. This is the *true* type.

This type is not available before version 8.2.

```
<?php

function foo() : true {
     return true;
}

?>
```

Specs

Short name	Php/Php82NewTypes
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*
Exakat since	2.6.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	

14.2.927 PHP 80 Named Parameter Variadic

Named parameter with variadic have been renamed from 0 to 'parameter name' in PHP 8.0.

```
<?php

function foo($a, ...$b) {
    print_r($b);
}

foo(3, 4);
```

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```
foo(3, b: 4);               // PHP 8 only
foo(...[2, "b"=> [3, 4]]); // PHP 8 only

?>
```

In PHP 7.0, with positional argument only, the content of $b is in an array, index 0. This is also true with PHP 8.0.

In PHP 8.0, with named arguments, the content of $b is in an array, index 'b';

Since the behavior of the variadic depends on the calling syntax (with or without named parameter), the receiving must ensure the correct reception, and handle both cases.

Suggestions

- Apply array_values() to the variadic arguments.

Specs

Short name	Php/Php80NamedParameterVariadic
Rulesets	*All*, *CE*, *CompatibilityPHP80*
Exakat since	2.2.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	variadic, parameter
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.928 PHP Alternative Syntax

This rule identifies the usage of alternative syntax in the code, for if then, switch, while, for and foreach.

Alternative syntax is another way to write the same expression. Alternative syntax is less popular than the normal one, and associated with older coding practices.

```
<?php

// Normal syntax
if ($a == 1) {
    print $a;
}

// Alternative syntax : identical to the previous one.
if ($a == 1) :
    print $a;
endif;

?>
```

See also Alternative syntax.

Specs

Short name	Php/AlternativeSyntax
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	alternative-syntax, foreach, while, do-while, for, switch
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.929 PHP Arrays Index

List of indexes used when manipulating PHP arrays in the code. These indices usually carry semantic meanings, and should always be readable.

```
<?php

// HTTP_HOST is a PHP array index.
$ip = 'http'.$_SERVER['HTTP_HOST']./'.$row['path'];

//'path' is not a PHP index

?>
```

Specs

Short name	Arrays/Phparrayindex
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	array, index-array
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.930 PHP Bugfixes

This is the list of features, used in the code, that also received a bug fix in recent PHP versions.

Specs

Short name	Php/MiddleVersion
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.931 PHP Constant Usage

List of PHP constants being used.

```
<?php

const MY_CONST = 'Hello';

// PHP_EOL (native PHP Constant)
// MY_CONST (custom constant, not reported)
echo PHP_EOL . MY_CONST;

?>
```

See also Predefined Constants.

Specs

Short name	Constants/PhpConstantUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	dynamic-constant, constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.932 PHP Exception

Mark an exception as a native exception. They may come from PHP standard distribution or an extension.

```
<?php

// From the native set
$a = new LogicException('Logic error');
throw $a;
```

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```
// From an extension
throw new ZookeeperException('Zookeeper error');

?>
```

See also Exceptions.

Specs

Short name	Exceptions/IsPhpException
Rulesets	*All*, *Changed Behavior*
Exakat since	1.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	exception
Available in	Entreprise Edition, Exakat Cloud

14.2.933 PHP Handlers Usage

PHP has a number of handlers that may be replaced by customized code : session, shutdown, error, exception. They are noted here.

The example is adapted from the PHP documentation of set_error_handler().

```
<?php
// error handler function
function myErrorHandler($errno, $errstr, $errfile, $errline)
{
    if (!(error_reporting() & $errno)) {
        // This error code is not included in error_reporting, so let it fall
        // through to the standard PHP error handler
        return false;
    }

    switch ($errno) {
    case E_USER_ERROR:
        echo '<b>My ERROR</b> [$errno] $errstr<br />'.PHP_EOL;
        echo '  Fatal error on line '.$errline.' in file .'$errfile;
        echo ', PHP ' . PHP_VERSION . ' (' . PHP_OS . ')<br />'.PHP_EOL;
        echo 'Aborting...<br />'.PHP_EOL;
        exit(1);
        break;

    case E_USER_WARNING:
        echo '<b>My WARNING</b> ['.$errno.'] '.$errstr.'<br />'.PHP_EOL;
        break;
```

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```
    case E_USER_NOTICE:
        echo '<b>My NOTICE</b> ['.$errno.'] '.$errstr.'<br />'.PHP_EOL;
        break;

    default:
        echo 'Unknown error type: ['.$errno.'] $errstr<br />'.PHP_EOL;
        break;
    }

    /* Don't execute PHP internal error handler */
    return true;
}


// set to the user defined error handler
$old_error_handler = set_error_handler("myErrorHandler");

?>
```

See also set_error_handler.

Specs

Short name	Php/SetHandlers
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	handler
Available in	Entreprise Edition, Exakat Cloud

14.2.934 PHP Interfaces

List of PHP interfaces being used in the code.

```
<?php

// Countable is a PHP native interface
class Enumeration extends Countable {
    function count() { return 1; }
}

?>
```

Specs

Short name	Interfaces/Php
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.935 PHP Keywords As Names

PHP has a set of reserved keywords. It is recommended not to use those keywords for names structures.

PHP does check that a number of structures, such as classes, methods, interfaces… can't be named or called using one of the keywords. However, in a few other situations, no check are enforced. Using keywords in such situation is confusing.

```
<?php

// This keyword is reserved since PHP 7.2
class object {
    // _POST is used by PHP for the $_POST variable
    // This methods name is probably confusing,
    // and may attract more than its share of attention
    function _POST() {

    }
}

?>
```

Name	Default	Type	Description
reservedNames		string	Other reserved names : all in a string, comma separated.
allowedNames		string	PHP reserved names that can be used in the code. All in a string, comma separated.

See also List of Keywords, Predefined Classes, Predefined Constants, List of other reserved words and Predefined Variables.

Suggestions

- Rename the structure
- Choose another naming convention to avoid conflict and rename the current structures

Specs

Short name	Php/ReservedNames
Rulesets	*All*, *Changed Behavior*, *Semantics*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	reserved-name
Examples	*ChurchCRM*, *xataface*
Available in	Entreprise Edition, Exakat Cloud

14.2.936 PHP Native Attributes

This is the list of the PHP native attribute in use in the code. PHP native attribute depends on the PHP version, as new attributes are added regularly.

```
<?php

#[Attribute]
class x {
     function foo(#[SensitiveParameter] $a) {
             // doSomething()
     }
}

?>
```

See also PHP native attributes.

Specs

Short name	Attributes/PhpNativeAttributes
Rulesets	*All*, *Attributes*, *Changed Behavior*
Exakat since	2.6.4
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	attribute
Available in	Entreprise Edition, Exakat Cloud

14.2.937 PHP Native Class Type Compatibility

PHP enforces the method compatibility with native classes and interfaces.

This means that classes that extends native PHP classes or interfaces must declare compatible types. They can't omit typing, like it was the case until PHP 8.0. This is needed for compatibility with PHP 8.0. This is probably good for older versions too, although it is not reported.

The attribute `ReturnTypeWillChange` is taken into account by this rule. Note that it is not detected when auditing with PHP < 8.0, so it won't have effect until this version. The attribute was declared in PHP 8.1, though it is also taken into account when auditing with PHP 8.0.

```
<?php

class a extends RecursiveFilterIterator {

    // fully declared method
    function hasChildren(): bool {
        return true;
    }

    // key() returns mixed. Omitting the type used to be quiet
    function key() {}

    //    #[\ReturnTypeWillChange] is taken into account

}
?>
```

See also method-compatibility.

Suggestions

- Make sure the methods are compatible or identical to the parent's method signature.

Specs

Short name	Php/NativeClassTypeCompatibility
Rulesets	*All*, *Analyze*, *Changed Behavior*, *CompatibilityPHP81*
Exakat since	2.2.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	returntypewillchange, type-covariance, type-contravariance
Available in	Entreprise Edition, Exakat Cloud

14.2.938 PHP Native Interfaces and Return Type

> Native PHP interface which define a type, expect the derived methods to use the same time. In particular, a mixed return type was added to the jsonSerialize() of the JsonSerialize PHP interface.

In PHP 8.1, the mixed return type is now enforced, and a deprecated notice is displayed.

One solution is to add the good return type, or to use the #[`ReturnTypeWillChange]` attribute. This rule covers the following interfaces :

- ArrayAccess <https://www.php.net/manual/en/class.`arrayaccess.php>`_
- Countable
- Exception
- FilterIterator
- Iterator
- JsonSerializable
- php_user_filter
- SessionHandlerInterface

```
<?php
    class MyJsonSerialize implements jsonserialize {
        function jsonserialize() : int {}
    }
?>
```

See also JsonSerializable::jsonSerialize.

Suggestions

- Add the mixed returntype to all implementation of the jsonSerialize method
- Add the #[ReturnTypeWillChange] attribute to the method

Specs

Short name	Php/JsonSerializeReturnType
Rulesets	*All*, *Analyze*, *Changed Behavior*, *CompatibilityPHP81*, *Deprecated*, *LintButWontExec*
Exakat since	2.3.0
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	json
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.939 PHP Overridden Function

It is possible to declare and use a function with the same name as a PHP native, in a namespace.

Within the declaration namespace, it is easy to confuse the local version and the global version, unless the function has been prefixed with \.

When a piece of code use overridden function, any newcomer may be confused by the usage of classic PHP native function in surprising situations.

It is recommended to avoid redeclare PHP native function in namespaces.

```
<?php

namespace A {
    use function A\dirname as split;

    function dirname($a, $b) { return __FUNCTION__; }

    echo dirname('/a/b/c');
    echo split('a', 'b');

    echo \dirname('/a/b/c');
}

?>
```

Suggestions

- Change the name of the function, in its declaration and usage.

Specs

Short name	Php/OveriddenFunction
Rulesets	*All*, *Appinfo*, *CE*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	1.7.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.940 PHP Sapi

List of PHP SAPI mentioned in the code. When those SAPI are mentioned in strings, they are usually checked to take advantage of special characteristics. Check the code for portability.

```
<?php

require __DIR__.'/phpdbg.php';

$Phpdbg = new phpdbg();

?>
```

See also php_sapi_name().

Specs

Short name	Type/Sapi
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	sapi
Available in	Entreprise Edition, Exakat Cloud

14.2.941 PHP Variables

This is the list of PHP predefined variables that are used in the application.

The web variables (`$_GET`, `$_COOKIE`, `$_FILES`) are quite commonly used, though sometimes replaced by some special accessors. Others are rarely used.

```
<?php

// Reading an incoming email, with sanitation
$email = filter_var($_GET['email'], FILTER_SANITIZE_EMAIL);

?>
```

See also Predefined Variables.

Specs

Short name	Variables/VariablePhp
Rulesets	*All*, *Appinfo*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	superglobal, global
Available in	Entreprise Edition, Exakat Cloud

14.2.942 PHP5 Indirect Variable Expression

Indirect variable expressions changes between PHP 5 an 7.

The following structures are evaluated differently in PHP 5 and 7. It is recommended to review them or switch to a less ambiguous syntax.

```
<?php

// PHP 7
$foo = 'bar';
$bar['bar']['baz'] = 'foobarbarbaz';
echo $$foo['bar']['baz'];
echo ($$foo)['bar']['baz'];

// PHP 5
$foo['bar']['baz'] = 'bar';
$bar = 'foobarbazbar';
echo $$foo['bar']['baz'];
echo \$\{\$foo['bar']['baz']\};

?>
```

See also Backward incompatible changes PHP 7.0.

Suggestions

- Avoid using complex expressions, mixing `\$\$\`, `[0]` and `->` in the same expression
- Add curly braces { } to ensure that the precedence is the same between PHP 5 and 7. For example, `\$\$v` becomes `\$\{\$v\}`

Specs

Short name	Variables/Php5IndirectExpression
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	global
Available in	Entreprise Edition, Exakat Cloud

14.2.943 PHP7 Dirname

dirname() has a second argument that represents the number of parent folder to follow. This prevent us from using nested dirname() calls to reach an grand-parent direct.

```
<?php
$path = '/a/b/c/d/e/f';

// PHP 7 syntax
$threeFoldersUp = dirname($path, 3);

// PHP 5 syntax
$threeFoldersUp = dirname(dirname(dirname($path)));

// long path, with backtracking
$path = __DIR__.'/../../../abc';

// short path, with direct access
$path = dirname(__DIR__, 3).'/abc';

?>
```

See also dirname.

Suggestions

- Use dirname()'s second argument

Specs

Short name	Structures/PHP7Dirname
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *Suggestions*, *php-cs-fixable*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Examples	*OpenConf*, *MediaWiki*
Available in	Entreprise Edition, Exakat Cloud

14.2.944 PSR-11 Usage

PSR-11 describes a common interface for dependency injection containers.

It is supported by an set of interfaces, that one may use in the code.

```
<?php

namespace MyNamespace;

// MyContainerInterface implements the PSR-7 ServerRequestInterface.
// MyContainerInterface is more of a black hole than a real Container.
class MyContainerInterface implements \Psr\Container\ContainerInterface {
    public function get($id) {}
    public function has($id) {}
}

?>
```

See also PSR-11 : Dependency injection container.

Specs

Short name	Psr/Psr11Usage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.5
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	psr
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.945 PSR-13 Usage

PSR-13 describes a common interface for dependency injection containers.

It is supported by an set of interfaces, that one may use in the code.

```
<?php

namespace MyNamespace;

// MyLink implements the PSR-13 LinkInterface.
// MyLink is more of a black hole than a real Container.
class MyLink implements LinkInterface {
    public function getHref() {}
    public function isTemplated() {}
    public function getRels() {}
    public function getAttributes() {}
}

?>
```

See also PSR-13 : Link definition interface.

Specs

Short name	Psr/Psr13Usage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	psr
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.946 PSR-16 Usage

PSR-16 describes a simple yet extensible interface for a cache item and a cache driver. It is supported by an set of interfaces, that one may use in the code.

```
<?php

namespace My\SimpleCache;

// MyCache implements the PSR-16 Simple cache.
// MyCache is more of a black hole than a real cache.
class MyCache implements Psr\SimpleCache\CacheInterface {
    public function get($key, $default = null) {}
    public function set($key, $value, $ttl = null) {}
    public function delete($key) {}
    public function clear() {}
```

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```
    public function getMultiple($keys, $default = null) {}
    public function setMultiple($values, $ttl = null) {}
    public function deleteMultiple($keys) {}
    public function has($key) {}
}

?>
```

See also PSR-16 : Common Interface for Caching Libraries.

Specs

Short name	Psr/Psr16Usage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	psr
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.947 PSR-3 Usage

PSR-3 describes a common interface for logging libraries.

It is supported by an set of interfaces, that one may use in the code.

```
<?php

namespace MyNamespace;

// MyLog implements the PSR-3 LoggerInterface.
// MyLog is more of a black hole than a real Log.
namespace ;

class MyLog implements \Psr\Log\LoggerInterface {
    public function emergency($message, array $context = array()) {}
    public function alert($message, array $context = array()) {}
    public function critical($message, array $context = array()) {}
    public function error($message, array $context = array()) {}
    public function warning($message, array $context = array()) {}
    public function notice($message, array $context = array()) {}
    public function info($message, array $context = array()) {}
    public function debug($message, array $context = array()) {}
    public function log($level, $message, array $context = array()) {}
}

?>
```

See also PSR-3 : Logger Interface.

Specs

Short name	Psr/Psr3Usage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	psr
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.948 PSR-6 Usage

PSR-6 is the cache standard for PHP.

The goal of PSR-6 is to allow developers to create cache-aware libraries that can be integrated into existing frameworks and systems without the need for custom development.

It is supported by an set of interfaces, that one may use in the code.

```
<?php

namespace MyNamespace;

// MyCacheItem implements the PSR-7 CacheItemInterface.
// This MyCacheItem is more of a black hole than a real CacheItem.
class MyCacheItem implements \Psr\Cache\CacheItemInterface {
    public function getKey() {}
    public function get() {}
    public function isHit() {}
    public function set($value) {}
    public function expiresAt($expiration) {}
    public function expiresAfter($time) {}
}

?>
```

See also PSR-6 : Caching.

Specs

Short name	Psr/Psr6Usage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	psr
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.949 PSR-7 Usage

> PSR-7 describes common interfaces for representing HTTP messages as described in RFC 7230 and RFC 7231, and URI for use with HTTP messages as described in RFC 3986.

It is supported by an set of interfaces, that one may use in the code.

```
<?php

namespace MyNamespace;

// MyServerRequest implements the PSR-7 ServerRequestInterface.
// MyServerRequest is more of a black hole than a real Server.
class MyServerRequest extends  \Psr\Http\Message\ServerRequestInterface  {
    public function getServerParams() {}
    public function getCookieParams() {}
    public function withCookieParams(array $cookies) {}
    public function getQueryParams() {}
    public function withQueryParams(array $query) {}
    public function getUploadedFiles() {}
    public function withUploadedFiles(array $uploadedFiles) {}
    public function getParsedBody() {}
    public function withParsedBody($data) {}
    public function getAttributes() {}
    public function getAttribute($name, $default = null) {}
    public function withAttribute($name, $value) {}
    public function withoutAttribute($name) {}
}

?>
```

See also PSR-7 : HTTP message interfaces.

Specs

Short name	Psr/Psr7Usage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	psr
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.950 Pack Format Inventory

All format used in the code with pack() and unpack().

```
<?php

$binarydata = "\x04\x00\xa0\x00";
$array = unpack("cn", $binarydata);
$initial = pack("cn", ...$array);

?>
```

See also pack().

Specs

Short name	Type/Pack
Rulesets	*All*, *Appinfo*, *CE*, *Inventory*
Exakat since	1.5.0
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	pack
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.951 Parameter Hiding

When a parameter is set to another variable, and never used.

While this is a legit syntax, parameter hiding tends to make the code confusing. The parameter itself seems to be unused, while some extra variable appears.

Keep this code simple by removing the hiding parameter.

```
<?php
```

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```
function substract($a, $b) {
    // $b is given to $c;
    $c = $b;

    // $c is used, but $b would be the same
    return $a - $c;
}

?>
```

Suggestions

- Remove the parameter alias and use the parameter
- Add some modifications to the alias parameter and use it

Specs

Short name	Functions/ParameterHiding
Rulesets	*All*, *Semantics*
Exakat since	1.9.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	parameter
Available in	Entreprise Edition, Exakat Cloud

14.2.952 Parent First

When calling parent constructor, always put it first in the `__construct` method.

It ensures the parent is correctly build before the child start using values.

```
<?php

class father {
    protected $name = null;

    function __construct() {
        $this->name = init();
    }
}

class goodSon {
    function __construct() {
        // parent is build immediately,
        parent::__construct();
        echo "my name is ".$this->name;
```

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```
    }
}

class badSon {
    function __construct() {
        // This will fail.
        echo "my name is ".$this->name;

        // parent is build later,
        parent::__construct();
    }
}

?>
```

This analysis doesn't apply to Exceptions.

Suggestions

- Use `parent::__construct` as the first call in the constructor.

Specs

Short name	Classes/ParentFirst
Rulesets	*All*, *Analyze*, *Suggestions*
Exakat since	1.0.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	parent
Examples	*shopware*, *PrestaShop*
Available in	Entreprise Edition, Exakat Cloud

14.2.953 Parent Is Not Static

The *parent* keyword behaves like *self*, not like *static*. It links to the parent of the defining expression, not to the one being called.

This may skip the parent of the calling class, and create a *Undefined method* call, or yield the wrong *::class* value. It may also skip a local version of the method.

```
<?php

class w {
}

class x extends w {
    function foo() {
```

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```
        parent::method();
    }

    // method() is in the parent of Y, but not in the one of X.
    function method() {
        print __METHOD__;
    }
}

class y extends x {}

(new y)->foo();
// print W::method
(new y)->method();
// print x::method

?>
```

Suggestions

- Use self keyword
- Use static keyword
- Use hard-coded class name keyword

Specs

Short name	Classes/ParentIsNotStatic
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.4.3
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	self, static, parent
Available in	Entreprise Edition, Exakat Cloud

14.2.954 Parent, Static Or Self Outside Class

Parent, static and self keywords must be used within a class, a trait or an enum. They make no sense outside a class or trait scope, as self and static refers to the current class and parent refers to one of parent above.

PHP 7.0 and later detect some of their usage at compile time, and emits a fatal error.

```
<?php

class x {
    const Y = 1;
```

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```
    function foo() {
        // self is \x
        echo self::Y;
    }
}

const Z = 1;
// This lint but won't anymore
echo self::Z;

?>
```

Static may be used in a function or a closure <https://www.php.net/`closure>`_, but not globally.

Suggestions

- Make sure the keyword is inside a class context

Specs

Short name	Classes/PssWithoutClass
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	parent, self, static, class
Available in	Entreprise Edition, Exakat Cloud

14.2.955 Parenthesis As Parameter

Using parenthesis around parameters used to silent some internal check. This is not the case anymore in PHP 7, and should be fixed by removing the parenthesis and making the value a real reference.

```
<?php
// example extracted from the PHP manual
function getArray() {
    return [1, 2, 3];
}

function squareArray(array &$a) {
    foreach ($a as &$v) {
        $v \*\*\= 2;
    }
}
```

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```
// Generates a warning in PHP 7.
squareArray((getArray()));
?>
```

See also Parentheses around function arguments no longer affect behaviour.

Suggestions

- Remove the parenthesis when they are only encapsulating an argument
- Replace the parenthesis by the no-scream operator

Specs

Short name	Php/ParenthesisAsParameter
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	parenthesis, parameter
Available in	Entreprise Edition, Exakat Cloud

14.2.956 Path lists

List of all paths that were found in the code.

Path are identified with this regex : `^(.*/)([^/]*)\.\w+$`. In particular, the directory <https://www.php.net/`directory>`_ delimiter is `/` : Windows delimiter \ are not detected.

```
<?php

// the first argument is recognized as an URL
fopen('/tmp/my/file.txt', 'r+');

// the string argument  is recognized as an URL
$source = 'https://www.other-example.com/';

?>
```

URL are ignored when the protocol is present in the literal : `http://www.example.com` is not mistaken with a file.

See also Dir predefined constants and Supported Protocols and Wrappers.

Specs

Short name	Type/Path
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.5.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.957 Pathinfo() Returns May Vary

pathinfo() function returns an array whose content may vary. It is recommended to collect the values after check, rather than directly.

The same applies to parse_url(), which returns an array with various index.

```
<?php

$file = '/a/b/.c';
//$extension may be missing, leading to empty $filename and filename in $extension
list( $dirname, $basename, $extension, $filename ) = array_values( pathinfo($file) );

//Use PHP 7.1 list() syntax to assign correctly the values, and skip array_values()
//This emits a warning in case of missing index
['dirname'   => $dirname,
 'basename'  => $basename,
 'extension' => $extension,
 'filename'  => $filename ] = pathinfo($file);

//This works without warning
$details = pathinfo($file);
$dirname   = $details['dirname'] ?? getpwd();
$basename  = $details['basename'] ?? '';
$extension = $details['extension'] ?? '';
$filename  = $details['filename'] ?? '';

?>
```

Suggestions

- Add a check on the return value of pathinfo() before using it.

Specs

Short name	Php/PathinfoReturns
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.12.11
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	path
Examples	*NextCloud*
Available in	Entreprise Edition, Exakat Cloud

14.2.958 Pear Usage

Pear Usage : list of Pear packages in use.

```
<?php
    require_once('MDB2.php');
    $dsn = 'mysql://user:pass@host';
    $mdb2 = &MDB2::factory($dsn);
    $mdb2->setFetchMode(MDB2_FETCHMODE_ASSOC);
?>
```

See also PEAR.

Specs

Short name	Php/PearUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	pear
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.959 Perl Regex

List of all the Perl Regex (PCRE-style).

```
<?php

preg_match('/[abc]/', $haystack);

preg_replace('#[0-9A-Z]+#is', $y, $z);

?>
```

Regex are spotted when they are literals : dynamically built regex, (including /$x/) are not reported.

See also `PCRE <https://www.php.net/manual/en/book.pcre.php>_.

Specs

Short name	Type/Pcre
Rulesets	*All*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	regex
Available in	Entreprise Edition, Exakat Cloud

14.2.960 Phalcon Usage

This analysis reports usage of the Phalcon Framework. The report is based on the usage of Phalcon namespace, which may be provided by PHP code inclusion or the PHP extension.

```
<?php

use Phalcon\Mvc\Application;

// Register autoloaders

// Register services

// Handle the request
$application = new Application($di);

try {
    $response = $application->handle();

    $response->send();
} catch (\Exception $e) {
    echo 'Exception: ', $e->getMessage();
}

?>
```

See also Phalcon.

Specs

Short name	Vendors/Phalcon
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.0.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.961 Php 7 Indirect Expression

Those are variable indirect expressions that are interpreted differently in PHP 5 and PHP 7.

You should check them so they don't behave strangely.

```
<?php

// Ambiguous expression :
$b = $$foo['bar']['baz'];
echo $b;

$foo = array('bar' => array('baz' => 'bat'));
$bat = 'PHP 5.6';

// In PHP 5, the expression above means :
$b = ${$foo['bar']['baz']};
$b = 'PHP 5.6';

$foo = 'a';
$a = array('bar' => array('baz' => 'bat'));

// In PHP 7, the expression above means :
$b = ($$foo)['bar']['baz'];
$b = 'bat';

?>
```

See also Changes to variable handling.

Suggestions

- Avoid using complex expressions, mixing $$, [0] and -> in the same expression
- Add curly braces { } to ensure that the precedence is the same between PHP 5 and 7. For example, `$$v` becomes `${$v}`

Specs

Short name	Variables/Php7IndirectExpression
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.962 Php 7.1 New Class

New classes, introduced in PHP 7.1. If classes where created with the same name, in current code, they have to be moved in a namespace, or removed from code to migrate safely to PHP 7.1.

The new class is : ReflectionClassConstant. The other class is 'Void' : this is forbidden as a class name, as Void is used for return type hint.

```
<?php

class ReflectionClassConstant {
    // Move to a namespace, do not leave in global
    // or, remove this class
}

?>
```

Specs

Short name	Php/Php71NewClasses
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.1 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.963 Php 7.2 New Class

New classes, introduced in PHP 7.2. If classes where created with the same name, in current code, they have to be moved in a namespace, or removed from code to migrate safely to PHP 7.2.

The new class is : HashContext.

```
<?php

namespace {
    // Global namespace
    class HashContext {
        // Move to a namespace
        // or, remove this class
    }
}

namespace B {
    class HashContext {
        // This is OK : in a namespace
    }
}

?>
```

See also New Classes and Interfaces.

Suggestions

- Move the current classes with the same names into a distinct domain name
- Change the name of the class

Specs

Short name	Php/Php72NewClasses
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*
Exakat since	1.0.4
PHP Version	With PHP 7.2 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.964 Php 7.4 New Classes

New classes, introduced in PHP 7.4. If classes where created with the same name, in current code, they have to be moved in a namespace, or removed from code to migrate safely to PHP 7.4.

The new classes are :

- `ReflectionReference`
- `WeakReference`

```
<?php

namespace {
    // Global namespace
    class WeakReference {
        // Move to a namespace
        // or, remove this class
    }
}

namespace B {
    class WeakReference {
        // This is OK : in a namespace
```

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```
    }
}

?>
```

See also New Classes and Interfaces.

Suggestions

- Move the current classes with the same names into a distinct domain name
- Change the name of the class

Specs

Short name	Php/Php74NewClasses
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	1.0.4
PHP Version	With PHP 7.4 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.965 Php 8.0 Only TypeHints

Three scalar typehints are introduced in version 8.0. They are `mixed`, `false` and `null`.

`false` represents a false boolean, and nothing else. It is more restrictive than a boolean, which accepts true too. `null` is an alternative syntax to `?` : it allows the type to be `null`. `mixed` is an special typehint which explicitly means any type.

An interface `stringable` was also introduced to identify objects that may be turned into a string.

Both the above typehints are to be used in conjunction with other types : they can't be used alone. In PHP 7.0, both those values could not be used as a class or interface name, to avoid confusion with the actual booleans, nor `null` value.

```
<?php

// function accepts an A object, or null.
function foo(A|null $x) {}

// same as above
function foo2(A|null $x) {}

// returns an object of class B, or false
function bar($x) : false|B {}

?>
```

See also PHP RFC: Union Types 2.0.

Specs

Short name	Php/Php80OnlyTypeHints
Rule-sets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*
Exakat since	2.0.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	mixed, false, null
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.966 Php 8.0 Variable Syntax Tweaks

> Several variable syntaxes are added in version 8.0. They extends the PHP 7.0 syntax updates, and fix a number of edges cases.

In particular, `new``and ``instanceof` now support a way to inline the expression, rather than use a temporary variable.

Magic constants are now accessible with array notation, just like another constant. It is also possible to use method calls : although this is Syntacticly correct for PHP, this won't be executed, as the left operand is a string, and not an object.

```
<?php

 // array name is dynamically build
 echo "foo$bar"[0];
 // static method
 "foo$bar"::baz();
 // static property
 "foo$bar"::$baz;

 // Syntactly correct, but not executable
 "foo$bar"->baz();

 // expressions with instanceof and new
    $object = new ("class_".$name);
    $x instanceof ("class_$name");
```

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```
    // PHP 7.0 style
    $className = "class_".$name;
    $object = new $className;

?>
```

See also PHP RFC: Variable Syntax Tweaks and scalar_objects in PHP.

Specs

Short name	Php/Php80VariableSyntax
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP74*
Exakat since	2.0.8
PHP Version	With PHP 8.0 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	variable
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.967 Php 8.3 New Classes

New classes, introduced in PHP 8.3. If classes where created with the same name, in current code, they have to be moved in a namespace, or removed from code to migrate safely to PHP 8.3.

The new classes are :

- `DateError`
- `DateObjectError`
- `DateRangeError`
- `DateException`
- `DateInvalidTimeZoneException`
- `DateInvalidOperationException`
- `DateMalformedStringException`
- `DateMalformedIntervalStringException`
- `DateMalformedPeriodStringException`
- `Random\`IntervalBoundary <https://www.php.net/intervalboundary>`_`

```
<?php

namespace {
    // Global namespace
    class DateError {
        // Move to a namespace
        // or, remove this class
    }
```

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```
}

namespace B {
    class DateError {
        // This is OK : in a namespace
    }
}

?>
```

See also New Classes and Interfaces.

Suggestions

- Move the current classes with the same names into a distinct domain name
- Change the name of the class

Specs

Short name	Php/Php83NewClasses
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP83*
Exakat since	1.0.4
PHP Version	With PHP 8.3 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.968 Php Ext Stub Property And Method

Provides *isExt* property to method call and properties access, based on typehints and local instantiation.

Specs

Short name	Complete/PhpExtStubPropertyMethod
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.969 Php Native Reference Variable

Native functions, such as sort() (first argument), or preg_match_all() (third argument), use reference.

```
<?php

$a = [3,1,2];
sort($a);
$a === [1,2,3];

?>
```

Specs

Short name	Complete/PhpNativeReference
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.1
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	reference
Available in	Entreprise Edition, Exakat Cloud

14.2.970 Php7 Relaxed Keyword

Most of the traditional PHP keywords may be used inside classes, enums, traits and interfaces: they can be used as constant or method name.

It is recommended to use this syntax cautiously, as it leads to a lot of surprises and confusion from unsuspecting developpers.

This was not the case in PHP 5, and will yield parse errors.

```
<?php

// Compatible with PHP 7.0 +
class foo {
     const array = [];

    // as is a PHP 5 keyword
    public function as() {
     print_r(self::array);
    }
}

?>
```

See also Loosening Reserved Word Restrictions.

Specs

Short name	Php/Php7RelaxedKeyword
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	keyword, reserved-name
Related rule	*No Keyword In Namespace*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.971 Phpinfo

phpinfo() is a great function to learn about the current configuration of the server.

```
<?php

if (DEBUG) {
    phpinfo();
}

?>
```

If left in the production code, it may lead to a critical leak, as any attacker gaining access to this data will know a lot about the server configuration.

It is advised to never leave that kind of instruction in a production code.

phpinfo() may be necessary to access some specific configuration of the server : for example, `Apache` module list are only available via phpinfo(), and apache_get(), when they are loaded.

Suggestions

- Remove all usage of phpinfo()
- Add one or more constant to fine-tune the phpinfo(), and limit the amount of displayed information
- Replace phpinfo() with a more adapted method : get_loaded_extensions() to access the list of loaded extensions

Specs

Short name	Structures/PhpinfoUsage
Rulesets	*All*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	phpinfo
Examples	*Dolphin*
Available in	Entreprise Edition, Exakat Cloud

14.2.972 Plus Plus Used On Strings

Reports strings that are incremented with the post increment operator `'s'`++.

This spots issues of the famous feature of PHP : incrementing strings with letters.

This analysis checks for string to be incremented. It doesn't check if the string is a numeric string, but does check the type, implicit or explicit.

```
<?php

$a = 'a';
$a++;
print $a;
// prints b
?>
```

See also Incrementing/Decrementing Operators and Path to Saner Increment/Decrement operators.

Specs

Short name	Php/PlusPlusOnLetters
Rulesets	*All*, *Appinfo*
Exakat since	2.5.1
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.973 Possible Alias Confusion

> An alias is used for a class that doesn't belong to the current namespace, while there is such a class. This also applies to traits and interfaces.

When no alias is used, PHP will search for a class in the local space. Since classes, traits and interfaces are usually stored one per file, it is a valid syntax to create an alias, even if this alias name is the name of a class in the same namespace.

Yet, with an alias referring to a remote class, while a local one is available, it is possible to generate confusion.

```
<?php

// This should be in a separate file, but has been merged here, for display purposes.
namespace A {
    //an alias from a namespace called C
    use C\A as C_A;

    //an alias from a namespace called C, which will superseed the local A\B class (see␣
↪below)
    use C\D as B;
}

namespace A {
    // There is a class B in the A namespace
    class B {}
}

?>
```

Suggestions

- Avoid using existing classes names for alias
- Use a coding convention to distinguish alias from names

Specs

Short name	Namespaces/AliasConfusion
Rulesets	*All*, *Changed Behavior*, *Semantics*, *Suggestions*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	semantics
Available in	Entreprise Edition, Exakat Cloud

14.2.974 Possible Increment

This expression looks like a typo : a missing + would change the behavior.

The same pattern is not reported with -, as it is legit expression. + sign is usually understated, rather than explicit.

```
<?php

// could it be a ++$b ?
$a = +$b;

?>
```

See also Incrementing/Decrementing Operators and Arithmetic Operators.

Suggestions

- Drop the whole assignation
- Complete the addition with another value : $a = 1 + $b
- Make this a ++ operator : ++$b
- Make this a negative operator : -$b
- Make the casting explicit : (int) $b

Specs

Short name	Structures/PossibleIncrement
Rulesets	*All*, *Suggestions*
Exakat since	1.2.1
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Examples	*Zurmo*, *MediaWiki*
Available in	Entreprise Edition, Exakat Cloud

14.2.975 Possible Infinite Loop

Loops on files that can't be open results in infinite loop.

fgets(), and functions like fgetss(), fgetcsv(), fread(), return false when they finish reading, or can't access the file.

In case the file is not accessible, comparing the result of the reading to something that is falsy, leads to a permanent valid condition. The execution will only finish when the `max_execution_time` is reached.

```
<?php

$file = fopen('/path/to/file.txt', 'r');
// when fopen() fails, the next loops is infinite
// fgets() will always return false, and while will always be true.
```

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```
while($line = fgets($file) != 'a') {
    doSomething();
}

?>
```

It is recommended to check the file resources when they are opened, and always use === or !== to compare readings. feof() is also a reliable function here.

Specs

Short name	Structures/PossibleInfiniteLoop
Rulesets	*All*, *Analyze*
Exakat since	1.1.5
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	loop
Available in	Entreprise Edition, Exakat Cloud

14.2.976 Possible Interfaces

This analyzer lists classes that may be a base to create interfaces.

Currently, classes with more than 1 defined method are used to identify possible interfaces. An interfaces are considered when at least 2 methods are common in 3 classes.

Only the name of the method is used to identify possible methods. Signature and method options are not taken into account.

```
<?php

class a {
    function m1 () {}
    function m2 () {}
    function m3 () {}
}

class b {
    function m1 () {}
    function m2 () {}
    function m4 () {}
}

// This class has not enough shared methods with other classes
class c {
    function m1 () {}
    function m4 () {}
    function m5 () {}
```

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```
}

?>
```

Suggestions

- Add those interfaces, and use the *implements* keyword in the mentioned classes.

Specs

Short name	Interfaces/PossibleInterfaces
Rulesets	*All*, *Changed Behavior*
Exakat since	2.0.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	interface
Available in	Entreprise Edition, Exakat Cloud

14.2.977 Possible Missing Subpattern

When capturing subpatterns are the last ones in a regex, PHP doesn't fill their spot in the resulting array. This leads to a possible missing index in the result array.

The same applies to preg_replace() : the pattern may match the string, but no value is available is the corresponding sub-pattern.

In PHP 7.4, a new option was added : `PREG_UNMATCHED_AS_NULL`, which always provides a value for the subpatterns.

```
<?php

// displays a partial array, from 0 to 1
preg_match('/(a)(b)?/', 'adc', $r);
print_r($r);
/*
Array
(
    [0] => a
    [1] => a
)
*/

// displays a full array, from 0 to 2
preg_match('/(a)(b)?/', 'abc', $r);
print_r($r);

/*
Array
```

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```
(
    [0] => ab
    [1] => a
    [2] => b
)
*/

// double 'b' when it is found
print preg_replace(',^a(b)?,', './$1$1', 'abc'); // prints ./abbc
print preg_replace(',^a(b)?,', './$1$1', 'adc'); // prints ./dc

?>
```

See also Bug #73948 Preg_match_all should return NULLs on trailing optional capture groups. and Bug #50887 preg_match , last optional sub-patterns ignored when empty.

Suggestions

- Add an always capturing subpatterns after the last ?
- Move the ? inside the parenthesis, so the parenthesis is always on, but the content may be empty
- Add a test on the last index of the resulting array, to ensure it is available when needed
- Use the PREG_UNMATCHED_AS_NULL option (PHP 7.4+)

Specs

Short name	Php/MissingSubpattern
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Top10*
Exakat since	1.6.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	regex
Examples	*phpMyAdmin*, *SPIP*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.978 Possible TypeError

Report possible errors when a string is given to a int or float typed container.

That error will be emitted when strict_types is active, or if the string cannot be formatted into a float or an int. Otherwise, the code works as intended.

It is recommended to set a try/catch around those expressions, to catch them.

```
<?php

// This is OK, as the string will be successfully turned into a float
```

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```
foo("12.34");

// This is KO, as the string will not bet turned into a float
foo("12.34a");

function foo(float $price) {
     intdiv($price, 3);
}

?>
```

See also *TypeError <https://www.php.net/manual/en/class.typeerror.php>*.

Suggestions

- Add the try expression around the assignation, to catch the error
- Validate the incoming value to ensure it can be converted to the target type
- Cast the value to int or float

Specs

Short name	Exceptions/PossibleTypeError
Rulesets	*All*, *Changed Behavior*, *Typechecks*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	typeerror
Available in	Entreprise Edition, Exakat Cloud

14.2.979 Pre-Calculate Use

> In a closure <https://www.php.net/`closure>`_, it is faster to pass a final value, rather than calculate it at call time.

In the `use` clause of the closure <https://www.php.net/`closure>`_, make sure that the passed variables do not require any more processing, such as a call to another function or an extra expression.

This is a micro-optimisation. It has more potential with the closure <https://www.php.net/`closure>`_ used in a loop, or an array function.

```
<?php

// $b->get is calculated inside the closure
$d = $b->get();
$f = function ($a) use ($d) {
     return $d + $a;
```

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```
}

// $b->get is calculated inside the closure
$f = function ($a) use ($b) {
     return $b->get() + $a;
}
?>
```

Suggestions

- Inject the final value in the closure and avoid method calls inside the closure

Specs

Short name	Performances/PreCalculateUse
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	closure, micro-optimisation
Available in	Entreprise Edition, Exakat Cloud

14.2.980 Pre-increment

When possible, use the pre-increment operator (`++$i` or `--$i`) instead of the post-increment operator (`$i++` or `$i--`).

The latter needs an extra memory allocation that costs about 10% of performances. This is a micro-optimisation. However, its usage is so widespread, including within loops, that it may eventually have an significant impact on execution time. As such, it is recommended to adopt this rule, and only consider changing legacy code as they are refactored for other reasons.

```
<?php

// ++$i should be preferred over $i++, as current value is not important
for($i = 0; $i <10; ++$i) {
    // do Something
}

// ++$b and $b++ have different impact here, since $a will collect $b + 1 or $b,␣
↪respectively.
$a = $b++;

?>
```

Suggestions

- Use the pre increment when the new value is not reused.

Specs

Short name	Performances/PrePostIncrement
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	increment
Examples	*ExpressionEngine*, *Traq*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.981 Prefix And Suffixes With Typehint

This analysis checks the relationship between methods prefixes and suffixes, with their corresponding return typehint.

For example, a method with the signature `function isACustomer() {}` should return a boolean. That boolean can then be read when calling the method : `if ($user->isACustomer()) {}`.

There are multiple such conventions that may be applied. For example, `has*` should return a boolean, `set*` should return nothing (aka `void`), and `get*` shall return any kind of type.

```php
<?php

class x  {
    // Easy to read convention
    function isAUser() : bool {}

    // shall return a boolean
    function isACustomer() {}

    // shall return a string, based on suffix 'name => string'
    function getName() {}

    // shall return a string, based on suffix 'name => string'
    function getUsername() {}

    // shall return \Uuid, based on prefix 'uuid => \Uuid'
    function getUuid() {}

    // shall return anything, based on no prefix nor suffix
    function getBirthday() {}

}

?>
```

There are 2 parameters for this analysis. It is recommended to customize them to get an better results, related to the naming conventions used in the code.

`prefixedType` is used for prefix in method names, which is the beginning of the name. `suffixedType` is used for suffixes : the ending part of the name. Matching is case insensitive.

The prefix is configured as the index of the map, while the related type is configured as the value of the map.

`prefixToType['is'] = 'bool';` will be use as `is*` shall use the `bool` typehint.

Multiple typehints may be used at the same time. PHP supports multiple types since PHP 8.0, and Exakat will support them with any PHP version. Specify multiple types by separating them with comma. Any typehint not found in this list will be reported, including `null`.

PHP scalar types are available : `string`, `int`, `void`, etc. Explicit types, based on classes or interfaces, must use the fully qualified name, not the short name. `suffixToType['uuid'] = '\Uuid';` will be use as `*uuid` shall use the `\Uuid` typehint.

When multiple rules applies, only one is reported.

Name	Default	Type	Description
prefixedType	prefixedType['is'] = 'bool'; prefixedType['has'] = 'bool'; prefixedType['set'] = 'void'; prefixedType['list'] = 'array';	ini_h	List of prefixes and their expected return-type
suffixedType	prefixedType['list'] = 'bool'; prefixedType['int'] = 'int'; prefixedType['string'] = 'string'; prefixedType['name'] = 'string'; prefixedType['description'] = 'string'; prefixedType['id'] = 'int'; prefixedType['uuid'] = 'Uuid';	ini_h	List of suffixes and their expected return-type

Specs

Short name	Functions/PrefixToType
Rulesets	*All*, *Semantics*
Exakat since	2.1.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.982 Preprocess Arrays

> Using long list of assignations for initializing arrays is significantly slower than the declaring them as an array.

If the array has to be completed rather than created, it is also faster to use += when there are more than ten elements to add.

```
<?php

// Slow way
$a = []; // also with $a = array();
```

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```
$a[1] = 2;
$a[2] = 3;
$a[3] = 5;
$a[4] = 7;
$a[5] = 11;

// Faster way
$a = [1 => 2,
      2 => 3,
      3 => 5,
      4 => 7,
      5 => 11];

// Even faster way if indexing is implicit
$a = [2, 3, 5, 7, 11];

?>
```

Suggestions

- Preprocess the code so PHP doesn't do it at execution time. Keep the detailed version into comments.

Specs

Short name	Arrays/ShouldPreprocess
Rulesets	*All*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	preprocess
Available in	Entreprise Edition, Exakat Cloud

14.2.983 Preprocessable

The following expressions are made of literals or already known values : they may be fully calculated before running PHP.

```
<?php

// Building an array from a string
$name = 'PHP'.' '.'7.2';

// Building an array from a string
$list = explode(',', 'a,b,c,d,e,f');

// Calculating a power
```

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```
$kbytes = $bytes / pow(2, 10);

// This will never change
$name = ucfirst(strtolower('PARIS'));

?>
```

By doing so, this will reduce the amount of work of PHP. This is a micro-optimisation, when this is used once, or the amount of work is small. It may be kept for readability.

Suggestions

- Do the work yourself, instead of giving it to PHP

Specs

Short name	Structures/ShouldPreprocess
Rulesets	*All*, *Analyze*, *Rector*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	preprocess, readability
Examples	*phpadsnew*
Available in	Entreprise Edition, Exakat Cloud

14.2.984 Print And Die

Die() also prints.

When stopping a script with die(), it is possible to provide a message as first argument, that will be displayed at execution. There is no need to make a specific call to print or echo.

```
<?php

//  die may do both print and die.
echo 'Error message';
die();

//  exit may do both print and die.
print 'Error message';
exit;

//  exit cannot print integers only : they will be used as status report to the system.
print 'Error message';
exit 1;

?>
```

Specs

Short name	Structures/PrintAndDie
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	print, die
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.985 Printf Format Inventory

All format used in the code with printf(), vprintf(), sprintf(), scanf() and fscanf().

```
<?php

// Display a number with 2 digits
echo printf("%'.2d\n", 123);

?>
```

Specs

Short name	Type/Printf
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *Inventory*
Exakat since	1.5.0
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	printf
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.986 Printf Number Of Arguments

The number of arguments provided to printf(), vprintf() and vsprintf() doesn't match the format string.

Extra arguments are ignored, and are dead code as such. Missing arguments are reported with a warning, and nothing is displayed.

Omitted arguments produce an error.

```
<?php

// not enough arguments
printf(' a %s ', $a1);
// OK
```

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```
printf(' a %s ', $a1, $a2);
// too many arguments
printf(' a %s ', $a1, $a2, $a3);

// not enough arguments
sprintf(' a %s ', $a1);
// OK
\sprintf(' a %s ', $a1, $a2);
// too many arguments
sprintf(' a %s ', $a1, $a2, $a3);

?>
```

See also printf, sprintf and vsprintf.

Suggestions

- Sync the number of argument with the format command

Specs

Short name	Structures/PrintfArguments
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.0.1
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Medium
Features	print
Examples	*PhpIPAM*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.987 Processing Collector

When accumulating data in a variable, within a loop, it is slow to apply repeatedly a function to the variable.

The example below illustrate the problem : `$collector` is build with element from `$array`. `$collector` actually gets larger and larger, slowing the in_array() call each time.

It is better to apply the preg_replace() to `$a`, a short variable, and then, add `$a` to the collector.

```
<?php

// Fast way
$collector = '';
foreach($array as $a){
    $a = preg_replace('/__(.*?)__/', '<b>$1</b>', $a);
    $collector .= $a;
}
```

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```
// Slow way
$collector = '';
foreach($array as $a){
    $collector .= $a;
    $collector = preg_replace('/__(.*?)__/', '<b>$1</b>', $collector);
}

?>
```

Suggestions

- Avoid applying the checks on the whole data, rather on the diff only.

Specs

Short name	Performances/RegexOnCollector
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.2.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.988 Promoted Properties

Promoted properties is a way to declare the properties within the constructor, and have them assigned to the constructing value at instantiation.

```
<?php

    class CustomerDTO
    {
        public function __construct(
            public string $name,
            public string $email,
            public DateTimeImmutable $birth_date,
        ) {}
    }

?>
```

See also Constructor Promotion and PHP 8: Constructor property promotion.

Specs

Short name	Classes/PromotedProperties
Rulesets	*All*, *Appinfo*, *Changed Behavior*, *Inventory*
Exakat since	2.3.1
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	promoted-property
Available in	Entreprise Edition, Exakat Cloud

14.2.989 Propagate Constants

This command calculates constant expression values, and set them in the graph.

After running this command, B has `intval` of 3.

This command propagate `const` constants, class constants and define() constants, when possible.

```
<?php

const A = 1;
const B = A + 2;

?>
```

Specs

Short name	Complete/PropagateConstants
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	constant, static-constant-expression
Available in	Entreprise Edition, Exakat Cloud

14.2.990 Properties Declaration Consistence

Properties may be declared all at once, or one by one.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

It happens that choosing unique declarations or multiple depends on coding style and files.

```php
<?php

class x {
    // Some declarations are made by batch
    private $a1 = 1,
            $a2 = 2;
    public $c = 1, $c2 = 2, $c4 = 3;

    // Most declarations are made one by one
    protected $b = 1;
    protected $b1 = 1;
    protected $b2 = 1;
    protected $b3 = 1;
    protected $b4 = 1;
    protected $b5 = 1;
    protected $b6 = 1;
    protected $b7 = 1;
    protected $b8 = 1;
    protected $b9 = 1;
    protected $b10 = 1;
    protected $b11 = 1;
    protected $b12 = 1;
    protected $b13 = 1;
    protected $b14 = 1;
    protected $b15 = 1;
    protected $b16 = 1;
    protected $b17 = 1;
    protected $b18 = 1;
    protected $b19 = 1;

}
?>
```

See also PSR-12: Properties and constants.

Suggestions

- Make the declaration consistent : one or multiple.

Specs

Short name	Classes/PPPDeclarationStyle
Rulesets	*All*, *Preferences*
Exakat since	1.2.1
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.991 Property Cannot Be Readonly

This analysis reports different situations where a property is readonly, and has some impossible code.

Two cases are reported : + a self-updated property, where it is updated with a value that is created from itself. The most obvious is `$this->a = `$this <https://www.php.net/manual/en/language.oop5.basic.php>`_->a;` (which is reported as an error by PHP), and `$this->a = foo(`$this <https://www.php.net/manual/en/language.oop5.basic.php>`_->a);` is the most common. + a property which is set in the constructor, yet has a distinct method where it is updated too.

Most of thoses cases are dead code.

```
<?php

class x {
     private readonly $p;
     private readonly $q;

     function __construct($p) {
             $this->p = $p; // normal assignation
     }

     function foo() {
             $this->q = bar($this->q); // this is not possible with readonly
             $this->q++; // this is not possible with readonly
             $this->q[] = 2; // this is not possible with readonly
     }
}

?>
```

Suggestions

- Remove the impossible code

Specs

Short name	Classes/CannotBeReadonly
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.6.1
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	readonly, dead-code
Available in	Entreprise Edition, Exakat Cloud

14.2.992 Property Could Be Local

A property only used in one method may be turned into a local variable.

Public an protected properties are omitted here : they may be modified somewhere else, in the code. This analysis may be upgraded to support those properties, when tracking of such properties becomes available.

Classes where only one non-magic method is available are omitted.

Traits with private properties are processed the same way.

```
<?php

class x {
    private $foo = 1;

    // Magic method, and constructor in particular, are omitted.
    function __construct($foo) {
        $this->foo = $foo;
    }

    function bar() {
        $this->foo++;

        return $this->foo;
    }

    function barbar() {}
}

?>
```

Suggestions

- Remove the property and make it an argument in the method
- Use that property elsewhere

Specs

Short name	Classes/PropertyCouldBeLocal
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	1.1.7
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	property
Examples	*Mautic*, *Typo3*
Available in	Entreprise Edition, Exakat Cloud

14.2.993 Property Could Be Private

The following properties are never used outside their class of definition. Given the analyzed code, they could be set as private.

```
<?php

class foo {
    public $couldBePrivate = 1;
    public $cantdBePrivate = 1;

    function bar() {
        // couldBePrivate is used internally.
        $this->couldBePrivate = 3;
    }
}

class foo2 extends foo {
    function bar2() {
        // cantdBePrivate is used in a child class.
        $this->cantdBePrivate = 3;
    }
}

//$couldBePrivate is not used outside
$foo = new foo();

//$cantdBePrivate is used outside the class
$foo->cantdBePrivate = 2;

?>
```

Note that dynamic properties (such as $x->$y) are not taken into account.

Suggestions

- Remove the unused property
- Use the private property
- Change the visibility to allow access the property from other part of the code

Specs

Short name	Classes/CouldBePrivate
Rulesets	*All*, *Class Review*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	visibility
Available in	Entreprise Edition, Exakat Cloud

14.2.994 Property Export

With a reference, it is possible to export a property and modify it from the outside. This requires the handling of the reference with a method and a variable.

The result is a suprising modification of the original object, even if its visibility is private.

```
<?php

class x {
     private $p = [];

     function &foo() {
             return $this->p;
     }

     function print() {
             print_r($this->p);
     }
}

$x = new x();
$export = &$x->foo();
$export[] = 2;

$x->print();
// property $p has been modified in $x
// $x->p === [2];

?>
```

Suggestions

- Avoid modifying an object without its knowledge

Specs

Short name	Classes/ExportProperty
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.6.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.995 Property Invasion

Property invasion exports a reference from an object, for external and direct modifications.

With a method that returns a reference, a link is created between an external variable and the private property. That way, it is possible to modify the object, without calling a property, or a method.

```
<?php

class x {
     private $p = 1;

     function &get() {
             return $this->p;
     }
}

$x = new x;
$y = &$x->get();
$y = 2;

print $x->get(); // 2

?>
```

Suggestions

- Invading private properties and methods in PHP

Specs

Short name	Classes/PropertyInvasion
Rulesets	*All*, *Class Review*
Exakat since	2.5.1
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	object-invasion
Available in	Entreprise Edition, Exakat Cloud

14.2.996 Property Names

Variables are used in property definitions, when they are located in a class.

```
<?php

static $x; // not a property, a static variable

class foo {
    static $x; // now, this is a static property
```

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```
    public $y, $z = 1; // normal properties

    public function bar() {
        static $x; // again, a static variable
    }
}

?>
```

See also Properties.

Specs

Short name	Classes/PropertyDefinition
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.997 Property Used Above

Property used in the parent classes. If the definition of the property is in the child class, then the parent should not know about it and make usage of it.

It may also be used in the current class, or its children, though this is not reported by this analyzer.

```
<?php

class A {
    public function foo() {
        $this->pb++;
    }
}

class B extends A {
    protected $pb = 0;        // property     used above
    protected $pb2 = 0;       // property NOT used above
}

?>
```

See also *Property Used Below*.

Suggestions

- Move the definition of the property to the upper class
- Move the usage of the property to the lower class

Specs

Short name	Classes/PropertyUsedAbove
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	Slow (1 hour)
Precision	Medium
Features	property, inheritance
Available in	Entreprise Edition, Exakat Cloud

14.2.998 Property Used Below

This rule marks properties that are used in children classes.

This analysis doesn't mark the current class, nor the parent or grand parent classes.

```
<?php

class foo {
    // This property is used in children
    protected protectedProperty = 1;

    // This property is not used in children
    protected localProtectedProperty = 1;

    private function foobar() {
        // protectedProperty is used here, but defined in parent
        $this->localProtectedProperty = 3;
    }
}

class foofoo extends foo {
    private function bar() {
        // protectedProperty is used here, but defined in parent
        $this->protectedProperty = 3;
    }
}

?>
```

See also *Property Used Above*.

Specs

Short name	Classes/PropertyUsedBelow
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Medium
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.999 Property Used In One Method Only

> Properties should be used in several methods. When a property is used in only one method, this should have be of another shape.

Properties used in one method only may be used several times, and read only. This may be a class constant. Such properties are meant to be overwritten by an extending class, and that's possible with class constants.

Properties that read and written may be converted into a variable, static to the method. This way, they are kept close to the method, and do not pollute the object's properties.

```
<?php

class foo {
    private $once = 1;
    const ONCE = 1;
    private $counter = 0;

    function bar() {
        // $this->once is never used anywhere else.
        someFunction($this->once);
        someFunction(self::ONCE);   // Make clear that it is a
    }

    function bar2() {
        static $localCounter = 0;
        $this->counter++;

        // $this->once is only used here, for distinguising calls to someFunction2
        if ($this->counter > 10) { // $this->counter is used only in bar2, but it may be␣
↪used several times
            return false;
        }
        someFunction2($this->counter);

        // $localCounter keeps track for all the calls
        if ($localCounter > 10) {
            return false;
        }
        someFunction2($localCounter);
```

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```
    }
}

?>
```

This analysis consider that using the current object with a cast or with the get_object_vars() function is also a usage, and skip those properties.

Note : properties used only once are not returned by this analysis. They are omitted, and are available in the analysis **`Used Once Property`_**.

Suggestions

- Drop the property, and inline the value
- Drop the property, and make the property a local variable
- Use the property in another method

Specs

Short name	Classes/PropertyUsedInOneMethodOnly
Rulesets	*All*, *Analyze*
Exakat since	0.10.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	property
Examples	*Contao*
Available in	Entreprise Edition, Exakat Cloud

14.2.1000 Property Variable Confusion

Within a class, there is both a property and variables bearing the same name.

The property and the variable may easily be confused one for another and lead to a bug.

Sometimes, when the property is going to be replaced by the incoming argument, or data based on that argument, this naming schema is made on purpose, indicating that the current argument will eventually end up in the property. When the argument has the same name as the property, no warning is reported.

```
<?php
class Object {
    private $x;

    function SetData( ) {
        $this->x = $x + 2;
    }
}
?>
```

Suggestions

- Use different names for the properties and variables
- Adopt and apply a naming convention for variables and properties.

Specs

Short name	Structures/PropertyVariableConfusion
Rulesets	*All*, *Semantics*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	property, variable, semantics
Examples	*PhpIPAM*
Available in	Entreprise Edition, Exakat Cloud

14.2.1001 Protocol lists

List of all protocols that were found in the code.

From the manual : PHP comes with many built-in wrappers for various URL-style protocols for use with the filesystem functions such as fopen(), copy(), file_exists() and filesize().

```
<?php
// Example from the PHP manual, with the glob:// wrapper

// Loop over all *.php files in ext/spl/examples/ directory
// and print the filename and its size
$it = new DirectoryIterator("glob://ext/spl/examples/*.php");
foreach($it as $f) {
    printf("%s: %.1FK\n", $f->getFilename(), $f->getSize()/1024);
}
?>
```

See also Supported Protocols and Wrappers.

Specs

Short name	Type/Protocols
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	2.1.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	protocol
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1002 Public Reach To Private Methods

This rule reports the ways to reach private and protected methods, by using only public methods.

Each internal is reported here, with the origin and destination. When connecting the calls from methods to method, it is possible to draw the path from public methods to private methods.

This class map is useful to prepare tests and improve coverage by targeting public methods that may use restricted methods.

Note that conditions will apply (pun intended) : a link between two methods only means that one may call the other, given the right conditions.

Specs

Short name	Dump/PublicReach
Rulesets	*All*, *Changed Behavior*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	visibility
Available in	Entreprise Edition, Exakat Cloud

14.2.1003 Queries In Loops

Avoid querying databases in a loop.

Querying an external database in a loop usually leads to performances problems. This is also called the 'n + 1 problem'.

This problem applies also to prepared statement : when such statement are called in a loop, they are slower than one-time large queries.

It is recommended to reduce the number of queries by making one query, and dispatching the results afterwards. This is true with SQL databases, graph queries, LDAP queries, etc.

```
<?php

// Typical N = 1 problem : there will be as many queries as there are elements in $array
$ids = array(1,2,3,5,6,10);

$db = new SQLite3('mysqlitedb.db');

// all the IDS are merged into the query at once
$results = $db->query('SELECT bar FROM foo WHERE id  in ('.implode(',', $id).')');
while ($row = $results->fetchArray()) {
    var_dump($row);
}


// Typical N = 1 problem : there will be as many queries as there are elements in $array
$ids = array(1,2,3,5,6,10);
```

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```
$db = new SQLite3('mysqlitedb.db');

foreach($ids as $id) {
    $results = $db->query('SELECT bar FROM foo WHERE id = '.$id);
    while ($row = $results->fetchArray()) {
        var_dump($row);
    }
}

?>
```

This optimisation is not always possible : for example, some SQL queries may not be prepared, like `DROP TABLE` or `DESC`. `UPDATE` commands often update one row at a time, and grouping such queries may be counter-productive or unsafe.

This analysis looks for query calls inside loops, and within one functioncall.

See also E N+1 PROBLEM IN ORMS SOLVING THE N+1 PROBLEM IN ORMS.

Suggestions

- Batch calls by using WHERE clauses and applying the same operation to all similar data
- Use native commands to avoid double query : REPLACE instead of SELECT-(UPDATE/INSERT), or UPSERT, for example

Specs

Short name	Structures/QueriesInLoop
Rulesets	*All*, *Analyze*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	query, loop
Examples	*TeamPass*, *OpenEMR*
Available in	Entreprise Edition, Exakat Cloud

14.2.1004 Raised Access Level

A visibility may be lowered, but not raised. Visibilities apply to properties, methods and class constants.

This error may be detected by PHP when the classes are in the same file, and declared in the right order : then, PHP reports a compilation error. However, when the classes are separated in different files, as it is customary, PHP won't check this at linting time, yielding a fatal error at execution time.

```
<?php
```

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```
class Foo {
    public $publicProperty;
    protected $protectedProperty;
    private $privateProperty;
}

class Bar extends Foo {
    private $publicProperty;
    private $protectedProperty;
    private $privateProperty;   // This one is OK
}
?>
```

See also Visibility and Understanding the concept of visibility in object oriented php.

Suggestions

- Lower the visibility in the child class
- Raise the visibility in the parent class

Specs

Short name	Classes/RaisedAccessLevel
Rulesets	*All*, *Changed Behavior*, *Class Review*, *LintButWontExec*
Exakat since	0.10.0
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.1005 Random Without Try

random_int() and random_bytes() require a try/catch structure around them.

random_int() and random_bytes() emit Exceptions if they meet a problem. This way, failure can't be mistaken with returning an empty value, which leads to lower security.

```
<?php

try {
    $salt = random_bytes($length);
} catch (TypeError $e) {
    // Error while reading the provided parameter
} catch (Exception $e) {
    // Insufficient random data generated
```

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```
} catch (Error $e) {
    // Error with the provided parameter : <= 0
}

?>
```

Since PHP 7.4, openssl_random_pseudo_bytes() has adopted the same behavior. It is included in this analysis : check your PHP version for actual application.

Suggestions

- Add a try/catch structure around calls to random_int() and random_bytes().

Specs

Short name	Structures/RandomWithoutTry
Rulesets	*All*, *Security*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	random
Available in	Entreprise Edition, Exakat Cloud

14.2.1006 Random extension

The random extension. It improves the random generators from the older PHP version, and provides a OOP interface.

```
<?php

$rng = $is_production
    ? new Random\Engine\Secure()
    : new Random\Engine\PCG64(1234);

$randomizer = new Random\Randomizer($rng);
$randomizer->shuffleString('foobar');

?>
```

See also PHP RFC: Random Extension 5.x.

Specs

Short name	Extensions/Extrandom
Rulesets	*All*, *Appinfo*
Exakat since	2.4.7
PHP Version	With PHP 8.2 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1007 Randomly Sorted Arrays

Those literal arrays are written in several places, but their items are in various orders.

This may reduce the reading and proofing of the arrays, and induce confusion. The random order may also be a residue of development : both arrays started with different values, but they grew overtime to handle the same items. The way they were written lead to the current order.

Unless order is important, it is recommended to always use the same order when defining literal arrays. This makes it easier to match different part of the code by recognizing one of its literal.

```
<?php

// an array
$set = [1,3,5,9,10];

function foo() {
    // an array, with the same values but different order, in a different context
    $list = [1,3,5,10,9,];
}

// an array, with the same order than the initial one
$inits = [1,3,5,9,10];

?>
```

Name	Default	Type	Description
maxSize	5	integer	Maximal size of arrays to survey.

Suggestions

- Match the sorting order of the arrays. Choose any of them.
- Configure a constant and use it as a replacement for those arrays.
- Leave the arrays intact : the order may be important.
- For hash arrays, consider turning the array in a class.

Specs

Short name	Arrays/RandomlySortedLiterals
Rulesets	*All*, *Analyze*, *Suggestions*
Exakat since	0.11.2
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	array
Examples	*Contao*, *Vanilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.1008 Readonly Property Changed By Cloning

Readonly properties may be changed when cloning. This may happen in the `__clone` magic method.

In that method, a new object is being created. It is acting like a constructor, and may tweak some of the values of the original object, before assigning them to the new object.

```
<?php

class x {
     public readonly int $p;

     function __construct($p) {
             $this->p = $p;
     }

     function __clone() {
             // This is possible in a clone, and only once
             $this->p = $this->p + 1;

             // This second call is not possible, as the property was set just above
             $this->p = $this->p + 2;
     }
}

$a = new x(1);
print_r(clone $a);

?>
```

Specs

Short name	Php/ReadonlyPropertyChangedByCloning
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.5.3
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1009 Readonly Usage

Usage of the readonly option on classes and properties. Readonly is available on classes starting with PHP 8.2.

```
<?php

class x {
     private readonly int $property = 1;
}

readonly class y {
     private int $property = 1;
}

?>
```

See also Readonly properties.

Specs

Short name	Classes/ReadonlyUsage
Rulesets	*All*, *Appinfo*, *Changed Behavior*
Exakat since	2.3.5
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	readonly
Available in	Entreprise Edition, Exakat Cloud

14.2.1010 Real Functions

Real functions, not methods.

Function keywords, that are not in a class, trait, interface, nor a closure <https://www.php.net/`closure>`_.

```
<?php

// a real Function
function realFunction () {}

// Those are not real functions
function ($closure) { }

class foo {
    function isAClassMethod() {}
}

interface fooi {
    function isAnInterfaceMethod() {}
}

trait foot {
    function isATraitMethod() {}
}
?>
```

Specs

Short name	Functions/RealFunctions
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	function
Available in	Entreprise Edition, Exakat Cloud

14.2.1011 Real Variables

Inventory of real variables. Global, Static and property declarations are skipped here.

```
<?php

$realVariable = 1;

class foo {
    private $property;        // not a variable

    private function bar() {
        global $global;       // not a variable
        static $static;       // not a variable

    }
}

?>
```

This is a refined version of a search on `T_VARIABLE` token.

Specs

Short name	Variables/RealVariables
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1012 Recalled Condition

A recalled condition is a check that is made twice : once in the condition, once in the body of the structure.

Usually, the second call may be skipped by storing the value in a local variable. The second call may be necessary when the call is not idempotent.

```
<?php

if (get('a')) {
     $a = get('a');
     echo "Here is a : $a\n";
}

?>
```

Suggestions

- Put the result of the call in a variable to cache it.

Specs

Short name	Structures/RecalledCondition
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	micro-optimisation, idempotent
Available in	Entreprise Edition, Exakat Cloud

14.2.1013 Recursive Functions

Recursive methods are methods that calls itself.

Usually, the method call itself directly. In rarer occasions, the method calls another method which calls it back; such cycle are longer and not detected here.

Functions, methods, arrow functions and closures are identified as recursive. Higher level of recursion are not detected (function a() calls function b(), calls function a(), etc.).

Functions are easy to identify as recursive. Methods have some blind spots : when the injected argument is of the same class, it may lead to recursion too. On the other hand, calling the same method on a property is not sufficient, as the property might not be `$this`.

```
<?php

// a recursive function ; it calls itself
function factorial($n) {
    if ($n == 1) { return 1; }

    return factorial($n - 1) * $n;
}
?>
```

Specs

Short name	Functions/Recursive
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	recursion
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1014 Recycled Variables

A recycled variable is a variable used for two distinct missions in a method. There is usually a first part, with its own initialization, then, later in the method, a second part with a new initialization and a distinct usage of the variable.

Recycled variables leads to confusion: with the new initialization, the variable changes its purpose. Yet, with the same name, and with a bit of lost context, it is easy to confuse it later.

```
<?php

function foo() {
    $variable = "initial";      // first initialisation
    $variable = goo($variable);   // processing the variable
    hoo($variable);               // sending the variable to a final destination

    $variable = "second" ;      // second initialisation
    hoo2($variable);              // sending the variable to a different final␣
↪destination
}
?>
```

See also Please Don't Recycle Local Variables.

Suggestions

- Use distinct names for each variable
- Split the method into smaller methods and unique variable name usage

Specs

Short name	Variables/RecycledVariables
Rulesets	*All*, *Analyze*
Exakat since	2.3.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	variable, readability
Available in	Entreprise Edition, Exakat Cloud

14.2.1015 Redeclared PHP Functions

Function that bear the same name as a PHP function, and that are declared.

This is useful when managing backward compatibility, like emulating an old function, or preparing for newer PHP versions, like emulating new upcoming function.

```
<?php

if (version_compare(PHP_VERSION, 7.0) > 0) {
    function split($separator, $string) {
        return explode($separator, $string);
    }
}

print_r( split(' ', '2 3'));

?>
```

Suggestions

- Check if it is still worth emulating that function

Specs

Short name	Functions/RedeclaredPhpFunction
Rulesets	*All*, *Analyze*, *Appinfo*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	function
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1016 Redeclared Static Variable

Static variables shall be declared only once. It is forbidden in PHP 8.3 and later.

```
<?php

function foo() {
     static $a;
     static $a;
}

?>
```

Suggestions

- Keep the last static call
- Keep the first static call

Specs

Short name	Variables/RedeclaredStaticVariable
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.5.3
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	static-variable
Available in	Entreprise Edition, Exakat Cloud

14.2.1017 Redefined Class Constants

Redefined class constants.

Class constants may be redefined, though it is prone to errors when using them, as it is now crucial to use the right class name to access the right value. It is recommended to use distinct names.

```
<?php

class a {
    const A = 1;
}

class b extends a {
    const A = 2;
}

class c extends c { }

echo a::A, ' ', b::A, ' ', c::A;
// 1 2 2

?>
```

Specs

Short name	Classes/RedefinedConstants
Rulesets	*All*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class-constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1018 Redefined Default

Classes allows properties to be set with a default value. When those properties get, unconditionally, another value at constructor time, then one of the default value are useless. One of those definition should go : it is better to define properties outside the constructor.

```
<?php

class foo {
    public $redefined = 1;

    public function __construct( ) {
        $this->redefined = 2;
    }
}

?>
```

Suggestions

- Move the default assignation to the property definition
- Drop the reassignation in the constructor

Specs

Short name	Classes/RedefinedDefault
Rulesets	*All*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	default-value
Examples	*Piwigo*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1019 Redefined Methods

Redefined methods are overwritten methods. Those methods are defined in different classes that are part of the same classes hierarchy.

Protected and public redefined methods replace each other. Private methods are kept separated, and depends on the caller to be distinguished.

```
<?php

class foo {
    function method() {
        return 1;
    }
}

class bar extends foo {
    function method() {
        return 2;
    }
}
?>
```

See also Object Inheritance.

Specs

Short name	Classes/RedefinedMethods
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *Class Review*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1020 Redefined PHP Traits

List of all traits that bears name of a PHP trait. Although, at the moment (PHP 8.1), there are no PHP trait defined.

Specs

Short name	Traits/Php
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	trait
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1021 Redefined Private Property

> Private properties are local to their defined class. PHP doesn't forbid the re-declaration of a private property in a child class.

However, having two or more properties with the same name, in the class hierarchy tends to be error prone. Methods will be accessing properties with the same name, but with different values.

```
<?php

class A {
    private $isReady = true;
}

class B {
    private $isReady = false;
}

?>
```

Suggestions

- Remove the property in the children classes
- Rename the property in the children classes
- Change the visibility in the parent class

Specs

Short name	Classes/RedefinedPrivateProperty
Rulesets	*All*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	1.2.3
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	private
Configurable by	php_core, php_extensions, stubs
Examples	*Zurmo*
Available in	Entreprise Edition, Exakat Cloud

14.2.1022 Redefined Property

Property redefined in a parent class.

Using heritage, it is possible to define several times the same property, at different levels of the hierarchy.

```
<?php

class foo {
    protected $aProperty = 1;
}

class bar extends foo {
    // This property is redefined in the parent class, leading to potential confusion
    protected $aProperty = 1;
}

?>
```

When this is the case, it is difficult to understand which class will actually handle the property.

In the case of a private property, the different instances will stay distinct. In the case of protected or public properties, they will all share the same value.

It is recommended to avoid redefining the same property in a hierarchy.

Suggestions

- Remove of the definition

Specs

Short name	Classes/RedefinedProperty
Rulesets	*All*, *Class Review*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.1023 Reflection Export() Is Deprecated

export() method in Reflection classes is now deprecated. It is obsolete since PHP 7.4 and will disappear in PHP 8.0.

The Reflector interface, which is implemented by all reflection classes, specifies two methods: __toString() and export().

```
<?php

ReflectionFunction::export('foo');
// same as
echo new ReflectionFunction('foo'), "\n";

$str = ReflectionFunction::export('foo', true);
// same as
$str = (string) new ReflectionFunction('foo');

?>
```

See also Reflection export() methods and Reflection.

Suggestions

- Cast the object to string
- Remove the call to export()

Specs

Short name	Php/ReflectionExportIsDeprecated
Rulesets	*All*, *CE*, *Changed Behavior*, *CompatibilityPHP74*
Exakat since	1.9.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.4 - More
Precision	Very high
Features	reflection
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1024 Regex Delimiter

PCRE regular expressions may use a variety of delimiters.

There seems to be a standard delimiter in the code, and some exceptions : one or several forms are dominant (> 90%), while the others are rare.

The analyzed code has less than 10% of the rare delimiters. For consistency reasons, it is recommended to make them all the same.

Generally, one or two delimiters are used, depending on the expected special chars in the scanned strings : for example, / tends to be avoided when parsing HTML.

Regex are literals, or partial literals, used in preg_match(), preg_match_all(), preg_replace(), preg_replace_callback(), preg_replace_callback_array().

```
<?php

echo 'a';
echo 'b';
echo 'c';
echo 'd';
echo 'e';
echo 'f';
echo 'g';
echo 'h';
echo 'i';
echo 'j';
echo 'k';

// This should probably be written 'echo';
print 'l';

?>
```

See also Ideal regex delimiters in PHP.

Specs

Short name	Structures/RegexDelimiter
Rulesets	*All*, *Preferences*
Exakat since	0.10.5
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	regex
Available in	Entreprise Edition, Exakat Cloud

14.2.1025 Regex Inventory

All regular expressions used in the code. PHP relies on the PCRE extension to process them, with the functions preg_match(), preg_replace(), etc.

```
<?php

// PCRE regex used with preg_match
preg_match('/[abc]+/', $string);

// Mbstring regex, in the arabic range
if(mb_ereg('[\x{0600}-\x{06FF}]', $text))

?>
```

`mbstring` regular expressions are also collected. POSIX regex are not listed : they were deprecated in PHP 7.0.

See also preg_match(), `ext/mbstring <http://www.php.net/manual/en/book.mbstring.php> `_ and `ext/pcre <http://www.php.net/manual/en/book.pcre.php> `_.

Specs

Short name	Type/Regex
Rulesets	*All*, *Appinfo*, *CE*, *Inventory*
Exakat since	0.12.14
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	regex
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1026 Regex On Arrays

> Avoid using a loop with arrays of regex or values. There are several PHP function which work directly on arrays, and much faster.

preg_grep() is able to extract all matching strings from an array, or non-matching strings. This usually saves a loop over the strings.

preg_filter() is able to extract all strings from an array, matching at least one regex in an array. This usually saves a double loop over the strings and the regex. The trick here is to provide '$0' as replacement, leading preg_filter() to replace the found string by itself.

Finally, preg_replace_callback() an preg_replace_callback_array() are also able to apply an array of regex to an array of strings, and then, apply callbacks to the found values.

```
<?php

$regexs = ['/ab+c/', '/abd+/', '/abe+/'];
$strings = ['/abbbbc/', '/abd/', '/abeee/'];

// Directly extract all strings that match one regex
foreach($regexs as $regex) {
    $results[] = preg_grep($regex, $strings);
}

// extract all matching regex, by string
foreach($strings as $string) {
    $results[] = preg_filter($regexs, array_fill(0, count($regexs), '$0'), $string);
}

// very slow way to get all the strings that match a regex
foreach($regexs as $regex) {
    foreach($strings as $string) {
        if (preg_match($regex, $string)) {
            $results[] = $string;
        }
    }
}

?>
```

See also preg_filter.

Suggestions

- Apply preg_match() to an array of string or regex, via preg_filter() or preg_grep().
- Apply preg_match() to an array of string or regex, via preg_replace_callback() or preg_replace_callback_array().

Specs

Short name	Performances/RegexOnArrays
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	regex
Available in	Entreprise Edition, Exakat Cloud

14.2.1027 Register Globals

> `register_globals` was a PHP directive that dumped all incoming variables from GET, POST, COOKIE and FILES as global variables in the called scripts.

This lead to security failures, as the variables were often used but not filtered.

Though it is less often found in more recent code, `register_globals` is sometimes needed in legacy code, that haven't made the move to eradicate this style of coding. Backward compatible pieces of code that mimic the `register_globals` features usually create even greater security risks by being run after scripts startup. At that point, some important variables are already set, and may be overwritten by the incoming call, creating confusion in the script.

Mimicking `register_globals` is achieved with variables variables, extract(), parse_str() and import_request_variables() (Up to PHP 5.4).

```
<?php

// Security warning ! This overwrites existing variables.
extract($_POST);

// Security warning ! This overwrites existing variables.
foreach($_REQUEST as $var => $value) {
    $$var = $value;
}

?>
```

Suggestions

- Avoid implementing again `register_globals`
- Use a container to store and access commonly used values

Specs

Short name	Security/RegisterGlobals
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Slow (1 hour)
Precision	High
Features	register-globals
Examples	*TeamPass*, *XOOPS*
Available in	Entreprise Edition, Exakat Cloud

14.2.1028 Relay Function

Relay function only delegates workload to another one.

Relay functions and methods are delegating the actual work to another function or method. They do not have any impact on the results, besides exposing another name for the same feature.

```
<?php

function myStrtolower($string) {
    return \strtolower($string);
}

?>
```

Relay functions are typical of transition API, where an old API have to be preserved until it is fully migrated. Then, they may be removed, so as to reduce confusion, and simplify the API.

Suggestions

- Remove relay function, call directly the final function
- Remove the target function, and move the code here
- Add more logic to that function, like conditions or cache

Specs

Short name	Functions/RelayFunction
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function
Examples	*TeamPass*, *SPIP*
Available in	Entreprise Edition, Exakat Cloud

14.2.1029 Repeated Interface

A class should implements only once an interface. An interface can only extends once another interface. In both cases, parent classes or interfaces must be checked.

PHP accepts multiple times the same interface in the `implements` clause. In fact, it doesn't do anything beyond the first implement. This code may compile, but won't execute.

```
<?php

use i as j;

interface i {}

// Multiple ways to reference an interface
class foo implements i, \i, j {}

// This applies to interfaces too
interface bar extends i, \i, j {}

?>
```

See also Object Interfaces and The Basics.

Suggestions

- Remove the interface usage at the lowest class or interface

Specs

Short name	Interfaces/RepeatedInterface
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*
Exakat since	1.4.9
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	interface
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.1030 Repeated Regex

Repeated regex should be centralized.

When a regex is repeatedly used in the code, it is getting harder to update.

```
<?php

// Regex used several times, at least twice.
preg_match('/^abc_|^square$/i', $_GET['x']);
```

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```
//.......

preg_match('/^abc_|^square$/i', $row['name']);

// This regex is dynamically built, so it is not reported.
preg_match('/^circle|^'.$x.'$/i', $string);

// This regex is used once, so it is not reported.
preg_match('/^circle|^square$/i', $string);

?>
```

Regex that are repeated at least once (aka, used twice or more) are reported. Regex that are dynamically build are not reported.

Suggestions

- Create a central library of regex
- Use the regex inventory to spot other regex that are close, and should be identical.

Specs

Short name	Structures/RepeatedRegex
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.10.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	regex
Examples	*Vanilla*, *Tikiwiki*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1031 Repeated print()

Merge several print or echo in one call, to speed up the processing.

It is recommended to use echo with multiple arguments, or a concatenation with print, instead of multiple calls to print echo, when outputting several blob of text.

```
<?php

//Write :
  echo 'a', $b, 'c';
  print 'a' . $b . 'c';

//Don't write :
```

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```
  print 'a';
  print $b;
  print 'c';
?>
```

Suggestions

- Merge all prints into one echo call, separating arguments by commas.
- Collect all values in one variable, and do only one call to print or echo.

Specs

Short name	Structures/RepeatedPrint
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Suggestions*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	print
ClearPHP	no-repeated-print
Examples	*Edusoho*, *HuMo-Gen*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1032 Reserved Keywords In PHP 7

PHP reserved names for class/trait/interface. They won't be available anymore in user space starting with PHP 7.

For example, string, float, false, true, null, resource,`… <https://www.php.net/manual/en/functions.arguments.php#functions.variable-arg-list>`_ are not acceptable as class name.

```
<?php

// This doesn't compile in PHP 7.0 and more recent
class null { }

?>
```

See also List of other reserved words.

Suggestions

- Avoid using PHP reserved keywords as names for structures such as class, functions, etc.

Specs

Short name	Php/ReservedKeywords7
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1033 Reserved Match Keyword

`match` is a new instruction in PHP 8.0.

For that, it becomes a reserved keyword, and cannot be used in various situations: type, class, function, global constant name.

```
<?php

// Match as a standalone keyword is not possible
use X as Match;

// No more use as a type
function foo(match $a ) : match {}
$a instanceof match;

// No use as method name
match(a, 4) ;

// Match in a Fully qualified name is OK
b\match ;

// Match as a property name or a class constant is OK
$match->match;
C::MATCH;

// Match as a method is OK
$method->match();
$static::match();

?>
```

See also Match expression V2.

Suggestions

- Change the name from Match to something else.

Specs

Short name	Php/ReservedMatchKeyword
Rulesets	*All*, *CompatibilityPHP80*
Exakat since	2.2.1
PHP Version	With PHP 8.0 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	match
Related rule	*Uses PHP 8 Match()*
Available in	Entreprise Edition, Exakat Cloud

14.2.1034 Reserved Methods

PHP has reserved all the methods names, starting with two underscores characters __.

While this is not explicitely enforced, using such names may create future conflict if PHP acquire features that rely on them.

```
<?php

class x {
     // One of the reserved and used PHP method
     function __toString() {}

     // One potential PHP reserved method
     function __toArray() {}
}

?>
```

See also Magic methods.

Suggestions

- Change the name of the method and avoid prefixing it with __

Specs

Short name	Php/ReservedMethods
Rulesets	*All*, *Changed Behavior*, *PHP recommendations*
Exakat since	2.6.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	naming, magic-method
Available in	Entreprise Edition, Exakat Cloud

14.2.1035 Resources Usage

List of situations that are creating resources.

```
<?php
    // This functioncall creates a resource to use
    $fp = fopen('/tmp/file.txt', 'r');

    if (!is_resource($fp)){
        thrown new RuntimeException('Could not open file.txt');
    }
?>
```

Specs

Short name	Structures/ResourcesUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	resource
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1036 Restrict Global Usage

$GLOBALS access, as whole, is forbidden. In PHP 8.1, it is not possible to this as a variable, but only access its individual values.

```
<?php
// Example extracted from the RFC (see link below)
// Continues to work:
foreach ($GLOBALS as $var => $value) {
    echo $var . ' => ' . $value . PHP_EOL;
}
```

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```
// Generates compile-time error:
$GLOBALS = [];
$GLOBALS += [];
$GLOBALS =& $x;
$x =& $GLOBALS;
unset($GLOBALS);

?>
```

See also Restrict $GLOBALS usage.

Suggestions

- Copy values individually from $GLOBALS

Specs

Short name	Php/RestrictGlobalUsage
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP81*
Exakat since	2.2.2
PHP Version	With PHP 8.1 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 8.1 - More
Precision	High
Features	global
Available in	Entreprise Edition, Exakat Cloud

14.2.1037 Results May Be Missing

preg_match() may return empty values, if the search fails. It is important to check for the existence of results before assigning them to another variable, or using it.

```
<?php
    preg_match('/PHP ([0-9\.]+) /', $res, $r);
    $s = $r[1];
    // $s may end up null if preg_match fails.
?>
```

Since PHP 7.2, it is possible to use the `PREG_UNMATCHED_AS_NULL` constant in the flag parameter to avoid this.

Suggestions

- Use a final always capturing parenthesis to avoid this
- Use the `PREG_UNMATCHED_AS_NULL` option (PHP 7.2)

Specs

Short name	Structures/ResultMayBeMissing
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1038 Rethrown Exceptions

Throwing a caught exception is usually useless and dead code.

When exceptions are caught, they should be processed or transformed, but not rethrown as is.

Those issues often happen when a catch structure was positioned for debug purposes, but lost its usage later.

```
<?php

try {
    doSomething();
} catch (Exception $e) {
    throw $e;
}

?>
```

See also What are the best practices for catching and re-throwing exceptions?.

Suggestions

- Log the message of the exception for later usage.
- Remove the try/catch and let the rest of the application handle this exception.
- Chain the exception, by throwing a new exception, including the caught exception.

Specs

Short name	Exceptions/Rethrown
Rulesets	*All*, *Changed Behavior*, *Dead code*
Exakat since	0.9.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	exception
Examples	*PrestaShop*
Available in	Entreprise Edition, Exakat Cloud

14.2.1039 Return True False

These conditional expressions return true/false, depending on the condition. This may be simplified by dropping the control structure altogether.

```
<?php

if (version_compare($a, $b) >= 0) {
    return true;
} else {
    return false;
}

?>
```

This may be simplified with :

```
<?php

return version_compare($a, $b) >= 0;

?>
```

This may be applied to assignations and ternary operators too.

```
<?php

if (version_compare($a, $b) >= 0) {
    $a = true;
} else {
    $a = false;
}

$a = version_compare($a, $b) >= 0 ? false : true;

?>
```

Suggestions

- Return directly the comparison, without using the if/then structure
- Cast the value to (boolean) and use it instead of the ternary

Specs

Short name	Structures/ReturnTrueFalse
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	boolean
Examples	*Mautic*, *FuelCMS*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1040 Return Typehint Usage

Spot usage of return typehint. It is a PHP 7.0 feature.

Return typehint were introduced in PHP 7.0, and are backward incompatible with PHP 5.x.

```
<?php

function foo($a) : stdClass {
    return new \stdClass();
}

?>
```

See also RFC: Return Type Declarations and Return Type Declarations.

Specs

Short name	Php/ReturnTypehintUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	returntype
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1041 Return With Parenthesis

return statement doesn't require parenthesis. PHP tolerates them with return statement, but it is recommended not to use them.

From the PHP Manual : 'Note: Note that since return is a language construct and not a function, the parentheses surrounding its argument are not required and their use is discouraged.'.

```
<?php

function foo() {
    $a = rand(0, 10);

    // No need for parenthesis
    return $a;

    // Parenthesis are useless here
    return ($a);

    // Parenthesis are useful here: they are needed by the multplication.
    return ($a + 1) * 3;
}

?>
```

See also PHP return(value); vs return value; and return.

Suggestions

- Remove the parenthesis

Specs

Short name	Php/ReturnWithParenthesis
Rulesets	*All*, *Changed Behavior*, *Coding conventions*, *PHP recommendations*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	return-value
Available in	Entreprise Edition, Exakat Cloud

14.2.1042 Return void

Return returns null as default value. It is recommended to mention explicitly 'null' or find a meaningful return such as a boolean or a default value instead.

```
<?php

function foo(&$a) {
    ++$a;
    // No explicit return : it returns void
}

function bar(&$a) {
    ++$a;

    // Explicit return : it returns null
    return null
}

?>
```

See also Void functions.

Specs

Short name	Structures/ReturnVoid
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	void
Available in	Entreprise Edition, Exakat Cloud

14.2.1043 Retyped Reference

A parameter with a reference may be typed differently, at the end of a method call.

It is possible for a referenced and typed parameter to be retyped during a method call. As such, the type of the used variable might both be checked and changed.

Using such syntax will lead to confusion in the code.

```
<?php

$a = [1];
foo($a);
echo $a; // Now, $a is a string

function foo(array &$a) {
```

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```
    $a = "Now, I am a string";
}

?>
```

This works on all types, scalars or objects.

This rule will detect variables which are defined with a placeholder value, or even undefined, and are filled during the method call.

Suggestions

- Do not change a referenced variable's type
- Set the called value to a compatible type.

Specs

Short name	Functions/RetypedReference
Rulesets	*All*, *Analyze*
Exakat since	2.4.3
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.1044 Reuse Existing Variable

A variable is already holding the content that is calculated again : it could be used again.

It is recommended to use the cached value. This saves some computation, in particular when used in a loop, and speeds up the process. This is called memoization.

```
<?php

function foo($a) {
    $b = strtolower($a);

    // strtolower($a) is already calculated in $b. Just reuse the value.
    if (strtolower($a) === 'c') {
        doSomething();
    }
}

?>
```

Some expressions are not idempotent, and should not be cached. For example, calls to time() or fgets() return different values with the same parameters.

This may be a micro-optimisation.

Suggestions

- Reuse the existing variable

Specs

Short name	Structures/ReuseVariable
Rulesets	*All*, *Suggestions*
Exakat since	1.1.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	memoization
Available in	Entreprise Edition, Exakat Cloud

14.2.1045 Rewrote Final Class Constant

Final class constants can't be rewriten in a child class.

It is possible to write code that lints, when the classes are in different files. Such overwrites will only be detected at execution time.

```
<?php

class x {
     final const A = 1;
     const B = 1;
}

class y extends x {
     const A = 1;
     const B = 1;
}

?>
```

Suggestions

- Remove the final keyword
- Remove the rewritten constant

Specs

Short name	Classes/RewroteFinalClassConstant
Rulesets	*All*, *Class Review*
Exakat since	2.5.4
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	final
Available in	Entreprise Edition, Exakat Cloud

14.2.1046 SQL queries

SQL queries, detected in literal strings.

SQL queries are detected with keywords, inside literals or concatenations.

```
<?php

// SQL in a string
$query = 'SELECT name FROM users WHERE id = 1';

// SQL in a concatenation
$query = 'SELECT name FROM '.$table_users.' WHERE id = 1';

// SQL in a Heredoc
$query = <<<SQL
SELECT name FROM $table_users WHERE id = 1
SQL;

?>
```

Specs

Short name	Type/Sql
Rulesets	*All*, *Appinfo*, *CE*, *Inventory*
Exakat since	0.10.1
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1047 Safe Curl Options

> It is advised to always use CURLOPT_SSL_VERIFYPEER and CURLOPT_SSL_VERIFYHOST when requesting a SSL connection.

With those tests, the certificate is verified, and if it isn't valid, the connection fails : this is a safe behavior.

```
<?php
$ch = curl_init();

curl_setopt($ch, CURLOPT_URL, https://www.php.net/);

// To be safe, always set this to true
curl_setopt($ch, CURLOPT_SSL_VERIFYPEER, true);

curl_exec($ch);
curl_close($ch);
?>
```

See also Don't turn off CURLOPT_SSL_VERIFYPEER, fix your PHP configuration, Certainty: Automated CACert.pem Management for PHP Software and Server-Side HTTPS Requests.

Suggestions

- Always use CURLOPT_SSL_VERIFYPEER and HTTPS for communication with other servers

Specs

Short name	Security/CurlOptions
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	curl, ssl, https
Examples	*OpenConf*
Available in	Entreprise Edition, Exakat Cloud

14.2.1048 Safe HTTP Headers

> Avoid configuring HTTP headers with lax restriction from within PHP.

There are a lot of HTTP headers those days, targeting various vulnerabilities. To ensure backward compatibility, those headers have a default mode that is lax and permissive. It is recommended to avoid using those from within the code.

```
<?php

//Good configuration, limiting access to origin
header('Access-Control-Allow-Origin: https://www.exakat.io');
```

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```
//Configuration is present, but doesn't restrict anything : any external site is a␣
↪potential source
header('Access-Control-Allow-Origin: *');

?>
```

See also Hardening Your HTTP Security Headers, How To Secure Your Web App With HTTP Headers and Security-Headers.

Suggestions

- Remove usage of those headers

Specs

Short name	Security/SafeHttpHeaders
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.5.5
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	http-header
Available in	Entreprise Edition, Exakat Cloud

14.2.1049 Safe Phpvariables

Mark the safe PHP variables.

PHP superglobals are usually filled with external data that should be filtered. However, some values may be considered safe, as they are under the control of the developer.

`$_GET`, `$_POST`, `$_FILES`, `$_REQUEST`, `$_COOKIES` are all considered unsafe. Their level of validation is checked in other analysis.

`$_SERVER` is partially safe. It is valid for the following values : `DOCUMENT_ROOT`, `REQUEST_TIME`, `REQUEST_TIME_FLOAT`, `SCRIPT_NAME`, `SERVER_ADMIN`, `_`.

```
<?php

// DOCUMENT_ROOT is a safe variable
echo $_SERVER['DOCUMENT_ROOT'];

// $_SERVER's PHP_SELF MUST be validated before usage
echo $_SERVER['PHP_SELF'];

// $_GET MUST be validated before usage
echo $_GET['_'];

?>
```

See also Predefined Variables.

Specs

Short name	Php/SafePhpvars
Rulesets	*All*, *Changed Behavior*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	superglobal, php-variable
Available in	Entreprise Edition, Exakat Cloud

14.2.1050 Same Conditions In Condition

At least two consecutive if/then structures use identical conditions. The latter will probably be ignored.

This analysis returns false positive when there are attempt to fix a situation, or to call an alternative solution.

Conditions that are shared between if structures, but inside a logical OR expression are also detected.

```
<?php

if ($a == 1) { doSomething(); }
elseif ($b == 1) { doSomething(); }
elseif ($c == 1) { doSomething(); }
elseif ($a == 1) { doSomething(); }
else {}

// Also works on if then else if chains
if ($a == 1) { doSomething(); }
else if ($b == 1) { doSomething(); }
else if ($c == 1) { doSomething(); }
else if ($a == 1) { doSomething(); }
else {}

// Also works on if then else if chains
// Here, $a is common and sufficient in both conditions
if ($a || $b) { doSomething(); }
elseif ($a || $c) { doSomethingElse(); }

// This sort of situation generate false postive.
$config = load_config_from_commandline();
if (empty($config)) {
    $config = load_config_from_file();
    if (empty($config)) {
        $config = load_default_config();
    }
}

?>
```

Suggestions

- Merge the two conditions into one
- Make the two conditions different

Specs

Short name	Structures/SameConditions
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*TeamPass*, *Typo3*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1051 Same Name For Property And Method

> A property and a method have the same name. While it is a valid naming scheme with PHP, it may lead to confusion while codeing.

Such naming collision may appear with words that are the same as a verb (for method) and as a noun (for property). For example, in English : query, work, debug, run, process, rain, polish, paint, etc,.

It may also happen during the life cycle of the class, as it is extended with new methods and properties, and little care is give to semantic meaning of the names, beyond the task at hand.

```
<?php

class x {
    public $foo;
    function foo() {}
}

$x = new X:
$x->p = $x->foo();

?>
```

It is recommended to avoid those collisions, and keep properties and methods named distinctly.

That problem do not happen to constants, which are mostly written uppercase. This rule is case-insensitive.

See also Words That Are Both Nouns And Verbs.

Suggestions

- Fix any spelling in the names
- Rename the property or the method

Specs

Short name	Classes/PropertyMethodSameName
Rulesets	*All*, *Analyze*, *Class Review*, *Semantics*
Exakat since	2.4.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1052 Same Variable Foreach

A foreach which uses its own source as a blind variable is actually broken.

Actually, PHP makes a copy of the source before it starts the loop. As such, the same variable may be used for both source and blind value.

Of course, this is very confusing, to see the same variables used in very different ways.

The source will also be destroyed immediately after the blind variable has been turned into a reference.

```
<?php

$array = range(0, 10);
foreach($array as $array) {
    print $array.PHP_EOL;
}

print_r($array); // display number from 0 to 10.

$array = range(0, 10);
foreach($array as &$array) {
    print $array.PHP_EOL;
}

print_r($array); // display 10

?>
```

Suggestions

- Name the source and variable names distinctly

Specs

Short name	Structures/AutoUnsetForeach
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.0.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	foreach
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1053 Scalar Are Not Arrays

It is wrong to use a scalar as an array, a Warning is emitted. PHP 7.4 emits a Warning in such situations.

Typehinted argument with a scalar are reported by this analysis. Also, nullable arguments, both with typehint and return type hint.

```
<?php

// Here, $x may be null, and in that case, the echo will fail.
function foo(?A $x) {
    echo $x[2];
}

?>
```

See also E_WARNING for invalid container read array-access.

Suggestions

- Update type hints to avoid scalar values
- Remove the array syntax in the code using the results
- Cast to string type, so the array notation is accessible

Specs

Short name	Php/ScalarAreNotArrays
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *CompatibilityPHP74*
Exakat since	1.9.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array, array-object
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1054 Scalar Or Object Property

Property shouldn't use both object and scalar syntaxes. When a property may be an object, it is recommended to implement the Null Object pattern : instead of checking if the property is scalar, make it always object.

```
<?php

class x {
    public $display = 'echo';

    function foo($string) {
        if (is_string($this->display)) {
            echo $this->string;
        } elseif ($this->display instanceof myDisplayInterface) {
            $display->display();
        } else {
            print "Error when displaying\n";
        }
    }
}

interface myDisplayInterface {
    public function display($string); // does the display in its own way
}

class nullDisplay implements myDisplayInterface {
    // implements myDisplayInterface but does nothing
    public function display($string) {}
}

class x2 {
    public $display = null;

    public function __construct() {
        $this->display = new nullDisplay();
    }

    function foo($string) {
```

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```
        // Keep the check, as $display is public, and may get wrong values
        if ($this->display instanceof myDisplayInterface) {
            $display->display();
        } else {
            print "Error when displaying\n";
        }
    }
}

// Simple class for echo
class echoDisplay implements myDisplayInterface {
    // implements myDisplayInterface but does nothing
    public function display($string) {
        echo $string;
    }
}

?>
```

See also Null Object Pattern and The Null Object Pattern.

Suggestions

- Only use one type of syntax with your properties.

Specs

Short name	Classes/ScalarOrObjectProperty
Rulesets	*All*, *Analyze*
Exakat since	0.12.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	object, scalar-typehint
Examples	*SugarCrm*
Available in	Entreprise Edition, Exakat Cloud

14.2.1055 Scalar Typehint Usage

Spot usage of scalar type hint : `int`, `float`, `boolean` and `string`.

Scalar typehint are PHP 7.0 and more recent. Some, like `object`, is 7.2.

Scalar typehint were not supported in PHP 5 and older. Then, the typehint is treated as a class name.

```
<?php

function withScalarTypehint(string $x) {}
```

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```
function withoutScalarTypehint(someClass $x) {}

?>
```

See also PHP RFC: Scalar Type Hints and Type declarations.

Specs

Short name	Php/ScalarTypehintUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	scalar-typehint, typehint
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1056 Scope Resolution Operator

The scope resolution operator *::class* is faster than a call to get_class() function.

It is also possible to replace *get_class()* by *static::class* to get the name of the calling class.

```
<?php

$a = new stdClass();

echo $a::class;

// identical to
echo get_class($a);

class x {
    function foo() { echo static::class; }
}

class y extends x {}

// static will resolve to y here
(new y)->foo();

?>
```

See also get_class..

Suggestions

- Use the *::class* operator instead of the call to get_class()

Specs

Short name	Performances/ClassOperator
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	2.3.3
PHP Version	With PHP 7.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	scope-resolution-operator, static
Available in	Entreprise Edition, Exakat Cloud

14.2.1057 Searching For Multiple Keys

array_search() and array_keys() find keys in an array. array_search() returns the first key that match a value, while array_keys() returns all the keys that match a value.

array_search() and array_keys() both accepts a final parameter to set a strict search or not.

```
<?php

$array = array(0,1,2,3,4,3);

// $id = 3
$id = array_search($array, 3);

// $ids = [3, 5];
$ids = array_keys($array, 3);

?>
```

Suggestions

- Use array_keys() to find multiple keys in an array
- Use array_keys() to find a unique key in an array

Specs

Short name	Structures/ArraySearchMultipleKeys
Rulesets	*All*, *Suggestions*
Exakat since	2.2.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1058 Self Using Trait

> Trait uses itself : this is unnecessary. Traits may use themselves, or be used by other traits, that are using the initial trait itself.

PHP handles the situation quietly, by ignoring all extra use of the same trait, keeping only one valid version.

```
<?php

// empty, but valid
trait a {}

// obvious self usage
trait b { use b; }

// less obvious self usage
trait c { use d, e, f, g, h, c; }

// level 2 self usage
trait i { use j; }
trait j { use i; }

?>
```

See also Traits.

Suggestions

- Remove the extra usage of the trait.

Specs

Short name	Traits/SelfUsingTrait
Rulesets	*All*, *Changed Behavior*, *Class Review*, *Dead code*
Exakat since	1.5.7
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	trait
Available in	Entreprise Edition, Exakat Cloud

14.2.1059 Self-Transforming Variables

Variables that are assigned to themselves, after transformation. Auto-transformations include appending element to an array, using post and pre increment operators, and assigning to the variable the result of a call where the variable is also an argument.

```
<?php

$s = strtolower($s);

// filtering one element AND dropping all that not 1
$a = array_filter('foo', $a[1]);

$o->m = foo($o->m);

?>
```

Suggestions

- Use new variables to hold transformed values.

Specs

Short name	Variables/SelfTransform
Rulesets	*All*, *CE*, *Changed Behavior*
Exakat since	1.7.0
PHP Version	All
Severity	
Time To Fix	
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1060 Semantic Typing

Arguments names are only useful inside the method's body. They are not actual type.

```
<?php

// arguments should be a string and an array
function foo($array, $str) {
    // more code
    return $boolean;
}

// typehint is actually checking the values
function bar(iterable $closure) : bool {
    // more code
    return true;
}

?>
```

Suggestions

- Use a typehint to make sure the argument is of the expected type.

Specs

Short name	Functions/SemanticTyping
Rulesets	*All*, *Semantics*
Exakat since	2.0.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.1061 Sensitive Argument

Spot the argument that are sensitive for security. The functioncalls that are hosting a sensitive argument are called a sink.

```
<?php

// first argument $query is a sensitive argument
mysqli_query($query);

?>
```

Specs

Short name	Security/SensitiveArgument
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1062 Sequences In For

For() instructions allow several instructions in each of its parameters. Then, the instruction separator is comma ',', not semi-colon, which is used for separating the 3 arguments.

```
<?php
   for ($a = 0, $b = 0; $a < 10, $b < 20; $a++, $b += 3) {
    // For loop
   }
?>
```

This loop will simultaneously increment *$a* and *$b*. It will stop only when the last of the central sequence reach a value of false : here, when *$b* reach 20 and *$a* will be 6.

This structure is rarely used, and makes the *for()* instruction quite difficult to read. It is also easy to oversee the multiples instructions, and omit one of them.

It is recommended not to use it.

Specs

Short name	Structures/SequenceInFor
Rulesets	*All*, *Surprising*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	for
Available in	Entreprise Edition, Exakat Cloud

14.2.1063 Serialize Magic Method

Classes that defines __serialize() and __unserialize() are using Serialize Magic.

Serialize magic methods were introduced in PHP 7.4, and are not effective before.

```
<?php

class x {
    function __serialize() {}
    function __unserialize() {}
}

?>
```

See also New custom object serialization mechanism.

Specs

Short name	Php/SerializeMagic
Rulesets	*All*, *Changed Behavior*
Exakat since	1.9.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	serialize
Available in	Entreprise Edition, Exakat Cloud

14.2.1064 Session Lazy Write

Classes that implements SessionHandlerInterface must also implements SessionUpdateTimestampHandlerInterface.

The two extra methods are used to help lazy loading : the first actually checks if a sessionId is available, and the seconds updates the time of last usage of the session data in the session storage.

This was spotted by `Nicolas Grekas`, and fixed in Symfony [HttpFoundation] Make sessions `secure and lazy #24523 <https://github.com/symfony/symfony/pull/24523>`_.

```
<?php

interface SessionUpdateTimestampHandlerInterface {
    // returns a boolean to indicate that valid data is available for this sessionId, or␣
↪not.
    function validateId($sessionId);

    //called to change the last time of usage for the session data.
    //It may be a file's touch or full write, or a simple update on the database
    function updateTimestamp($sessionId, $sessionData);
}
```

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```
?>
```

See also Sessions: Improve original RFC about lazy_write and Sessions.

Suggestions

- Implements the SessionUpdateTimestampHandlerInterface interface

Specs

Short name	Security/SessionLazyWrite
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.12.15
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	session
Available in	Entreprise Edition, Exakat Cloud

14.2.1065 Session Variables

Sessions names, used across the application.

```
<?php

if (isset($_SESSION['mySessionVariable'])) {
    $_SESSION['mySessionVariable']['counter']++;
} else {
    $_SESSION['mySessionVariable'] = array('counter'  => 1,
                                           'creation' => time());
}

?>
```

See also Sessions.

Specs

Short name	Php/SessionVariables
Rulesets	*All*, *Changed Behavior*, *Inventory*
Exakat since	0.12.16
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	session
Available in	Entreprise Edition, Exakat Cloud

14.2.1066 Set Array Class Definition

Link arrays with their related method definition.

PHP accepts an array structure such as `[class, method]`, or `[$object, method]` as a valid method callback. This analysis builds such relations, whenever they are static.

```
<?php

class x {
    public function foo() {}
}

// designate the foo method in the x class
$f = [\x, 'foo'];

array_

?>
```

See also class.

Specs

Short name	Complete/SetArrayClassDefinition
Rulesets	*All*, *CE*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.3
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1067 Set Aside Code

Setting aside code should be made into a method.

Setting aside code happens when one variable or member is stored locally, to be temporarily replaced by another value. Once the new value has been processed, the original value is reverted.

The temporary change of the value makes the code hard to read.

It is a good example of a piece of code that could be moved to a separate method or function. Using the temporary value as a parameter makes the change visible, and avoid local pollution.

```
<?php

// Setting aside database
class cache extends Storage {
    private $database = null;

    function __construct($database) {
        $this->database = $database;
    }

    function foo($values) {
        // handling storage with sqlite3
        $secondary = new cache(new Sqlite3(':memory:'));
        $secondary->store($values);

        $this->store($values);      // handling storage with injection
    }
}

// Setting aside database to cache data in two distinct backend
class cache extends Storage {
    private $database = null;

    function __construct(\Pdo $database) {
        $this->database = $database;
    }

    function foo($values) {
        // $this->database is set aside for secondary configuration
        $side = $this->database;
        $this->database = new Sqlite3(':memory:');
        $this->store($values);      // handling storage with sqlite3
        $this->database = $side;
        // $this->database is restored
        $this->store($values);      // handling storage with injection
    }
}

?>
```

Suggestions

- Extract the code that run with the temporary value to a separate method.

Specs

Short name	Structures/SetAside
Rulesets	*All*, *Suggestions*
Exakat since	1.8.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1068 Set Chaining Exception

Chaining exception allows rethrowing a caught exception with a new one. The previous exception is added to the new exception, for later reference.

For that, the constructor of the chaining exception must relay the previous one to the parent constructor.

```
<?php

//
class myChainingException{
     function __construct($message, $code = 0, \Throwable $exception = null) {
             // This exception can be chained
             parent::__construct($message, $code, $exception);
     }
}

// No chaining possible
class myException{
     function __construct($message) {
             // This exception can't chain anything
             parent::__construct($message);
     }
}

?>
```

Suggestions

- Add the default values to allow chaining

Specs

Short name	Exceptions/SetChainingException
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	chaining-exception
Available in	Entreprise Edition, Exakat Cloud

14.2.1069 Set Class Method Remote Definition

Links method to the method definition. The link is `DEFINITION`.

Static method calls and normal method calls are both solved with this rule. Parent classes and trait are also searched for the right method.

```
<?php

class x {
    public function __construct() {}
    public function foo() {}
}

// This links to __construct method
$a = new x;

// This links to foo() method
$a->foo();

?>
```

Specs

Short name	Complete/SetClassMethodRemoteDefinition
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.1070 Set Class Property Definition With Typehint

Links method call to its definition, thanks to property typehinting. The link is `DEFINITION`.

```
<?php

class x {
    public x $p = null;

    public function bar() {
        return $this;
    }
}

$x = new x;

// $x->p is of 'x' class
$x->p->bar();

?>
```

Specs

Short name	Complete/SetClassPropertyDefinitionWithTypehint
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1071 Set Class Remote Definition With Global

Links method call to its definition, thanks to the global definition. The link is `DEFINITION`.

```
<?php

class x {
    public function bar() {    }
}

global $a;
$a = new X;

function foo() {
    global $a;

    // This links to class x, method bar(), thanks to global.
    return $a->bar();
```

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```
}

?>
```

Specs

Short name	Complete/SetClassRemoteDefinitionWithGlobal
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1072 Set Class Remote Definition With Injection

Links a method call and its definition, thanks to a typehint.

```
<?php

class A {
    function goo() {}
}

function foo(A $arg) {
    // This goes to method A::goo(), thanks to the typehint
    $arg->goo();
}

?>
```

Specs

Short name	Complete/SetClassRemoteDefinitionWithInjection
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1073 Set Class Remote Definition With Local New

Links method calls and properties to its definition, thanks to the local new. The link is `DEFINITION`.

```
<?php

class x {
    public function bar() {    }
}

function foo() {
    $a = new x;

    // This links to class x, method bar(), thanks to the local new.
    return $a->bar();
}

?>
```

Specs

Short name	Complete/SetClassRemoteDefinitionWithLocalNew
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1074 Set Class Remote Definition With Parenthesis

Links methodcall, properties and constants to its definition, based to the new in the parenthesis. The link is `DEFINITION`.

```
<?php

class x {
    public function bar() {    }
}

function foo() {
    // This links to class x, method bar(), thanks to the new.
    return (new x)->bar();
}

?>
```

Specs

Short name	Complete/SetClassRemoteDefinitionWithParenthesis
Rulesets	*All*, *NoDoc*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1075 Set Class Remote Definition With Return Typehint

Links method call to its definition, thanks to the typed return. The link is `DEFINITION`.

```
<?php

class x {
    public function bar() {    }
}

function foo() {
    $a = bar();
    // This links to class x, method bar(), thanks to the new.
    return $a->bar();
}

function bar() : x {
    return new x;
}

?>
```

Specs

Short name	Complete/SetClassRemoteDefinitionWithReturnTypehint
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.3
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1076 Set Class Remote Definition With Typehint

Links method calls, properties static or not, and constants to their definition, thanks to typed arguments. The link is `DEFINITION`.

```
<?php

class x {
    public function bar() {    }
}

function foo(x $a) {
    // This links to class x, method bar(), thanks to the typehint.
    return $a->bar();
}

?>
```

Specs

Short name	Complete/SetClassRemoteDefinitionWithTypehint
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1077 Set Clone Link

This command creates a link DEFINITION between a clone call, and its equivalent magic method.

This command may not detect all possible link for the clone. It may be missing information about the nature of the clone object.

```
<?php

class x {
    // Store an object
    private $a;

    function foo() {
        // This clone is linked to the magic method below
        return clone $this;
    }

    function __clone() {
        $this->a = clone $this->a;
    }
```

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```
}

// This is not linked to any __clone method, by lack of information
clone $x;

?>
```

See also Object Cloning.

Specs

Short name	Complete/SetCloneLink
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	clone
Available in	Entreprise Edition, Exakat Cloud

14.2.1078 Set Cookie Safe Arguments

The last five arguments of setcookie() and setrawcookie() are for security. Use them anytime you can.

```
setcookie ( string $name [, string $value = '' [, int $expire = 0 [, string $path = ''
[, string $domain = '' [, bool $`secure <https://www.php.net/secure>`_ = false [, bool
$httponly = false ]]]]]] )
```

The `$expire` argument sets the date of expiration of the cookie. It is recommended to make it as low as possible, to reduce its chances to be captured. Sometimes, low expiration date may be several days (for preferences), and other times, low expiration date means a few minutes.

The `$path` argument limits the transmission of the cookie to URL whose path matches the one mentioned here. By default, it is `'/'`, which means the whole server. If a cookie usage is limited to a part of the application, use it here.

The `$domain` argument limits the transmission of the cookie to URL whose domain matches the one mentioned here. By default, it is `''`, which means any server on the internet. At worse, you may use `mydomain.com` to cover your whole domain, or better, refine it with the actual subdomain of usage.

The `$`secure <https://www.php.net/secure>`_ argument limits the transmission of the cookie over HTTP (by default) or HTTPS. The second is better, as the transmission of the cookie is crypted. In case HTTPS is still at the planned stage, use '$_SERVER["HTTPS"]'. This environment variable is false on HTTP, and true on HTTPS.

The `$httponly` argument limits the access of the cookie to JavaScript. It is only transmitted to the browser, and retransmitted. This helps reducing XSS and CSRF attacks, though it is disputed.

The `$samesite` argument limits the sending of the cookie to the domain that initiated the request. It is by default `Lax` but should be upgraded to `Strict` whenever possible. This feature is available as PHP 7.3.

```
<?php

//admin cookie, available only on https://admin.my-domain.com/system/, for the next␣
```

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```
↪minute, and not readable by javascript
setcookie("admin", $login, time()+60, "/system/", "admin.my-domain.com", $_SERVER['HTTPS
↪'], 1);

//login cookie, available until the browser is closed, over http or https
setcookie("login", $login);

//removing the login cookie : Those situations are omitted by the analysis
setcookie("login", '');

?>
```

See also setcookie and 'SameSite' cookie attribute.

Suggestions

- Use all the argument when setting cookies with PHP functions

Specs

Short name	Security/SetCookieArgs
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.10.6
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	cookie
Available in	Entreprise Edition, Exakat Cloud

14.2.1079 Set Method Fnp

Complete code by adding the `fullnspath` property to methods calls.

It makes it faster to find definitions later.

```
<?php

function foo(X $a) {
     // \x::moo
     $a->moo();
}

?>
```

Specs

Short name	Complete/SetMethodFnp
Rulesets	*All*, *Changed Behavior*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1080 Set Parent Definition

This command creates a DEFINITION link between *parent* keyword and the actual parent class.

```
<?php

class x {
    const A = 1;
}

class y extends x {
    function foo() {
        // 'parent' needs a DEFFINITION link to the class x
        return parent::A;
    }
}

?>
```

See also Scope Resolution Operator (::).

Specs

Short name	Complete/SetParentDefinition
Rulesets	*All*, *CE*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	parent
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1081 Set class_alias() Definition

Links identifiers and nsname to the concrete class, interface, trait and enumeration when class_alias() was used to create the name. The link is `DEFINITION`.

class_alias() are detected at loading time, and are used unconditionally.

This means that the fully qualified name of the `new` call and the instantiated class may be different : without the alias, the fully qualified name is the current value, or its use's origin, while with class_alias(), it is an arbitrary name.

```
<?php

class x {
    public function foo() {}
}

class_alias('x', 'y');

//y exists, as an alias of x.
$y = new y;

?>
```

Specs

Short name	Complete/SetClassAliasDefinition
Rulesets	*All*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class-alias
Available in	Entreprise Edition, Exakat Cloud

14.2.1082 Setlocale() Uses Constants

setlocale() don't use strings but constants.

The first argument of setlocale() must be one of the valid constants, `LC_ALL`, `LC_COLLATE`, `LC_CTYPE`, `LC_MONETARY`, `LC_NUMERIC`, `LC_TIME`, `` `LC_MESSAGES <https://www.php.net/LC_MESSAGES>`_ ``.

```
<?php

// Use constantes for setlocale first argument
setlocale(LC_ALL, 'nl_NL');
setlocale(\LC_ALL, 'nl_NL');

// Don't use string for setlocale first argument
setlocale('LC_ALL', 'nl_NL');
setlocale('LC_'.'ALL', 'nl_NL');
```

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```
?>
```

The PHP 5 usage of strings (same name as above, enclosed in ‘ or “) is not legit anymore in PHP 7 and later.

See also setlocale.

Suggestions

- Use setlocale() constants

Specs

Short name	Structures/SetlocaleNeedsConstants
Rulesets	*All*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1083 Several Instructions On The Same Line

Usually, instructions do not share their line : one instruction, one line.

This is good for readability, and help at understanding the code. This is especially important when fast-reading the code to find some special situation, where such double-meaning line way have an impact.

```
<?php

switch ($x) {
    // Is it a fallthrough or not ?
    case 1:
        doSomething(); break;

    // Easily spotted break.
    case 1:
        doSomethingElse();
        break;

    default :
        doDefault();
        break;
}

?>
```

See also Object Calisthenics, rule # 5.

Suggestions

- Add new lines, so that one expression is on one line

Specs

Short name	Structures/OneLineTwoInstructions
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*Piwigo*, *Tine20*
Available in	Entreprise Edition, Exakat Cloud

14.2.1084 Shell Favorite

PHP has several syntax to make system calls : shell_exec(), exec() and back-ticks, ` are the common ones.

It was found that one of those three is actually being used over 90% of the time. The remaining cases should be uniformed, so has to make this code consistent.

```
<?php

// back-ticks &#96; are only used once.
&#96;back-tick&#96;;

shell_exec('exec1');
shell_exec('exec2');
shell_exec('exec3');
shell_exec('exec4');
shell_exec('exec5');
shell_exec('exec6');
shell_exec('exec7');
shell_exec('exec8');
shell_exec('exec9');
shell_exec('exec10');
shell_exec('exec11');
shell_exec('exec12');

?>
```

See also Execution Operators, shell_exec() and ptlis/shell-command.

Specs

Short name	Php/ShellFavorite
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	0.12.9
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	shell
Available in	Entreprise Edition, Exakat Cloud

14.2.1085 Shell Usage

List of shell calls to system.

```
<?php
    // Using backtick operator
    $a = `ls -hla`;

    // Using one of PHP native or extension functions
    $a = shell_exec('ls -hla');
    $b = \pcntl_exec('/path/to/command');

?>
```

See also shell_exec and Execution Operators.

Specs

Short name	Structures/ShellUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	shell
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1086 Shell commands

Shell commands, called from PHP.

Shell commands are detected with the italic quotes, and using shell_exec(), system(), exec() and proc_open().

```
<?php

// Shell command in a shell_exec() call
shell_exec('ls -1');

// Shell command with backtick operator
`ls -1 $path`;

?>
```

See also Execution operator, shell_exec and exec.

Specs

Short name	Type/Shellcommands
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.9.9
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	system-call
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1087 Short Open Tags

Usage of short open tags is discouraged. The following files were found to be impacted by the short open tag directive at compilation time. They must be reviewed to ensure no <? tags are found in the code.

Specs

Short name	Php/ShortOpenTagRequired
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	short-tag
Available in	Entreprise Edition, Exakat Cloud

14.2.1088 Short Or Complete Comparison

Which type of condition is used for boolean comparisons : either short or formal.

Formal is an explicit comparison to another boolean, while short is when the variable is used without comparison.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

```
<?php

// returns a boolean
$checked = checkSomething();

// short comparison
if ($checked) {
     // doSomething()
}

// also short comparison
if (!$checked) {
     // doSomething()
}

// formal comparison
if ($checked === true) {
     // doSomething()
}

?>
```

Specs

Short name	Structures/ShortOrCompleteComparison
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1089 Short Syntax For Arrays

Arrays written with the new short syntax.

PHP 5.4 introduced the new short syntax, with square brackets. The previous syntax, based on the array() keyword is still available.

```
<?php
```

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```
// All PHP versions array
$a = array(1, 2, 3);

// PHP 5.4+ arrays
$a = [1, 2, 3];

?>
```

See also Array.

Specs

Short name	Arrays/ArrayNSUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP53*
Exakat since	0.8.4
PHP Version	With PHP 5.3 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	array
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1090 Short Ternary

Short ternaries are the ternary operator, where the middle operand was left out.

Written that way, the operator checks if the first operand is empty() : in that case, the second operand is used; Otherwise, the first operand is used.

```
<?php
     // $b is now 2
     $b = $a ?: 2;
     // $c is now 2 also
     $c = $b ?: 4;
?>
```

See also Ternary Operator.

Specs

Short name	Php/ShortTernary
Rulesets	*All*, *Appinfo*, *Changed Behavior*, *One Liners*
Exakat since	2.5.2
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	short-ternary
Available in	Entreprise Edition, Exakat Cloud

14.2.1091 Should Be Single Quote

Use single quote for simple strings.

Static content inside a string, that has no single quotes nor escape sequence (such as n or t), should be using single quote delimiter, instead of double quote.

```
<?php

$a = "abc";

// This one is using a special sequence
$b = "cde\n";

// This one is using two special sequences
$b = "\x03\u{1F418}";

?>
```

If you have too many of them, don't loose your time switching them all. If you have a few of them, it may be good for consistence.

Specs

Short name	Type/ShouldBeSingleQuote
Rulesets	*All*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	double-quote, single-quote
ClearPHP	no-double-quote
Available in	Entreprise Edition, Exakat Cloud

14.2.1092 Should Cache Local

Repeated calls to a method with the same arguments should be put in a local cache.

It speeds up processing, even in case of a simple property fetch. A local cache makes the code more readable and more compact.

```
<?php

function foo() {
     $goo = goo(), 0, 3;
     $a = strtolower($goo);
     $b = strtoupper($goo);

     return $a . '-' . $b;
}
```

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```
function foo2() {
     $a = strtolower(goo(), 0, 3);
     $b = strtoupper(goo(), 0, 3);

     return $a . '-' . $b;
}

?>
```

Suggestions

- Use a local cache to reduce processing time

Specs

Short name	Performances/ShouldCacheLocal
Rulesets	*All*, *Performances*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	micro-optimisation
Available in	Entreprise Edition, Exakat Cloud

14.2.1093 Should Chain Exception

Chain exception to provide more context.

When catching an exception and rethrowing another one, it is recommended to chain the exception : this means providing the original exception, so that the final recipient has a chance to track the origin of the problem. This doesn't change the thrown message, but provides more information.

Note : Chaining requires PHP > 5.3.0.

```
<?php
    try {
        throw new Exception('Exception 1', 1);
    } catch (\Exception $e) {
        throw new Exception('Exception 2', 2, $e);
        // Chaining here.

    }
?>
```

See also Exception::__construct and What are the best practices for catching and re-throwing exceptions?.

Suggestions

- Add the incoming exception to the newly thrown exception

Specs

Short name	Structures/ShouldChainException
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	exception-chain
Examples	*Magento*, *Tine20*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1094 Should Deep Clone

> By default, PHP makes a shallow clone. It only clone the scalars, and keep the reference to any object already referenced. This means that the cloned object and its original share any object they hold as property.

This is where the magic method __clone() comes into play. It is called, when defined, at clone time, so that the cloned object may clone all the needed sub-objects.

It is recommended to use the __clone() method whenever the objects hold objects.

```
<?php

class a {
    public $b = null;

    function __construct() {
        $this->b =  new Stdclass();
        $this->b->c = 1;
    }
}

class ab extends a {
    function __clone() {
        $this->b = clone $this->b;
    }
}

// class A is shallow clone, so $a->b is not cloned
$a = new a();
$b = clone $a;
$a->b->c = 3;
echo $b->b->c;
// displays 3
```

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```
// class Ab is deep clone, so $a->b is cloned
$a = new ab();
$b = clone $a;
$a->b->c = 3;
echo $b->b->c;
// displays 1

?>
```

See also PHP Clone and Shallow vs Deep Copying and Cloning objects.

Specs

Short name	Classes/ShouldDeepClone
Rulesets	*All*, *Suggestions*
Exakat since	1.7.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	clone
Available in	Entreprise Edition, Exakat Cloud

14.2.1095 Should Have Destructor

> PHP destructors are called when the object is being destroyed. By default, PHP calls recursively the destructor on internal objects, until everything is unset.

Unsetting objects and resources explicitly in the destructor is a good practice to reduce the amount of memory in use. It helps PHP resource counter to keep the numbers low, and easier to clean. This is a major advantage for long running scripts.

Unsetting scalar properties, such as *string* or *int* is not necessary, as they are stored independently and cleaned automatically by PHP. Closing resources of type *resource* is important : there might be some final calls to close it cleanly. Unsetting an object only decreases the reference count for that object : it is still available to other objects that kept it as property.

Destructor is useful for long-running resources : file resource, sockets, a file lock or persistent database connexion. This is a good time to finish cleanly, and close.

Internally to the application, destructors are also useful with static properties and registries : for example, the current class may deregister from a list of listener, so that this list is still up to date. Otherwise, the registry keeps the object alive.

```
<?php

class x {
    function __construct() {
        $this->p = new y();
    }
```

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```
    function __destruct() {
        print __METHOD__.PHP_EOL;
        unset($this->p);
    }
}

class y {
    function __construct() {
        print __METHOD__.PHP_EOL;
        $this->p = new y();
    }

    function __destruct() {
        print __METHOD__.PHP_EOL;
        unset($this->p);
    }
}

$a = (new x);
sleep(1);

// This increment the resource counter by one for the property.
$p = $a->p;
unset($a);
sleep(3);

print 'end'.PHP_EOL;
// Y destructor is only called here, as the object still exists in $p.

?>
```

See also Destructor and Php Destructors.

Suggestions

- Add a destruct method to the class to help clean at destruction time.

Specs

Short name	Classes/ShouldHaveDestructor
Rulesets	*All*, *Suggestions*
Exakat since	1.5.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	destructor
Available in	Entreprise Edition, Exakat Cloud

14.2.1096 Should Make Alias

Long names should be aliased.

Aliased names are easy to read at the beginning of the script; they may be changed at one point, and update the whole code at the same time. Finally, short names makes the rest of the code readable.

```
<?php

namespace x\y\z;

use a\b\c\d\e\f\g as Object;

// long name, difficult to read, prone to change.
new a\b\c\d\e\f\g();

// long name, difficult to read, prone to silent dead code if namespace change.
if ($o instanceof a\b\c\d\e\f\g) {

}

// short names Easy to update all at once.
new Object();
if ($o instanceof Object) {

}

?>
```

Specs

Short name	Namespaces/ShouldMakeAlias
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1097 Should Preprocess Chr()

Replace literal chr() calls with their escape sequence.

chr() is a functioncall, that cannot be cached. It is only resolved at execution time. On the other hand, literal values are preprocessed by PHP and may be cached.

```
<?php

// This is easier on PHP
$a = "\120\110\120\040 is great!";
```

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```
// This is slow
$a = chr(80), chr(72), chr(80), chr(32), ' is great!';

// This would be the best with this example, but it is not always possible
$a = 'PHP is great!';

?>
```

This is a micro-optimisation.

See also Escape sequences.

Suggestions

- Use PHP string sequences, and skip chr() at execution time

Specs

Short name	Php/ShouldPreprocess
Rulesets	*All*, *Suggestions*
Exakat since	1.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	preprocess
Examples	*phpadsnew*
Available in	Entreprise Edition, Exakat Cloud

14.2.1098 Should Typecast

When typecasting, it is better to use the casting operator, such as `(int)` or `(bool)`.

Functions such as intval() or settype() are always slower.

```
<?php

// Fast version
$int = (int) $X;

// Slow version
$int = intval($X);

// Convert to base 8 : can't use (int) for that
$int = intval($X, 8);


?>
```

This is a micro-optimisation, although such conversion may be use multiple times, leading to a larger performance increase.

Note that intval() may also be used to convert an integer to another base. Intval() called with 2 arguments are skipped by this rule.

Suggestions

- Use a typecast, instead of a functioncall.

Specs

Short name	Type/ShouldTypecast
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Rector*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	cast
Examples	*xataface*, *OpenConf*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1099 Should Use Coalesce

PHP 7 introduced the ?? operator, that replaces longer structures to set default values when a variable is not set.

```
<?php

// Fetches the request parameter user and results in 'nobody' if it doesn't exist
$username = $_GET['user'] ?? 'nobody';
// equivalent to: $username = isset($_GET['user']) ? $_GET['user'] : 'nobody';

// Calls a hypothetical model-getting function, and uses the provided default if it fails
$model = Model::get($id) ?? $default_model;
// equivalent to: if (($model = Model::get($id)) === NULL) { $model = $default_model; }

?>
```

Sample extracted from PHP docs Isset Ternary.

See also New in PHP 7: null coalesce operator.

Suggestions

- Replace the long syntax with the short one

Specs

Short name	Php/ShouldUseCoalesce
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Suggestions*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	coalesce
Examples	*ChurchCRM*, *Cleverstyle*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1100 Should Use Existing Constants

The following functions have related constants that should be used as arguments, instead of scalar literals, such as integers or strings.

```
<?php

// The file is read and new lines are ignored.
$lines = file('file.txt', FILE_IGNORE_NEW_LINES)

// What is this doing, with 2 ?
$lines = file('file.txt', 2);

?>
```

See also Bitmask Constant Arguments in PHP.

Suggestions

- Use PHP native constants whenever possible, for better readability.

Specs

Short name	Functions/ShouldUseConstants
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	predefined-constant, constant
Examples	*Tine20*
Available in	Entreprise Edition, Exakat Cloud

14.2.1101 Should Use Explode Args

explode() has a third argument, which limits the amount of exploded elements. With it, it is possible to collect only the first elements, or drop the last ones.

```
<?php

$exploded = explode(DELIMITER, $string);

// use explode(DELIMITER, $string, -1);
array_pop($exploded);

// use explode(DELIMITER, $string, -2);
$c = array_slice($exploded, 0, -2);

// with explode()'s third argument :
list($a, $b) = explode(DELIMITER, $string, 2);

// with list() omitted arguments
list($a, $b, ) = explode(DELIMITER, $string);

?>
```

See also explode.

Suggestions

- Add the third argument to the explode() call

Specs

Short name	Structures/ShouldUseExplodeArgs
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.9.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1102 Should Use Foreach

Use the `foreach` loop instead of `for` when traversing an array.

Foreach() is the modern loop : it maps automatically every element of the array to a blind variable, and iterate. This is faster and safer.

```
<?php

// Foreach version
foreach($array as $element) {
    doSomething($element);
}

// The above case may even be upgraded with array_map and a callback,
// for the simplest one of them
$array = array_map('doSomething', $array);

// For version (one of various alternatives)
for($i = 0; $i < count($array); $i++) {
    $element = $array[$i];
    doSomething($element);
}

// Based on array_pop or array_shift()
while($value = array_pop($array)) {
    doSomething($array);
}

?>
```

See also foreach and 5 Ways To Loop Through An Array In PHP.

Suggestions

- Move for() loops to foreach(), whenever they apply to a finite list of elements

Specs

Short name	Structures/ShouldUseForeach
Rulesets	*All*, *Suggestions*
Exakat since	0.12.7
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	foreach, for
Examples	*ExpressionEngine*, *Woocommerce*
Available in	Entreprise Edition, Exakat Cloud

14.2.1103 Should Use Function

Functioncalls that fall back to global scope should be using 'use function' or be fully namespaced.

PHP searches for functions in the local namespaces, and in case it fails, makes the same search in the global scope. Anytime a native function is referenced this way, the search (and fail) happens. This slows down the scripts.

The speed bump range from 2 to 8 %, depending on the availability of functions in the local scope. The overall bump is about 1 µs per functioncall, which makes it a micro optimisation until a lot of function calls are made.

Based on one of Marco Pivetta tweet.

```
<?php

namespace X {
    use function strtolower as strtolower_aliased;

    // PHP searches for strtolower in X, fails, then falls back to global scope,␣
↪succeeds.
    $a = strtolower($b);

    // PHP searches for strtolower in global scope, succeeds.
    $a = \strtolower($b);

    // PHP searches for strtolower_aliased in global scope, succeeds.
    $a = \strtolower_aliased($b);
}

?>
```

This analysis is a related to Performances/Php74ArrayKeyExists, and is a more general version.

See also blog post.

Suggestions

- Use the *use* command for arrray_key_exists(), at the beginning of the script
- Use an initial before array_key_exists()
- Remove the namespace

Specs

Short name	Php/ShouldUseFunction
Rulesets	*All*, *Performances*
Exakat since	0.9.5
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1104 Should Use Local Class

Methods should use the defining class, or be functions.

Methods should use `$this` with another method or a property, or call `parent\:\:`. Static methods should call another static method, or a static property. Methods which are overwritten by a child class are omitted : the parent class act as a default value for the children class, and this is correct.

```
<?php

class foo {
    public function __construct() {
        // This method should do something locally, or be removed.
    }
}

class bar extends foo {
    private $a = 1;

    public function __construct() {
        // Calling parent:: is sufficient
        parent::__construct();
    }

    public function barbar() {
        // This is acting on the local object
        $this->a++;
    }

    public function barfoo($b) {
        // This has no action on the local object. It could be a function or a closure␣
↪where needed
        return 3 + $b;
```

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```
    }
}

?>
```

Note that a method using a class constant is not considered as using the local class, for this analyzer.

Suggestions

- Make this method a function
- Actually use $this, or any related attributes of the class

Specs

Short name	Classes/ShouldUseThis
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	$this, self
ClearPHP	not-a-method
Available in	Entreprise Edition, Exakat Cloud

14.2.1105 Should Use Math

Use math operators to make the operation readable.

```
<?php

// Adding one to self
$a *= 2;
// same as above
$a += $a;

// Squaring oneself
$a \*\*\= 2;
// same as above
$a *= $a;

// Removing oneself
$a = 0;
// same as above
$a -= $a;

// Dividing oneself
$a = 1;
```

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```
// same as above
$a /= $a;

// Division remainer
$a = 0;
// same as above
$a %= $a;

?>
```

See also Mathematical Functions.

Suggestions

- Use explicit math assignation

Specs

Short name	Structures/ShouldUseMath
Rulesets	*All*, *Suggestions*
Exakat since	1.1.5
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*OpenEMR*
Available in	Entreprise Edition, Exakat Cloud

14.2.1106 Should Use Operator

Some functions duplicate the feature of an operator. When in doubt, it is better to use the operator.

Beware, some edge cases may apply. In particular, backward compatibility may prevent usage of newer features.

- array_push() is equivalent to []
- is_object() is equivalent to instanceof
- function_get_arg() and function_get_args() is equivalent to ellipsis : ...
- chr() is equivalent to string escape sequences, such as `\n`, `\x69`, `u{04699}`
- call_user_func() is equivalent to `$functionName(arguments)`, `$object->$method(`... <https://www.php.net/manual/en/functions.arguments.php#functions.variable-arg-list>`_$arguments)`
- is_null() is equivalent to `=== null`
- php_version() is equivalent to `PHP_VERSION` (the constant)
- is_array(), is_int(), is_object(), etc. is equivalent to a scalar type

Suggestions

- Use [] instead of array_push()
- Use instanceof instead of is_object()
- Use ... instead of function_get_arg() and function_get_args()
- Use escape sequences instead of chr()
- Use dynamic function call instead of call_user_func()
- Use === null instead of is_null()
- Use PHP_VERSION instead of php_version()
- Use type instead of is_int(), is_string(), is_bool(), etc.

Specs

Short name	Structures/ShouldUseOperator
Rulesets	*All*, *Suggestions*
Exakat since	1.3.0
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*Zencart*, *SugarCrm*
Available in	Entreprise Edition, Exakat Cloud

14.2.1107 Should Use Prepared Statement

> Modern databases provides support for prepared statement : it separates the query from the processed data and raise significantly the security.

Building queries with concatenations is not recommended, though not always avoidable. When possible, use prepared statements. Same code, without preparation :

```
<?php
/* Execute a prepared statement by passing an array of values */

$sql = 'SELECT name, colour, calories
    FROM fruit
    WHERE calories < :calories AND colour = :colour';
$sth = $conn->prepare($sql, array(PDO::ATTR_CURSOR => PDO::CURSOR_FWDONLY));
$sth->execute(array(':calories' => 150, ':colour' => 'red'));
$red = $sth->fetchAll();
?>
```

Name	Default	Type	Description
queryMethod	query_methods.json	data	Methods that call a query.

See also Prepared Statements, PHP MySQLi Prepared Statements Tutorial to Prevent SQL Injection and The Best Way to Perform MYSQLI Prepared Statements in PHP.

Suggestions

- Use an ORM
- Use an Active Record library
- Change the query to hard code it and make it not injectable

Specs

Short name	Security/ShouldUsePreparedStatement
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Examples	*Dolibarr*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1108 Should Use SetCookie()

> Use setcookie() or setrawcookie(). Avoid using header() to do so, as the PHP native functions are more convenient and easier to spot during a refactoring.

setcookie() applies some encoding internally, for the value of the cookie and the date of expiration. Rarely, this encoding has to be skipped : then, use setrawencoding().

Both functions help by giving a checklist of important attributes to be used with the cookie.

```
<?php

// same as below
setcookie("myCookie", 'chocolate', time()+3600, "/", "", true, true);

// same as above. Slots for path and domain are omitted, but should be used whenever␣
↪possible
header('Set-Cookie: myCookie=chocolate; Expires='.date('r', (time()+3600)).'; Secure;␣
↪HttpOnly');

?>
```

See also Set-Cookie and setcookie.

Suggestions

- Use setcookie() function, instead of header()

Specs

Short name	Php/UseSetCookie
Rulesets	*All*, *Analyze*
Exakat since	0.10.6
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	cookie, http-header
Available in	Entreprise Edition, Exakat Cloud

14.2.1109 Should Use Ternary Operator

Ternary operators are the best when assigning values to a variable.

They are less verbose, compatible with assignation and easier to read.

```
<?php
    // verbose if then structure
    if ($a == 3) {
        $b = 2;
    } else {
        $b = 3;
    }

    // compact ternary call
    $b = ($a == 3) ? 2 : 3;

    // verbose if then structure
    // Works with short assignations and simple expressions
    if ($a != 3) {
        $b += 2 - $a * 4;
    } else {
        $b += 3;
    }

    // compact ternary call
    $b += ($a != 3) ? 2 - $a * 4 : 3;

?>
```

See also Ternary Operator and Shorthand comparisons in PHP.

Suggestions

- Use the ternary operator

Specs

Short name	Structures/ShouldMakeTernary
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.5
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	ternary
Examples	*ChurchCRM*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1110 Should Use Url Query Functions

PHP features several functions dedicated to processing URL's query string.

- parse_str()
- parse_url()
- http_build_query()

Those functions include extra checks : for example, http_build_query() adds urlencode() call on the values, and allow for choosing the separator and the Query string format.

```
<?php
$data = array(
    'foo' => 'bar',
    'baz' => 'boom',
    'cow' => 'milk',
    'php' => 'hypertext processor'
);

// safe and efficient way to build a query string
echo http_build_query($data, '', '&') . PHP_EOL;

// slow way to produce a query string
foreach($data as $name => &$value) {
    $value = $name.'='.$value;
}
echo implode('&', $data) . PHP_EOL;

?>
```

Suggestions

- Use the URL query functions from PHP

Specs

Short name	Structures/UseUrlQueryFunctions
Rulesets	*All*, *Suggestions*
Exakat since	1.9.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	url
Available in	Entreprise Edition, Exakat Cloud

14.2.1111 Should Use array_column()

Avoid writing a whole slow loop, and use the native array_column().

array_column() is a native PHP function, that extract a property or a index from a array of object, or a multidimensional array. This prevents the usage of foreach to collect those values.

```
<?php

$a = array(array('b' => 1),
           array('b' => 2, 'c' => 3),
           array(          'c' => 4)); // b doesn't always exists

$bColumn = array_column($a, 'b');

// Slow and cumbersome code
$bColumn = array();
foreach($a as $k => $v) {
    if (isset($v['b'])) {
        $bColumn[] = $v['b'];
    }
}

?>
```

array_column() is faster than foreach() (with or without the isset() test) with 3 elements or more, and it is significantly faster beyond 5 elements. Memory consumption is the same.

See also [blog] array_column() and preprocess.

Suggestions

- Use array_column(), instead of a foreach()

Specs

Short name	Php/ShouldUseArrayColumn
Rulesets	*All*, *Performances*, *Suggestions*
Exakat since	0.10.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1112 Should Use array_filter()

Should use array_filter().

array_filter() is a native PHP function, that extract elements from an array, based on a custom call. Using array_filter() shortens your code, and allows for reusing the filtering logic across the application, instead of hard coding it every time.

```
<?php

$a = range(0, 10); // integers from 0 to 10

// Extracts odd numbers
$odds = array_filter($a, function($x) { return $x % 2; });
$odds = array_filter($a, 'odd');

// Slow and cumbersome code for extracting odd numbers
$odds = array();
foreach($a as $v) {
    if ($a % 2) { // same filter than the closure above, or the odd function below
        $bColumn[] = $v;
    }
}

function foo($x) {
    return $x % 2;
}

?>
```

array_filter() is faster than foreach() (with or without the isset() test) with 3 elements or more, and it is significantly faster beyond 5 elements. Memory consumption is the same.

See also array_filter.

Suggestions

- Use array_filter()

Specs

Short name	Php/ShouldUseArrayFilter
Rulesets	*All*, *Suggestions*
Exakat since	1.0.7
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Examples	*xataface*, *shopware*
Available in	Entreprise Edition, Exakat Cloud

14.2.1113 Should Use session_regenerateid()

session_regenerateid() should be used when sessions are used.

When using sessions, a session ID is assigned to the user. It is a random number, used to connect the user and its data on the server. Actually, anyone with the session ID may have access to the data. This is why those session ID are so long and complex.

A good approach to protect the session ID is to reduce its lifespan : the shorter the time of use, the better. While changing the session ID at every hit on the page may no be possible, a more reasonable approach is to change the session id when an important action is about to take place. What important means is left to the application to decide.

Based on this philosophy, a code source that uses ZendSession but never uses ZendSession::regenerateId() has to be updated.

```
<?php

    session_start();

    $id = (int) $_SESSION['id'];
    // no usage of session_regenerateid() anywhere triggers the analysis

    // basic regeneration every 20 hits on the page.
    if (++$_SESSION['count'] > 20) {
        session_regenerateid();
    }

?>
```

See also session_regenerateid() and PHP Security Guide: Sessions.

Suggestions

- Add session_regenerateid() call before any important operation on the application

Specs

Short name	Security/ShouldUseSessionRegenerateId
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	0.10.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	session
Available in	Entreprise Edition, Exakat Cloud

14.2.1114 Should Yield With Key

iterator_to_array() overwrite generated values with the same key.

PHP generators are based on the `yield` keyword. They also delegate some generating to other methods, with `yield from`.

When delegating, `yield from` uses the keys that are generated with `yield`, and otherwise, it uses auto-generated index, starting with 0.

The trap is that each `yield from` reset the index generation and start again with 0. Coupled with iterator_to_array(), this means that the final generated array may lack some values, while a foreach() loop would yield all of them.

Thanks to Holger Woltersdorf for pointing this.

```
<?php

function g1() : Generator {
     for ( $i = 0; $i < 4; $i++ ) { yield $i; }
}

function g2() : Generator {
     for ( $i = 5; $i < 10; $i++ ) { yield $i; }
}

function aggregator() : Generator {
     yield from g1();
     yield from g2();
}

print_r(iterator_to_array());

/*
Array
(
    [0] => 6
```

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```
    [1] => 7
    [2] => 8
    [3] => 9
    [4] => 4  // Note that 4 and 5 still appears
    [5] => 5  // They are not overwritten by the second yield
)
*/


foreach ( aggregator() as $i ) {
     print $i.PHP_EOL;
}

/*
0  // Foreach has no overlap and yield it all.
1
2
3
4
5
6
7
8
9
*/

?>
```

See also Generator syntax and Yielding values with keys.

Suggestions

- Use iterator_to_array() on each generator separately, and use array_merge() to merge all the arrays.
- Always yield with distinct keys
- Avoid iterator_to_array() and use foreach()

Specs

Short name	Functions/ShouldYieldWithKey
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Top10*
Exakat since	1.5.2
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	yield, key
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1115 Sidelined Method

A method, defined in a trait, which is overwritten by a class's method. This makes the trait's method useless and unreachable.

It is recommended to check if this is not a typo, as the trait may not be able to work correctly.

```
<?php

trait t {
     function name() : string { return 'abc'; }
     function foo() : string { return 'ddd'; }
}

class x {
     use t;

     // This method
     function name() : string { return 'bca'; }

     //function foo is imported from the trait
}

?>
```

Suggestions

- Check the naming of the function in the class
- Use a 'as' expression to rename the trait's method with another name

Specs

Short name	Traits/SidelinedMethod
Rulesets	*All*, *Class Review*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1116 Signature Trailing Comma

Trailing comma in method signature. This feature was added in PHP 8.0.

Allowing the trailing comma makes it possible to reduce the size of VCS's diff, when adding , removing a parameter.

```
<?php

// Example from the RFC
class Uri {
    private function __construct(
        ?string $scheme,
        ?string $user,
        ?string $pass,
        ?string $host,
        ?int $port,
        string $path,
        ?string $query,
        ?string $fragment // <-- ARGH!
    ) {
        ...
    }
}
?>
```

See also PHP RFC: Allow trailing comma in parameter list.

Specs

Short name	Php/SignatureTrailingComma
Rulesets	*All*, *CE*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*
Exakat since	2.1.0
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	trailing-comma
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1117 Silently Cast Integer

Those are integer literals that are cast to a float when running PHP. They are too big for the current PHP version, and PHP resorts to cast them into a float, which has a much larger capacity but a lower precision.

Compare your literals to `PHP_MAX_INT` (typically `9223372036854775807`) and `PHP_MIN_INT` (typically `-9223372036854775808`). This applies to binary (`0b10101...`), octal (`0123123...`) and hexadecimal (`0xfffff...`) too.

```
<?php

echo 0b1010101101010110101011010101011010101011010101011010101011010111;
```

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```
//6173123008118052203
echo 0b1010101101010110101011010101101010101101010101101010101101010110101111;
//1.2346246016236E+19

echo 0123123123123123123123;
//1498121094048818771
echo 0123123123123123123123123;
//1.1984968752391E+19

echo 0x12309812311230;
//5119979279159856
echo 0x12309812311230fed;
//2.0971435127439E+19

echo 9223372036854775807; //PHP_MAX_INT
//9223372036854775807
echo 9223372036854775808;
9.2233720368548E+18

?>
```

See also Integer overflow.

Suggestions

- Make sure hexadecimal numbers have the right number of digits : generally, it is 15, but it may depends on your PHP version.

Specs

Short name	Type/SilentlyCastInteger
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	cast, silent-cast
Examples	*MediaWiki*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1118 Similar Integers

This analysis reports all integer values that are expressed in different format.

```
<?php

// Three ways to write 10 (more available)
$a = 10;
$b = 012;
$x = 0xA;

// 7 is expressed in one way only
$d = 7;
$d = 7;

// Four ways to write 11 (more available)
$a = 11;
$b = 013;
$x = 0xB;
$x = -+-11;

// Expressions are not counted

?>
```

Specs

Short name	Type/SimilarIntegers
Rulesets	*All*, *Coding conventions*, *Semantics*
Exakat since	1.9.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	integer
Available in	Entreprise Edition, Exakat Cloud

14.2.1119 Simple Global Variable

The global keyword should only be used with simple variables. Since PHP 7, it cannot be used with complex or dynamic structures.

```
<?php

// Forbidden in PHP 7
global $normalGlobal;

// Forbidden in PHP 7
global $$variable->global ;
```

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```
// Tolerated in PHP 7
global $\{$variable->global\};

?>
```

See also Changes to the handling of indirect variables, properties, and methods.

Suggestions

- Add curly braces so the syntax is compatibles PHP 5 and PHP 7
- Remove this syntax, and access the variable through another way : argument, array, property.

Specs

Short name	Php/GlobalWithoutSimpleVariable
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Critical
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	global
Available in	Entreprise Edition, Exakat Cloud

14.2.1120 Simple Switch And Match

Switch() and match() are faster when relying only on literal integers or strings.

Since PHP 7.2, simple switches, that use only literal strings or integers, are optimized. The bigger the switch, the greater the gain. Match() was introduced in PHP 8.0

In particular, this optimisation doesn't work with any expressions (constant or not), function call, methodcall, constant usage, etc. Only literal values, string or integer.

When the switch is partially build of literals, it is worth splitting the switch in two : first level, only with the literal cases, and, in the default, the dynamic values. This brings some performances, though it is a micro-optimisation.

```
<?php

// Optimized switch.
switch($b) {
    case "a":
        break;
    case "b":
        break;
    case "c":
        break;
    case "d":
```

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```
        break;
    default :
        break;
}

// Unoptimized switch.
// Try moving the foo() call in the default, to keep the rest of the switch optimized.
switch($c) {
    case "a":
        break;
    case foo($b):
        break;
    case C:
        break;
    case "c":
        break;
    case "d":
        break;
    default :
        break;
}

// Partially optimised switch
// Try moving the foo() call in the default, to keep the rest of the switch optimized.
switch($c) {
    case "a":
        break;
    case "c":
        break;
    case "d":
        break;
    default :
        switch($c) {
            case foo($b):
            break;

            case C:
            break;

        default :
            break;
        }
        break;
}

?>
```

See also PHP 7.2's "switch" optimisations.

Suggestions

- Split the switch between literal and dynamic cases
- Remove the dynamic cases from the switch
- Move the most common case to the beginning of the switch

Specs

Short name	Performances/SimpleSwitch
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.0.1
PHP Version	With PHP 7.2 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	switch, match
Available in	Entreprise Edition, Exakat Cloud

14.2.1121 Simplify Foreach

Remove all unused keys or values from a foreach() call. This prevents PHP from assigning them for nothing, and save some processing time.

```
<?php

// No key usage
foreach($array as $key => $value) {
    echo $value;
}

// No value usage
foreach($array as $key => $value) {
    echo $key;
}

?>
```

This is a micro-optimisation.

Suggestions

- Use array_keys() or array_values() to simplify the source array
- Remove the call to $key => when the key is not used in the loop

Specs

Short name	Performances/SimplifyForeach
Rulesets	*All*, *Performances*
Exakat since	2.3.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	foreach
Available in	Entreprise Edition, Exakat Cloud

14.2.1122 Simplify Regex

Avoid using regex when the searched string or the replacement are simple enough.

PRCE regex are a powerful way to search inside strings, but they also come at the price of performance. When the query is simple enough, try using strpos() or stripos() instead.

```
<?php

// simple preg calls
if (preg_match('/a/', $string))  {}
if (preg_match('/b/i', $string)) {} // case insensitive

// light replacements
if( strpos('a', $string)) {}
if( stripos('b', $string)) {}       // case insensitive

?>
```

Suggestions

- Use str_replace(), strtr() or even strpos()

Specs

Short name	Structures/SimplePreg
Rulesets	*All*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	regex
Examples	*Zurmo*, *OpenConf*
Available in	Entreprise Edition, Exakat Cloud

14.2.1123 Single Use Variables

This is the list of variables that are written, then read, and only used once.

Single-use variables may be trimmed down, and the initial expression may be used instead.

Single-use variables may improve readability, when the final expression grows too much with the extra expression.

```
<?php

function foo($d) {
    $a = 1;     // $a is used twice
    $b = $a + 2;  // $b is used once
    $c = $a + $b + $d; // $c is also used once
    // $d is an argument, so it's OK.

    retrun $c;
}

?>
```

Suggestions

- Merge the two expressions into one larger
- Make a second use of the variable
- Inline the code of the expression instead of the variable

Specs

Short name	Variables/UniqueUsage
Rulesets	*All*
Exakat since	1.3.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	variable
Available in	Entreprise Edition, Exakat Cloud

14.2.1124 Skip Empty Array

When collecting arrays to be merged, it is faster to skip the empty arrays, rather than let array_merge() process them. This also works with array_merge_recursive().

This is a micro-optimisation. It is more efficient with larger arrays.

```
<?php

$all = [];
foreach($source as $array) {
```

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```
    // $array is an array in this example
    if (empty($array)) {
            continue;
    }

    $all[] = $array;
}

$all = array_merge(...$all);

?>
```

Specs

Short name	Performances/SkipEmptyArray
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1125 Slice Arrays First

> Always start by reducing an array before applying some transformation on it. The shorter array will be processed faster.

The gain produced here is greater with longer arrays, or greater reductions. They may also be used in loops. This is a micro-optimisation when used on short arrays.

```
<?php

// fast version
$a = array_map('foo', array_slice($array, 2, 5));

// slower version
$a = array_slice(array_map('foo', $array), 2, 5);
?>
```

Suggestions

- Use the array transforming function on the result of the array shortening function.

Specs

Short name	Arrays/SliceFirst
Rulesets	*All*, *Performances*, *Suggestions*
Exakat since	1.0.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.1126 Slow Functions

Avoid using those slow native PHP functions, and replace them with alternatives.

Slow Function	Faster
array_diff() array_intersect() array_key_exists() array_map() array_search() array_udiff() array_uintersect() array_unshift() array_walk() in_array() preg_replace() strstr() uasort() uksort() usort() array_unique()	foreach() foreach() isset() and array_key_exists() foreach() array_flip() and isset() Use another way Use another way Use another way foreach() isset() strpos() strpos() Use another way Use another way Use another way array_keys() and array_count_values()

array_unique() has been accelerated in PHP 7.2 and may be used directly from this version on : Optimize `array_unique() <https://github.com/php/php-src/commit/6c2c7a023da4223e41fea0225c51a417fc8eb10d>`_.

array_key_exists() has been accelerated in PHP 7.4 and may be used directly from this version on : Implement ZEND_ARRAY_KEY_EXISTS opcode to speed up `array_key_exists() <https://github.com/php/php-src/pull/3360>`_.

```
<?php

$array = source();

// Slow extraction of distinct values
$array = array_unique($array);

// Much faster extraction of distinct values
$array = array_keys(array_count_values($array));

?>
```

Suggestions

- Replace the slow function with a faster version
- Remove the usage of the slow function

Specs

Short name	Performances/SlowFunctions
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
ClearPHP	avoid-those-slow-functions
Examples	*ChurchCRM*, *SuiteCrm*
Available in	Entreprise Edition, Exakat Cloud

14.2.1127 Solve Trait Constants

Adds a link between static constant usage and a class constant set in a trait.

Constants in traits are added in PHP 8.2.

```
<?php

trait t { const A = 1; }

class x {
     use t;

     function foo() {
             echo self::A;
     }
}

?>
```

Specs

Short name	Complete/SolveTraitConstants
Rulesets	*All*, *Changed Behavior*
Exakat since	2.4.9
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1128 Solve Trait Methods

This command adds DEFINITION link between trait's method definitions and their usage in classes.

```
<?php

trait t {
    function foo() {

    }
}

class x {
    use t { t::foo as foo2; };

    function bar() {
        // Link to foo() in trait t
        $this->foo();
        // Link to foo() in trait t, thanks to 'as'
        $this->foo2();
    }
}

?>
```

Specs

Short name	Complete/SolveTraitMethods
Rulesets	*All*, *Changed Behavior*, *NoDoc*
Exakat since	1.9.2
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	trait, method
Available in	Entreprise Edition, Exakat Cloud

14.2.1129 Special Integers

Short and incomplete list of integers that may hold special values.

```
<?php

// 86400 is the number of seconds in a day
$day = 86400;

// 1400 is the number of minutes in a day
$day = 1440;

?>
```

The list includes powers of 2, duration in various units, factorial, ASCII codes and years.

Specs

Short name	Type/SpecialIntegers
Rulesets	*All*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	integer
Available in	Entreprise Edition, Exakat Cloud

14.2.1130 Spread Operator For Array

The variadic operator may be used with arrays. This has been introduced in PHP 7.4.

list() is not allowed to use this operator, as list() expected variables, not values.

```
<?php

$array = [1, 2, 3];
$extended_array = [...$array, 4, 5, 6];

// invalid syntax
[...$a] = [1,2,3];

?>
```

See also Spread Operator in Array Expression.

Specs

Short name	Php/SpreadOperatorForArray
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.9.4
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	variadic
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1131 Sprintf Format Compilation

The sprintf() format used yields an error.

This applies to printf(), sprintf(), vprintf(), vfprintf(), vsprintf(), sscanf(), fscanf()

```
<?php

    printf('"%we3e"', 123);
    //Unknown format specifier
?>
```

See also sprintf.

Suggestions

- Fix the format

Specs

Short name	Structures/SprintfFormatCompilation
Rulesets	*All*, *Analyze*
Exakat since	2.4.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	sprintf
Available in	Entreprise Edition, Exakat Cloud

14.2.1132 Sqlite3 Requires Single Quotes

The escapeString() method from `SQLite3` doesn't escape `"`, but only `'`.

To properly handle quotes and `NUL` characters, use bindParam() instead.

Quote from the PHP manual comments : `The reason this function doesn't escape double quotes is because double quotes are used with names (the equivalent of backticks in MySQL), as in table or column names, while single quotes are used for values.`

```
<?php

// OK. escapeString is OK with '
$query = "SELECT * FROM table WHERE col = '".$sqlite->escapeString($x)."'";

// This is vulnerable to " in $x
$query = 'SELECT * FROM table WHERE col = "'.$sqlite->escapeString($x).'"';

?>
```

See also SQLite3::escapeString.

Suggestions

- Use prepared statements whenever possible
- Switch the query to use single quote

Specs

Short name	Security/Sqlite3RequiresSingleQuotes
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.0.10
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	sqlite3
Available in	Entreprise Edition, Exakat Cloud

14.2.1133 StandaloneType True False Null

Report usage of standalone types of true, false and null.

false and null were added to PHP in PHP 8.2, as standalone types : they can be used alone in a type declaration (property, argument or returntype). true was added in PHP 8.3.

```
<?php

// simplistic example
function foo(true $t) : false {
     return false;
}

?>
```

See also What's the 'true' Standalone Type in PHP?.

Specs

Short name	Typehints/StandaloneTypeTFN
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.3
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	type
Available in	Entreprise Edition, Exakat Cloud

14.2.1134 Static Call May Be Truly Static

Static calls are allowed on objects. Although, when using typehinting, it is better to use the actual type, and allow PHP to prepare this at compilation time, not at execution time.

When the typehint is an interface or an abstract class, then the object may hold a different type : those cases are omitted.

```
<?php

function foo(A $a, $b) {
    // This could use \A instead of $a
    echo $a::class;

    // This will be arbitrary and needs $b
    echo $a::class;
}

?>
```

This is a micro-optimisation. The call is very fast, but will gain another 1/3 with a static syntax.

Suggestions

- Use the actual typehint of the parameter or property
- Use a parent of the typehint of the parameter or property

Specs

Short name	Performances/StaticCallDontNeedObjects
Rulesets	*All*, *Performances*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	static
Available in	Entreprise Edition, Exakat Cloud

14.2.1135 Static Call With Self

Avoid using a static call on a non-static method.

PHP allows it inside the class itself. Yet, it makes the code confusing.

```
<?php

class x {
     function foo() {
             self::bar();
             $this->bar();
```

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```
    }

    // non static method
    function bar() {

    }
}

?>
```

See also Don't call instance methods statically.

Suggestions

- Use the normal method call syntax.

Specs

Short name	Performances/StaticCallWithSelf
Rulesets	*All*, *Class Review*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1136 Static Global Variables Confusion

PHP can't have variable that are both static and global variable. While the syntax is legit, the variables will be alternatively global or static.

It is recommended to avoid using the same name for a global variable and a static variable.

```
<?php

function foo() {
    $a = 1; // $a is a local variable

    global $a; // $a is now a global variable

    static $a; // $a is not w static variable
}

?>
```

Suggestions

- Avoid using static variables
- Avoid using global variables
- Avoid using the same name for static and global variables

Specs

Short name	Structures/SGVariablesConfusion
Rulesets	*All*, *Semantics*, *Suggestions*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	global, static
Available in	Entreprise Edition, Exakat Cloud

14.2.1137 Static Loop

Static loop may be preprocessed.

It looks like the following loops are static : the same code is executed each time, without taking into account loop variables.

```
<?php

// Static loop
$total = 0;
for($i = 0; $i < 10; $i++) {
    $total += $i;
}

// The above loop may be replaced by (with some math help)
$total = 10 * (10  + 1) / 2;

// Non-Static loop (the loop depends on the size of the array)
$n = count($array);
for($i = 0; $i < $n; $i++) {
    $total += $i;
}

?>
```

It is possible to create loops that don't use any blind variables, though this is fairly rare. In particular, calling a method may update an internal pointer, like next() or `SimpleXMLIterator\:\:`next() <https://www.php.net/next>`_.

It is recommended to turn a static loop into an expression that avoid the loop. For example, replacing the sum of all integers by the `function $n * ($n + 1) / 2`, or using array_sum().

This analysis doesn't detect usage of variables with `compact`.

Suggestions

- Precalculate the result of that loop and removes it altogether
- Check that the loop is not missing a blind variable usage
- Replace the usage of a loop with a native PHP call : for example, with str_repeat(). Although the loop is still here, it usually reflects better the intend.

Specs

Short name	Structures/StaticLoop
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	loop
Available in	Entreprise Edition, Exakat Cloud

14.2.1138 Static Methods

List of all static methods.

```
<?php

class foo {
    static public function staticMethod() {

    }

    public function notStaticMethod() {

    }

    private function method() {
        // This is not a property
        new static();
    }
}

?>
```

Specs

Short name	Classes/StaticMethods
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	static
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1139 Static Methods Called From Object

> Static methods may be called without instantiating an object. As such, they never interact with the special variable '$this', as they do not depend on object existence.

Besides this, static methods are normal methods that may be called directly from object context, to perform some utility task.

To maintain code readability, it is recommended to call static method in a static way, rather than within object context.

```
<?php
    class x {
        static function y( ) {}
    }

    $z = new x( );

    $z->y( ); // Readability : no one knows it is a static call
    x::y( );  // Readability : here we know
?>
```

Suggestions

- Switch to static method syntax
- Remove the static option from the method

Specs

Short name	Classes/StaticMethodsCalledFromObject
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	object, static
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1140 Static Methods Can't Contain $this

Static methods are also called `class methods` : they may be called even if the class has no instantiated object. Thus, the local variable `$this` won't exist, PHP will set it to NULL as usual.

```
<?php

class foo {
    // Static method may access other static methods, or property, or none.
    static function staticBar() {
        // This is not possible in a static method
        return self::otherStaticBar() . static::$staticProperty;
    }

    static function bar() {
        // This is not possible in a static method
        return $this->property;
    }
}

?>
```

Either this is not a static method, which is fixed by removing the `static` keyword, or replace all $this mention by static properties `Class\:\:$property`.

See also Static Keyword <https://www.php.net/manual/en/language.oop5.static.php>``Static Keyword.

Suggestions

- Remove any $this usage
- Turn any $this usage into a static call : $this->foo() => self::foo()

Specs

Short name	Classes/StaticContainsThis
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	$this, static
ClearPHP	no-static-this
Examples	*xataface*, *SugarCrm*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1141 Static Methods Cannot Call Non-Static Methods

A static method cannot call a non-static method. The object context would be missing.

On the other hand, a method may call a static method, as the context is lost, but not useful.

Magic methods cannot be static, so they are out of this rule. This applies to the constructor, when called with `parent\:\:`__construct() <https://www.php.net/manual/en/language.oop5.decon.php>`_.

```
<?php

class x {
     function foo() {}

     static function ioo() {
             // This syntax is valid within a class
             // yet, the call is not possible
             self::foo();
     }

}
?>
```

Suggestions

- Make the calling method non static too
- Remove the call to the non-static method
- Make the target method static

Specs

Short name	Classes/StaticCannotCallNonStatic
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.6.3
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1142 Static Properties

List of all static properties.

```
<?php

class foo {
    static public $staticProperty = 1;
           public $notStaticProperty = 2;

    private function method() {
        // This is not a property
        new static();
    }
}

function bar() {
    // This is not a static property
    static $staticVariable;

    //....
}

?>
```

Specs

Short name	Classes/StaticProperties
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	property
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1143 Static Variable Can Default To Arbitrary Expression

Static variables can hold any type of PHP expression. Indeed, those are variables, so their value can be build from other variables, and even functioncalls.

This feature was introduced in PHP 8.3.

```
<?php

function foo($init) {
     static $variable = foo($a);

     return $variable++;
}
?>
```

Specs

Short name	Php/StaticVariableDefaultCanBeAnyExpression
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.5.3
PHP Version	With PHP 8.3 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static-variable
Available in	Entreprise Edition, Exakat Cloud

14.2.1144 Static Variable In Namespace

Static variables may be declared outside a function scope, but it has no usage. Static variables are persistent between function calls, and there is not such thing as namespace call (including an 'include' call).

```
<?php

namespace A {
     // Static has no value here.
     static $a = 1;

     function foo() {
             // One useful static variable
             static $static = 2;
     }
}

?>
```

Suggestions

- Remove the 'static' keyword in the code

Specs

Short name	Variables/StaticVariableInNamespace
Rulesets	*All*, *Dead code*
Exakat since	2.6.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static variables, namespace
Available in	Entreprise Edition, Exakat Cloud

14.2.1145 Static Variable Initialisation

Static variables can be initialized like any other variable, straight from the `static` keyword. This was added in PHP 8.3.

Indeed, static variables are variables, so they shall be initialized with any value, another variable or a functioncall. This behavior is different from the static constant expression, where only a small set of operators and constants can be used.

```
<?php

function foo(int $a = 0) {
     static $s = 1;

     static $s2 = $a + 1;
```

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```
}
?>
```

Specs

Short name	Variables/StaticVariableInitialisation
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.6.1
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static-constant-expression
Available in	Entreprise Edition, Exakat Cloud

14.2.1146 Static Variables

In PHP, variables may be static. They will survive after the function execution end, and will be available at the next function run. They are distinct from globals, which are available application wide, and from static properties, which are tied to a class of objects.

```php
<?php

function foo() {
    // static variable
    static $count = 0;

    echo ++$count;
}

class bar {
    // This is not a static variable :
    // it is a static property
    static $property = 1;
}

?>
```

See also Using static variables.

Specs

Short name	Variables/StaticVariables
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static-variable
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1147 Stomp

This extension allows php applications to communicate with any Stomp compliant Message Brokers through easy object-oriented and procedural interfaces.

```php
<?php

$queue  = '/queue/foo';
$msg    = 'bar';

/* connection */
try {
    $stomp = new Stomp('tcp://localhost:61613');
} catch(StompException $e) {
    die('Connection failed: ' . $e->getMessage());
}

/* send a message to the queue 'foo' */
$stomp->send($queue, $msg);

/* subscribe to messages from the queue 'foo' */
$stomp->subscribe($queue);

/* read a frame */
$frame = $stomp->readFrame();

if ($frame->body === $msg) {
    var_dump($frame);

    /* acknowledge that the frame was received */
    $stomp->ack($frame);
}

/* close connection */
unset($stomp);

?>
```

See also Stomp.

Specs

Short name	Extensions/Extstomp
Rulesets	*All*, *Appinfo*
Exakat since	2.4.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1148 Strange Name For Constants

Those constants looks like a typo from other names.

```
<?php

// This code looks OK : DIRECTORY_SEPARATOR is a native PHP constant
$path = $path . DIRECTORY_SEPARATOR . $file;

// Strange name DIRECOTRY_SEPARATOR
$path = $path . DIRECOTRY_SEPARATOR . $file;

?>
```

Suggestions

- Fix any typo in the spelling of the constants
- Tell us about common misspelling so we can upgrade this analysis

Specs

Short name	Constants/StrangeName
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Semantics*
Exakat since	0.10.5
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.1149 Strange Name For Variables

Variables with strange names. They might be a typo, or bear strange patterns.

Any variable with three identical letter in a row are considered as strange. 2 letters in a row is classic, and while three letters may happen, it is rare enough.

A list of classic typo is also used to find such variables.

This analysis is case-sensitive.

```
<?php

class foo {
    function bar() {
        // Strange name $tihs
        return $tihs;
    }

    function barbar() {
        // variables with blocks of 3 times the same character are reported
        // Based on Alexandre Joly's tweet
        $aaa = $bab + $www;
    }
}

?>
```

See also #QuandLeDevALaFleme.

Suggestions

- Fix the name of the variable
- Rename the variable to something better
- Drop the variable

Specs

Short name	Variables/StrangeName
Rulesets	*All*, *Semantics*
Exakat since	0.10.5
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	variable
Examples	*FuelCMS*, *PhpIPAM*
Available in	Entreprise Edition, Exakat Cloud

14.2.1150 Strange Names In Classes

Those methods, properties, constants or types should have another name.

Ever wondered why the `__constructor` is never called? Or the `__consturct` ?

Those errors most often originate from typos, or quick fixes that where not fully tested. Other times, they were badly chosen, or ran into PHP's own reserved keywords.

```
<?php

class foo {
    // The real constructor
    function __construct() {}

    // The fake constructor
    function __constructor() {}

    // The 'typo'ed' constructor
    function __consturct() {}

    // This doesn't clone
    function clone() {}
}

?>
```

Suggestions

- Use the proper name
- Remove the method, when it is not used and tests still pass.

Specs

Short name	Classes/StrangeName
Rulesets	*All*, *Semantics*
Exakat since	0.10.1
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1151 Strict Comparison With Booleans

Strict comparisons prevent mistaking an error with a false.

Boolean values may be easily mistaken with other values, especially when the function may return integer or boolean as a normal course of action.

It is encouraged to use strict comparison === or !== when booleans are involved in a comparison.

```
<?php

// distinguish between : $b isn't in $a, and, $b is at the beginning of $a
if (strpos($a, $b) === 0) {
    doSomething();
}

// DOES NOT distinguish between : $b isn't in $a, and, $b is at the beginning of $a
if (strpos($a, $b)) {
    doSomething();
}

// will NOT mistake 1 and true
$a = array(0, 1, 2, true);
if (in_array($a, true, true)) {
    doSomething();
}

// will mistake 1 and true
$a = array(0, 1, 2, true);
if (in_array($a, true)) {
    doSomething();
}

?>
```

switch() structures always uses == comparisons. Since PHP 8.0, it is possible to use match() to have strict comparisons. This is not reported by this analysis, as every switch should be refactored.

Native functions in_array(), array_keys() and array_search() have a third parameter to make it use strict comparisons.

Suggestions

- Use strict comparison whenever possible

Specs

Short name	Structures/BooleanStrictComparison
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	strict-comparison, switch, match
Examples	*Phinx*, *Typo3*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1152 Strict In_Array() Preference

It is possible to set in_array() to strict search mode, by using the third argument.

The analyzed code has less than 10% of one of the two sets : for consistency reasons, it is recommended to make them all the same.

Warning : the two sets of operators have different precedence levels. Using and or && is not exactly the same, especially and not only, when assigning the results to a variable.

```
<?php

// relax mode : value may use typejuggling with the array values
in_array($value, $array );

// strict mode : value is compared to array's value with both data and type
in_array($value, $array, true);

?>
```

In doubt, it is recommended to use the strict mode.

Specs

Short name	Structures/StrictInArrayFavorite
Rulesets	*All*, *Preferences*
Exakat since	2.4.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	strict-comparison
Available in	Entreprise Edition, Exakat Cloud

14.2.1153 Strict Or Relaxed Comparison

PHP has two comparison styles : strict and relaxed.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

It is recommended to always use the strict comparison by default, and use the relaxed in case of specific situations.

```
<?php

// This compares $strict both in terms of value and type
if ($strict === 3) {

} elseif ($strict == 3) {
    // This compares $strict after an possible type casting.
    // '3', 3.0 or 3 would all be possible solutions.
}

?>
```

See also Comparison Operators.

Specs

Short name	Structures/ComparisonFavorite
Rulesets	*All*, *Preferences*
Exakat since	1.3.2
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	comparison
Available in	Entreprise Edition, Exakat Cloud

14.2.1154 String

Strings in PHP. Strings are part of the core of PHP, and are not a separate extension.

```
<?php
$str = "Mary Had A Little Lamb and She LOVED It So";
$str = strtolower($str);

echo $str; // Prints mary had a little lamb and she loved it so
?>
```

See also String functions.

Specs

Short name	Extensions/Extstring
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.9.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1155 String Int Comparison

While PHP allows direct comparison of integer and strings, with some type conversion, the rules of conversion changed in PHP 8.0. This lead to a change in behavior for comparison.

In particular, strings that are equal to 0, or empty strings, have changed.

This doesn't affect identity comparison, since the type is initially checked.

```
<?php
                          PHP 7   PHP 8
var_dump(0 == "0");           true    true
var_dump(0 == "0.0");         true    true
var_dump(0 == "foo");    false   false

var_dump(0 > '');        false   true
var_dump(0 < '');        false   false
var_dump(0 >= '');       true    true
var_dump(0 <= '');       true    false

?>
```

See also String to Number Comparison.

Suggestions

- Force a conversion to integer before the comparison to make sure of the behavior.

Specs

Short name	Php/StringIntComparison
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP80*
Exakat since	2.3.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	Medium
Features	comparison
Available in	Entreprise Edition, Exakat Cloud

14.2.1156 String Interpolation Favorite

This analysis collects the various ways that string interpolation is done inside strings. Until PHP 8.1, there were 4 ways :

```
<?php

$a = "$variable";
$a = "$object->property";
$a = "$array[index]";

$a = "";
$a = "{$variable}";

$a = "";
?>
```

Specs

Short name	Structures/StringInterpolationFavorite
Rulesets	*All*, *Preferences*
Exakat since	2.3.8
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	interpolation
Available in	Entreprise Edition, Exakat Cloud

14.2.1157 String May Hold A Variable

Strings that contains a variable, yet are not interpolated.

Single quotes and Nowdoc syntax may include $ signs. They are treated as literals, and not replaced with a variable value.

However, there are some potential variables in those strings, making it possible for an error : the variable was forgotten and will be published as such. It is worth checking the content and make sure those strings are not variables.

```
<?php

$a = 2;

// Explicit variable, but literal effect is needed
echo '$a is '.$a;

// One of the variable has been forgotten
echo '$a is $a';

// $CAD is not a variable, rather a currency unit
$total = 12;
echo $total.' $CAD';

// $CAD is not a variable, rather a currency unit
$total = 12;

// Here, $total has been forgotten
echo <<<'TEXT'
$total $CAD
TEXT;

?>
```

Suggestions

- Check if the variable is really a variable
- Turn the string into an interpolated string (double quote, heredoc, concatenation)

Specs

Short name	Type/StringHoldAVariable
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	variable, interpolation
Available in	Entreprise Edition, Exakat Cloud

14.2.1158 Strings With Strange Space

An invisible space may be mistaken for a normal space.

However, PHP does straight comparisons, and may fail at recognizing. This analysis reports when it finds such strange spaces inside strings.

PHP doesn't mistake space and tables for whitespace when tokenizing the code.

This analysis doesn't report Unicode Codepoint Notation : those are visible in the code.

```
<?php

// PHP 7 notation,
$a = "\u{3000}";
$b = " ";

// Displays false
var_dump($a === $b);

?>
```

See also Unicode spaces and disallow irregular whitespace (no-irregular-whitespace).

Suggestions

- Replace the odd spaces with a normal space
- If unsecable spaces are important for presentation, add them at the templating level.

Specs

Short name	Type/StringWithStrangeSpace
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.11.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	non-breakable-space
Examples	*OpenEMR*, *Thelia*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1159 Strpos() Less Than One

This rule reports a comparison of strpos() or stripos() with 1. This is a variable of strpos() == 0, since both false and 0 are processed the same way. Yet, 0 might be a valid value.

This rule was suggested by Yann Ouche.

```
<?php

// this works both when $a starts with .
// and when the . is not in the string.
if (strpos($a, '.') < 1) {

}

?>
```

Suggestions

- Make sure that the 2 cases are valid business cases.

Specs

Short name	Structures/StrposLessThanOne
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Surprising*
Exakat since	2.6.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	

14.2.1160 Strpos()-like Comparison

The result of that function may be mistaken with an error.

strpos(), along with several PHP native functions, returns a string position, starting at 0, or false, in case of failure.

```
<?php

// This is the best comparison
if (strpos($string, 'a') === false) { }

// This is OK, as 2 won't be mistaken with false
if (strpos($string, 'a') == 2) { }

// strpos is one of the 26 functions that may behave this way
if (preg_match($regex, $string)) { }

// This works like above, catching the value for later reuse
```

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```
if ($a = strpos($string, 'a')) { }

// This misses the case where 'a' is the first char of the string
if (strpos($string, 'a')) { }

// This misses the case where 'a' is the first char of the string, just like above
if (strpos($string, 'a') == 0) { }

?>
```

It is recommended to check the result of strpos() with === or !==, so as to avoid confusing 0 and false.

This analyzer list all the strpos()-like functions that are directly compared with == or !=. preg_match(), when its first argument is a literal, is omitted : this function only returns NULL in case of regex error.

The full list is the following :

- array_search()
- collator_compare()
- collator_get_sort_key()
- current()
- fgetc()
- file_get_contents()
- file_put_contents()
- fread()
- iconv_strpos()
- iconv_strrpos()
- imagecolorallocate()
- imagecolorallocatealpha()
- mb_strlen()
- next()
- pcntl_getpriority()
- preg_match()
- prev()
- readdir()
- stripos()
- strpos()
- strripos()
- strrpos()
- strtok()
- curl_exec()

In PHP 8.0, str_contains() will do the expected job of strpos(), with less confusion.

See also strpos not working correctly.

Suggestions

- Use identity comparisons, for 0 values : === instead of ==, etc.
- Compare with other exact values than 0 : strpos() == 2
- Use str_contains()

Specs

Short name	Structures/StrposCompare
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *PHP recommendations*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	strict-comparison
ClearPHP	strict-comparisons
Examples	*Piwigo*, *Thelia*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1161 Strtr Arguments

Strtr() replaces characters by others in a string. When using strings, strtr() replaces characters as long as they have a replacement. All others are ignored.

In particular, strtr() works on strings of the same size, and cannot be used to remove chars.

```
<?php

$string = 'abcde';
echo strtr($string, 'abc', 'AB');
echo strtr($string, 'ab', 'ABC');
// displays ABcde
// c is ignored each time

// strtr can't remove a char
echo strtr($string, 'a', '');
// displays a

?>
```

See also strtr.

Suggestions

- Check the call to strtr() and make sure the arguments are of the same size
- Replace strtr() with str_replace(), which works with strings and array, not chars
- Replace strtr() with preg_match(), which works with patterns and not chars

Specs

Short name	Php/StrtrArguments
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.2.3
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*SuiteCrm*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1162 Substr To Trim

When removing the first or the last character of a string, trim() does a more readable job.

trim(), ltrim() and rtrim() accept a string as second argument. Those will all be removed from the endings of the string.

```
<?php

$a = '$drop the dollar';
$b = substr($a, 1); // drop the first char
$b = ltrim($a, '$'); // remove the initial '$'s


$b = substr($a, 1);     // replace with ltrim()

$b = substr($a, 0, -1); // replace with rtrim()

$b = substr($a, 1, -1); // replace with trim()

?>
```

trim() will remove all occurrences of the requested char(). This may remove a loop with substr(), or remove more than is needed.

trim() doesn't work with multi-bytes strings, but so does substr(). For that, use mb_substr(), as there isn't any mb_trim() function (so far in PHP 8.2).

See also trim, ltrim and rtrim.

Suggestions

- Replace substr() with trim(), ltrim() or rtrim().

Specs

Short name	Structures/SubstrToTrim
Rulesets	*All*, *Suggestions*
Exakat since	1.8.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1163 Substr() In Loops

Successive substr() calls may be replaced by a call to str_split().

It speeds up the processing, and allows the replacement of indefinite loops by a foreach() call.

This is a micro optimisation. It works better on longer strings.

```
<?php

$bits = str_split($string, 5);
foreach($bits as $bit) {
     foo($bit);
}

$i = 0;
$s = strlen($string);
while($i < $s) {
     // repeating calls to substr during the loop
     foo(substr($string, $i * 5, 5));
     $i += 5;
}

?>
```

Suggestions

- Use str_split()

Specs

Short name	Performances/SubstrInLoops
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1164 Substring First

> Always start by reducing a string before applying some transformation on it. The shorter string will be processed faster.

The gain produced here is greater with longer strings, or greater reductions. They may also be used in loops. This is a micro-optimisation when used on short strings and single string reductions.

This works with any reduction function instead of substr(), like trim(), iconv(), etc.

```
<?php

// fast version
$result = strtolower(substr($string, $offset, $length));

// slower version
$result = substr(strtolower($string), $offset, $length);
?>
```

Suggestions

- Always reduce the string first, then apply some transformation

Specs

Short name	Performances/SubstrFirst
Rulesets	*All*, *Changed Behavior*, *Performances*, *Suggestions*, *Top10*
Exakat since	1.0.1
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	declare
Examples	*SPIP*, *PrestaShop*
Available in	Entreprise Edition, Exakat Cloud

14.2.1165 Super Global Usage

Spot usage of Super global variables, such as $_GET, $_POST or $_REQUEST.

```
<?php

echo htmlspecialchars($_GET['name'], UTF-8);

?>
```

See also Superglobals.

Specs

Short name	Php/SuperGlobalUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	superglobal
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1166 Super Globals Contagion

Basic tainting system. This tracks superglobal values across the variables.

Specs

Short name	Security/SuperGlobalContagion
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	superglobal
Available in	Entreprise Edition, Exakat Cloud

14.2.1167 Superglobals

Links superglobals across the code. This speeds up pivoting with super global values.

```
<?php

echo $_GET['x'];

?>
```

Specs

Short name	Complete/Superglobals
Rulesets	*All*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1168 Suspicious Comparison

The comparison seems to be misplaced.

A comparison happens in the last argument, while the actual function expect another type : this may be the case of a badly placed parenthesis.

```
<?php

// trim expect a string, a boolean is given.
if (trim($str === '')){

}

// Just move the first closing parenthesis to give back its actual meaning
if (trim($str) === ''){

}

?>
```

Original idea by Vladimir Reznichenko.

Suggestions

- Remove the comparison altogether
- Move the comparison to its right place : that, or more the parenthesis.
- This may be what is intended : just leave it.

Specs

Short name	Structures/SuspiciousComparison
Rulesets	*All*, *Analyze*
Exakat since	0.11.0
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	comparison
Examples	*PhpIPAM*, *ExpressionEngine*
Available in	Entreprise Edition, Exakat Cloud

14.2.1169 Swapped Arguments

Overwritten methods must be compatible, but argument names is not part of that compatibility.

Methods with the same name, in two classes of the same hierarchy, must be compatible for typehint, default value, reference. The name of the argument is not taken into account when checking such compatibility, at least until PHP 7.4.

```
<?php

class x {
    function foo($a, $b) {}

    function bar($a, $b) {}
}

class y extends x {
    // foo is compatible (identical) with the above class
    function foo($a, $b) {}

    // bar is compatible with the above class, yet, the argument might not receive what␣
↪they expect.
    function bar($b, $a) {}
}

?>
```

This analysis reports argument lists that differs in ordering. This analysis doesn't report argument lists that also differs in argument names.

Suggestions

- Make sure the names of the argument are in the same order in all classes and interfaces

Specs

Short name	Classes/SwappedArguments
Rulesets	*All*, *Analyze*
Exakat since	2.1.5
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1170 Switch Fallthrough

A switch with fallthrough is prone to errors.

A fallthrough happens when a case or default clause in a switch statement is not finished by a break (or equivalent); CWE report this as a security concern, unless well documented.

A fallthrough may be used as a feature. Then, it is indistinguishable from an error.

When the case block is empty, this analysis doesn't report it : the case is then used as an alias.

```
<?php
switch($variable) {
    case 1 :   // case 1 is not reported, as it actually shares the same body as case 33
    case 33 :
        break ;
    case 2 :
        break ;
    default:
        ++$a;
    case 4 :
        break ;
}
?>
```

This analysis doesn't take into account comments about the fallthrough.

See also CWE-484: Omitted Break Statement in Switch and Rule: no-switch-case-fall-through.

Suggestions

- Make separate code for each case. Always use break at the end of a case or default.

Specs

Short name	Structures/Fallthrough
Rulesets	*All*, *Inventory*, *Security*
Exakat since	0.12.14
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	switch, fallthrough
Available in	Entreprise Edition, Exakat Cloud

14.2.1171 Switch To Switch

> The following structures are based on if / elseif / else. Since they have more than three conditions (not withstanding the final else), it is recommended to use the switch structure, so as to make this more readable.

On the other hand, switch() structures with less than 3 elements should be expressed as a if / else structure.

Note that if condition that uses strict typing (=== or !==) can't be converted to switch() as the latter only performs == or != comparisons.

```
<?php

if ($a == 1) {

} elseif ($a == 2) {

} elseif ($a == 3) {

} elseif ($a == 4) {

} else {

}

// Better way to write long if/else lists
switch ($a) {
    case 1 :
        doSomething(1);
        break 1;

    case 2 :
        doSomething(2);
        break 1;

    case 3 :
```

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```
        doSomething(3);
        break 1;

    case 4 :
        doSomething(4);
        break 1;

    default :
        doSomething();
        break 1;
}

?>
```

Note that simple switch statement, which compare a variable to a literal are optimised in PHP 7.2 and more recent. This gives a nice performance boost, and keep code readable.

See also PHP 7.2's switch optimisations and Is Your Code Readable By Humans? Cognitive Complexity Tells You.

Suggestions

- Use a switch statement, rather than a long string of if/else
- Use a match() statement, rather than a long string of if/else (PHP 8.0 +)

Specs

Short name	Structures/SwitchToSwitch
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	switch, match
Examples	*Thelia*, *XOOPS*
Available in	Entreprise Edition, Exakat Cloud

14.2.1172 Switch With Too Many Default

Switch statements should only hold one default, not more. Check the code and remove the extra default.

PHP 7.0 won't compile a script that allows for several default cases.

Multiple default happens often with large switch().

```
<?php

switch($a) {
    case 1 :
```

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```
        break;
    default :
        break;
    case 2 :
        break;
    default :  // This default is never reached
        break;
}

?>
```

Suggestions

- Remove the useless default : it may be the first, or the last. In case of ambiguity, keep the first, as it is the one being used at the moment.

Specs

Short name	Structures/SwitchWithMultipleDefault
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	switch
Available in	Entreprise Edition, Exakat Cloud

14.2.1173 Switch Without Default

Always use a default statement in switch() and match().

Switch statements hold a number of 'case' that cover all known situations, and a 'default' one which is executed when all other options are exhausted.

For Match statements, a missing default will lead to the `UnhandledMatchError` exception being raised. On the other hand, the switch statement will simply exit without action nor alert.

```
<?php

// Missing default
switch($format) {
    case 'gif' :
        processGif();
        break 1;

    case 'jpeg' :
        processJpeg();
        break 1;
```

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```
    case 'bmp' :
        throw new UnsupportedFormat($format);
}
// In case $format is not known, then switch is ignored and no processing happens,␣
↪leading to preparation errors


// switch with default
switch($format) {
    case 'text' :
        processText();
        break 1;

    case 'jpeg' :
        processJpeg();
        break 1;

    case 'rtf' :
        throw new UnsupportedFormat($format);

    default :
        throw new UnknownFileFormat($format);
}
// In case $format is not known, an exception is thrown for processing

?>
```

Most of the time, switch() do need a default case, so as to catch the odd situation where the 'value is not what it was expected'. This is a good place to catch unexpected values, to set a default behavior.

See also UnhandledMatchError.

Suggestions

- Add a default case
- Catch the UnhandledMatchError exception

Specs

Short name	Structures/SwitchWithoutDefault
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	match, switch, case, default
ClearPHP	no-switch-without-default
Examples	*Zencart*, *Traq*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1174 Swoole

Swoole : Production-Grade Async programming Framework for PHP.

Swoole is an event-driven asynchronous & concurrent networking communication framework with high performance written only in C for PHP.

```
<?php
for($i = 0; $i < 100; $i++) {
    Swoole\Coroutine::create(function() use ($i) {
        $redis = new Swoole\Coroutine\Redis();
        $res = $redis->connect('127.0.0.1', 6379);
        $ret = $redis->incr('coroutine');
        $redis->close();
        if ($i == 50) {
            Swoole\Coroutine::create(function() use ($i) {
                $redis = new Swoole\Coroutine\Redis();
                $res = $redis->connect('127.0.0.1', 6379);
                $ret = $redis->set('coroutine_i', 50);
                $redis->close();
            });
        }
    });
}

?>
```

See also Swoole and Swoole src.

Specs

Short name	Extensions/Extswoole
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.12.0
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1175 Sylius usage

This analysis reports usage of the Sylius framework.

Sylius is an Open Source Headless eCommerce Platform for mid-market and enterprise brands that need custom solutions.

```
<?php

declare(strict_types=1);

namespace App\Controller;

use Sylius\Bundle\ResourceBundle\Controller\ResourceController;
use Sylius\Component\Resource\ResourceActions;
use Symfony\Component\HttpFoundation\Request;
use Symfony\Component\HttpFoundation\Response;

class ProductController extends ResourceController
{
    public function showAction(Request $request): Response
    {
        $configuration = $this->requestConfigurationFactory->create($this->metadata,
↪$request);

        $this->isGrantedOr403($configuration, ResourceActions::SHOW);
        $product = $this->findOr404($configuration);

        // some custom provider service to retrieve recommended products
        $recommendationService = $this->get('app.provider.product');

        $recommendedProducts = $recommendationService->getRecommendedProducts($product);

        $this->eventDispatcher->dispatch(ResourceActions::SHOW, $configuration,
↪$product);

        if ($configuration->isHtmlRequest()) {
            return $this->render($configuration->getTemplate(ResourceActions::SHOW . '.
↪html'), [
                'configuration' => $configuration,
```

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```
                'metadata' => $this->metadata,
                'resource' => $product,
                'recommendedProducts' => $recommendedProducts,
                $this->metadata->getName() => $product,
            ]);
        }

        return $this->createRestView($configuration, $product);
    }
}

?>
```

See also sylius.

Specs

Short name	Vendors/Sylius
Rulesets	*All*, *Appinfo*
Exakat since	2.4.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Exakat Cloud

14.2.1176 Symfony usage

This analysis reports usage of the Symfony framework.

```
<?php

// src/AppBundle/Controller/LuckyController.php
namespace AppBundle\Controller;

use Sensio\Bundle\FrameworkExtraBundle\Configuration\Route;
use Symfony\Component\HttpFoundation\Response;

class LuckyController
{
    /**
     * @Route("/lucky/number")
     */
    public function numberAction()
    {
        $number = mt_rand(0, 100);

        return new Response(
```

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```
            '<html><body>Lucky number: '.$number.'</body></html>'
        );
    }
}

?>
```

See also Symfony.

Specs

Short name	Vendors/Symfony
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1177 Ternary In Concat

Ternary and coalesce operator have higher priority than dot '.' for concatenation. This means that :

```
<?php
  // print B0CE as expected
  print 'B'.$b.'C'. ($b > 1 ? 'D') : 'E';

  // print E, instead of B0CE
  print 'B'.$b.'C'. $b > 1 ? 'D' : 'E';

  print 'B'.$b.'C'. $b > 1 ? 'D' : 'E';
?>
```

prints actually `'E'`, instead of the awaited `'B0CE'`.

To be safe, always add parenthesis when using ternary operator with concatenation.

See also Operator Precedence.

Suggestions

- Use parenthesis
- Avoid ternaries and coalesce operators inside a string

Specs

Short name	Structures/TernaryInConcat
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	ternary, concatenation
Examples	*TeamPass*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1178 Test Class

Those are test classes, based on popular UT frameworks.

Currently, the following frameworks are detected, based on the classes that are mentionned :

- PHPUnit
- Atoum
- simpletest
- drupal tests
- symfony tests
- luya

Specs

Short name	Classes/TestClass
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	test
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1179 Test Then Cast

A test is run on a value without a cast, and later the cast value is later used.

The cast may introduce a distortion to the value, and still lead to the unwanted situation. For example, comparing to 0, then later casting to an int. The comparison to 0 is done without casting, and as such, 0.1 is different from 0. Yet, (int) 0.1 is actually 0, leading to a Division by 0 error.

```
<?php

// Here. $x may be different from 0, but (int) $x may be 0
$x = 0.1;

if ($x != 0) {
    $y = 4 / (int) $x;
}

// Safe solution : check the cast value.
if ( (int) $x != 0) {
    $y = 4 / (int) $x;
}

?>
```

Suggestions

- Test with the cast value

Specs

Short name	Structures/TestThenCast
Rulesets	*All*, *Analyze*
Exakat since	1.1.6
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	cast
Examples	*Dolphin*, *SuiteCrm*
Available in	Entreprise Edition, Exakat Cloud

14.2.1180 This Could Be Iterable

An argument that is both array and traversable <https://www.php.net/`traversable>`_ may be typed iterable. Iterable is a more generic type than array, and allows the usage of iterators too.

```
<?php

// parameter and return type might be iterable
function foo($a) {
    foreach($a as $b) {
     // do something
    }

    return $a;
}

class x {
     private $b;

     function foo() {
     foreach($this->b as $c) {
             // do something
         }
     }
}

?>
```

See also iterable.

Suggestions

- Add the iterable typehint

Specs

Short name	Classes/CouldBeIterable
Rulesets	*All*, *Changed Behavior*, *Suggestions*, *Typechecks*
Exakat since	2.3.3
PHP Version	With PHP 7.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	iterable
Available in	Entreprise Edition, Exakat Cloud

14.2.1181 Throw

List of thrown exceptions.

```
<?php
if ($divisor === 0) {
    // Throw native exception
    throw new DivisionByZeroError("Shouldn't divide by one");
}

if ($divisor === 1) {
    // Throw custom exception
    throw new DontDivideByOneException("Shouldn't divide by one");
}
?>
```

See also Exceptions.

Specs

Short name	Php/ThrowUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	exception, try-catch
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1182 Throw Functioncall

The `throw` keyword expects to use an exception. Calling a function to prepare that exception before throwing it is possible, but forgetting the new keyword is also possible.

When the `new` keyword is forgotten, then the class constructor is used as a function name, and now exception is emitted, but an `Undefined function` fatal error is emitted.

```
<?php

// Forgotten new
throw \RuntimeException('error!');

// Code is OK, function returns an exception
throw getException(ERROR_TYPE, 'error!');

function getException(ERROR_TYPE, $message) {
    return new \RuntimeException($messsage);
}

?>
```

Suggestions

- Add the new operator to the call
- Make sure the function is really a functioncall, not a class name
- Use return type for functions, so that Exception may be detected

Specs

Short name	Exceptions/ThrowFunctioncall
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Medium
Features	exception
Examples	*SugarCrm*, *Zurmo*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1183 Throw In Destruct

> According to the manual, `Attempting to throw an `exception <https://www.php.net/exception>`_ from a destructor (called in the time of script termination) causes a fatal `error <https://www.php.net/error>`_.`

The destructor may be called during the lifespan of the script, but it is not certain. If the exception is thrown later, the script may end up with a fatal error.

Thus, it is recommended to avoid throwing exceptions within the `__destruct` method of a class.

```
<?php

// No exception thrown
class Bar {
    function __construct() {
        throw new Exception('__construct');
    }

    function __destruct() {
        $this->cleanObject();
    }
}

// Potential crash
class Foo {
    function __destruct() {
        throw new Exception('__destruct');
    }
}

?>
```

See also Constructors and Destructors.

Suggestions

- Remove any exception thrown from a destructor

Specs

Short name	Classes/ThrowInDestruct
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *PHP recommendations*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	throw
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1184 Throw Raw Exceptions

Avoid throwing native PHP exceptions. Consider defining specific and meaningful exception, by extending the native one.

```
<?php

// Throwing a raw exception
throw new exception('This is an error!');

class myException extends Exception {}

throw new myException('This is a distinguished error!');

?>
```

Thanks to Atif Shahab Qureshi for the inspiration.

See also Stop using regular exceptions in PHP!.

Suggestions

- Define an adapted exception and throw it instead

Specs

Short name	Exceptions/ThrowRawExceptions
Rulesets	*All*, *Analyze*, *Suggestions*
Exakat since	2.4.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	exception
Available in	Entreprise Edition, Exakat Cloud

14.2.1185 Throw Was An Expression

Throw used to be an expression. In PHP 7.0, there were some location where one couldn't use a throw : this was the case for arrow functions, which expect one expression as function's body.

Using throw as an instruction makes the code incompatible with PHP 7 version and older.

```
<?php

// Valid in PHP 8.0 and more recent
$fn = fn($a) => throw new Exception($a);

?>
```

See also Throw Expression and Exceptions.

Specs

Short name	Php/ThrowWasAnExpression
Rulesets	*All*, *CE*, *Changed Behavior*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *One Liners*
Exakat since	2.1.1
PHP Version	With PHP 8.0 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	Very high
Features	throw
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1186 Thrown Exceptions

This rules reports the usage of the `throw` keyword. This means all these exceptions are raised at some point in the code.

```
<?php

throw new MyException("An error happened");

?>
```

See also Exceptions.

Specs

Short name	Exceptions/ThrownExceptions
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	exception, throw
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1187 Throws An Assignement

It is possible to throw an exception, and, in the same time, assign this exception to a variable.

However, the variable will never be used, as the exception is thrown, and any following code is not executed, unless the exception is caught in the same scope.

```
<?php

    // $e is useful, though not by much
    $e = new() Exception();
    throw $e;

    // $e is useless
    throw $e = new Exception();

?>
```

Suggestions

- Drop the assignation

Specs

Short name	Structures/ThrowsAndAssign
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	throw, assignation
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1188 Ticks Usage

Usage of `declare()` with `ticks`. When ticks are declared, a related handler must be registered with register_tick_function().

```
<?php

// Setting ticks value
declare(ticks = 2);

?>
```

See also declare.

Specs

Short name	Php/DeclareTicks
Rulesets	*All*, *Appinfo*, *CE*, *Preferences*
Exakat since	0.12.1
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	tick, declare
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1189 Timestamp Difference

Avoid adding or subtracting quantities of seconds to measure time.

`time()`, `microtime()` or `DateTime\:\:format('U')` provide timestamps, which are the number of seconds since `January, 1rst, 1970`. They shouldn't be used to calculate duration or another date by adding an amount of seconds.

Those functions are subject to variations, depending on system clock variations, such as daylight saving time difference (every spring and fall, one hour variation), or leap seconds, happening on `June, 30th` or `December 31th`, as announced by IERS.

```
<?php

// Calculating tomorow, same hour, the wrong way
// tomorrow is not always in 86400s, especially in countries with daylight saving
$tomorrow = time()  + 86400;

// Good way to calculate tomorrow
$datetime = new DateTime('tomorrow');

?>
```

When the difference may be rounded to a larger time unit (rounding the difference to days, or several hours), the variation may be ignored safely.

When the difference is very small, it requires a better way to measure time difference, such as *Ticks <https://www.php.net/manual/en/control-structures.declare.php#control-structures.declare.ticks>'_, `ext/hrtime <https://www.php.net/manual/en/book.hrtime.php>'_, or including a check on the actual time zone (`ini_get()`* with 'date.timezone').

See also PHP DateTime difference – it's a trap! and PHP Daylight savings bug?.

Suggestions

- For small time intervals, use hrtime() functions
- For larger time intervals, use add() method with `DateTime`

Specs

Short name	Structures/TimestampDifference
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	date
Examples	*Zurmo*, *shopware*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1190 Too Complex Expression

Long expressions should be broken in small chunks, to limit complexity.

Really long expressions tends to be error prone : either by typo, or by missing details. They are even harder to review, once the initially build of the expression is gone.

As a general rule, it is recommended to keep expressions short. The analysis include any expression that is more than 15 tokens large : variable and operators counts as one, properties, arrays count as two. Parenthesis are also counted.

PHP has no specific limit to expression size, so long expression are legal and valid. It is possible that the business logic requires a complex equation.

```
<?php

// Why not calculate wordwrap size separatedly ?
$a = explode("\n", wordwrap($this->message, floor($this->width / imagefontwidth($this->
↪fontsize)), "\n"));

// Longer but easier to read
$width = floor($this->width / imagefontwidth($this->fontsize)), "\n");
$a = explode("\n", wordwrap($this->message, $width);

// Here, some string building, including error management with @, is making the data␣
↪quite complex.
fwrite($fp, 'HEAD ' . @$url['path'] . @$url['query'] . ' HTTP/1.0' . "\r\n" . 'Host: ' .␣
↪@$url['host'] . "\r\n\r\n")

// Better validation of data.
$http_header = 'HEAD ';
if (isset($url['path'])) {
    $http_header .= $url['path'];
}
if (isset($url['query'])) {
    $http_header .= $url['query'];
}

$http_header .=  "\r\n";
if (isset($url['host'])) {
    $http_header .= 'Host: ' . $url['host'] . "\r\n\r\n";
}

fwrite($fp, $http_header);

?>
```

Name	Default	Type	Description
complexExpressionThreshold	30	integer	Minimal number of operators in one expression to report.

Suggestions

- Reduce complexity by breaking the expressions into smaller ones

Specs

Short name	Structures/ComplexExpression
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.12.16
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Related rule	*Multiline Expressions*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1191 Too Long A Block

The loop is operating on a block that is too long.

This analysis is applied to loops (for, foreach, while, do..while) and if/then/else/elseif structures.

Then length of a block is managed with the `longBlock` parameter. By default, it is 200 lines, from beginning to the end. Comments are taken into account.

```
<?php

$i = 0;
do {
    // 200 lines of PHP code

    ++$i;
} while($i < 100);

?>
```

Name	Default	Type	Description
longBlock	200	integer	Size of a block for it to be too long. A block is commanded by a for, foreach, while, do…while, if/then else structure.

Suggestions

- Move the code of the block to an method or a function
- Move part of the code of the block to methods or functions
- Extract repeated patterns and use them

Specs

Short name	Structures/LongBlock
Rulesets	*All*, *Suggestions*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	block
Available in	Entreprise Edition, Exakat Cloud

14.2.1192 Too Many Array Dimensions

This analysis reports when arrays have too many dimensions. This happens when arrays are too deeply nested inside other arrays.

PHP has no nesting limit, and accepts any number of of dimensions. This is usually very memory hungry, and could be better replaced with classes.

The default threshold for this rule is 3 (see examples above).

```
<?php

$a           = array();   // level 1;
$a[1]        = array();   // level 2
$a[1][2]     = array();   // level 3 : still valid by default
$a[1][2][3] = array();   // level 4

?>
```

Name	Default	Type	Description
maxDimensions	3	integer	Number of valid dimensions in an array.

Suggestions

- Replace the arrays by classes
- Flatten the structure of the arrays

Specs

Short name	Arrays/TooManyDimensions
Rulesets	*All*, *Analyze*
Exakat since	1.9.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	multidimensional-array
Available in	Entreprise Edition, Exakat Cloud

14.2.1193 Too Many Chained Calls

Report chained calls of functions, methods and static methods are crammed in one expression.

This makes the whole expression difficult to read, and it is possible to miss some important parameter or intermidate calls when reviewing it.

This may lead to bugs when some of the intermediate calls may return an invalid result, such as *null* or *false* in case of error. Those must be tested before being propagated.

```
<?php

//
$s = strtoupper(hash('whirlpool',hash('sha1', microtime(true).crypt(uniqid(rand(),␣
↪true)))));

?>
```

Suggestions

- Reduce the number of needed calls in the expression
- Add intermediate checks on the values
- Split the expression on multiple lines, and add a comment with a summary first

Specs

Short name	Structures/TooManyChainedCalls
Rulesets	*All*, *Semantics*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1194 Too Many Children

Classes that have more than 15 children. It is worth checking if they cannot be refactored in anyway.

The threshold of 15 children can be configured. There is no technical limitation of the number of children and grand-children for a class.

The analysis doesn't work recursively : only direct generations are counted. Only children that can be found in the code are counted.

```
<?php

// parent class
// calling it grandparent to avoid confusion with 'parent'
class grandparent {}


class children1 extends grandparent {}
class children2 extends grandparent {}
class children3 extends grandparent {}
class children4 extends grandparent {}
class children5 extends grandparent {}
class children6 extends grandparent {}
class children7 extends grandparent {}
class children8 extends grandparent {}
class children9 extends grandparent {}
class children11 extends grandparent {}
class children12 extends grandparent {}
class children13 extends grandparent {}
class children14 extends grandparent {}
class children15 extends grandparent {}
class children16 extends grandparent {}
class children17 extends grandparent {}
class children18 extends grandparent {}
class children19 extends grandparent {}

?>
```

Name	Default	Type	Description
childrenClassCount	15	integer	Threshold for too many children classes for one class.

See also Why is subclassing too much bad (and hence why should we use prototypes to do away with it)?.

Suggestions

- Split the original class into more specialised classes

Specs

Short name	Classes/TooManyChildren
Rulesets	*All*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class, inheritance
Examples	*Typo3*, *Woocommerce*
Available in	Entreprise Edition, Exakat Cloud

14.2.1195 Too Many Dereferencing

Linking too many properties and methods, one to the other.

This analysis counts both static calls and normal call; methods, properties and constants. It also takes into account arrays along the way.

The default limit of chaining methods and properties is set to 7 by default. Too many chained methods is harder to read.

```
<?php

// 9 chained calls.
$main->getA()->getB()->getC()->getD()->getE()->getF()->getG()->getH()->getI()->property;

?>
```

Name	Default	Type	Description
tooManyDereferencing	7	integer	Maximum number of dereferencing.

Specs

Short name	Classes/TooManyDereferencing
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.9.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	dereferencing
Available in	Entreprise Edition, Exakat Cloud

14.2.1196 Too Many Extractions

Using a loop to extract all the values from an array or an object, but failing to use them all later.

This means too much work was applied to the extraction, and it could be shorten by choosing the actual values.

```
<?php

function bar($array) {
     foreach(source() as $k => $v) {
             $data[$k] = $v;
     }

     // returning the whole array, so all can be useful
     return $data;
}

function foo($array) {
     foreach(source() as $k => $v) {
             $data[$k] = $v;
     }

     // only using one value, the rest is wasted
     echo $data['foo'];
}

?>
```

Suggestions

- Filter data before extracting them
- Do not use a loop to extract all, but cherry pick the one that are needed

Specs

Short name	Performances/TooManyExtractions
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	2.5.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1197 Too Many Finds

Too many methods called 'find*' in this class. It is may be time to consider the Specification pattern.

```
<?php

// quite a fishy interface
interface UserInterface {
    public function findByEmail($email);
    public function findByUsername($username);
    public function findByFirstName($firstname);
    public function findByLastName($lastname);
    public function findByName($name);
    public function findById($id);

    public function insert($user);
    public function update($user);
}

?>
```

Name	Default	Type	Description
minimumFinds	5	integer	Minimal number of prefixed methods to report.
findPrefix	find	string	list of prefix to use when detecting the 'find'. Comma-separated list, case insensitive.
findSuffix		string	list of fix to use when detecting the 'find'. Comma-separated list, case insensitive.

See also On Taming Repository Classes in Doctrine and specifications.

Suggestions

- Split the class into smaller classes
- Remove some of the find* methods

Specs

Short name	Classes/TooManyFinds
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.10.5
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1198 Too Many Injections

When a class is constructed with more than four dependencies, it should be split into smaller classes.

```
<?php

// This class relies on 5 other instances.
// It is probably doing too much.
class Foo {
    public function __construct(
            A $a,
            B $b,
            C $c,
            D $d
            E $e ) {
        $this->a = $a;
        $this->b = $b;
        $this->d = $d;
        $this->d = $d;
        $this->e = $e;
    }
}

?>
```

Name	Default	Type	Description
injectionsCount	5	integer	Threshold for too many injected parameters for one class.

See also Dependency Injection Smells.

Suggestions

- Split the class into smaller classes. Try to do less in that class.

Specs

Short name	Classes/TooManyInjections
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.11.6
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	injection
Examples	*NextCloud*, *Thelia*
Available in	Entreprise Edition, Exakat Cloud

14.2.1199 Too Many Local Variables

Too many local variables were found in the methods. When over 15 variables are found in such a method, a violation is reported.

Local variables exclude globals (imported with global) and arguments. Local variable include static variables.

When too many variables are used in a function, it is a code smells. The function is trying to do too much and needs extra space for juggling. Beyond 15 variables, it becomes difficult to keep track of their name and usage, leading to confusion, overwriting or hijacking.

```php
<?php

// This function is OK : 3 vars are arguments, 3 others are globals.
function a20a3g3($a1, $a2, $a3) {
    global $a4, $a5, $a6;

    $a1  = 1;
    $a2  = 2;
    $a3  = 3 ;
    $a4  = 4 ;
    $a5  = 5 ;
    $a6  = 6 ;
    $a7  = 7 ;
    $a8  = 8 ;
    $a9  = 9 ;
    $a10 = 10;
    $a11  = 11;
    $a12  = 12;
    $a13  = 13 ;
    $a14  = 14 ;
    $a15  = 15 ;
    $a16  = 16 ;
    $a17  = 17 ;
```

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```
    $a18  = 18 ;
    $a19  = 19 ;
    $a20 = 20;

}

// This function has too many variables
function a20() {

    $a1  = 1;
    $a2  = 2;
    $a3  = 3 ;
    $a4  = 4 ;
    $a5  = 5 ;
    $a6  = 6 ;
    $a7  = 7 ;
    $a8  = 8 ;
    $a9  = 9 ;
    $a10 = 10;
    $a11  = 11;
    $a12  = 12;
    $a13  = 13 ;
    $a14  = 14 ;
    $a15  = 15 ;
    $a16  = 16 ;
    $a17  = 17 ;
    $a18  = 18 ;
    $a19  = 19 ;
    $a20 = 20;

}

?>
```

Name	Default	Type	Description
tooManyLocalVariableThreshold	15	integer	Minimal number of variables in one function or method to report.

Suggestions

- Remove some of the variables, and inline them
- Break the big function into smaller ones
- Find repeated code and make it a separate function

Specs

Short name	Functions/TooManyLocalVariables
Rulesets	*All*, *Analyze*
Exakat since	0.9.2
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Examples	*HuMo-Gen*
Available in	Entreprise Edition, Exakat Cloud

14.2.1200 Too Many Native Calls

Avoid stuffing too many PHP native call inside another functioncall.

For readability reasons, or, more often, for edge case handling, it is recommended to avoid nesting too many PHP native calls.

This analysis reports any situation where more than 3 PHP native calls are nested.

```
<?php

// Too many nested functions
$cleanArray = array_unique(array_keys(array_count_values(array_column($source, 'x'))));

// Avoid warning when source is empty
$extract = array_column($source, 'x');
if (empty($extract)) {
    $cleanArray = array();
} else {
    $cleanArray = array_unique(array_keys(array_count_values($extract)));
}

// This is not readable, although it is short.
// It may easily get out of hand.
echo chr(80), chr(72), chr(80), chr(32), ' is great!';

?>
```

Name	Default	Type	Description
nativeCallCounts	3	integer	Number of native calls found inside another call.

Suggestions

- Reduce the number of native calls
- Split the method into smaller methods

Specs

Short name	Php/TooManyNativeCalls
Rulesets	*All*, *Analyze*, *IsExt*, *IsPHP*
Exakat since	1.1.10
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	native
Configurable by	php_core, php_extensions
Examples	*SPIP*
Available in	Entreprise Edition, Exakat Cloud

14.2.1201 Too Many Parameters

Method has too many parameters. Exakat has a default parameter count which may be configured.

A method that needs more than 8 parameters is trying to do too much : it should be reviewed and split into smaller methods.

```
<?php

// This methods has too many parameters.
function alertSomeone($name, $email, $title, $message, $attachements, $signature, $bcc,
↪$cc, $extra_headers) {
    /* too much code here */
}

?>
```

Name	Default	Type	Description
parametersCount	8	integer	Minimal number of parameters to report.

See also How many parameters is too many ? and Too Many Parameters.

Suggestions

- Reduce the number of parameters to a lower level
- Break the function into smaller functions
- Turn the function into a class

Specs

Short name	Functions/TooManyParameters
Rulesets	*All*, *Suggestions*
Exakat since	1.1.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	parameter
Examples	*WordPress*, *ChurchCRM*
Available in	Entreprise Edition, Exakat Cloud

14.2.1202 Too Many Stringed Elseif

Too many if/then structures are linked. If a pattern emerges, such as with the illustration below, they might be replaced with a loop, a switch() or a match() statement.

This rule also takes into account `else if` structures.

```
<?php

if      ($a === 1) {   }
elseif  ($a === 2) {   }
elseif  ($a === 3) {   }
else if ($a === 4) {   } // else if
elseif  ($a === 5) {   }

?>
```

Name	Default	Type	Description
maxIf	5	integer	Maximum number of allowed stringed if-then-elseif structure.

See also *Bail Out Early*.

Suggestions

- Replace the if-then with a loop
- Use the bail early strategy to isolate the if-then

Specs

Short name	Structures/TooManyElseif
Rulesets	*All*, *Suggestions*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1203 Too Much Indented

Reports methods that are using more than one level of indentation on average.

Indentations levels are counted for each for, foreach, if…then, while, do..while, try..catch..finally structure met. Compulsory expressions, such as conditions, are not counted in the total. Levels of indentation start at 0 (no indentation needed)

This analysis targets methods which are build around large conditions : the actual useful code is nested inside the branches of the if/then/else (for example).

The default threshold `indentationAverage` of 1 is a good start for spotting large methods with big conditional code, and will leave smaller methods, even when they only contain one if/then. Larger methods shall be refactored in smaller size.

The parameter `minimumSize` set aside methods which are too small for refactoring.

```
<?php

// average 0
function foo0() {
    $a = rand(1,2);
    $a *= 3;

    return $a;
}

// average 0.66 = (0 + 1 + 1) / 3
function foo0_66() {
    // if () is at level 0
    if ($a == 2) { // condition is not counted
        $a = 1;    // level 1
    } else {
        $a = 2;    // level 1
    }
}
```

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```
// average 1 = (0 + 2 + 1 + 1) / 4
function foo1() {
    // if () is at level 0
    if ($a == 2) {
        // if () is at level 1
        if ($a == 2) {
            $a = 1; // level 2
        }
        $a = 1; // level 1
    } else {
        $a = 2; // level 1
    }
}

?>
```

This analysis is distinct from Structures/MaxLevelOfIdentation, which only reports the highest level of indentation. This one reports how one method is build around one big

Name	Default	Type	Description
indentationAverage	1	real	Minimal average of indentation in a method to report. Default is 1.0, which means that the method is on average at one level of indentation or more.
minimumSize	3	real	Minimal number of expressions in a method to apply this analysis.

See also *Max Level Of Nesting*.

Suggestions

- Refactor the method to reduce the highest level of indentation
- Refactor the method move some of the code to external methods.

Specs

Short name	Functions/TooMuchIndented
Rulesets	*All*, *Suggestions*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	indentation
Available in	Entreprise Edition, Exakat Cloud

14.2.1204 Trailing Comma In Calls

The last argument may be left empty.

This feature was introduced in PHP 7.3.

```
<?php

// VCS friendly call
// PHP 7.3 and more recent
foo(1,
    2,
    3,
   );

// backward compatible call
// All PHP versions
foo(1,
    2,
    3
   );

?>
```

See also PHP RFC: Allow a trailing comma in function calls.

Specs

Short name	Php/TrailingComma
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*
Exakat since	1.4.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	trailing-comma
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1205 Trait Is Not A Type

A trait cannot be used for typing. It is used by a classes, and those classes should be used for typing.

```
<?php

trait t {}

// No way to provide an object of type t
function foo(t $t) {

}

?>
```

Suggestions

- Use the classes that use the trait as type
- Provide an interface that matches the trait, and make the using classes implements it too

Specs

Short name	Traits/TraitIsNotAType
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.6.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1206 Trait Methods

List the names of the methods in a trait.

```
<?php

trait t {
    private $property = 1;

    // This is a trait method name
    function foo() {
        // This is not a trait method
        return function($a) { return $a + 1; }
    }
}

?>
```

Specs

Short name	Traits/TraitMethod
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	method, trait
Available in	Entreprise Edition, Exakat Cloud

14.2.1207 Trait Names

List all the trait's names.

```
<?php

// This trait is called 't'
trait t {}

?>
```

See also Traits.

Specs

Short name	Traits/Traitnames
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	trait
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1208 Trait Not Found

A unknown trait is mentioned in the use expression.

The used traits all exist, but in the configuration block, some unmentioned trait is called.

Be aware that the traits used in any configuration block may originate in any use expression. PHP will check the configuration block at instantiation only, and after compiling : at that moment, it will know all the used traits across the class.

```
<?php
class x  {
```

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```
    // c is not a used trait
    use a, b { c::d insteadof e;}

    // e is a used trait, even if is not in the use above.
    use e;
}
?>
```

See also Traits.

Suggestions

- Switch the name of the trait to an existing and used trait
- Drop the expression that rely on the non-existent trait

Specs

Short name	Traits/TraitNotFound
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*
Exakat since	1.7.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	trait
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.1209 Traits Usage

This is the list of traits that are actually 'used' in the code. There are classes or traits that 'use' them. Traits can only be accessed by calling them with the 'use' command. It is not possible to reach a trait element (method, constant, property) by refering to them with the trait name, even for static elements: the code must go through the host class.

```
<?php

trait t {
    function t() {
        echo 'I\'m in t';
    }
}

class foo {
    use t;
}

$x = new foo();
```

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```
$x->t();

?>
```

See also Traits.

Specs

Short name	Traits/TraitUsage
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	trait
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1210 Trigger Errors

List of situations where user errors are triggered.

PHP errors are triggered with trigger_error().

```
<?php
if ($divisor == 0) {
    trigger_error('Cannot divide by zero', E_USER_ERROR);
}
?>
```

See also trigger_error.

Specs

Short name	Php/TriggerErrorUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	error
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1211 True False Inconsistant Case

TRUE or true or True is the favorite.

Usually, PHP projects choose between ALL CAPS True/False, or all lowercase True/False. Sometimes, the project will have no recommendations.

When your project use a vast majority of one of the convention, then the analyzer will report all remaining inconsistently cased constant.

```
<?php

$a1 = true;
$a2 = true;
$a3 = true;
$a4 = true;
$a5 = true;
$a6 = true;
$a7 = true;
$a8 = true;
$a9 = true;
$a10 = true;

// This convention is inconsistence with the rest
$b1 = TRUE;
?>
```

See also PHP Constants.

Specs

Short name	Constants/InconsistantCase
Rulesets	*All*, *Changed Behavior*, *Preferences*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.1212 Try With Finally

Indicates if a try use a finally statement.

```
<?php

try {
    $a = doSomething();
} catch (Throwable $e) {
    // Fix the problem
```

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```
} finally {
    // remove $a anyway
    unset($a);
}

?>
```

See also Exceptions.

Specs

Short name	Structures/TryFinally
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	try-catch, finally
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1213 Try With Multiple Catch

Try may be used with multiple catch clauses.

```
<?php

try {
    OneCatch();
} catch (FirstException $e) {

}

try {
    TwoCatches();
} catch (FirstException $e) {
} catch (SecondException $e) {
}

?>
```

See also Exceptions.

Specs

Short name	Php/TryMultipleCatch
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.3
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	exception
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1214 Try Without Catch

Try may only hold a finally clause, to ensure that some code is always executed, in case of error or not.

This is very rare.

```
<?php

try {
     $x = doSomething();
} finally {
     if (!isset($x)) {
             $x = 'Error';
     }
}

?>
```

Specs

Short name	Exceptions/TryNoCatch
Rulesets	*All*, *Changed Behavior*, *Dump*
Exakat since	2.6.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	try, catch, finally
Available in	Entreprise Edition, Exakat Cloud

14.2.1215 Type Array Index

All literal index used in the code.

```
<?php

// index is an index. it is read
$array['index'] = 1;

// another_index and second_level are read
$array[] = $array['another_index']['second_level'];

// variables index are not reported
$array[$variable] = 1;

?>
```

Specs

Short name	Type/ArrayIndex
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *Inventory*
Exakat since	1.0.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	array, index
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1216 Type Could Be Integer

Mark arguments, class constants, properties and return types that can be set to `int`.

```
<?php

// Accept an int as input
function foo($b) {
    // Returns an int
    return $b + 8;
}

?>
```

Suggestions

- Add *int* typehint to the code.

Specs

Short name	Typehints/CouldBeInt
Rulesets	*All*, *CE*, *Typechecks*
Exakat since	2.1.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	integer, type
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1217 Type Could Be Never

Mark return types that can be set to `never`.

```
<?php

function foo($b) {
    // this function never returns
    die();
}

?>
```

Suggestions

- Add the 'never' returntype

Specs

Short name	Typehints/CouldBeNever
Rulesets	*All*, *Typechecks*
Exakat since	2.3.8
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	never
Available in	Entreprise Edition, Exakat Cloud

14.2.1218 Type Dodging

> It is always possible to rewrite a parameter type by using union types. When the parent class or interface requires a type, the child class may create a union type with the required type, add a secondary type and ignore the first one.

This is part of the Liskov Substitution Principle, so the syntax is legit. When the union type is only used to circumvent the previous typing, it is now a violation, as such a typed data would be valid, but ignored.

```
<?php

interface i {
     function foo(A $a) {}
}

class x implement i {
     function foo(A | string $a) {
             if ($a instanceof A) {
                     throw new Exception('Unused type.');
             }
             // ...
     }
}
?>
```

Suggestions

- Avoid using union type to enlarge types in parameters

Specs

Short name	Functions/TypeDodging
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.5.0
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	liskov
Available in	Entreprise Edition, Exakat Cloud

14.2.1219 Type Must Be Returned

> When using a type for a method, it is compulsory to use a at least one return in the method's body. This is true for nullable type too : `return` alone won't be sufficient.

When the method contains a return expression, PHP doesn't lint unless the return expression has a value. Any value will do, and it will actually checked at execution time.

When the method contains no return expression, PHP only checks it at execution time.

There is no need for a return expression when the method throws an expression, yield values, triggers an error or triggers an assertion. Even in case of inheritance or implementation, the return type may be replaced by `never`.

```php
<?php

// The function returns a value (here, correct object)
function foo() : Bar { return new Bar(); }

// The function should at least, return a value
function foo() : Bar { }

// The function should at least, return a value : Null or an object. Void, here, is not␣
↪acceptable.
function foo() : ?Bar { return; }

?>
```

See also Return Type Declaration and Type hint in PHP function parameters and return values.

Suggestions

- Add a return with a valid value
- Add a throw expression
- Add a trigger_error() call
- Add a assert(false, ...) expression
- If the method doesn't return, change the returntype to *never*

Specs

Short name	Functions/TypehintMustBeReturned
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *LintButWontExec*
Exakat since	1.6.9
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	return-type, never-type
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1220 Typed Class Constants Usage

Class constants may be typed with the usual types, like a property or an argument.

While it appears to be a paradox to give a type to a structure which as a static value, there are several situations where the type can be enforced:

- When the class constant is modified in a children class: the children class must use the same type as the parent.
- When the class constant is build with an expression
- When the class constant is build with another constant

See also PHP RFC: Typed class constants and `Why Class Constants Should be Typed <https://tomasvotruba.com/blog/2020/06/22/why-class-constants-should-be-typed>_.

Specs

Short name	Classes/TypedClassConstants
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.6.0
PHP Version	With PHP 8.3 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	type
Available in	Entreprise Edition, Exakat Cloud

14.2.1221 Typed Property Usage

PHP properties may be typed. Since PHP 7.4, it is possible to type properties, just like arguments and return values.

```
<?php

class User {
    public int $id;
    public string $name;

    public function __construct(int $id, string $name) {
        $this->id = $id;
        $this->name = $name;
    }
}
?>
```

See also Typed Properties 2.0 and Typed Properties in PHP 7.4.

Specs

Short name	Php/TypedPropertyUsage
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*
Exakat since	1.6.2
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint, type-declaration-property
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1222 Typehint Could Be Iterable

Mark arguments, class constants, properties and return types that can be set to `iterable`.

```
<?php

// Accept an array or a traversable Object as input
function foo($b) {
    foreach($b as $c) {

    }

    // Returns an array
    return [$b];
}

?>
```

Suggestions

- Add *iterable* typehint to the code (PHP 8.0+).

Specs

Short name	Typehints/CouldBeIterable
Rulesets	*All*, *Typechecks*
Exakat since	2.1.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	iterable
Available in	Entreprise Edition, Exakat Cloud

14.2.1223 Typehint Order

Topological order, based on typehints.

Each function, method that use typehint is a link between a type of data and another one. The argument typehint acts as a filter, and the returned type hint is the next step.

```
<?php

// This library imposes the following order : A -> B -> C
function foo(A $a) : B { }
function bar(B $b) : C { }

?>
```

Specs

Short name	Dump/Typehintorder
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	2.0.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1224 Typehinting Stats

Collects various statistics about typehinting usage.

- totalArguments : Total number of explicit arguments. This count variadics as one, and skip usage of func_get_args()
- totalFunctions : Total number of functions, closures, arrow-functions and methods
- withTypehint : Total number of typed arguments
- withReturnTypehint : Total number of return types
- scalartype : Total number of scalar type used
- returnNullable : Total number of null types returned
- argNullable : Total number of null types arguments
- classTypehint : Total number of non-scalar types
- interfaceTypehint : Total number of interface or abstract class types
- typedProperties : Total number of typed properties
- totalProperties : Total number of properties
- unionTypehints : Total number of union types, including null types
- intersectionTypehints : Total number of intersection types

Specs

Short name	Dump/TypehintingStats
Rulesets	*All*, *CE*, *Changed Behavior*, *Dump*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1225 Typehints

List of all the types (classes or scalar) used in Typehinting.

```
<?php

// here, array, myObject and string are all typehints.
function foo(array $array, myObject $x, string $string) {

}

?>
```

See also Type declarations.

Specs

Short name	Functions/Typehints
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1226 Typehints/CouldBeResource

Mark arguments, properties and return types that can be set to `resource`.

`resource` is an internal PHP type, and it should be a scalar type, yet it is not implement yet (as of PHP 8.2). It is still used as such by Exakat.

```
<?php

class x {
    // $p holds a resource
    private $p;

    function __construct() {
        $this->p = fopen('/tmp/file.txt', 'w+');
    }
}
?>
```

Specs

Short name	Typehints/CouldBeResource
Rulesets	*All*, *Changed Behavior*, *Typechecks*
Exakat since	2.4.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	resource, typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.1227 Typo 3 usage

This analysis reports usage of the Typo 3 CMS.

The current supported version is 11.4

```
<?php
declare(strict_types=1);

namespace MyVendor\SjrOffers\Controller;

use TYPO3\CMS\Extbase\Mvc\Controller\ActionController;

class OfferController extends ActionController
{
   // action methods will be following here
}
?>
```

See also Typo3.

Specs

Short name	Vendors/Typo3
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1228 URL List

List of all the URL addresses that were found in the code.

```
<?php

// the first argument is recognized as an URL
ftp_connect('http://www.example.com/', $port, $timeout);

// the string argument  is recognized as an URL
$source = 'https://www.other-example.com/';

?>
```

See also Uniform Resource Identifier.

Specs

Short name	Type/Url
Rulesets	*All*, *Appinfo*, *CE*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	url
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1229 Unbinding Closures

Never drop `$this`, once a closure <https://www.php.net/`closure>`_ was created in a non-static method.

From the PHP wiki : "Currently it is possible to unbind the $this variable from a closure <https://www.php.net/`closure>`_ that originally had one by using `$`closure <https://www.php.net/`closure <https://www.php.net/closure>`_>`_->bindTo(null)`. Due to the removal of static calls to non-static methods in PHP 8, we now have a guarantee that $this always exists inside non-static methods. We would like to have a similar guarantee that $this always exists for non-static closures declared inside non-static methods. Otherwise, we will end up imposing an unnecessary performance penalty either on $this accesses in general, or $this accesses inside such closures."

Calling `bindTo()` with a valid object is still valid.

```
<?php

class x {
    private $a = 3;

    function foo() {
        return function () { echo $this->a; };
    }
}

$closure = (new x)->foo();

// $this was expected, and it is not anymore
$closure->bindTo(null);

$closure->bindTo(new x);

?>
```

See also Unbinding $this from non-static closures.

Suggestions

- Create a static closure, which doesn't rely on $this at all
- Remove the call to `bindTo(null)`.

Specs

Short name	Functions/UnbindingClosures
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	1.9.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	closure, closure-binding
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1230 Uncaught Exceptions

The following exceptions are thrown in the code, but are never caught.

Either they will lead to a Fatal Error, or they have to be caught by an including application. This is a valid behavior for libraries, but is not for a final application.

```
<?php

// This exception is throw, but not caught. It will lead to a fatal error.
if ($message = check_for_error()) {
    throw new My\Exception($message);
}

// This exception is throw, and caught.
try {
    if ($message = check_for_error()) {
        throw new My\Exception($message);
    }
} catch (\Exception $e) {
    doSomething();
}

?>
```

See also Structuring PHP Exceptions.

Suggestions

- Catch all the exceptions you throw

Specs

Short name	Exceptions/UncaughtExceptions
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	exception, try-catch
Available in	Entreprise Edition, Exakat Cloud

14.2.1231 Unchecked Resources

Resources are created, but never checked before being used. This is not safe.

Always check that resources are correctly created before using them.

```
<?php

// always check that the resource is created correctly
$fp = fopen($d,'r');
if ($fp === false) {
    throw new Exception('File not found');
}
$firstLine = fread($fp);

// This directory is not checked : the path may not exist and return false
$uncheckedDir = opendir($pathToDir);
while(readdir($uncheckedDir)) {
    // do something()
}

// This file is not checked : the path may not exist or be unreadable and return false
$fp = fopen($pathToFile);
while($line = freads($fp)) {
    $text .= $line;
}

// unsafe one-liner : using bzclose on an unchecked resource
bzclose(bzopen('file'));

?>
```

See also resources.

Suggestions

- Add a check between the resource acquisition and its usage

Specs

Short name	Structures/UncheckedResources
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	resource
ClearPHP	no-unchecked-resources
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1232 Unconditional Break In Loop

An unconditional break in a loop creates dead code. Since the break is directly in the body of the loop, it is always executed, creating a strange loop that can only run once.

Here, break may also be a return, a goto or a continue. They all branch out of the loop. Such statement are valid, but should be moderated with a condition.

```
<?php

// return in loop should be in
function summAll($array) {
    $sum = 0;

    foreach($array as $a) {
        // Stop at the first error
        if (is_string($a)) {
            return $sum;
        }
        $sum += $a;
    }

    return $sum;
}

// foreach loop used to collect first element in array
function getFirst($array) {
    foreach($array as $a) {
        return $a;
    }
}

?>
```

Suggestions

- Remove the loop and call the content of the loop once.

Specs

Short name	Structures/UnconditionLoopBreak
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.12.16
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	loop, break
Examples	*LiveZilla*, *MediaWiki*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1233 Undefined ::class

`\:\:class` doesn't check if a corresponding class exists.

`\:\:class` must be checked with a call to class_exists(). Otherwise, it may lead to a `Class 'foo' not found` or even silent dead code : this happens also with Catch and instanceof commands with undefined classes. PHP doesn't raise an error in that case.

```
<?php

class foo() {}

// prints foo
echo foo::class;

// prints bar though bar doesn't exist.
echo bar::class;

?>
```

See also Class Constants.

Suggestions

- Create the missing class
- Fix the name part of the syntax
- Check the name part of syntax with class_exists()

Specs

Short name	Classes/UndefinedStaticclass
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.3.5
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1234 Undefined Caught Exceptions

Those are exceptions that are caught in the code, but are not defined in the application.

They may be externally defined, such as in core PHP, extensions or libraries. Make sure those exceptions are useful to your application : otherwise, they are dead code.

```
<?php

try {
    library_function($some, $args);

} catch (LibraryException $e) {
    // This exception is not defined, and probably belongs to Library
    print "Library failed\n";

} catch (OtherLibraryException $e) {
    // This exception is not defined, and probably do not belongs to this code
    print "Library failed\n";

} catch (\Exception $e) {
    // This exception is a PHP standard exception
    print "Something went wrong, but not at Libary level\n";
}

?>
```

Suggestions

- Remove the catch clause, as it is dead code
- Make sure the exception is thrown by the underlying code

Specs

Short name	Exceptions/CaughtButNotThrown
Rulesets	*All*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	exception, predefined-exception
Available in	Entreprise Edition, Exakat Cloud

14.2.1235 Undefined Class Constants

> Class constants that are used, but never defined. This yield a fatal error upon execution, but no feedback at compile level.

This analysis takes into account native PHP class constants, extensions and stubs. It also disambiguate enumeration cases.

Constants are searched in the typed class or interface, and their parent. They are not searched in the children, since the children are not necessarily available, unless the class is abstract. In particular, one of the children may not define the constant, and when such child is used, it will satisfy the type, but not the constant definition.

```
<?php

class foo {
    const A = 1;
}

function foo(Foo $f) {
     // here, C is not defined in the code and is reported
     echo foo::A.foo::B.foo::C;

     // This is also an undefined constant
     echo $f::B;
}

?>
```

See also Class constants.

Suggestions

- Fix the name of the constant
- Add the constant to the current class or one of its parent
- Update the constant's visibility

Specs

Short name	Classes/UndefinedConstants
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	class-constant, undefined
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1236 Undefined Classes

Those classes are used in the code, but there are no definition for them.

This may happens under normal conditions, if the application makes use of an unsupported extension, that defines extra classes; or if some external libraries, such as PEAR, are not provided during the analysis.

This analysis also checks in attributes.

```
<?php

// FPDF is a classic PDF class, that is usually omitted by Exakat.
$o = new FPDF();

// Exakat reports undefined classes in instanceof
// PHP ignores them
if ($o instanceof SomeClass) {
    // doSomething();
}

// Classes may be used in typehint too
function foo(TypeHintClass $x) {
    // doSomething();
}

?>
```

Suggestions

- Fix the typo in the class name
- Add a missing 'use' expression
- Create the missing class
- Added a missing component

Specs

Short name	Classes/UndefinedClasses
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Medium
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1237 Undefined Constant Name

When using the `` syntax for variable, the name used must be a defined constant. It is not a simple string, like 'x', it is an actual constant name.

Interestingly, it is possible to use a qualified name within ``, full or partial. PHP will lint such code, and will collect the value of the constant immediately. Since there is no fallback mechanism for fully qualified names, this ends with a Fatal error.

```
<?php

const x = "a";
$a = "Hello";

// Display 'Hello'  -> $a -> Hello
echo ;

// Yield a PHP Warning
// Use of undefined constant y - assumed 'y' (this will throw an Error in a future␣
↪version of PHP)
echo ;

// Yield a PHP Fatal error as PHP first checks that the constant exists
//Undefined constant 'y'
echo ;
?>
```

Suggestions

- Define the constant
- Turn the dynamic syntax into a normal variable syntax
- Use a fully qualified name (at least one \ ) to turn this syntax into a Fatal error when the constant is not found. This doesn't fix the problem, but may make it more obvious during the diagnostic.

Specs

Short name	Variables/UndefinedConstantName
Rulesets	*All*, *Analyze*
Exakat since	2.1.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1238 Undefined Constants

Constants definition can't be located.

Those constants are not defined in the code, and will raise errors, or use the fallback mechanism of being treated like a string. It is recommended to define them all, or to avoid using them.

```
<?php

const A = 1;
define('B', 2);

// here, C is not defined in the code and is reported
echo A.B.C;

?>
```

See also Constants.

Suggestions

- Define the constant
- Fix the name of the constant
- Fix the namespace of the constant (Fully Qualified Name or use)
- Remove the usage of the constant

Specs

Short name	Constants/UndefinedConstants
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *CompatibilityPHP72*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typo
Related rule	*Constant Typo Looks Like A Variable*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1239 Undefined Enumcase

The enumeration case does not exists. It may also be a constant.

```
<?php

enum theEnum {
    case A; // an enum case

    // a constant
    const C = 1;
}

function foo(theEnum $a) {}

foo(theEnum::A);
foo(theEnum::C);

?>
```

Specs

Short name	Enums/UndefinedEnumcase
Rulesets	*All*, *Analyze*, *Class Review*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	2.3.6
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	enum, enum-case
Configurable by	php_core, php_extensions, stubs
Related rule	*Unused Enumeration Case*
Available in	Entreprise Edition, Exakat Cloud

14.2.1240 Undefined Functions

Those functions are called, though they are not defined in the code.

The functions are probably defined in a missing library, component, or in an extension. When this is not the case, PHP yield a Fatal error at execution.

```
<?php

// Undefined function
foo($a);

// valid function, as it belongs to the ext/yaml extension
$parsed = yaml_parse($yaml);

// This function is not defined in the a\b\c namespace, nor in the global namespace
a\b\c\foo();

?>
```

See also Functions.

Suggestions

- Fix the name of the function in the code
- Remove the functioncall in the code
- Define the function for the code to call it
- Include the correct library in the code source

Specs

Short name	Functions/UndefinedFunctions
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	function
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1241 Undefined Insteadof

> `Insteadof` tries to replace a method with another, but it doesn't exists. This happens when the replacing class is refactored, and some of its definition are dropped.

`Insteadof` may replace a non-existing method with an existing one, but not the contrary.

This error is not linted : it only appears at execution time.

```
<?php

trait A {
    function C (){}
}

trait B {
    function C (){}
}

class Talker {
    use A, B {
        B::C insteadof A;
        B::D insteadof A;
    }
}

new Talker();
?>
```

See also Traits.

Suggestions

- Remove the insteadof expression
- Fix the original method and replace it with an existing method

Specs

Short name	Traits/UndefinedInsteadof
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *LintButWontExec*
Exakat since	1.4.2
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Features	insteadof, trait, method
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1242 Undefined Interfaces

Some typehints or `instanceof` that are relying on undefined interfaces or classes. They will always return false. Any condition based upon them are dead code.

```
<?php

class var implements undefinedInterface {
    // If undefinedInterface is undefined, this code lints but doesn't run
}

if ($o instanceof undefinedInterface) {
    // This is silent dead code
}

function foo(undefinedInterface $a) {
    // This is dead code
    // it will probably be discovered at execution
}

?>
```

See also Object interfaces, Type declarations and Instanceof.

Suggestions

- Implement the missing interfaces
- Remove the code governed by the missing interface : the whole method if it is an typehint, the whole if/then if it is a condition.

Specs

Short name	Interfaces/UndefinedInterfaces
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	interface
Examples	*xataface*
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1243 Undefined Methods

The methods used in the code are undefined.

Defined methods are found in : + Local definitions + __call() definition + PHP native definitions + Extension's definitions + Included components.

When the origin of the class is not clear, the report is omitted.

```
<?php

class x {
    function foo() {
        $this->defined();
        $this->undefined();
    }

    function defined() {}
}

?>
```

Suggestions

- Fix the name of the method in the methodcall
- Define the method in the target class

Specs

Short name	Classes/UndefinedMethod
Rulesets	*All*, *Class Review*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.1244 Undefined Parent

List of properties and methods that are accessed using `parent` keyword but are not defined in the parent classes.

This may compile but, eventually yields a fatal error during execution.

Note that if the parent is defined using `extends someClass` but `someClass` is not available in the tested code, it will not be reported : it may be in composer, another dependency, or just missing.

```php
<?php

class theParent {
    // No bar() method
    // private bar() method is not accessible to theChild
}

class theChild extends theParent {
    function foo() {
        // bar is defined in theChild, but not theParent
        parent::bar();
    }

    function bar() {

    }
}

?>
```

See also parent.

Suggestions

- Remove the usage of the found method
- Add a definition for the method in the appropriate parent
- Fix the name of the method, and replace it with a valid definition
- Change 'parent' with 'self' if the method is eventually defined in the current class
- Change 'parent' with another object, if the method has been defined in another class
- Add the 'extends' keyword to the class, to actually have a parent class

Specs

Short name	Classes/UndefinedParentMP
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	parent
Available in	Entreprise Edition, Exakat Cloud

14.2.1245 Undefined Properties

List of properties that are not explicitly defined in the class, its parents or traits.

It is possible to spot unidentified properties by using the PHP's magic methods `__get` and `__set`. Even if the class doesn't use magic methods, any call to an undefined property will be directed to those methods, and they can be used as a canary, warning that the code is missing a definition.

In PHP 8.2, undefined properties are reported as deprecated. They will be a Fatal Error in PHP 9.0.

```
<?php

class foo {
    // property definition
    private bar = 2;

    function foofoo() {
        // $this->bar is defined in the class
        // $this->barbar is NOT defined in the class
        return $this->bar + $this->barbar;
    }
}

?>
```

See also Properties.

Suggestions

- Add an explicit property definition, and give it `null` as a default value : this way, it behaves the same as undefined.
- Rename the property to one that exists already.

Specs

Short name	Classes/UndefinedProperty
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *CompatibilityPHP82*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.2 - More
Precision	Very high
Features	property
ClearPHP	no-undefined-properties
Examples	*WordPress*, *MediaWiki*
Related rule	*Checks Property Existence*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1246 Undefined Trait

Those are undefined, traits .

When the using class or trait is instantiated, PHP emits a a fatal error.

Trait which are referenced in a *use* expression are omitted: they are considered part of code that is probably outside the current code, either omitted or in external component.

```
<?php

use Composer/Component/someTrait as externalTrait;

trait t {
    function foo() {}
}

// This class uses trait that are all known
class hasOnlyDefinedTrait {
    use t, externalTrait;
}

// This class uses trait that are unknown
class hasUndefinedTrait {
    use unknownTrait, t, externalTrait;
}
?>
```

Suggestions

- Define the missing trait
- Remove usage of the missing trait

Specs

Short name	Traits/UndefinedTrait
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	High
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1247 Undefined Variable

Variable that is used before any initialisation.

It is recommended to use a default value for every variable used. When not specified, the default value is set to `NULL` by PHP.

Variable may be created in various ways : assignation, arguments, foreach blind variables, static and global variables.

This analysis doesn't handle dynamic variables, such as `$$x`. It also doesn't handle variables outside a method or function.

```
<?php

// Adapted from the PHP manual
$var = 'Bob';
$Var = 'Joe';
// The following line may emit a warning : Undefined variable: $undefined
echo "$var, $Var, $undefined";      // outputs "Bob, Joe, "


?>
```

See also Variable basics.

Suggestions

- Remove the expression that is using the undefined variable
- Fix the variable name
- Define the variable by assigning a value to it, before using it

Specs

Short name	Variables/UndefinedVariable
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.4.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	variable
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1248 Undefined static:: Or self::

The identified property or method are undefined. self and static refer to the current class, or one of its parent or trait.

```
<?php

class x {
    static public function definedStatic() {}
    private definedStatic = 1;

    public function method() {
        self::definedStatic();
        self::undefinedStatic();

        static::definedStatic;
        static::undefinedStatic;
    }
}

?>
```

See also Late Static Bindings.

Suggestions

- Define the missing method or property
- Remove usage of that undefined method or property
- Fix name to call an actual local structure
- Fix object to one of the local property

Specs

Short name	Classes/UndefinedStaticMP
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	static
Examples	*xataface*, *SugarCrm*
Available in	Entreprise Edition, Exakat Cloud

14.2.1249 Unfinished Object

Some of the properties are not assigned a value before or at constructor time. Then, they might be called when one of the other public method is called, and yield a fatal error.

```
<?php

class x {
    private $p;
    private $p2;

    function __construct($p) {
        $this->p = $p;
        // $p2 is not assigned
    }

    function foo() {
        $this->p->goo();
        // This is not valid
        $this->p2->goo();
    }
}

?>
```

See also Compulsory parameters should be required in your constructor.

Suggestions

- Make sure the object is finished at construction time

Specs

Short name	Classes/UnfinishedObject
Rulesets	*All*, *Analyze*, *Class Review*
Exakat since	2.3.6
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	object, constructor
Available in	Entreprise Edition, Exakat Cloud

14.2.1250 Unicode Blocks

List of the Unicode blocks used in string literals.

This is the kind of characters that can be found in the applications strings.

```
<?php

$a = "zoo";

$b = ""; // Telugu character
$b = "\u{0C12}"; Same as above

$b = ""; // Chinese Mandarin character
$b = "\u{4EBA}"; Same as above

?>
```

Note that Exakat only analyze PHP scripts : any translation available in a `.po` or external resource is not parsed and will not show.

See also Unicode block.

Specs

Short name	Type/UnicodeBlock
Rulesets	*All*, *Inventory*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1251 Unicode Escape Partial

PHP 7 introduces a new escape sequence for strings : `u{hex}`. It is backward incompatible with previous PHP versions for two reasons :

PHP 7 will recognize en replace those sequences, while PHP 5 keep them intact. PHP 7 will halt on partial Unicode Sequences, as it tries to understand them, but may fail.

```
<?php

echo \u{1F418}\n;
// PHP 5 displays the same string
// PHP 7 displays : an elephant

echo \u{NOT A UNICODE CODEPOINT}\n;
// PHP 5 displays the same string
// PHP 7 emits a fatal error
```

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```
?>
```

Is is recommended to check all those strings, and make sure they will behave correctly in PHP 7.

Specs

Short name	Php/UnicodeEscapePartial
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	unicode, escape-sequence
Available in	Entreprise Edition, Exakat Cloud

14.2.1252 Unicode Escape Syntax

Usage of the Unicode Escape syntax, with the `\u{xxxxx}` format, available since PHP 7.0.

```
<?php

// Produce an elephant icon in PHP 7.0+
echo "\u{1F418}";

// Produce the raw sequence in PHP 5.0
echo "\u{1F418}";

?>
```

See also PHP RFC: Unicode Codepoint Escape Syntax, Code point and Unicode.

Specs

Short name	Php/UnicodeEscapeSyntax
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	unicode, escape-sequence
Available in	Entreprise Edition, Exakat Cloud

14.2.1253 Uninitialized Property

Uninitialized properties are not fully bootstrapped at the end of the constructor.

Properties may be initialized at definition time, along with their visibility and type. Some types are not initialized at definition time, as any object (before PHP 8.2) or resources, so they should be initialized during constructor. At the end of the former, all properties shall have a legit value, and be ready for usage.

PHP 8.1 introduced the possibility to instantiate objects as default value, as long as they only require constant values. This means that those properties may have an object type and a default value.

```
<?php

class x {
    private $foo = null;
    private $uninited;

    function __construct($arg) {
        $this->foo = $args;

        // $this->uninited is not inited, nor at definition, nor in constructor
        // it will hold null at the beginning of the next method call
    }
}

?>
```

Suggestions

- Remove the property, and move it to another class
- Add an initialisation for this property
- Give the property a neutral value (object or scalar)

Specs

Short name	Classes/UninitedProperty
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.0.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	property, default-value
Available in	Entreprise Edition, Exakat Cloud

14.2.1254 Union Typehint

Union typehints allows the specification of several typehint for the same argument or return value.

Several typehints are specified at the same place as a single one. The different values are separated by a pipe character |, like for exceptions

```
<?php

// Example from the RFC https://wiki.php.net/rfc/union_types_v2
class Number {
    private int|float $number;

    public function setNumber(int|float $number): void {
        $this->number = $number;
    }

    public function getNumber(): int|float {
        return $this->number;
    }
}
?>
```

Nullable is reported as union type. Mixed and iterable are not reported as a union type.

Union types are a PHP 8.0 new feature. They are not compatible with PHP 7.4 and older.

See also PHP RFC: Union Types 2.0, PHP 8 Union types and Type declarations.

Specs

Short name	Php/Php80UnionTypehint
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*
Exakat since	2.0.9
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint, intersection-type
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1255 Unitialized Properties

Properties that are not initialized in the constructor, nor at definition.

With the above class, when m() is accessed right after instantiation, there will be a missing property. Using default values at property definition, or setting default values in the constructor ensures that the created object is consistent.

```
<?php

class X {
    private $i1 = 1, $i2;
    protected $u1, $u2;

    function __construct() {
        $this->i2 = 1 + $this->u2;
    }

    function m() {
        echo $this->i1, $this->i2, $this->u1, $this->u2;
    }
}
?>
```

Suggestions

- Add an explicit initialization for each property.

Specs

Short name	Classes/UnitializedProperties
Rulesets	*All*, *Changed Behavior*, *Suggestions*, *Top10*
Exakat since	0.8.9
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	property
Examples	*SPIP*
Available in	Entreprise Edition, Exakat Cloud

14.2.1256 Unknown Directive Name

Unknown directives names used in the code.

The following list has directive mentioned in the code, that are not known from PHP or any extension. If this is due to a mistake, the directive must be fixed to be actually useful.

```
<?php

// non-existing directive
```

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```
$reporting_error = ini_get('reporting_error');
$error_reporting = ini_get('error_reproting'); // Note the inversion
if (ini_set('dump_globals')) {
    // doSomething()
}

// Correct directives
$error_reporting = ini_get('reporting_error');
if (ini_set('xdebug.dump_globals')) {
    // doSomething()
}

?>
```

Specs

Short name	Php/DirectiveName
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	directive
Available in	Entreprise Edition, Exakat Cloud

14.2.1257 Unknown Parameter Name

The name of the parameter doesn't belong to the method signature. Named arguments were introduced in PHP 8.0.

Named arguments errors will also arise when spreading a hash array with arbitrary number of arguments. For example, with array_merge(), the array should not use named keys.

```
<?php

// All good
foo(a:1, b:2, c:3);
foo(...['a':1, 'b':2, 'c':3]);

// A is not a parameter name, it should be a : names are case sensitive
foo(A:1, b:2, c:3);
foo(...['A':1, 'b':2, 'c':3]);

function foo($a, $b, $c) {}

array_merge(['a' => [1], 'b' => [2]]);
?>
```

See also Named Arguments and *Wrong Argument Name With PHP Function*.

Suggestions

- Fix the name of the parameter and use a valid one
- Remove the parameter name, and revert to positional notation

Specs

Short name	Functions/UnknownParameterName
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	2.1.6
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	named-parameter
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1258 Unknown Pcre2 Option

PCRE2 supports different options, compared to PCRE1. PCRE2 was adopted with PHP 7.3.

The S modifier : it used to tell PCRE to spend more time studying the regex, so as to be faster at execution. This is now the default behavior, and may be dropped from the regex.

The X modifier : X is still existing with PCRE2, though it is now the default for PCRE2, and not for PHP as time of writing. In particular, `Any backslash in a pattern that is followed by a letter that has no special meaning causes an `error <https://www.php.net/error>`_, thus reserving these combinations for future expansion. ``. It is recommended to avoid using useless sequence \\s in regex to get ready for that change. All the following letters ``gijkmoqyFIJMOTY` . Note that clLpPuU are valid PRCE sequences, and are probably failing for other reasons.

```
<?php

// \y has no meaning. With X option, this leads to a regex compilation error, and a
↪failed test.
preg_match('/ye\y/', $string);
preg_match('/ye\y/X', $string);

?>
```

See also Pattern Modifiers and PHP RFC: PCRE2 migration.

Specs

Short name	Php/UnknownPcre2Option
Rulesets	*All*, *Analyze*, *CompatibilityPHP73*
Exakat since	1.0.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	regex
Available in	Entreprise Edition, Exakat Cloud

14.2.1259 Unkown Regex Options

Regex support in PHP accepts the following list of options : `eimsuxADJSUX`.

All other letter used as option are not supported : depending on the situation, they may be ignored or raise an error.

```
<?php

// all options are available
if (preg_match('/\d+/isA', $string, $results)) { }

// p and h are not regex options, p is double
if (preg_match('/\d+/php', $string, $results)) { }

?>
```

See also Pattern Modifiers.

Suggestions

- Remove the unknown options
- Replace the option with a valid one
- Fix any syntax typo in the regex

Specs

Short name	Structures/UnknownPregOption
Rulesets	*All*, *Analyze*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	regex
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1260 Unpacking Inside Arrays

The variadic operator is now available inside arrays. Until PHP 7.4, it is not possible to use the variadic operator, or `...` inside arrays.

The workaround is to use array_merge(), after checking that arrays are not empty.

```
<?php

$a = ['a', 'b', 'c'];
$b = ['d', 'e', 'f'];

// PHP 7.4
$c = [...$a, ...$b];

// PHP 7.3 and older
$c = array_merge($a, $b);

?>
```

See also Spread Operator in Array Expression and PHP 5.6 and the Splat Operator.

Suggestions

- Replace array_merge() with `...`.

Specs

Short name	Php/UnpackingInsideArrays
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*
Exakat since	1.8.0
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array-spread
Available in	Entreprise Edition, Exakat Cloud

14.2.1261 Unpreprocessed Values

Preprocessing values is the preparation of values before PHP executes the code.

There is no macro language in PHP, that prepares the code before compilation, bringing some comfort and short syntax. Most of the time, one uses PHP itself to preprocess data.

For example :

```
<?php
    $days_en = 'monday,tuesday,wednesday,thursday,friday,saturday,sunday';
    $days_zh = ',,,,,,';

    $days = explode(',', $lang === 'en' ? $days_en : $days_zh);
?>
```

could be written

```
<?php
    if ($lang === 'en') {
        $days = ['monday', 'tuesday', 'wednesday', 'thursday', 'friday', 'saturday',
↪'sunday'];
    } else {
        $days = ['', '', '', '', '', '', ''];
    }
?>
```

and avoid preprocessing the string into an array first.

Preprocessing could be done anytime the script includes all the needed values to process the expression.

This is a micro-optimisation, in particular when the expression is used once.

Suggestions

- Preprocess the values and hardcode them in PHP. Do not use PHP to calculate something at the last moment.
- Use already processed values, or cache to avoid calculating the value each hit.
- Create a class that export the data in the right format for every situation, including the developer's comfort.

Specs

Short name	Structures/Unpreprocessed
Rulesets	*All*, *Analyze*, *Performances*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	preprocess, micro-optimisation
ClearPHP	always-preprocess
Examples	*Zurmo*, *Piwigo*
Available in	Entreprise Edition, Exakat Cloud

14.2.1262 Unreachable Class Constant

Class constants may be unreachable due to visibility configuration.

Since PHP 7.1, class constants support visibility. Their usage may be restricted to the current class, or `private`, to classes that extends or are extended by the current class, or `protected`. They may also be `public`, just like it was before.

```
<?php

class Foo{
    private const PRIVATE = 1;
            const PUBLIC = 3;
}

// PHP 7.1- and older
echo Foo::PUBLIC;

// This is not accessible
echo Foo::PRIVATE;

?>
```

See also Class Constant and PHP RFC: Support Class Constant Visibility.

Suggestions

- Make the class constant protected, when the call to the constant is inside a related class.
- Create another constant, that may be accessible
- Make the class constant public

Specs

Short name	Classes/UnreachableConstant
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	1.5.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1263 Unreachable Code

Code may be unreachable, because other instructions prevent its reaching.

For example, it be located after throw, return, exit(), die(), goto, break or continue : this way, it cannot be reached, as the previous instruction will divert the engine to another part of the code.

This is dead code, that may be removed.

```
<?php

function foo() {
    $a++;
    return $a;
    $b++;      // $b++ can't be reached;
}

function bar() {
    if ($a) {
        return $a;
    } else {
        return $b;
    }
    $b++;      // $b++ can't be reached;
}

foreach($a as $b) {
    $c += $b;
    if ($c > 10) {
        continue 1;
    } else {
        $c--;
        continue;
    }
    $d += $e;   // this can't be reached
}

$a = 1;
goto B;
class foo {}    // Definitions are accessible, but not functioncalls
B:
echo $a;

?>
```

See also Unreachable code.

Suggestions

- Remove the unreachable code
- Remove the blocking expression, and let the rest of the code execute

Specs

Short name	Structures/UnreachableCode
Rulesets	*All*, *Changed Behavior*, *Dead code*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	unreachable-code
ClearPHP	no-dead-code
Available in	Entreprise Edition, Exakat Cloud

14.2.1264 Unreachable Method

A method that is never called from the code.

The method has the following characteristics : + not private, aka public or protected + The direct class is never instantiated + All children classes overwrite this method + parent:: is never used to reach it

Then, this class is actually dead code.

```
<?php

class x {
    protected function foox() {}
}

class xx extends x {
    protected function foox() {}
}
?>
```

Suggestions

- Make the method abstract and remove the block
- Move the code to one of the child

Specs

Short name	Classes/UnreachableMethod
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*, *Dead code*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.1265 Unresolved Catch

Catch clauses do not check for Exception existence.

Catch clauses check that the emitted expression is of the requested Class, but if that class doesn't exist in the code, the catch clause is always false. This is dead code.

```
<?php

try {
    // doSomething()
} catch {TypoedExxeption $e) { // Do not exist Exception
    // Fix this exception
} catch {Stdclass $e) {        // Exists, but is not an exception
    // Fix this exception
} catch {Exception $e) {        // Actual and effective catch
    // Fix this exception
}
?>
```

See also PHP Try Catch: Basics & Advanced PHP Exception Handling Tutorial and Silent failure to catch exceptions in PHP.

Suggestions

- Fix the name of the exception
- Remove the catch clause
- Add a use expression with a valid name
- Create/import the missing exception

Specs

Short name	Classes/UnresolvedCatch
Rulesets	*All*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	try-catch
ClearPHP	no-unresolved-catch
Available in	Entreprise Edition, Exakat Cloud

14.2.1266 Unresolved Classes

The following classes are instantiated in the code, but their definition couldn't be found in that same code. They might be defined in an extension or an external component.

```
<?php

class Foo extends Bar {
    private function foobar() {
        // here, parent is not resolved, as Bar is not defined in the code.
        return parent::$prop;
    }
}

?>
```

Suggestions

- Check for namespaces and aliases and make sure they are correctly configured.

Specs

Short name	Classes/UnresolvedClasses
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1267 Unresolved Instanceof

The instanceof operator doesn't confirm if the compared class exists.

It checks if an variable is of a specific class. However, if the referenced class doesn't exist, because of a bug, a missed inclusion or a typo, the operator always fails, without a warning. Make sure the following classes are well defined.

```
<?php

namespace X {
    class C {}

    // This is OK, as C is defined in X
    if ($o instanceof C) { }

    // This is not OK, as C is not defined in global
    // instanceof respects namespaces and use expressions
    if ($o instanceof \C) { }

    // This is not OK, as undefinedClass
    if ($o instanceof undefinedClass) { }

    // This is not OK, as $class is now a full namespace. It actually refers to \c,␣
↪which doesn't exist
    $class = 'C';
    if ($o instanceof $class) { }
}
?>
```

See also Instanceof.

Suggestions

- Remove the call to instanceof and all its dependencies.
- Fix the class name and use a class existing in the project.

Specs

Short name	Classes/UnresolvedInstanceof
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Dead code*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	instanceof
ClearPHP	no-unresolved-instanceof
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.1268 Unresolved Use

The following use instructions cannot be resolved to a known class, interface, trait, constant or function. They should be dropped or fixed.

A known class, interface, trait, constant or function is defined in PHP (standard), an extension, a stub or the current code. Use expression are options for the current namespace.

```
<?php

namespace A {
    // class B is defined
    class B {}
    // class C is not defined
}

namespace X/Y {

    use A/B;  // This use is valid
    use A/C;  // This use point to nothing.

    new B();
    new C();
}

?>
```

See also Using namespaces: Aliasing/Importing.

Suggestions

- Remove the use expression
- Fix the use expression

Specs

Short name	Namespaces/UnresolvedUse
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	namespace, use
ClearPHP	no-unresolved-use
Available in	Entreprise Edition, Exakat Cloud

14.2.1269 Unserialize Second Arg

Since PHP 7, unserialize() function has a second argument that limits the classes that may be unserialized. In case of a breach, this is limiting the classes accessible from unserialize().

One way to exploit unserialize, is to make PHP unserialized the data to an available class, may be one that may be auto-loaded.

```
<?php

// safe unserialization : only the expected class will be extracted
$serialized = 'O:7:"dbClass":0:{}';
$var = unserialize($serialized, ['dbClass']);
$var->connect();

// unsafe unserialization : $var may be of any type that was in the serialized string
// although, here, this is working well.
$serialized = 'O:7:"dbClass":0:{}';
$var = unserialize($serialized);
$var->connect();

// unsafe unserialization : $var is not of the expected type.
// and, here, this will lead to disaster.
$serialized = 'O:10:"debugClass":0:{}';
$var = unserialize($serialized);
$var->connect();

?>
```

See also unserialize(), Securely Implementing (De)Serialization in PHP and Remote code execution via PHP [Unserialize].

Suggestions

- Add a list of class as second argument of any call to unserialize(). This is valid for PHP 7.0 and later.

Specs

Short name	Security/UnserializeSecondArg
Rulesets	*All*, *Security*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	High
Features	serialization
Examples	*Piwigo*, *LiveZilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.1270 Unset Arguments

There is no need to unset arguments. Those values will be freed at the end of the function anyhow.

```
<?php

function foo($a, $b) {
    $b = $a * 2;
    // This is useless. $a will be freed at the end of the function.
    unset($a);
}

?>
```

Specs

Short name	Functions/UnsetOnArguments
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	argument
Available in	Entreprise Edition, Exakat Cloud

14.2.1271 Unset In Foreach

Unset applied to the variables of a `foreach` loop are useless. Those variables are copies and not the actual value. Even if the value is a reference, unsetting it has no effect on the original array : the only effect may be indirect, on elements inside an array, or on properties inside an object.

```
<?php

// When unset is useless
$array = [1, 2, 3];
foreach($array as $a) {
    unset($a);
}

print_r($array); // still [1, 2, 3]

foreach($array as $b => &$a) {
    unset($a);
}

print_r($array); // still [1, 2, 3]

// When unset is useful
$array = [ [ 'c' => 1] ]; // Array in array
```

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```
foreach($array as &$a) {
    unset(&$a['c']);
}

print_r($array); // now [ ['c' => null] ]

?>
```

Suggestions

- Drop the unset

Specs

Short name	Structures/UnsetInForeach
Rulesets	*All*, *Analyze*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	foreach
Available in	Entreprise Edition, Exakat Cloud

14.2.1272 Unset() Or (unset)

Unset() and (unset) have the same functional use.

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

It happens that unset() or (unset) are used depending on coding style and files. One file may be consistently using unset(), while the others are all using (unset).

In PHP 8.0, the cast `(unset)` is not available anymore. It is recomended to avoid using it.

```
<?php

// be consistent
(unset) $a1;
(unset) $a2;
(unset) $a3;
(unset) $a4;
(unset) $a5;
(unset) $a6;
(unset) $a7;
(unset) $a8;
(unset) $a9;
(unset) $a10;
```

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```
(unset) $a11;
(unset) $a12;

unset($b);
?>
```

Suggestions

- Use the correct parameter name
- Remove all the parameter names from the call
- Create a relay function with the correct parameter names

Specs

Short name	Php/UnsetOrCast
Rulesets	*All*, *Preferences*
Exakat since	0.9.3
PHP Version	With PHP 8.0 and older
Severity	
Time To Fix	
Precision	High
Features	unset
Available in	Entreprise Edition, Exakat Cloud

14.2.1273 Unsupported Operand Types

This error is raised when trying to combine an array and a scalar value.

Always checks that the types are compatible with the planned operations.

```
<?php

const MY_ARRAY = 'error';

// This leads to the infamous "Unsupported operand types" error
$b = MY_ARRAY + array(3,4);

?>
```

PHP detects this error at linting time, when using literal values. When static expression are involved, this error will appear at execution time.

See also PHP - Fatal error: Unsupported operand types [duplicate].

Suggestions

- Make sure all the planned operations are compatible with the type used.

Specs

Short name	Structures/UnsupportedOperandTypes
Rulesets	*All*, *Analyze*, *PHP recommendations*
Exakat since	1.7.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	plus
Available in	Entreprise Edition, Exakat Cloud

14.2.1274 Unsupported Types With Operators

Arrays, resources and objects are generally not accepted with unary and binary operators.

The operators are +, -, *, /, **, %, <<, >>, &, |, ^, ~, ++ and –.

```
<?php

var_dump([] % [42]);
// int(0) in PHP 7.x
// TypeError in PHP 8.0 +

// Also impossible usage : index are string or int
$a = [];
$b = $c[$a];

?>
```

In PHP 8.0, the rules have been made stricter and more consistent.

The only valid operator is +, combined with arrays in both operands. Other situations throw `TypeError`.

See also Stricter type checks for arithmetic/bitwise operators and TypeError.

Suggestions

- Do not use those values with those operators
- Use a condition to skip this awkward situation
- Add an extra step to turn this value into a valid type

Specs

Short name	Structures/UnsupportedTypesWithOperators
Rulesets	*All*, *Analyze*, *CE*, *CompatibilityPHP80*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	operator
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1275 Unthrown Exception

These exceptions are defined in the code but never thrown. They are probably dead code.

Unused exceptions are code bloat, as they increase the size of the code without any purpose. They are also misleading, as other developers might come to the impression that there is a mechanism to handle the situation that the exception describe, yet they are generating a fatal error.

```
<?php

//This exception is defined but never used in the code.
class myUnusedException extends \Exception {}

//This exception is defined and used in the code.
class myUsedException extends \Exception {}

throw new myUsedException('I was called');

?>
```

Suggestions

- Remove the exception
- Find a place in the code to throw the exception
- Replace an existing Exception with this more specific one

Specs

Short name	Exceptions/Unthrown
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	exception
ClearPHP	no-unthrown-exceptions
Available in	Entreprise Edition, Exakat Cloud

14.2.1276 Untyped No Default Properties

This rule reports untyped properties without default value, that are not assigned at constructor time.

This means that these properties will be assigned later, and are now running the risk to be accessed before being written. This yields a warning, and, when the property get typed, event with `mixed`, a fatal error.

```
<?php

class x {
     public $noTypeNoDefaultNoConstructor;
     public $noTypeNoDefaultButConstructor;

     function __construct() {
             // property is defined in the constructor, so always defined
             $this->noTypeNoDefaultButConstructor = 1;
     }

     function foo()  {
             // possible error here
             return $this->noTypeNoDefaultNoConstructor;
     }
}
?>
```

Specs

Short name	Classes/UntypedNoDefaultProperties
Rulesets	*All*, *Appinfo*, *Class Review*
Exakat since	2.6.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	property
Available in	Entreprise Edition, Exakat Cloud

14.2.1277 Unused Class Constant

The class constant is unused. Consider removing it or using it.

Class constants may be used in expressions, in static expressions, when building other constants, or in default values.

```
<?php

class foo {
    public const UNUSED = 1; // No mention in the code

    private const USED = 2;  // used constant

    function bar() {
        echo self::USED;
    }
}

?>
```

Suggestions

- Remove the class constant
- Use the class constant

Specs

Short name	Classes/UnusedConstant
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	1.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	class-constant
Available in	Entreprise Edition, Exakat Cloud

14.2.1278 Unused Classes

The following classes are never explicitly used in the code.

Note that this may be valid in case the current code is a library or framework, since it defines classes that are used by other (unprovided) codes. Also, this analyzer may find classes that are, in fact, dynamically loaded.

```
<?php

class unusedClasss {}
class usedClass {}

$y = new usedClass();
```

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```
?>
```

See also class.

Suggestions

- Remove unused classes
- Make use of unused classes
- Fix class name

Specs

Short name	Classes/UnusedClass
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1279 Unused Constants

Those constants are defined in the code but never used. Defining unused constants slow down the application, as they are executed and stored in PHP hashtables.

It is recommended to comment them out, and only define them when it is necessary.

```
<?php

// const-defined constant
const USED_CONSTANT   = 0;
const UNUSED_CONSTANT = 1 + USED_CONSTANT;

// define-defined constant
define('ANOTHER_UNUSED_CONSTANT', 3);

?>
```

Suggestions

- Make use of the constant
- Remove the constant

Specs

Short name	Constants/UnusedConstants
Rulesets	*All*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	constant
Available in	Entreprise Edition, Exakat Cloud

14.2.1280 Unused Enumeration Case

Those are enumeration cases which are defined, yet not used.

```
<?php

enum x {
    case A;
    case C;

    const F = 1;
}

function foo(x $a) {}

foo(x::A);

?>
```

The error message when the case is missing mentions the class constant : this is because enumeration cases and class constants use the same configuration. They are only distinguished by their definition, which, here, does not exists.

Suggestions

- Use the case in the code
- Remove the case in the code
- Fix the name of the case
- Turn the case in a constant

Specs

Short name	Enums/UnusedEnumCase
Rulesets	*All*, *Analyze*, *Dead code*
Exakat since	2.4.0
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	enum
Related rule	*Undefined Enumcase*
Available in	Entreprise Edition, Exakat Cloud

14.2.1281 Unused Exception Variable

The variable from a catch clause is not used. It is expected to be used, either by chaining the exception, or logging the message.

In PHP 8.0, this variable may be omitted.

```
<?php

try{
    doSomething();
} catch (A $a) {
    // $a is caught, but not used here
} catch (B $b) {
    // $b is caught, and used
    log($b->getMessage());
} catch (C) {
    // Caught and ignored (PHP 8.0 +)
}

?>
```

Suggestions

- Drop the variable in the clause expression (PHP 8.0 and more recent)
- Chain the exception
- Log the exception message

Specs

Short name	Exceptions/UnusedExceptionVariable
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.2.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	exception
Available in	Entreprise Edition, Exakat Cloud

14.2.1282 Unused Functions

The functions below are unused. They look like dead code.

Recursive functions, level 1, are detected : they are only reported when a call from outside the function is made. Recursive functions calls of higher level (A calls B calls A) are not handled.

```
<?php

function used() {}
// The 'unused' function is defined but never called
function unused() {}

// The 'used' function is called at least once
used();

?>
```

Suggestions

- Use the function in the code
- Remove the functions from the code

Specs

Short name	Functions/UnusedFunctions
Rulesets	*All*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, unused
Examples	*Woocommerce*, *Piwigo*
Available in	Entreprise Edition, Exakat Cloud

14.2.1283 Unused Global

A global keyword is used in a method, yet the variable is not actually used. This makes PHP import values for nothing, or may create interference

```
<?php
    function foo() {
        global bar;

        return 1;
    }
?>
```

Suggestions

- Remove the global declaration
- Remove the global variable altogether

Specs

Short name	Structures/UnusedGlobal
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	global, unused
Examples	*Dolphin*
Available in	Entreprise Edition, Exakat Cloud

14.2.1284 Unused Inherited Variable In Closure

Some closures forgot to make usage of inherited variables.

Closure <https://www.php.net/manual/en/class.`closure.php>`_ have two separate set of incoming variables : the arguments (between parenthesis) and the inherited variables, in the 'use' clause. Inherited variables are extracted from the local environment at creation time, and keep their value until execution.

The reported closures are requesting some local variables, but do not make any usage of them. They may be considered as dead code.

```
<?php

// In this closure, $y is forgotten, but $u is used.
$a = function ($y) use ($u) { return $u; };

// In this closure, $u is forgotten
$a = function ($y, $z) use ($u) { return $u; };

?>
```

See also Anonymous functions.

Suggestions

- Remove the unused inherited variable
- Make us of the unused inherited variable

Specs

Short name	Functions/UnusedInheritedVariable
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Dead code*
Exakat since	1.0.11
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	variable, inherited-variable
Examples	*shopware*, *Mautic*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1285 Unused Interfaces

Those interfaces are defined and never used. They should be removed, as they are dead code.

Interfaces may be use as parent for other interfaces, as types (argument, return and property), in instance of.

```
<?php

interface used {}
interface unused {}
```

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```
// Used by implementation
class c implements used {}

// Used by extension
interface j implements used {}

$x = new c;

// Used in a instanceof
var_dump($x instanceof used);

// Used in a type
function foo(Used $x) {}

?>
```

Suggestions

- Remove the interface
- Actually use the interface

Specs

Short name	Interfaces/UnusedInterfaces
Rulesets	*All*, *Changed Behavior*, *Dead code*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	interface
Examples	*Tine20*
Available in	Entreprise Edition, Exakat Cloud

14.2.1286 Unused Label

Some labels have been defined in the code, but they are not used. They may be removed as they are dead code.

There is no analysis for undefined goto call, as PHP checks that goto has a destination label at compile time :

```
<?php

$a = 0;
A:

    ++$a;
```

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```
    // A loop. A: is used
    if ($a < 10) { goto A; }

// B is never called explicitly. This is useless.
B:

?>
```

See also Goto.

Suggestions

- Remove the unused label
- Add a goto call to this label
- Check for spelling mistakes
- Check that it is not a coding typo, like a raw `http://www.php.net`, left in the code (It is actually valid PHP code)

Specs

Short name	Structures/UnusedLabel
Rulesets	*All*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	label, goto
Available in	Entreprise Edition, Exakat Cloud

14.2.1287 Unused Methods

Those methods are never called.

They are probably dead code, unless they are called dynamically.

This analysis omits methods which are in a class that makes dynamical self calls : `$this->$m()`. That way, any method may be called.

This analysis omits methods which are overwritten by a child class. That way, they are considered to provide a default behavior.

```
<?php

class foo {
    public function used() {
        $this->used();
```

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```
    }

    public function unused() {
        $this->used();
    }
}

class bar extends foo {
    public function some() {
        $this->used();
    }
}

$a = new foo();
$a->used();

?>
```

See also Dead Code: Unused Method.

Suggestions

- Make use of the method
- Remove the method
- Move the method to another class

Specs

Short name	Classes/UnusedMethods
Rulesets	*All*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	method
Related rule	*Unused Public Methods*
Available in	Entreprise Edition, Exakat Cloud

14.2.1288 Unused Parameter

Those parameters are not used inside the method or function.

Unused parameters should be removed in functions : they are dead code, and seem to offer features that they do not deliver.

Some parameters are unused, due to the signature compatibility: for example, if an interface or a parent class defines that parameter, but it is not useful in the current method. Then, it must stay.

This is a silent error: no error message is emitted when doing so.

```
<?php

// $unused is in the signature, but not used.
function foo($unused, $b, $c) {
    return $b + $c;
}

interface i {
    function goo($a);
}

class a implements i {
    // goo signature comes from the interface
    function goo($a) {
        return 3;
    }
}
?>
```

Suggestions

- Drop the argument from the signature
- Actually use that argument in the body of the method

Specs

Short name	Functions/UnusedArguments
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	parameter
Examples	*ThinkPHP*, *phpMyAdmin*
Related rule	*Never Called Parameter*, *Could Be Class Constant*
Available in	Entreprise Edition, Exakat Cloud

14.2.1289 Unused Private Methods

> Private methods that are not used in the local class are dead code. Protected methods that are not used in the local class or its children, are dead code.

Private methods are reserved for the defining class. Thus, they must be used with the current class, with `$this` or `self\:\:`.

Protected methods, in a standalone class, are also included. This analysis skips classes that makes self dynamic calls, such as `$this->$method()`.

```
<?php

class Foo {
    // Those methods are used
    private function method() {}
    private static function staticMethod() {}

    // Those methods are not used
    private function unusedMethod() {}
    private static function staticUnusedMethod() {}

    public function bar() {
        self::staticMethod();
        $this->method();
    }
}

?>
```

Suggestions

- Remove the private method, as it is unused
- Add a call to this private method
- Change method visibility to make it available to other classes

Specs

Short name	Classes/UnusedPrivateMethod
Rulesets	*All*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility
Related rule	*Unused Public Methods*
Available in	Entreprise Edition, Exakat Cloud

14.2.1290 Unused Private Properties

Unused static properties should be removed.

Unused private properties are dead code. They are usually leftovers of development or refactorisation : they used to have a mission, but are now left.

Being private, those properties are only accessible to the current class or trait. As such, validating the

```
<?php

class foo {
    // This is a used property (see bar method)
    private $used = 1;

    // This is an unused property
    private $unused = 2;

    function bar($a) {
        $this->used += $a;

        return $this->used;
    }
}

?>
```

Suggestions

- Remove the property altogether
- Check if the property wasn't forgotten in the rest of the class
- Check if the property is correctly named
- Change the visibility to protected or public : may be a visibility refactoring was too harsh

Specs

Short name	Classes/UnusedPrivateProperty
Rulesets	*All*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	unused
Examples	*OpenEMR*, *phpadsnew*
Available in	Entreprise Edition, Exakat Cloud

14.2.1291 Unused Protected Methods

> The following protected methods are unused in children class. As such, they may be considered for being private.

Methods reported by this analysis are not used by children, yet they are protected. No usage of those methods were found.

This analysis is impacted by dynamic method calls.

```
<?php

class Foo {
    // This method is not used
    protected function unusedBar() {}
    protected function usedInFoo() {}
    protected function usedInFooFoo() {}

    public function bar2() {
        // some code
        $this->usedInFoo();
    }
}

class FooFoo extends Foo {
    protected function bar() {}

    public function bar2() {
        // some code
        $this->usedInFooFoo();
    }
}

class someOtherClass {
    protected function bar() {
        // This is not related to foo.
        $this->unusedbar();
    }
}

?>
```

Suggestions

- Make use of the protected method in the code
- Remove the method

Specs

Short name	Classes/UnusedProtectedMethods
Rulesets	*All*, *Changed Behavior*, *Dead code*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	unused
Related rule	*Unused Public Methods*
Available in	Entreprise Edition, Exakat Cloud

14.2.1292 Unused Public Methods

This rule lists unused public methods.

Unused public methods are declared as `public` in the class, but never called, including outside the class.

```
<?php

class x {
     public function usedMethod() {}

     // There is no call to this method
     public function unusedMethod() {}
}

$x = new x();
$x->usedMethod();


?>
```

Specs

Short name	Classes/UnusedPublicMethod
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.4.9
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Medium
Features	public, method
Related rule	*Unused Private Methods*, *Unused Protected Methods*, *Unused Methods*
Available in	Entreprise Edition, Exakat Cloud

14.2.1293 Unused Returned Value

The function called returns a value, which is ignored.

Usually, this is a sign of dead code, or a missed check on the results of the functioncall. At times, it may be a valid call if the function has voluntarily no return value.

It is recommended to add a check on the return value, or remove the call.

Note that this analysis ignores functions that return void (same meaning that PHP 7.1 : return ; or no return in the function body).

```
<?php

// simplest form
function foo() {
    return 1;
}

foo();

// In case of multiple return, any one that returns something means that return value is␣
↪meaningful
function bar() {
    if (rand(0, 1)) {
        return 1;
    } else {
        return ;
    }
}

bar();

?>
```

Specs

Short name	Functions/UnusedReturnedValue
Rulesets	*All*, *Analyze*, *Dead code*
Exakat since	0.8.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	return
Available in	Entreprise Edition, Exakat Cloud

14.2.1294 Unused Trait In Class

> A trait has been summoned in a class, but is not used. Traits may be used as a copy/paste of code, bringing a batch of methods and properties to a class. In the current case, the imported trait is never called. As such, it may be removed.

Currently, the analysis covers only traits that are used in the class where they are imported. Also, the properties are not covered yet.

There are some sneaky situations, where a trait falls into decay : for example, creating a method in the importing class, with the name of a trait class, will exclude the trait method, as the class method has priority. Other precedence rules may lead to the same effect.

```
<?php

trait t {
    function foo() { return 1;}
}

// this class imports and uses the trait
class UsingTrait {
    use t;

    function bar() {
        return $this->foo() + 1;
    }
}

// this class imports but doesn't uses the trait
class UsingTrait {
    use t;

    function bar() {
        return 1;
    }
}

?>
```

See also Traits.

Suggestions

- Remove the trait from the class
- Actually use the trait, at least in the importing class
- Use conflict resolution to make the trait accessible

Specs

Short name	Traits/UnusedClassTrait
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.1.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	trait
Available in	Entreprise Edition, Exakat Cloud

14.2.1295 Unused Traits

Those traits are not used in any class or trait. They are probably dead code, as there is no way to use a trait without a host class.

```
<?php

// unused trait
trait unusedTrait { /**/ }

// used trait
trait tUsedInTrait { /**/ }

trait tUsedInClass {
    use tUsedInTrait;
    /**/
    }

class foo {
    use tUsedInClass;
}
?>
```

Suggestions

- Remove the unused trait
- Actually use the trait in one class or another trait

Specs

Short name	Traits/UnusedTrait
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	trait
Available in	Entreprise Edition, Exakat Cloud

14.2.1296 Unused Use

Unused use statements. They may be removed, as they clutter the code and slows PHP by forcing it to search in this list for nothing.

```
<?php

use A as B; // Used in a new call.
use Unused; // Never used. May be removed

$a = new B();

?>
```

Suggestions

- Remove the unused use

Specs

Short name	Namespaces/UnusedUse
Rulesets	*All*, *Changed Behavior*, *Dead code*, *php-cs-fixable*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	use
ClearPHP	no-useless-use
Available in	Entreprise Edition, Exakat Cloud

14.2.1297 Unusual Case For PHP Functions

Usually, PHP functions are written all in lower case.

```
<?php

// All uppercases PHP functions
ECHO STRTOLOWER('This String');

?>
```

Suggestions

- Use the PHP casing for functions

Specs

Short name	Php/UpperCaseFunction
Rulesets	*All*, *Coding conventions*, *IsExt*, *IsPHP*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	function, coding-convention
Configurable by	php_core, php_extensions
Available in	Entreprise Edition, Exakat Cloud

14.2.1298 Unvalidated Data Cached In Session

Data is cached in the $_SESSION variable and later reused. When data is not validated before this storage, it might be used to make an injection.

```
<?php

$_SESSION['a'] = $_GET['a'];

// across the code, this call
function foo() {
     echo $_SESSION["a"];
}

?>
```

Suggestions

- Validate data before storing in the SESSION

Specs

Short name	Security/SessionCachedData
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	2.5.2
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1299 Upload Filename Injection

When receiving a file via Upload, it is recommended to store it under a self-generated name. Any storage that uses the original filename, or even a part of it may be vulnerable to injections.

```
<?php

// Security error ! the $_FILES['upload']['filename'] is provided by the sender.
// 'a.<script>alert(\'a\')</script>'; may lead to a HTML injection.
$extension = substr( strrchr($_FILES['upload']['name'], '.') ,1);
if (!in_array($extension, array('gif', 'jpeg', 'jpg')) {
    // process error
    continue;
}
// Md5 provides a name without special characters
$name = md5($_FILES['upload']['filename']);
if(@move_uploaded_file($_FILES['upload']['tmp_name'], '/var/no-www/upload/'.$name.'.'.
↪$extension)) {
    safeStoring($name.'.'.$extension, $_FILES['upload']['filename']);
}

// Security error ! the $_FILES['upload']['filename'] is provided by the sender.
if(@move_uploaded_file($_FILES['upload']['tmp_name'], $_FILES['upload']['filename'])) {
    safeStoring($_FILES['upload']['filename']);
}

// Security error ! the $_FILES['upload']['filename'] is provided by the sender.
// 'a.<script>alert('a')</script>'; may lead to a HTML injection.
$extension = substr( strrchr($_FILES['upload']['name'], '.') ,1);
$name = md5($_FILES['upload']['filename']);
if(@move_uploaded_file($_FILES['upload']['tmp_name'], $name.'.'.$extension)) {
    safeStoring($name.'.'.$extension, $_FILES['upload']['filename']);
}

?>
```

It is highly recommended to validate any incoming file, generate a name for it, and store the result in a folder outside the web folder. Also, avoid accepting PHP scripts, if possible.

See also [CVE-2017-6090], CWE-616: Incomplete Identification of Uploaded File Variables and Why File Upload Forms are a Major Security Threat.

Suggestions

- Validate uploaded filenames
- Rename files upon storage, and keep the original name in a database

Specs

Short name	Security/UploadFilenameInjection
Rulesets	*All*, *Security*
Exakat since	0.12.14
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Features	upload
Available in	Entreprise Edition, Exakat Cloud

14.2.1300 Usage Of class_alias()

`class_alias` creates dynamically an alias for classes.

```
<?php

class foo { }

class_alias('foo', 'bar');

$a = new foo;
$b = new bar;

// the objects are the same
var_dump($a == $b, $a === $b);
var_dump($a instanceof $b);

// the classes are the same
var_dump($a instanceof foo);
var_dump($a instanceof bar);

var_dump($b instanceof foo);
var_dump($b instanceof bar);

?>
```

See also class_alias.

Specs

Short name	Classes/ClassAliasUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	class, class-alias
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1301 Use ::Class Operator

Use `\:\:class` to hardcode class names, instead of strings.

This is actually faster than strings, which are parsed at execution time, while `\:\:class` is compiled, making it faster to execute.

`\:\:class` operator is also able to handle use expressions, including aliases and local namespace. The code is easier to maintain. For example, the target class's namespace may be renamed, without changing the `\:\:class`, while the string must be updated.

`\:\:class` operator works with `self` and ``static``keywords. This is not possible when building the name of the class with concatenation.

This is a micro-optimization. This also helps static analysis, as it gives more information at compile time to analyse.

```
<?php

namespace foo\bar;

use foo\bar\X as B;

class X {}

$className = '\foo\bar\X';

$className = foo\bar\X::class;

$className = B\X;

$object = new $className;

?>
```

See also ::class.

Suggestions

- Replace strings by the ::class operator whenever possible

Specs

Short name	Classes/UseClassOperator
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Performances*
Exakat since	0.8.7
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Medium
Features	class-operator
Examples	*Typo3*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1302 Use === null

It is faster to use === null than the function is_null().

This is a micro-optimisation. And being used frequently, and in loops, it may yield visible speed up.

```
<?php

// Operator === is faster
if ($a === null) {

}

// Function call is slow
if (is_null($a)) {

}
?>
```

See also is_null.

Suggestions

- Use === comparison instead of is_null

Specs

Short name	Php/IsnullVsEqualNull
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *php-cs-fixable*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	strict-comparison, null
ClearPHP	avoid-those-slow-functions
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1303 Use Array Functions

There are a lot of native PHP functions for arrays. It is often faster to take advantage of them than write a loop.

- array_push() : use array_merge()
- array_slice() : use array_chunk()
- index access : use array_column()
- append *[]*: use array_merge()
- addition : use array_sum()
- multiplication : use array_product()
- concatenation : use implode()
- ifthen : use array_filter()

```
<?php

$all = implode('-', $s).'-';

// same as above
$all = '';
foreach($array as $s) {
    $all .= $s . '-';
}

?>
```

See also Array Functions and *No array_merge() In Loops*.

Suggestions

- Remove the loop and use a native PHP function
- Add more expressions to the loop : batching multiple operations in one loop makes it more interesting than running separates loops.

Specs

Short name	Structures/UseArrayFunctions
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	1.8.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1304 Use Arrow Functions

Arrow functions are closures that require one expression of code. They also include all the variables of the current context, unless they are made static.

Arrow functions were introduced in PHP 7.4. They added the reserved keyword `fn`.

```
<?php

array_map(fn(A $b): int => $b->c, $array);

function array_values_from_keys($arr, $keys) {
    return array_map(fn($x) => $arr[$x], $keys);
}
?>
```

See also RFC : Arrow functions and Arrow functions in PHP.

Specs

Short name	Functions/UseArrowFunctions
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *One Liners*
Exakat since	1.9.4
PHP Version	With PHP 7.4 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	arrow-function
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1305 Use Basename Suffix

basename() is able to remove a file extension when it is provided as argument. The second argument is removed from the name of the file.

```
<?php

$path = 'phar:///path/to/file.php';

// Don't forget the .
$filename = basename($path, '.php');

// Too much work for this
$filename = substr(basename($path), 0, -4);

?>
```

Using basename() instead of substr() or else, makes the intention clear.

See also basename.

Suggestions

- Use basename(), remove more complex code based on substr() or str_replace()

Specs

Short name	Structures/BasenameSuffix
Rulesets	*All*, *Suggestions*
Exakat since	1.5.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	basename, file-extension, dirname
Examples	*NextCloud*, *Dolibarr*
Available in	Entreprise Edition, Exakat Cloud

14.2.1306 Use Browscap

Browscap is a browser database, accessible via get_browser().

Browscap is the 'Browser Capabilities Project'.

```
<?php
echo $_SERVER['HTTP_USER_AGENT'] . "\n\n";

$browser = get_browser(null, true);
print_r($browser);
?>
```

See also browscap.

Specs

Short name	Php/UseBrowscap
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	browscap
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1307 Use Cli

Signal the usage of code in CLI mode, through the usage of `$argv` and `$argc` variables, or the getopt() function.

```
<?php

// Characteristics of CLI usage
getopt("abcd");

?>
```

Specs

Short name	Php/UseCli
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	cli, $argv, $argc
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1308 Use Closure Trailing Comma

Use a trailing comma in the closure <https://www.php.net/`closure>`_'s `use` list.

A trailing comma doesn't add any argument, not even a void or null one. It is a convenient for VCS to make diff with the previous code, and have them more readable.

This feature was added in PHP 8.0.

```
<?php

// PHP 8.0 valid syntax
$f = function foo() use ($a, ) { };
```

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```
// always valid syntax for closure
$f = function foo() use ($a ) { };

?>
```

See also Trailing Comma In Closure Use List.

Suggestions

- Add a trailing comma when there are more than one argument in the use expression

Specs

Short name	Php/UseTrailingUseComma
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	2.1.6
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	trailing-comma
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1309 Use Composer Lock

This rule reports when the `composer.lock` is committed to the archive. `composer.lock` stores the actual versions of the components that were fetched by composer, based on the `composer.json`. This is useful to store and share among developers.

See also Composer.

Specs

Short name	Composer/UseComposerLock
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.9.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	composer
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1310 Use Const And Functions

Since PHP 5.6 it is possible to import specific functions or constants from other namespaces.

```
<?php

namespace A {
    const X = 1;
    function foo() { echo __FUNCTION__; }
}

namespace My{
    use function A\foo;
    use constant A\X;

    echo foo(X);
}

?>
```

See also Using namespaces: Aliasing/Importing.

Specs

Short name	Namespaces/UseFunctionsConstants
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1311 Use Constant As Arguments

Some methods and functions are defined to be used with constants as arguments. Those constants are made to be meaningful and readable, keeping the code maintenable. It is recommended to use such constants as soon as they are documented.

```
<?php

// Turn off all error reporting
// 0 and -1 are accepted
error_reporting(0);

// Report simple running errors
error_reporting(E_ERROR | E_WARNING | E_PARSE);

// The first argument can be one of INPUT_GET, INPUT_POST, INPUT_COOKIE, INPUT_SERVER,␣
↪or INPUT_ENV.
```

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```
$search_html = filter_input(INPUT_GET, 'search', FILTER_SANITIZE_SPECIAL_CHARS);

// sort accepts one of SORT_REGULAR, SORT_NUMERIC, SORT_STRING, SORT_LOCALE_STRING, SORT_
↪NATURAL
// SORT_FLAG_CASE may be added, and combined with SORT_STRING or SORT_NATURAL
sort($fruits);

?>
```

Here is the list of functions that use a unique PHP constant as argument :

- array_change_key_case()
- array_multisort()
- array_unique()
- count()
- dns_get_record()
- easter_days()
- extract()
- filter_input()
- filter_var()
- fseek()
- get_html_translation_table()
- gmp_div_q()
- gmp_div_qr()
- gmp_div_r()
- html_entity_decode()
- htmlspecialchars_decode()
- http_build_query()
- http_parse_cookie()
- http_parse_params()
- http_redirect()
- http_support()
- parse_ini_file()
- parse_ini_string()
- parse_url()
- pathinfo()
- pg_select()
- posix_access()
- round()

- scandir()
- socket_read()
- str_pad()
- trigger_error()

Here is the list of functions that use a combination of PHP native constants as argument.

- arsort()
- asort()
- error_reporting()
- filter_input()
- filter_var()
- get_html_translation_table()
- htmlentities()
- htmlspecialchars()
- http_build_url()
- jdtojewish()
- krsort()
- ksort()
- pg_result_status()
- phpcredits()
- phpinfo()
- preg_grep()
- preg_match()
- preg_split()
- rsort()
- runkit_import()
- sort()
- stream_socket_client()
- stream_socket_server()

Suggestions

- Use PHP native constants, whenever possible, instead of nondescript literals.

Specs

Short name	Functions/UseConstantAsArguments
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Examples	*Tikiwiki*, *shopware*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1312 Use Constant Instead Of Function

Some functioncalls have a constant equivalent, that is faster to execute than calling the function.

This applies to the following functions :

- pi() : replace with *M_PI*
- phpversion() : replace with *PHP_VERSION*
- php_sapi_name() : replace with *PHP_SAPI_NAME*

```
<?php

// recommended way
echo PHP_VERSION;

// slow version
echo php_version();

?>
```

See also PHP why pi() and M_PI.

Suggestions

- Use the constant version, not the function.

Specs

Short name	Structures/UseConstant
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *PHP recommendations*, *php-cs-fixable*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1313 Use Constants As Returns

When a native PHP function returns only constants, it is recommended to use those constants to identify the returned values.

```
<?php

if (preg_last_error() != PREG_NO_ERROR ) {
    // An error occured with the last Regex call
}

// Who will guess PREG_JIT_STACKLIMIT_ERROR ?
if (preg_last_error() == 6 ) {
    // An error occured with the last Regex call
}

?>
```

Suggestions

- Use the valid constants to identify the results

Specs

Short name	Functions/UseConstantsAsReturns
Rulesets	*All*, *Analyze*
Exakat since	2.3.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1314 Use Contravariance

Contravariance is compatible argument typehint. A child class may accept an object of a parent class of the argument type of its parent's method.

Since a children class may accept a parent class of the argument type, the evolution is in opposite order.

Contravariance is a PHP 7.4 feature. Contravariance is distinct from return type covariance.

```
<?php
class X {
  function m(Y $z): X {}
}

// m is overwriting the parent's method.
// The return type is different.
// The return type is compatible, as Y is also a sub-class of X.
```

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```
class Y extends X {
  function m(X $z): Y {}
}

?>
```

See also Covariant Returns and Contravariant Parameters and No title for `Php/UseCovariance <No anchor for *Php/UseCovariance*>`.

Specs

Short name	Php/UseContravariance
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.9.3
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	type-covariance, type-contravariance
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1315 Use Cookies

This code source uses cookies.

Cookie usage is spotted with the usage of setcookie(), setrawcookie() and header() with the 'Set-Cookie' header.

```
<?php

     header('Set-Cookie: '.$name.'='.$value.'; EXPIRES'.$date.';');

    // From the PHP Manual :
    setcookie('TestCookie3', $value, time()+3600, '/~rasmus/', 'example.com', 1);

?>
```

See also Cookies.

Specs

Short name	Php/UseCookies
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.10.6
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	cookie
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1316 Use Count Recursive

The code could use the recursive version of count.

The second argument of count, when set to `COUNT_RECURSIVE`, count recursively the elements. It also counts the elements themselves.

```
<?php

$array = array( array(1,2,3), array(4,5,6));

print (count($array, COUNT_RECURSIVE) - count($array, COUNT_NORMAL));

$count = 0;
foreach($array as $a) {
    $count += count($a);
}
print $count;

?>
```

See also count.

Suggestions

- Drop the loop and use the 2nd argument of count()

Specs

Short name	Structures/UseCountRecursive
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	1.1.7
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Examples	*WordPress*, *PrestaShop*
Available in	Entreprise Edition, Exakat Cloud

14.2.1317 Use Covariance

Covariance is compatible return typehint. A child class may return an object of a child class of the return type of its parent's method.

Since a children class may return a children class of the return type, the evolution is in the same order.

Covariance is a PHP 7.4 feature. Covariance is distinct from argument contravariance.

```
<?php
class X {
  function m(Y $z): X {}
```

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```
}

// m is overwriting the parent's method.
// The return type is different.
// The return type is compatible, as Y is also a sub-class of X.
class Y extends X {
  function m(X $z): Y {}
}

?>
```

See also Covariant Returns and Contravariant Parameters and **:ref:`No title for `Php/UseContravariance`_** <No anchor for **`Php/UseContravariance`_**>`.

Specs

Short name	Php/UseCovariance
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.9.3
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	covariance
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1318 Use DNF

This rule detects the usage of the DNF. DNF is the disjunctive Normal Form. It is a syntax to handle union and intersectional types at the same time. It was introducted in PHP 8.2.

DNF is available for every typed element of PHP : properties, arguments and returntype. It was extended to class constants on PHP 8.3.

```
<?php

class x {
     const (A&B)|string C = 'string';

     function foo((A&B)|(C&D) $e) {}

}

?>
```

See also PHP 8.2: DNF Types.

Specs

Short name	Php/UseDNF
Rulesets	*All*, *Appinfo*
Exakat since	2.5.3
PHP Version	With PHP 8.2 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	type, dnf-type
Available in	Entreprise Edition, Exakat Cloud

14.2.1319 Use DateTimeImmutable Class

The `DateTimeImmutable` class is the immutable version of the `Datetime` class.

While `DateTime` may be modified, `DateTimeImmutable` cannot be modified : it needs to be cloned instead. Any modification to such an object will return a new and distinct object. This prevents alterations that are hard to track.

```
<?php
// Example extracted from Derick Rethans' article (link below)

function formatNextMondayFromNow( DateTime $dt )
{
        return $dt->modify( 'next monday' )->format( 'Y-m-d' );
}

$d = new DateTime();                            //2014-02-17
echo formatNextMondayFromNow( $d ), "\n";
echo $d->format( 'Y-m-d' ), "\n";               //2014-02-17
?>
```

See also What's all this 'immutable date' stuff, anyway?, DateTimeImmutable, The DateTime class and The DateTimeImmutable class.

Suggestions

- Always use DateTimeImmutable when manipulating dates.

Specs

Short name	Php/UseDateTimeImmutable
Rulesets	*All*, *Suggestions*
Exakat since	1.8.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	immutable, date
Available in	Entreprise Edition, Exakat Cloud

14.2.1320 Use Debug

The code source includes calls to debug functions.

The following debug functions and libraries are reported :

- Aronduby Dump
- Cakephp Debug Toolbar
- Kint
- Krumo
- Nette tracy
- php-debugbar
- PHP native functions : print_r(), var_dump(), debug_backtrace(), debug_print_backtrace(), debug_zval_dump()
- Symfony debug
- Wordpress debug
- Xdebug
- Zend debug

```
<?php

// Example with Zend Debug
Zend\Debug\Debug::dump($var, $label = null, $echo = true);

?>
```

Specs

Short name	Structures/UseDebug
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.11.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	debug
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1321 Use Enum Case In Constant Expression

Enum cases are constants, and may be used in constant definitions, as value. This is valid both with the case itself, or with their value, for the backed enum version.

```
<?php

enum A {
    case A;
```

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```
}

enum B : string {
     case B = 'b';
}

class C {
     const C1 = A::A;
     const C2 = B::B->value;
}
?>
```

Specs

Short name	Php/UseEnumCaseInConstantExpression
Rulesets	*All*, *Appinfo*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*
Exakat since	2.5.3
PHP Version	With PHP 8.2 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1322 Use File Append

> When appending data to a file, one may also use the file_put_contents() function with the `FILE_APPEND` option.

Using file_put_contents() also keeps the file open as little as possible, unlike keeping the resource open in PHP, between usages.

```
<?php

// appends the text to the end of the end of the file
file_put_contents($file, $text, FILE_APPEND);
```

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```
// appends the text to the end of the end of the file
$fp = fopen($file, 'a');
fwrite($fp, $text);

?>
```

Suggestions

- Use file_put_contents()

Specs

Short name	Structures/UseFileAppend
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	2.3.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1323 Use Instanceof

The `instanceof` operator is a more precise alternative to `is_object()`. It is also faster.

instanceof checks for an variable to be of a class or its parents or the interfaces it implements. Once `instanceof` has been used, the actual attributes available (properties, constants, methods) are known, unlike with `is_object()`.

Last, `instanceof` may be upgraded to Typehint, by moving it to the method signature. `instanceof` and `is_object()` may not be always interchangeable. Consider using isset() on a known property for a simple check on objects. You may also consider is_string(), is_integer() or is_scalar(), in particular instead of `!`is_object() <https://www.php.net/is_object>`_.

The `instanceof` operator is also faster than the `is_object()` functioncall.

```
<?php

class Foo {

    // Don't use is_object
    public function bar($o) {
        if (!is_object($o)) { return false; } // Classic argument check
        return $o->method();
    }

    // use instanceof
    public function bar($o) {
        if ($o instanceof myClass) {  // Now, we know which methods are available
```

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```
            return $o->method();
        }

        return false; } // Default behavior
    }

    // use of typehinting
    // in case $o is not of the right type, exception is raised automatically
    public function bar(myClass $o) {
        return $o->method();
    }
}

?>
```

See also Type Operators and is_object.

Suggestions

- Use instanceof and remove is_object()
- Create a high level interface to check a whole family of classes, instead of testing them individually
- Use typehint when possible
- Avoid mixing scalar types and objects in the same variable

Specs

Short name	Classes/UseInstanceof
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	instanceof
Examples	*TeamPass*, *Zencart*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1324 Use List With Foreach

Foreach() structures accepts list() as blind key. If the loop-value is an array with a fixed structure, it is possible to extract the values directly into variables with explicit names.

```
<?php

// Short way to assign variables
// Works on PHP 7.1, where list() accepts keys.
foreach($names as list('first' => $first, 'last' => $last)) {
```

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```
    doSomething($first, $last);
}

// Short way to assign variables
// Works on all PHP versions with numerically indexed arrays.
foreach($names as list($first, $last)) {
    doSomething($first, $last);
}

// Long way to assign variables
foreach($names as $name) {
    $first = $name['first'];
    $last = $name['last'];

    doSomething($first, $last);
}

?>
```

See also list and foreach.

Suggestions

- Use the list keyword (or the short syntax), and simplify the array calls in the loop.

Specs

Short name	Structures/UseListWithForeach
Rulesets	*All*, *Changed Behavior*, *Suggestions*, *Top10*
Exakat since	1.0.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Examples	*MediaWiki*
Available in	Entreprise Edition, Exakat Cloud

14.2.1325 Use Lower Case For Parent, Static And Self

> The special parent, static and self keywords needed to be lowercase to be usable. This was fixed in PHP 5.5; otherwise, they would yield a 'PHP Fatal error: Class 'PARENT' not found'.

parent, static and self are traditionally written in lowercase only. Mixed case and Upper case are both valid, though. Until PHP 5.5, non-lowercase version of those keywords are generating a bug.

```
<?php

class foo {
```

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```
    const aConstante = 233;

    function method() {
        // Wrong case, error with PHP 5.4.* and older
        echo SELF::aConstante;

        // Always right.
        echo self::aConstante;
    }
}

?>
```

Suggestions

- Upgrade to PHP 5.6 or more recent

Specs

Short name	Php/CaseForPSS
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and older
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	parent, static, self
Available in	Entreprise Edition, Exakat Cloud

14.2.1326 Use Named Boolean In Argument Definition

Boolean values in argument definition are confusing.

It is recommended to use explicit constant names or enumerations, instead. They are more readable. They also allow for easy replacement when the code evolve and has to replace those booleans by strings. This works even also with classes, and class constants.

```
<?php

function flipImage($im, $horizontal = NO_HORIZONTAL_FLIP, $vertical = NO_VERTICAL_FLIP)
↪{ }

// with constants
const HORIZONTAL_FLIP = true;
const NO_HORIZONTAL_FLIP = true;
const VERTICAL_FLIP = true;
const NO_VERTICAL_FLIP = true;
```

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```
rotateImage($im, HORIZONTAL_FLIP, NO_VERTICAL_FLIP);


// without constants
function flipImage($im, $horizontal = false, $vertical = false) { }

rotateImage($im, true, false);

?>
```

See also Improve Passing Booleans in PHP, Flag Argument and Improve Passing Booleans in PHP.

Suggestions

- Use available constants whenever possible
- Create a constant (global or class), and use it
- Use named parameters to clarify the target of the boolean
- Use a single-parameter method, so that the value of the boolean is obvious
- Use an enumeration

Specs

Short name	Functions/AvoidBooleanArgument
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.0.6
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Examples	*phpMyAdmin*, *Cleverstyle*
Available in	Entreprise Edition, Exakat Cloud

14.2.1327 Use NullSafe Operator

The nullsafe operator `?->` is an alternative to the object operator `->`. It silently fails the whole expression if a null is used for object.

```
<?php

$o = null;

// PHP 8.0 Failsafe : $r = null;
$r = $o->method();

// PHP 7.4- : Call to a member function method() on null
$r = $o->method();
```

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```
?>
```

See also PHP RFC: Nullsafe operator.

Specs

Short name	Php/UseNullSafeOperator
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *One Liners*
Exakat since	2.1.6
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	object-operator
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1328 Use Nullable Type

The code uses nullable type, available since PHP 7.1.

Nullable Types are an option to type hint : they allow the passing value to be null, or another type.

According to the authors of the feature : 'It is common in many programming languages including PHP to allow a variable to be of some type or null. This null often indicates an error or lack of something to return.'

```
<?php

function foo(?string $a = 'abc') : ?string {
    return $a.b;
}

?>
```

See also Type declarations and PHP RFC: Nullable Types.

Specs

Short name	Php/UseNullableType
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 7.1 and more recent
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	nullable
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1329 Use PHP Attributes

This rule reports if PHP 8.0 attributes are in use.

Attributes look like special comments `#[`... <https://www.php.net/manual/en/functions.arguments.php#functions.variable-arg-list>`_]`. They are linked to classes, traits, interfaces, enums, class constants, functions, methods, and parameters.

```
<?php

#[foo(4)]
class x {

}

?>
```

See also PHP RFC: Shorter Attribute Syntax, Attributes Amendements and Shorter Attribute Syntax Change.

Specs

Short name	Php/UseAttributes
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	2.1.6
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	attribute
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1330 Use PHP Object API

OOP API is the modern version of the PHP API.

When PHP offers the alternative between procedural and OOP api for the same features, it is recommended to use the OOP API.

Often, this least to more compact code, as methods are shorter, and there is no need to bring the resource around. Lots of new extensions are directly written in OOP form too.

OOP / procedural alternatives are available for mysqli <https://www.php.net/manual/en/book.`mysqli.php>`_, tidy <https://www.php.net/manual/en/book.`tidy.php>`_, cairo, finfo, and some others.

```
<?php
/// OOP version
$mysqli = new mysqli("localhost", "my_user", "my_password", "world");

/* check connection */
if ($mysqli->connect_errno) {
    printf("Connect failed: %s\n", $mysqli->connect_error);
    exit();
}

/* Create table doesn't return a resultset */
if ($mysqli->query("CREATE TEMPORARY TABLE myCity LIKE City") === TRUE) {
    printf("Table myCity successfully created.\n");
}

/* Select queries return a resultset */
if ($result = $mysqli->query("SELECT Name FROM City LIMIT 10")) {
    printf("Select returned %d rows.\n", $result->num_rows);

    /* free result set */
    $result->close();
}
?>
```

```
<?php
/// Procedural version
$link = mysqli_connect("localhost", "my_user", "my_password", "world");

/* check connection */
if (mysqli_connect_errno()) {
    printf("Connect failed: %s\n", mysqli_connect_error());
    exit();
}

/* Create table doesn't return a resultset */
if (mysqli_query($link, "CREATE TEMPORARY TABLE myCity LIKE City") === TRUE) {
    printf("Table myCity successfully created.\n");
}

?>
```

Suggestions

- Use the object API

Specs

Short name	Php/UseObjectApi
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	object-api
ClearPHP	use-object-api
Examples	*WordPress*, *PrestaShop*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1331 Use PHP7 Encapsed Strings

PHP 7 has optimized the handling of double-quoted strings. In particular, double-quoted strings are much less memory hungry than classic concatenations.

PHP allocates memory at the end of the double-quoted string, making only one call to the allocator. On the other hand, concatenations are allocated each time they include dynamic content, leading to higher memory consumption. Concatenations are still needed with constants, static constants, magic constants, functions, static properties or static methods.

```
<?php

$bar = 'bar';

/* PHP 7 optimized this */
$a = "foo and $bar";

/* This is PHP 5 code (aka, don't use it) */
$a = 'foo and ' . $bar;

// Constants can't be used with double quotes
$a = 'foo and ' . __DIR__;
$a = "foo and __DIR__"; // __DIR__ is not interpolated

?>
```

See also PHP 7 performance improvements (3/5): Encapsed strings optimization.

Specs

Short name	Performances/PHP7EncapsedStrings
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.0.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	string
Available in	Entreprise Edition, Exakat Cloud

14.2.1332 Use Pathinfo

Use pathinfo() function instead of string manipulations.

pathinfo() is more efficient and readable and string functions.

```
<?php

$filename = '/path/to/file.php';

// With pathinfo();
$details = pathinfo($filename);
print $details['extension'];  // also capture php

// With string functions (other solutions possible)
$ext = substr($filename, - strpos(strreverse($filename), '.')); // Capture php

?>
```

When the path contains UTF-8 characters, pathinfo() may strip them. There, string functions are necessary.

Suggestions

- Use pathinfo() and its second argument

Specs

Short name	Php/UsePathinfo
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	pathinfo
Examples	*SuiteCrm*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1333 Use Positive Condition

Whenever possible, use a positive condition.

Positive conditions are easier to understand, and lead to less understanding problems. Negative conditions are not reported when else is not present.

```
<?php

// This is a positive condition
if ($a == 'b') {
    doSomething();
} else {
    doSomethingElse();
}

if (!empty($a)) {
    doSomething();
} else {
    doSomethingElse();
}

// This is a negative condition
if ($a == 'b') {
    doSomethingElse();
} else {
    doSomething();
}

// No need to force $a == 'b' with empty else
if ($a != 'b') {
    doSomethingElse();
}

?>
```

See also Double negatives should not not be avoided and How To Write Conditional Statements in PHP.

Suggestions

- Invert the code in the if branches, and the condition

Specs

Short name	Structures/UsePositiveCondition
Rulesets	*All*, *Analyze*
Exakat since	0.8.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*SPIP*, *ExpressionEngine*
Available in	Entreprise Edition, Exakat Cloud

14.2.1334 Use Same Types For Comparisons

> Beware when using inequality operators that the type of the values are the same on both sites of the operators.

Different types may lead to PHP type juggling, where the values are first cast to one of the used types. Other comparisons are always failing, leading to unexpected behavior.

This applies to all inequality operators, as well as the spaceship operator.

This analysis skips comparisons between integers, floats and strings, as those are usually expected.

Thanks to Jordi Boggiano and Filippo Tessarotto.

```
<?php

// Both are wrong, while one should be true (depending on when you read this)
var_dump('1995-06-08' < new DateTimeImmutable());
var_dump('1995-06-08' > new DateTimeImmutable());

enum x : int {
    case A = 1;
    case B = 2;
}

// Both are false as objects are compared, not their integer value
var_dump(x::A < x::B);
var_dump(x::A > x::B);

var_dump(x::A->value < x::b->value);
var_dump(x::A->value > x::b->value);

?>
```

Suggestions

- Make sure that the same time

Specs

Short name	Structures/UseSameTypesForComparisons
Rulesets	*All*, *Analyze*
Exakat since	2.4.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	inequality, enum-case, type-juggling
Available in	Entreprise Edition, Exakat Cloud

14.2.1335 Use System Tmp

It is recommended to avoid hardcoding the temporary file. It is better to rely on the system's temporary folder, which is accessible with sys_get_temp_dir().

```
<?php

// Where the tmp is :
file_put_contents(sys_get_temp_dir().'/tempFile.txt', $content);


// Avoid hard-coding tmp folder :
// On Linux-like systems
file_put_contents('/tmp/tempFile.txt', $content);

// On Windows systems
file_put_contents('C:\WINDOWS\TEMP\tempFile.txt', $content);

?>
```

See also PHP: When is /tmp not /tmp?.

Suggestions

- Do not hardcode the temporary file, use the system's

Specs

Short name	Structures/UseSystemTmp
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1336 Use The Blind Var

When in a loop, it is faster to rely on the blind var, rather than the original source.

When the key is referenced in the foreach loop, it is faster to use the available container to access a value for reading.

Note that it is also faster to use the value with a reference to handle the writings.

```
<?php

// Reaching $source[$key] via $value is faster
foreach($source as $key => $value) {
    $coordinates = array('x' => $value[0],
                         'y' => $value[1]);
}

// Reaching $source[$key] via $source is slow
foreach($source as $key => $value) {
    $coordinates = array('x' => $source[$key][0],
                         'y' => $source[$key][1]);
}

?>
```

Suggestions

- Use the blind var

Specs

Short name	Performances/UseBlindVar
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	1.2.9
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	blind-variable
Available in	Entreprise Edition, Exakat Cloud

14.2.1337 Use The Case Value

When switch() has branched to the right case, the value of the switched variable is known : it is the case.

This doesn't work with complex expression cases, nor with default.

```
<?php

switch($a) {
    case 'a' :
        // $a == 'a';
        echo $a;
        break;

    case 'b' :
        // $a == 'b';
        echo 'b';
        break;
}

?>
```

Suggestions

- Use the literal value in the case, to avoid unnecessary computation.

Specs

Short name	Structures/UseCaseValue
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	1.9.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1338 Use This

Those methods should be using $this, or a static method or property.

A method that doesn't use any local data may be considered for a move : may be it doesn't belong here.

The following functioncalls have been added, as access to the current class, without using *$this* or *self* :

- get_class()
- get_called_class()
- get_object_vars()
- get_parent_class()
- get_class_vars()

- get_class_methods()

```
<?php

class dog {
    private $name = 'Rex';

    // This method is related to the current object and class
    public function attaboy() {
        return Fetch, $this->name, Fetch\n;
    }

    // Not using any class related data : Does this belong here?
    public function addition($a, $b) {
        return $a + $b;
    }
}
?>
```

See also The Basics.

Suggestions

- Add any use of $this pseudo-variable
- Move the method to another class
- Refactor the method as a function

Specs

Short name	Classes/UseThis
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	this, self, static
Available in	Entreprise Edition, Exakat Cloud

14.2.1339 Use Variable Created Inside Loop

When a variable is created inside a loop, it should also be used in the loop. Otherwise, the variable will be overwritten by each loop, and become dead code.

```
<?php

foreach($a as $b => $c) {
    $c = 1;
}
```

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```
?>
```

Suggestions

- Remove the variable from the loop
- Add usage to that variable inside the loop
- Turn the variable into a property

Specs

Short name	Structures/UseVariableInsideLoop
Rulesets	*All*, *Dead code*
Exakat since	2.3.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	loop
Available in	Entreprise Edition, Exakat Cloud

14.2.1340 Use Web

The code is used in web environment.

The web usage is identified through the usage of the superglobals: `$_GET`, `$_POST`, etc.

```
<?php

// Accessing $_GET is possible when PHP is used in a web server.
$x = filter_validate($_GET['x'], FILTER_EMAIL);

?>
```

Specs

Short name	Php/UseWeb
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1341 Use With Fully Qualified Name

Use statement doesn't require a fully qualified name.

PHP manual recommends not to use fully qualified name (starting with) when using the 'use' statement : they are "the leading backslash is unnecessary and not recommended, as import names must be fully qualified, and are not processed relative to the current namespace".

```
<?php

// Recommended way to write a use statement.
use  A\B\C\D as E;

// No need to use the initial \
use \A\B\C\D as F;

?>
```

Suggestions

- Remove the initial in use expressions.

Specs

Short name	Namespaces/UseWithFullyQualifiedNS
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Coding conventions*, *PHP recommendations*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1342 Use array_slice()

Array_slice() is de equivalent of substr() for arrays.

array_splice() is also available, to remove a portion of array inside the array, not at the ends. This has no simple equivalent for strings.

```
<?php

$array = range(0, 9);

// Extract the 5 first elements
print_r(array_slice($array, 0, 5));

// Extract the 4 last elements
print_r(array_slice($array, -4));
```

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```
// Extract the 2 central elements : 4 and 5
print_r(array_splice($array, 4, 2));

// slow way to remove the last elementst of an array
for($i = 0; $i < 4) {
    array_pop($array);
}

?>
```

See also array_slice and array_splice.

Suggestions

- Use array_slice()

Specs

Short name	Performances/UseArraySlice
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.9.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1343 Use class_alias()

class_alias() is a PHP features, that allows the creation of class alias, at execution time.

Those class aliases are application wide, as they are valid everywhere, yet they have a lower precedence over the use expression. This means that even when a class_alias() was called, the local use expression will have right of execution.

```
<?php

// static type of aliasing
use a as c;

class a {}
class_alias('a', 'b');

new b;

?>
```

See also class_alias.

Specs

Short name	Php/UseClassAlias
Rulesets	*All*, *Appinfo*
Exakat since	2.3.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class-alias
Available in	Entreprise Edition, Exakat Cloud

14.2.1344 Use const

The const keyword may be used to define constant, just like the define() function.

When defining a constant, it is recommended to use 'const' when the features of the constant are not dynamical (name or value are known at compile time). This way, constant will be defined at compile time, and not at execution time.

define() function is useful when the constant is not known at compile time, or when case sensitivity is necessary.

```
<?php
  //Do
  const A = 1;
  // Don't
  define('A', 1);

?>
```

See also Syntax.

Suggestions

- Use const instead of define()

Specs

Short name	Constants/ConstRecommended
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Coding conventions*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	const, define
Examples	*phpMyAdmin*, *Piwigo*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1345 Use get_debug_type()

get_debug_type() returns the given type of a variable. It was introduced in PHP 8.0: this makes it incompatible with previous versions.

```
<?php
  // From the RFC
  throw new TypeError('Expected ' . Foo::class . ' got ' . (is_object($bar) ? get_class(
↪$bar) : gettype($bar)));

  // Becomes
  throw new TypeError('Expected ' . Foo::class . ' got ' . get_debug_type($bar));

?>
```

See also PHP RFC: get_debug_type.

Suggestions

- Replace the ternary with a call to get_debug_type()

Specs

Short name	Php/UseGetDebugType
Rulesets	*All*, *Suggestions*
Exakat since	2.1.9
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1346 Use is_countable

is_countable() checks if a variables holds a value that can be counted. It is recommended to use it before calling count().

is_countable() accepts arrays and object whose class implements `countable <https://www.php.net/countable>`_.

```
<?php

function foo($arg) {
    if (!is_countable($arg)) {
        // $arg cannot be passed to count()
        return 0
    }
    return count($arg);
}

function bar($arg) {
```

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```
    if (!is_array($arg) and !$x instanceof \Countable) {
        // $arg cannot be passed to count()
        return 0
    }

    return count($arg);
}

?>
```

See also PHP RFC: is_countable.

Suggestions

- Use is_countable()
- Create a compatibility function that replaces is_countable() until the code is ready for PHP 7.3

Specs

Short name	Php/CouldUseIsCountable
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	1.3.8
PHP Version	With PHP 7.3 and more recent
Severity	
Time To Fix	
Precision	High
Features	array, countable
Available in	Entreprise Edition, Exakat Cloud

14.2.1347 Use json_decode() Options

> json_decode() returns objects by default, unless the second argument is set to `TRUE` or `JSON_OBJECT_AS_ARRAY`. Then, it returns arrays.

Avoid casting the returned value from json_decode(), and use the second argument to directly set the correct type.

```
<?php

$json = '{"a":"b"}';

// Good syntax
$array = json_decode($json, JSON_OBJECT_AS_ARRAY);

// GoToo much work
$array = (array) json_decode($json);

?>
```

Note that all objects will be turned into arrays, recursively. If you're expecting an array of objects, don't use the `JSON_OBJECT_AS_ARRAY` constant, and change your JSON code.

Note that `JSON_OBJECT_AS_ARRAY` is the only constant : there is no defined constant to explicitly ask for an object as returned value.

See also json_decode.

Suggestions

- Use the correct second argument of json_decode() : `JSON_OBJECT_AS_ARRAY`

Specs

Short name	Structures/JsonWithOption
Rulesets	*All*, *Suggestions*
Exakat since	1.4.3
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	json
Available in	Entreprise Edition, Exakat Cloud

14.2.1348 Use password_hash()

password_hash() and password_check() are a better choice to replace the use of crypt() to check password.

PHP 5.5 introduced these functions.

```
<?php

$password = 'rasmuslerdorf';
$hash = '$2y$10$YCFsG6elYca568hBi2pZ0.3LDL5wjgxct1N8w/oLR/jfHsiQwCqTS';

// The cost parameter can change over time as hardware improves
$options = array('cost' => 11);

// Verify stored hash against plain-text password
if (password_verify($password, $hash)) {
    // Check if a newer hashing algorithm is available
    // or the cost has changed
    if (password_needs_rehash($hash, PASSWORD_DEFAULT, $options)) {
        // If so, create a new hash, and replace the old one
        $newHash = password_hash($password, PASSWORD_DEFAULT, $options);
    }

    // Log user in
}
?>
```

See also Password hashing.

Specs

Short name	Php/Password55
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and more recent
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1349 Use pathinfo() Arguments

pathinfo() has a second argument to select only useful data.

It is twice faster to get only one element from pathinfo() than get the four of them, and use only one.

This analysis reports pathinfo() usage, without second argument, where only one or two indices are used, after the call.

```
<?php

// This could use only PATHINFO_BASENAME
function foo_db() {
    $a = pathinfo($file2);
    return $a['basename'];
}

// This could be 2 calls, with PATHINFO_BASENAME and PATHINFO_DIRNAME.
function foo_de() {
    $a = pathinfo($file3);
    return $a['dirname'].'/'.$a['basename'];
}

// This is OK : 3 calls to pathinfo() is slower than array access.
function foo_deb() {
    $a = pathinfo($file4);
    return  $a['dirname'].'/'.$a['filename'].'.'.$a['extension'];
}

?>
```

Depending on the situation, the functions dirname() and basename() may also be used. They are even faster, when only fetching those data.

See also list.

Suggestions

- Use PHP native function pathinfo() and its arguments

Specs

Short name	Php/UsePathinfoArgs
Rulesets	*All*, *Performances*
Exakat since	0.12.12
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	path
Examples	*Zend-Config*, *ThinkPHP*
Available in	Entreprise Edition, Exakat Cloud

14.2.1350 Use random_int()

rand() and mt_rand() should be replaced with random_int().

At worse, rand() should be replaced with mt_rand(), which is a drop-in replacement and srand() by mt_srand().

random_int() replaces rand(), and has no seeding function like srand().

Other sources of entropy that should be replaced by random_int() : microtime(), uniqid(), time(). Those a often combined with hashing functions and mixed with other sources of entropy, such as a salt. Since PHP 7, random_int() along with random_bytes(), provides cryptographically secure pseudo-random bytes, which are good to be used when security is involved. openssl_random_pseudo_bytes() may be used when the `OpenSSL` extension is available.

```
<?php

// Avoid using this
$random = rand(0, 10);

// Drop-in replacement
$random = mt_rand(0, 10);

// Even better but different :
// valid with PHP 7.0+
try {
    $random = random_int(0, 10);
} catch (\Exception $e) {
    // process case of not enoug random values
}

// This is also a source of entropy, based on srand()
// random_int() is a drop-in replacement here
$a = sha256(uniqid());

?>
```

See also CSPRNG and OpenSSL.

Suggestions

- Use random_bytes() and randon_int(). At least, use them as a base for random data, and then add extra prefix and suffix, and a hash call on top.

Specs

Short name	Php/BetterRand
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *CompatibilityPHP71*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	random
Examples	*Thelia*, *FuelCMS*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1351 Use session_start() Options

It is possible to set the session's option at session_start() call, skipping the usage of session_option().

This way, session's options are set in one call, saving several hits.

This is available since PHP 7.0. It is recommended to set those values in the `php.ini` file, whenever possible.

```
<?php

// PHP 7.0
session_start(['session.name' => 'mySession',
               'session.cookie_httponly' => 1,
               'session.gc_maxlifetime' => 60 * 60);

// PHP 5.6- old way
ini_set ('session.name', 'mySession');
ini_set("session.cookie_httponly", 1);
ini_set('session.gc_maxlifetime', 60 * 60);
session_start();

?>
```

Suggestions

- Use session_start() with array arguments

Specs

Short name	Php/UseSessionStartOptions
Rulesets	*All*, *Suggestions*
Exakat since	0.11.8
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	session
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.1352 Use str_contains()

str_contains() checks if a string is within another one. It replaces a call to strpos() with a comparison.

```
<?php

if (str_contains("abc", "a")) { doSomething(); }

// strpos is used only for detection.
if (strpos("abc", "a") !== false) { doSomething(); }

// strpos returns a position,
$pos = strpos("abca", "a", 3);
if ($pos > 3) { doSomething();

?>
```

Note that this function is case sensitive : it cannot replace stripos().

Note that this function is single-byte only : it cannot replace mb_strpos().

This analysis omits calls to strpos() that are saved to a variable. strpos() is actually returning the position of the found string in the haystack, which may be reused later.

See also PHP RFC: str_contains.

Suggestions

- Switch to str_contains()

Specs

Short name	Php/UseStrContains
Rulesets	*All*, *Suggestions*
Exakat since	2.2.0
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	string
Available in	Entreprise Edition, Exakat Cloud

14.2.1353 Use str_ends_with()

There is a dedicated function to check the suffix of a string.

```
<?php

if (str_ends_with($a, 'abc')) { }

// Before PHP 8.2
if (substr($a, -3) === 'abc') { }

?>
```

See also str_ends_with().

Suggestions

- Use the native PHP function

Specs

Short name	Structures/UseStrEndsWith
Rulesets	*All*, *Suggestions*
Exakat since	2.5.2
PHP Version	With PHP 8.2 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1354 Use str_starts_with()

There is a dedicated function to check the prefix of a string.

```
<?php

if (str_starts_with($a, 'abc')) { }

// Before PHP 8.2
if (substr($a, 0, 3) === 'abc') { }

?>
```

See also str_ends_with().

Suggestions

- Use the native PHP function

Specs

Short name	Structures/UseStrStartsWith
Rulesets	*All*, *Suggestions*
Exakat since	2.5.2
PHP Version	With PHP 8.2 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1355 Used Classes

The following classes are used in the code.

Classes may be use when they are instantiated, or with static calls

```
<?php

class unusedClasss { const X = 1;}
class usedClass {}

$y = new usedClass(usedClass::X);

?>
```

Specs

Short name	Classes/UsedClass
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1356 Used Functions

The functions below are used in the code.

A function is used in the code when it is called literally, or as a string callback.

```
<?php

function used() {}
// The 'unused' function is defined but never called
function unused() {}

// The 'used' function is called at least once
used();

// The 'used' function is called as a callback
array_filter($array, 'used');

?>
```

Specs

Short name	Functions/UsedFunctions
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	function, unused
Available in	Entreprise Edition, Exakat Cloud

14.2.1357 Used Interfaces

Interfaces used in the code.

```
<?php

interface used {}

// Used by implementation
class c implements used {}

// Used by extension
interface j implements used {}

$x = new c;

// Used in a instanceof
var_dump($x instanceof used);

// Used in a typehint
function foo(Used $x) {}

?>
```

Specs

Short name	Interfaces/UsedInterfaces
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	interface
Available in	Entreprise Edition, Exakat Cloud

14.2.1358 Used Methods

Those methods are used in the code: this means they have a definition and at least one call. They may have more than one call too. This analysis is mostly useful for detecting unused methods.

```
<?php

class foo {
    public function used() {
        $this->used();
    }

    // No usage of 'unused', as method call, in or out of the definition class.
    public function unused() {
```

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```
        $this->used();
    }
}

class bar extends foo {
    public function some() {
        $this->used();
    }
}

$a = new foo();
$a->used();

?>
```

Specs

Short name	Classes/UsedMethods
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.1359 Used Once Property

Property used once in their defining class.

Properties used in one method only may be used several times, and read only. This may be a class constant. Such properties are meant to be overwritten by an extending class, and that's possible with class constants.

Setting properties with default values is a good way to avoid littering the code with literal values, and provide a single point of update (by extension, or by hardcoding) for all those situations. A constant is definitely better suited for this task.

```
<?php

class foo {
    private $defaultCols = '*';
    cont DEFAULT_COLUMNS = '*';

    // $this->defaultCols holds a default value. Should be a constant.
    function bar($table, $cols) {
        // This is necessary to activate usage of default values
        if (empty($cols)) {
            $cols = $this->defaultCols;
        }
```

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```
        $res = $this->query('SELECT '.$cols.' FROM '.$table);
        // ....
    }

    // Upgraded version of bar, with default values
    function bar2($table, $cols = self::DEFAULT_COLUMNS) {
        $res = $this->query('SELECT '.$cols.' FROM '.$table);
        // .....
    }
}

?>
```

Suggestions

- Remove the property, as it is probably not unused
- Add another usage of the property where it is useful

Specs

Short name	Classes/UsedOnceProperty
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.10.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.1360 Used Once Trait

Trait should promote code reuse and be used multiple time. A trait that is used once might be as well merged into its host class, and removed. This is currently overengineered code.

```
<?php

trait t {
    function foo() {}
}

class x {
    // This expression may be replaced by the foo method definition
    use t;
}
?>
```

Name	Default	Type	Description
timeUsed	2	integer	Maximal number of trait usage, before the trait is considered enough used.

Suggestions

- Inline the trait with its calling class or trait
- Use the trait in another class or trait

Specs

Short name	Traits/UsedOnceTrait
Rulesets	*All*, *Class Review*
Exakat since	2.4.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	code-reuse, overenginereed
Available in	Entreprise Edition, Exakat Cloud

14.2.1361 Used Once Variables

This is the list of used once variables.

```
<?php

// The variables below never appear again in the code
$writtenOnce = 1;

foo($readOnce);

?>
```

Such variables are useless. Variables must be used at least twice : once for writing, once for reading, at least. It is recommended to remove them.

In special situations, variables may be used once :

- PHP predefined variables, as they are already initialized. They are omitted in this analyze.
- Interface function's arguments, since the function has no body; They are omitted in this analyze.
- Dynamically created variables ($$x, ${$this->y} or also using extract), as they are runtime values and can't be determined at static code time. They are reported for manual review.
- Dynamically included files will provide in-scope extra variables.

This rule counts variables at the application level, and not at a method scope level.

See also class.

Suggestions

- Remove the variable
- Fix the name of variable
- Use the variable a second time, at least

Specs

Short name	Variables/VariableUsedOnce
Rulesets	*All*, *Analyze*, *Top10*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	class
Examples	*shopware*, *Vanilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.1362 Used Once Variables (In Scope)

> This is the list of used once variables, scope by scope. Those variables are used once in a function, a method, a class or a namespace. In any case, this means the variable is read or written, while it should be used at least twice.

Static and global variables are omitted here : they may be used multiple times by having the method being called multiple times.

Blind variables, which are defined in a foreach() structure, are also omitted : the loop will use them multiple time, assigning different values each time.

Parameters that are inherited from parent classes' methods are also omitted : they are imposed by the structure, and cannot be avoided.

```php
<?php

function foo() {
    // The variables below never appear twice, inside foo()
    $writtenOnce = 1;

    foo($readOnce);
    // They do appear again in other functions, or in global space.
}

function bar() {
    $writtenOnce = 1;
    foo($readOnce);
}

?>
```

Suggestions

- Remove the variable
- Fix the name of variable
- Use the variable a second time in the current scope, at least

Specs

Short name	Variables/VariableUsedOnceByContext
Rulesets	*All*, *Analyze*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	static-variable
Examples	*shopware*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1363 Used Private Methods

List of all private methods that are used.

Protected methods, in a standalone class, are also included.

```
<?php

class Foo {
    // Those methods are used
    private function method() {}
    private static function staticMethod() {}

    // Those methods are not used
    private function unusedMethod() {}
    private static function staticUnusedMethod() {}

    public function bar() {
        self::staticMethod();
        $this->method();
    }
}

?>
```

Specs

Short name	Classes/UsedPrivateMethod
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	method
Available in	Entreprise Edition, Exakat Cloud

14.2.1364 Used Protected Method

This rule marks protected methods being used in the current class or its children classes. This show how the methods are used inside a class hierarchy.

```
<?php

class foo {
    // This is reported
    protected usedByChildren() {}

    // This is not reported
    protected notUsedByChildren() {}
}

class bar extends foo {
    // The parent method is not overloaded, though it may be
    protected someMethod() {
        // The parent method is called
        $this->usedByChildren();
    }

}

?>
```

See also Visibility.

Specs

Short name	Classes/UsedProtectedMethod
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	visibility
Available in	Entreprise Edition, Exakat Cloud

14.2.1365 Used Static Properties

List of all static properties that are used.

A private property is used when it is defined and read. A private property that is only written is not used. A property that is only read is used, as it may have a default value, or act as NULL.

```
<?php

class foo {
    // This is a used property (see bar method)
    private $used = 1;

    function bar($a) {
        $this->used += $a;

        return $this->used;
    }
}

?>
```

Specs

Short name	Classes/UsedPrivateProperty
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	class, static
Available in	Entreprise Edition, Exakat Cloud

14.2.1366 Used Trait

Mark a trait as being used by a class or another trait.

```
<?php

// One used trait
trait usedTrait {}

// One unused trait
trait unusedTrait {}

class foo {
    use usedTrait;
}

?>
```

See also Traits.

Specs

Short name	Traits/UsedTrait
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	trait
Available in	Entreprise Edition, Exakat Cloud

14.2.1367 Used Use

List of use statements. Those use are made to import namespaces structures, not to include traits.

```
<?php

namespace A {
    class b {}
}

namespace B {
    use A\B as B;

    new B();
}

?>
```

See also Using namespaces: Aliasing/Importing.

Specs

Short name	Namespaces/UsedUse
Rulesets	*All*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	use
Available in	Entreprise Edition, Exakat Cloud

14.2.1368 Useless Abstract Class

> Those classes are marked 'abstract' and they are never extended. This way, they won't be instantiated nor used.

Abstract classes that have only static methods are omitted here : one usage of such classes are Utilities classes, which only offer static methods.

```
<?php

// Never extended class : this is useless
abstract class foo {}

// Extended class
abstract class bar {
    public function barbar() {}
}

class bar2 extends bar {}

// Utility class : omitted here
abstract class bar {
    public static function barbar() {}
}

?>
```

Suggestions

- Drop the abstract keyword
- Extends the abstract class, more than once
- If the class is extended, merge the class in the child

Specs

Short name	Classes/UselessAbstract
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	abstract
Available in	Entreprise Edition, Exakat Cloud

14.2.1369 Useless Argument

> The argument is always used with the same value. This value could be hard coded in the method, and save one argument slot.

There is no indication that this argument will be used with other values. It may be a development artifact, that survived without cleaning.

```
<?php

// All foo2 arguments are used with different values
function foo2($a, $b) {}
foo2(1, 2);
foo2(2, 2);
foo2(3, 3);

// The second argument of foo is always used with 2
function foo($a, $b) {}
foo(1, 2);
foo(2, 2);
foo(3, 2);

?>
```

Methods with less than 3 calls are not considered here, to avoid reporting methods used once. Also, arguments with a default value are omitted.

The chances of useless arguments decrease with the number of usage. The parameter `maxUsageCount` prevents highly called methods (more than the parameter value) to be processed.

Name	Default	Type	Description
maxUsageCount	30	integer	Maximum count of function usage. Use this to limit the amount of processed arguments.

See also class.

Suggestions

- Remove the argument and hard code its value inside the method
- Add the value as default in the method signature, and drop it from the calls
- Add calls to the method, with more varied arguments

Specs

Short name	Functions/UselessArgument
Rulesets	*All*, *Analyze*
Exakat since	1.8.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	class
Available in	Entreprise Edition, Exakat Cloud

14.2.1370 Useless Assignation Of Promoted Property

Promoted properties save the assignation of constructor argument to the property. It is useless to do it with that syntax, and in the constructor too.

```
<?php

class x {
     private $b;

     function __construct(private $a,
                                                $b,
                                                ) {
             // This is already done with the promoted property
             $this->a = $a;

             // This is the traditional way (up to PHP 8.0)
             $this->b = $b;
             }
}

?>
```

Suggestions

- Remove the assignation in the constructor

Specs

Short name	Classes/UselessAssignationOfPromotedProperty
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*
Exakat since	2.5.0
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	promoted-property
Available in	Entreprise Edition, Exakat Cloud

14.2.1371 Useless Brackets

Standalone brackets have no use. Brackets are used to delimit a block of code, and are used by control statements. They may also be used to protect variables in strings.

Standalone brackets may be a left over of an old instruction, or a misunderstanding of the alternative syntax.

```
<?php

// The following brackets are useless : they are a leftover from an older instruction
// if (DEBUG)
{
    $a = 1;
}

// Here, the extra brackets are useless
for($a = 2; $a < 5; $a++) : {
    $b++;
} endfor;

?>
```

Suggestions

- Remove the brackets
- Restore the flow-control operation that was there and removed
- Move the block into a method or function, and call it

Specs

Short name	Structures/UselessBrackets
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	block, curly-bracket
Examples	*ChurchCRM*, *Piwigo*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1372 Useless Catch

A catch clause should handle the exception by doing something.

Among the task of a catch clause : log the exception, clean any mess that was introduced, fail graciously.

```
<?php

function foo($a) {
    try {
        $b = doSomething($a);
    } catch (Throwable $e) {
        // No log of the exception : no one knows it happened.

        // return immediately ?
        return false;
    }

    $b->complete();

    return $b;
}

?>
```

See also Exceptions and Best practices for PHP exception handling.

Suggestions

- Add a log call to the catch block
- Handle correctly the exception

Specs

Short name	Exceptions/UselessCatch
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.1.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	exception, catch
Examples	*Zurmo*, *PrestaShop*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1373 Useless Check

> There is no need to check the size of an array content before using foreach. Foreach() applies a test on the source, and skips the loop if no element is found.

This analysis checks for conditions with sizeof() and count(). Conditions with isset() and empty() are omitted : they also check for the variable existence, and thus, offer extra coverage.

```
<?php

// Checking for type is good.
if (is_array($array)) {
    foreach($array as $a) {
        doSomething($a);
    }
}

// Foreach on empty arrays doesn't start. Checking is useless
if (!empty($array)) {
    foreach($array as $a) {
        doSomething($a);
    }
}

?>
```

See also foreach.

Suggestions

- Drop the condition and the check
- Turn the condition into isset(), empty() and is_array()

Specs

Short name	Structures/UselessCheck
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.9
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	validation
Examples	*Magento*, *Phinx*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1374 Useless Coalesce

The ?: operator needs the condition to be potentially empty. This means that the type should have the possibility to be null, false, 0, or any of the empty values.

```
<?php

function foo(A $a, bool $b) {
     $a ?: 'a';
     $b ?: 'a';
}

?>
```

Suggestions

- Remove the operator.
- Extend the type to include values that may be empty.

Specs

Short name	Structures/UselessCoalesce
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.6.6
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1375 Useless Constant Overwrite

A class constant is defined in a parent and child class, with the same value. One of them is useless and may be removed.

```
<?php

class x {
     const A = 1;
     const B = 1;
}

class y extends x {
     // A is the same as in the parent class.
     const A = 1;
     // B has a new value, so it is important.
     const B = 2;
}

?>
```

Suggestions

- Remove the parent constant
- Remove the child constant

Specs

Short name	Classes/UselessConstantOverwrite
Rulesets	*All*, *Class Review*
Exakat since	2.5.3
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1376 Useless Constructor

Class constructor that have empty bodies are useless. They may be removed, as they are not called.

The only edge case is when the class has a parent, and that constructor should not be called.

```
<?php

class X {
    function __construct() {
        // Do nothing
    }
}
```

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```
class Y extends X {
    // Useful constructor, as it prevents usage of the parent
    function __construct() {
        // Do nothing
    }
}

?>
```

Suggestions

- Remove the constructor

Specs

Short name	Classes/UselessConstructor
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	constructor
Available in	Entreprise Edition, Exakat Cloud

14.2.1377 Useless Default Argument

One of the argument has a default value, and this default value is never used. Every time the method is called, the argument is provided explicitly, rendering the default value actually useless.

```
<?php

function goo($a, $b = 3) {
    // do something here
}

// foo is called 3 times, and sometimes, $b is not provided.
goo(1,2);
goo(1,2);
goo(1);


function foo($a, $b = 3) {
    // do something here
}

// foo is called 3 times, and $b is always provided.
```

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```
foo(1,2);
foo(1,2);
foo(1,2);
?>
```

Suggestions

- Remove the default value
- Remove the explicit argument in the function call, when it is equal to the default value

Specs

Short name	Functions/UselessDefault
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	1.7.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	function, default
Available in	Entreprise Edition, Exakat Cloud

14.2.1378 Useless Final

When a class is declared final, all of its methods are also final by default.

There is no need to declare them individually final.

```
<?php

    final class foo {
        // Useless final, as the whole class is final
        final function method() { }
    }

    class bar {
        // Useful final, as the whole class is not final
        final function method() { }
    }

?>
```

See also Final Keyword and When to declare final.

Specs

Short name	Classes/UselessFinal
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	final
ClearPHP	no-useless-final
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1379 Useless Global

Global are useless in two cases. First, on super-globals, which are always globals, like $_GET; secondly, on variables that are not used.

```
<?php

// $_POST is already a global : it is in fact a global everywhere
global $_POST;

// $unused is useless
function foo() {
    global $used, $unused;

    ++$used;
}

?>
```

Also, PHP has superglobals, a special team of variables that are always available, whatever the context. They are : $GLOBALS, $_SERVER, $_GET, $_POST, $_FILES, $_COOKIE, $_SESSION, $_REQUEST and $_ENV.

Suggestions

- Drop the global expression

Specs

Short name	Structures/UselessGlobal
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	super-global, $_get, $_post, $_server, $globals, $_files, $_cookie, $_request, $_env
Examples	*Zencart*, *HuMo-Gen*
Available in	Entreprise Edition, Exakat Cloud

14.2.1380 Useless Instructions

Those instructions are useless, or contains useless parts.

For example, an addition whose result is not stored in a variable, or immediately used, does nothing : it is actually performed, and the result is lost. Just plain lost. In fact, PHP might detect it, and optimize it away.

Here the useless instructions that are spotted :

```
<?php

// Concatenating with an empty string is useless.
$string = 'This part '.$is.' useful but '.$not.'';

// This is a typo, that PHP turns into a constant, then a string, then nothing.
continue;

// Empty string in a concatenation
$a = 'abc' . '';

// Returning expression, whose result is not used (additions, comparisons, properties,␣
↪closures, new without =, ...)
1 + 2;

// Returning post-incrementation
function foo($a) {
    return $a++;
}

// array_replace() with only one argument
$replaced = array_replace($array);
// array_replace() is OK with ...
$replaced = array_replace(...$array);

// @ operator on source array, in foreach, or when assigning literals
$array = @array(1,2,3);

// Multiple comparisons in a for loop : only the last is actually used.
for($i = 0; $j = 0; $j < 10, $i < 20; ++$j, ++$i) {
```

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```
    print $i.' '.$j.PHP_EOL;
}

// Counting the keys and counting the array is the same.
$c = count(array_keys($array))

//array_keys already provides an array with only unique values, as they were keys in a␣
↪previous array
$d = array_unique(array_keys($file['messages']))

// No need for assignation inside the ternary operator
$closeQuote = $openQuote[3] === "'" ? substr($openQuote, 4, -2) : $closeQuote = substr(
↪$openQuote, 3);

?>
```

Suggestions

- Remove the extra semi-colon
- Remove the useless instruction
- Assign this expression to a variable and make use of it

Specs

Short name	Structures/UselessInstruction
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
ClearPHP	no-useless-instruction
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1381 Useless Interfaces

The interfaces below are defined and are implemented by some classes.

However, they are never used to enforce an object's class in the code, using `instanceof` or in a type. As they are currently used, those interfaces may be removed without change in behavior. Interfaces should be used in type or with the `instanceof` operator.

```
<?php
    // only defined interface but never enforced
    interface i {};
    class c implements i {}
?>
```

Suggestions

- Use the interface with instanceof, or a type
- Drop the interface altogether : both definition and implements keyword

Specs

Short name	Interfaces/UselessInterfaces
Rulesets	*All*, *Analyze*, *Changed Behavior*, *Class Review*, *Typechecks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	interface
ClearPHP	no-useless-interfaces
Examples	*Woocommerce*
Available in	Entreprise Edition, Exakat Cloud

14.2.1382 Useless Method

This method is useless, as it actually does what PHP would do by default.

```
<?php

class y {
     function foo() {
             // doSomething('foo')
     }
     function goo() {
             // doSomething('goo')
     }
}

class x extends y {
     // No definition for goo(), so it fallback to the parent

     // This definition of foo() falls back to the parent's,
     // just like if it wasn't there.
     function foo() {
             return parent::foo();
     }
}
?>
```

Suggestions

- Remove the useless method
- Add more code to the method body

Specs

Short name	Classes/UselessMethod
Rulesets	*All*, *Analyze*
Exakat since	2.5.1
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1383 Useless Method Alias

It is not possible to declare an alias of a method with the same name.

PHP reports that `Trait method f has not been applied, because there are collisions with other trait methods on x`, which is a way to say that the alias will be in conflict with the method name.

When the method is the only one bearing a name, and being imported, there is no need to alias it. When the method is imported in several traits, the keyword `insteadof` is available to solve the conflict.

This code lints but doesn't execute.

```
<?php

trait t {
    function h() {}
}

class x {
    use t {
        // This is possible
        t::f as g;

        // This is not possible, as the alias is in conflict with itself
        // alias are case insensitive
        t::f as f;
    }
}

?>
```

See also Conflict resolution.

Suggestions

- Remove the alias
- Fix the alias or the origin method name
- Switch to insteadof, and avoid as keyword

Specs

Short name	Traits/UselessAlias
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *LintButWontExec*
Exakat since	1.5.6
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	trait
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1384 Useless Null Coalesce

When the type system ensure the condition is never null, the operator becomes useless.

This is particularly true for properties (static or not) and returntype of methods and functions. And, to a lesser extend, to variables and parameters.

```
<?php

function foo(A $a, ?B $b) {
    // $a is never null, so this is OK
    $a ?? 'a';

    // $b might be null, so this is OK
    $b ?? 'b';
}

?>
```

See also Null coalescing operator.

Suggestions

- Remove the ?? operator
- Switch to a ?: operator
- Updated the properties to accept NULL as a possible type

Specs

Short name	Structures/UselessNullCoalesce
Rulesets	*All*, *Analyze*
Exakat since	2.4.0
PHP Version	With PHP 7.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	coalesce
Available in	Entreprise Edition, Exakat Cloud

14.2.1385 Useless NullSafe Operator

Nullsafe operator ?-> has no object when the types are never null, or when coalesce is active.

The nullsafe operator protects the execution from accessing a method or a property on a null value. If the object part of the syntax cannot be null, then the nullsafe operator ?-> will not protect it.

The nullsafe operator is filling the same duty as ?? operator, although with a more granular precision.

```
<?php

function foo() : A {
     return new A(); // or other code
}

// foo() always returns A, so it is always valid
foo()?->methodOnA();

// goo() may return NULL: ?-> and ?? are filling the same duty
goo()?->methodOnA ?? C;

function goo() : ?A {}

?>
```

Suggestions

- Replace the null safe operator with the normal one.
- Add the type null to the type declaration.
- Check for null-coalesce operator ?? and choose the most appropriate.

Specs

Short name	Classes/UselessNullSafeOperator
Rulesets	*All*, *Changed Behavior*, *Class Review*
Exakat since	2.6.5
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	nullsafe-operator
Available in	Entreprise Edition, Exakat Cloud

14.2.1386 Useless Parenthesis

Situations where parenthesis are not necessary, and may be removed.

Parenthesis group several elements together, and allows for a more readable expression. They are used with logical and mathematical expressions. They are necessary when the precedence of the operators are not the intended execution order : for example, when an addition must be performed before the multiplication.

Sometimes, the parenthesis provide the same execution order than the default order : they are deemed useless, from the PHP point of view. Yet, they may add readability to the code. In special circumstances, they may also protect the code from evolution in the precedence of operators : for example, `1 + 2 . '.' . 3 + 4;` has different results between PHP 8 and PHP 7.

```
<?php

    if ( ($condition) ) {}
    while( ($condition) ) {}
    do $a++; while ( ($condition) );

    switch ( ($a) ) {}
    $y = (1);
    ($y) == (1);

    f(($x));

    // = has precedence over ==
    ($a = $b) == $c;

    ($a++);

    // No need for parenthesis in default values
    function foo($c = ( 1 + 2) ) {}
?>
```

See also Operators Precedence.

Suggestions

- Remove useless parenthesis, unless they are important for readability.

Specs

Short name	Structures/UselessParenthesis
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	operator, operator-precedence
Examples	*Mautic*, *Woocommerce*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1387 Useless Referenced Argument

The argument has a reference, and is only used for reading.

This is probably a development artefact that was forgotten. It is better to remove it.

This analysis also applies to foreach() loops, that declare the blind variable as reference, then use the variable as an object, accessing properties and methods. When a variable contains an object, there is no need to declare a reference : it is a reference automatically.

```
<?php

function foo($a, &$b, &$c) {
    // $c is passed by reference, but only read. The reference is useless.
    $b = $c + $a;
    // The reference is useful for $b
}

foreach ($array as &$element) {
    $element->method();
}

?>
```

See also Objects and references.

Suggestions

- Remove the useless & from the argument
- Make an actual use of the argument before the end of the method

Specs

Short name	Functions/UselessReferenceArgument
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.1.3
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	reference, argument
Examples	*Woocommerce*, *Magento*
Available in	Entreprise Edition, Exakat Cloud

14.2.1388 Useless Return

The spotted functions or methods have a return statement, but this statement is useless. This is the case for constructor and destructors, whose return value are ignored or inaccessible.

When return is void, and the last element in a function, it is also useless.

```
<?php

class foo {
    function __construct() {
        // return is not used by PHP
        return 2;
    }
}

function bar(&$a) {
    $a++;
    // The last return, when empty, is useless
    return;
}

?>
```

Suggestions

- Remove the return expression. Keep any other calculation.

Specs

Short name	Functions/UselessReturn
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	return
Examples	*ThinkPHP*, *Vanilla*
Available in	Entreprise Edition, Exakat Cloud

14.2.1389 Useless Short Ternary

The short ternary operates on empty or null values. When the type of the condition is not false, boolean or null, the operator is useless.

```
<?php

function foo() : A { return new A; }

// This is useless
$b = foo() ? 1;

?>
```

Suggestions

- Remove the ternary operator
- Refactor the types to allow for empty values

Specs

Short name	Structures/UselessShortTernary
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.6.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	short-ternary
Available in	Entreprise Edition, Exakat Cloud

14.2.1390 Useless Switch

This switch has only one case. It may very well be replaced by a ifthen structure.

```
<?php
switch($a) {
    case 1:
        doSomething();
        break;
}

// Same as

if ($a == 1) {
    doSomething();
}
?>
```

Suggestions

- Turn the switch into a if/then for better readability
- Add other cases to the switch, making it adapted to the situation

Specs

Short name	Structures/UselessSwitch
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Features	switch
Examples	*Phpdocumentor*, *Dolphin*
Available in	Entreprise Edition, Exakat Cloud

14.2.1391 Useless Trailing Comma

Trailing comma is the last comma in a call or function definition. It is left with an empty slot aftewards, so as to reduce the diff when adding or removing an element.

Trailing commas appear in array definition, method calls, method definitions, including use expression for closures and use call.

Trailing comma with only one element are reported as useless. Then, for multiple elements, the elements should be on separate lines.

This is a coding convention.

```
<?php

$good = array(1,
                        2,
                        3,
                        4,
                        );

// The trailing comma is just useless.
$bad = array( 1, 2, 3, 4, );

?>
```

Suggestions

- Remove the trailing comma
- Put the trailing comma on a new line

Specs

Short name	Structures/UselessTrailingComma
Rulesets	*All*, *Changed Behavior*, *Coding conventions*
Exakat since	2.6.2
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	trailing-comma
Available in	Entreprise Edition, Exakat Cloud

14.2.1392 Useless Try

Report try clause that are useless. A try clause is useless when no exception is emitted by the code in the block.

This happens when the underlying layers removed the emission of exceptions.

```
<?php

try {
     // Nothing is going to happen here
     ++$a;
} catch (Exception $e) {

}

?>
```

Suggestions

- Remove the Try clause
- Add a throw among the different called methods

Specs

Short name	Exceptions/UselessTry
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Available in	Entreprise Edition, Exakat Cloud

14.2.1393 Useless Type Casting

There is no need to cast already typed values.

```
<?php

// trim always returns a string : cast is useless
$a = (string) trim($b);

// strpos doesn't always returns an integer : cast is useful
$a = (boolean) strpos($b, $c);

// comparison don't need casting, nor parenthesis
$c = (bool) ($b > 2);

function foo(array $a) {
    foreach((array) $a as $b) {
        // doSomething
    }
}
?>
```

Typed values, such as properties, do not have to be cast again, as the engine always ensures their type.

Typed arguments are variables : after the initial check at method call time, they might change value and type. Those extra cast may then carry some value, although changing the type of an incoming value is not recommended.

See also Type juggling and *Multiple Type Variable*.

Suggestions

- Remove the type cast

Specs

Short name	Structures/UselessCasting
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *PHP recommendations*
Exakat since	0.8.7
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	type, cast
Examples	*FuelCMS*, *ThinkPHP*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1394 Useless Type Check

With the type system, checking the type of arguments is handled by PHP.

In particular, a typed argument can't be null, unless it is explicitly nullable, or has a `null` value as default.

```
<?php

// The test on null is useless, it will never happen
function foo(A $a) {
    if (is_null($a)) {
        // do something
    }
}

// Either nullable ? is too much, either the default null is
function barbar(?A $a = null) {
}

// The test on null is useful, the default value null allows it
function bar(A $a = null) {
    if ($a === null) {
        // do something
    }
}


?>
```

See also Type Declarations.

Suggestions

- Remove the nullable typehint
- Remove the null default value
- Remove tests on null

Specs

Short name	Functions/UselessTypeCheck
Rulesets	*All*, *Dead code*
Exakat since	1.8.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.1395 Useless Typehint

__get() and __set() magic methods won't enforce any typehint. The name of the magic property is always cast to string.

__call()

```
<?php

class x {
    // typehint is set and ignored
    function __set(float $name, string $value) {
        $this->$name = $value;
    }

    // typehint is set and ignored
    function __get(integer $name) {
        $this->$name = $value;
    }

    // typehint is checked by PHP 8.0 linting
    // typehint is enforced by PHP 7.x
    function __call(integer $name) {
        $this->$name = $value;
    }
}

$o = new x;
$b = array();
// Property will be called 'Array'
$o->{$b} = 2;
```

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```
// type of $m is check at calling time. It must be string.
$o->{$m}();

?>
```

See also __set.

Suggestions

- Use *string* for the *$name* parameter
- Use no typehint for the *$name* parameter

Specs

Short name	Classes/UselessTypehint
Rulesets	*All*, *Changed Behavior*, *Class Review*, *Suggestions*
Exakat since	2.1.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	magic-method
Available in	Entreprise Edition, Exakat Cloud

14.2.1396 Useless Unset

There are situations where trying to remove a variable is actually useless.

PHP ignores any command that tries to unset a global variable, a static variable, or a blind variable from a foreach loop.

This is different from the garbage collector, which is run on its own schedule. It is also different from an explicit unset, aimed at freeing memory early : those are useful.

```
<?php

function foo($a) {
    // unsetting arguments is useless
    unset($a);

    global $b;
    // unsetting global variable has no effect
    unset($b);

    static $c;
    // unsetting static variable has no effect
    unset($c);

    foreach($d as &$e){
        // unsetting a blind variable is useless
```

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```
        (unset) $e;
    }
    // Unsetting a blind variable AFTER the loop is good.
    unset($e);
}

?>
```

See also unset.

Suggestions

- Remove the unset
- Set the variable to null : the effect is the same on memory, but the variable keeps its existence.
- Omit unsetting variables, and wait for the end of the scope. That way, PHP free memory en mass.

Specs

Short name	Structures/UselessUnset
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	unset
ClearPHP	no-useless-unset
Examples	*Tine20*, *Typo3*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1397 Uses Default Values

Default values are provided to methods so as to make it convenient to use. However, with new versions, those values may change. For example, in PHP 5.4, htmlentities() switched from `Latin1` to `UTF-8` default encoding.

```
<?php

$string = Eu não sou o pão;

echo htmlentities($string);

// PHP 5.3 : Eu n&Atilde;&pound;o sou o p&Atilde;&pound;o
// PHP 5.4 : Eu n&atilde;o sou o p&atilde;o

// Stable across versions
echo htmlentities($string, 'UTF8');
```

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```
?>
```

As much as possible, it is recommended to use explicit values in those methods, so as to prevent from being surprise at a future PHP evolution.

This analyzer tend to report a lot of false positives, including usage of count(). Count() indeed has a second argument for recursive counts, and a default value. This may be ignored safely.

Suggestions

- Mention all arguments, as much as possible

Specs

Short name	Functions/UsesDefaultArguments
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1398 Uses Environment

This rule spots usage of `$_ENV`, `getenv()` and `putenv()` functions: they fetch data from the environment variables.

```
<?php

// Take some configuration from the environment
$secret_key = getenv('secret_key');

?>
```

Specs

Short name	Php/UsesEnv
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	environment
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1399 Uses PHP 8 Match()

Use the match() syntax.

```
<?php


$A = match($a) {
    'a' => 'A',
    'b' => 'B',
    default => 'd',
};

?>
```

See also match and Match expression.

Specs

Short name	Php/UseMatch
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	2.1.4
PHP Version	With PHP 8.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	match
Related rule	*Reserved Match Keyword*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1400 Using $this Outside A Class

`$this` is a special variable, that should only be used in a class context.

Until PHP 7.1, `$this` may be used as an argument in a function or a method, a global, a static : while this is legit, it sounds confusing enough to avoid it. Starting with PHP 7.1, the PHP engine check thoroughly that `$this` is used in an appropriate manner, and raise fatal errors in case it isn't.

Yet, it is possible to find `$this` outside a class : if the file is included inside a class, then `$this` will be recognized and validated. If the file is included outside a class context, it will yield a fatal error : `Using `$this <https://www.php.net/manual/en/language.oop5.basic.php>`_ when not in object context`.

```
<?php

function foo($this) {
    echo $this;
}

// A closure can be bound to an object at later time. It is valid usage.
$closure = function ($x) {
    echo $this->foo($x);
```

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```
}

?>
```

See also Closure::bind and The Basics.

Specs

Short name	Classes/UsingThisOutsideAClass
Rulesets	*All*, *Analyze*, *Changed Behavior*, *CompatibilityPHP71*, *LintButWontExec*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Critical
Time To Fix	Instant (5 mins)
Changed Behavior	PHP 7.1 - More
Precision	High
Features	$this
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.1401 Using Deprecated Feature

Deprecated attribute marks a class, interface, trait, enumeration, function, closure <https://www.php.net/`closure>`_, array function, parameter, as a deprecated feature. This rule reports usage of these structure, so they can be removed.

Note that the class ` rulesets-deprecated ` does not need to be defined anywhere.

```
<?php

#[Deprecated]
function foo() { }

// This is reported
foo();

?>
```

Suggestions

- Remove usage of this deprecated feature, so they can be removed ultimately.

Specs

Short name	Attributes/UsingDeprecated
Rulesets	*All*, *Attributes*
Exakat since	2.6.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	attribute
Available in	Entreprise Edition, Exakat Cloud

14.2.1402 Using Deprecated Method

A call to a deprecated method has been spotted. A method is deprecated when it bears a `@deprecated` parameter in its typehint definition.

Deprecated methods which are not called are not reported.

```
<?php

// not deprecated method
not_deprecated();

// deprecated methods
deprecated();
$object = new X();
$object->deprecatedToo();

/**
 * @deprecated since version 2.0.0
 */
function deprecated() {}

// PHP 8.0 attribute for deprecation
class X {
    #[ Deprecated]
    function deprecatedToo() {}
}

function not_deprecated() {}

?>
```

See also @deprecated.

Suggestions

- Replace the deprecated call with a stable call
- Remove the deprecated attribute from the method definition
- Remove the deprecated call

Specs

Short name	Functions/UsingDeprecated
Rulesets	*All*, *Analyze*, *Attributes*
Exakat since	2.1.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	deprecated
Available in	Entreprise Edition, Exakat Cloud

14.2.1403 Using Short Tags

The code makes use of short tags. Short tags are the following : `<?` . A full scripts looks like that : `<? /* php code */ ?>` .

It is recommended to avoid using short tags, and use standard PHP tags. This makes PHP code compatible with XML standards. Short tags used to be popular, but have lost it.

See also PHP Tags.

Suggestions

- Use full tags

Specs

Short name	Structures/ShortTags
Rulesets	*All*, *Appinfo*, *CE*, *PHP recommendations*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	short-tag, php-tag, echo-tag
ClearPHP	no-short-tags
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1404 Usort Sorting In PHP 7.0

Usort(), uksort() and uasort() behavior has changed in PHP 7. Values that are equals (based on the user-provided method) may be sorted differently than in PHP 5.

If this sorting is important, it is advised to add extra comparison in the user-function and avoid returning 0 (thus, depending on default implementation).

```
<?php

$a = [ 2, 4, 3, 6];

function noSort($a) { return $a > 5; }

usort($a, 'noSort');
print_r($a);

?>
```

In PHP 5, the results is ::

```
Array
(
    [0] => 3
    [1] => 4
    [2] => 2
    [3] => 6
)
```

in PHP 7, the result is ::

```
Array
(
    [0] => 2
    [1] => 4
    [2] => 3
    [3] => 6
)
```

See also Sort order of equal elements.

Suggestions

- Make sure the sorting function doesn't generate any values of the same order.
- Add an extra order branch to avoid values of the same order.
- Spot the values of the same order after the sort, and sort them again, independently.

Specs

Short name	Php/UsortSorting
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 7.0 - More
Precision	Medium
Features	sort
Available in	Entreprise Edition, Exakat Cloud

14.2.1405 Utf8 Encode And Decode Are Deprecated

utf8_encode() and utf8_decode() are deprecated in PHP 8.0. They are planned removal in PHP 9.0.

See also PHP RFC: Deprecate and Remove utf8_encode and utf8_decode.

Suggestions

- Use mbstring functions : mb_convert_encoding($latin1, 'UTF-8', 'ISO-8859-1')
- Use iconv functions : mb_convert_encoding($latin1, 'UTF-8', 'ISO-8859-1')
- Use intl functions : iconv('ISO-8859-1', 'UTF-8', $latin1)

Specs

Short name	Php/Utf8EncodeDeprecated
Rulesets	*All*, *CompatibilityPHP82*
Exakat since	2.4.5
PHP Version	With PHP 8.2 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1406 Var Keyword

Var was used in PHP 4 to mark properties as public. Nowadays, new keywords are available : public, protected, private. Var is equivalent to public.

It is recommended to avoid using var, and explicitly use the new keywords.

```
<?php

class foo {
    public $bar = 1;
```

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```
    // Avoid var
    //var $bar = 1;
}

?>
```

See also Visibility.

Suggestions

- It is recommended to avoid using var, and explicitly use the new keywords : private, protected, public

Specs

Short name	Classes/OldStyleVar
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	visibility
ClearPHP	no-php4-class-syntax
Examples	*xataface*
Available in	Entreprise Edition, Exakat Cloud

14.2.1407 Variable Anf Property Typehint

Adds typehints to (local) variables and properties, by inference from the code.

Currently, the variable must be assigned only one type within its context to be typed. Non-typed variables limit the scope of other rules.

This is an internal tool, to help find definitions of classes. The same strategies may happen to arguments, though there is no syntax relay for variables.

```
<?php

function foo() {
    $a = 1;

    return $a;
}

?>
```

Specs

Short name	Complete/VariableTypehint
Rulesets	*All*, *Changed Behavior*, *First*, *NoDoc*
Exakat since	2.3.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Medium
Features	variable, typehint
Available in	Entreprise Edition, Exakat Cloud

14.2.1408 Variable Constants

Variable constants are constants whose value is accessed via the function constant(). Otherwise, there is no way to dynamically access a constant (aka, when the developer has the name of the constant as a incoming parameter, and it requires the value of it).

```
<?php

const A = 'constant_value';

$constant_name = 'A';

$variableConstant = constant($constant_name);

?>
```

See also constant().

Specs

Short name	Constants/VariableConstant
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	dynamic-constant, constant
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1409 Variable Global

Variable `global` such are valid in PHP 5.6, but no in PHP 7.0. They should be replaced with ${$foo->bar}.

```
<?php

// Forbidden in PHP 7
global $normalGlobal;

// Forbidden in PHP 7
global $$variable->global ;

// Tolerated in PHP 7
global ${$variable->global};

?>
```

Specs

Short name	Structures/VariableGlobal
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.3
PHP Version	With PHP 7.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	global
Available in	Entreprise Edition, Exakat Cloud

14.2.1410 Variable Is A Local Constant

A variable that is written once, then never modified : it behaves like a constant. Some other rule may take advantage of this.

```
<?php

function foo() {
    $localConstant = 'Hello';
    echo $localConstant;

    $variable = 'Hello, ';
    $variable .= date('r');
    echo $variable;
}

?>
```

Specs

Short name	Variables/IsLocalConstant
Rulesets	*All*, *Changed Behavior*, *First*, *NoDoc*
Exakat since	2.3.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1411 Variable Is Not A Condition

> Avoid using a lone variable as a condition. It is recommended to use a comparative value, or one of the filtering function, such as isset(), empty().

Using the raw variable as a condition blurs the difference between an undefined variable and an empty value. By using an explicit comparison or validation function, it is easier to understand what the variable stands for.

```
<?php

if (isset($error)) {
    echo 'Found one error : '.$error!;
}

//
if ($errors) {
    print count($errors).' errors found : '.join('', $errors).PHP_EOL;
    echo 'Not found';
}

?>
```

Thanks to the PMB team for the inspiration.

Suggestions

- Make the validation explicit, by using a comparison operator, or one of the validation function.

Specs

Short name	Structures/NoVariableIsACondition
Rulesets	*All*, *Analyze*
Exakat since	1.6.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	comparison, iffectation
Available in	Entreprise Edition, Exakat Cloud

14.2.1412 Variable Parameter Ambiguity In Arrow Function

Avoid using a parameter that is also the name of a local variable.

Arrow functions import automatically the variables from the local context in their body. Yet, a variable name may also be used as the name of a parameter. In that case, PHP use the parameter, and omits the value of the local variable.

```
<?php

// $b is a parameter, $a is a local variable
$a = 1;
fn($b) => $a + $b;

//  $a is a local variable, but also a parameter.
// PHP uses the parameter, and omits the local variable
fn($a) => $a + 1;

?>
```

Suggestions

- Use parameter names that are distinct from the local variables names.

Specs

Short name	Functions/VariableParameterAmbiguityInArrowFunction
Rulesets	*All*, *Changed Behavior*
Exakat since	2.6.6
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	arrow-function
Available in	

14.2.1413 Variable References

Variables that are holding references.

References are created with =& operators, and later propagated with the same operators, or via reference-arguments.

```
<?php

$a = '1'; // not a reference
$b = &$a; // a reference

?>
```

See also References.

Specs

Short name	Variables/References
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	reference
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1414 Variable Variables

A variable variable takes the value of a variable and treats that as the name of a variable.

PHP has the ability to dynamically use a variable.

They are also called 'dynamic variable'.

```
<?php

// Normal variable
$a = 'b';
$b = 'c';

// Variable variable
$d = $$b;

// Variable variable in string
$d = "$\{$b\}";

?>
```

See also Variable variables.

Specs

Short name	Variables/VariableVariables
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	variable-variable, variable
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1415 Variables With Long Names

This analysis collects all variables with more than 20 characters longs. This may be configured with the `variableLength` parameter.

```
<?php

// Quite a long variable name
$There_is nothing_wrong_with_long_variable_names_They_tend_to_be_rare_and_that_make_them_
↪noteworthy = 1;

?>
```

PHP has not limitation on variable name size. While short name are often obscure, long names are usually better. Yet, there exists a limit to convenient variable name length.

Name	Default	Type	Description
variableLength	20	integer	Minimum size of a long variable name, including the initial $.

See also Basics.

Suggestions

- Try to use short variable names.

Specs

Short name	Variables/VariableLong
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1416 Variables With One Letter Names

Variables with one letter name are the shortest name for variables. They also bear very little meaning : what does contain the variable `$w` ?

Some one-letter variables have meaning : `$x` and `$y` for coordinates, `$i`, `$j`, `$k` for blind variables. Others tend to be an easy way to give a name to a variable, without thinking too hard a good name.

```
<?php

// $a is reported as a one-letter variable
$a = 0;
```

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```
// $i is considered a false positive.
for($i = 0; $i < 10; ++$i) {
    $a += doSomething($i);
}

?>
```

See also Using single characters for variable names in loops/exceptions and Single Letter Variable Names Still Considered Harmful.

Suggestions

- Make the variable more meaningful, with full words

Specs

Short name	Variables/VariableOneLetter
Rulesets	*All*, *Semantics*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1417 Void Is Not A Reference

It is not possible to return by reference, in a method that is typed void. The returned value is a literal `null`.

```
<?php

function ?foo() : void {}

?>
```

Suggestions

- Remove the void type
- Remove the reference on the method

Specs

Short name	Functions/VoidIsNotAReference
Rule-sets	*All*, *Analyze*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*
Exakat since	2.6.2
PHP Version	With PHP 8.1 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.1 - More
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1418 Weak Type With Array

Using array as a type, to use specific index later.

The type of array is too weak : it allows to know that the array syntax has to be used in the function. Yet, it doesn't enforce the presence or absence of a specific index.

```
<?php

function foo(array $variable) {
     echo $array['display'];
}

?>
```

See also Stop using Arrays and Never* Use Arrays.

Suggestions

- Use a class as type, instead of

Specs

Short name	Arrays/WeakType
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.1
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	array
Available in	Entreprise Edition, Exakat Cloud

14.2.1419 Weak Typing

The variable's validation is not enough to allow for a sophisticated usage. For example, the variable is checked for null, then used as an object or an array.

```
<?php

if ($a !== null) {
    echo $a->b;
}

?>
```

See also From assumptions to assertions.

Suggestions

- Use instanceof when checking for objects
- Use is_array() when checking for arrays. Also consider is_string(), is_int(), etc.
- Use typehint when the variable is an argument

Specs

Short name	Classes/WeakType
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	1.2.8
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	typehint
Examples	*TeamPass*
Available in	Entreprise Edition, Exakat Cloud

14.2.1420 Weird Array Index

Array index that looks weird. Arrays index may be string or integer, but some strings looks weird.

In particular, strings that include terminal white spaces, often leads to missed values.

```
<?php

$array = ['a ' => 1, 'b' => 2, 'c' => 3];

// Later in the code

//Notice: Undefined index: a in /Users/famille/Desktop/analyzeG3/test.php on line 8
echo $array['a'];

//Notice: Undefined index: b  in /Users/famille/Desktop/analyzeG3/test.php on line 10
// Note that the space is visible, but easy to miss
echo $array['b '];

// all fine here
echo $array['c'];

?>
```

Although this is rare error, and often easy to spot, it is also very hard to find when it strikes.

Suggestions

- Remove white spaces when using strings as array index.

Specs

Short name	Arrays/WeirdIndex
Rulesets	*All*, *Semantics*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	index
Available in	Entreprise Edition, Exakat Cloud

14.2.1421 While(List() = Each())

This code structure is quite old : it should be replace by the more modern and efficient foreach.

This structure is deprecated since PHP 7.2. It may disappear in the future.

```
<?php

    while(list($key, $value) = each($array)) {
        doSomethingWith($key) and $value();
    }

    foreach($array as $key => $value) {
        doSomethingWith($key) and $value();
    }
?>
```

See also PHP RFC: Deprecations for PHP 7.2 : Each().

Suggestions

- Change this loop with foreach
- Change this loop with an `array_*` functions with a callback

Specs

Short name	Structures/WhileListEach
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Performances*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	while
Examples	*OpenEMR*, *Dolphin*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1422 Windows Only Constants

When built on Windows, PHP offers some extra constants. They are not available on other operating systems.

```
<?php

//The Windows build number (for example, Windows Vista with SP1 applied is build 6001)
echo PHP_WINDOWS_VERSION_BUILD;

?>
```

See also Info Predefined Constants.

Specs

Short name	Portability/WindowsOnlyConstants
Rulesets	*All*
Exakat since	1.7.0
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1423 Wordpress usage

This analysis reports usage of the Wordpress platform.

The current supported version is Wordpress 5.8.

```
<?php

//Usage of the WP_http class from Wordpress
$rags = array(
   'x' => '1',
   'y' => '2'
);
$url = 'http://www.example.com/';
$request = new WP_Http();
$result = $request->request( $url, array( 'method' => 'POST', 'body' => $body) );

?>
```

See also Wordpress.

Specs

Short name	Vendors/Wordpress
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1424 Written Only Variables

Those variables are being written, but never read. In this way, they are useless and should be removed, or be read at some point in the code.

When the variables are only written, it takes time to process them, while discarding their result without usage. Also, when those variables are built with a complex process, it makes it difficult to understand their point, and still create maintenance work.

```
<?php

// $a is used multiple times, but never read
$a = 'a';
$a .= 'b';

$b = 3;
//$b is actually read once
$a .= $b + 3;

?>
```

Suggestions

- Check that variables are written AND read in each context
- Remove variables that are only read
- Use the variable that are only read

Specs

Short name	Variables/WrittenOnlyVariable
Rulesets	*All*, *Analyze*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	variable
ClearPHP	no-unused-variable
Examples	*Dolibarr*, *SuiteCrm*
Available in	Entreprise Edition, Exakat Cloud

14.2.1425 Wrong Access Style to Property

> Use the right syntax when reaching for a property. Static properties use the `\:\:` operator, and non-static properties use `->`.

Mistaking one of the other raise two different reactions from PHP : `Access to undeclared `static <https://www.php.net/manual/en/language.oop5.static.php>`_ property` is a fatal error, while `PHP Notice: Accessing `static <https://www.php.net/manual/en/language.oop5.static.php>`_ property aa\:\:$a as non `static <https://www.php.net/manual/en/language.oop5.static.php>`_` is a notice.

This analysis reports both static properties with a -> access, and non-static properties with a *::* access.

```
<?php

class a {
    static public $a = 1;

    function foo() {
        echo self::$a; // right
        echo $this->a; // WRONG
    }
}

class b {
    public $b = 1;

    function foo() {
        echo $this->$b;  // right
        echo b::$b;      // WRONG
    }
}

?>
```

See also Static Keyword.

Suggestions

- Match the property call with the definition
- Make the property static

Specs

Short name	Classes/UndeclaredStaticProperty
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Class Review*
Exakat since	1.4.9
PHP Version	All
Severity	Critical
Time To Fix	Quick (30 mins)
Precision	Very high
Features	declaration
Examples	*HuMo-Gen*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1426 Wrong Argument Name With PHP Function

The name of the argument provided is not a valid parameter name for that PHP native function or method.

```
<?php

// those are the valid names
strcmp(string1: 'a', string2: 'b');

// those are not the valid names
strcmp(string: 'a', stringToo: 'b');

?>
```

This analysis may be configured with extra PHP extensions or external packages.

See also *Unknown Parameter Name*.

Suggestions

- Use the correct parameter name
- Remove all the parameter names from the call
- Create a relay function with the correct parameter names

Specs

Short name	Functions/WrongArgumentNameWithPhpFunction
Rulesets	*All*, *Analyze*, *CI-checks*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	2.2.3
PHP Version	With PHP 8.0 and more recent
Severity	Major
Time To Fix	Instant (5 mins)
Precision	High
Features	named-parameter
Configurable by	php_core, php_extensions, stubs
Available in	Entreprise Edition, Exakat Cloud

14.2.1427 Wrong Argument Type

Checks that the type of the argument is consistent with the type of the called method.

```
<?php

function foo(int $a) { }

//valid call, with an integer
foo(1);

//invalid call, with a string
foo('asd');

?>
```

This analysis is valid with PHP 8.0.

Suggestions

- Always use a valid type when calling methods.

Specs

Short name	Functions/WrongArgumentType
Rulesets	*All*, *Analyze*, *Typechecks*
Exakat since	2.1.3
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1428 Wrong Attribute Configuration

A class is attributed to the wrong PHP structure.

```
<?php
#[Attribute(Attribute::TARGET_CLASS)]
class ClassAttribute { }

// Wrong
#[ClassAttribute]
function foo () {}

// OK
#[ClassAttribute]
class y  {}

?>
```

See also Declaring Attribute Classes.

Suggestions

- Remove the attribute from the wrongly attributed structure
- Extend the configuration of the attribute with Attribute::TARGET_*

Specs

Short name	Php/WrongAttributeConfiguration
Rulesets	*All*, *Analyze*
Exakat since	2.2.0
PHP Version	With PHP 8.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	attribute
Available in	Entreprise Edition, Exakat Cloud

14.2.1429 Wrong Case Namespaces

Namespaces are case-insensitive.

```
<?php

// Namespaces should share the same case
namespace X {}

namespace x {}

?>
```

Suggestions

- Synchronize all names

Specs

Short name	Namespaces/WrongCase
Rulesets	*All*, *Changed Behavior*, *Coding conventions*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	namespace
Available in	Entreprise Edition, Exakat Cloud

14.2.1430 Wrong Class Name Case

The spotted classes are used with a different case than their definition. While PHP accepts this, it makes the code harder to read.

It may also be a violation of coding conventions.

```
<?php

// This use statement has wrong case for origin.
use Foo as X;

// Definition of the class
class foo {}

// Those instantiations have wrong case
new FOO();
new X();

?>
```

See also PHP class name constant case sensitivity and PSR-11.

Suggestions

- Match the defined class name with the called name

Specs

Short name	Classes/WrongCase
Rulesets	*All*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Examples	*WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.1431 Wrong Function Name Case

The spotted functions are used with a different case than their definition. While PHP accepts this, it makes the code harder to read.

It may also be a violation of coding conventions.

```
<?php

// Definition of the class
function foo () {}
```

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```
// Those calls have wrong case
FOO();
\Foo();

// This is valid
foo();

?>
```

See also PHP class name constant case sensitivity and PSR-11.

Suggestions

- Match the defined functioncall with the called name

Specs

Short name	Functions/WrongCase
Rulesets	*All*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	case-sensitivity
Available in	Entreprise Edition, Exakat Cloud

14.2.1432 Wrong Locale

Checks the locale used in the code against a library.

```
<?php

// what language ?
setLocale(LC_ALL, 'hx');

// utf8 actually needs a - : utf-8
setLocale(LC_ALL, 'utf8');

?>
```

Name	Default	Type	Description
otherLocales		array	Other accepted locales, comma separated
maxPositions	3	integer	Number of argument in setLocale() to be tried.

Suggestions

- Use a valid locale

Specs

Short name	Structures/WrongLocale
Rulesets	*All*, *Analyze*, *Semantics*
Exakat since	2.4.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	locale
Available in	Entreprise Edition, Exakat Cloud

14.2.1433 Wrong Number Of Arguments

Those functioncalls are made with too many or too few arguments.

When the number arguments is wrong for native functions, PHP emits a warning. When the number arguments is too small for custom functions, PHP raises an exception. When the number arguments is too high for custom functions, PHP ignores the arguments. Such arguments should be handled with the variadic operator, or with func_get_args() family of functions.

```
<?php

echo strtoupper('This function is', 'ignoring arguments');
//Warning: strtoupper() expects exactly 1 parameter, 2 given in Command line code on␣
↪line 1

echo strtoupper();
//Warning: strtoupper() expects exactly 1 parameter, 0 given in Command line code on␣
↪line 1

function foo($argument) {}
echo foo();
//Fatal error: Uncaught ArgumentCountError: Too few arguments to function foo(), 0␣
↪passed in /Users/famille/Desktop/analyzeG3/test.php on line 10 and exactly 1 expected␣
↪in /Users/famille/Desktop/analyzeG3/test.php:3

echo foo('This function is', 'ignoring arguments');

?>
```

It is recommended to check the signature of the methods, and fix the arguments.

Suggestions

- Add more arguments to fill the list of compulsory arguments
- Remove arguments to fit the list of compulsory arguments
- Use another method or class

Specs

Short name	Functions/WrongNumberOfArguments
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *IsExt*, *IsPHP*, *IsStub*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	High
Features	function, method, static-method, constructor
Configurable by	php_core, php_extensions, stubs
ClearPHP	no-missing-argument.md
Examples	*xataface*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1434 Wrong Number Of Arguments In Methods

Those methods are called with a wrong number of arguments : too many or too few. Check the signature.

```
<?php

class Foo {
    private function Bar($a, $b) {
        return $a + $b;
    }

    public function foobar() {
        $this->Bar(1);

        // Good amount
        $this->Bar(1, 2);

        // Too Many
        $this->Bar(1, 2, 3);
    }
}

?>
```

Methods with a variable number of argument, either using ellipsis or func_get_args() are ignored.

PHP emits an error at runtime, when arguments are not enough : ''. PHP doesn't emit an error when too many arguments are provided.

Suggestions

- Adapt the call to use one of the right number of arguments : this means dropping the extra ones, or adding the missing ones
- Adapt the signature of the method, and use a default value

Specs

Short name	Functions/WrongNumberOfArgumentsMethods
Rulesets	*All*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	composer
Available in	Entreprise Edition, Exakat Cloud

14.2.1435 Wrong Optional Parameter

Wrong placement of optional parameters.

PHP parameters are optional when they defined with a default value, like this :

When a function have both compulsory and optional parameters, the compulsory ones should appear first, and the optional should appear last :

PHP solves this problem at runtime, assign values in the same other, but will miss some of the default values and emits warnings.

It is better to put all the optional parameters at the end of the method's signature.

Optional parameter wrongly placed are now a Notice in PHP 8.0. The only previous case that is allowed in PHP 8.0 and also in this analysis, is when the `null` value is used as default for typed arguments.

```
<?php
    function x($arg = 1) {
        // PHP code here
    }
?>
```

See also Function arguments.

Suggestions

- Give default values to all but first parameters. Null is a good default value, as PHP will use it if not told otherwise.
- Remove default values to all but last parameters. That is probably a weak solution.
- Change the order of the values, so default-valued parameters are at the end. This will probably have impact on the rest of the code, as the API is changing.

Specs

Short name	Functions/WrongOptionalParameter
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *CompatibilityPHP80*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.1 - More
Precision	Very high
Features	parameter, optional-parameter
Examples	*FuelCMS*, *Vanilla*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1436 Wrong Parameter Type

The expected parameter is not of the correct type. Check PHP documentation to know which is the right format to be used.

```
<?php

// substr() shouldn't work on integers.
// the first argument is first converted to string, and it is 123456.
echo substr(123456, 0, 4); // display 1234

// substr() shouldn't work on boolean
// the first argument is first converted to string, and it is 1, and not t
echo substr(true, 0, 1); // displays 1

// substr() works correctly on strings.
echo substr(123456, 0, 4);

?>
```

Specs

Short name	Php/InternalParameterType
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*Zencart*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1437 Wrong Precedence In Expression

> These operators are not executed in the expected order. Coalesce and ternary operator have lesser precedence compared to comparisons or spaceship operators.

Thus, the comparison is executed first, and the other operator later.

It is recomended to use parenthesis in these cases.

Note that this may behave as expected, with a bit of clever placing boolean: see last example.

```
<?php

// This
if ($a ?? 1 == 2) {}

// is equivalent to
if ($a ?? (1 == 2)) {}

// It is different from
if (($a ?? 1) == 2) {}

// This one is also wrong, but falls back on correct values
if ($a ?? false === true) {}

?>
```

Suggestions

- Add parenthesis around the coalesce operator

Specs

Short name	Structures/WrongPrecedenceInExpression
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.6.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1438 Wrong Range Check

The interval check should use && and not ||.

```
<?php

//interval correctly checked a is between 2 and 999
if ($a > 1 && $a < 1000) {}

//interval incorrectly checked : a is 2 or more ($a < 1000 is never checked)
if ($a > 1 || $a < 1000) {}

?>
```

Suggestions

- Make the interval easy to read and understand
- Check the truth table for the logical operation

Specs

Short name	Structures/WrongRange
Rulesets	*All*, *Analyze*
Exakat since	1.2.5
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*Dolibarr*, *WordPress*
Available in	Entreprise Edition, Exakat Cloud

14.2.1439 Wrong Type For Native PHP Function

This analysis reports calls to a PHP native function with a wrongly typed value.

```
<?php

// valid calls
echo exp(1);
echo exp(2.5);

// invalid calls
echo exp("1");
echo exp(array(2.5));

// valid call, but invalid math
// -1 is not a valid value for log(), but -1 is a valid type (int) : it is not reported␣
↪by this analysis.
echo log(-1);
?>
```

See also PHP 7.1 no longer converts string to arrays the first time a value is assigned with square bracket notation.

Suggestions

- Set the code to the valid type, when calling a PHP native function

Specs

Short name	Php/WrongTypeForNativeFunction
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	2.1.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1440 Wrong Type Returned

The returned value is not compatible with the specified return type.

```
<?php

// classic error
function bar() : int {
    return 'A';
}

// classic static error
const B = 2;
```

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```
function bar() : string {
    return B;
}

// undecideable error
function bar($c) : string {
    return $c;
}

// PHP lint this, but won't execute it
function foo() : void {
    // No return at all
}

?>
```

See also Returning values, Void Return Type, *Mismatch Type And Default* and *Wrong Typed Property Default*.

Suggestions

- Match the return type with the return value
- Remove the return expression altogether
- Add a typecast to the returning expression

Specs

Short name	Functions/WrongReturnedType
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Class Review*, *LintButWontExec*
Exakat since	1.8.7
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1441 Wrong Type With Call

This analysis checks that a call to a method uses the types.

This analysis is compatible with Union types and with Intersection types.

```
<?php

function foo(string $a) {

}
```

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```
// wrong type used
foo(1);

// wrong type used
foo("1");

?>
```

Currently, this analysis doesn't take into account `strict_types = 1`. As such, `int` and `string` won't be compatible.

Suggestions

- Use the right type with all arguments
- Force the type with a cast
- Check the type before calling

Specs

Short name	Functions/WrongTypeWithCall
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Typechecks*
Exakat since	1.9.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	union-type, intersection-type
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1442 Wrong Type With Default

The default value is not of the declared type.

For properties, this will generate an error as soon as the default value is used : this is before constructor call for properties, and when the argument is omitted for promoted properties.

For parameters, the error happens when the argument is omitted, and the default value is fetched. Otherwise, it won't happen.

```
<?php

const A = 1;

class B {
    private string $c = A;
}

new B;
//Cannot assign string to property B::$c of type string
?>
```

This error is immediately detected when a literal value is used. It only happens when the default is a constant (class or global) or an expression, as those are only solved at execution time.

See also When does PHP check for Fatal error.

Specs

Short name	Typehints/WrongTypeWithDefault
Rulesets	*All*, *Analyze*, *Class Review*, *LintButWontExec*
Exakat since	2.4.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.1443 Wrong Typed Property Default

Property is typed, yet receives an incompatible value at constructor time.

Initialized type might be a new instance, the return of a method call or an interface compatible object.

PHP compiles such code, but won't execute it, as it detects the incompatibility at execution time.

```
<?php

class x {
    private A $property;
    private B $incompatible;

    function __construct() {
        // This is compatible
        $this->property = new A();

        // This is incompatible : new B() expected
        $this->incompatible = new C();

    }
}

?>
```

See also *Wrong Type Returned* and *Mismatch Type And Default*.

Suggestions

- Remove the type hint of the property
- Fix the initialization call
- Use an interface for typehint

Specs

Short name	Classes/WrongTypedPropertyInit
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Class Review*, *LintButWontExec*
Exakat since	2.0.9
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	default-value
Note	This issue may lint but will not run
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1444 Wrong Typehinted Name

The parameter name doesn't reflect the typehint used.

There are no restriction on parameter names, except its uniqueness in the signature. Yet, using a scalar typehint as the name for another typehinted value is just misleading.

```
<?php

function foo(string $array,
             int $int) {
    // doSomething()
}

function bar(array $strings) {
    // doSomething()
}

?>
```

This analysis relies on exact names : calling an array a list of `strings` is OK with this analysis.

This analysis relies on a few variations of names : `bool` and `boolean`, `int` and `integer`.

Suggestions

- Rename the parameter

Specs

Short name	Functions/WrongTypehintedName
Rulesets	*All*, *Coding conventions*, *Semantics*
Exakat since	2.0.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	type
Available in	Entreprise Edition, Exakat Cloud

14.2.1445 Wrong fopen() Mode

Wrong file opening for fopen().

fopen() has a few modes, as described in the documentation : 'r', 'r+', for reading; 'w', 'w+' for writing; 'a', 'a+' for appending; 'x', 'x+' for modifying; 'c', 'c+' for writing and locking, 't' for text files and windows only. An optional 'b' may be used to make the fopen() call more portable and binary safe. Another optional 't' may be used to make the fopen() call process automatically text input : this one should be avoided. Any other values are not understood by PHP.

```
<?php

// open the file for reading, in binary mode
$fp = fopen('/tmp/php.txt', 'rb');

// New option e in PHP 7.0.16 and 7.1.2 (beware of compatibility)
$fp = fopen('/tmp/php.txt', 'rbe');

// Unknown option x
$fp = fopen('/tmp/php.txt', 'rbx');

?>
```

Suggestions

- Check the docs, choose the right opening mode.

Specs

Short name	Php/FopenMode
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	file-mode
Examples	*Tikiwiki*, *HuMo-Gen*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1446 Yield From Usage

Usage of generator <https://www.php.net/`generator>`_ delegation, with `yield from` keyword.

In PHP 7, generator <https://www.php.net/`generator>`_ delegation allows you to yield values from another `Generator`, `Traversable` object, or array by using the `yield from`.

`Yield from` was introduced in PHP 7.1, and is backward incompatible.

```
<?php

// Yield delegation
function foo() {
    yield from bar();
}

function bar() {
    yield 1;
}

?>
```

See also Generator Syntax and Understanding PHP Generators.

Specs

Short name	Php/YieldFromUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	yield, yield-from
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1447 Yield Usage

Usage of generators, with yield keyword.

Yield was introduced in PHP 5.5, and is backward incompatible.

```
<?php

function prime() {
    $primes = [2, 3, 5, 7, 11, 13, 17, 19];
    foreach($primes as $prime) {
        yield $prime;
    }
}

?>
```

See also Generator Syntax, Deal with Memory Gently using "Yield" in PHP and Understanding PHP Generators.

Specs

Short name	Php/YieldUsage
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	With PHP 5.5 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	yield, yield-from
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1448 Yii usage

This analysis reports usage of the Yii 2 framework.

This analysis targets Yii 2, not Yii 1.

```
<?php

// A Yii controller
class SiteController extends \Yii\Web\Controller
{
    public function actionIndex()
    {
        // ...
    }

    public function actionContact()
    {
        // ...
    }
```

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```
}

?>
```

See also Yii.

Specs

Short name	Vendors/Yii
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	framework
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1449 Yoda Comparison

Yoda comparison is a way to write conditions which places literal values on the left side.

```
<?php
  if (1 == $a) {
    // Then condition
  }
?>
```

The objective is to avoid mistaking a comparison to an assignation. If the comparison operator is mistaken, but the literal is on the left, then an error will be triggered, instead of a silent bug.

```
<?php
    // error in comparison!
    if ($a = 1) {
        // Then condition
    }
?>
```

.

See also Yoda Conditions and Yoda Conditions: To Yoda or Not to Yoda.

Specs

Short name	Structures/YodaComparison
Rulesets	*All*, *Coding conventions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1450 __DIR__ Then Slash

__DIR__ must be concatenated with a string starting with /.

The magic constant __DIR__ holds the name of the current directory <https://www.php.net/`directory>`_, without final /. When it is used to build path, then the following path fragment must start with /. Otherwise, two directories names will be merged together.

```
<?php

// __DIR__ = /a/b/c
// $filePath = /a/b/c/g.php

// /a/b/c/d/e/f.txt : correct path
echo __DIR__.'/d/e/f.txt';
echo dirname($filePath).'/d/e/f.txt';

// /a/b/cd/e/f.txt : most probably incorrect path
echo __DIR__.'d/e/f.txt';
echo dirname($filePath).'d/e/f.txt';

?>
```

Suggestions

- Add a check on __DIR__, as it may be '/' when run at the root of the server
- Add a '/' at the beginning of the path after __DIR__.
- Add a call to realpath() or file_exists(), before accessing the file.

Specs

Short name	Structures/DirThenSlash
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	0.10.3
PHP Version	All
Severity	Major
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*Traq*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1451 __debugInfo() Usage

The magic method __debugInfo() provides a custom way to dump an object.

It has been introduced in PHP 5.6. In the previous versions of PHP, this method is ignored and won't be called when debugging.

```
<?php

// PHP 5.6 or later
class foo {
    private $bar = 1;
    private $reallyHidden = 2;

    function __debugInfo() {
        return ['bar' => $this->bar,
                'reallyHidden' => 'Secret'];
    }
}

$f = new Foo();
var_dump($f);

/* Displays :
object(foo)#1 (2) {
  [bar]=>
  int(1)
  [reallyHidden]=>
  string(6) Secret
}
*/

?>
```

See also Magic methods.

Specs

Short name	Php/debugInfoUsage
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and more recent
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	Very high
Features	magic-method
Examples	*Dolibarr*
Available in	Entreprise Edition, Exakat Cloud

14.2.1452 __halt_compiler

__halt_compiler() usage.

```
<?php

// open this file
$fp = fopen(__FILE__, 'r');

// seek file pointer to data
fseek($fp, __COMPILER_HALT_OFFSET__);

// and output it
var_dump(stream_get_contents($fp));

// the end of the script execution
__halt_compiler(); the installation data (eg. tar, gz, PHP, etc.)

?>
```

See also __halt_compiler.

Specs

Short name	Php/Haltcompiler
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	halt-compiler
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1453 __toString() Throws Exception

Magical method __toString() can't throw exceptions.

In fact, __toString() may not let an exception pass. If it throw an exception, but must catch it. If an underlying method throws an exception, it must be caught.

A fatal error is displayed, when an exception is not intercepted in the __toString() function.

```
<?php

class myString {
    private $string = null;

    public function __construct($string) {
        $this->string = $string;
    }

    public function __toString() {
        // Do not throw exceptions in __toString
        if (!is_string($this->string)) {
            throw new Exception("$this->string is not a string!!");
        }

        return $this->string;
    }
}

?>
```

See also __toString().

Suggestions

- Remove any usage of exception from __toString() magic method

Specs

Short name	Structures/toStringThrowsException
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	With PHP 7.4 and older
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	exception, magic-method
Available in	Entreprise Edition, Exakat Cloud

14.2.1454 array_key_exists() Speedup

array_key_exists() has its own opcode, leading to better features and speed.

isset() is faster for all non-empty values, but is limited when the value is NULL or empty : then, array_key_exists() has the good features.

This change makes `array_key_exists() <https://www.php.net/array_key_exists>`_ actually faster than `isset() <https://www.www.php.net/isset>`_ by ~25% (tested with GCC 8, -O3, march=native, mtune=native)..

```
<?php

$foo = [123 => 456];

// This is sufficient and efficient since PHP 7.4
if (array_search_key($foo[123])) {
    // do something
}

// taking advantages of performances for PHP 7.4 and older
if (isset($foo[123]) || array_search_key($foo[123])) {
    // do something
}

?>
```

See also Implement ZEND_ARRAY_KEY_EXISTS opcode to speed up array_key_exists().

Suggestions

- Remove the isset() call and the logical operator

Specs

Short name	Performances/ArrayKeyExistsSpeedup
Rulesets	*All*, *Changed Behavior*, *Performances*, *Suggestions*
Exakat since	1.6.1
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	array_key_exists, opcode
Available in	Entreprise Edition, Exakat Cloud

14.2.1455 array_key_exists() Works On Arrays

array_key_exists() requires arrays as second argument. Until PHP 7.4, objects were also allowed, yet it is now deprecated.

```
<?php

// Valid way to check for key
$array = ['a' => 1];
var_dump(array_key_exists('a', $array))


// Deprecated since PHP 7.4
$object = new Stdclass();
$object->a = 1;
var_dump(array_key_exists('a', $object))

?>
```

See also array_key_exists() with objects and array_key_exists.

Suggestions

- Use the (array) cast to turn the object into an array
- Use the native PHP function proprety_exists() or isset() on the property to check them.

Specs

Short name	Php/ArrayKeyExistsWithObjects
Rulesets	*All*, *Analyze*, *CE*, *Changed Behavior*, *CompatibilityPHP74*
Exakat since	1.9.0
PHP Version	With PHP 7.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	index, array
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1456 array_merge With Ellipsis

Ellipsis, or ..., returns a null when the operand array is empty. This doesn't suit array_merge().

It is recommended to use a coalesce operator, to handle graciously an empty array : use an empty array as default value.

This applies to the following PHP functions :

- array_merge()
- array_merge_recursive()
- array_diff()
- array_diff_assoc()

- array_diff_key()
- array_diff_uassoc()

```
<?php

// Correct usage of array_merge and ellipsis
$a = [ [1,2], [3,4]];
$b = array_merge(...$a);

// Notee the nested array
$a = [ ];
$b = array_merge(...$a ?: [[]] );

// Yield an error because $a is empty
$a = [ ];
$b = array_merge(...$a);

?>
```

Suggestions

- Use one of the coalesce operator to default to an empty array, avoiding a runtime warning.
- Check the content of the expanded array before using it

Specs

Short name	Structures/ArrayMergeWithEllipsis
Rulesets	*All*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*
Exakat since	1.7.6
PHP Version	With PHP 7.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1457 array_merge() And Variadic

Always check value in variadic before using it with array_merge() and array_merge_recursive().

Before PHP 7.4, array_merge() and array_merge_recursive() would complain when no argument was provided. As such, using the spread operator ... on an empty array() would yield no argument, and an error.

```
<?php

$b = array_merge(...$x);

?>
```

Suggestions

- Add a check to the spread variable to ensure it is not empty
- Append an empty array to to the spread variable to ensure it is not empty

Specs

Short name	Structures/ArrayMergeAndVariadic
Rulesets	*All*, *Analyze*
Exakat since	1.9.2
PHP Version	With PHP 7.4 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	variadic
Available in	Entreprise Edition, Exakat Cloud

14.2.1458 class_alias() Supports Internal Classes

class_alias() accepts internal classes as first argument. Until PHP 8.3, this feature was restricted to user-defined classes.

```
<?php

class_alias(stdClass::class, 'standardClass');

?>
```

Specs

Short name	Php/ClassAliasSupportsInternalClasses
Rulesets	*All*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.5.3
PHP Version	With PHP 8.3 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1459 crypt() Without Salt

PHP requires a salt when calling crypt(). 5.5 and previous versions didn't require it. Salt is a simple string, that is usually only known by the application.

According to the manual : The salt parameter is optional. However, crypt() creates a weak hash without the salt. PHP 5.6 or later raise an E_NOTICE error without it. Make sure to specify a strong enough salt for better security.

```
<?php
// Set the password
$password = 'mypassword';

// salted crypt usage (always valid)
$hash = crypt($password, '123salt');

// Get the hash, letting the salt be automatically generated
// This generates a notice after PHP 5.6
$hash = crypt($password);

?>
```

See also crypt.

Suggestions

- Always provide the second argument

Specs

Short name	Structures/CryptWithoutSalt
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP54*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and older
Severity	Minor
Time To Fix	Instant (5 mins)
Changed Behavior	PHP 5.6 - More
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1460 curl_version() Has No Argument

curl_version() used to accept `CURLVERSION_NOW` as argument. Since PHP 7.4, it is a function without arguments.

```
<?php

// Compatible syntax
$details = curl_version(CURLVERSION_NOW);

// New PHP 7.4 syntax
$details = curl_version();

?>
```

See also curl_version.

Suggestions

- Drop all arguments from curl_version() calls.

Specs

Short name	Structures/CurlVersionNow
Rulesets	*All*, *CE*, *Changed Behavior*, *CompatibilityPHP74*
Exakat since	1.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.4 - More
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1461 date() versus DateTime Preference

Processing dates is done with date() functions or DateTime <https://www.php.net/`datetime>`_ classes.

In the date() team, there are the following functions : date(), time(), getdate(), localtime(), strtotime(), strptime(), gmdate(), strftime(), mktime(), gmktime().

In the DateTime <https://www.php.net/`datetime>`_ team, there are the instantiation of DateTime <https://www.php.net/`datetime>`_ and DateTimeImmutable <https://www.php.net/`datetimeimmutable>`_; the DateTime::createFromInterface(), DateTime::createFromFormat(), DateTime::createFromImmutable() and DateTime::createFromMutable().

The analyzed code has less than 10% of one of them : for consistency reasons, it is recommended to make them all the same.

```
<?php

// be consistent
$date = date();
$time = time();
$date = date();
$time = time();
$date = date();
$time = time();
$date = date();
$time = time();
$date = date();
$time = time();
$date = date();
$time = time();

// Be consistent, always use the same.
$date = new DateTime();

?>
```

Specs

Short name	Structures/DateTimePreference
Rulesets	*All*, *Appinfo*, *Changed Behavior*, *Preferences*
Exakat since	2.4.9
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	date
Available in	Entreprise Edition, Exakat Cloud

14.2.1462 error_reporting() With Integers

Using named constants with error_reporting is strongly encouraged to ensure compatibility for future versions. As error levels are added, the range of integers increases, so older integer-based error levels will not always behave as expected. (Adapted from the documentation).

```
<?php

// This is ready for PHP next version
error_reporting(E_ALL & ~E_DEPRECATED & ~E_STRICT & ~E_NOTICE & ~E_WARNING);

// This is not ready for PHP next version
error_reporting(2047);

// -1 and 0 are omitted, as they will be valid even is constants changes.
error_reporting(-1);
error_reporting(0);

?>
```

See also directive error_reporting and error_reporting.

Suggestions

- Always use the constant combination when configuring error_reporting or any PHP native function

Specs

Short name	Structures/ErrorReportingWithInteger
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Examples	*SugarCrm*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1463 eval() Without Try

`eval()` emits a `ParseError` exception with PHP 7 and later. Catching this exception is the recommended way to handle errors when using the `eval()` function.

```
<?php

$code = 'This is no PHP code.';

//PHP 5 style
eval($code);
// Ends up with a Fatal error, at execution time
```

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```
//PHP 7 style
try {
    eval($code);
} catch (ParseError $e) {
    cleanUpAfterEval();
}

?>
```

Note that it will catch situations where `eval()` is provided with code that can't be used, but it will not catch security problems. Avoid using `eval()` with incoming data.

Suggestions

- Always add a try/catch block around eval() call

Specs

Short name	Structures/EvalWithoutTry
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*, *Security*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Critical
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	eval
Examples	*FuelCMS*, *ExpressionEngine*
Related rule	*Could Use Try*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1464 ext/0mq

Extension ext/zmq for `0mq`.

`ØMQ is a software library that lets you quickly design and implement a fast message-based application.`

```
<?php

// Example from https://github.com/kuying/ZeroMQ/blob/
↪d80dcc3dc1c14a343ca90bbd656b98fd55366548/zguide/examples/PHP/msgqueue.php
    /*
     *  Simple message queuing broker
     *  Same as request-reply broker but using QUEUE device
     * @author Ian Barber <ian(dot)barber(at)gmail(dot)com>
     */
    $context = new ZMQContext();
```

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```
    //  Socket facing clients
    $frontend = $context->getSocket(ZMQ::SOCKET_ROUTER);
    $frontend->bind("tcp://*:5559");
    //  Socket facing services
    $backend = $context->getSocket(ZMQ::SOCKET_DEALER);
    $backend->bind("tcp://*:5560");
    //  Start built-in device
    new ZMQDevice($frontend, $backend);

?>
```

See also ZeroMQ and ZMQ.

Specs

Short name	Extensions/Extzmq
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1465 ext/CSV

A small PHP extension to add/improve the handling of CSV strings.

```
<?php
$fields = [
    'Hello',
    'World',
];

$output = "Hello,World";

var_dump($output === CSV::arrayToRow($fields));
var_dump(CSV::rowToArray($output));
?>
```

See also PHP csv extension.

Specs

Short name	Extensions/Extcsv
Rulesets	*All*, *Appinfo*
Exakat since	2.4.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	csv
Available in	Entreprise Edition, Exakat Cloud

14.2.1466 ext/amqp

Extension `amqp`.

PHP AMQP Binding Library. This is an interface with the RabbitMQ AMQP client library. It is a C language AMQP client library for use with version 2.0 and more recent of the `RabbitMQ` broker.

```
<?php
$cnn = new AMQPConnection();
$cnn->connect();
echo 'Used channels: ', $cnn->getUsedChannels(), PHP_EOL;
$ch = new AMQPChannel($cnn);
echo 'Used channels: ', $cnn->getUsedChannels(), PHP_EOL;
$ch = new AMQPChannel($cnn);
echo 'Used channels: ', $cnn->getUsedChannels(), PHP_EOL;
$ch = null;
echo 'Used channels: ', $cnn->getUsedChannels(), PHP_EOL;
?>
```

See also PHP AMQP Binding Library.

Specs

Short name	Extensions/Extamqp
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1467 ext/apache

Extension Apache.

These functions are only available when running PHP as an Apache module.

```
<?php
  $ret = apache_getenv("SERVER_ADDR");
  echo $ret;
?>
```

See also Extension Apache and Apache server.

Specs

Short name	Extensions/Extapache
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1468 ext/apc

Extension Alternative PHP Cache.

The Alternative PHP Cache (APC) is a free and open opcode cache for PHP. Its goal is to provide a free, open, and robust framework for caching and optimizing PHP intermediate code.

This extension is considered unmaintained and dead.

```
<?php
   $bar = 'BAR';
   apc_add('foo', $bar);
   var_dump(apc_fetch('foo'));
   echo PHP_EOL;

   $bar = 'NEVER GETS SET';
   apc_add('foo', $bar);
   var_dump(apc_fetch('foo'));
   echo PHP_EOL;
?>
```

See also Alternative PHP Cache.

Specs

Short name	Extensions/Extapc
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1469 ext/apcu

Extension APCU.

APCu is APC stripped of opcode caching. The Alternative PHP Cache (APC) is a free and open opcode cache for PHP. Its goal is to provide a free, open, and robust framework for caching and optimizing PHP intermediate code.

```
<?php
$bar = 'BAR';
apcu_add('foo', $bar);
var_dump(apcu_fetch('foo'));
echo "\n";
$bar = 'NEVER GETS SET';
apcu_add('foo', $bar);
var_dump(apcu_fetch('foo'));
echo "\n";
?>
```

See also APCU, ext/apcu and krakjoe/apcu.

Specs

Short name	Extensions/Extapcu
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1470 ext/array

Core functions processing arrays.

These functions manipulate arrays in various ways. Arrays are essential for storing, managing, and operating on sets of variables.

This is not a real extension : it is a documentation section, that helps classifying the functions.

```
<?php
function odd($var)
{
    // returns whether the input integer is odd
    return($var & 1);
}

function even($var)
{
    // returns whether the input integer is even
    return(!($var & 1));
}

$array1 = array('a'=>1, 'b'=>2, 'c'=>3, 'd'=>4, 'e'=>5);
$array2 = array(6, 7, 8, 9, 10, 11, 12);

echo 'Odd :'.PHP_EOL;
print_r(array_filter($array1, 'odd'));
echo 'Even:'.PHP_EOL;
print_r(array_filter($array2, 'even'));
?>
```

See also Arrays.

Specs

Short name	Extensions/Extarray
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1471 ext/bcmath

Extension BC Math.

For arbitrary precision mathematics PHP offers the Binary Calculator which supports numbers of any size and precision up to `2147483647-1` (or `0x7FFFFFFF-1`) decimals, represented as strings.

```
<?php

echo bcpow('2', '123');
//10633823966279326983230456482242756608

echo 2**123;
//1.0633823966279E+37
?>
```

See also BC Math Functions.

Specs

Short name	Extensions/Extbcmath
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1472 ext/bzip2

Extension ext/bzip2.

Bzip2 Functions for PHP.

```
<?php

$file = '/tmp/foo.bz2';
$bz = bzopen($file, 'r') or die('Couldn\'t open $file for reading');

bzclose($bz);

?>
```

See also Bzip2 Functions and bzip2.

Specs

Short name	Extensions/Extbzip2
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	compression
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1473 ext/calendar

Extension ext/calendar.

The calendar extension presents a series of functions to simplify converting between different calendar formats.

```
<?php
$number = cal_days_in_month(CAL_GREGORIAN, 8, 2003); // 31
echo "There were {$number} days in August 2003";
?>
```

See also Calendar Functions.

Specs

Short name	Extensions/Extcalendar
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1474 ext/cmark

Extension Cmark, for Common Mark.

cmark provides access to the reference implementation of CommonMark, a rationalized version of Markdown syntax with a specification.

```
<?php
$text = new CommonMark\Node\Text;
$text->literal = 'Hello World';
$document = new CommonMark\Node\Document;
$document->appendChild(
     (new CommonMark\Node\Paragraph)
```

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```
            ->appendChild($text));
echo CommonMark\Render\HTML($document);
?>
```

See also Cmark and ext/cmark.

Specs

Short name	Extensions/Extcmark
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.2.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1475 ext/com

Extension COM and `.Net` (Windows).

COM is an acronym for 'Component Object Model'; it is an object orientated layer (and associated services) on top of DCE RPC (an open standard) and defines a common calling convention that enables code written in any language to call and interoperate with code written in any other language (provided those languages are COM aware).

```
<?php
$domainObject = new COM("WinNT://Domain");
foreach ($domainObject as $obj) {
   echo $obj->Name . "<br />";
}
?>
```

See also COM and .Net (Windows).

Specs

Short name	Extensions/Extcom
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1476 ext/crypto

Extension ext/crypto (PECL).

Objective PHP binding of OpenSSL Crypto library.

```
<?php
use Crypto\Cipher;
use Crypto\AlgorihtmException;
$algorithm = 'aes-256-cbc';
if (!Cipher::hasAlgorithm($algorithm)) {
     die('Algorithm $algorithm not found' . PHP_EOL);
}
try {
     $cipher = new Cipher($algorithm);
     // Algorithm method for retrieving algorithm
     echo 'Algorithm: ' . $cipher->getAlgorithmName() . PHP_EOL;
     // Params
     $key_len = $cipher->getKeyLength();
     $iv_len = $cipher->getIVLength();

     echo 'Key length: ' . $key_len . PHP_EOL;
     echo 'IV length: '  . $iv_len . PHP_EOL;
     echo 'Block size: ' . $cipher->getBlockSize() . PHP_EOL;
     // This is just for this example. You should never use such key and IV!
     $key = str_repeat('x', $key_len);
     $iv = str_repeat('i', $iv_len);
     // Test data
     $data1 = 'Test';
     $data2 = 'Data';
     $data = $data1 . $data2;
     // Simple encryption
     $sim_ct = $cipher->encrypt($data, $key, $iv);

     // init/update/finish encryption
     $cipher->encryptInit($key, $iv);
     $iuf_ct  = $cipher->encryptUpdate($data1);
     $iuf_ct .= $cipher->encryptUpdate($data2);
     $iuf_ct .= $cipher->encryptFinish();
     // Raw data output (used base64 format for printing)
     echo 'Ciphertext (sim): ' . base64_encode($sim_ct) . PHP_EOL;
     echo 'Ciphertext (iuf): ' . base64_encode($iuf_ct) . PHP_EOL;
     // $iuf_out == $sim_out
     $ct = $sim_ct;
     // Another way how to create a new cipher object (using the same algorithm and mode)
     $cipher = Cipher::aes(Cipher::MODE_CBC, 256);
     // Simple decryption
     $sim_text = $cipher->decrypt($ct, $key, $iv);

     // init/update/finish decryption
     $cipher->decryptInit($key, $iv);
     $iuf_text = $cipher->decryptUpdate($ct);
     $iuf_text .= $cipher->decryptFinish();
     // Raw data output ($iuf_out == $sim_out)
```

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```
    echo 'Text (sim): ' . $sim_text . PHP_EOL;
    echo 'Text (iuf): ' . $iuf_text . PHP_EOL;
}
catch (AlgorithmException $e) {
    echo $e->getMessage() . PHP_EOL;
}

?>
```

See also pecl crypto and php-crypto.

Specs

Short name	Extensions/Extcrypto
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1477 ext/ctype

Extension ext/ctype.

Ext/ctype checks whether a character or string falls into a certain character class according to the current locale.

```
<?php
$strings = array('AbCd1zyZ9', 'foo!#$bar');
foreach ($strings as $testcase) {
    if (ctype_alnum($testcase)) {
        echo "The string $testcase consists of all letters or digits.\n";
    } else {
        echo "The string $testcase does not consist of all letters or digits.\n";
    }
}
?>
```

See also Ctype functions.

Specs

Short name	Extensions/Extctype
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	ctype
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1478 ext/curl

Extension curl.

PHP supports libcurl, a library created by Daniel Stenberg. It allows the connection and communication to many different types of servers with many different types of protocols.

```
<?php

$ch = curl_init("http://www.example.com/");
$fp = fopen("example_homepage.txt", "w");

curl_setopt($ch, CURLOPT_FILE, $fp);
curl_setopt($ch, CURLOPT_HEADER, 0);

curl_exec($ch);
curl_close($ch);
fclose($fp);
?>
```

See also Curl for PHP and curl.

Specs

Short name	Extensions/Extcurl
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1479 ext/date

Extension ext/date.

These functions allows the manipulation of date and time from the server where the PHP scripts are running.

```
<?php
$dt = new DateTime('2015-11-01 00:00:00', new DateTimeZone('America/New_York'));
echo 'Start: ', $dt->format('Y-m-d H:i:s P'), PHP_EOL;
$dt->add(new DateInterval('PT3H'));
echo 'End:   ', $dt->format('Y-m-d H:i:s P'), PHP_EOL;
?>
```

See also Date and Time.

Specs

Short name	Extensions/Extdate
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1480 ext/db2

Extension for IBM DB2, Cloudscape and Apache Derby.

This extension gives access to IBM DB2 Universal Database, IBM Cloudscape, and Apache Derby databases using the DB2 Call Level Interface (DB2 CLI).

```
<?php
$conn = db2_connect($database, $user, $password);

if ($conn) {
    $stmt = db2_exec($conn, 'SELECT count(*) FROM animals');
    $res = db2_fetch_array( $stmt );
    echo $res[0] . PHP_EOL;

    // Turn AUTOCOMMIT off
    db2_autocommit($conn, DB2_AUTOCOMMIT_OFF);

    // Delete all rows from ANIMALS
    db2_exec($conn, 'DELETE FROM animals');

    $stmt = db2_exec($conn, 'SELECT count(*) FROM animals');
    $res = db2_fetch_array( $stmt );
    echo $res[0] . PHP_EOL;
```

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```
    // Roll back the DELETE statement
    db2_rollback( $conn );

    $stmt = db2_exec( $conn, 'SELECT count(*) FROM animals' );
    $res = db2_fetch_array( $stmt );
    echo $res[0] . PHP_EOL;
    db2_close($conn);
}
?>
```

See also IBM Db2.

Specs

Short name	Extensions/Extdb2
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.1.8
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1481 ext/dba

Extension ext/dba.

These functions build the foundation for accessing Berkeley DB style databases.

```
<?php

$id = dba_open('/tmp/test.db', 'n', 'db2');

if (!$id) {
    echo 'dba_open failed'.PHP_EOL;
    exit;
}

dba_replace('key', 'This is an example!', $id);

if (dba_exists('key', $id)) {
    echo dba_fetch('key', $id);
    dba_delete('key', $id);
}

dba_close($id);
?>
```

See also Database (dbm-style) Abstraction Layer.

Specs

Short name	Extensions/Extdba
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP53*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1482 ext/decimal

Extension php-decimal, by `Rudi Theunissen`.

This library provides a PHP extension that adds support for correctly-rounded, arbitrary-precision decimal floating point arithmetic. Applications that rely on accurate numbers (ie. money, measurements, or mathematics) can use Decimal instead of float or string to represent numerical values.

```
<?php

use Decimal\Decimal;

$op1 = new Decimal("0.1", 4);
$op2 = "0.123456789";

print_r($op1 + $op2);


use Decimal\Decimal;

/**
 * @param int $n The factorial to calculate, ie. $n!
 * @param int $p The precision to calculate the factorial to.
 *
 * @return Decimal
 */
function factorial(int $n, int $p = Decimal::DEFAULT_PRECISION): Decimal
{
    return $n < 2 ? new Decimal($n, $p) : $n * factorial($n - 1, $p);
}

echo factorial(10000, 32);

?>
```

See also PHP Decimal and libmpdec.

Specs

Short name	Extensions/Extdecimal
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.5.2
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	extension, float
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1483 ext/dio

Extension DIO : Direct Input Output.

PHP supports the direct io functions as described in the Posix Standard (Section 6) for performing I/O functions at a lower level than the C-Language stream I/O functions

```
<?php

$fd = dio_open('/dev/ttyS0', O_RDWR | O_NOCTTY | O_NONBLOCK);

dio_close($fd);
?>
```

See also DIO.

Specs

Short name	Extensions/Extdio
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1484 ext/dom

Extension Document Object Model.

The DOM extension allows the manipulation of XML documents through the DOM API with PHP.

```
<?php

$dom = new DOMDocument('1.0', 'utf-8');
```

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```
$element = $dom->createElement('test', 'This is the root element!');

// We insert the new element as root (child of the document)
$dom->appendChild($element);

echo $dom->saveXML();
?>
```

See also Document Object Model.

Specs

Short name	Extensions/Extdom
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1485 ext/ds

Extension Data Structures : Data structures.

```
<?php

$vector = new \Ds\Vector();

$vector->push('a');
$vector->push('b', 'c');

$vector[] = 'd';

print_r($vector);

?>
```

See also Efficient data structures for PHP 7.

Specs

Short name	Extensions/Extds
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.10.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1486 ext/eaccelerator

Extension Eaccelerator.

eAccelerator is a free open-source PHP accelerator & optimizer.

DEPRECATED: This project is deprecated and does not work with anything newer than PHP 5.3.

See also Eaccelerator and eaccelerator/eaccelerato.

Specs

Short name	Extensions/Exteaccelerator
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	extension
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1487 ext/eio

Extension EIO.

This is a PHP extension wrapping functions of the libeio library written by Marc Lehmann.

Libeio is a an asynchronous I/O library. Features basically include asynchronous versions of POSIX API(read, write, open, close, stat, unlink, fdatasync, mknod, readdir etc.); sendfile (native on Solaris, Linux, HP-UX, FreeBSD); readahead. libeio itself emulates the system calls, if they are not available on specific(UNIX-like) platform.

```
<?php
$str      = str_repeat('1', 20);
$filename = '/tmp/tmp_file' .uniqid();
@unlink($filename);
touch($filename);
eio_open($filename, EIO_O_RDWR, NULL, EIO_PRI_DEFAULT, function($filename, $fd) use (
↪$str) {
```

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```
    eio_write($fd, $str, strlen($str), 0, null, function($fd, $written) use ($str,
↪$filename) {
            var_dump([
                    'written'  => $written,
                    'strlen'   => strlen($str),
                    'filesize' => filesize($filename),
                    'count'    => substr_count(file_get_contents($filename), '1')
                    ]);
    }, $fd);
}, $filename);
eio_event_loop();
?>
```

See also libeio and PHP extension for libeio.

Specs

Short name	Extensions/Exteio
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.3.3
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1488 ext/enchant

Extension Enchant.

Enchant is the PHP binding for the Enchant spelling library. Enchant steps in to provide uniformity and conformity on top of all spelling libraries, and implement certain features that may be lacking in any individual provider library.

```
<?php
$tag = 'en_US';
$r = enchant_broker_init();
$bprovides = enchant_broker_describe($r);
echo 'Current broker provides the following backend(s):'.PHP_EOL;
print_r($bprovides);

$dicts = enchant_broker_list_dicts($r);
print_r($dicts);
if (enchant_broker_dict_exists($r,$tag)) {
    $d = enchant_broker_request_dict($r, $tag);
    $dprovides = enchant_dict_describe($d);
    echo 'dictionary $tag provides:'.PHP_EOL;
    $wordcorrect = enchant_dict_check($d, 'soong');
    print_r($dprovides);
    if (!$wordcorrect) {
        $suggs = enchant_dict_suggest($d, 'soong');
```

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```
        echo 'Suggestions for "soong":';
        print_r($suggs);
    }
    enchant_broker_free_dict($d);
} else {
}
enchant_broker_free($r);
?>
```

See also Enchant spelling library and Enchant.

Specs

Short name	Extensions/Extenchant
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1489 ext/ev

Extension ev.

ext/ev is a high performance full-featured event loop written in C.

```
<?php
// Create and start timer firing after 2 seconds
$w1 = new EvTimer(2, 0, function () {
    echo '2 seconds elapsed'.PHP_EOL;
});

// Create and launch timer firing after 2 seconds repeating each second
// until we manually stop it
$w2 = new EvTimer(2, 1, function ($w) {
    echo 'is called every second, is launched after 2 seconds'.PHP_EOL;
    echo 'iteration = ', Ev::iteration(), PHP_EOL;

    // Stop the watcher after 5 iterations
    Ev::iteration() == 5 and $w->stop();
    // Stop the watcher if further calls cause more than 10 iterations
    Ev::iteration() >= 10 and $w->stop();
});

// Create stopped timer. It will be inactive until we start it ourselves
$w_stopped = EvTimer::createStopped(10, 5, function($w) {
    echo 'Callback of a timer created as stopped'.PHP_EOL;
```

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```
    // Stop the watcher after 2 iterations
    Ev::iteration() >= 2 and $w->stop();
});

// Loop until Ev::stop() is called or all of watchers stop
Ev::run();

// Start and look if it works
$w_stopped->start();
echo 'Run single iteration'.PHP_EOL;
Ev::run(Ev::RUN_ONCE);

echo 'Restart the second watcher and try to handle the same events, but don\'t block'.
↪PHP_EOL;
$w2->again();
Ev::run(Ev::RUN_NOWAIT);

$w = new EvTimer(10, 0, function() {});
echo 'Running a blocking loop'.PHP_EOL;
Ev::run();
echo 'END'.PHP_EOL;
?>
```

See also Ev and libev.

Specs

Short name	Extensions/Extev
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	event-loop
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1490 ext/event

Extension event.

This is an extension to efficiently schedule I/O, time and signal based events using the best I/O notification mechanism available for specific platform. This is a port of libevent to the PHP infrastructure.

```
<?php
// Read callback
function readcb($bev, $base) {
    //$input = $bev->input; //$bev->getInput();

    //$pos = $input->search('TTP');
```

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```
    $pos = $bev->input->search('TTP');

    while (($n = $bev->input->remove($buf, 1024)) > 0) {
        echo $buf;
    }
}

// Event callback
function eventcb($bev, $events, $base) {
    if ($events & EventBufferEvent::CONNECTED) {
        echo 'Connected.';
    } elseif ($events & (EventBufferEvent::ERROR | EventBufferEvent::EOF)) {
        if ($events & EventBufferEvent::ERROR) {
            echo 'DNS error: ', $bev->getDnsErrorString(), PHP_EOL;
        }

        echo 'Closing'.PHP_EOL;
        $base->exit();
        exit('Done'.PHP_EOL);
    }
}

if ($argc != 3) {
    echo <<<EOS
Trivial HTTP 0.x client
Syntax: php {$argv[0]} [hostname] [resource]
Example: php {$argv[0]} www.google.com /

EOS;
    exit();
}

$base = new EventBase();

$dns_base = new EventDnsBase($base, TRUE); // We'll use async DNS resolving
if (!$dns_base) {
    exit('Failed to init DNS Base'.PHP_EOL);
}

$bev = new EventBufferEvent($base, /* use internal socket */ NULL,
    EventBufferEvent::OPT_CLOSE_ON_FREE | EventBufferEvent::OPT_DEFER_CALLBACKS,
    'readcb', /* writecb */ NULL, 'eventcb'
);
if (!$bev) {
    exit('Failed creating bufferevent socket'.PHP_EOL);
}

//$bev->setCallbacks('readcb', /* writecb */ NULL, 'eventcb', $base);
$bev->enable(Event::READ | Event::WRITE);

$output = $bev->output; //$bev->getOutput();
if (!$output->add(
```

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```
    'GET '.$argv[2].' HTTP/1.0'."\r\n".
    'Host: '.$argv[1]."\r\n".
    'Connection: Close'."\r\n\r\n"
)) {
    exit('Failed adding request to output buffer\n');
}

if (!$bev->connectHost($dns_base, $argv[1], 80, EventUtil::AF_UNSPEC)) {
    exit('Can\'t connect to host '.$argv[1].PHP_EOL);
}

$base->dispatch();
?>
```

See also Event and libevent.

Specs

Short name	Extensions/Extevent
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1491 ext/exif

Extension EXIF : Exchangeable image file format.

The EXIF extension manipulates image meta data.

```
<?php
echo 'test1.jpg:<br />';
$exif = exif_read_data('tests/test1.jpg', 'IFD0');
echo $exif===false ? 'No header data found.<br />' : 'Image contains headers<br />';

$exif = exif_read_data('tests/test2.jpg', 0, true);
echo 'test2.jpg:<br />';
foreach ($exif as $key => $section) {
    foreach ($section as $name => $val) {
        echo $key.$name.': '.$val.'<br />';
    }
}
?>
```

See also Exchangeable image information.

Specs

Short name	Extensions/Extexif
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1492 ext/expect

Extension Expect.

This extension allows to interact with processes through PTY. You may consider using the `expect://` wrapper with the filesystem functions which provide a simpler and more intuitive interface.

```
<?php
ini_set('expect.loguser', 'Off');

$stream = fopen('expect://ssh root@remotehost uptime', 'r');

$cases = array (
    array (0 => 'password:', 1 => PASSWORD)
);

switch (expect_expectl ($stream, $cases)) {
    case PASSWORD:
        fwrite ($stream, 'password'.PHP_EOL);
        break;

    default:
        die ('Error was occurred while connecting to the remote host!'.PHP_EOL);
}

while ($line = fgets($stream)) {
      print $line;
}
fclose ($stream);
?>
```

See also expect.

Specs

Short name	Extensions/Extexpect
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1493 ext/fam

File Alteration Monitor extension.

FAM monitors files and directories, notifying interested applications of changes.

ext/FAM is not available for Windows

```
<?php

$fam = fam_open('myApplication');
fam_monitor_directory($fam, '/tmp');
fam_close($fam);

?>
```

See also File Alteration Monitor.

Specs

Short name	Extensions/Extfam
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.12.8
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1494 ext/fann

Extension `FANN` : Fast Artificial Neural Network.

PHP binding for `FANN` library which implements multi-layer artificial neural networks with support for both fully connected and sparsely connected networks.

```
<?php
$num_input = 2;
$num_output = 1;
```

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```
$num_layers = 3;
$num_neurons_hidden = 3;
$desired_error = 0.001;
$max_epochs = 500000;
$epochs_between_reports = 1000;

$ann = fann_create_standard($num_layers, $num_input, $num_neurons_hidden, $num_output);

if ($ann) {
    fann_set_activation_function_hidden($ann, FANN_SIGMOID_SYMMETRIC);
    fann_set_activation_function_output($ann, FANN_SIGMOID_SYMMETRIC);

    $filename = dirname(__FILE__) . '/xor.data';
    if (fann_train_on_file($ann, $filename, $max_epochs, $epochs_between_reports,
↪$desired_error))
        fann_save($ann, dirname(__FILE__) . '/xor_float.net');

    fann_destroy($ann);
}
?>
```

See also extension FANN, PHP-ML, Rubix ML and lib FANN.

Specs

Short name	Extensions/Extfann
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	High
Features	machine-learning
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1495 ext/ffi

Extension `FFI` : Foreign Function Interface .

This extension allows the loading of shared libraries (.DLL or .so), calling of C functions and accessing of C data structures in pure PHP, without having to have deep knowledge of the Zend extension API, and without having to learn a third "intermediate" language. The public API is implemented as a single class FFI with several static methods (some of them may be called dynamically), and overloaded object methods, which perform the actual interaction with C data.

```
<?php
//Example : Calling a function from shared library
// create FFI object, loading libc and exporting function printf()
$ffi = FFI::cdef(
    "int printf(const char *format, ...);", // this is a regular C declaration
    "libc.so.6");
```

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```
// call C's printf()
$ffi->printf("Hello %s!\n", "world");
?>
```

See also ext/ffi and A PHP Compiler, aka The FFI Rabbit Hole.

Specs

Short name	Extensions/Extffi
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.7.9
PHP Version	With PHP 7.4 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1496 ext/file

Filesystem functions from standard.

Extension that handle access to file on the file system.

```
<?php
$row = 1;
if (($handle = fopen('test.csv', 'r')) !== FALSE) {
    while (($data = fgetcsv($handle, 1000, ',')) !== FALSE) {
        $num = count($data);
        echo '<p> $num fields in line $row: <br /></p>'.PHP_EOL;
        $row++;
        for ($c=0; $c < $num; $c++) {
            echo $data[$c] . '<br />'.PHP_EOL;
        }
    }
    fclose($handle);
}
?>
```

See also filesystem.

Specs

Short name	Extensions/Extfile
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1497 ext/fileinfo

Extension ext/fileinfo.

This module guesses the content type and encoding of a file by looking for certain magic byte sequences at specific positions within the file.

```
<?php
$finfo = finfo_open(FILEINFO_MIME_TYPE); // return mime type ala mimetype extension
foreach (glob('*') as $filename) {
    echo finfo_file($finfo, $filename) . PHP_EOL;
}
finfo_close($finfo);
?>
```

See also Filinfo.

Specs

Short name	Extensions/Extfileinfo
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1498 ext/filter

Extension filter.

This extension filters data by either validating or sanitizing it.

```
<?php
$email_a = 'joe@example.com';
$email_b = 'bogus';
```

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```
if (filter_var($email_a, FILTER_VALIDATE_EMAIL)) {
    echo 'This ($email_a) email address is considered valid.'.PHP_EOL;
}
if (filter_var($email_b, FILTER_VALIDATE_EMAIL)) {
    echo 'This ($email_b) email address is considered valid.'.PHP_EOL;
} else {
    echo 'This ($email_b) email address is considered invalid.'.PHP_EOL;
}
?>
```

See also Data filtering.

Specs

Short name	Extensions/Extfilter
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1499 ext/fpm

Extension FPM, FastCGI Process Manager.

FPM (FastCGI Process Manager) is an alternative PHP FastCGI implementation with some additional features (mostly) useful for heavy-loaded sites.

```
<?php
    echo $text;
    fastcgi_finish_request( );
?>
```

See also FastCGI Process Manager.

Specs

Short name	Extensions/Extfpm
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1500 ext/ftp

Extension FTP.

The functions in this extension implement client access to files servers speaking the File Transfer Protocol (FTP) as defined in RFC 959.

```
<?php
// set up basic connection
$conn_id = ftp_connect($ftp_server);

// login with username and password
$login_result = ftp_login($conn_id, $ftp_user_name, $ftp_user_pass);

// check connection
if ((!$conn_id) || (!$login_result)) {
    echo 'FTP connection has failed!';
    echo 'Attempted to connect to $ftp_server for user $ftp_user_name';
    exit;
} else {
    echo 'Connected to $ftp_server, for user $ftp_user_name';
}

// upload the file
$upload = ftp_put($conn_id, $destination_file, $source_file, FTP_BINARY);

// check upload status
if (!$upload) {
    echo 'FTP upload has failed!';
} else {
    echo 'Uploaded $source_file to $ftp_server as $destination_file';
}

// close the FTP stream
ftp_close($conn_id);
?>
```

See also FTP.

Specs

Short name	Extensions/Extftp
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1501 ext/gd

Extension GD for PHP.

This extension allows PHP to create and manipulate image files in a variety of different image formats, including GIF, PNG, JPEG, WBMP, and XPM.

```
<?php

header("Content-type: image/png");
$string = $_GET['text'];
$im     = imagecreatefrompng("images/button1.png");
$orange = imagecolorallocate($im, 220, 210, 60);
$px     = (imagesx($im) - 7.5 * strlen($string)) / 2;
imagestring($im, 3, $px, 9, $string, $orange);
imagepng($im);
imagedestroy($im);

?>
```

See also Image Processing and GD.

Specs

Short name	Extensions/Extgd
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1502 ext/gearman

Extension Gearman.

Gearman is a generic application framework for farming out work to multiple machines or processes.

```
<?php

# Create our client object.
$gmclient= new GearmanClient();

# Add default server (localhost).
$gmclient->addServer();

echo 'Sending job'.PHP_EOL;

# Send reverse job
do
```

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```
{
  $result = $gmclient->doNormal('reverse', 'Hello!');

  # Check for various return packets and errors.
  switch($gmclient->returnCode())
  {
    case GEARMAN_WORK_DATA:
      echo 'Data: '.$result . PHP_EOL;;
      break;
    case GEARMAN_WORK_STATUS:
      list($numerator, $denominator)= $gmclient->doStatus();
      echo 'Status: '.$numerator.'/'.$denominator.' complete'. PHP_EOL;
      break;
    case GEARMAN_WORK_FAIL:
      echo 'Failed\n';
      exit;
    case GEARMAN_SUCCESS:
      echo 'Success: $result\n';
      break;
    default:
      echo 'RET: ' . $gmclient->returnCode() . PHP_EOL;
      exit;
  }
}
while($gmclient->returnCode() != GEARMAN_SUCCESS);

?>
```

See also Gearman on PHP and Gearman.

Specs

Short name	Extensions/Extgearman
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1503 ext/gender

Gender extension.

The Gender PHP extension is a port of the gender.c program originally written by Joerg Michael. Its main purpose is to find out the gender of firstnames, based on a database of over 40000 firstnames from 54 countries.

```
<?php

namespace Gender;

$gender = new Gender;


$name = 'Milene';
$country = Gender::FRANCE;

$result = $gender->get($name, $country);

$data = $gender->country($country);

switch($result) {
    case Gender::IS_FEMALE:
        printf('The name %s is female in %s\n', $name, $data['country']);
    break;


    case Gender::IS_MOSTLY_FEMALE:
        printf('The name %s is mostly female in %s\n', $name, $data['country']);
    break;


    case Gender::IS_MALE:
        printf('The name %s is male in %s\n', $name, $data['country']);
    break;


    case Gender::IS_MOSTLY_MALE:
        printf('The name %s is mostly male in %s\n', $name, $data['country']);
    break;


    case Gender::IS_UNISEX_NAME:
        printf('The name %s is unisex in %s\n', $name, $data['country']);
    break;


    case Gender::IS_A_COUPLE:
        printf('The name %s is both male and female in %s\n', $name, $data['country']);
    break;


    case Gender::NAME_NOT_FOUND:
        printf('The name %s was not found for %s\n', $name, $data['country']);
```

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```
    break;


    case Gender::ERROR_IN_NAME:
        echo 'There is an error in the given name!'.PHP_EOL;
    break;

    default:
        echo 'An error occurred!'.PHP_EOL;
    break;

}

?>
```

See also ext/gender manual and genderReader.

Specs

Short name	Extensions/Extgender
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.6
PHP Version	With PHP 8.0 and older
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1504 ext/geoip

Extension geoip for PHP.

The GeoIP extension allows the localisation of an IP address.

```
<?php
$org = geoip_org_by_name('www.example.com');
if ($org) {
    echo 'This host IP is allocated to: ' . $org;
}
?>
```

See also GeoIP.

Specs

Short name	Extensions/Extgeoip
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1505 ext/gettext

Extension Gettext.

The gettext functions implement an NLS (Native Language Support) API which can be used to internationalize your PHP applications.

```
<?php
// Set language to German
putenv('LC_ALL=de_DE');
setlocale(LC_ALL, 'de_DE');

// Specify location of translation tables
bindtextdomain('myPHPApp', './locale');

// Choose domain
textdomain('myPHPApp');

// Translation is looking for in ./locale/de_DE/LC_MESSAGES/myPHPApp.mo now

// Print a test message
echo gettext('Welcome to My PHP Application');

// Or use the alias _() for gettext()
echo _('Have a nice day');
?>
```

See also Gettext and ext/gettext.

Specs

Short name	Extensions/Extgettext
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1506 ext/gmagick

Extension gmagick.

Gmagick is a php extension to create, modify and obtain meta information of images using the GraphicsMagick API.

```
<?php
//Instantiate a new Gmagick object
$image = new Gmagick('example.jpg');

//Make thumbnail from image loaded. 0 for either axes preserves aspect ratio
$image->thumbnailImage(100, 0);

//Create a border around the image, then simulate how the image will look like as an oil␣
↪painting
//Note the chaining of mutator methods which is supported in gmagick
$image->borderImage("yellow", 8, 8)->oilPaintImage(0.3);

//Write the current image at the current state to a file
$image->write('example_thumbnail.jpg');
?>
```

See also PHP gmagick and gmagick.

Specs

Short name	Extensions/Extgmagick
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1507 ext/gmp

Extension ext/gmp.

These functions allow for arbitrary-length integers to be worked with using the GNU MP library.

```
<?php
$pow1 = gmp_pow('2', 131);
echo gmp_strval($pow1) . PHP_EOL;
$pow2 = gmp_pow('0', 0);
echo gmp_strval($pow2) . PHP_EOL;
$pow3 = gmp_pow('2', -1); // Negative exp, generates warning
echo gmp_strval($pow3) . PHP_EOL;
?>
```

See also GMP and GNU MP library.

Specs

Short name	Extensions/Extgmp
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1508 ext/gnupgp

Extension GnuPG.

This module allows you to interact with gnupg.

```
<?php
// init gnupg
$res = gnupg_init();
// not really needed. Clearsign is default
gnupg_setsignmode($res,GNUPG_SIG_MODE_CLEAR);
// add key with passphrase 'test' for signing
gnupg_addsignkey($res,"8660281B6051D071D94B5B230549F9DC851566DC","test");
// sign
$signed = gnupg_sign($res,"just a test");
echo $signed;
?>
```

See also Gnupg Function for PHP and GnuPG.

Specs

Short name	Extensions/Extgnupg
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1509 ext/grpc

Extension for GRPC : A high performance, open-source universal RPC framework.

```
<?php

//https://github.com/grpc/grpc/blob/master/examples/php/greeter_client.php

require dirname(__FILE__).'/vendor/autoload.php';
// The following includes are needed when using protobuf 3.1.0
// and will suppress warnings when using protobuf 3.2.0+
@include_once dirname(__FILE__).'/helloworld.pb.php';
@include_once dirname(__FILE__).'/helloworld_grpc_pb.php';
function greet($name)
{
    $client = new Helloworld\GreeterClient('localhost:50051', [
        'credentials' => Grpc\ChannelCredentials::createInsecure(),
    ]);
    $request = new Helloworld\HelloRequest();
    $request->setName($name);
    list($reply, $status) = $client->SayHello($request)->wait();
    $message = $reply->getMessage();
    return $message;
}
$name = !empty($argv[1]) ? $argv[1] : 'world';
echo greet($name)."\n";

?>
```

See also GRPC and GRPC on PECL.

Specs

Short name	Extensions/Extgrpc
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.3
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1510 ext/hash

Extension for HASH Message Digest Framework.

Message Digest (hash) engine. Allows direct or incremental processing of arbitrary length messages using a variety of hashing algorithms.

```
<?php
/* Create a file to calculate hash of */
file_put_contents('example.txt', 'The quick brown fox jumped over the lazy dog.');

echo hash_file('md5', 'example.txt');
?>
```

See also HASH Message Digest Framework.

Specs

Short name	Extensions/Exthash
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1511 ext/hrtime

High resolution timing Extension.

The HRTime extension implements a high resolution *StopWatch* class. It uses the best possible API on different platforms which brings resolution up to nanoseconds. It also makes possible to implement a custom stopwatch using low level ticks delivered by the underlaying system.

```
<?php

$c = new HRTime\StopWatch;

$c->start();
/* measure this code block execution */
for ($i = 0; $i < 1024*1024; $i++);
$c->stop();
$elapsed0 = $c->getLastElapsedTime(HRTime\Unit::NANOSECOND);

/* measurement is not running here*/
for ($i = 0; $i < 1024*1024; $i++);

$c->start();
/* measure this code block execution */
for ($i = 0; $i < 1024*1024; $i++);
```

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```
$c->stop();
$elapsed1 = $c->getLastElapsedTime(HRTime\Unit::NANOSECOND);

$elapsed_total = $c->getElapsedTime(HRTime\Unit::NANOSECOND);

?>
```

See also ext/hrtime manual.

Specs

Short name	Extensions/Exthrtime
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.1.5
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1512 ext/ibase

Extensions `Interbase` and `Firebird`.

`Firebird` is a relational database offering many ISO SQL-2003 features that runs on Linux, Windows, and a variety of Unix platforms.

```
<?php

$host = 'localhost:/path/to/your.gdb';

$dbh = ibase_connect($host, $username, $password);
$stmt = 'SELECT * FROM tblname';

$sth = ibase_query($dbh, $stmt) or die(ibase_errmsg());

?>
```

See also Firebase / Interbase and Firebird.

Specs

Short name	Extensions/Extibase
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1513 ext/iconv

Extension ext/iconv.

With this module, you can turn a string represented by a local character set into the one represented by another character set, which may be the Unicode character set.

```
<?php
$text = "This is the Euro symbol '€'.";

echo 'Original : ', $text, PHP_EOL;
echo 'TRANSLIT : ', iconv("UTF-8", "ISO-8859-1//TRANSLIT", $text), PHP_EOL;
echo 'IGNORE   : ', iconv("UTF-8", "ISO-8859-1//IGNORE", $text), PHP_EOL;
echo 'Plain    : ', iconv("UTF-8", "ISO-8859-1", $text), PHP_EOL;

?>
```

See also Iconv and libiconv.

Specs

Short name	Extensions/Exticonv
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1514 ext/igbinary

Extension igbinary.

igbinary is a drop in replacement for the standard php serializer. Instead of time and space consuming textual representation, igbinary stores php data structures in compact binary form.

```
<?php
     $serialized = igbinary_serialize($variable);
     $unserialized = igbinary_unserialize($serialized);
?>
```

See also igbinary.

Specs

Short name	Extensions/Extigbinary
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.0.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1515 ext/imagick

Extension Imagick for PHP.

Imagick is a native php extension to create and modify images using the ImageMagick API.

```
<?php

header('Content-type: image/jpeg');

$image = new Imagick('image.jpg');

// If 0 is provided as a width or height parameter,
// aspect ratio is maintained
$image->thumbnailImage(100, 0);

echo $image;

?>
```

See also Imagick for PHP and Imagick.

Specs

Short name	Extensions/Extimagick
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1516 ext/imap

Extension ext/imap.

This extension operate with the IMAP protocol, as well as the NNTP, POP3 and local mailbox access methods.

```
<?php
$mbox = imap_open('{imap.example.org}', 'username', 'password', OP_HALFOPEN)
      or die('can't connect: ' . imap_last_error());

$list = imap_list($mbox, '{imap.example.org}', '*');
if (is_array($list)) {
    foreach ($list as $val) {
        echo imap_utf7_decode($val) . PHP_EOL;
    }
} else {
    echo 'imap_list failed: ' . imap_last_error() . PHP_EOL;
}

imap_close($mbox);
?>
```

See also IMAP.

Specs

Short name	Extensions/Extimap
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1517 ext/info

PHP Options and Information.

These functions enable you to get a lot of information about PHP itself, e.g. runtime configuration, loaded extensions, version and much more.

```
<?php
/*
Our php.ini contains the following settings:

display_errors = On
register_globals = Off
post_max_size = 8M
*/

echo 'display_errors = ' . ini_get('display_errors') . "\n";
echo 'register_globals = ' . ini_get('register_globals') . "\n";
echo 'post_max_size = ' . ini_get('post_max_size') . "\n";
echo 'post_max_size+1 = ' . (ini_get('post_max_size')+1) . "\n";
echo 'post_max_size in bytes = ' . return_bytes(ini_get('post_max_size'));

function return_bytes($val) {
    $val = trim($val);
    $last = strtolower($val[strlen($val)-1]);
    switch($last) {
        // The 'G' modifier is available since PHP 5.1.0
        case 'g':
            $val *= 1024;
        case 'm':
            $val *= 1024;
        case 'k':
            $val *= 1024;
    }

    return $val;
}

?>
```

See also PHP Options And Information.

Specs

Short name	Extensions/Extinfo
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1518 ext/inotify

Extension inotify.

The Inotify extension gives access to the Linux kernel subsystem that acts to extend filesystems to notice changes to the filesystem, and report those changes to applications.

```
<?php
// Open an inotify instance
$fd = inotify_init();

// Watch __FILE__ for metadata changes (e.g. mtime)
$watch_descriptor = inotify_add_watch($fd, __FILE__, IN_ATTRIB);

// generate an event
touch(__FILE__);

// Read events
$events = inotify_read($fd);
print_r($events);

// The following methods allows to use inotify functions without blocking on inotify_
↪read():

// - Using stream_select() on $fd:
$read = array($fd);
$write = null;
$except = null;
stream_select($read,$write,$except,0);

// - Using stream_set_blocking() on $fd
stream_set_blocking($fd, 0);
inotify_read($fd); // Does no block, and return false if no events are pending

// - Using inotify_queue_len() to check if event queue is not empty
$queue_len = inotify_queue_len($fd); // If > 0, inotify_read() will not block

// Stop watching __FILE__ for metadata changes
inotify_rm_watch($fd, $watch_descriptor);

// Close the inotify instance
// This may have closed all watches if this was not already done
fclose($fd);

?>
```

See also ext/inotify manual and inotify.

Specs

Short name	Extensions/Extinotify
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1519 ext/intl

Extension international.

Internationalization extension (further is referred as Intl) is a wrapper for ICU library, enabling PHP programmers to perform various locale-aware operations including but not limited to formatting, transliteration, encoding conversion, calendar operations, UCA-conformant collation, locating text boundaries and working with locale identifiers, timezones and graphemes.

```
<?php
$coll = new Collator('en_US');
$al   = $coll->getLocale(Locale::ACTUAL_LOCALE);
echo "Actual locale: $al\n";

$formatter = new NumberFormatter('en_US', NumberFormatter::DECIMAL);
echo $formatter->format(1234567);
?>
```

See also Internationalization Functions.

Specs

Short name	Extensions/Extintl
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1520 ext/json

Extension JSON.

This extension implements the JavaScript Object Notation (JSON) data-interchange format. PHP implements a superset of JSON as specified in the original RFC 7159.

```
<?php
$arr = array('a' => 1, 'b' => 2, 'c' => 3, 'd' => 4, 'e' => 5);

echo json_encode($arr);
?>
```

See also JavaScript Object Notation and JSON.

Specs

Short name	Extensions/Extjson
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1521 ext/judy

The Judy extension.

PHP Judy is a PECL extension for the Judy C library implementing dynamic sparse arrays.

```
<?php
$judy = new Judy(Judy::BITSET);
if ($judy->getType() === judy_type($judy) &&
    $judy->getType() === Judy::BITSET) {
    echo 'Judy BITSET type OK'.PHP_EOL;
} else {
    echo 'Judy BITSET type check fail'.PHP_EOL;
}
unset($judy);
?>
```

See also php-judy.

Specs

Short name	Extensions/Extjudy
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1522 ext/ldap

Extension ext/ldap.

LDAP is the Lightweight Directory <https://www.php.net/`Directory>`_ Access Protocol, and is a protocol used to access 'Directory <https://www.php.net/`Directory>`_ Servers'. The Directory <https://www.php.net/`Directory>`_ is a special kind of database that holds information in a tree structure.

```
<?php
// basic sequence with LDAP is connect, bind, search, interpret search
// result, close connection

echo '<h3>LDAP query test</h3>';
echo 'Connecting ...';
$ds=ldap_connect('localhost');  // must be a valid LDAP server!
echo 'connect result is ' . $ds . '<br />';

if ($ds) {
    echo 'Binding ...';
    $r=ldap_bind($ds);     // this is an 'anonymous' bind, typically
                           // read-only access
    echo 'Bind result is ' . $r . '<br />';

    echo 'Searching for (sn=S*) ...';
    // Search surname entry
    $sr=ldap_search($ds, 'o=My Company, c=US', 'sn=S*');
    echo 'Search result is ' . $sr . '<br />';

    echo 'Number of entries returned is ' . ldap_count_entries($ds, $sr) . '<br />';

    echo 'Getting entries ...<p>';
    $info = ldap_get_entries($ds, $sr);
    echo 'Data for ' . $info['count'] . ' items returned:<p>';

    for ($i=0; $i<$info['count']; $i++) {
        echo 'dn is: ' . $info[$i]['dn'] . '<br />';
        echo 'first cn entry is: ' . $info[$i]['cn'][0] . '<br />';
        echo 'first email entry is: ' . $info[$i]['mail'][0] . '<br /><hr />';
    }
```

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```
    echo 'Closing connection';
    ldap_close($ds);

} else {
    echo '<h4>Unable to connect to LDAP server</h4>';
}
?>
```

See also Lightweight Directory Access Protocol.

Specs

Short name	Extensions/Extldap
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1523 ext/leveldb

PHP Binding for LevelDB.

LevelDB is a fast key-value storage library written at Google that provides an ordered mapping from string keys to string values.

```
<?php

$db = new LevelDB($leveldb_path);

$batch = new LevelDBWriteBatch();
$batch->set('batch_foo', 'batch_bar');
$batch->put('batch_foo2', 'batch_bar2');
$batch->delete('batch_foo');

$db->write($batch);

$batch->clear();
$batch->delete('batch_foo2');
$batch->set('batch_foo', 'batch again');

?>
```

See also ext/leveldb on Github and Leveldb.

Specs

Short name	Extensions/Extleveldb
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.1.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1524 ext/libsodium

Extension for libsodium : in PECL until PHP 7.2, and in core ever since.

The Sodium crypto library (libsodium) is a modern, easy-to-use software library for encryption, decryption, signatures, password hashing and more.

Sodium supports a variety of compilers and operating systems, including Windows (with MinGW or Visual Studio, x86 and x64), iOS and Android.

The design choices emphasize security, and "magic constants" have clear rationales.

```
<?php
// Example from the docs : https://paragonie.com/book/pecl-libsodium/read/06-hashing.md
↪#crypto-generichash

// Fast, unkeyed hash function.
// Can be used as a secure replacement for MD5
$h = \Sodium\crypto_generichash('msg');

// Fast, keyed hash function.
// The key can be of any length between \Sodium\CRYPTO_GENERICHASH_KEYBYTES_MIN
// and \Sodium\CRYPTO_GENERICHASH_KEYBYTES_MAX, in bytes.
// \Sodium\CRYPTO_GENERICHASH_KEYBYTES is the recommended length.
$h = \Sodium\crypto_generichash('msg', $key);

// Fast, keyed hash function, with user-chosen output length, in bytes.
// Output length can be between \Sodium\CRYPTO_GENERICHASH_BYTES_MIN and
// \Sodium\CRYPTO_GENERICHASH_BYTES_MAX.
// \Sodium\CRYPTO_GENERICHASH_BYTES is the default length.
$h = \Sodium\crypto_generichash('msg', $key, 64);

?>
```

See also PHP extension for libsodium and Using Libsodium in PHP Projects.

Specs

Short name	Extensions/Extlibsodium
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.10.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1525 ext/libxml

Extension libxml.

These functions/constants are available as of PHP 5.1.0, and the following core extensions rely on this libxml extension: DOM, libxml, SimpleXML, SOAP, WDDX, XSL, XML, XMLReader, XMLRPC and XMLWriter.

```
<?php

// $xmlstr is a string, containing a XML document.

$doc = simplexml_load_string($xmlstr);
$xml = explode(PHP_EOL, $xmlstr);

if ($doc === false) {
    $errors = libxml_get_errors();

    foreach ($errors as $error) {
        echo display_xml_error($error, $xml);
    }

    libxml_clear_errors();
}


function display_xml_error($error, $xml)
{
    $return  = $xml[$error->line - 1] . PHP_EOL;
    $return .= str_repeat('-', $error->column) . '^'.PHP_EOL;

    switch ($error->level) {
        case LIBXML_ERR_WARNING:
            $return .= 'Warning ',$error->code.': ';
            break;
         case LIBXML_ERR_ERROR:
            $return .= 'Error '.$error->code.': ';
            break;
        case LIBXML_ERR_FATAL:
            $return .= 'Fatal Error '.$error->code.': ';
            break;
```

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```
    }

    $return .= trim($error->message) .
               PHP_EOL.'  Line: '.$error->line .
               PHP_EOL.'  Column: '.$error->column;

    if ($error->file) {
        $return .= "\n  File: $error->file";
    }

    return $return.PHP_EOL.PHP_EOL.'--------------------------------------------'.PHP_
↪EOL.PHP_EOL;
}

?>
```

See also libxml.

Specs

Short name	Extensions/Extlibxml
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1526 ext/lua

Extension Lua.

'Lua is a powerful, fast, light-weight, embeddable scripting language.' This extension embeds the lua interpreter and offers an OO-API to lua variables and functions.

```
<?php
$lua = new Lua();
$lua->eval(<<<CODE
    print(2);
CODE
);
?>
```

See also ext/lua manual and LUA.

Specs

Short name	Extensions/Extlua
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	High
Features	pecl
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1527 ext/lzf

Extension LZF.

LZF is a very fast compression algorithm, ideal for saving space with only slight speed cost. It can be optimized for speed or space at the time of compilation.

```
<?php
$compressed = lzf_compress("This is test of LZF extension");

echo base64_encode($compressed);
?>
```

See also lzf and liblzf.

Specs

Short name	Extensions/Extlzf
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.3.5
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1528 ext/mail

Extension for mail.

The mail() function allows you to send mail.

```
<?php
// The message
$message = "Line 1\r\nLine 2\r\nLine 3";

// In case any of our lines are larger than 70 characters, we should use wordwrap()
```

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```
$message = wordwrap($message, 70, "\r\n");

// Send
mail('caffeinated@example.com', 'My Subject', $message);
?>
```

See also Mail related functions.

Specs

Short name	Extensions/Extmail
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1529 ext/mailparse

Extension mailparse.

Mailparse is an extension for parsing and working with email messages. It can deal with RFC 822 (MIME) and RFC 2045 (MIME) compliant messages.

```
<?php

$mail = mailparse_msg_create();
mailparse_msg_parse($mail, $mailInString);
$parts = mailparse_msg_get_structure($mail);

foreach($parts as $part) {
    $section = mailparse_msg_get_part($mail, $part);
    $info = mailparse_msg_get_part_data($section);
}

?>
```

See also Mailparse.

Specs

Short name	Extensions/Extmailparse
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	mail
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1530 ext/math

Core functions that provides math standard functions.

This is not a real extension : it is a documentation section, that helps sorting the functions.

```
<?php
echo decbin(12) . PHP_EOL;
echo decbin(26);
?>
```

See also Mathematical Functions.

Specs

Short name	Extensions/Extmath
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1531 ext/mbstring

Extension `ext/mbstring`.

`mbstring` provides multibyte specific string functions that help you deal with multibyte encodings in PHP.

```
<?php
/* Convert internal character encoding to SJIS */
$str = mb_convert_encoding($str, "SJIS");

/* Convert EUC-JP to UTF-7 */
$str = mb_convert_encoding($str, "UTF-7", "EUC-JP");
```

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```
/* Auto detect encoding from JIS, eucjp-win, sjis-win, then convert str to UCS-2LE */
$str = mb_convert_encoding($str, "UCS-2LE", "JIS, eucjp-win, sjis-win");

/* "auto" is expanded to "ASCII,JIS,UTF-8,EUC-JP,SJIS" */
$str = mb_convert_encoding($str, "EUC-JP", "auto");
?>
```

See also Mbstring.

Specs

Short name	Extensions/Extmbstring
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1532 ext/mcrypt

Extension for mcrypt.

This extension has been deprecated as of PHP 7.1.0 and moved to PECL as of PHP 7.2.0.

This is an interface to the mcrypt library, which supports a wide variety of block algorithms such as DES, TripleDES, Blowfish (default), 3-WAY, SAFER-SK64, SAFER-SK128, TWOFISH, TEA, RC2 and GOST in CBC, OFB, CFB and ECB cipher modes. Additionally, it supports RC6 and IDEA which are considered 'non-free'. CFB/OFB are 8bit by default.

```
<?php
    # --- ENCRYPTION ---

    # the key should be random binary, use scrypt, bcrypt or PBKDF2 to
    # convert a string into a key
    # key is specified using hexadecimal
    $key = pack('H*', 'bcb04b7e103a0cd8b54763051cef08bc55abe029fdebae5e1d417e2ffb2a00a3
↪');

    # show key size use either 16, 24 or 32 byte keys for AES-128, 192
    # and 256 respectively
    $key_size =  strlen($key);
    echo 'Key size: ' . $key_size . PHP_EOL;

    $plaintext = 'This string was AES-256 / CBC / ZeroBytePadding encrypted.';

    # create a random IV to use with CBC encoding
    $iv_size = mcrypt_get_iv_size(MCRYPT_RIJNDAEL_128, MCRYPT_MODE_CBC);
    $iv = mcrypt_create_iv($iv_size, MCRYPT_RAND);
```

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```
    # creates a cipher text compatible with AES (Rijndael block size = 128)
    # to keep the text confidential
    # only suitable for encoded input that never ends with value 00h
    # (because of default zero padding)
    $ciphertext = mcrypt_encrypt(MCRYPT_RIJNDAEL_128, $key,
                                 $plaintext, MCRYPT_MODE_CBC, $iv);

    # prepend the IV for it to be available for decryption
    $ciphertext = $iv . $ciphertext;

    # encode the resulting cipher text so it can be represented by a string
    $ciphertext_base64 = base64_encode($ciphertext);

    echo  $ciphertext_base64 . PHP_EOL;

    # === WARNING ===

    # Resulting cipher text has no integrity or authenticity added
    # and is not protected against padding oracle attacks.

    # --- DECRYPTION ---

    $ciphertext_dec = base64_decode($ciphertext_base64);

    # retrieves the IV, iv_size should be created using mcrypt_get_iv_size()
    $iv_dec = substr($ciphertext_dec, 0, $iv_size);

    # retrieves the cipher text (everything except the $iv_size in the front)
    $ciphertext_dec = substr($ciphertext_dec, $iv_size);

    # may remove 00h valued characters from end of plain text
    $plaintext_dec = mcrypt_decrypt(MCRYPT_RIJNDAEL_128, $key,
                                    $ciphertext_dec, MCRYPT_MODE_CBC, $iv_dec);

    echo  $plaintext_dec . PHP_EOL;
?>
```

See also extension mcrypt and mcrypt.

Specs

Short name	Extensions/Extmcrypt
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP71*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	crypto, libsodium, openssl
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1533 ext/memcache

Extension Memcache.

Memcache module provides handy procedural and object oriented interface to memcached, highly effective caching daemon, which was especially designed to decrease database load in dynamic web applications.

```
<?php

$memcache = new Memcache;
$memcache->connect('localhost', 11211) or die ('Could not connect');

$version = $memcache->getVersion();
echo 'Server\'s version: '.$version.'<br/>';

$tmp_object = new stdClass;
$tmp_object->str_attr = 'test';
$tmp_object->int_attr = 123;

$memcache->set('key', $tmp_object, false, 10) or die ('Failed to save data at the server
↪');
echo 'Store data in the cache (data will expire in 10 seconds)<br/>';

$get_result = $memcache->get('key');
echo 'Data from the cache:<br/>';

var_dump($get_result);

?>
```

See also Memcache on PHP and memcache on github.

Specs

Short name	Extensions/Extmemcache
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1534 ext/memcached

Extension ext-memcached.

This extension uses the libmemcached library to provide an API for communicating with memcached servers. It also provides a session handler (*memcached*).

```
<?php
$m = new Memcached();
$m->addServer('localhost', 11211);

$m->set('foo', 100);
var_dump($m->get('foo'));
?>
```

See also ext/memcached manual and memcached.

Specs

Short name	Extensions/Extmemcached
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1535 ext/mongo

Extension MongoDB driver (legacy).

```
<?php

// connect
$m = new MongoClient();

// select a database
$db = $m->comedy;

// select a collection (analogous to a relational database\'s table)
$collection = $db->cartoons;

// add a record
$document = array( 'title' => 'Calvin and Hobbes', 'author' => 'Bill Watterson' );
$collection->insert($document);

// add another record, with a different 'shape'
$document = array( 'title' => 'XKCD', 'online' => true );
$collection->insert($document);
```

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```
// find everything in the collection
$cursor = $collection->find();

// iterate through the results
foreach ($cursor as $document) {
    echo $document['title'] . PHP_EOL;
}

?>
```

Note : this is not the MongoDB driver. This is the legacy extension.

See also ext/mongo manual and MongdDb.

Specs

Short name	Extensions/Extmongo
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1536 ext/mongodb

Extension MongoDb.

Do not mistake with extension Mongo, the previous version.

Mongodb driver supports both PHP and HHVM and is developed atop the libmongoc and libbson libraries.

```
<?php
require 'vendor/autoload.php'; // include Composer's autoloader

$client = new MongoDB\Client("mongodb://localhost:27017");
$collection = $client->demo->beers;

$result = $collection->insertOne( [ 'name' => 'Hinterland', 'brewery' => 'BrewDog' ] );

echo "Inserted with Object ID '{$result->getInsertedId()}'";
?>
```

See also MongoDB driver and MongdDb.

Specs

Short name	Extensions/Extmongodb
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.9.5
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1537 ext/msgpack

Extension msgPack.

This extension provide API for handling MessagePack serialization, both encoding and decoding.

```
<?php

    $serialized = msgpack_serialize(array('a' => true, 'b' => 4));
    $unserialized = msgpack_unserialize($serialized);

?>
```

See also msgpack for PHP and MessagePack.

Specs

Short name	Extensions/Extmsgpack
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.3.5
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	format
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1538 ext/mssql

Extension MSSQL, Microsoft SQL Server.

These functions allow you to access MS SQL Server database.

```
<?php
// Connect to MSSQL
$link = mssql_connect('KALLESPC\SQLEXPRESS', 'sa', 'phpfi');

if (!$link || !mssql_select_db('php', $link)) {
```

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```
    die('Unable to connect or select database!');
}

// Do a simple query, select the version of
// MSSQL and print it.
$version = mssql_query('SELECT @@VERSION');
$row = mssql_fetch_array($version);

echo $row[0];

// Clean up
mssql_free_result($version);
?>
```

See also Microsoft SQL Server and Microsoft PHP Driver for SQL Server.

Specs

Short name	Extensions/Extmssql
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1539 ext/mysql

Extension for MySQL (Original MySQL API).

This extension is deprecated as of PHP 5.5.0, and has been removed as of PHP 7.0.0. Instead, either the mysqli or PDO_MySQL extension should be used.

See also the MySQL API Overview for further help while choosing a MySQL API.

```
<?php
$result = mysql_query('SELECT * WHERE 1=1');
if (!$result) {
    die('Invalid query: ' . mysql_error());
}

?>
```

See also Original MySQL API and MySQL.

Specs

Short name	Extensions/Extmysql
Rulesets	*All*, *Appinfo*, *CE*, *CompatibilityPHP55*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1540 ext/mysqli

Extension mysqli for MySQL.

The mysqli extension allows you to access the functionality provided by MySQL 4.1 and above.

```
<?php
$mysqli = new mysqli('localhost', 'my_user', 'my_password', 'world');

/* check connection */
if (mysqli_connect_errno()) {
    printf('Connect failed: %s\n', mysqli_connect_error());
    exit();
}

$city = 'Amersfoort';

/* create a prepared statement */
if ($stmt = $mysqli->prepare('SELECT District FROM City WHERE Name=?')) {

    /* bind parameters for markers */
    $stmt->bind_param('s', $city);

    /* execute query */
    $stmt->execute();

    /* bind result variables */
    $stmt->bind_result($district);

    /* fetch value */
    $stmt->fetch();

    printf('%s is in district %s\n', $city, $district);

    /* close statement */
    $stmt->close();
}

/* close connection */
$mysqli->close();
?>
```

See also MySQL Improved Extension, MySQL and Mariadb.

Specs

Short name	Extensions/Extmysqli
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1541 ext/ncurses

Extension ncurses (CLI).

ncurses (new curses) is a free software emulation of curses in System V Rel 4.0 (and above).

```
<?php
ncurses_init();
ncurses_start_color();
ncurses_init_pair(1, NCURSES_COLOR_GREEN, NCURSES_COLOR_BLACK);
ncurses_init_pair(2, NCURSES_COLOR_RED,   NCURSES_COLOR_BLACK);
ncurses_init_pair(3, NCURSES_COLOR_WHITE, NCURSES_COLOR_BLACK);
ncurses_color_set(1);
ncurses_addstr('OK   ');
ncurses_color_set(3);
ncurses_addstr('Success!'.PHP_EOL);
ncurses_color_set(2);
ncurses_addstr('FAIL ');
ncurses_color_set(3);
ncurses_addstr('Success!'.PHP_EOL);
?>
```

See also Ncurses Terminal Screen Control and Ncurses.

Specs

Short name	Extensions/Extncurses
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1542 ext/newt

Newt PHP CLI extension.

This is a PHP language extension for RedHat Newt library, a terminal-based window and widget library for writing applications with user friendly interface.

```
<?php
newt_init ();
newt_cls ();

newt_draw_root_text (0, 0, "Test Mode Setup Utility 1.12");
newt_push_help_line (null);

newt_get_screen_size ($rows, $cols);

newt_open_window ($rows/2-17, $cols/2-10, 34, 17, "Choose a Tool");

$form = newt_form ();

$list = newt_listbox (3, 2, 10);

foreach (array (
    "Authentication configuration",
    "Firewall configuration",
    "Mouse configuration",
    "Network configuration",
    "Printer configuration",
    "System services") as $l_item)
{
    newt_listbox_add_entry ($list, $l_item, $l_item);
}

$b1 = newt_button (5, 12, "Run Tool");
$b2 = newt_button (21, 12, "Quit");

newt_form_add_component ($form, $list);
newt_form_add_components ($form, array($b1, $b2));

newt_refresh ();
newt_run_form ($form);

newt_pop_window ();
newt_pop_help_line ();
newt_finished ();
newt_form_destroy ($form);
?>
```

See also Newt.

Specs

Short name	Extensions/Extnewt
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1543 ext/nsapi

NSAPI specific functions calls.

These functions are only available when running PHP as a NSAPI module in Netscape/iPlanet/Sun webservers.

```
<?php

// This scripts depends on ext/nsapi
if (ini_get('nsapi.read_timeout') < 60) {
    doSomething();
}

?>
```

See also Sun, iPlanet and Netscape servers on Sun Solaris.

Specs

Short name	Extensions/Extnsapi
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.9.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1544 ext/ob

Extension Output Buffering Control.

The Output Control functions allow you to control when output is sent from the script.

```
<?php

ob_start();
echo "Hello\n";
```

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```
setcookie("cookiename", "cookiedata");

ob_end_flush();

?>
```

See also Output Buffering Control.

Specs

Short name	Extensions/Extob
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1545 ext/oci8

Extension ext/oci8.

OCI8 gives access Oracle Database 12c, 11g, 10g, 9i and 8i.

```
<?php

$conn = oci_connect('hr', 'welcome', 'localhost/XE');
if (!$conn) {
    $e = oci_error();
    trigger_error(htmlentities($e['message'], ENT_QUOTES), E_USER_ERROR);
}

// Prepare the statement
$stid = oci_parse($conn, 'SELECT * FROM departments');
if (!$stid) {
    $e = oci_error($conn);
    trigger_error(htmlentities($e['message'], ENT_QUOTES), E_USER_ERROR);
}

// Perform the logic of the query
$r = oci_execute($stid);
if (!$r) {
    $e = oci_error($stid);
    trigger_error(htmlentities($e['message'], ENT_QUOTES), E_USER_ERROR);
}

// Fetch the results of the query
print '<table border='1'>' . PHP_EOL;
```

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```
while ($row = oci_fetch_array($stid, OCI_ASSOC+OCI_RETURN_NULLS)) {
    print '<tr>' . PHP_EOL;
    foreach ($row as $item) {
        print '    <td>' . ($item !== null ? htmlentities($item, ENT_QUOTES) : ' ')␣
↪. '</td>' . PHP_EOL;
    }
    print '</tr>' . PHP_EOL;
}
print '</table>' . PHP_EOL;

oci_free_statement($stid);
oci_close($conn);

?>
```

See also Oracle OCI8 and Oracle.

Specs

Short name	Extensions/Extoci8
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1546 ext/odbc

Extension ODBC.

In addition to normal ODBC support, the Unified ODBC functions in PHP allow you to access several databases that have borrowed the semantics of the ODBC API to implement their own API. Instead of maintaining multiple database drivers that were all nearly identical, these drivers have been unified into a single set of ODBC functions.

```
<?php
$a = 1;
$b = 2;
$c = 3;
$stmt    = odbc_prepare($conn, 'CALL myproc(?,?,?)');
$success = odbc_execute($stmt, array($a, $b, $c));
?>
```

See also ODBC (Unified), Unixodbc and IODBC.

Specs

Short name	Extensions/Extodbc
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1547 ext/opcache

Extension opcache.

OPcache improves PHP performance by storing precompiled script bytecode in shared memory, thereby removing the need for PHP to load and parse scripts on each request.

```
<?php

echo opcache_compile_file('/var/www/index.php');

print_r(opcache_get_status());

?>
```

See also OPcache functions.

Specs

Short name	Extensions/Extopcache
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1548 ext/opencensus

Extension PHP for OpenCensus.

A stats collection and distributed tracing framework.

```
<?php
opencensus_trace_begin('root', ['spanId' => '1234']);
opencensus_trace_add_annotation('foo');
opencensus_trace_begin('inner', []);
```

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```
opencensus_trace_add_annotation('asdf', ['spanId' => '1234']);
opencensus_trace_add_annotation('abc');
opencensus_trace_finish();
opencensus_trace_finish();
$traces = opencensus_trace_list();
echo "Number of traces: " . count($traces) . "\n";
$span = $traces[0];
print_r($span->timeEvents());
$span2 = $traces[1];
print_r($span2->timeEvents());
?>
```

See also opencensus.

Specs

Short name	Extensions/Extopencensus
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.1.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1549 ext/openssl

Extension Openssl.

This extension binds functions of `OpenSSL` library for symmetric and asymmetric encryption and decryption, `PBKDF2`, `PKCS7`, `PKCS12`, `X509` and other cryptographic operations. In addition to that it provides implementation of `TLS` streams.

```
<?php
// $data and $signature are assumed to contain the data and the signature

// fetch public key from certificate and ready it
$pubkeyid = openssl_pkey_get_public("file://src/openssl-0.9.6/demos/sign/cert.pem");

// state whether signature is okay or not
$ok = openssl_verify($data, $signature, $pubkeyid);
if ($ok == 1) {
    echo "good";
} elseif ($ok == 0) {
    echo "bad";
} else {
    echo "ugly, error checking signature";
}
// free the key from memory
```

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```
openssl_free_key($pubkeyid);
?>
```

See also ext/OpenSSL and OpenSSL.

Specs

Short name	Extensions/Extopenssl
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1550 ext/parle

Extension Parser and Lexer.

The parle extension provides lexing and parsing facilities. The implementation is based on » Ben Hanson's libraries and requires a » C++14 capable compiler.

```
<?php

use Parle\{Token, Lexer, LexerException};

/* name => id */
$token = array(
        'EOI' => 0,
        'COMMA' => 1,
        'CRLF' => 2,
        'DECIMAL' => 3,
);
/* id => name */
$token_rev = array_flip($token);

$lex = new Lexer;
$lex->push("[\x2c]", $token['COMMA']);
$lex->push("[\r][\n]", $token['CRLF']);
$lex->push("[\d]+", $token['DECIMAL']);
$lex->build();

$in = "0,1,2\r\n3,42,5\r\n6,77,8\r\n";

$lex->consume($in);

do {
        $lex->advance();
        $tok = $lex->getToken();
```

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```
        if (Token::UNKNOWN == $tok->id) {
                throw new LexerException('Unknown token "'.$tok->value.'" at offset '.
↪$tok->offset.'.');
        }

        echo 'TOKEN: ', $token_rev[$tok->id], PHP_EOL;
} while (Token::EOI != $tok->id);

?>
```

See also Parsing and Lexing.

Specs

Short name	Extensions/Extparle
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.12.12
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1551 ext/password

Extension password.

The password hashing API provides an easy to use wrapper around crypt() and some other password hashing algorithms, to make it easy to create and manage passwords in a secure manner.

```
<?php
// See the password_hash() example to see where this came from.
$hash = '$2y$07$BCryptRequires22Chrcte/VlQH0piJtjXl.0t1XkA8pw9dMXTpOq';

if (password_verify('rasmuslerdorf', $hash)) {
    echo 'Password is valid!';
} else {
    echo 'Invalid password.';
}
?>
```

See also Password Hashing and crypt man page.

Specs

Short name	Extensions/Extpassword
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1552 ext/pcntl

Extension for process control.

Process Control support in PHP implements the Unix style of process creation, program execution, signal handling and process termination. Process Control should not be enabled within a web server environment and unexpected results may happen if any Process Control functions are used within a web server environment.

```
<?php
declare(ticks=1);

$pid = pcntl_fork();
if ($pid == -1) {
     die('could not fork');
} else if ($pid) {
     exit(); // we are the parent
} else {
     // we are the child
}

// detatch from the controlling terminal
if (posix_setsid() == -1) {
    die('could not detach from terminal');
}

// setup signal handlers
pcntl_signal(SIGTERM, 'sig_handler');
pcntl_signal(SIGHUP, 'sig_handler');

// loop forever performing tasks
while (1) {

    // do something interesting here

}

function sig_handler($signo)
{

     switch ($signo) {
```

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```
        case SIGTERM:
            // handle shutdown tasks
            exit;
            break;
        case SIGHUP:
            // handle restart tasks
            break;
        default:
            // handle all other signals
    }

}

?>
```

See also Process Control.

Specs

Short name	Extensions/Extpcntl
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1553 ext/pcov

CodeCoverage compatible driver for PHP.

A self contained CodeCoverage compatible driver for PHP7. CodeCoverage provides collection, processing, and rendering functionality for PHP code coverage information.

```
<?php
\pcov\start();
$d = [];
for ($i = 0; $i < 10; $i++) {
     $d[] = $i * 42;
}
\pcov\stop();
var_dump(\pcov\collect());
?>
```

See also PCOV and phpunit/php-code-coverage.

Specs

Short name	Extensions/Extpcov
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	1.6.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1554 ext/pcre

Extension ext/pcre. PCRE stands for Perl Compatible Regular Expression. It is a standard PHP extension.

```
<?php

$zip_code = $_GET['zip'];

// Canadian Zip code H2M 3J1
$zip_ca = '/^([a-zA-Z]\d[a-zA-Z])\ {0,1}(\d[a-zA-Z]\d)$/';

// French Zip code  75017
$zip_fr = '/^\d{5}$/';

// Chinese Zip code  590615
$zip_cn = '/^\d{6}$/';

var_dump(preg_match($_GET['zip']));

?>
```

See also Regular Expressions (Perl-Compatible).

Specs

Short name	Extensions/Extpcre
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1555 ext/pdo

Generic extension PDO.

The PHP Data Objects (PDO) extension defines a lightweight, consistent interface for accessing databases in PHP.

```
<?php
/* Execute a prepared statement by passing an array of values */
$sql = 'SELECT name, colour, calories
    FROM fruit
    WHERE calories < :calories AND colour = :colour';
$sth = $dbh->prepare($sql, array(PDO::ATTR_CURSOR => PDO::CURSOR_FWDONLY));
$sth->execute(array(':calories' => 150, ':colour' => 'red'));
$red = $sth->fetchAll();
$sth->execute(array(':calories' => 175, ':colour' => 'yellow'));
$yellow = $sth->fetchAll();
?>
```

See also PHP Data Object.

Specs

Short name	Extensions/Extpdo
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1556 ext/pecl_http

Extension HTTP.

This HTTP extension aims to provide a convenient and powerful set of functionalities for one of PHP major applications.

It eases handling of HTTP URL, headers and messages, provides means for negotiation of a client's preferred content type, language and charset, as well as a convenient way to send any arbitrary data with caching and resuming capabilities.

It provides powerful request functionality with support for parallel requests.

```
<?php

$client = new http\Client;
$client->setSslOptions(array("verifypeer" => true));
$client->addSslOptions(array("verifyhost" => 2));

$client->enqueue($req = new http\Client\Request("GET", "https://twitter.com/"));
$client->send();
$ti = (array) $client->getTransferInfo($req);
```

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```
var_dump($ti);

?>
```

See also ext-http and pecl_http.

Specs

Short name	Extensions/Exthttp
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1557 ext/pgsql

Extension PostGreSQL.

PostgreSQL is an open source descendant of this original Berkeley code. It provides SQL92/SQL99 language support, transactions, referential integrity, stored procedures and type extensibility.

```
<?php
// Connect to a database named 'mary'
$dbconn = pg_connect('dbname=mary');

// Prepare a query for execution
$result = pg_prepare($dbconn, 'my_query', 'SELECT * FROM shops WHERE name = $1');

// Execute the prepared query.  Note that it is not necessary to escape
// the string 'Joe's Widgets' in any way
$result = pg_execute($dbconn, 'my_query', array('Joe\'s Widgets'));

// Execute the same prepared query, this time with a different parameter
$result = pg_execute($dbconn, 'my_query', array('Clothes Clothes Clothes'));

?>
```

See also PostgreSQL and PostgreSQL: The world's most advanced open source database.

Specs

Short name	Extensions/Extpgsql
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1558 ext/phalcon

Extension Phalcon : High Performance PHP Framework.

Phalcon's autoload examples from the docs : Tutorial 1: Let's learn by example

```
<?php

use Phalcon\Loader;

// ...

$loader = new Loader();

$loader->registerDirs(
    [
        ../app/controllers/,
        ../app/models/,
    ]
);

$loader->register();

?>
```

See also PhalconPHP.

Specs

Short name	Extensions/Extphalcon
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1559 ext/phar

Extension phar.

The phar extension provides a way to put entire PHP applications into a single file called a `phar` (PHP Archive) for easy distribution and installation.

```
<?php
try {
    $p = new Phar('/path/to/my.phar', 0, 'my.phar');
    $p['myfile.txt'] = 'hi';
    $file = $p['myfile.txt'];
    var_dump($file->isCompressed(Phar::BZ2));
    $p['myfile.txt']->compress(Phar::BZ2);
    var_dump($file->isCompressed(Phar::BZ2));
} catch (Exception $e) {
    echo 'Create/modify operations on my.phar failed: ', $e;
}
?>
```

See also phar.

Specs

Short name	Extensions/Extphar
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1560 ext/php-ast

PHP-AST extension (PHP 7.0 +).

```
<?php

$code = <<<'EOC'
<?php
$var = 42;
EOC;

var_dump(ast\parse_code($code, $version=50));

?>
```

See also ext/ast, Extension exposing PHP 7 abstract syntax tree and Introduction of PHP parse and its application in hyperf.

Specs

Short name	Extensions/Extast
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	ast
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1561 ext/pkcs11

In cryptography, PKCS #11 is one of the Public-Key Cryptography Standards. This extensions provides methods to create, read and check those keys.

```
<?php

$key = $session->generateKey(new Pkcs11\Mechanism(Pkcs11\CKM_AES_KEY_GEN), [
  Pkcs11\CKA_CLASS => Pkcs11\CKO_SECRET_KEY,
  Pkcs11\CKA_SENSITIVE => true,
  Pkcs11\CKA_ENCRYPT => true,
  Pkcs11\CKA_DECRYPT => true,
  Pkcs11\CKA_VALUE_LEN => 32,
  Pkcs11\CKA_KEY_TYPE => Pkcs11\CKK_AES,
  Pkcs11\CKA_LABEL => "Test AES",
  Pkcs11\CKA_PRIVATE => true,
]);

?>
```

Specs

Short name	Extensions/Extpkcs11
Rulesets	*All*, *Appinfo*
Exakat since	2.4.2
PHP Version	With PHP 8.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1562 ext/posix

Extension POSIX.

Ext/posix contains an interface to those functions defined in the IEEE 1003.1 (POSIX.1) standards document which are not accessible through other means.

```
<?php
posix_kill(999459,SIGKILL);
echo 'Your error returned was '.posix_get_last_error(); //Your error was ___
?>
```

See also 1003.1-2008 - IEEE Standard for Information Technology - Portable Operating System Interface (POSIX(R)).

Specs

Short name	Extensions/Extposix
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1563 ext/protobuf

Extension Protobuf.

Protocol Buffers (a.k.a., protobuf) are Google's language-neutral, platform-neutral, extensible mechanism for serializing structured data.

```
<?php

// Example extracted from https://developers.google.com/protocol-buffers/docs/reference/
↪php-generated

// given a simple message
//message Foo {}

/*
The protocol buffer compiler generates a PHP class called Foo. This class inherits from␣
↪a common base class, Google\Protobuf\Internal\Message, which provides methods for␣
↪encoding and decoding your message types, as shown in the following example:
*/

$from = new Foo();
$from->setInt32(1);
$from->setString('a');
$from->getRepeatedInt32()[] = 1;
$from->getMapInt32Int32()[1] = 1;
```

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```
$data = $from->serializeToString();
try {
  $to->mergeFromString($data);
} catch (Exception $e) {
  // Handle parsing error from invalid data.
  ...
}

?>
```

See also Protocol Buffers, PHP Protocol Buffers and protobuf-php on packagist.

Specs

Short name	Extensions/Extprotobuf
Rulesets	*All*, *Appinfo*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1564 ext/pspell

Extension pspell.

These functions allow you to check the spelling of a word and offer suggestions.

```
<?php
$pspell_link = pspell_new('en');

if (pspell_check($pspell_link, 'testt')) {
    echo 'This is a valid spelling';
} else {
    echo 'Sorry, wrong spelling';
}
?>
```

See also Pspell and pspell.

Specs

Short name	Extensions/Extpspell
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1565 ext/psr

Extension PSR : PHP Standards Recommendations.

This PHP extension provides the interfaces from the PSR standards as established by the PHP-FIG group. You can use interfaces provided by this extension in another extension easily - see this example.

Currently supported PSR :

- PSR-3 - *psr/http-message*
- PSR-11 - *psr/container*
- PSR-13 - *psr/link*
- PSR-15 - *psr/http-server*
- PSR-16 - *psr/simple-cache*
- PSR-17 - *psr/http-factory*

```
<?php
// Example from the tests, for Cache (PSR-6)
use Psr\Cache\CacheException;
class MyCacheException extends Exception implements CacheException {}
$ex = new MyCacheException('test');
var_dump($ex instanceof CacheException);
var_dump($ex instanceof Exception);
try {
    throw $ex;
} catch( CacheException $e ) {
    var_dump($e->getMessage());
}
?>
```

See also php-psr and PHP-FIG.

Specs

Short name	Extensions/Extpsr
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.5.2
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	psr
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1566 ext/rar

Extension RAR.

Rar is a powerful and effective archiver created by Eugene Roshal. This extension gives you possibility to read Rar archives but doesn't support writing Rar archives, because this is not supported by the UnRar library and is directly prohibited by its license.

```
<?php

$arch = RarArchive::open(example.rar);
if ($arch === FALSE)
    die(Cannot open example.rar);

$entries = $arch->getEntries();
if ($entries === FALSE)
    die(Cannot retrieve entries);


?>
```

See also Rar archiving and rarlabs.

Specs

Short name	Extensions/Extrar
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1567 ext/rdkafka

Extension for RDkafka.

PHP-rdkafka is a thin librdkafka binding providing a working PHP 5 / PHP 7 Kafka 0.8 / 0.9 / 0.10 client.

```
<?php

$rk = new RdKafka\Producer();
$rk->setLogLevel(LOG_DEBUG);
$rk->addBrokers("10.0.0.1,10.0.0.2");

?>
```

See also Kafka client for PHP and librdkafka.

Specs

Short name	Extensions/Extrdkafka
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.12.8
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1568 ext/readline

Extension readline.

The readline functions implement an interface to the GNU Readline library. These are functions that provide editable command lines.

```
<?php
//get 3 commands from user
for ($i=0; $i < 3; $i++) {
        $line = readline("Command: ");
        readline_add_history($line);
}

//dump history
print_r(readline_list_history());

//dump variables
print_r(readline_info());
?>
```

See also ext/readline and The GNU Readline Library.

Specs

Short name	Extensions/Extreadline
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1569 ext/redis

Extension ext/redis.

The phpredis extension provides an API for communicating with the Redis key-value store.

```
<?php

$redis = new Redis();
$redis->connect('127.0.0.1', 6379);

$redis->setOption(Redis::OPT_SERIALIZER, Redis::SERIALIZER_NONE);    // don't serialize␣
↪data
$redis->setOption(Redis::OPT_SERIALIZER, Redis::SERIALIZER_PHP);     // use built-in␣
↪serialize/unserialize
$redis->setOption(Redis::OPT_SERIALIZER, Redis::SERIALIZER_IGBINARY);        // use␣
↪igBinary serialize/unserialize

$redis->setOption(Redis::OPT_PREFIX, 'myAppName:');  // use custom prefix on all keys

/* Options for the SCAN family of commands, indicating whether to abstract
   empty results from the user.  If set to SCAN_NORETRY (the default), phpredis
   will just issue one SCAN command at a time, sometimes returning an empty
   array of results.  If set to SCAN_RETRY, phpredis will retry the scan command
   until keys come back OR Redis returns an iterator of zero
*/
$redis->setOption(Redis::OPT_SCAN, Redis::SCAN_NORETRY);
$redis->setOption(Redis::OPT_SCAN, Redis::SCAN_RETRY);
?>
```

See also A PHP extension for Redis and Redis.

Specs

Short name	Extensions/Extredis
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1570 ext/reflection

Extension Reflection.

PHP comes with a complete reflection API that adds the ability to reverse-engineer classes, interfaces, functions, methods and extensions. Additionally, the reflection API offers ways to retrieve doc comments for functions, classes and methods.

```
<?php
/**
 * A simple counter
 *
 * @return    int
 */
function counter1()
{
    static $c = 0;
    return ++$c;
}

/**
 * Another simple counter
 *
 * @return    int
 */
$counter2 = function()
{
    static $d = 0;
    return ++$d;

};

function dumpReflectionFunction($func)
{
    // Print out basic information
    printf(
        PHP_EOL.'===> The %s function '%s''.PHP_EOL.
        '     declared in %s'.PHP_EOL.
        '     lines %d to %d'.PHP_EOL,
        $func->isInternal() ? 'internal' : 'user-defined',
```

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```
        $func->getName(),
        $func->getFileName(),
        $func->getStartLine(),
        $func->getEndline()
    );

    // Print documentation comment
    printf('---> Documentation:'.PHP_EOL.' %s',PHP_EOL, var_export($func->
↪getDocComment(), 1));

    // Print static variables if existant
    if ($statics = $func->getStaticVariables())
    {
        printf('---> Static variables: %s',PHP_EOL, var_export($statics, 1));
    }
}

// Create an instance of the ReflectionFunction class
dumpReflectionFunction(new ReflectionFunction('counter1'));
dumpReflectionFunction(new ReflectionFunction($counter2));
?>
```

See also Reflection.

Specs

Short name	Extensions/Extreflection
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1571 ext/scrypt

This is a PHP library providing a wrapper to Colin Percival's scrypt implementation. Scrypt is a key derivation function designed to be far more secure against hardware brute-force attacks than alternative functions such as PBKDF2 or bcrypt.

```
<?php
echo scrypt("", "", 16, 1, 1, 64) . "\n";
echo scrypt("password", "NaCl", 1024, 8, 16, 64) . "\n";
?>
```

See also *scrypt <http://www.tarsnap.com/scrypt.html>* and *PHP scrypt module <https://github.com/DomBlack/php-scrypt>*.

Specs

Short name	Extensions/Extscrypt
Rulesets	*All*, *Appinfo*
Exakat since	2.4.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	crypto
Available in	Entreprise Edition, Exakat Cloud

14.2.1572 ext/sdl

Extensions ext/sdl.

Simple DirectMedia Layer (SDL) is a cross-platform software development library designed to provide a hardware abstraction layer for computer multimedia hardware components.

```
<?php
/**
 * Example of how to change screen properties such as title, icon or state using the PHP-
↪SDL extension.
 *
 * @author Santiago Lizardo <santiagolizardo@php.net>
 */
require 'common.php';
SDL_Init( SDL_INIT_VIDEO );
$screen = SDL_SetVideoMode( 640, 480, 16, SDL_HWSURFACE );
if( null == $screen )
{
     fprintf( STDERR, 'Error: %s' . PHP_EOL, SDL_GetError() );
}
for( $i = 3; $i > 0; $i-- )
{
     SDL_WM_SetCaption( "Switching to fullscreen mode in $i seconds...", null );
     SDL_Delay( 1000 );
}
SDL_WM_ToggleFullscreen( $screen );
SDL_Delay( 3000 );
SDL_WM_ToggleFullscreen( $screen );
SDL_WM_SetCaption( "Back from fullscreen mode. Quitting in 2 seconds...", null );
SDL_Delay( 2000 );
SDL_FreeSurface( $screen );
SDL_Quit();

?>
```

See also phpsdl, Simple DirectMedia Layer and About SDL.

Specs

Short name	Extensions/Extsdl
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.5.6
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1573 ext/seaslog

Extension Seaslog.

An effective, fast, stable log extension for PHP.

```
<?php
$basePath_1 = SeasLog::getBasePath();

SeasLog::setBasePath('/log/base_test');
$basePath_2 = SeasLog::getBasePath();

var_dump($basePath_1,$basePath_2);

/*
string(19) "/log/seaslog-ciogao"
string(14) "/log/base_test"
*/

$lastLogger_1 = SeasLog::getLastLogger();

SeasLog::setLogger('testModule/app1');
$lastLogger_2 = SeasLog::getLastLogger();

var_dump($lastLogger_1,$lastLogger_2);
/*
string(7) "default"
string(15) "testModule/app1"
*/
?>
```

See also ext/SeasLog on Github and SeasLog.

Specs

Short name	Extensions/Extseaslog
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.4.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1574 ext/sem

Extension Semaphore, Shared Memory and IPC.

This module provides wrappers for the System V IPC family of functions. It includes semaphores, shared memory and inter-process messaging (IPC).

```
<?php

$key         = ftok(__FILE__,'a');
$semaphore   = sem_get($key);
sem_acquire($semaphore);
sem_release($semaphore);
sem_remove($semaphore);

?>
```

See also Semaphore, Shared Memory and IPC.

Specs

Short name	Extensions/Extsem
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1575 ext/session

Extension ext/session.

Session support in PHP consists of a way to preserve certain data across subsequent accesses.

```
<?php
session_start();
if (!isset($_SESSION['count'])) {
  $_SESSION['count'] = 0;
} else {
  $_SESSION['count']++;
}
?>
```

See also Session.

Specs

Short name	Extensions/Extsession
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	session
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1576 ext/shmop

Extension ext/shmop.

Shmop is an easy to use set of functions that allows PHP to read, write, create and delete Unix shared memory segments.

```
<?php
// Create a temporary file and return its path
$tmp = tempnam('/tmp', 'PHP');

// Get the file token key
$key = ftok($tmp, 'a');

// Attach the SHM resource, notice the cast afterwards
$id = shm_attach($key);

if ($id === false) {
    die('Unable to create the shared memory segment');
}

// Cast to integer, since prior to PHP 5.3.0 the resource id
// is returned which can be exposed when casting a resource
```

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```
// to an integer
$id = (integer) $id;
?>
```

See also Semaphore, Shared Memory and IPC.

Specs

Short name	Extensions/Extshmop
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1577 ext/simplexml

Extension `SimpleXML`.

The `SimpleXML` extension provides a very simple and easily usable toolset to convert XML to an object that can be processed with normal property selectors and array iterators.

```
<?php

$xml = <<<'XML'
<?xml version='1.0' standalone='yes' ? >
<movies>
 <movie>
  <title>PHP: Behind the Parser</title>
  <characters>
   <character>
    <name>Ms. Coder</name>
    <actor>Onlivia Actora</actor>
   </character>
   <character>
    <name>Mr. Coder</name>
    <actor>El Act&#211;r</actor>
   </character>
  </characters>
  <plot>
   So, this language. It's like, a programming language. Or is it a
   scripting language? All is revealed in this thrilling horror spoof
   of a documentary.
  </plot>
  <great-lines>
   <line>PHP solves all my web problems</line>
  </great-lines>
  <rating type="thumbs">7</rating>
```

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```
  <rating type="stars">5</rating>
 </movie>
</movies>
XML;

$movies = new SimpleXMLElement($xml);

echo $movies->movie[0]->plot;
?>
```

See also SimpleXML.

Specs

Short name	Extensions/Extsimplexml
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1578 ext/snmp

Extension SNMP.

The SNMP extension provides a very simple and easily usable toolset for managing remote devices via the Simple Network Management Protocol.

```
<?php
    $nameOfSecondInterface = snmp3_get('localhost', 'james', 'authPriv', 'SHA',
↪'secret007', 'AES', 'secret007', 'IF-MIB::ifName.2');
?>
```

See also Net SNMP and SNMP.

Specs

Short name	Extensions/Extsnmp
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1579 ext/soap

Extension SOAP.

The SOAP extension can be used to write SOAP Servers and Clients. It supports subsets of » SOAP 1.1, » SOAP 1.2 and » WSDL 1.1 specifications.

```
<?php

$client = new SoapClient("some.wsdl");

$client = new SoapClient("some.wsdl", array('soap_version'   => SOAP_1_2));

$client = new SoapClient("some.wsdl", array('login'          => "some_name",
                                            'password'       => "some_password"));

?>
```

See also SOAP and SOAP specifications.

Specs

Short name	Extensions/Extsoap
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1580 ext/sockets

Extension socket.

The socket extension implements a low-level interface to the socket communication functions based on the popular BSD sockets, providing the possibility to act as a socket server as well as a client.

```
<?php

//Example #2 Socket example: Simple TCP/IP client
//From the PHP manual

error_reporting(E_ALL);

echo "<h2>TCP/IP Connection</h2>\n";

/* Get the port for the WWW service. */
$service_port = getservbyname('www', 'tcp');

/* Get the IP address for the target host. */
```

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```
$address = gethostbyname('www.example.com');

/* Create a TCP/IP socket. */
$socket = socket_create(AF_INET, SOCK_STREAM, SOL_TCP);
if ($socket === false) {
    echo 'socket_create() failed: reason: ' . socket_strerror(socket_last_error()) . PHP_
↪EOL;
} else {
    echo 'OK.'.PHP_EOL;
}

echo 'Attempting to connect to '$address' on port '$service_port'...';
$result = socket_connect($socket, $address, $service_port);
if ($result === false) {
    echo 'socket_connect() failed.\nReason: ($result) ' . socket_strerror(socket_last_
↪error($socket)) . '\n';
} else {
    echo 'OK.'.PHP_EOL;
}

$in = "HEAD / HTTP/1.1\r\n";
$in .= "Host: www.example.com\r\n";
$in .= "Connection: Close\r\n\r\n";
$out = '';

echo 'Sending HTTP HEAD request...';
socket_write($socket, $in, strlen($in));
echo "OK.\n";

echo 'Reading response:\n\n';
while ($out = socket_read($socket, 2048)) {
    echo $out;
}

echo 'Closing socket...';
socket_close($socket);
echo 'OK.\n\n';
?>
```

See also Sockets.

Specs

Short name	Extensions/Extsockets
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1581 ext/sphinx

Extension for the Sphinx search server.

This extension provides bindings for Sphinx search client library.

```
<?php

$s = new SphinxClient;
$s->setServer("localhost", 6712);
$s->setMatchMode(SPH_MATCH_ANY);
$s->setMaxQueryTime(3);

$result = $s->query("test");

var_dump($result);

?>
```

See also Sphinx Client and Sphinx Search.

Specs

Short name	Extensions/Extsphinx
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.3
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1582 ext/spl

SPL extension.

The Standard PHP Library (SPL) is a collection of interfaces and classes that are meant to solve common problems.

```
<?php

// Example with FilesystemIterator
$files = new FilesystemIterator('/path/to/dir');
foreach($files as $file) {
    echo $file->getFilename() . PHP_EOL;
}

?>
```

See also Standard PHP Library (SPL).

Specs

Short name	Extensions/Extspl
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1583 ext/spx

SPX, which stands for Simple Profiling eXtension, is just another profiling extension for PHP.

```
<?php

while ($task = get_next_ready_task()) {
  spx_profiler_start();
  try {
    $task->process();
  } finally {
    spx_profiler_stop();
  }
}
?>
```

See also https://github.com/NoiseByNorthwest/php-spx.

Specs

Short name	Extensions/Extspx
Rulesets	*All*, *Appinfo*
Exakat since	2.4.2
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	profiler
Available in	Entreprise Edition, Exakat Cloud

14.2.1584 ext/sqlite

Extension Sqlite 2.

Support for SQLite version 2 databases. The support for this version of Sqlite has ended. It is recommended to use `SQLite3`.

```
<?php

if ($db = sqlite_open('mysqlitedb', 0666, $sqliteerror)) {
    sqlite_query($db, 'CREATE TABLE foo (bar varchar(10))');
    sqlite_query($db, 'INSERT INTO foo VALUES ("fnord")');
    $result = sqlite_query($db, 'select bar from foo');
    var_dump(sqlite_fetch_array($result));
} else {
    die($sqliteerror);
}

?>
```

See also ext/sqlite and SQLite.

Specs

Short name	Extensions/Extsqlite
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.11.3
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1585 ext/sqlite3

Extension Sqlite3.

This extension adds support for SQLite version 3 databases. There used to be a Sqlite2 extension, which have been discontinued: this is the replacement.

```
<?php
$db = new SQLite3('mysqlitedb.db');

$results = $db->query('SELECT bar FROM foo');
while ($row = $results->fetchArray()) {
    var_dump($row);
}
?>
```

See also ext/sqlite3 and Sqlite.

Specs

Short name	Extensions/Extsqlite3
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1586 ext/sqlsrv

Extension for Microsoft SQL Server Driver.

The SQLSRV extension allows you to access Microsoft SQL Server and SQL Azure databases when running PHP on Windows.

```
<?php
$serverName = 'serverName\sqlexpress';
$connectionInfo = array( 'Database'=>'dbName', 'UID'=>'username', 'PWD'=>'password' );
$conn = sqlsrv_connect( $serverName, $connectionInfo);
if( $conn === false ) {
     die( print_r( sqlsrv_errors(), true));
}

$sql = 'INSERT INTO Table_1 (id, data) VALUES (?, ?)';
$params = array(1, 'some data');

$stmt = sqlsrv_query( $conn, $sql, $params);
if( $stmt === false ) {
     die( print_r( sqlsrv_errors(), true));
}
?>
```

See also Microsoft SQL Server Driver and PHP Driver for SQL Server Support for LocalDB.

Specs

Short name	Extensions/Extsqlsrv
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1587 ext/ssh2

Extension ext/ssh2.

```
<?php
/* Notify the user if the server terminates the connection */
function my_ssh_disconnect($reason, $message, $language) {
  printf("Server disconnected with reason code [%d] and message: %s\n",
         $reason, $message);
}

$methods = array(
  'kex' => 'diffie-hellman-group1-sha1',
  'client_to_server' => array(
    'crypt' => '3des-cbc',
    'comp' => 'none'),
  'server_to_client' => array(
    'crypt' => 'aes256-cbc,aes192-cbc,aes128-cbc',
    'comp' => 'none'));

$callbacks = array('disconnect' => 'my_ssh_disconnect');

$connection = ssh2_connect('shell.example.com', 22, $methods, $callbacks);
if (!$connection) die('Connection failed');
?>
```

See also SSH2 functions and ext/ssh2 on PECL.

Specs

Short name	Extensions/Extssh2
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1588 ext/standard

Standards PHP functions.

This is not a real PHP extension : it covers the core functions.

```
<?php
/*
Our php.ini contains the following settings:

display_errors = On
register_globals = Off
```

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```
post_max_size = 8M
*/

echo 'display_errors = ' . ini_get('display_errors') . PHP_EOL;
echo 'register_globals = ' . ini_get('register_globals') . PHP_EOL;
echo 'post_max_size = ' . ini_get('post_max_size') . PHP_EOL;
echo 'post_max_size+1 = ' . (ini_get('post_max_size')+1) . PHP_EOL;
echo 'post_max_size in bytes = ' . return_bytes(ini_get('post_max_size'));

function return_bytes($val) {
    $val = trim($val);
    $last = strtolower($val[strlen($val)-1]);
    switch($last) {
        // The 'G' modifier is available since PHP 5.1.0
        case 'g':
            $val *= 1024;
        case 'm':
            $val *= 1024;
        case 'k':
            $val *= 1024;
    }

    return $val;
}

?>
```

See also PHP Options/Info Functions.

Specs

Short name	Extensions/Extstandard
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1589 ext/stats

Statistics extension.

This extension contains few dozens of functions useful for statistical computations. It is a wrapper around 2 scientific libraries, namely DCDFLIB (Library of C routines for Cumulative Distributions Functions, Inverses, and Other parameters) by B. Brown & J. Lavato and RANDLIB by Barry Brown, James Lavato & Kathy Russell.

```
<?php
```

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```
$x = [ 15, 16, 8, 6, 15, 12, 12, 18, 12, 20, 12, 14, ];
$y = [ 17.24, 15, 14.91, 4.5, 18, 6.29, 19.23, 18.69, 7.21, 42.06, 7.5, 8,];

sprintf("%2.9f", stats_covariance($a_1, $a_2));

?>
```

See also Statistics and ext/stats.

Specs

Short name	Extensions/Extstats
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.11.5
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1590 ext/suhosin

Suhosin extension.

Suhosin (pronounced 'su-ho-shin') is an advanced protection system for PHP installations. It was designed to protect servers and users from known and unknown flaws in PHP applications and the PHP core.

Suhosin was a PHP 5 extension, and it has been ported to PHP 7 and 8, as a separate but eponymous project.

```
<?php

// sha256 is a ext/suhosin specific function
$sha256 = sha256($string);

?>
```

See also Suhosin.org and Suhosin snuffleupagus.

Specs

Short name	Extensions/Extsuhosin
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1591 ext/svm

Extension SVM.

SVM is in interface with the libsvm, from . ``libsvm``is a library for Support Vector Machines, a classification tool for machine learning.

```
<?php
   $data = array(
       array(-1, 1 => 0.43, 3 => 0.12, 9284 => 0.2),
       array(1, 1 => 0.22, 5 => 0.01, 94 => 0.11),
   );

   $svm = new SVM();
   $model = $svm->train($data);

   $data = array(1 => 0.43, 3 => 0.12, 9284 => 0.2);
   $result = $model->predict($data);
   var_dump($result);
   $model->save('model.svm');
?>
```

See also SVM, LIBSVM – A Library for Support Vector Machines, ext/svm and ianbarber/php-svm.

Specs

Short name	Extensions/Extsvm
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.7.8
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1592 ext/teds

teds (Tentative Extra Data Structures) is a collection of data structures and iterable functionality.

```
<?php
// discards keys
$it = new Teds\BitVector(['first' => true, 'second' => false]);
foreach ($it as $key => $value) {
    printf("Key: %s\nValue: %s\n", var_export($key, true), var_export($value, true));
}
var_dump($it);
var_dump((array)$it);

$it = new Teds\BitVector([]);
var_dump($it);
var_dump((array)$it);
```

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```
foreach ($it as $key => $value) {
    echo "Unreachable\n";
}

// Teds\BitVector will always reindex keys in the order of iteration, like array_
↪values() does.
$it = new Teds\BitVector([2 => true, 0 => false]);
var_dump($it);

var_dump(new Teds\BitVector([-1 => false]));
?>
```

See also PECL TEDS.

Specs

Short name	Extensions/Extteds
Rulesets	*All*, *Appinfo*
Exakat since	2.4.8
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1593 ext/tidy

Extension Tidy.

Tidy is a binding for the Tidy HTML clean and repair utility which allows you to not only clean and otherwise manipulate HTML documents, but also traverse the document tree.

```
<?php
ob_start();
?>
```

<html>a html document</html>

```
<?php
$html = ob_get_clean();

// Specify configuration
$config = array(
           'indent'         => true,
           'output-xhtml'   => true,
           'wrap'           => 200);

// Tidy
$tidy = new tidy;
$tidy->parseString($html, $config, 'utf8');
```

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```
$tidy->cleanRepair();

// Output
echo $tidy;
?>
```

See also Tidy and HTML-tidy.

Specs

Short name	Extensions/Exttidy
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1594 ext/tokenizer

Extension Tokenizer.

The Tokenizer functions provide an interface to the PHP tokenizer embedded in the Zend Engine.

```
<?php
/*
* T_ML_COMMENT does not exist in PHP 5.
* The following three lines define it in order to
* preserve backwards compatibility.
*
* The next two lines define the PHP 5 only T_DOC_COMMENT,
* which we will mask as T_ML_COMMENT for PHP 4.
*/
if (!defined('T_ML_COMMENT')) {
   define('T_ML_COMMENT', T_COMMENT);
} else {
   define('T_DOC_COMMENT', T_ML_COMMENT);
}

$source = file_get_contents('example.php');
$tokens = token_get_all($source);

foreach ($tokens as $token) {
   if (is_string($token)) {
       // simple 1-character token
       echo $token;
   } else {
       // token array
       list($id, $text) = $token;
```

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```
        switch ($id) {
            case T_COMMENT:
            case T_ML_COMMENT: // we\'ve defined this
            case T_DOC_COMMENT: // and this
                // no action on comments
                break;

            default:
                // anything else -> output 'as is'
                echo $text;
                break;
        }
    }
}
?>
```

See also tokenizer.

Specs

Short name	Extensions/Exttokenizer
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1595 ext/tokyotyrant

Extension for Tokyo Tyrant.

tokyo_tyrant extension provides a wrapper for Tokyo Tyrant client libraries.

```
<?php
$tt = new TokyoTyrant("localhost");
$tt->put("key", "value");
echo $tt->get("key");
?>
```

See also tokyo_tyrant and Tokyo cabinet.

Specs

Short name	Extensions/Exttokyotyrant
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1596 ext/trader

Extension trader.

The trader extension is a free open source stock library based on TA-Lib. It's dedicated to trading software developers requiring to perform technical analysis of financial market data.

```
<?php

// get_data() reads the data from a source
var_dump(trader_avgprice(
     get_data("open", $data0),
     get_data("high", $data0),
     get_data("low", $data0),
     get_data("close", $data0)
));

?>
```

See also trader (PECL), 'TA-lib <http://www.ta-lib.org/>`_ and ext/trader.

Specs

Short name	Extensions/Exttrader
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1597 ext/uopz

Extension UOPZ : User Operations for Zend.

The uopz extension is focused on providing utilities to aid with unit testing PHP code.

It supports the following activities: Intercepting function execution, Intercepting object creation, Hooking into function execution, Manipulation of function statics, Manipulation of function flags, Redefinition of constants, Deletion of constants, Runtime creation of functions and methods,

```
<?php
// The example is extracted from the UOPZ extension test suite : tests/001.phpt
class Foo {
     public function bar(int $arg) : int {
             return $arg;
     }
}
var_dump(uopz_set_return(Foo::class, 'bar', true));
$foo = new Foo();
var_dump($foo->bar(1));
uopz_set_return(Foo::class, 'bar', function(int $arg) : int {
     return $arg * 2;
}, true);
var_dump($foo->bar(2));
try {
     uopz_set_return(Foo::class, 'nope', 1);
} catch(Throwable $t) {
     var_dump($t->getMessage());
}
class Bar extends Foo {}
try {
     uopz_set_return(Bar::class, 'bar', null);
} catch (Throwable $t) {
     var_dump($t->getMessage());
}

     uopz_set_something(Bar::class, 'bar', null);

?>
```

See also ext/uopz and User Operations for Zend.

Specs

Short name	Extensions/Extuopz
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.1.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1598 ext/uuid

> Extension UUID. A universally unique identifier (UUID) is a 128-bit number used to identify information in computer systems.

An interface to the libuuid system library. The libuuid library is used to generate unique identifiers for objects that may be accessible beyond the local system. The Linux implementation was created to uniquely identify ext2 filesystems created by a machine. This library generates UUIDs compatible with those created by the Open Software Foundation (OSF) Distributed Computing Environment (DCE) utility uuidgen.

```
<?php
    // example from the test suitee of the extension.

    // check basic format of generated UUIDs
    $uuid = uuid_create();
    if (preg_match("/[[:xdigit:]]{8}-[[:xdigit:]]{4}-[[:xdigit:]]{4}-[[:xdigit:]]{4}-
↪[[:xdigit:]]{12}/", $uuid)) {
            echo "basic format ok\n";
    } else {
            echo "basic UUID format check failed, generated UUID was $uuid\n";
    }

?>
```

See also libuuid and ext/uuid.

Specs

Short name	Extensions/Extuuid
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.7.9
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1599 ext/v8js

> Extension v8js.

This extension embeds the V8 Javascript `Engine <https://bugs.chromium.org/p/v8/issues/list>`_ into PHP.

```
<?php

$v8 = new V8Js();

/* basic.js */
$JS = <<< EOT
len = print('Hello' + ' ' + 'World!' + '\n');
len;
```

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```
EOT;

try {
  var_dump($v8->executeString($JS, 'basic.js'));
} catch (V8JsException $e) {
  var_dump($e);
}

?>
```

See also V8 Javascript Engine Integration, V8 Javascript Engine for PHP and pecl v8js.

Specs

Short name	Extensions/Extv8js
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1600 ext/varnish

Extension PHP for varnish.

Varnish Cache is an open source, state of the art web application accelerator. The extension makes it possible to interact with a running varnish instance through TCP socket or shared memory.

```
<?php
    $args = array(
        VARNISH_CONFIG_HOST => '::1',
        VARNISH_CONFIG_PORT => 6082,
        VARNISH_CONFIG_SECRET => '5174826b-8595-4958-aa7a-0609632ad7ca',
        VARNISH_CONFIG_TIMEOUT => 300,
    );
    $va = new VarnishAdmin($args);
?>
```

See also ext/varnish and pecl/Varnish.

Specs

Short name	Extensions/Extvarnish
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.1.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1601 ext/vips

Extension VIPS.

The VIPS image processing system is a very fast, multi-threaded image processing library with low memory needs.

```
<?php
     dl('vips.' . PHP_SHLIB_SUFFIX);
     $x = vips_image_new_from_file($argv[1])["out"];
     vips_image_write_to_file($x, $argv[2]);
?>
```

See also php-vips-ext, libvips and libvips adapter for PHP Imagine.

Specs

Short name	Extensions/Extvips
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.0.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1602 ext/wasm

Extension WASM.

The goal of the project is to be able to run WebAssembly binaries from PHP directly. So much fun coming!

From the php-ext-wasm documentation :

```
<?php

//There is a toy program in examples/simple.rs, written in Rust (or any other language␣
↪that compiles to WASM):
// Stored in file __DIR__ . '/simple.wasm'
/*
```

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```
#[no_mangle]
pub extern "C" fn sum(x: i32, y: i32) -> i32 {
    x + y
}
*/

$instance = new WASM\Instance(__DIR__ . '/simple.wasm');

var_dump(
    $instance->sum(5, 37) // 42!
);

?>
```

See also php-ext-wasm.

Specs

Short name	Extensions/Extwasm
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.5.7
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1603 ext/wddx

Extension WDDX.

The Web Distributed Data Exchange, or WDDX, is a free, open XML-based technology that allows Web applications created with any platform to easily exchange data with one another over the Web.

```
<?php
  echo wddx_serialize_value("PHP to WDDX packet example", "PHP packet");
?>
```

See also Wddx on PHP and WDDX.

Specs

Short name	Extensions/Extwddx
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1604 ext/weakref

Weak References for PHP.

Weak references provide a non-intrusive gateway to ephemeral objects. Unlike normal (strong) references, weak references do not prevent the garbage collector from freeing that object. For this reason, an object may be destroyed even though a weak reference to that object still exists. In such conditions, the weak reference seamlessly becomes invalid.

```
<?php
class MyClass {
    public function __destruct() {
        echo "Destroying object!\n";
    }
}

$o1 = new MyClass;

$r1 = new WeakRef($o1);

if ($r1->valid()) {
    echo "Object still exists!\n";
    var_dump($r1->get());
} else {
    echo "Object is dead!\n";
}

unset($o1);

if ($r1->valid()) {
    echo "Object still exists!\n";
    var_dump($r1->get());
} else {
    echo "Object is dead!\n";
}
?>
```

See also Weak references and PECL extension that implements weak references and weak maps in PHP.

Specs

Short name	Extensions/Extweakref
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.6.5
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1605 ext/xattr

Extensions xattr.

The xattr extension allows for the manipulation of extended attributes on a filesystem.

```
<?php
$file = 'my_favourite_song.wav';
xattr_set($file, 'Artist', 'Someone');
xattr_set($file, 'My ranking', 'Good');
xattr_set($file, 'Listen count', '34');

/* ... other code ... */

printf('You\'ve played this song %d times', xattr_get($file, 'Listen count'));
?>
```

See also xattr and Extended attributres.

Specs

Short name	Extensions/Extxattr
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.12.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	file
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1606 ext/xdebug

Xdebug extension.

The Xdebug is a extension PHP which provides debugging and profiling capabilities.

```
<?php
class Strings
{
    static function fix_string($a)
    {
        echo
            xdebug_call_class().
            "::".
            xdebug_call_function().
            " is called at ".
            xdebug_call_file().
            ":".
            xdebug_call_line();
    }
}

$ret = Strings::fix_string( 'Derick' );
?>
```

See also Xdebug.

Specs

Short name	Extensions/Extxdebug
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1607 ext/xdiff

Extension xdiff.

xdiff extension enables you to create and apply patch files containing differences between different revisions of files.

```
<?php
$old_version = 'my_script-1.0.php';
$patch = 'my_script.patch';

$errors = xdiff_file_patch($old_version, $patch, 'my_script-1.1.php');
if (is_string($errors)) {
   echo 'Rejects:'.PHP_EOL;
```

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```
    echo $errors;
}

?>
```

See also libxdiff.

Specs

Short name	Extensions/Extxdiff
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1608 ext/xhprof

Extension xhprof.

XHProf is a light-weight hierarchical and instrumentation based profiler.

```
<?php
xhprof_enable(XHPROF_FLAGS_CPU + XHPROF_FLAGS_MEMORY);

for ($i = 0; $i <= 1000; $i++) {
    $a = $i * $i;
}

$xhprof_data = xhprof_disable();

$XHPROF_ROOT = '/tools/xhprof/';
include_once $XHPROF_ROOT . '/xhprof_lib/utils/xhprof_lib.php';
include_once $XHPROF_ROOT . '/xhprof_lib/utils/xhprof_runs.php';

$xhprof_runs = new XHProfRuns_Default();
$run_id = $xhprof_runs->save_run($xhprof_data, 'xhprof_testing');

echo 'http://localhost/xhprof/xhprof_html/index.php?run={$run_id}&source=xhprof_testing'.
↪PHP_EOL;

?>
```

See also XHprof Documentation and ext/apcu.

Specs

Short name	Extensions/Extxhprof
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	profiler
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1609 ext/xml

Extension xml (Parser).

This PHP extension implements support for James Clark's expat in PHP. This toolkit lets you parse, but not validate, XML documents.

```
<?php
$file = "data.xml";
$depth = array();

function startElement($parser, $name, $attrs)
{
    global $depth;

    if (!isset($depth[$parser])) {
        $depth[$parser] = 0;
    }

    for ($i = 0; $i < $depth[$parser]; $i++) {
        echo "  ";
    }
    echo "$name\n";
    $depth[$parser]++;
}

function endElement($parser, $name)
{
    global $depth;
    $depth[$parser]--;
}

$xml_parser = xml_parser_create();
xml_set_element_handler($xml_parser, "startElement", "endElement");
if (!($fp = fopen($file, "r"))) {
    die("could not open XML input");
}

while ($data = fread($fp, 4096)) {
```

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```
    if (!xml_parse($xml_parser, $data, feof($fp))) {
        die(sprintf("XML error: %s at line %d",
                    xml_error_string(xml_get_error_code($xml_parser)),
                    xml_get_current_line_number($xml_parser)));
    }
}
xml_parser_free($xml_parser);
?>
```

See also XML Parser.

Specs

Short name	Extensions/Extxml
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1610 ext/xmlreader

Extension XMLReader.

The XMLReader extension is an XML Pull parser. The reader acts as a cursor going forward on the document stream and stopping at each node on the way.

```
<?php

    $xmlreader = new XMLReader();
    $xmlreader->xml("<xml><div>Content</div></xml>");
    $xmlreader->read();
    $xmlreader->read();
    $xmlreader->readString();

?>
```

See also xmlreader.

Specs

Short name	Extensions/Extxmlreader
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	xml
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1611 ext/xmlrpc

Extension ext/xmlrpc.

This extension can be used to write XML-RPC servers and clients.

```
<?php
$request = xmlrpc_encode_request('method', array(1, 2, 3));
$context = stream_context_create(array('http' => array(
    'method' => 'POST',
    'header' => 'Content-Type: text/xml',
    'content' => $request
)));
$file = file_get_contents('http://www.example.com/xmlrpc', false, $context);
$response = xmlrpc_decode($file);
if ($response && xmlrpc_is_fault($response)) {
    trigger_error('xmlrpc: '.$response['faultString'].' ('.$response['faultCode']));
} else {
    print_r($response);
}
?>
```

See also XML-RPC.

Specs

Short name	Extensions/Extxmlrpc
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	With PHP 8.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	rpc
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1612 ext/xmlwriter

Extension ext/xmlwriter.

The XMLWriter extension wraps the libxml xmlWriter API inside PHP.

```
<?php
$xw = xmlwriter_open_memory();
xmlwriter_set_indent($xw, TRUE);
xmlwriter_start_document($xw, NULL, 'UTF-8');
xmlwriter_start_element($xw, 'root');
xmlwriter_write_attribute_ns($xw, 'prefix', '', 'http://www.php.net/uri');
xmlwriter_start_element($xw, 'elem1');
xmlwriter_write_attribute($xw, 'attr1', 'first');
xmlwriter_end_element($xw);
xmlwriter_full_end_element($xw);
xmlwriter_end_document($xw);
$output = xmlwriter_flush($xw, true);
print $output;
// write attribute_ns without start_element first
$xw = xmlwriter_open_memory();
var_dump(xmlwriter_write_attribute_ns($xw, 'prefix', 'id', 'http://www.php.net/uri',
↪'elem1'));
print xmlwriter_output_memory($xw);
?>
```

See also XMLWriter and Module xmlwriter from libxml2.

Specs

Short name	Extensions/Extxmlwriter
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Features	xml
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1613 ext/xsl

Extension XSL.

The XSL extension implements the XSL standard, performing XSLT transformations using the libxslt library.

```
<?php

// Example from the PHP manual

$xmldoc = new DOMDocument();
```

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```
$xsldoc = new DOMDocument();
$xsl = new XSLTProcessor();

$xmldoc->loadXML('fruits.xml');
$xsldoc->loadXML('fruits.xsl');

libxml_use_internal_errors(true);
$result = $xsl->importStyleSheet($xsldoc);
if (!$result) {
    foreach (libxml_get_errors() as $error) {
        echo "Libxml error: {$error->message}\n";
    }
}
libxml_use_internal_errors(false);

if ($result) {
    echo $xsl->transformToXML($xmldoc);
}

?>
```

See also XSL extension.

Specs

Short name	Extensions/Extxsl
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1614 ext/xxtea

Extension xxtea : XXTEA encryption algorithm extension for PHP.

XXTEA is a fast and secure encryption algorithm. This is a XXTEA extension for PHP. It is different from the original XXTEA encryption algorithm. It encrypts and decrypts string instead of uint32 array, and the key is also string.

```
<?php
// Example is extracted from the xxtea repository on github : tests/xxtea.phpt

$str = 'Hello World! ';
$key = '1234567890';
$base64 = 'D4t0rVXUDl3bnWdERhqJmFIanfn/6zAxAY9jD6n9MSMQNoD8TOS4rHHcGuE=';
$encrypt_data = xxtea_encrypt($str, $key);
$decrypt_data = xxtea_decrypt($encrypt_data, $key);
if ($str == $decrypt_data && base64_encode($encrypt_data) == $base64) {
```

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```
    echo 'success!';
} else {
    echo base64_encode($encrypt_data);
    echo 'fail!';
}
?>
```

See also PECL ext/xxtea and ext/xxtea on Github.

Specs

Short name	Extensions/Extxxtea
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.1.7
PHP Version	With PHP 8.0 and older
Severity	
Time To Fix	
Precision	Very high
Features	xxtea
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1615 ext/yaml

Extension YAML.

This extension implements the YAML Ain't Markup Language (YAML) data serialization standard. Parsing and emitting are handled by the LibYAML library.

```
<?php
$addr = array(
    'given' => 'Chris',
    'family'=> 'Dumars',
    'address'=> array(
        'lines'=> '458 Walkman Dr.
        Suite #292',
        'city'=> 'Royal Oak',
        'state'=> 'MI',
        'postal'=> 48046,
      ),
  );
$invoice = array (
    'invoice'=> 34843,
    'date'=> '2001-01-23',
    'bill-to'=> $addr,
    'ship-to'=> $addr,
    'product'=> array(
        array(
            'sku'=> 'BL394D',
            'quantity'=> 4,
            'description'=> 'Basketball',
```

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```
            'price'=> 450,
          ),
        array(
            'sku'=> 'BL4438H',
            'quantity'=> 1,
            'description'=> 'Super Hoop',
            'price'=> 2392,
          ),
      ),
    'tax'=> 251.42,
    'total'=> 4443.52,
    'comments'=> 'Late afternoon is best. Backup contact is Nancy Billsmer @ 338-4338.',
    );

// generate a YAML representation of the invoice
$yaml = yaml_emit($invoice);
var_dump($yaml);

// convert the YAML back into a PHP variable
$parsed = yaml_parse($yaml);

// check that roundtrip conversion produced an equivalent structure
var_dump($parsed == $invoice);
?>
```

See also YAML.

Specs

Short name	Extensions/Extyaml
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1616 ext/zend_monitor

Extension `zend_monitor`.

The Zend Monitor component is integrated into the runtime environment and serves as an alerting and collection mechanism for early detection of PHP script problems.

```
<?php

zend_monitor_pass_error();

?>
```

See also Zend Monitor - PHP API and `Zend Monitor `<https://help.zend.com/zend/Zend-Server-5.1/monitor.htm>`_.

Specs

Short name	Extensions/Extzendmonitor
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.7.9
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1617 ext/zip

Extension ext/zip.

This extension enables you to transparently read or write ZIP compressed archives and the files inside them.

```
<?php

$zip = new ZipArchive();
$filename = './test112.zip';

if ($zip->open($filename, ZipArchive::CREATE)!==TRUE) {
    exit('cannot open <$filename>');
}

$zip->addFromString('testfilephp.txt' . time(), '#1 This is a test string added as␣
↪testfilephp.txt.'.PHP_EOL);
$zip->addFromString('testfilephp2.txt' . time(), '#2 This is a test string added as␣
↪testfilephp2.txt.'.PHP_EOL);
$zip->addFile($thisdir . '/too.php','/testfromfile.php');
echo 'numfiles: ' . $zip->numFiles . PHP_EOL;
echo 'status:' . $zip->status . PHP_EOL;
$zip->close();
?>
```

See also Zip.

Specs

Short name	Extensions/Extzip
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1618 ext/zlib

Extension ext/zlib.

```
<?php

$filename = tempnam('/tmp', 'zlibtest') . '.gz';
echo "<html>\n<head></head>\n<body>\n<pre>\n";
$s = "Only a test, test, test, test, test, test, test, test!\n";

// open file for writing with maximum compression
$zp = gzopen($filename, 'w9');

// write string to file
gzwrite($zp, $s);

// close file
gzclose($zp);

?>
```

See also Zlib.

Specs

Short name	Extensions/Extzlib
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	
Time To Fix	
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1619 ext/zookeeper

Extension for Apache Zookeeper.

ZooKeeper is an Apache project that enables centralized service for maintaining configuration information, naming, providing distributed synchronization, and providing group services.

```
<?php
$zookeeper = new Zookeeper('locahost:2181');
$path = '/path/to/node';
$value = 'nodevalue';
$zookeeper->set($path, $value);

$r = $zookeeper->get($path);
if ($r)
  echo $r;
else
  echo 'ERR';
?>
```

See also ext/zookeeper, Install Zookeeper PHP Extension and Zookeeper.

Specs

Short name	Extensions/Extzookeeper
Rulesets	*All*, *Appinfo*, *CE*
Exakat since	1.2.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1620 filter_input() As A Source

The filter_input() and filter_input_array() functions access directly to `$_GET`. They represent a source for external data just like `$_GET`, `$_POST`, etc.

The main feature of filter_input() is that it is already filtered. The main drawback is that `FILTER_FLAG_NONE` is the none filter, and that default configuration is *FILTER_UNSAFE_RAW*.

The filter extension keeps access to the incoming data, even after the super globals, such as `$_GET`, are unset. Thanks to Frederic Bouchery for reporting this special case.

```
<?php

// Removing $_GET
$_GET = [];

// with the default : FILTER_UNSAFE_RAW, this means XSS
echo filter_input(INPUT_GET, 'i');
```

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```
// Same as above :
echo filter_var(_GET, 'i');

?>
```

See also Data filtering.

Suggestions

- Use the classic $_GET, $_POST super globals, which are easier to audit.
- Use your framework's parameter access.

Specs

Short name	Security/FilterInputSource
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.4.8
PHP Version	All
Severity	Minor
Time To Fix	Slow (1 hour)
Precision	High
Features	validation
Available in	Entreprise Edition, Exakat Cloud

14.2.1621 fputcsv() In Loops

> fputcsv() is slow when called on each row. It actually flushes the data to the disk each time, and that results in a inefficient dump to the disk, each call.

To speed up this process, it is recommended to dump the CSV to memory first, then dump the memory to the disk, in larger chunks. Since fputcsv() works only on stream, it is necessary to use a memory stream.

The speed improvement is significant on small rows, while it may be less significant on larger rows : with more data in the rows, the file buffer may fill up more efficiently. On small rows, the speed gain is up to 7 times.

```
<?php

// Speedy yet memory intensive version
$f = fopen('php://memory', 'w+');
foreach($data_source as $row) {
    // You may configure fputcsv as usual
    fputcsv($f, $row);
}
rewind($f); // Important
$fp = fopen('final.csv', 'w+');
fputs($fp, stream_get_contents($f));
fclose($fp);
fclose($f);
```

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```
// Slower version
$fp = fopen('final.csv', 'w+');
foreach($data_source as $row) {
    // You may configure fputcsv as usual
    fputcsv($fp, $row);
}
fclose($fp);
?>
```

Suggestions

- Use fputcsv() on a memory stream, and flush it on the disk once

Specs

Short name	Performances/CsvInLoops
Rulesets	*All*, *Performances*, *Top10*
Exakat since	1.5.5
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Features	csv
Available in	Entreprise Edition, Exakat Cloud

14.2.1622 func_get_arg() Modified

func_get_arg() and func_get_args() used to report the calling value of the argument until PHP 7.

Since PHP 7, it is reporting the value of the argument at calling time, which may have been modified by a previous instruction.

This code will display 1 in PHP 7, and 0 in PHP 5.

```
<?php

function x($a) {
    print func_get_arg(0);  // 0
    $a++;
    print func_get_arg(0);  // 1
}

x(0);
?>
```

Suggestions

- Use func_get_arg() early in the function.
- Avoir mixing func_get_args() and direct access to the parameters.
- Avoir using func_get_args() and specifying parameters.
- Avoir modifying parameters.

Specs

Short name	Functions/funcGetArgModified
Rulesets	*All*, *Analyze*, *Changed Behavior*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 7.0 - More
Precision	High
Features	arbitrary-argument
Available in	Entreprise Edition, Exakat Cloud

14.2.1623 get_class() Without Argument

get_class() and get_parent_class() should not be called without arguments. It was possible until PHP 8.3, but it is now a deprecated behavior.

Suggestions

- Use get_called_class() instead
- Use __CLASS__ magic constant instead

Specs

Short name	Structures/GetClassWithoutArg
Rulesets	*All*, *CompatibilityPHP83*
Exakat since	2.6.1
PHP Version	With PHP 9.0 and older
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Available in	Entreprise Edition, Exakat Cloud

14.2.1624 idn_to_ascii() New Default

The default parameter value of idn_to_ascii() and idn_to_utf8() is now *INTL_IDNA_VARIANT_UTS46* instead of the deprecated `INTL_IDNA_VARIANT_2003`.

```
<?php

echo idn_to_ascii('täst.de');

?>
```

See also idn_to_ascii, idn_to_utf8 and Unicode IDNA Compatibility Processing.

Suggestions

- Explicitly add the second parameter to the idn_to_ascii() and idn_to_utf8() functions.

Specs

Short name	Php/IdnUts46
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	2.2.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	internationalization
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1625 include_once() Usage

Usage of include_once() and require_once(). Those functions should be avoided for performances reasons.

```
<?php

// Including a library.
include 'lib/helpers.inc';

// Including a library, and avoiding double inclusion
include_once 'lib/helpers.inc';

?>
```

Try using autoload for loading classes, or use include() or require() and make it possible to include several times the same file without errors.

Suggestions

- Avoid using include_once() whenever possible
- Use autoload() to load classes, and avoid loading them with include

Specs

Short name	Structures/OnceUsage
Rulesets	*All*, *Analyze*, *Appinfo*, *CE*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*XOOPS*, *Tikiwiki*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1626 is_a() Versus instanceof

is_a() and instanceof have the same functional use: checking if an object is of a specific class.

The analyzed code has less than 10% of one of them: either is_a() or instanceof. For consistency reasons, it is recommended to make them all the same.

It happens that is_a() or instance are used depending on coding style and files. One file may be consistently using is_a(), while the others are all using instanceof.

```
<?php

if (is_a($object, $class)) { /**/ }

if ($object instanceof $class) { /**/ }

// Note : code is not representative of actual code.

?>
```

Suggestions

- Adopt one of the two syntaxes

Specs

Short name	Structures/IsAVersusInstanceof
Rulesets	*All*, *Preferences*
Exakat since	2.6.4
Severity	
Time To Fix	
Precision	Very high
Features	instanceof
Available in	Entreprise Edition, Exakat Cloud

14.2.1627 isset() With Constant

Until PHP 7, it was possible to use arrays as constants, but it was not possible to test them with isset.

This would yield an error : `Cannot use `isset() <https://www.www.php.net/isset>`_ on the `result <https://www.php.net/result>`_ of an expression (you can use "null !== expression" instead)`. This is a backward incompatibility.

```
<?php
const X = [1,2,3];

if (isset(X[4])) {}
?>
```

Suggestions

- Avoid testing values on constants.

Specs

Short name	Structures/IssetWithConstant
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*
Exakat since	0.8.4
PHP Version	With PHP 7.0 and more recent
Severity	Major
Time To Fix	Instant (5 mins)
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	isset
Available in	Entreprise Edition, Exakat Cloud

14.2.1628 list() May Omit Variables

Simply omit any unused variable in a list() call.

list() is the only PHP function that accepts to have omitted arguments. If the following code makes no usage of a listed variable, just omit it.

```
<?php
    // No need for '2', so no assignation
    list ($a, , $b) = array(1, 2, 3);

    // works with PHP 7.1 short syntax
    [$a, , $b] = array(1, 2, 3);

    // No need for '2', so no assignation
    list ($a, $c, $b) = array(1, 2, 3);
?>
```

See also list.

Suggestions

- Remove the unused variables from the list call
- When the ignored values are at the beginning or the end of the array, array_slice() may be used to shorten the array.

Specs

Short name	Structures/ListOmissions
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	class
Examples	*OpenConf*, *FuelCMS*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1629 mb_strrpos() Third Argument

Passing the encoding as 3rd parameter to mb_strrpos() is deprecated. Instead pass a 0 offset, and encoding as 4th parameter.

```
<?php

// Finds the position of the last occurrence of of a string in a string, starting at␣
↪position 10
$extract = mb_strrpos($haystack, $needle, 10, 'utf8');
```

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```
// This is the old behavior. Here, the offset will be 0, by default
$extract = mb_strrpos($haystack, $needle, 'utf8');
?>
```

See also mb_strrpos().

Suggestions

- Remove usage of mb_strrpos() 3rd parameter.

Specs

Short name	Php/Php74mbstrrpos3rdArg
Rulesets	*All*, *CE*, *Changed Behavior*, *CompatibilityPHP74*
Exakat since	1.8.9
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	Very high
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1630 mcrypt_create_iv() With Default Values

Avoid using *mcrypt_create_iv()* default values.

`mcrypt_create_iv()` used to have `MCRYPT_DEV_RANDOM` as default values, and in PHP 5.6, it now uses `MCRYPT_DEV_URANDOM`.

If the code doesn't have a second argument, it relies on the default value. It is recommended to set explicitly the value, so has to avoid problems while migrating.

```
<?php
    $size = mcrypt_get_iv_size(MCRYPT_CAST_256, MCRYPT_MODE_CFB);
    // mcrypt_create_iv is missing the second argument
    $iv = mcrypt_create_iv($size);

// Identical to the line below
//    $iv = mcrypt_create_iv($size, MCRYPT_DEV_RANDOM);

?>
```

See also mcrypt_create_iv().

Suggestions

- Avoid using *mcrypt_create_iv()* default values.

Specs

Short name	Structures/McryptcreateivWithoutOption
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	With PHP 5.6 and older
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Features	mcrypt
Available in	Entreprise Edition, Exakat Cloud

14.2.1631 move_uploaded_file Instead Of copy

Always use move_uploaded_file() with uploaded files. Avoid using copy or rename with uploaded file.

move_uploaded_file() checks to ensure that the file designated by filename is a valid upload file (meaning that it was uploaded via PHP's HTTP POST upload mechanism).

```
<?php

    // $a->file was filled with $_FILES at some point
    move_uploaded_file($a->file['tmp_name'], $target);

    // $a->file was filled with $_FILES at some point
    rename($a->file['tmp_name'], $target);

?>
```

See also move_uploaded_file and Uploading Files with PHP.

Suggestions

- Always use move_uploaded_file()
- Extract the needed information from the file, and leave it for PHP to remove without storage

Specs

Short name	Security/MoveUploadedFile
Rulesets	*All*, *Changed Behavior*, *Security*
Exakat since	1.3.2
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	file-upload
Available in	Entreprise Edition, Exakat Cloud

14.2.1632 openssl_random_pseudo_byte() Second Argument

openssl_random_pseudo_byte() uses exceptions to signal an error. Since PHP 7.4, there is no need to use the second argument.

On the other hand, it is important to catch the exception that openssl_random_pseudo_byte() may emit.

```
<?php
    // PHP 7.4 way to check on random number generation
    try {
        $bytes = openssl_random_pseudo_bytes($i);
    } catch(\Exception $e) {
        die("Error while loading random number");
    }

    // Old way to check on random number generation
    $bytes = openssl_random_pseudo_bytes($i, $cstrong);
    if ($cstrong === false) {
        die("Error while loading random number");
    }
?>
```

See also openssl_random_pseudo_byte and PHP RFC: Improve openssl_random_pseudo_bytes().

Suggestions

- Skip the second argument, add a try/catch around the call to openssl_random_pseudo_bytes()

Specs

Short name	Structures/OpensslRandomPseudoByteSecondArg
Rulesets	*All*, *CE*, *CompatibilityPHP74*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Features	openssl
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1633 parse_str() Warning

The parse_str() function parses a query string and assigns the resulting variables to the local scope. This may create a unexpected number of variables, and even overwrite the existing one.

```
<?php
  function foo( ) {
    global $a;

    echo $a;
  }

  parse_str('a=1'); // No second parameter
  foo( );
  // displays 1
?>
```

Always use an empty variable a second parameter to parse_str(), so as to collect the incoming values, and then, filter them in that array.

See also parse_url() and PHP SSRF Techniques.

Suggestions

- Use the second parameter when calling parse_url();
- Change to PHP 8.0 version, which made the second argument compulsory

Specs

Short name	Security/parseUrlWithoutParameters
Rulesets	*All*, *Security*
Exakat since	0.8.4
PHP Version	With PHP 8.0 and older
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	query-string
ClearPHP	know-your-variables
Available in	Entreprise Edition, Exakat Cloud

14.2.1634 preg_match_all() Flag

preg_match_all() has an option to configure the structure of the results : it is either by capturing parenthesis (by default), or by result sets.

The second option is the most interesting when the following foreach() loop has to manipulate several captured strings at the same time. No need to use an index in the first array and use it in the other arrays. The second syntax is easier to read and may be marginally faster to execute (preg_match_all() and foreach()).

```
<?php
$string = 'ababab';

// default behavior
preg_match_all('/(a)(b)/', $string, $r);
$found = '';
foreach($r[1] as $id => $s) {
    $found .= $s.$r[2][$id];
}

// better behavior
preg_match_all('/(a)(b)/', $string, $r, PREG_SET_ORDER);
$found = '';
foreach($r as $s) {
    $found .= $s[1].$s[2];
}

?>
```

Suggestions

- Use flags to adapt the results of preg_match_all() to your code, not the contrary.

Specs

Short name	Php/PregMatchAllFlag
Rulesets	*All*, *Changed Behavior*, *Suggestions*
Exakat since	0.8.4
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	Very high
Examples	*FuelCMS*
Available in	Entreprise Edition, Exakat Cloud

14.2.1635 preg_replace With Option e

preg_replace() supported the /e option until PHP 7.0. It allowed the use of eval()'ed expression as replacement. This has been dropped in PHP 7.0, for security reasons.

preg_replace() with /e option may be replaced with preg_replace_callback() and a closure <https://www.php.net/`closure>`_, or preg_replace_callback_array() and an array of closures.

```
<?php

// preg_replace with /e
$string = 'abcde';

// PHP 5.6 and older usage of /e
$replaced = preg_replace('/c/e', 'strtoupper($0)', $string);

// PHP 7.0 and more recent
// With one replacement
$replaced = preg_replace_callback('/c/', function ($x) { return strtoupper($x[0]); },
↪$string);

// With several replacements, preventing multiple calls to preg_replace_callback
$replaced = preg_replace_callback_array(array('/c/' => function ($x) { return strtoupper(
↪$x[0]); },
                                                '/[a-b]/' => function ($x) { return␣
↪strtolower($x[0]); }), $string);
?>
```

Suggestions

- Replace call to preg_replace() and /e with preg_replace_callback() or preg_replace_callback_array()

Specs

Short name	Structures/pregOptionE
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Quick (30 mins)
Precision	Very high
Features	regex
Examples	*Edusoho*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1636 self, parent, static Outside Class

self, parent and static should be called inside a class or trait. PHP lint won't report those situations.

self, parent and static may be used in a trait : their actual value will be only known at execution time, when the trait is used.

Such syntax problem is only revealed at execution time : PHP raises a Fatal error.

The origin of the problem is usually a method that was moved outside a class, at least temporarily.

Closures and arrow functions are reported here, though they might be rebound with a valid context before execution.

```
<?php
// In the examples, self, parent and static may be used interchangeably

// This raises a Fatal error
//Fatal error: Uncaught Error: Cannot access static:: when no class scope is active
new static();

// static calls
echo self::CONSTANTE;
echo self::$property;
echo self::method();

// as a type hint
function foo(static $x) {
    doSomething();
}

// as a instanceof
if ($x instanceof static) {
    doSomething();
}

?>
```

See also Scope Resolution Operator (::).

Suggestions

- Remove the call to static, parent or self
- Make sure the closure is correctly binded before usage

Specs

Short name	Classes/NoPSSOutsideClass
Rulesets	*All*, *Analyze*, *Changed Behavior*, *LintButWontExec*
Exakat since	0.10.3
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Precision	Very high
Features	self, parent, static
Note	This issue may lint but will not run
Available in	Entreprise Edition, Exakat Cloud

14.2.1637 set_exception_handler() Warning

> The set_exception_handler() callable function has to be adapted to PHP 7 : `Exception` is not the right typehint, it is now `Throwable`.

When in doubt about backward compatibility, just drop the typehint. Otherwise, use `Throwable`.

```
<?php

// PHP 5.6- typehint
class foo { function bar(\Exception $e) {} }

// PHP 7+ typehint
class foo { function bar(Throwable $e) {} }

// PHP 5 and PHP 7 compatible typehint (note : there is none)
class foo { function bar($e) {} }

set_exception_handler(foo);

?>
```

See also Drop the type and Use Throwable type.

Suggestions

- Change the typehint from Exception to Throwable.

Specs

Short name	Php/SetExceptionHandlerPHP7
Rulesets	*All*, *Changed Behavior*, *CompatibilityPHP70*
Exakat since	0.8.4
PHP Version	All
Severity	Major
Time To Fix	Slow (1 hour)
Changed Behavior	PHP 7.0 - More
Precision	Very high
Features	error-handler
Available in	Entreprise Edition, Exakat Cloud

14.2.1638 strict_types Preference

`strict_types` is a PHP mode where typehint are enforced strictly or weakly. By default, it is weak typing, allowing backward compatibility with previous versions.

This analysis reports if `strict_types` are used systematically or not. `strict_types` affects the calling file, not the definition file.

```
<?php

// define strict_types
declare(strict_types = 1);

foo(1);

?>
```

See also Strict typing.

Suggestions

- Use `strict_types` as early as possible in the development, to make it easier to adopt

Specs

Short name	Php/DeclareStrict
Rulesets	*All*, *Appinfo*, *CE*, *Changed Behavior*, *Preferences*
Exakat since	0.12.2
PHP Version	With PHP 7.0 and more recent
Severity	
Time To Fix	
Precision	Very high
Features	strict_types
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1639 strip_tags() Skips Closed Tag

strip_tags() skips non-self closing tags. This means that tags such as `<br />` will be ignored from the second argument of the function.

```
<?php

$input = 'a<br />';

// Displays 'a' and clean the tag
echo strip_tags($input, '<br>');

// Displays 'a<br />' and skips the allowed tag
echo strip_tags($input, '<br/>');

?>
```

See also strip_tags.

Suggestions

- Do not use self-closing tags in the second parameter

Specs

Short name	Structures/StripTagsSkipsClosedTag
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*
Exakat since	1.9.3
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1640 strpos() Too Much

strpos() covers the whole string before reporting 0. If the expected string is expected be at the beginning, or a fixed place, it is more stable to use substr() for comparison.

The longer the haystack (the searched string), the more efficient is that trick. The string has to be 10k or more to have impact, unless it is in a loop. This applies to stripos() too.

```
<?php

// This always reads the same amount of string
if (substr($html, 0, 6) === '<html>') {

}

// When searching for a single character, checking with a known position ($string[
↪$position]) is even faster
if ($html[0] === '<') {

}

// With strpos(), the best way is to search for something that exist, and use absence as␣
↪worst case scenario
if (strpos($html, '<html>') > 0) {

} else {
    //
}

// When the search fails, the whole string has been read
if (strpos($html, '<html>') === 0) {

}

?>
```

Suggestions

- Check for presence, and not for absence
- Use substr() and compare the extracted string
- For single chars, try using the position in the string

Specs

Short name	Performances/StrposTooMuch
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Changed Behavior*
Exakat since	1.2.8
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	High
Examples	*WordPress*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1641 strpos() With Integers

strpos() used to accept integer as second argument, and turn them into their ASCII equivalent. This was deprecated in PHP 7.x, and dropped in 8.0.

It is recommended to use casting to ensure the variable is actually strings, and strpos() behaves as expected.

```
<?php

strpos('abc ', 32);
// PHP 8.0+ : false, 32 is not found
// PHP 7.4- : 3, 32 is turned into space, then found

?>
```

Suggestions

- Add a cast to make the data string
- Test the data to be a string before usage

Specs

Short name	Php/StrposWithIntegers
Rulesets	*All*, *Analyze*, *Changed Behavior*
Exakat since	2.5.2
PHP Version	All
Severity	Minor
Time To Fix	Quick (30 mins)
Changed Behavior	PHP 8.0 - More
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.2.1642 time() Vs strtotime()

time() is actually faster than strtotime() with 'now' key string.

This is a micro-optimisation. Relative gain is real, but small unless the function is used many times.

```
<?php

// Faster version
$a = time();

// Slower version
$b = strtotime('now');

?>
```

Suggestions

- Replace strtotime() with time(). Do not change strtotime() with other value than 'now'.

Specs

Short name	Performances/timeVsstrtotime
Rulesets	*All*, *Changed Behavior*, *Performances*
Exakat since	0.8.7
PHP Version	All
Severity	Minor
Time To Fix	Instant (5 mins)
Precision	Very high
Features	declare
Examples	*Woocommerce*
Available in	Entreprise Edition, Exakat Cloud

14.2.1643 var_dump()... Usage

var_dump(), print_r() or var_export() should not be left in any production code. They are debugging functions.

```
<?php

if ($error) {
    // Debugging usage of var_dump
    // And major security problem
    var_dump($query);

    // This is OK : the $query is logged, and not displayed
    $this->log(print_r($query, true));
}

?>
```

They may be tolerated during development time, but must be removed so as not to have any chance to be run in production.

Suggestions

- Remove usage of var_dump(), print_r(), var_export() without second argument, and other debug functions.
- Push all logging to an external file, instead of the browser.

Specs

Short name	Structures/VardumpUsage
Rulesets	*All*, *Analyze*, *CE*, *CI-checks*, *Security*
Exakat since	0.8.4
PHP Version	All
Severity	Critical
Time To Fix	Instant (5 mins)
Precision	Very high
Features	debug
ClearPHP	no-debug-code
Examples	*Tine20*, *Piwigo*
Available in	Entreprise Edition, Community Edition, Exakat Cloud

14.2.1644 version_compare Operator

version_compare()'s third argument is checked for value. The third argument specifies the operator, which may be only one of the following : <, *lt*, <=, *le*, >, *gt*, >=, *ge*, ==, =, *eq*, *!=*, <>, *ne*. The operator is case sensitive.

Until PHP 8.1, it was silently reverted to the default value. It is a deprecated warning in PHP 8.1 and will be finalized in PHP 9.0. It is recommended to fix this parameter in any PHP version.

```
<?php

// return true
var_dump(version_compare('2.0', '2.1', '<'));

// returns false
var_dump(version_compare('2.0', '2.1', '>'));

// returns NULL and might be interpreted as false
var_dump(version_compare('2.0', '2.1', 'as'));

?>
```

Suggestions

- Use a valid comparison operator

Specs

Short name	Php/VersionCompareOperator
Rulesets	*All*, *Analyze*, *CompatibilityPHP81*, *CompatibilityPHP82*
Exakat since	2.3.1
PHP Version	With PHP 8.1 and more recent
Severity	Minor
Time To Fix	Quick (30 mins)
Precision	High
Available in	Entreprise Edition, Exakat Cloud

14.3 Directory by Exakat version

List of analyzers, by version of introduction, newest to oldest. In parenthesis, the first element is the analyzer name, used with 'analyze -P' command, and the seconds, if any, are the ruleset, used with the -T option. Rulesets are separated by commas, as the same analysis may be used in several rulesets.

- 2.6.6
  - *Count() Is Not Negative*
  - *Empty Json Error*
  - *Exit Without Argument*
  - *PHP 8.1 New Types*
  - *PHP 8.2 New Types*
  - *Strpos() Less Than One*
  - *Useless Coalesce*
  - *Variable Parameter Ambiguity In Arrow Function*
- 2.6.5
  - *Combined Calls*
  - *File_Put_Contents Using Array Argument*
  - *Nested Match*
  - *Useless NullSafe Operator*
  - *Useless Short Ternary*
- 2.6.4
  - *Check After Null Safe Operator*
  - *Could Be Readonly Property*
  - *Could Cast To Array*
  - *Could Drop Variable*

  - *Could Use strcontains()*
  - *Injectable Version*
  - *Invalid Cast*
  - *Multiple Property Declaration*
  - *New Object Then Immediate Call*
  - *No Null With Null Safe Operator*
  - *Only Variable Passed By Reference*
  - *PHP Native Attributes*
  - *Property Export*
  - *Try Without Catch*
  - *Wrong Precedence In Expression*
  - *is_a() Versus instanceof*
- 2.6.3
  - *Can't Call Generator*
  - *Cannot Use Append For Reading*
  - *Static Methods Cannot Call Non-Static Methods*
- 2.6.2
  - *Cant Instantiate Non Class*
  - *Count() To Array Append*
  - *Don't Use The Type As Variable Name*
  - *Friend Attribute*
  - *Non Integer Nor String As Index*
  - *Reserved Methods*
  - *Trait Is Not A Type*
  - *Untyped No Default Properties*
  - *Useless Trailing Comma*
  - *Void Is Not A Reference*
- 2.6.1
  - *Append And Assign Arrays*
  - *Collect Graph Triplets*
  - *Favorite Casting Method*
  - *Multiline Expressions*
  - Override
  - *Property Cannot Be Readonly*
  - *Static Variable In Namespace*
  - *Static Variable Initialisation*

  - *Using Deprecated Feature*
  - *get_class() Without Argument*
- 2.6.0
  - *Typed Class Constants Usage*
- 2.5.4
  - *Rewrote Final Class Constant*
- 2.5.3
  - *Blind Variable Used Beyond Loop*
  - *Class Injection Count*
  - *Collect Catch Calls*
  - *Collect Compared Literals*
  - *Collect Methods Throwing Exceptions*
  - *Collect Property Usage*
  - *Collect Structures*
  - *Collect Throw Calls*
  - *Collects Names*
  - *Comparison On Different Types*
  - *Constants In Traits*
  - *Converted Exceptions*
  - *Could Be array_combine()*
  - *Could Use Yield From*
  - *Default Then Discard*
  - *Final Traits Are Final*
  - *Identical Case In Switch*
  - *Incompatible Property Between Class And Trait*
  - *Inherited Class Constant Visibility*
  - *Method Is Not An If*
  - *New Dynamic Class Constant Syntax*
  - *No Null For Index*
  - *Readonly Property Changed By Cloning*
  - *Recalled Condition*
  - *Redeclared Static Variable*
  - *Short Or Complete Comparison*
  - *StandaloneType True False Null*
  - *Static Call With Self*
  - *Static Variable Can Default To Arbitrary Expression*

  - *Use DNF*
  - *Use Enum Case In Constant Expression*
  - *Useless Constant Overwrite*
  - *Useless Try*
  - *class_alias() Supports Internal Classes*
- 2.5.2
  - *Argument Counts Per Calls*
  - *Array Access On Literal Array*
  - *Deprecated Mb_string Encodings*
  - *Different Constructors*
  - *Double Checks*
  - *Ellipsis Merge*
  - *Global Definitions*
  - *Init Then Update*
  - *Missing Assignation In Command*
  - *Misused Yield*
  - *Mono Or Multibytes Favorite*
  - *New Functions In PHP 8.3*
  - *No Empty String With explode()*
  - *No Max On Empty Array*
  - *No Valid Cast*
  - *Pre-Calculate Use*
  - *Short Ternary*
  - *Should Cache Local*
  - *Sidelined Method*
  - *Substr() In Loops*
  - *Superglobals*
  - *Unvalidated Data Cached In Session*
  - *Use str_ends_with()*
  - *Use str_starts_with()*
  - *strpos() With Integers*
- 2.5.1
  - *Class Could Be Readonly*
  - *Class Invasion*
  - *Collect SetLocale*
  - *Filter Not Raw*

  - *Multiple Type Cases In Switch*
  - *Plus Plus Used On Strings*
  - *Property Invasion*
  - *Useless Method*
  - *Weak Type With Array*
- 2.5.0
  - *Ambiguous Types With Variables*
  - *Coalesce And Ternary Operators Order*
  - *Collect Calls*
  - *Could Use Class Operator*
  - *Could Use Namespace Magic Constant*
  - *Empty Loop*
  - *Incompatible Types With Incoming Values*
  - *Json_encode() Without Exceptions*
  - *Mbstring Unknown Encodings*
  - *Method Property Confusion*
  - *Method Usage*
  - *Named Argument And Variadic*
  - *No Initial S In Variable Names*
  - *No Variable Needed*
  - *Possible TypeError*
  - *Set Chaining Exception*
  - *Set Method Fnp*
  - *Skip Empty Array*
  - *Too Many Chained Calls*
  - *Too Many Extractions*
  - *Type Dodging*
  - *Useless Assignation Of Promoted Property*
- 2.4.9
  - *Could Be Abstract Method*
  - *No Keyword In Namespace*
  - *Solve Trait Constants*
  - *Unused Public Methods*
  - *date() versus DateTime Preference*
- 2.4.8
  - *Feast usage*

  - *ext/teds*
- 2.4.7
  - *Clone Constant*
  - *Could Inject Parameter*
  - *Empty Array Detection*
  - *Enum Case Values*
  - *Geospatial*
  - *Ip*
  - *No Default For Referenced Parameter*
  - *Random extension*
  - *Strict In_Array() Preference*
  - *ext/scrypt*
- 2.4.5
  - *DateTimeImmutable Is Not Immutable*
  - *If Then Return Favorite*
  - *Invalid Date Scanning Format*
  - *Magic Method Returntype Is Restricted*
  - *No Private Abstract Method In Trait*
  - *Same Name For Property And Method*
  - *Sprintf Format Compilation*
  - *Typehints/CouldBeResource*
  - *Utf8 Encode And Decode Are Deprecated*
- 2.4.4
  - *Could Be Enumeration*
  - *Extensions/Exttaint*
  - *Ice framework*
  - *Wrong Type With Default*
- 2.4.3
  - *Parent Is Not Static*
  - *Retyped Reference*
- 2.4.2
  - *Array Addition*
  - *Can't Overwrite Final Method*
  - *Collect Vendor Structures*
  - *Could Set Property Default*
  - *Excimer*

  - *Identity*
  - *Implicit Conversion To Int*
  - *Incoming Date Formats*
  - *Lowered Access Level*
  - *Make All Statics*
  - *No Magic Method For Enum*
  - *No Readonly Assignation In Global*
  - *Overload Existing Names*
  - *Stomp*
  - *Use Same Types For Comparisons*
  - *Used Once Trait*
  - *Wrong Locale*
  - *ext/CSV*
  - *ext/pkcs11*
  - *ext/spx*
- 2.4.1
  - *Collect Stub Structures*
  - *Dollar Curly Interpolation Is Deprecated*
  - *Extensions yar*
- 2.4.0
  - *Could Be A Constant*
  - *Could Be Spaceship*
  - *No Constructor In Interface*
  - *Sylius usage*
  - *Throw Raw Exceptions*
  - *Unused Enumeration Case*
  - *Useless Null Coalesce*
- 2.3.9
  - *Add Return Typehint*
  - *Can't Overwrite Final Constant*
  - *Constant : With Or Without Use*
  - *Don't Add Seconds*
  - *Identical Variables In Foreach*
  - *String Int Comparison*
  - *Use Constants As Returns*
- 2.3.8

  - *String Interpolation Favorite*
  - *Type Could Be Never*
- 2.3.7
  - *Identical Elseif*
  - *Simplify Foreach*
  - *Use Variable Created Inside Loop*
- 2.3.6
  - *Could Use array_sum()*
  - *Is Extension Structure*
  - *Is PHP Structure*
  - *Is Stub Structure*
  - *Missing Type In Definition*
  - *Public Reach To Private Methods*
  - *Static Call May Be Truly Static*
  - *Too Many Stringed Elseif*
  - *Undefined Enumcase*
  - *Undefined Methods*
  - *Unfinished Object*
  - *Unreachable Method*
  - *Use class_alias()*
- 2.3.5
  - *Collect Dependency Extension*
  - *Could Be Ternary*
  - *Could Use Existing Constant*
  - *Don't Reuse Foreach Source*
  - *Missing Visibility*
  - *Multiple Similar Calls*
  - *Readonly Usage*
  - *Use File Append*
- 2.3.3
  - *Abstract Class Constants*
  - *Check Division By Zero*
  - *Checks Property Existence*
  - *Could Use Null-Safe Object Operator*
  - *Getter And Setter*
  - *Intersection Typehint*

  - *Recycled Variables*
  - *Scope Resolution Operator*
  - *This Could Be Iterable*
  - *Variable Is A Local Constant*
- 2.3.2
  - *Cant Overload Constants*
  - *Extends stdClass*
  - *Null Type Favorite*
  - *Overwritten Foreach Var*
  - *Variable Anf Property Typehint*
- 2.3.1
  - *Cannot Call Static Trait Method Directly*
  - *Deprecated Callable*
  - *Float Conversion As Index*
  - *Nested Attributes*
  - *New Initializers*
  - *Promoted Properties*
  - *version_compare Operator*
- 2.3.0
  - *False To Array Conversion*
  - *Final Constant*
  - *First Class Callable*
  - *Mixed Keyword*
  - *Mixed Typehint Usage*
  - *Named Parameter Usage*
  - *Never Keyword*
  - *Never Typehint Usage*
  - *New Functions In PHP 8.1*
  - *New Functions In PHP 8.2*
  - *PHP 8.0 Typehints*
  - *PHP 8.1 Removed Functions*
  - *PHP 8.1 Typehints*
  - *PHP Native Interfaces and Return Type*
- 2.2.5
  - *Calling Static Trait Method*
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* *Useless Null Coalesce*
* *Wrong Parameter Type*
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* *ext/exif*
* *ext/mongo*
* *ext/msgpack*
* *ext/pecl_http*
* *ext/pkcs11*
* *ext/sqlsrv*
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    * *ext/tidy*
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    * *ext/xmlwriter*
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    * *var_dump()… Usage*
    * *version_compare Operator*

- ***U***
  - *Usort()*
    * *Usort Sorting In PHP 7.0*
  - *uasort()*
    * *Slow Functions*
    * *Usort Sorting In PHP 7.0*
  - *uksort()*
    * *Slow Functions*
    * *Usort Sorting In PHP 7.0*
  - *uniqid()*
    * *Use random_int()*
    * *ext/eio*
  - *unpack()*
    * *Invalid Pack Format*
    * *Pack Format Inventory*
  - *unserialize()*
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  - *urlencode()*
    * *Should Use Url Query Functions*
  - *usleep()*
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  - *usort()*
    * *Slow Functions*
  - *utf8_decode()*
    * *Utf8 Encode And Decode Are Deprecated*
  - *utf8_encode()*
    * *Utf8 Encode And Decode Are Deprecated*
- ***V***
  - *ValueError*
    * *No Empty String With explode()*

- *var_dump()*
  - *Use Debug*
  - *var_dump()… Usage*
- *var_export()*
  - *var_dump()… Usage*
- *version_compare()*
  - *version_compare Operator*
- *vfprintf()*
  - *Sprintf Format Compilation*
- *vprintf()*
  - *Printf Format Inventory*
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  - *Sprintf Format Compilation*
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  - *Printf Number Of Arguments*
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- ***W***
  - *WeakReference*
    - *Php 7.4 New Classes*
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    - *Bracketless Blocks*
    - *Break Outside Loop*
    - *Minus One On Error*
    - *Add Brackets To Single Instructions*
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  - *wordwrap()*
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- ***X***
  - *XMLReader*
    - *ext/libxml*
    - *ext/xmlreader*
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  - *XSLTProcessor*
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- *xmlWriter*
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  - *PHP 8.0 Resources Turned Into Objects*
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- *xmlreader*
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  - *ext/xmlwriter*
- *xmlwriter_open_memory()*
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  - *zend_logo_guid()*
    - *Functions Removed In PHP 5.5*
  - *zend_monitor_pass_error()*
    - *ext/zend_monitor*
  - *zlib_decode()*
    - *New Functions In PHP 5.4*
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  - *_()*
    - *ext/gettext*
  - *__CLASS__*
    - *::class*
    - *Detect Current Class*
    - *Interpolation*
    - *Non Ascii Variables*
  - *__DIR__*
    - *Could Use __DIR__*
    - *No Hardcoded Path*
    - *PHP Sapi*
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    - *Use PHP7 Encapsed Strings*

    * *__DIR__ Then Slash*
    * *ext/wasm*
  - *__FILE__*
    * *Could Use __DIR__*
    * *Magic Constant Usage*
    * *No Hardcoded Path*
    * *__halt_compiler*
    * *ext/fann*
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    * *ext/inotify*
    * *ext/sem*
  - *__FUNCTION__*
    * *Can't Call Generator*
    * *PHP Overridden Function*
    * *Use Const And Functions*
  - *__LINE__*
    * *Magic Constant Usage*
  - *__METHOD__*
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    * *Anonymous Classes*
    * *Class Usage*
    * *Non Static Methods Called In A Static*
    * *Parent Is Not Static*
    * *Should Have Destructor*
  - *__NAMESPACE__*
    * *Could Use Namespace Magic Constant*
  - *__call*
    * *$this Belongs To Classes Or Traits*
    * *Check On __Call Usage*
    * *Create Magic Method*
    * *Has Magic Method*
    * *Magic Methods*
    * *Must Return Methods*
    * *Undefined Methods*
    * *Useless Typehint*
  - *__callStatic*

    * *Create Magic Method*
    * *Has Magic Method*
    * *Magic Methods*
    * *Must Return Methods*
  - *__clone*
    * *Could Be Readonly Property*
    * *Direct Call To __clone()*
    * *Has Magic Method*
    * *Magic Methods*
    * *Magic Visibility*
    * *No Direct Call To Magic Method*
    * *Readonly Property Changed By Cloning*
    * *Set Clone Link*
    * *Should Deep Clone*
  - *__construct*
    * *Anonymous Classes*
    * *Array Access On Literal Array*
    * *Assign Default To Properties*
    * *Avoid Large Array Assignation*
    * *Avoid Optional Properties*
    * *Avoid option arrays in constructors*
    * *Can't Instantiate Class*
    * *Collect Method Counts*
    * *Constructors*
    * *Could Be Readonly Property*
    * *Could Be Static Closure*
    * *Could Set Property Default*
    * *Could Use Promoted Properties*
    * *Courier Anti-Pattern*
    * *Create Default Values*
    * *DI Cyclic Dependencies*
    * *DateTimeImmutable Is Not Immutable*
    * *Dependency Injection*
    * *Different Constructors*
    * *Don't Send $this In Constructor*
    * *Friend Attribute*

* *Has Magic Method*
* *Illegal Name For Method*
* *Incompatible Types With Incoming Values*
* *Injectable Version*
* *Insufficient Property Typehint*
* *Magic Method Returntype Is Restricted*
* *Make Global A Property*
* *Missing Type In Definition*
* *Must Call Parent Constructor*
* *No Constructor In Interface*
* *No Magic Method For Enum*
* *Non Ascii Variables*
* *Non Nullable Getters*
* *Old Style Constructor*
* *Parent First*
* *Promoted Properties*
* *Property Cannot Be Readonly*
* *Property Could Be Local*
* *Readonly Property Changed By Cloning*
* *Redefined Default*
* *Scalar Or Object Property*
* *Set Aside Code*
* *Set Chaining Exception*
* *Set Class Method Remote Definition*
* *Should Deep Clone*
* *Should Have Destructor*
* *Should Use Local Class*
* *Signature Trailing Comma*
* *Static Methods Cannot Call Non-Static Methods*
* *Strange Names In Classes*
* *Throw In Destruct*
* *Too Many Injections*
* *Typed Property Usage*
* *Typehints/CouldBeResource*
* *Unfinished Object*
* *Uninitialized Property*

    * *Unitialized Properties*
    * *Untyped No Default Properties*
    * *Useless Assignation Of Promoted Property*
    * *Useless Constructor*
    * *Useless Return*
    * *Wrong Typed Property Default*
    * *__toString() Throws Exception*
    * *Set Typehints*
  - *__debugInfo*
    * *Has Magic Method*
    * *Magic Methods*
    * *Must Return Methods*
    * *__debugInfo() Usage*
  - *__destruct*
    * *Has Magic Method*
    * *Magic Method Returntype Is Restricted*
    * *Missing Type In Definition*
    * *Should Have Destructor*
    * *Throw In Destruct*
    * *ext/weakref*
  - *__get*
    * *Checks Property Existence*
    * *Could Not Type*
    * *Create Magic Property*
    * *Has Magic Method*
    * *Is A Magic Property*
    * *Magic Methods*
    * *Magic Properties*
    * *Magic Visibility*
    * *Make Magic Concrete*
    * *Memoize MagicCall*
    * *Missing __isset() Method*
    * *Must Return Methods*
    * *No Direct Call To Magic Method*
    * *No Magic Method With Array*
    * *Useless Typehint*

    * *Set Typehints*
  - *__invoke*
    * *Has Magic Method*
    * *Magic Methods*
    * *Must Return Methods*
  - *__isset*
    * *Checks Property Existence*
    * *Has Magic Method*
    * *Magic Method Returntype Is Restricted*
    * *Magic Methods*
    * *Magic Visibility*
    * *Missing __isset() Method*
    * *Must Return Methods*
  - *__set*
    * *Checks Property Existence*
    * *Could Not Type*
    * *Create Magic Property*
    * *Extends stdClass*
    * *Has Magic Method*
    * *Magic Method Returntype Is Restricted*
    * *Magic Methods*
    * *Magic Properties*
    * *Magic Visibility*
    * *Make Magic Concrete*
    * *No Magic Method With Array*
    * *Useless Typehint*
    * *Set Typehints*
  - *__set_state*
    * *Has Magic Method*
    * *Magic Methods*
    * *Must Return Methods*
  - *__sleep*
    * *Has Magic Method*
    * *Magic Methods*
    * *Must Return Methods*
  - *__toString*

        * *Could Be Stringable*
        * *Has Magic Method*
        * *Interpolation*
        * *Magic Method Returntype Is Restricted*
        * *Magic Methods*
        * *Must Return Methods*
        * *No Direct Call To Magic Method*
        * *No Valid Cast*
        * *Reflection Export() Is Deprecated*
        * *Reserved Methods*
        * *__toString() Throws Exception*
    - *__tostring*
        * *Could Be Stringable*
    - *__unset*
        * *Has Magic Method*
        * *Magic Method Returntype Is Restricted*
        * *Magic Methods*
    - *__wakeup*
        * *Has Magic Method*
        * *Magic Methods*

14.5 Directory by PHP Features

Exakat links each rules to PHP features.

- $HTTP_RAW_POST_DATA
    - *$HTTP_RAW_POST_DATA Usage*
- $_FILES
    - *$FILES full_path*
    - *Useless Global*
- $_GET
    - *Useless Global*
- $_POST
    - *Useless Global*
- $_REQUEST
    - *Useless Global*
- $argc

  - *Use Cli*
- $argv
  - *Use Cli*
- $php_errormsg
  - *$php_errormsg Usage*
- $this
  - *$this Belongs To Classes Or Traits*
  - *$this Is Not An Array*
  - *Closure May Use $this*
  - *Coalesce*
  - *Don't Send $this In Constructor*
  - *Should Use Local Class*
  - *Static Methods Can't Contain $this*
  - *Using $this Outside A Class*
- Abstract Class
  - *Insufficient Typehint*
- Abstract Keyword
  - *Abstract Class Constants*
  - *Abstract Class Usage*
  - *Abstract Methods Usage*
  - *Abstract Or Implements*
  - *Abstract Static Methods*
  - *Anonymous Classes*
  - *Cant Inherit Abstract Method*
  - *Could Be Abstract Class*
  - *Could Be Abstract Method*
  - *Dependant Abstract Classes*
  - *Instantiating Abstract Class*
  - *Interfaces Is Not Implemented*
  - *Internet Ports*
  - *Missing Abstract Method*
  - *No Private Abstract Method In Trait*
  - *Order Of Declaration*
  - *Useless Abstract Class*
- Abstract Syntactic Tree
  - *ext/php-ast*

- Addition
  - *Adding Zero*
  - *Concat And Addition*
- Alias
  - *Multiple Alias Definitions Per File*
- Alternative Syntax
  - *Alternative Syntax Consistence*
  - *PHP Alternative Syntax*
- Anonymous Class
  - *Anonymous Classes*
  - *Internet Ports*
  - *Order Of Declaration*
- Arbitrary Number Of Argument
  - *func_get_arg() Modified*
- Argument
  - *Links Between Parameter And Argument*
  - *Long Arguments*
  - *Unset Arguments*
  - *Useless Referenced Argument*
- ArithmeticError Error
  - *Check Division By Zero*
  - *Could Use Try*
- Array
  - *Ambiguous Array Index*
  - *Array Index*
  - *Array() / [ ] Consistence*
  - *Array_Fill() With Objects*
  - *Array_Map() Passes By Value*
  - *Array_merge Needs Array Of Arrays*
  - *Avoid Large Array Assignation*
  - *Avoid array_unique()*
  - *Could Be Array Typehint*
  - *Could Cast To Array*
  - *Could Use array_sum()*
  - *Empty Slots In Arrays*
  - *False To Array Conversion*

  - *Float Conversion As Index*
  - *Getting Last Element*
  - *Indices Are Int Or String*
  - *Mass Creation Of Arrays*
  - *Mistaken Concatenation*
  - *Mixed Keys In Array*
  - *Multidimensional Arrays*
  - *Multiple Index Definition*
  - *No Spread For Hash*
  - *Non-constant Index In Array*
  - *Null Or Boolean Arrays*
  - *PHP Arrays Index*
  - *Randomly Sorted Arrays*
  - *Scalar Are Not Arrays*
  - *Short Syntax For Arrays*
  - *Slice Arrays First*
  - *Type Array Index*
  - *Use array_slice()*
  - *Use is_countable*
  - *Weak Type With Array*
  - *array_key_exists() Works On Arrays*
- Array Append
  - *Count() To Array Append*
  - *List With Array Appends*
  - *No String With Append*
- Array Spread
  - *No Spread For Hash*
  - *Unpacking Inside Arrays*
- Array With Curly Braces
  - *No More Curly Arrays*
- ArrayObject
  - *Avoid get_object_vars()*
- Arrow Functions
  - *Fn Argument Variable Confusion*
  - *Follow Closure Definition*
  - *Use Arrow Functions*

  - *Variable Parameter Ambiguity In Arrow Function*
- Assertions
  - *Assert Function Is Reserved*
  - *Assertions*
- Assignations
  - *Assign And Compare*
  - *Assigned In One Branch*
  - *Double Assignation*
  - *Iffectations*
  - *Throws An Assignement*
- Assumption
  - *Assumptions*
- Attributes
  - *Friend Attribute*
  - *Missing Attribute Attribute*
  - *Modify Immutable*
  - *PHP Native Attributes*
  - *Use PHP Attributes*
  - *Using Deprecated Feature*
  - *Wrong Attribute Configuration*
- Backed Enumeration
  - *Enum Case Values*
- Binary Integer
  - *Binary Glossary*
- Bitwise Operators
  - *Not Or Tilde*
- Blind Variable
  - *Don't Change The Blind Var*
  - *Use The Blind Var*
- Block
  - *Empty Blocks*
  - *Lone Blocks*
  - *Too Long A Block*
  - *Useless Brackets*
- Boolean
  - *No Boolean As Default*

  - *Null Or Boolean Arrays*
  - *Return True False*
- Break
  - *Break Outside Loop*
  - *Unconditional Break In Loop*
- CSV
  - *Do In Base*
  - *Fetch One Row Format*
  - *Joining file()*
  - *Make One Call With Array*
  - *No mb_substr In Loop*
  - *ext/CSV*
  - *fputcsv() In Loops*
- Callables
  - *Could Be Callable*
  - *Could Be Typehinted Callable*
  - *Deprecated Callable*
- Callbacks
  - *Callback Function Needs Return*
  - *Closure Could Be A Callback*
  - *Could Be Callable*
- Case
  - *Non-lowercase Keywords*
  - *Switch Without Default*
- Case Sensitivity
  - *Wrong Function Name Case*
- Cast Operator
  - *Cast To Boolean*
  - *Cast Unset Usage*
  - *Cast Usage*
  - *Casting Ternary*
  - *Could Cast To Array*
  - *Do Not Cast To Int*
  - *Favorite Casting Method*
  - *Invalid Cast*
  - *No Valid Cast*

  - *Not Not*
  - *Should Typecast*
  - *Silently Cast Integer*
  - *Test Then Cast*
  - *Useless Type Casting*
- Catch
  - *Caught Exceptions*
  - *Caught Expressions*
  - *Collect Catch Calls*
  - *Could Drop Variable*
  - *Try Without Catch*
  - *Useless Catch*
- Chaining Exceptions
  - *Set Chaining Exception*
  - *Should Chain Exception*
- Class Aliases
  - *Set class_alias() Definition*
  - *Usage Of class_alias()*
  - *Use class_alias()*
- Class Autoloading
  - *Autoloading*
  - *Composer's autoload*
  - *Old Style __autoload()*
- Class Constants Visibility
  - *Const Visibility Usage*
- Class Getter Method
  - *Getter And Setter*
- Class Invasion
  - *Class Invasion*
  - *Class Overreach*
  - *No Readonly Assignation In Global*
- Class Operator
  - *Could Use Class Operator*
  - *Use ::Class Operator*
- Class Setter Method
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- Classes
  - *@ Operator*
  - *Abstract Class Usage*
  - *Abstract Methods Usage*
  - *Accessing Private*
  - *Ambiguous Visibilities*
  - *Anonymous Classes*
  - *Avoid get_class()*
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  - *Cancel Common Method*
  - *Cant Overload Constants*
  - *Class Function Confusion*
  - *Class Usage*
  - *Class, Interface, Enum Or Trait With Identical Names*
  - *Classes Names*
  - *Constant Definition*
  - *Constructors*
  - *Could Be Boolean*
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  - *Could Be Generator*
  - *Could Be Parent Method*
  - *Could Be Static Closure*
  - *Could Make A Function*
  - *Could Type With Array*
  - *Could Use self*
  - *Custom Class Usage*
  - *Cyclic References*
  - *Deep Definitions*
  - *Detect Current Class*
  - *Disconnected Classes*
  - *Double Object Assignation*
  - *Dynamic Property*
  - *Dynamically Called Classes*
  - *Else Usage*
  - *Empty Classes*
  - *Functioncall Is Global*

- *Htmlentities Using Default Flag*
- *Internet Ports*
- *Is An Extension Class*
- *Is Not Class Family*
- *Is Upper Family*
- *Is_A() With String*
- *Make Global A Property*
- *Manipulates INF*
- *Method Has Fluent Interface*
- *Multiple Class Declarations*
- *Multiple Classes In One File*
- *Multiple Constant Definition*
- *Multiple Definition Of The Same Argument*
- *Multiple Identical Closure*
- *No Append On Source*
- *No Class As Typehint*
- *No Class In Global*
- *No Empty Regex*
- *No Hardcoded Hash*
- *No Need For get_class()*
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- *No isset() With empty()*
- *Not Same Name As File*
- *Null On New*
- *Only Static Methods Class*
- *Order Of Declaration*
- *Overwritten Constant*
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- *PHP 7.0 New Classes*
- *PHP 7.0 Scalar Typehints*
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- *PHP 7.3 Last Empty Argument*
- *Parent, Static Or Self Outside Class*
- *Php 7.1 New Class*

  - *Php 7.2 New Class*
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  - *Reserved Keywords In PHP 7*
  - *Set Array Class Definition*
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  - *Too Many Children*
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  - *Undefined ::class*
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  - *Unresolved Classes*
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  - *Usage Of class_alias()*
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  - *Used Classes*
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  - *Useless Argument*
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  - *Clone With Non-Object*
  - *Direct Call To __clone()*
  - *Set Clone Link*
  - *Should Deep Clone*
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  - *Close Tags Consistency*
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  - *Cannot Use Static For Closure*
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  - *Follow Closure Definition*
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  - *::class*
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  - *Isset Multiple Arguments*
  - *Isset() On The Whole Array*
  - *Should Use Coalesce*
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- Coding Conventions
  - *Unusual Case For PHP Functions*
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  - *Avoid sleep()/usleep()*
  - *Is CLI Script*
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  - *Assign And Compare*
  - *Compared Comparison*
  - *Comparison Is Always The Same*
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  - *Variable Is Not A Condition*
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  - *Composer Usage*
  - *Composer's autoload*

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  - *ext/bzip2*
- Concatenation
  - *Coalesce And Concat*
  - *Concat And Addition*
  - *Concatenation Interpolation Consistence*
  - *Inconsistent Concatenation*
  - *Mistaken Concatenation*
  - *Mixed Concat And Interpolation*
  - *Ternary In Concat*
- Concrete Class
  - *Instantiating Abstract Class*
- Condition
  - *Constant Conditions*
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  - *Const Or Define Preference*
  - *Define Constants With Array*
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- Constant Scalar Expression
  - *Constant Scalar Expression*
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  - *Define Constants With Array*
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  - *Static Variable Initialisation*
- Constants
  - *Abstract Static Methods*
  - *Bad Constants Names*
  - *Case Insensitive Constants*
  - *Class Const With Array*
  - *Clone Constant*

  - *Const Or Define*
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  - *Constant : With Or Without Use*
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  - *Constant Dynamic Creation*
  - *Constant Typo Looks Like A Variable*
  - *Constants Created Outside Its Namespace*
  - *Constants In Traits*
  - *Constants Names*
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  - *Constants With Strange Names*
  - *Could Be A Constant*
  - *Could Be Constant*
  - *Could Use Existing Constant*
  - *Custom Constant Usage*
  - *Invalid Constant Name*
  - *Is An Extension Constant*
  - *Is Global Constant*
  - *Is PHP Constant*
  - *New Constants In PHP 7.2*
  - *New Constants In PHP 7.4*
  - *No Self Referencing Constant*
  - *Nullable With Constant*
  - *PHP 8.1 Removed Constants*
  - *PHP Constant Usage*
  - *Propagate Constants*
  - *Should Use Existing Constants*
  - *Strange Name For Constants*
  - *True False Inconsistant Case*
  - *Unused Constants*
  - *Variable Constants*
- Continue
  - *Continue Is For Loop*
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  - *Incompatible Signature Methods With Covariance*
  - *Method Signature Must Be Compatible*

  - *PHP Native Class Type Compatibility*
  - *Use Contravariance*
- Cookie
  - *Cookies Variables*
  - *Set Cookie Safe Arguments*
  - *Should Use SetCookie()*
  - *Use Cookies*
- Countable Interface
  - *Can't Count Non-Countable*
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  - *Incompatible Signature Methods With Covariance*
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  - *Use Contravariance*
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- Cryptography
  - *Check Crypto Key Length*
  - *Compare Hash*
  - *Crypto Usage*
  - *Deprecated PHP Functions*
  - *Openssl Encrypt Default Algorithm Change*
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  - *Safe Curl Options*
- Curly Brackets
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- Cyclomatic Complexity
  - *Cyclomatic Complexity*
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  - *Identical Case In Switch*
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  - *Don't Add Seconds*
  - *Invalid Date Scanning Format*
  - *Next Month Trap*
  - *Timestamp Difference*
  - *Use DateTimeImmutable Class*
  - *date() versus DateTime Preference*
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  - *Property Cannot Be Readonly*
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  - *Use Debug*
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- Default Value
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  - *Definitions Only*
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```
+ :ref:`Scope Resolution Operator <scope-resolution-operator>`
```

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  - *Implements Is For Interface*
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  - *Missing Include*
  - *No Parenthesis For Language Construct*
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  - *mcrypt_create_iv() With Default Values*
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  - *Could Use Try*
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  - *Maybe Missing New*
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  - *New On Functioncall Or Identifier*
  - *New Order*
  - *Null On New*
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  - *Pack Format Inventory*
- parent
  - *$this Belongs To Classes Or Traits*
  - *Class Without Parent*
  - *Could Be Parent Method*
  - *Must Call Parent Constructor*
  - *Parent First*
  - *Parent Is Not Static*

  - *Parent, Static Or Self Outside Class*
  - *Set Parent Definition*
  - *Undefined Parent*
  - *Use Lower Case For Parent, Static And Self*
  - *self, parent, static Outside Class*
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  - *Phpinfo*
- plus +
  - *Unsupported Operand Types*
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  - *PHP 8.0 Resources Turned Into Objects*
  - *PHP 8.1 Resources Turned Into Objects*
  - *Resources Usage*
  - *Typehints/CouldBeResource*
  - *Unchecked Resources*
- sleep
  - *Avoid sleep()/usleep()*
- sprintf
  - *Printf Format Inventory*
  - *Sprintf Format Compilation*
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  - *$this Belongs To Classes Or Traits*
  - *$this Is Not For Static Methods*
  - *Ambiguous Static*
  - *Cannot Use Static For Closure*
  - *Could Be A Static Variable*
  - *Declare Static Once*
  - *Make All Statics*
  - *Method Could Be Static*
  - *Non Static Methods Called In A Static*
  - *Only Static Methods Class*
  - *Parent Is Not Static*
  - *Parent, Static Or Self Outside Class*
  - *Scope Resolution Operator*
  - *Static Call May Be Truly Static*
  - *Static Global Variables Confusion*

  - *Static Methods*
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  - *Static Methods Can't Contain $this*
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  - *Use Lower Case For Parent, Static And Self*
  - *Use This*
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  - *Checks Property Existence*
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  - *strict_types Preference*
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  - *Forgotten Thrown*
  - *Long Preparation For Throw*
  - *Throw In Destruct*
  - *Throw Was An Expression*
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- unset()
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  - *Multiple Unset()*
  - *Unset() Or (unset)*
  - *Useless Unset*
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  - *Could Use Yield From*
  - *Method Is A Generator*
  - *Misused Yield*
  - *Yield From Usage*
  - *Yield Usage*

14.6 Directory by PHP Error message

Exakat helps reduce the amount of error and warning that code is producing by reporting pattern that are likely to emit errors.

264 PHP error message detailled :

- *"boolean" will be interpreted as a class name. Did you mean "bool"?*
- *"continue" targeting switch is equivalent to "break". Did you mean to use "continue 2"?*
- *$GLOBALS can only be modified using the $GLOBALS[$name] = $value syntax*
- *%s %s inherits both %s::%s and %s::%s*
- *'break' operator accepts only positive integers*
- *A function with return type must return a value (did you mean "return null;" instead of "return;"?)*
- *A never-returning function must not return*
- *Abstract function t::someAbstractPrivateFunction() cannot be declared private*
- *Access level to Bar::$publicProperty must be public (as in class Foo)*
- *Access level to x::I must be public (as in interface i)*
- *Access level to x::foo() must be public (as in class i)*
- *Access level to xx::$x must be public (as in class x)*
- *Access to undeclared static property*
- *Access to undeclared static property: x::$y*
- *Accessing static property aa::$a as non static*
- *An alias (%s) was defined for method %s(), but this method does not exist*
- *Argument #1 ($a) must be of type T*
- *Argument #1 ($array) cannot be passed by reference*
- *Argument #1 ($array) could not be passed by reference*
- *Argument #1 ($line) must be passed by reference*
- *Argument #1 ($s) must be of type X, int given*
- *Argument #1 ($s) must be of type array, int given*
- *Argument #1 ($value) must contain at least one element*
- *Argument #1 must be of type float, string given*
- *Argument #2 ($encoding) must be a valid encoding, "xxx" given*
- *Argument #3 ($case_insensitive) is ignored since declaration of case-insensitive constants is no longer supported*
- *Argument #3 ($matches) cannot be passed by reference*
- *Argument 1 passed to foo() must be of the type integer, string given*
- *Argument cannot be passed by reference*
- *Argument cannot be passed by reference*
- *Argument must be of type int, array given*
- *Array and string offset access syntax with curly braces is deprecated*

- *Array to string conversion*
- *Attempt to echo a string that might be tainted*
- *Attempt to read property "b" on null*
- *Attribute "AttributeFunction" cannot target Class (allowed targets: Function)*
- *Call to a member function b() on null*
- *Call to a member function m() on null*
- *Call to private Y::__construct() from invalid context*
- *Call to protected method x::method*
- *Call to undefined function*
- *Call to undefined method theParent::bar()*
- *Call to undefined method x::y()*
- *Call-time pass-by-reference has been removed*
- *Calling static trait method Test::test is deprecated, it should only be called on a class using the trait*
- *Calling static trait method t::t is deprecated, it should only be called on a class using the trait*
- *Can't inherit abstract function A::bar()*
- *Cannot access offset of type stdClass on string*
- *Cannot access parent:: when current class scope has no parent*
- *Cannot access parent:: when current class scope has no parent*
- *Cannot access parent:: when current class scope has no parent*
- *Cannot access private const*
- *Cannot access protected constant x::Cpro*
- *Cannot access protected property x::$property*
- *Cannot access self:: when no class scope is active*
- *Cannot access static:: when no class scope is active*
- *Cannot assign string to property A::$g of type int*
- *Cannot bind an instance to a static closure*
- *Cannot call __clone() method on objects - use 'clone $obj' instead*
- *Cannot call constructor*
- *Cannot combine named arguments and argument unpacking*
- *Cannot inherit previously-inherited or override constant A from interface*
- *Cannot inherit previously-inherited or override constant A from interface i*
- *Cannot initialize readonly property x::$p from global scope*
- *Cannot initialize readonly property x::$p from scope y*
- *Cannot instantiate enum e*
- *Cannot instantiate interface i*
- *Cannot instantiate trait t*

- *Cannot override final method Foo::Bar()*
- *Cannot override final method Foo::FooBar()*
- *Cannot override final method x::method()*
- *Cannot pass parameter 1 by reference*
- *Cannot pass parameter 1 by reference*
- *Cannot perform bitwise not on array*
- *Cannot perform bitwise not on bool*
- *Cannot perform bitwise not on object*
- *Cannot perform bitwise not on resource*
- *Cannot re-assign auto-global variable*
- *Cannot unpack array with string keys*
- *Cannot use “”parent”” when current class scope has no parent*
- *Cannot use “parent” when current class scope has no parent*
- *Cannot use “parent” when no class scope is active*
- *Cannot use “self” when no class scope is active*
- *Cannot use “static” when no class scope is active*
- *Cannot use ‘final’ as constant modifier*
- *Cannot use ‘never’ as class name as it is reserved*
- *Cannot use ‘never’ as class name as it is reserved*
- *Cannot use [] for reading*
- *Cannot use a scalar value as an array*
- *Cannot use int as default value for parameter $a of type string*
- *Cannot use int as default value for property x::$a of type string*
- *Cannot use isset() on the result of an expression (you can use “null !== expression” instead)*
- *Cannot use isset() on the result of an expression (you can use “null !== expression” instead)*
- *Cannot use lexical variable $b as a parameter name*
- *Cannot use object of type Foo as array*
- *Cannot use positional argument after argument unpacking*
- *Case-insensitive constants are deprecated. The correct casing for this constant is “A”*
- *Class “null” not found*
- *Class ‘PARENT’ not found*
- *Class ‘x’ not found*
- *Class BA contains 1 abstract method and must therefore be declared abstract or implement the remaining methods (A::aFoo)*
- *Class b cannot implement previously implemented interface i*
- *Class b cannot implement previously implemented interface i*

- *Class bar cannot implement previously implemented interface i*
- *Class c contains 1 abstract method and must therefore be declared abstract or implement the remaining methods (a::foo)*
- *Class fooThrowable cannot implement interface Throwable, extend Exception or Error instead*
- *Class i cannot extend interface Throwable*
- *Class x contains 2 abstract methods and must therefore be declared abstract or implement the remaining methods (x::m1, x::m2)*
- *Class x must implement interface Traversable as part of either Iterator or IteratorAggregate*
- *Class y cannot extend final class x*
- *Constant FILE_BINARY is deprecated*
- *Constant expression contains invalid operations*
- *Constant expression contains invalid operations*
- *Constants may only evaluate to scalar values*
- *Could not check compatibility between xx::bar(B $a) and foo::bar(A $a), because class A is not available*
- *Creating default object from empty value*
- *Declaration of FooParent::Bar() must be compatible with FooChildren::Bar()*
- *Declaration of a::foo($a) should be compatible with ab1::foo($a)*
- *Declaration of ab::foo($a) must be compatible with a::foo($a = 1)*
- *Declaration of ab::foo($a) must be compatible with a::foo($a = 1)*
- *Declaration of ab::foo($a) should be compatible with a::foo($a = 1)*
- *Declaration of ab::foo($a) should be compatible with a::foo($a = 1)*
- *Default value for parameters with a int type can only be int or NULL*
- *Defining a custom assert() function is deprecated, as the function has special semantics*
- *Delimiter must not be alphanumeric or backslash*
- *Deprecated: Required parameter $y follows optional parameter $x*
- *Empty delimiter*
- *Enum may not include __construct*
- *Enum may not include __isset*
- *Failed to open stream: +wr' is not a valid mode for fopen*
- *Generators cannot return values using "return"*
- *Generators cannot return values using "return"*
- *Headers already sent*
- *Illegal offset type*
- *Illegal offset type*
- *Illegal offset type in isset or empty*
- *Implicit conversion from float 1.2 to int loses precision*
- *Implicit conversion from float 3.141592653589793 to int loses precision*

- *Index invalid or out of range*
- *Indirect modification of overloaded property c::$b has no effect*
- *Invalid UTF-8 codepoint escape sequence*
- *Invalid UTF-8 codepoint escape: Codepoint too large*
- *Invalid numeric literal*
- *Method myString::__toString() must not throw an exception*
- *Method name must be a string*
- *Methods with the same name as their class will not be constructors in a future version of PHP; %s has a deprecated constructor*
- *Named parameter $a overwrites previous argument*
- *No ending delimiter '/'*
- *Non-static method A::B() should not be called statically*
- *Non-static method x::foo() cannot be called statically*
- *Non-string needles will be interpreted as strings in the future. Use an explicit chr() call to preserve the current behavior*
- *Object of class stdClass could not be converted to*
- *Object of class stdClass could not be converted to float*
- *Object of class stdClass could not be converted to int*
- *Octal escape sequence overflow 500 is greater than 377*
- *Old style constructors are DEPRECATED in PHP 7.0, and will be removed in a future version. You should always use __construct() in new code.*
- *Only the first byte will be assigned to the string offset*
- *Only variable references should be returned by reference*
- *Only variable references should be returned by reference*
- *Only variable references should be returned by reference*
- *Only variables can be passed by reference*
- *Only variables should be passed by reference*
- *Only variables should be passed by reference*
- *Optional parameter $a declared before required parameter $b is implicitly treated as a required parameter*
- *Passing null to parameter #2 ($offset) of type int is deprecated*
- *Private constant MyClass::Z cannot be final as it is not visible to other classes*
- *Private methods cannot be final as they are never overridden by other classes*
- *Property %s::$%s does not exist*
- *Property x::$x cannot have type callable*
- *Redefinition of parameter $b*
- *Return type must be array when declared in*

- *Return type of a::key() should either be compatible with IteratorIterator::key(): mixed, or the #[ReturnTypeWillChange] attribute should be used to temporarily suppress the notice*
- *Return type of x::jsonserialize() should either be compatible with JsonSerializable::jsonSerialize(): mixed, or the #[ReturnTypeWillChange] attribute should be used to temporarily suppress the notice*
- *Return value must be of type mixed, none returned*
- *Return value of foo() must be an instance of Bar, none returned*
- *Return value of foo() must be of the type int, string returned*
- *Static function foo::bar() should not be abstract*
- *The (real) cast has been removed, use (float) instead*
- *The (real) cast is deprecated, use (float) instead*
- *The (unset) cast is deprecated*
- *The (unset) cast is no longer supported*
- *The behavior of unparenthesized expressions containing both '.' and '+'/'-' will change in PHP 8: '+'/'-' will take a higher precedence*
- The behavior of unparenthesized expressions containing both '.' and '>>'/'
- *The each() function is deprecated. This message will be suppressed on further calls*
- *The magic method x::__call() must have public visibility*
- *The parent constructor was not called: the object is in an invalid state*
- *Too few arguments to function Foo::Bar(), 1 passed*
- *Too few arguments to function foo(), 1 passed and exactly 2 expected*
- *Too few arguments to function foo(), 1 passed and exactly 2 expected*
- *Trait 'T' not found*
- *Trait 'a' not found*
- *Trait method M has not been applied, because there are collisions with other trait methods on C*
- *Trait method f has not been applied, because there are collisions with other trait methods on x*
- *Trying to access array offset on value of type boolean*
- *Trying to access array offset on value of type float*
- *Trying to access array offset on value of type int*
- *Trying to access array offset on value of type null*
- *Trying to access array offset on value of type null*
- *Type of b::$a must be array (as in class a)*
- *Type of b::$a must not be defined (as in class a)*
- *Type of b::$b must be A (as in class a)*
- *Type z: unknown format code*
- *Typed property x::$p2 must not be accessed before initialization*
- *Uncaught ArgumentCountError: Too few arguments to function, 0 passed*
- *Uncaught Error: Undefined constant*

- *Uncaught TypeError: Cannot auto-initialize an array inside property x::$P of type bool*
- *Undefined array key 2*
- *Undefined class constant*
- *Undefined constant 'A'*
- *Undefined constant 'y'*
- *Undefined constant*
- *Undefined constant*
- *Undefined constant x::C*
- *Undefined constant y::I4*
- *Undefined function*
- *Undefined property*
- *Undefined property: x::$e*
- *Undefined variable $a*
- *Undefined variable:*
- *Undefined variable:*
- *Unknown format specifier*
- *Unknown named parameter $d in*
- *Unparenthesized a ? b : c ? d : e is deprecated. Use either (a ? b : c) ? d : e or a ? b : (c ? d : e)*
- *Unsupported operand types*
- *Unsupported operand types*
- *Use of "parent" in callables is deprecated*
- *Use of "self" in callables is deprecated*
- *Use of "static" in callables is deprecated*
- *Use of undefined constant y - assumed 'y' (this will throw an Error in a future version of PHP)*
- *Using $this when not in object context*
- *Using $this when not in object context*
- *Using $this when not in object context*
- *Using $this when not in object context*
- *Using array_key_exists() on objects is deprecated. Use isset() or property_exists() instead*
- *X() has been disabled for security reasons*
- *__autoload() is deprecated, use spl_autoload_register() instead*
- *__clone method called on non-object*
- *__clone method called on non-object*
- *array_merge() does not accept unknown named parameters*
- *array_merge() expects at least 1 parameter, 0 given*
- *b cannot implement a - it is not an interface*

- *cannot override final constant*
- *class_alias(): Argument #1 ($class) must be a user-defined class name, internal class name given*
- *compact(): Undefined variable $a*
- *define(): Declaration of case-insensitive constants is deprecated*
- *does not accept unknown named parameters*
- *explode(): Argument #1 ($separator) cannot be empty*
- *iconv(): Wrong charset, conversion from UTF-8' to ASCII//TRANSLIT' is not allowed*
- *include(a.php): failed to open stream: No such file or directory*
- *mb_convert_encoding(): Handling Base64 via mbstring is deprecated; use base64_encode/base64_decode instead*
- *needle is not a string or an integer*
- *pack(): Type t: unknown format code*
- *printf(): Too few arguments*
- *static:: is not allowed in compile-time constants*
- *strlen() expects exactly 1 argument, 3 given*
- *syntax error, unexpected '&', expecting variable (T_VARIABLE)*
- *syntax error, unexpected ','*
- *syntax error, unexpected '-', expecting '='*
- *syntax error, unexpected 'match'*
- *syntax error, unexpected '|', expecting variable (T_VARIABLE)*
- *theClass and theTrait define the same property ($property) in the composition of theClass. However, the definition differs and is considered incompatible.*
- *unpack(): Type t: unknown format code*
- *version_compare(): Argument #3 ($operator) must be a valid comparison operator*
- *y::F cannot override final constant x::F*

14.7 Directory by Exception

Exakat has rules that help identify possible exceptions in the code.

- ArgumentCountError
  - *Unknown Parameter Name*
  - *Wrong Number Of Arguments*
- ArithmeticError Error
  - *Could Use Try*
- DivisionByZeroError
  - *Could Use Try*
- Exception

  - *Could Use Try*
- ImagickException
  - *Could Use Try*
- ImagickPixelException
  - *Could Use Try*
- InvalidArgumentException
  - *Could Use Try*
- JsonException
  - *Could Use Try*
- PDOException
  - *Could Use Try*
- PharException
  - *Could Use Try*
- ReflectionException
  - *Could Use Try*
- SVMException
  - *Could Use Try*
- Type Error
  - *Could Use Try*
- TypeError
  - *Wrong Type For Native PHP Function*
- UnexpectedValueException
  - *Could Use Try*
- UnhandledMatchError
  - *Switch Without Default*
- mysqli_sql_exception
  - *Could Use Try*

CHAPTER

FIFTEEN

RULESETS

15.1 Introduction

Exakat provides unique 1644 rules to detect BUGS, CODE SMELLS, SECURITY OR QUALITY ISSUES in your PHP code.

For more smoothly usage, the ruleset concept allow you to run a set of rules based on a decidated focus. Beawre that a Ruleset run all the associated rules and any needed dependencies.

Rulesets are configured with the -T option, when running exakat in command line. For example :

```
php exakat.phar analyze -p <project> -T <Security>
```

15.2 Summary

Here is the list of the current rulesets supported by Exakat Engine.

Name	Description
All	All is a dummy ruleset, which includes all the rules.
Analyze	Check for common best practices.
Appinfo	Appinfo is the equivalent of phpinfo() for your code.
Attributes	This ruleset gathers all rules that rely on PHP 8.+ attributes.
CE	List of rules that are part of the Community Edition
CI-checks	Quick check for common best practices.
Changed Behavior	Ruleset with all rules that identify changed behavior across PHP versions.
Class Review	A set of rules dedicated to class hygiene
Classdependencies	A set of rules dedicated to show classes dependences
Coding conventions	List coding conventions violations.
CompatibilityPHP53	List features that are incompatible with PHP 5.3.
CompatibilityPHP54	List features that are incompatible with PHP 5.4.
CompatibilityPHP55	List features that are incompatible with PHP 5.5.
CompatibilityPHP56	List features that are incompatible with PHP 5.6.
CompatibilityPHP70	List features that are incompatible with PHP 7.0.
CompatibilityPHP71	List features that are incompatible with PHP 7.1.
CompatibilityPHP72	List features that are incompatible with PHP 7.2.
CompatibilityPHP73	List features that are incompatible with PHP 7.3.
CompatibilityPHP74	List features that are incompatible with PHP 7.4.
CompatibilityPHP80	List features that are incompatible with PHP 8.0.
CompatibilityPHP81	List features that are incompatible with PHP 8.1.

continues on next page

Table 1 – continued from previous page

CompatibilityPHP82	List features that are incompatible with PHP 8.2.
CompatibilityPHP83	List features that are incompatible with PHP 8.3.
Dead code	Check the unused code or unreachable code.
Deprecated	List of deprecated features, across all PHP versions.
Dump	Dump is a collector set of rules.
First	A set of rules that are always run at the beginning of a project, because they are frequently used.
Inventory	A set of rules that collect various definitions from the code
IsExt	Ruleset with analysis which rely on PHP's optional extensions
IsPHP	Ruleset with analysis which rely on PHP's core extensions
IsStub	Ruleset with analysis which rely on custom stubs
LintButWontExec	Check the code for common errors that will lead to a Fatal error on production, but lint fine.
NoDoc	Ruleset with analysis which are not published in the docs.
One Liners	Report expressions that are one liners.
PHP recommendations	Report recommendations from the PHP manual.
Performances	Check the code for slow code.
Preferences	Identify preferences in the code.
Rector	Suggests configuration to apply changes with Rector
Security	Check the code for common security bad practices, especially in the Web environnement.
Semantics	Checks the meanings found the names of the code.
Suggestions	List of possible modernisation of the PHP code.
Surprising	A ruleset dedicated to surprising pieces of code in PHP.
Top10	The most common issues found in the code
Typechecks	Checks related to types.
php-cs-fixable	Suggests configuration to apply changes with PHP-CS-FIXER

Note : in command line, don't forget to add quotes to rulesets' names that include white space.

15.3 List of rulesets

15.3.1 All

All is a dummy ruleset, which includes all the rules. It is mostly used internally.

Total : 1642 analysis

- *Adding Zero*
- *Ambiguous Array Index*
- *Array Index*
- *Multidimensional Arrays*
- *Multiple Index Definition*
- *PHP Arrays Index*
- *Class Usage*
- *Classes Names*
- *Constant Definition*
- *Empty Classes*
- *Magic Methods*

- *Forgotten Visibility*
- *Non Static Methods Called In A Static*
- *Old Style Constructor*
- *Property Names*
- *Static Methods*
- *Static Methods Called From Object*
- *Static Properties*
- *Constants With Strange Names*
- *Constants Usage*
- *Constants Names*
- *True False Inconsistant Case*
- *Magic Constant Usage*
- *PHP Constant Usage*
- *Caught Exceptions*
- *Defined Exceptions*
- *Thrown Exceptions*
- *ext/apc*
- *ext/bcmath*
- *ext/bzip2*
- *ext/calendar*
- *ext/crypto*
- *ext/ctype*
- *ext/curl*
- *ext/date*
- *ext/dba*
- *ext/dom*
- *ext/enchant*
- *ext/exif*
- *ext/fileinfo*
- *ext/filter*
- *ext/ftp*
- *ext/gd*
- *ext/gmp*
- *ext/gnupgp*
- *ext/hash*
- *ext/iconv*

- *ext/json*
- *ext/ldap*
- *ext/libxml*
- *ext/mbstring*
- *ext/mcrypt*
- *ext/mongo*
- *ext/mssql*
- *ext/mysql*
- *ext/mysqli*
- *ext/odbc*
- *ext/openssl*
- *ext/pcre*
- *ext/pdo*
- *ext/pgsql*
- *ext/phar*
- *ext/posix*
- *ext/readline*
- *ext/reflection*
- *ext/sem*
- *ext/session*
- *ext/shmop*
- *ext/simplexml*
- *ext/snmp*
- *ext/soap*
- *ext/sockets*
- *ext/spl*
- *ext/sqlite*
- *ext/sqlite3*
- *ext/ssh2*
- *ext/standard*
- *ext/tidy*
- *ext/tokenizer*
- *ext/wddx*
- *ext/xdebug*
- *ext/xmlreader*
- *ext/xmlrpc*

- *ext/xmlwriter*
- *ext/xsl*
- *ext/yaml*
- *ext/zip*
- *ext/zlib*
- *Closures Glossary*
- *Empty Function*
- *Function Called With Other Case Than Defined*
- *Functions Glossary*
- *Recursive Functions*
- *Redeclared PHP Functions*
- *Typehints*
- *Unset Arguments*
- *Methods Without Return*
- *Empty Interfaces*
- *Interfaces Usage*
- *Interfaces Names*
- *PHP Interfaces*
- *Aliases*
- *Namespaces Glossary*
- *Autoloading*
- *Use Lower Case For Parent, Static And Self*
- *Goto Names*
- *__halt_compiler*
- *Incompilable Files*
- *Labels*
- *Functions Removed In PHP 5.4*
- *Functions Removed In PHP 5.5*
- *Throw*
- *Trigger Errors*
- *Caught Expressions*
- *Break With 0*
- *Break With Non Integer*
- *Calltime Pass By Reference*
- *error_reporting() With Integers*
- *Eval() Usage*

- *Exit() Usage*
- *For Using Functioncall*
- *Forgotten Whitespace*
- *Iffectations*
- *Multiply By One*
- *@ Operator*
- *Not Not*
- *include_once() Usage*
- *Phpinfo*
- *No Plus One*
- *Using Short Tags*
- *Strpos()-like Comparison*
- *Throws An Assignement*
- *var_dump()… Usage*
- *__toString() Throws Exception*
- *Binary Glossary*
- *Continents*
- *Email Addresses*
- *Heredoc Delimiter Glossary*
- *Hexadecimal Glossary*
- *Http Headers*
- *HTTP Status Code*
- *Malformed Octal*
- *Md5 Strings*
- *Mime Types*
- *Nowdoc Delimiter Glossary*
- *Octal Glossary*
- *Perl Regex*
- *Internet Ports*
- *Special Integers*
- *All strings*
- *Unicode Blocks*
- *URL List*
- *Blind Variables*
- *Interface Arguments*
- *Variable References*

- *Static Variables*
- *Variables With Long Names*
- *Non Ascii Variables*
- *Variables With One Letter Names*
- *PHP Variables*
- *All Uppercase Variables*
- *Used Once Variables*
- *Variable Variables*
- *Abstract Class Usage*
- *Abstract Methods Usage*
- *Clone Usage*
- *Final Class Usage*
- *Final Methods Usage*
- *Bad Constants Names*
- *Variable Constants*
- *Empty Traits*
- *Redefined PHP Traits*
- *Traits Usage*
- *Trait Names*
- *PHP Alternative Syntax*
- *Short Syntax For Arrays*
- *Inclusions*
- *ext/file*
- *Unused Use*
- *Use With Fully Qualified Name*
- *Used Use*
- *ext/array*
- *ext/info*
- *ext/math*
- *$HTTP_RAW_POST_DATA Usage*
- *Non-lowercase Keywords*
- *New Functions In PHP 5.4*
- *New Functions In PHP 5.5*
- *Useless Instructions*
- *Abstract Static Methods*
- *Interface Methods*

- *New Functions In PHP 5.6*
- *Trait Methods*
- *Invalid Constant Name*
- *Multiple Constant Definition*
- *Wrong Optional Parameter*
- *Multiple Definition Of The Same Argument*
- *Echo Or Print*
- *Use === null*
- *Constant Comparison*
- *Fopen Binary Mode*
- *Assertions*
- *$this Is Not An Array*
- *One Variable String*
- *Cast Usage*
- *Function Subscripting*
- *Nested Loops*
- *Closing Tags*
- *<?= Usage*
- *Static Methods Can't Contain $this*
- *Closure May Use $this*
- *While(List() = Each())*
- *Several Instructions On The Same Line*
- *One Letter Functions*
- *Multiples Identical Case*
- *Switch Without Default*
- *Function Subscripting, Old Style*
- *Internally Used Properties*
- *$this Belongs To Classes Or Traits*
- *Nested Ternary*
- *Switch With Too Many Default*
- *Non-constant Index In Array*
- *Undefined Constants*
- *Custom Constant Usage*
- *Instantiating Abstract Class*
- *Classes Mutually Extending Each Other*
- *Class, Interface, Enum Or Trait With Identical Names*

- *Empty Try Catch*
- *ext/pcntl*
- *Undefined Classes*
- *Is An Extension Class*
- *Wrong Class Name Case*
- *ext/redis*
- *Is An Extension Function*
- *Is An Extension Interface*
- *Is An Extension Constant*
- *Htmlentities Calls*
- *Bracketless Blocks*
- *Defined Class Constants*
- *Undefined Class Constants*
- *Unused Private Properties*
- *Used Static Properties*
- *Used Private Methods*
- *Unused Private Methods*
- *Unused Functions*
- *Used Functions*
- *Used Once Variables (In Scope)*
- *Undefined Functions*
- *Deprecated PHP Functions*
- *crypt() Without Salt*
- *mcrypt_create_iv() With Default Values*
- *Dangling Array References*
- *ext/sqlsrv*
- *Queries In Loops*
- *Var Keyword*
- *Native Alias Functions Usage*
- *Uses Default Values*
- *Wrong Number Of Arguments*
- *Hardcoded Passwords*
- *Functions In Loop Calls*
- *Unresolved Classes*
- *Ellipsis Usage*
- *Exponent Usage*

- *** For Exponent*
- *Constructors*
- *Useless Constructor*
- *Too Many Children*
- *Implements Is For Interface*
- *Use const*
- *Unresolved Use*
- *Conditional Structures*
- *Unused Constants*
- *Undefined Parent*
- *Defined static:: Or self::*
- *Undefined static:: Or self::*
- *Accessing Private*
- *Access Protected Structures*
- *Parent, Static Or Self Outside Class*
- *ext/0mq*
- *ext/memcache*
- *ext/memcached*
- *Is Extension Trait*
- *Dynamic Function Call*
- *Has Variable Arguments*
- *Multiple Catch*
- *Dynamically Called Classes*
- *Conditioned Function*
- *Conditioned Constants*
- *Method Is A Generator*
- *Try With Finally*
- *Use password_hash()*
- *Dereferencing String And Arrays*
- *::class*
- *Foreach With list()*
- *Empty With Expression*
- *list() May Omit Variables*
- *Or Die*
- *Constant Conditions*
- *Use Const And Functions*

- *Constant Scalar Expressions*
- *Unusual Case For PHP Functions*
- *Multiple Returns*
- *Unreachable Code*
- *Exit-like Methods*
- *Written Only Variables*
- *Must Return Methods*
- *__debugInfo() Usage*
- *Empty Instructions*
- *Interpolation*
- *Mixed Keys In Array*
- *Empty Slots In Arrays*
- *Wrong Number Of Arguments In Methods*
- *Class Has Fluent Interface*
- *Method Has Fluent Interface*
- *Method Is Not For Fluent Interface*
- *PHP Handlers Usage*
- *ext/imagick*
- *Unused Methods*
- *Property Variable Confusion*
- *ext/oci8*
- *Used Methods*
- *Overwritten Exceptions*
- *Foreach Needs Reference Array*
- *Foreach Reference Is Not Modified*
- *ext/imap*
- *Overwritten Class Constants*
- *Direct Injection*
- *Dynamic Class Constant*
- *Dynamic Methodcall*
- *Dynamic New*
- *Dynamic Property*
- *Don't Change Incomings*
- *Super Globals Contagion*
- *Dynamic Classes*
- *Return void*

- *Compared Comparison*
- *Useless Return*
- *Multiple Classes In One File*
- *File Uploads*
- *Return With Parenthesis*
- *Unused Classes*
- *Used Classes*
- *ext/intl*
- *Dynamic Code*
- *Unpreprocessed Values*
- *ext/pspell*
- *No Direct Access*
- *ext/opcache*
- *Is PHP Constant*
- *Sensitive Argument*
- *Functioncall Is Global*
- *ext/expect*
- *Defined Properties*
- *Undefined Properties*
- *Has Magic Method*
- *ext/gettext*
- *Short Open Tags*
- *Strict Comparison With Booleans*
- *Lone Blocks*
- *$this Is Not For Static Methods*
- *Avoid sleep()/usleep()*
- *Argument Should Be Typehinted*
- *Should Be Single Quote*
- *Super Global Usage*
- *Global Usage*
- *PHP Keywords As Names*
- *Logical Should Use Symbolic Operators*
- *Could Use self*
- *Implicit Global*
- *Const With Array*
- *Catch Overwrite Variable*

- *Namespaces*
- *Avoid array_unique()*
- *Definitions Only*
- *Deep Definitions*
- *Constant Class*
- *File Is Not Definitions Only*
- *Global Code Only*
- *Preprocess Arrays*
- *Repeated print()*
- *Avoid Parenthesis With Language Construct*
- *Objects Don't Need References*
- *Redefined Property*
- *Locally Unused Property*
- *Locally Used Property*
- *Lost References*
- *Constants Created Outside Its Namespace*
- *Fully Qualified Constants*
- *Never Used Properties*
- *Yoda Comparison*
- *No Real Comparison*
- *Sequences In For*
- *Should Use Local Class*
- *Use This*
- *Usage Of class_alias()*
- *Custom Class Usage*
- *ext/apache*
- *ext/eaccelerator*
- *ext/fpm*
- *parse_str() Warning*
- *No Direct Call To Magic Method*
- *String May Hold A Variable*
- *Echo With Concat*
- *Unused Global*
- *Useless Global*
- *Preprocessable*
- *Slow Functions*

- *Useless Final*
- *Use Constant Instead Of Function*
- *Resources Usage*
- *Useless Unset*
- *Buried Assignation*
- *Duplicate Calls*
- *No array_merge() In Loops*
- *Useless Parenthesis*
- *Shell Usage*
- *File Usage*
- *Mail Usage*
- *Dynamic Calls*
- *Unresolved Instanceof*
- *Use PHP Object API*
- *Unthrown Exception*
- *Old Style __autoload()*
- *Altering Foreach Without Reference*
- *Test Class*
- *Magic Visibility*
- *Use Pathinfo*
- *Should Use Existing Constants*
- *Hash Algorithms*
- *Avoid Those Hash Functions*
- *ext/dio*
- *No Parenthesis For Language Construct*
- *Unused Label*
- *No Hardcoded Path*
- *Methodcall On New*
- *No Hardcoded Port*
- *ext/phalcon*
- *Use Constant As Arguments*
- *Implied If*
- *Overwritten Literals*
- *Assign Default To Properties*
- *No Public Access*
- *Composer Usage*

- *Composer's autoload*
- *Should Chain Exception*
- *Used Interfaces*
- *Unused Interfaces*
- *Useless Interfaces*
- *Undefined Interfaces*
- *ext/apcu*
- *Double Instructions*
- *Should Use Prepared Statement*
- *Is Interface Method*
- *Hash Algorithms Incompatible With PHP 5.3*
- *Hash Algorithms Incompatible With PHP 5.4/5.5*
- *Print And Die*
- *Unchecked Resources*
- *Class Const With Array*
- *ext/trader*
- *ext/mailparse*
- *ext/mail*
- *Unresolved Catch*
- *No Hardcoded Ip*
- *Variable Global*
- *Else If Versus Elseif*
- *Reserved Keywords In PHP 7*
- *Unset In Foreach*
- *Could Be Class Constant*
- *Could Be A Static Variable*
- *Multiple Class Declarations*
- *Compare Hash*
- *Empty Namespace*
- *Could Use Short Assignation*
- *Useless Abstract Class*
- *Only Static Methods Class*
- *Null On New*
- *Scalar Typehint Usage*
- *Return Typehint Usage*
- *ext/ob*

- *Global Import*
- *Static Loop*
- *Pre-increment*
- *Only Variable Returned By Reference*
- *ext/geoip*
- *ext/event*
- *ext/amqp*
- *ext/gearman*
- *ext/com*
- *ext/gmagick*
- *ext/ibase*
- *ext/inotify*
- *ext/xdiff*
- *ext/ev*
- *ext/php-ast*
- *ext/xml*
- *ext/xhprof*
- *Indices Are Int Or String*
- *Should Typecast*
- *No Self Referencing Constant*
- *No Direct Usage*
- *Break Outside Loop*
- *Inconsistent Concatenation*
- *Else Usage*
- *One Object Operator Per Line*
- *isset() With Constant*
- *Avoid Substr() One*
- *Global Inside Loop*
- *Anonymous Classes*
- *Is Global Constant*
- *Coalesce*
- *Double Assignation*
- *Unicode Escape Syntax*
- *New Functions In PHP 7.0*
- *PHP 7.0 Removed Functions*
- *PHP 7.0 New Classes*

- *PHP 7.0 New Interfaces*
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- *Calling Static Trait Method*
- *No Referenced Void*
- *PHP Native Interfaces and Return Type*
- *Final Constant*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *First Class Callable*
- *New Functions In PHP 8.1*
- *PHP 8.1 Removed Functions*
- *Never Keyword*
- *Mixed Keyword*
- *Mixed Typehint Usage*
- *False To Array Conversion*
- *Float Conversion As Index*
- *Cannot Call Static Trait Method Directly*
- *Nested Attributes*
- *New Initializers*
- *Deprecated Callable*
- *Promoted Properties*
- *Overwritten Foreach Var*
- *Null Type Favorite*
- *Checks Property Existence*

- *Variable Anf Property Typehint*
- *Extends stdClass*
- *Scope Resolution Operator*
- *Could Use Null-Safe Object Operator*
- *Cant Overload Constants*
- *Variable Is A Local Constant*
- *This Could Be Iterable*
- *Intersection Typehint*
- *Abstract Class Constants*
- *Recycled Variables*
- *Check Division By Zero*
- *Getter And Setter*
- *Multiple Similar Calls*
- *Could Be Ternary*
- *Use File Append*
- *Readonly Usage*
- *Missing Visibility*
- *Could Use Existing Constant*
- *Don't Reuse Foreach Source*
- *Collect Dependency Extension*
- *Public Reach To Private Methods*
- *Unreachable Method*
- *Static Call May Be Truly Static*
- *Could Use array_sum()*
- *Undefined Methods*
- *Is Stub Structure*
- *Is PHP Structure*
- *Is Extension Structure*
- *Unfinished Object*
- *Use class_alias()*
- *Undefined Enumcase*
- *Too Many Stringed Elseif*
- *Missing Type In Definition*
- *Identical Elseif*
- *Simplify Foreach*
- *Use Variable Created Inside Loop*

- *String Interpolation Favorite*
- *Type Could Be Never*
- *Don't Add Seconds*
- *Use Constants As Returns*
- *Identical Variables In Foreach*
- *Can't Overwrite Final Constant*
- *String Int Comparison*
- *Add Return Typehint*
- *ext/protobuf*
- *Constant : With Or Without Use*
- *No Constructor In Interface*
- *Could Be A Constant*
- *Create Magic Method*
- *Unsupported Operand Types*
- *array_merge With Ellipsis*
- *Is Library*
- *version_compare Operator*
- *PHP 8.1 Resources Turned Into Objects*
- *Do Not Cast To Int*
- *Constant Scalar Expression*
- *Windows Only Constants*
- *Could Be Spaceship*
- *Sylius usage*
- *Dollar Curly Interpolation Is Deprecated*
- *Unused Enumeration Case*
- *Useless Null Coalesce*
- *Throw Raw Exceptions*
- *Extensions yar*
- *Collect Stub Structures*
- *Lowered Access Level*
- *Can't Overwrite Final Method*
- *Implicit Conversion To Int*
- *Excimer*
- *Use Same Types For Comparisons*
- *Used Once Trait*
- *Make All Statics*

- *Wrong Locale*
- *ext/pkcs11*
- *ext/spx*
- *Parent Is Not Static*
- *No Magic Method For Enum*
- *No Readonly Assignation In Global*
- *Stomp*
- *ext/CSV*
- *Could Set Property Default*
- *Identity*
- *Overload Existing Names*
- *Incoming Date Formats*
- *Collect Vendor Structures*
- *Array Addition*
- *Retyped Reference*
- *Could Be Enumeration*
- *Wrong Type With Default*
- *Ice framework*
- *Extensions/Exttaint*
- *Sprintf Format Compilation*
- *Invalid Date Scanning Format*
- *Same Name For Property And Method*
- *No Private Abstract Method In Trait*
- *Utf8 Encode And Decode Are Deprecated*
- *Magic Method Returntype Is Restricted*
- *If Then Return Favorite*
- *Typehints/CouldBeResource*
- *DateTimeImmutable Is Not Immutable*
- *New Functions In PHP 8.2*
- *Empty Array Detection*
- *Strict In_Array() Preference*
- *No Default For Referenced Parameter*
- *Clone Constant*
- *Enum Case Values*
- *Random extension*
- *Ip*

- *Could Inject Parameter*
- *ext/scrypt*
- *ext/teds*
- *Geospatial*
- *Feast usage*
- *date() versus DateTime Preference*
- *Unused Public Methods*
- *Could Be Abstract Method*
- *Solve Trait Constants*
- *No Keyword In Namespace*
- *Ambiguous Types With Variables*
- *Set Chaining Exception*
- *Could Use Class Operator*
- *Mbstring Unknown Encodings*
- *Named Argument And Variadic*
- *Coalesce And Ternary Operators Order*
- *Useless Assignation Of Promoted Property*
- *Method Property Confusion*
- *Could Use Namespace Magic Constant*
- *Incompatible Types With Incoming Values*
- *Method Usage*
- *Too Many Chained Calls*
- *Empty Loop*
- *Too Many Extractions*
- *No Variable Needed*
- *Possible TypeError*
- *Json_encode() Without Exceptions*
- *No Initial S In Variable Names*
- *Collect Calls*
- *Set Method Fnp*
- *Type Dodging*
- *Skip Empty Array*
- *Useless Method*
- *Weak Type With Array*
- *Class Could Be Readonly*
- *Multiple Type Cases In Switch*

- *Class Invasion*
- *Property Invasion*
- *Filter Not Raw*
- *Collect SetLocale*
- *Plus Plus Used On Strings*
- *No Max On Empty Array*
- *No Empty String With explode()*
- *Array Access On Literal Array*
- *Double Checks*
- *strpos() With Integers*
- *Unvalidated Data Cached In Session*
- *Ellipsis Merge*
- *Superglobals*
- *New Functions In PHP 8.3*
- *Use str_ends_with()*
- *Use str_starts_with()*
- *Missing Assignation In Command*
- *Mono Or Multibytes Favorite*
- *Argument Counts Per Calls*
- *Global Definitions*
- *Short Ternary*
- *Deprecated Mb_string Encodings*
- *Pre-Calculate Use*
- *No Valid Cast*
- *Init Then Update*
- *Different Constructors*
- *Sidelined Method*
- *Misused Yield*
- *Substr() In Loops*
- *Should Cache Local*
- *Php 8.3 New Classes*
- *Rewrote Final Class Constant*
- *Useless Constant Overwrite*
- *Blind Variable Used Beyond Loop*
- *Recalled Condition*
- *Incompatible Property Between Class And Trait*

- *Collect Methods Throwing Exceptions*
- *Static Call With Self*
- *Use DNF*
- *Collect Throw Calls*
- *Collect Compared Literals*
- *Could Be array_combine()*
- *Comparison On Different Types*
- *No Null For Index*
- *Collects Names*
- *Useless Try*
- *Converted Exceptions*
- *Method Is Not An If*
- *Default Then Discard*
- *Class Injection Count*
- *Collect Property Usage*
- *Collect Structures*
- *Collect Catch Calls*
- *Identical Case In Switch*
- *StandaloneType True False Null*
- *Constants In Traits*
- *Short Or Complete Comparison*
- *Could Use Yield From*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Inherited Class Constant Visibility*
- *Final Traits Are Final*
- *Multiline Expressions*
- *Typed Class Constants Usage*
- *Favorite Casting Method*
- *get_class() Without Argument*
- *Append And Assign Arrays*
- *Property Cannot Be Readonly*

- *Static Variable Initialisation*
- *Collect Graph Triplets*
- *Static Variable In Namespace*
- *Using Deprecated Feature*
- override
- *Don't Use The Type As Variable Name*
- *Static Methods Cannot Call Non-Static Methods*
- *Untyped No Default Properties*
- *Trait Is Not A Type*
- *Cannot Use Append For Reading*
- *Friend Attribute*
- *Count() To Array Append*
- *Useless Trailing Comma*
- *Reserved Methods*
- *Void Is Not A Reference*
- *Can't Call Generator*
- *Non Integer Nor String As Index*
- *Cant Instantiate Non Class*
- *PHP Native Attributes*
- *Injectable Version*
- *Multiple Property Declaration*
- *is_a() Versus instanceof*
- *Could Cast To Array*
- *Check After Null Safe Operator*
- *No Null With Null Safe Operator*
- *Invalid Cast*
- *Could Use strcontains()*
- *Could Drop Variable*
- *Could Be Readonly Property*
- *New Object Then Immediate Call*
- *Try Without Catch*
- *Wrong Precedence In Expression*
- *Only Variable Passed By Reference*
- *Property Export*
- *File_Put_Contents Using Array Argument*
- *Useless NullSafe Operator*

- *Nested Match*
- *Useless Short Ternary*
- *Combined Calls*
- *Empty Json Error*
- *Useless Coalesce*
- *Count() Is Not Negative*
- *Exit Without Argument*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*
- *Variable Parameter Ambiguity In Arrow Function*
- *Strpos() Less Than One*

Specs

Short name	All
Available in	Entreprise Edition, Exakat Cloud

15.3.2 Analyze

This ruleset centralizes a large number of classic trap and pitfalls when writing PHP.

Total : 501 analysis

- *Adding Zero*
- *Ambiguous Array Index*
- *Multiple Index Definition*
- *Empty Classes*
- *Forgotten Visibility*
- *Non Static Methods Called In A Static*
- *Old Style Constructor*
- *Static Methods Called From Object*
- *Empty Function*
- *Redeclared PHP Functions*
- *Methods Without Return*
- *Empty Interfaces*
- *Incompilable Files*
- *error_reporting() With Integers*
- *Eval() Usage*
- *Exit() Usage*

- *Forgotten Whitespace*
- *Iffectations*
- *Multiply By One*
- *@ Operator*
- *Not Not*
- *include_once() Usage*
- *Strpos()-like Comparison*
- *Throws An Assignement*
- *var_dump()… Usage*
- *__toString() Throws Exception*
- *Non Ascii Variables*
- *Used Once Variables*
- *Bad Constants Names*
- *Empty Traits*
- *Use With Fully Qualified Name*
- *Useless Instructions*
- *Abstract Static Methods*
- *Invalid Constant Name*
- *Multiple Constant Definition*
- *Wrong Optional Parameter*
- *Use === null*
- *$this Is Not An Array*
- *One Variable String*
- *Static Methods Can't Contain $this*
- *While(List() = Each())*
- *Several Instructions On The Same Line*
- *Multiples Identical Case*
- *Switch Without Default*
- *$this Belongs To Classes Or Traits*
- *Nested Ternary*
- *Non-constant Index In Array*
- *Undefined Constants*
- *Instantiating Abstract Class*
- *Class, Interface, Enum Or Trait With Identical Names*
- *Empty Try Catch*
- *Undefined Classes*

- *Htmlentities Calls*
- *Undefined Class Constants*
- *Used Once Variables (In Scope)*
- *Undefined Functions*
- *Deprecated PHP Functions*
- *Dangling Array References*
- *Queries In Loops*
- *Var Keyword*
- *Native Alias Functions Usage*
- *Uses Default Values*
- *Wrong Number Of Arguments*
- *Hardcoded Passwords*
- *Unresolved Classes*
- *Useless Constructor*
- *Implements Is For Interface*
- *Use const*
- *Unresolved Use*
- *Undefined Parent*
- *Undefined static:: Or self::*
- *Accessing Private*
- *Access Protected Structures*
- *Parent, Static Or Self Outside Class*
- *list() May Omit Variables*
- *Or Die*
- *Written Only Variables*
- *Must Return Methods*
- *Empty Instructions*
- *Overwritten Exceptions*
- *Foreach Reference Is Not Modified*
- *Don't Change Incomings*
- *Compared Comparison*
- *Useless Return*
- *Unused Classes*
- *Unpreprocessed Values*
- *Undefined Properties*
- *Short Open Tags*

- *Strict Comparison With Booleans*
- *Lone Blocks*
- *$this Is Not For Static Methods*
- *Global Usage*
- *Logical Should Use Symbolic Operators*
- *Could Use self*
- *Catch Overwrite Variable*
- *Deep Definitions*
- *Repeated print()*
- *Avoid Parenthesis With Language Construct*
- *Objects Don't Need References*
- *Lost References*
- *Constants Created Outside Its Namespace*
- *Fully Qualified Constants*
- *Never Used Properties*
- *No Real Comparison*
- *Should Use Local Class*
- *No Direct Call To Magic Method*
- *String May Hold A Variable*
- *Echo With Concat*
- *Unused Global*
- *Useless Global*
- *Preprocessable*
- *Useless Final*
- *Use Constant Instead Of Function*
- *Useless Unset*
- *Buried Assignation*
- *No array_merge() In Loops*
- *Useless Parenthesis*
- *Unresolved Instanceof*
- *Use PHP Object API*
- *Unthrown Exception*
- *Old Style __autoload()*
- *Altering Foreach Without Reference*
- *Use Pathinfo*
- *Should Use Existing Constants*

- *Hash Algorithms*
- *No Parenthesis For Language Construct*
- *No Hardcoded Path*
- *No Hardcoded Port*
- *Use Constant As Arguments*
- *Implied If*
- *Overwritten Literals*
- *Assign Default To Properties*
- *No Public Access*
- *Should Chain Exception*
- *Useless Interfaces*
- *Undefined Interfaces*
- *Double Instructions*
- *Should Use Prepared Statement*
- *Print And Die*
- *Unchecked Resources*
- *No Hardcoded Ip*
- *Else If Versus Elseif*
- *Unset In Foreach*
- *Could Be A Static Variable*
- *Multiple Class Declarations*
- *Empty Namespace*
- *Could Use Short Assignation*
- *Useless Abstract Class*
- *Static Loop*
- *Pre-increment*
- *Only Variable Returned By Reference*
- *Indices Are Int Or String*
- *Should Typecast*
- *No Self Referencing Constant*
- *No Direct Usage*
- *Break Outside Loop*
- *Avoid Substr() One*
- *Double Assignation*
- *Empty List*
- *Useless Brackets*

- *preg_replace With Option e*
- *eval() Without Try*
- *Relay Function*
- *func_get_arg() Modified*
- *Avoid get_class()*
- *Silently Cast Integer*
- *Timestamp Difference*
- *Unused Parameter*
- *Switch To Switch*
- *Wrong Parameter Type*
- *Wrong fopen() Mode*
- *Negative Power*
- *Already Parents Interface*
- *Use random_int()*
- *Can't Extend Final*
- *Ternary In Concat*
- *Using $this Outside A Class*
- *Undefined Trait*
- *No Hardcoded Hash*
- *Identical Conditions*
- *Unkown Regex Options*
- *No Choice*
- *Common Alternatives*
- *Logical Mistakes*
- *Uncaught Exceptions*
- *Same Conditions In Condition*
- *Return True False*
- *Useless Switch*
- *Could Use __DIR__*
- *Should Use Coalesce*
- *Make Global A Property*
- *If With Same Conditions*
- *Throw Functioncall*
- *Use Instanceof*
- *Results May Be Missing*
- *Always Positive Comparison*

- *Empty Blocks*
- *Throw In Destruct*
- *Use System Tmp*
- *Dependant Trait*
- *Hidden Use Expression*
- *Should Make Alias*
- *Multiple Identical Trait Or Interface*
- *Multiple Alias Definitions*
- *Nested Ifthen*
- *Cast To Boolean*
- *Failed Substr() Comparison*
- *Should Use Ternary Operator*
- *Unused Returned Value*
- *Modernize Empty With Expression*
- *Use Positive Condition*
- *Drop Else After Return*
- *Use ::Class Operator*
- *Don't Echo Error*
- *Useless Type Casting*
- *No isset() With empty()*
- *Useless Check*
- *Bail Out Early*
- *Don't Change The Blind Var*
- *Avoid Using stdClass*
- *Too Many Local Variables*
- *Illegal Name For Method*
- *Long Arguments*
- *Assigned Twice*
- *No Boolean As Default*
- *Forgotten Thrown*
- *Multiple Alias Definitions Per File*
- *__DIR__ Then Slash*
- *self, parent, static Outside Class*
- *Used Once Property*
- *Property Used In One Method Only*
- *No Need For Else*

- *Strange Name For Constants*
- *Too Many Finds*
- *Should Use SetCookie()*
- *Check All Types*
- *Missing Cases In Switch*
- *Repeated Regex*
- *No Class In Global*
- *Crc32() Might Be Negative*
- *Could Use str_repeat()*
- *Suspicious Comparison*
- *Strings With Strange Space*
- *No Empty Regex*
- *Alternative Syntax Consistence*
- *Randomly Sorted Arrays*
- *Only Variable Passed By Reference*
- *No Return Used*
- *No Reference On Left Side*
- *Implemented Methods Must Be Public*
- *Mixed Concat And Interpolation*
- *Too Many Injections*
- *Could Make A Function*
- *Forgotten Interface*
- *Avoid Optional Properties*
- *Mismatched Ternary Alternatives*
- *Mismatched Default Arguments*
- *Mismatched Typehint*
- *Scalar Or Object Property*
- *Assign And Lettered Logical Operator Precedence*
- *No Magic Method With Array*
- *Logical To in_array*
- *Pathinfo() Returns May Vary*
- *Multiple Type Variable*
- *Is Actually Zero*
- *Unconditional Break In Loop*
- *Could Be Else*
- *Next Month Trap*

- *Printf Number Of Arguments*
- *Ambiguous Static*
- *Don't Send $this In Constructor*
- *No get_class() With Null*
- *Maybe Missing New*
- *Unknown Pcre2 Option*
- *Parent First*
- *Invalid Regex*
- *Use Named Boolean In Argument Definition*
- *Same Variable Foreach*
- *Never Called Parameter*
- *Identical On Both Sides*
- *Identical Consecutive Expression*
- *No Reference For Ternary*
- *Unused Inherited Variable In Closure*
- *Inclusion Wrong Case*
- *Missing Include*
- *Useless Referenced Argument*
- *Useless Catch*
- *Possible Infinite Loop*
- *Test Then Cast*
- *Foreach On Object*
- *Property Could Be Local*
- *Too Many Native Calls*
- *Don't Unset Properties*
- *Strtr Arguments*
- *Missing Parenthesis*
- *Callback Function Needs Return*
- *Wrong Range Check*
- *Can't Instantiate Class*
- *strpos() Too Much*
- *Class-typed References*
- *Weak Typing*
- *Method Signature Must Be Compatible*
- *Mismatch Type And Default*
- *Check JSON*

- *Don't Mix ++*
- *Can't Throw Throwable*
- *Abstract Or Implements*
- *Incompatible Signature Methods*
- *Ambiguous Visibilities*
- *Undefined ::class*
- *Assert Function Is Reserved*
- *Could Be Abstract Class*
- *Continue Is For Loop*
- *Must Call Parent Constructor*
- *Undefined Variable*
- *Undefined Insteadof*
- *Method Collision Traits*
- *Class Could Be Final*
- *Only Variable For Reference*
- *Wrong Access Style to Property*
- *Invalid Pack Format*
- *Repeated Interface*
- *Don't Read And Write In One Expression*
- *Should Yield With Key*
- *Useless Method Alias*
- *Method Could Be Static*
- *Possible Missing Subpattern*
- *Assign And Compare*
- *Variable Is Not A Condition*
- *Insufficient Typehint*
- *Type Must Be Returned*
- *Clone With Non-Object*
- *Check On __Call Usage*
- *Avoid option arrays in constructors*
- *Already Parents Trait*
- *Trait Not Found*
- *Casting Ternary*
- *Concat Empty String*
- *Concat And Addition*
- *Useless Argument*

- *No Append On Source*
- *Memoize MagicCall*
- *Unused Class Constant*
- *Infinite Recursion*
- *Null Or Boolean Arrays*
- *Dependant Abstract Classes*
- *Wrong Type Returned*
- *Overwritten Source And Value*
- *Avoid mb_dectect_encoding()*
- *array_key_exists() Works On Arrays*
- *Class Without Parent*
- *Scalar Are Not Arrays*
- *array_merge() And Variadic*
- *Implode() Arguments Order*
- *strip_tags() Skips Closed Tag*
- *No Spread For Hash*
- *Max Level Of Nesting*
- *Should Use Explode Args*
- *Use array_slice()*
- *Too Many Array Dimensions*
- *Coalesce And Concat*
- *Comparison Is Always The Same*
- *Incompatible Signature Methods With Covariance*
- *Interfaces Is Not Implemented*
- *No Literal For Reference*
- *Interfaces Don't Ensure Properties*
- *Non Nullable Getters*
- *Too Many Dereferencing*
- *Can't Implement Traversable*
- *Is_A() With String*
- *Mbstring Unknown Encoding*
- *Mbstring Third Arg*
- *Merge If Then*
- *Wrong Type With Call*
- *Not Equal Is Not !==*
- *Don't Collect Void*

- *Wrong Typed Property Default*
- *Hidden Nullable Typehint*
- *Fn Argument Variable Confusion*
- *Missing Abstract Method*
- *Undefined Constant Name*
- *Using Deprecated Method*
- *Cyclic References*
- *Double Object Assignation*
- *Wrong Argument Type*
- *Mismatch Properties Typehints*
- *No Need For Triple Equal*
- *Array_merge Needs Array Of Arrays*
- *Wrong Type For Native PHP Function*
- *Catch With Undefined Variable*
- *Swapped Arguments*
- *Different Argument Counts*
- *Unknown Parameter Name*
- *Missing Some Returntype*
- *Don't Pollute Global Space*
- *Mismatch Parameter Name*
- *Multiple Declaration Of Strict_types*
- *Array_Fill() With Objects*
- *Modified Typed Parameter*
- *Assumptions*
- *Unsupported Types With Operators*
- *Wrong Attribute Configuration*
- *Cancelled Parameter*
- *Constant Typo Looks Like A Variable*
- *Array_Map() Passes By Value*
- *Missing __isset() Method*
- *Modify Immutable*
- *Cannot Use Static For Closure*
- *Only First Byte*
- *Inherited Property Type Must Match*
- *No Object As Index*
- *Htmlentities Using Default Flag*

- *Wrong Argument Name With PHP Function*
- *Duplicate Named Parameter*
- *PHP Native Class Type Compatibility*
- *Missing Attribute Attribute*
- *No Null For Native PHP Functions*
- *No Referenced Void*
- *PHP Native Interfaces and Return Type*
- *New Functions In PHP 8.1*
- *Never Keyword*
- *False To Array Conversion*
- *Float Conversion As Index*
- *Cannot Call Static Trait Method Directly*
- *Overwritten Foreach Var*
- *Recycled Variables*
- *Check Division By Zero*
- *Don't Reuse Foreach Source*
- *Unreachable Method*
- *Unfinished Object*
- *Undefined Enumcase*
- *Don't Add Seconds*
- *Use Constants As Returns*
- *Identical Variables In Foreach*
- *Can't Overwrite Final Constant*
- *Unsupported Operand Types*
- *version_compare Operator*
- *Do Not Cast To Int*
- *Could Be Spaceship*
- *Unused Enumeration Case*
- *Useless Null Coalesce*
- *Throw Raw Exceptions*
- *Implicit Conversion To Int*
- *Use Same Types For Comparisons*
- *Wrong Locale*
- *Parent Is Not Static*
- *No Magic Method For Enum*
- *No Readonly Assignation In Global*

- *Overload Existing Names*
- *Retyped Reference*
- *Wrong Type With Default*
- *Sprintf Format Compilation*
- *Invalid Date Scanning Format*
- *Same Name For Property And Method*
- *DateTimeImmutable Is Not Immutable*
- *No Default For Referenced Parameter*
- *Clone Constant*
- *Could Inject Parameter*
- *Unused Public Methods*
- *Mbstring Unknown Encodings*
- *Coalesce And Ternary Operators Order*
- *Useless Assignation Of Promoted Property*
- *Empty Loop*
- *Useless Method*
- *Weak Type With Array*
- *No Empty String With explode()*
- *Array Access On Literal Array*
- *Double Checks*
- *strpos() With Integers*
- *Missing Assignation In Command*
- *No Valid Cast*
- *Misused Yield*
- *No Null For Index*
- *Useless Try*
- *Converted Exceptions*
- *Method Is Not An If*
- *Default Then Discard*
- *Identical Case In Switch*
- *StandaloneType True False Null*
- *Could Use Yield From*
- *Append And Assign Arrays*
- *Static Methods Cannot Call Non-Static Methods*
- *Trait Is Not A Type*
- *Cannot Use Append For Reading*

- *Void Is Not A Reference*
- *Can't Call Generator*
- *Non Integer Nor String As Index*
- *Cant Instantiate Non Class*
- *Check After Null Safe Operator*
- *No Null With Null Safe Operator*
- *Invalid Cast*
- *New Object Then Immediate Call*
- *Wrong Precedence In Expression*
- *Only Variable Passed By Reference*
- *Nested Match*
- *Useless Short Ternary*
- *Empty Json Error*
- *Useless Coalesce*
- *Count() Is Not Negative*
- *Exit Without Argument*
- *Strpos() Less Than One*

Specs

Short name	Analyze
Available in	Entreprise Edition, Community Edition, Exakat Cloud
Reports	*Ambassador*, *Diplomat*

15.3.3 Appinfo

A set of rules that describes with PHP features is used in the code.

Total : 388 analysis

- *Array Index*
- *Multidimensional Arrays*
- *PHP Arrays Index*
- *Classes Names*
- *Constant Definition*
- *Magic Methods*
- *Old Style Constructor*
- *Static Methods*
- *Static Properties*

- *Constants Usage*
- *Magic Constant Usage*
- *PHP Constant Usage*
- *Defined Exceptions*
- *Thrown Exceptions*
- *ext/apc*
- *ext/bcmath*
- *ext/bzip2*
- *ext/calendar*
- *ext/crypto*
- *ext/ctype*
- *ext/curl*
- *ext/date*
- *ext/dba*
- *ext/dom*
- *ext/enchant*
- *ext/exif*
- *ext/fileinfo*
- *ext/filter*
- *ext/ftp*
- *ext/gd*
- *ext/gmp*
- *ext/gnupgp*
- *ext/hash*
- *ext/iconv*
- *ext/json*
- *ext/ldap*
- *ext/libxml*
- *ext/mbstring*
- *ext/mcrypt*
- *ext/mongo*
- *ext/mssql*
- *ext/mysql*
- *ext/mysqli*
- *ext/odbc*
- *ext/openssl*

- *ext/pcre*
- *ext/pdo*
- *ext/pgsql*
- *ext/phar*
- *ext/posix*
- *ext/readline*
- *ext/reflection*
- *ext/sem*
- *ext/session*
- *ext/shmop*
- *ext/simplexml*
- *ext/snmp*
- *ext/soap*
- *ext/sockets*
- *ext/spl*
- *ext/sqlite*
- *ext/sqlite3*
- *ext/ssh2*
- *ext/standard*
- *ext/tidy*
- *ext/tokenizer*
- *ext/wddx*
- *ext/xdebug*
- *ext/xmlreader*
- *ext/xmlrpc*
- *ext/xmlwriter*
- *ext/xsl*
- *ext/yaml*
- *ext/zip*
- *ext/zlib*
- *Closures Glossary*
- *Functions Glossary*
- *Recursive Functions*
- *Redeclared PHP Functions*
- *Typehints*
- *Interfaces Names*

- *Aliases*
- *Namespaces Glossary*
- *Autoloading*
- *Goto Names*
- *__halt_compiler*
- *Incompilable Files*
- *Labels*
- *Throw*
- *Trigger Errors*
- *Caught Expressions*
- *Eval() Usage*
- *Exit() Usage*
- *@ Operator*
- *include_once() Usage*
- *Using Short Tags*
- *Binary Glossary*
- *Email Addresses*
- *Heredoc Delimiter Glossary*
- *Hexadecimal Glossary*
- *Md5 Strings*
- *Nowdoc Delimiter Glossary*
- *Octal Glossary*
- *URL List*
- *Variable References*
- *Static Variables*
- *Variables With Long Names*
- *PHP Variables*
- *Variable Variables*
- *Abstract Class Usage*
- *Abstract Methods Usage*
- *Clone Usage*
- *Variable Constants*
- *Redefined PHP Traits*
- *Traits Usage*
- *Trait Names*
- *PHP Alternative Syntax*

- *Short Syntax For Arrays*
- *Inclusions*
- *ext/file*
- *ext/array*
- *ext/info*
- *ext/math*
- *$HTTP_RAW_POST_DATA Usage*
- *Assertions*
- *Cast Usage*
- *Function Subscripting*
- *Nested Loops*
- *<?= Usage*
- *ext/pcntl*
- *ext/redis*
- *ext/sqlsrv*
- *Ellipsis Usage*
- *ext/0mq*
- *ext/memcache*
- *ext/memcached*
- *Dynamic Function Call*
- *Has Variable Arguments*
- *Multiple Catch*
- *Dynamically Called Classes*
- *Conditioned Function*
- *Conditioned Constants*
- *Method Is A Generator*
- *Try With Finally*
- *Dereferencing String And Arrays*
- *Constant Scalar Expressions*
- *ext/imagick*
- *ext/oci8*
- *ext/imap*
- *Overwritten Class Constants*
- *Dynamic Class Constant*
- *Dynamic Methodcall*
- *Dynamic New*

- *Dynamic Property*
- *Dynamic Classes*
- *Multiple Classes In One File*
- *File Uploads*
- *ext/intl*
- *Dynamic Code*
- *ext/pspell*
- *No Direct Access*
- *ext/opcache*
- *ext/expect*
- *ext/gettext*
- *Super Global Usage*
- *Global Usage*
- *Namespaces*
- *Deep Definitions*
- *File Is Not Definitions Only*
- *Usage Of class_alias()*
- *ext/apache*
- *ext/eaccelerator*
- *ext/fpm*
- *Resources Usage*
- *Shell Usage*
- *File Usage*
- *Mail Usage*
- *Dynamic Calls*
- *Test Class*
- *ext/dio*
- *ext/phalcon*
- *Composer Usage*
- *Composer's autoload*
- *ext/apcu*
- *ext/trader*
- *ext/mailparse*
- *ext/mail*
- *Scalar Typehint Usage*
- *Return Typehint Usage*

- *ext/ob*
- *ext/geoip*
- *ext/event*
- *ext/amqp*
- *ext/gearman*
- *ext/com*
- *ext/gmagick*
- *ext/ibase*
- *ext/inotify*
- *ext/xdiff*
- *ext/ev*
- *ext/php-ast*
- *ext/xml*
- *ext/xhprof*
- *Else Usage*
- *Anonymous Classes*
- *Coalesce*
- *Directives Usage*
- *Global In Global*
- *ext/fann*
- *Use Web*
- *Use Cli*
- *Error Messages*
- *Php7 Relaxed Keyword*
- *ext/pecl_http*
- *Uses Environment*
- *Redefined Methods*
- *Is CLI Script*
- *PHP Bugfixes*
- *ext/tokyotyrant*
- *ext/v8js*
- *Yield Usage*
- *Yield From Usage*
- *Pear Usage*
- *ext/lua*
- *List With Keys*

- *ext/suhosin*
- *Can't Disable Function*
- *Functions Using Reference*
- *List Short Syntax*
- *Use Nullable Type*
- *Multiple Exceptions Catch()*
- *ext/rar*
- *ext/nsapi*
- *ext/newt*
- *ext/ncurses*
- *Use Composer Lock*
- *String*
- *ext/mongodb*
- *Error_Log() Usage*
- *SQL queries*
- *ext/libsodium*
- *ext/ds*
- *Use Cookies*
- *Group Use Declaration*
- *ext/sphinx*
- *Try With Multiple Catch*
- *ext/grpc*
- *Use Browscap*
- *Use Debug*
- *PSR-16 Usage*
- *PSR-7 Usage*
- *PSR-6 Usage*
- *PSR-3 Usage*
- *PSR-11 Usage*
- *PSR-13 Usage*
- *ext/stats*
- *Dependency Injection*
- *Courier Anti-Pattern*
- *ext/gender*
- *ext/judy*
- *Yii usage*

- *Codeigniter usage*
- *Laravel usage*
- *Symfony usage*
- *Wordpress usage*
- *Ez cms usage*
- *Joomla usage*
- *Non Breakable Space In Names*
- *Multiple Functions Declarations*
- swoole
- *Manipulates NaN*
- *Manipulates INF*
- *Const Or Define*
- *strict_types Preference*
- *Declare strict_types Usage*
- *Encoding Usage*
- *Ticks Usage*
- *ext/xattr*
- *ext/rdkafka*
- *ext/fam*
- *ext/parle*
- *Regex Inventory*
- *Too Complex Expression*
- *Drupal Usage*
- *Phalcon Usage*
- *Fuel PHP Usage*
- *Argon2 Usage*
- *Crypto Usage*
- *Type Array Index*
- *Incoming Variable Index Inventory*
- *ext/vips*
- *Dl() Usage*
- *Environment Variables*
- *ext/igbinary*
- *Fallback Function*
- *ext/hrtime*
- *ext/xxtea*

- *ext/uopz*
- *ext/varnish*
- *ext/opencensus*
- *ext/leveldb*
- *ext/db2*
- *ext/zookeeper*
- *ext/cmark*
- *Const Visibility Usage*
- *ext/eio*
- *ext/lzf*
- *ext/msgpack*
- *Case Insensitive Constants*
- *Handle Arrays With Callback*
- *Trailing Comma In Calls*
- *Can't Disable Class*
- *ext/seaslog*
- *Pack Format Inventory*
- *Printf Format Inventory*
- *ext/decimal*
- *ext/psr*
- *ext/sdl*
- *ext/wasm*
- *Path lists*
- *Typed Property Usage*
- *ext/weakref*
- *ext/pcov*
- *Constant Dynamic Creation*
- *An OOP Factory*
- *PHP Overridden Function*
- *ext/svm*
- *ext/ffi*
- *ext/password*
- *ext/zend_monitor*
- *ext/uuid*
- *Numeric Literal Separator*
- *Use Covariance*

- *Use Contravariance*
- *Use Arrow Functions*
- *Spread Operator For Array*
- *Nested Ternary Without Parenthesis*
- *Typo 3 usage*
- *Concrete5 usage*
- *Immutable Signature*
- *Shell commands*
- *Links Between Parameter And Argument*
- *Php 8.0 Variable Syntax Tweaks*
- *Php 8.0 Only TypeHints*
- *Union Typehint*
- *Protocol lists*
- *Use PHP Attributes*
- *Use NullSafe Operator*
- *Use Closure Trailing Comma*
- *Class Overreach*
- *Final Constant*
- *Never Typehint Usage*
- *Named Parameter Usage*
- *First Class Callable*
- *Never Keyword*
- *Mixed Typehint Usage*
- *Nested Attributes*
- *New Initializers*
- *Promoted Properties*
- *Intersection Typehint*
- *Readonly Usage*
- *Use class_alias()*
- *ext/protobuf*
- *Constant Scalar Expression*
- *Sylius usage*
- *Extensions yar*
- *Excimer*
- *ext/pkcs11*
- *ext/spx*

- *Stomp*
- *ext/CSV*
- *Array Addition*
- *Ice framework*
- *Extensions/Exttaint*
- *Random extension*
- *Ip*
- *ext/scrypt*
- *ext/teds*
- *Geospatial*
- *Feast usage*
- *date() versus DateTime Preference*
- *Plus Plus Used On Strings*
- *Short Ternary*
- *Use DNF*
- *Use Enum Case In Constant Expression*
- *New Dynamic Class Constant Syntax*
- *Untyped No Default Properties*
- *File_Put_Contents Using Array Argument*

Specs

Short name	Appinfo
Available in	Entreprise Edition, Community Edition, Exakat Cloud
Reports	*Diplomat*, *Ambassador*

15.3.4 Attributes

This ruleset gathers all rules that rely on PHP 8.+ attributes.

Total : 8 analysis

- *Exit-like Methods*
- *Using Deprecated Method*
- *Modify Immutable*
- *Missing Attribute Attribute*
- *Using Deprecated Feature*
- override
- *Friend Attribute*

- *PHP Native Attributes*

Specs

Short name	Attributes
Available in	Entreprise Edition, Exakat Cloud

15.3.5 CE

This ruleset is the Community Edition list. It holds all the analysis that are in the community edition version of Exakat.

Total : 625 analysis

- *Adding Zero*
- *Array Index*
- *Multidimensional Arrays*
- *Multiple Index Definition*
- *PHP Arrays Index*
- *Classes Names*
- *Constant Definition*
- *Magic Methods*
- *Forgotten Visibility*
- *Non Static Methods Called In A Static*
- *Old Style Constructor*
- *Static Methods*
- *Static Methods Called From Object*
- *Static Properties*
- *Constants With Strange Names*
- *Constants Usage*
- *Constants Names*
- *Magic Constant Usage*
- *PHP Constant Usage*
- *Defined Exceptions*
- *Thrown Exceptions*
- *ext/apc*
- *ext/bcmath*
- *ext/bzip2*
- *ext/calendar*
- *ext/crypto*

- *ext/ctype*
- *ext/curl*
- *ext/date*
- *ext/dba*
- *ext/dom*
- *ext/enchant*
- *ext/exif*
- *ext/fileinfo*
- *ext/filter*
- *ext/ftp*
- *ext/gd*
- *ext/gmp*
- *ext/gnupgp*
- *ext/hash*
- *ext/iconv*
- *ext/json*
- *ext/ldap*
- *ext/libxml*
- *ext/mbstring*
- *ext/mcrypt*
- *ext/mongo*
- *ext/mssql*
- *ext/mysql*
- *ext/mysqli*
- *ext/odbc*
- *ext/openssl*
- *ext/pcre*
- *ext/pdo*
- *ext/pgsql*
- *ext/phar*
- *ext/posix*
- *ext/readline*
- *ext/reflection*
- *ext/sem*
- *ext/session*
- *ext/shmop*

- *ext/simplexml*
- *ext/snmp*
- *ext/soap*
- *ext/sockets*
- *ext/spl*
- *ext/sqlite*
- *ext/sqlite3*
- *ext/ssh2*
- *ext/standard*
- *ext/tidy*
- *ext/tokenizer*
- *ext/wddx*
- *ext/xdebug*
- *ext/xmlreader*
- *ext/xmlrpc*
- *ext/xmlwriter*
- *ext/xsl*
- *ext/yaml*
- *ext/zip*
- *ext/zlib*
- *Closures Glossary*
- *Functions Glossary*
- *Recursive Functions*
- *Redeclared PHP Functions*
- *Typehints*
- *Interfaces Names*
- *Aliases*
- *Namespaces Glossary*
- *Autoloading*
- *Goto Names*
- *__halt_compiler*
- *Incompilable Files*
- *Labels*
- *Throw*
- *Trigger Errors*
- *Caught Expressions*

- *error_reporting() With Integers*
- *Eval() Usage*
- *Exit() Usage*
- *Forgotten Whitespace*
- *Multiply By One*
- *@ Operator*
- *Not Not*
- *include_once() Usage*
- *Using Short Tags*
- *Strpos()-like Comparison*
- *Throws An Assignement*
- *var_dump()… Usage*
- *Binary Glossary*
- *Email Addresses*
- *Heredoc Delimiter Glossary*
- *Hexadecimal Glossary*
- *Md5 Strings*
- *Nowdoc Delimiter Glossary*
- *Octal Glossary*
- *URL List*
- *Variable References*
- *Static Variables*
- *Variables With Long Names*
- *Variable Variables*
- *Abstract Class Usage*
- *Abstract Methods Usage*
- *Clone Usage*
- *Variable Constants*
- *Redefined PHP Traits*
- *Traits Usage*
- *Trait Names*
- *PHP Alternative Syntax*
- *Short Syntax For Arrays*
- *Inclusions*
- *ext/file*
- *ext/array*

- *ext/info*
- *ext/math*
- *$HTTP_RAW_POST_DATA Usage*
- *Useless Instructions*
- *Multiple Constant Definition*
- *Wrong Optional Parameter*
- *Use === null*
- *Assertions*
- *One Variable String*
- *Cast Usage*
- *Function Subscripting*
- *Nested Loops*
- *<?= Usage*
- *Static Methods Can't Contain $this*
- *While(List() = Each())*
- *Multiples Identical Case*
- *Switch Without Default*
- *Nested Ternary*
- *Undefined Constants*
- *Custom Constant Usage*
- *ext/pcntl*
- *ext/redis*
- *Is An Extension Function*
- *Is An Extension Interface*
- *Is An Extension Constant*
- *Htmlentities Calls*
- *Defined Class Constants*
- *Undefined Class Constants*
- *Used Once Variables (In Scope)*
- *Undefined Functions*
- *Deprecated PHP Functions*
- *Dangling Array References*
- *ext/sqlsrv*
- *Native Alias Functions Usage*
- *Uses Default Values*
- *Wrong Number Of Arguments*

- *Ellipsis Usage*
- *Use const*
- *ext/0mq*
- *ext/memcache*
- *ext/memcached*
- *Is Extension Trait*
- *Dynamic Function Call*
- *Has Variable Arguments*
- *Multiple Catch*
- *Dynamically Called Classes*
- *Conditioned Function*
- *Method Is A Generator*
- *Try With Finally*
- *Dereferencing String And Arrays*
- *list() May Omit Variables*
- *Or Die*
- *Constant Scalar Expressions*
- *Exit-like Methods*
- *Must Return Methods*
- *ext/imagick*
- *ext/oci8*
- *Overwritten Exceptions*
- *Foreach Reference Is Not Modified*
- *ext/imap*
- *Overwritten Class Constants*
- *Dynamic Class Constant*
- *Dynamic Methodcall*
- *Dynamic New*
- *Dynamic Property*
- *Dynamic Classes*
- *Multiple Classes In One File*
- *File Uploads*
- *ext/intl*
- *Dynamic Code*
- *ext/pspell*
- *No Direct Access*

- *ext/opcache*
- *Is PHP Constant*
- *ext/expect*
- *Defined Properties*
- *Undefined Properties*
- *Has Magic Method*
- *ext/gettext*
- *Strict Comparison With Booleans*
- *Lone Blocks*
- *Super Global Usage*
- *Global Usage*
- *Logical Should Use Symbolic Operators*
- *Namespaces*
- *Deep Definitions*
- *Constant Class*
- *File Is Not Definitions Only*
- *Repeated print()*
- *Avoid Parenthesis With Language Construct*
- *Objects Don't Need References*
- *No Real Comparison*
- *Usage Of class_alias()*
- *ext/apache*
- *ext/eaccelerator*
- *ext/fpm*
- *No Direct Call To Magic Method*
- *Useless Final*
- *Use Constant Instead Of Function*
- *Resources Usage*
- *Useless Unset*
- *No array_merge() In Loops*
- *Useless Parenthesis*
- *Shell Usage*
- *File Usage*
- *Mail Usage*
- *Dynamic Calls*
- *Use PHP Object API*

- *Altering Foreach Without Reference*
- *Test Class*
- *Use Pathinfo*
- *ext/dio*
- *No Parenthesis For Language Construct*
- *ext/phalcon*
- *Use Constant As Arguments*
- *Implied If*
- *Composer Usage*
- *Composer's autoload*
- *Should Chain Exception*
- *Undefined Interfaces*
- *ext/apcu*
- *Should Use Prepared Statement*
- *Print And Die*
- *Unchecked Resources*
- *ext/trader*
- *ext/mailparse*
- *ext/mail*
- *Else If Versus Elseif*
- *Multiple Class Declarations*
- *Empty Namespace*
- *Could Use Short Assignation*
- *Scalar Typehint Usage*
- *Return Typehint Usage*
- *ext/ob*
- *Pre-increment*
- *ext/geoip*
- *ext/event*
- *ext/amqp*
- *ext/gearman*
- *ext/com*
- *ext/gmagick*
- *ext/ibase*
- *ext/inotify*
- *ext/xdiff*

- *ext/ev*
- *ext/php-ast*
- *ext/xml*
- *ext/xhprof*
- *Indices Are Int Or String*
- *Should Typecast*
- *Else Usage*
- *Avoid Substr() One*
- *Anonymous Classes*
- *Coalesce*
- *Directives Usage*
- *Useless Brackets*
- *preg_replace With Option e*
- *eval() Without Try*
- *Is Not Class Family*
- *Global In Global*
- *ext/fann*
- *Use Web*
- *Use Cli*
- *Avoid get_class()*
- *Silently Cast Integer*
- *Error Messages*
- *Timestamp Difference*
- *Php7 Relaxed Keyword*
- *ext/pecl_http*
- *Uses Environment*
- *Wrong Parameter Type*
- *Redefined Methods*
- *Redefined Class Constants*
- *Redefined Default*
- *Wrong fopen() Mode*
- *Is CLI Script*
- *PHP Bugfixes*
- *Negative Power*
- *Use random_int()*
- *Ternary In Concat*

- *ext/tokyotyrant*
- *ext/v8js*
- *Yield Usage*
- *Yield From Usage*
- *Pear Usage*
- *Undefined Trait*
- *Identical Conditions*
- *Unkown Regex Options*
- *No Choice*
- *Logical Mistakes*
- *ext/lua*
- *Same Conditions In Condition*
- *Return True False*
- *Could Use __DIR__*
- *Should Use Coalesce*
- *List With Keys*
- *If With Same Conditions*
- *ext/suhosin*
- *Throw Functioncall*
- *Can't Disable Function*
- *Functions Using Reference*
- *Use Instanceof*
- *List Short Syntax*
- *Results May Be Missing*
- *Use Nullable Type*
- *Always Positive Comparison*
- *Multiple Exceptions Catch()*
- *Empty Blocks*
- *Throw In Destruct*
- *Use System Tmp*
- *Hidden Use Expression*
- *Should Make Alias*
- *Multiple Identical Trait Or Interface*
- *Multiple Alias Definitions*
- *Failed Substr() Comparison*
- *Should Use Ternary Operator*

- *Drop Else After Return*
- *Use ::Class Operator*
- *ext/rar*
- *Don't Echo Error*
- *Useless Type Casting*
- *No isset() With empty()*
- *Useless Check*
- *ext/nsapi*
- *ext/newt*
- *ext/ncurses*
- *Use Composer Lock*
- *String*
- *ext/mongodb*
- *Error_Log() Usage*
- *SQL queries*
- *ext/libsodium*
- *Multiple Alias Definitions Per File*
- *__DIR__ Then Slash*
- *ext/ds*
- *Use Cookies*
- *Group Use Declaration*
- *Repeated Regex*
- *No Class In Global*
- *Could Use str_repeat()*
- *Strings With Strange Space*
- *No Empty Regex*
- *ext/sphinx*
- *Try With Multiple Catch*
- *ext/grpc*
- *Use Browscap*
- *Use Debug*
- *No Reference On Left Side*
- *PSR-16 Usage*
- *PSR-7 Usage*
- *PSR-6 Usage*
- *PSR-3 Usage*

- *PSR-11 Usage*
- *PSR-13 Usage*
- *ext/stats*
- *Dependency Injection*
- *Courier Anti-Pattern*
- *ext/gender*
- *ext/judy*
- *Yii usage*
- *Codeigniter usage*
- *Laravel usage*
- *Symfony usage*
- *Wordpress usage*
- *Ez cms usage*
- *Joomla usage*
- *Non Breakable Space In Names*
- *Multiple Functions Declarations*
- swoole
- *Manipulates NaN*
- *Manipulates INF*
- *Const Or Define*
- *strict_types Preference*
- *Declare strict_types Usage*
- *Encoding Usage*
- *Ticks Usage*
- *Assign And Lettered Logical Operator Precedence*
- *No Magic Method With Array*
- *ext/xattr*
- *ext/rdkafka*
- *ext/fam*
- *ext/parle*
- *Regex Inventory*
- *Is Actually Zero*
- *Unconditional Break In Loop*
- *Too Complex Expression*
- *Is A Magic Property*
- *Next Month Trap*

- *Printf Number Of Arguments*
- *Drupal Usage*
- *Phalcon Usage*
- *Fuel PHP Usage*
- *Argon2 Usage*
- *Crypto Usage*
- *Type Array Index*
- *Incoming Variable Index Inventory*
- *ext/vips*
- *Dl() Usage*
- *Environment Variables*
- *Invalid Regex*
- *Same Variable Foreach*
- *ext/igbinary*
- *Identical On Both Sides*
- *No Reference For Ternary*
- *Unused Inherited Variable In Closure*
- *Fallback Function*
- *Useless Catch*
- *ext/hrtime*
- *ext/xxtea*
- *ext/uopz*
- *ext/varnish*
- *ext/opencensus*
- *ext/leveldb*
- *ext/db2*
- *Don't Unset Properties*
- *Strtr Arguments*
- *Missing Parenthesis*
- *Callback Function Needs Return*
- *ext/zookeeper*
- *ext/cmark*
- *strpos() Too Much*
- *Class-typed References*
- *Check JSON*
- *ext/eio*

- *Undefined ::class*
- *ext/lzf*
- *ext/msgpack*
- *Case Insensitive Constants*
- *Handle Arrays With Callback*
- *Detect Current Class*
- *Trailing Comma In Calls*
- *Undefined Variable*
- *Undefined Insteadof*
- *Can't Disable Class*
- *ext/seaslog*
- *Wrong Access Style to Property*
- *Invalid Pack Format*
- *Don't Read And Write In One Expression*
- *Pack Format Inventory*
- *Printf Format Inventory*
- *idn_to_ascii() New Default*
- *ext/decimal*
- *ext/psr*
- *Should Yield With Key*
- *Useless Method Alias*
- *ext/sdl*
- *ext/wasm*
- *Path lists*
- *Possible Missing Subpattern*
- *Assign And Compare*
- *Typed Property Usage*
- *ext/weakref*
- *ext/pcov*
- *Constant Dynamic Creation*
- *PHP 8.0 Removed Functions*
- *PHP 8.0 Removed Constants*
- *An OOP Factory*
- *Type Must Be Returned*
- *Self-Transforming Variables*
- *Check On __Call Usage*

- *PHP Overridden Function*
- *ext/svm*
- *ext/ffi*
- *ext/password*
- *ext/zend_monitor*
- *ext/uuid*
- *Casting Ternary*
- *Concat And Addition*
- *New Functions In PHP 7.4*
- *curl_version() Has No Argument*
- *Php 7.4 New Classes*
- *New Constants In PHP 7.4*
- *Wrong Type Returned*
- *Methods That Should Not Be Used*
- *PHP 7.4 Removed Functions*
- *mb_strrpos() Third Argument*
- *array_key_exists() Works On Arrays*
- *Reflection Export() Is Deprecated*
- *Unbinding Closures*
- *Numeric Literal Separator*
- *Class Without Parent*
- *Scalar Are Not Arrays*
- *Create Compact Variables*
- *PHP 7.4 Reserved Keyword*
- *No More Curly Arrays*
- *Overwritten Properties*
- *Overwritten Constant*
- *Create Magic Property*
- *Set Parent Definition*
- *Makes Class Constant Definition*
- *Follow Closure Definition*
- *PHP 7.4 Constant Deprecation*
- *Implode() Arguments Order*
- *PHP 7.4 Removed Directives*
- *Hash Algorithms Incompatible With PHP 7.4-*
- *openssl_random_pseudo_byte() Second Argument*

- *strip_tags() Skips Closed Tag*
- *Use Covariance*
- *Use Contravariance*
- *Set Array Class Definition*
- *Use Arrow Functions*
- *Environment Variable Usage*
- *Indentation Levels*
- *Spread Operator For Array*
- *Nested Ternary Without Parenthesis*
- *Cyclomatic Complexity*
- *Should Use Explode Args*
- *Use array_slice()*
- *Coalesce And Concat*
- *Interfaces Is Not Implemented*
- *No Literal For Reference*
- *Collect Literals*
- *Collect Parameter Counts*
- *Collect Local Variable Counts*
- *Dereferencing Levels*
- *Make Functioncall With Reference*
- *Foreach() Favorite*
- *Can't Implement Traversable*
- *Is_A() With String*
- *Mbstring Unknown Encoding*
- *Collect Mbstring Encodings*
- *Filter To add_slashes()*
- *Mbstring Third Arg*
- *Typehinting Stats*
- *Typo 3 usage*
- *Concrete5 usage*
- *Immutable Signature*
- *Merge If Then*
- *Wrong Type With Call*
- *Shell commands*
- *Inclusions*
- *Typehint Order*

- *New Order*
- *Links Between Parameter And Argument*
- *Collect Class Interface Counts*
- *Collect Class Depth*
- *Collect Class Children Count*
- *Not Equal Is Not !==*
- *Constant Order*
- *Php 8.0 Variable Syntax Tweaks*
- *New Functions In PHP 8.0*
- *Php 8.0 Only TypeHints*
- *Union Typehint*
- *Wrong Typed Property Default*
- *Signature Trailing Comma*
- *Throw Was An Expression*
- *Collect Property Counts*
- *Collect Method Counts*
- *Collect Class Constant Counts*
- *Could Be String*
- *Could Be Boolean*
- *Could Be Array Typehint*
- *Could Be CIT*
- *Protocol lists*
- *Type Could Be Integer*
- *Call Order*
- *Could Be Null*
- *Uses PHP 8 Match()*
- *Could Be Float*
- *Collect Parameter Names*
- *Wrong Type For Native PHP Function*
- *Fossilized Methods List*
- *Collect Static Class Changes*
- *Use PHP Attributes*
- *Use NullSafe Operator*
- *Use Closure Trailing Comma*
- *Unknown Parameter Name*
- *Missing Some Returntype*

- *Collects Variables*
- *Collect Global Variables*
- *Collect Readability*
- *Collect Definitions Statistics*
- *Collect Class Traits Counts*
- *Collect Native Calls Per Expressions*
- *Function With Dynamic Code*
- *Cast Unset Usage*
- *$php_errormsg Usage*
- *Mismatch Parameter Name*
- *Collect Files Dependencies*
- *Collect Atom Counts*
- *Collect Classes Dependencies*
- *Collect Php Structures*
- *Collect Use Counts*
- *PHP 8.0 Removed Directives*
- *Unsupported Types With Operators*
- *Negative Start Index In Array*
- *Nullable With Constant*
- *PHP 8.0 Resources Turned Into Objects*
- *PHP 80 Named Parameter Variadic*
- *Final Private Methods*
- *Array_Map() Passes By Value*

Specs

Short name	CE
Available in	Entreprise Edition, Exakat Cloud

15.3.6 CI-checks

This ruleset is a collection of important rules to run in a CI pipeline.

Total : 178 analysis

- *Adding Zero*
- *Multiple Index Definition*
- *Forgotten Visibility*
- *Non Static Methods Called In A Static*

- *Static Methods Called From Object*
- *Constants With Strange Names*
- *Redeclared PHP Functions*
- *error_reporting() With Integers*
- *Exit() Usage*
- *Forgotten Whitespace*
- *Multiply By One*
- *@ Operator*
- *Not Not*
- *Strpos()-like Comparison*
- *Throws An Assignement*
- *var_dump()… Usage*
- *Useless Instructions*
- *Multiple Constant Definition*
- *Wrong Optional Parameter*
- *Use === null*
- *One Variable String*
- *Static Methods Can't Contain $this*
- *While(List() = Each())*
- *Multiples Identical Case*
- *Switch Without Default*
- *Nested Ternary*
- *Undefined Constants*
- *Htmlentities Calls*
- *Undefined Class Constants*
- *Undefined Functions*
- *Deprecated PHP Functions*
- *Dangling Array References*
- *Native Alias Functions Usage*
- *Uses Default Values*
- *Wrong Number Of Arguments*
- *Use const*
- *list() May Omit Variables*
- *Or Die*
- *Must Return Methods*
- *Overwritten Exceptions*

- *Foreach Reference Is Not Modified*
- *Undefined Properties*
- *Strict Comparison With Booleans*
- *Lone Blocks*
- *Logical Should Use Symbolic Operators*
- *Repeated print()*
- *Avoid Parenthesis With Language Construct*
- *Objects Don't Need References*
- *No Real Comparison*
- *No Direct Call To Magic Method*
- *Useless Final*
- *Use Constant Instead Of Function*
- *Useless Unset*
- *No array_merge() In Loops*
- *Useless Parenthesis*
- *Use PHP Object API*
- *Altering Foreach Without Reference*
- *Use Pathinfo*
- *No Parenthesis For Language Construct*
- *Use Constant As Arguments*
- *Implied If*
- *Should Chain Exception*
- *Undefined Interfaces*
- *Should Use Prepared Statement*
- *Print And Die*
- *Unchecked Resources*
- *Else If Versus Elseif*
- *Multiple Class Declarations*
- *Empty Namespace*
- *Could Use Short Assignation*
- *Pre-increment*
- *Indices Are Int Or String*
- *Should Typecast*
- *Avoid Substr() One*
- *Useless Brackets*
- *preg_replace With Option e*

- *eval() Without Try*
- *Avoid get_class()*
- *Silently Cast Integer*
- *Timestamp Difference*
- *Wrong Parameter Type*
- *Redefined Class Constants*
- *Redefined Default*
- *Wrong fopen() Mode*
- *Negative Power*
- *Use random_int()*
- *Ternary In Concat*
- *Undefined Trait*
- *Identical Conditions*
- *No Choice*
- *Logical Mistakes*
- *Same Conditions In Condition*
- *Return True False*
- *Could Use __DIR__*
- *Should Use Coalesce*
- *If With Same Conditions*
- *Throw Functioncall*
- *Use Instanceof*
- *Results May Be Missing*
- *Always Positive Comparison*
- *Empty Blocks*
- *Throw In Destruct*
- *Use System Tmp*
- *Hidden Use Expression*
- *Should Make Alias*
- *Multiple Identical Trait Or Interface*
- *Multiple Alias Definitions*
- *Failed Substr() Comparison*
- *Should Use Ternary Operator*
- *Drop Else After Return*
- *Use ::Class Operator*
- *Don't Echo Error*

- *Useless Type Casting*
- *No isset() With empty()*
- *Useless Check*
- *Multiple Alias Definitions Per File*
- *__DIR__ Then Slash*
- *Repeated Regex*
- *No Class In Global*
- *Could Use str_repeat()*
- *Strings With Strange Space*
- *No Empty Regex*
- *No Reference On Left Side*
- *Assign And Lettered Logical Operator Precedence*
- *No Magic Method With Array*
- *Is Actually Zero*
- *Unconditional Break In Loop*
- *Next Month Trap*
- *Printf Number Of Arguments*
- *Invalid Regex*
- *Same Variable Foreach*
- *Identical On Both Sides*
- *No Reference For Ternary*
- *Unused Inherited Variable In Closure*
- *Useless Catch*
- *Don't Unset Properties*
- *Strtr Arguments*
- *Missing Parenthesis*
- *Callback Function Needs Return*
- *strpos() Too Much*
- *Class-typed References*
- *Check JSON*
- *Undefined ::class*
- *Undefined Variable*
- *Undefined Insteadof*
- *Wrong Access Style to Property*
- *Invalid Pack Format*
- *Should Yield With Key*

- *Useless Method Alias*
- *Possible Missing Subpattern*
- *Assign And Compare*
- *Type Must Be Returned*
- *Check On __Call Usage*
- *Casting Ternary*
- *Concat And Addition*
- *Wrong Type Returned*
- *Class Without Parent*
- *Scalar Are Not Arrays*
- *Implode() Arguments Order*
- *strip_tags() Skips Closed Tag*
- *Should Use Explode Args*
- *Use array_slice()*
- *Coalesce And Concat*
- *Interfaces Is Not Implemented*
- *No Literal For Reference*
- *Can't Implement Traversable*
- *Is_A() With String*
- *Mbstring Unknown Encoding*
- *Mbstring Third Arg*
- *Merge If Then*
- *Wrong Type With Call*
- *Not Equal Is Not !==*
- *Wrong Typed Property Default*
- *Wrong Type For Native PHP Function*
- *Unknown Parameter Name*
- *Missing Some Returntype*
- *Htmlentities Using Default Flag*
- *Wrong Argument Name With PHP Function*

Specs

Short name	CI-checks
Available in	Entreprise Edition, Exakat Cloud

15.3.7 Changed Behavior

Ruleset with all rules that identify changed behavior across PHP versions. This means that some syntax behave differently, depending on PHP version.

Total : 611 analysis

- *Ambiguous Array Index*
- *Array Index*
- *True False Inconsistant Case*
- *Magic Constant Usage*
- *PHP Constant Usage*
- *Caught Exceptions*
- *Defined Exceptions*
- *ext/apc*
- *ext/bcmath*
- *ext/bzip2*
- *ext/calendar*
- *ext/sqlite*
- *ext/sqlite3*
- *Closures Glossary*
- *Recursive Functions*
- *Empty Interfaces*
- *Interfaces Usage*
- *Interfaces Names*
- *PHP Interfaces*
- *Aliases*
- *Namespaces Glossary*
- *Autoloading*
- *Use Lower Case For Parent, Static And Self*
- *Goto Names*
- *Labels*
- *Functions Removed In PHP 5.4*
- *For Using Functioncall*

- *No Plus One*
- *Throws An Assignement*
- *__toString() Throws Exception*
- *Binary Glossary*
- *Email Addresses*
- *HTTP Status Code*
- *All strings*
- *Interface Arguments*
- *Variable References*
- *Abstract Class Usage*
- *Variable Constants*
- *Empty Traits*
- *Redefined PHP Traits*
- *Traits Usage*
- *Trait Names*
- *Short Syntax For Arrays*
- *Unused Use*
- *Use With Fully Qualified Name*
- *Used Use*
- *ext/array*
- *Non-lowercase Keywords*
- *Abstract Static Methods*
- *Interface Methods*
- *Trait Methods*
- *Invalid Constant Name*
- *Multiple Constant Definition*
- *Wrong Optional Parameter*
- *Use === null*
- *$this Is Not An Array*
- *Cast Usage*
- *Closure May Use $this*
- *While(List() = Each())*
- *Several Instructions On The Same Line*
- *Function Subscripting, Old Style*
- *$this Belongs To Classes Or Traits*
- *Non-constant Index In Array*

- *Undefined Constants*
- *Custom Constant Usage*
- *Is An Extension Interface*
- *Is An Extension Constant*
- *Bracketless Blocks*
- *Undefined Class Constants*
- *Used Private Methods*
- *Unused Private Methods*
- *crypt() Without Salt*
- *mcrypt_create_iv() With Default Values*
- *Native Alias Functions Usage*
- *Unresolved Classes*
- *** For Exponent*
- *Useless Constructor*
- *Unresolved Use*
- *Unused Constants*
- *Undefined static:: Or self::*
- *Parent, Static Or Self Outside Class*
- *Is Extension Trait*
- *Dynamically Called Classes*
- *Conditioned Function*
- *Method Is A Generator*
- *Use password_hash()*
- *Dereferencing String And Arrays*
- *Empty With Expression*
- *Use Const And Functions*
- *Constant Scalar Expressions*
- *Unreachable Code*
- *Must Return Methods*
- *Interpolation*
- *Empty Slots In Arrays*
- *Method Is Not For Fluent Interface*
- *PHP Handlers Usage*
- *Unused Methods*
- *Used Methods*
- *Overwritten Exceptions*

- *Direct Injection*
- *Return void*
- *Return With Parenthesis*
- *Unused Classes*
- *Used Classes*
- *Is PHP Constant*
- *Sensitive Argument*
- *Undefined Properties*
- *Short Open Tags*
- *Lone Blocks*
- *Avoid sleep()/usleep()*
- *PHP Keywords As Names*
- *Const With Array*
- *Namespaces*
- *Repeated print()*
- *Constants Created Outside Its Namespace*
- *Fully Qualified Constants*
- *Use This*
- *ext/apache*
- *Slow Functions*
- *Useless Final*
- *No array_merge() In Loops*
- *Unresolved Instanceof*
- *Unthrown Exception*
- *Magic Visibility*
- *No Parenthesis For Language Construct*
- *Unused Label*
- *Methodcall On New*
- *Used Interfaces*
- *Unused Interfaces*
- *Useless Interfaces*
- *Undefined Interfaces*
- *ext/apcu*
- *Should Use Prepared Statement*
- *Class Const With Array*
- *Unresolved Catch*

- *Reserved Keywords In PHP 7*
- *Could Be A Static Variable*
- *Empty Namespace*
- *Could Use Short Assignation*
- *Useless Abstract Class*
- *Scalar Typehint Usage*
- *Return Typehint Usage*
- *Global Import*
- *Pre-increment*
- *ext/amqp*
- *ext/php-ast*
- *Indices Are Int Or String*
- *isset() With Constant*
- *Is Global Constant*
- *Coalesce*
- *List With Array Appends*
- *Simple Global Variable*
- *Parenthesis As Parameter*
- *Foreach Don't Change Pointer*
- *Unicode Escape Partial*
- *Directives Usage*
- *eval() Without Try*
- *No List With String*
- *Usort Sorting In PHP 7.0*
- *func_get_arg() Modified*
- *Register Globals*
- *Avoid get_class()*
- *Used Trait*
- *Unused Traits*
- *Wrong Parameter Type*
- *Redefined Methods*
- *Redefined Class Constants*
- *Redefined Default*
- *Wrong fopen() Mode*
- *Confusing Names*
- *PHP Bugfixes*

- *preg_match_all() Flag*
- *Safe Curl Options*
- *Already Parents Interface*
- *Use random_int()*
- *Cant Use Return Value In Write Context*
- *set_exception_handler() Warning*
- *Using $this Outside A Class*
- *Pear Usage*
- *Undefined Trait*
- *No Choice*
- *Exception Order*
- *Uncaught Exceptions*
- *Undefined Caught Exceptions*
- *GPRC Aliases*
- *Indirect Injection*
- *List With Keys*
- *Throw Functioncall*
- *Use Instanceof*
- *Make One Call With Array*
- *List Short Syntax*
- *Defined Parent MP*
- *Multiple Exceptions Catch()*
- *Used Protected Method*
- *Unused Protected Methods*
- *No Count With 0*
- *Dependant Trait*
- *Hidden Use Expression*
- *Could Use Alias*
- *Should Make Alias*
- *Multiple Identical Trait Or Interface*
- *Multiple Alias Definitions*
- *Use ::Class Operator*
- *Don't Echo Error*
- *time() Vs strtotime()*
- *Unitialized Properties*
- *PHP 7.1 Microseconds*

- *Getting Last Element*
- *Rethrown Exceptions*
- *Avoid array_push()*
- *$GLOBALS Or global*
- *Close Tags Consistency*
- *Fetch One Row Format*
- *Avoid glob() Usage*
- *Could Be Protected Property*
- *Raised Access Level*
- *Class Function Confusion*
- *Forgotten Thrown*
- *Multiple Alias Definitions Per File*
- *__DIR__ Then Slash*
- *self, parent, static Outside Class*
- *Used Once Property*
- *Should Use session_regenerateid()*
- *Strange Name For Constants*
- *Could Be Typehinted Callable*
- *Encoded Simple Letters*
- *Too Many Finds*
- *Set Cookie Safe Arguments*
- *New Constants In PHP 7.2*
- *Group Use Declaration*
- *Displays Text*
- *No Class In Global*
- *Crc32() Might Be Negative*
- *Use Debug*
- *Could Typehint*
- *DI Cyclic Dependencies*
- *Too Many Injections*
- *Dependency Injection*
- *Courier Anti-Pattern*
- *Could Make A Function*
- *Forgotten Interface*
- *Manipulates NaN*
- *Manipulates INF*

- *Mkdir Default*
- *strict_types Preference*
- *Declare strict_types Usage*
- *Encoding Usage*
- *Group Use Trailing Comma*
- *Logical Operators Favorite*
- *Isset Multiple Arguments*
- *No Magic Method With Array*
- *Avoid Concat In Loop*
- *No Substr Minus One*
- *Logical To in_array*
- *Shell Favorite*
- *Could Be Protected Class Constant*
- *Could Be Protected Method*
- *Pathinfo() Returns May Vary*
- *Is Actually Zero*
- *Session Lazy Write*
- *Session Variables*
- *Cookies Variables*
- *Date Formats*
- *Simple Switch And Match*
- *Substring First*
- *Use List With Foreach*
- *Crypto Usage*
- *Php 7.2 New Class*
- *Avoid set_error_handler $context Argument*
- *Hash Will Use Objects*
- *Maybe Missing New*
- *Use PHP7 Encapsed Strings*
- *Type Array Index*
- *Dl() Usage*
- *Invalid Regex*
- *Use Named Boolean In Argument Definition*
- *Not A Scalar Type*
- *Sqlite3 Requires Single Quotes*
- *No Net For Xml Load*

- *Useless Referenced Argument*
- *Double array_flip()*
- *Useless Catch*
- *Foreach On Object*
- *Dynamic Library Loading*
- *PHP 7.3 Last Empty Argument*
- *Use Count Recursive*
- *Processing Collector*
- *Missing Parenthesis*
- *strpos() Too Much*
- *Do In Base*
- *Weak Typing*
- *Cache Variable Outside Loop*
- *Use The Blind Var*
- *Nonexistent Variable In compact()*
- *Mismatch Type And Default*
- *Flexible Heredoc*
- *Comparisons Orientation*
- *Could Be Static Closure*
- *move_uploaded_file Instead Of copy*
- *Can't Throw Throwable*
- *Abstract Or Implements*
- *Ambiguous Visibilities*
- *Hash Algorithms Incompatible With PHP 7.1-*
- *Undefined ::class*
- *PHP 7.0 Scalar Typehints*
- *PHP 7.1 Scalar Typehints*
- *PHP 7.2 Scalar Typehints*
- *Locally Used Property In Trait*
- *Handle Arrays With Callback*
- *Use is_countable*
- *Detect Current Class*
- *Avoid Real*
- *Const Or Define Preference*
- *Constant Case Preference*
- *Assert Function Is Reserved*

- *Must Call Parent Constructor*
- *Undefined Insteadof*
- *Method Collision Traits*
- *Closure Could Be A Callback*
- *Add Default Value*
- *filter_input() As A Source*
- *Invalid Pack Format*
- *Repeated Interface*
- *No Reference For Static Property*
- *Printf Format Inventory*
- *PHP Exception*
- *Unreachable Class Constant*
- *Avoid Self In Interface*
- *Safe HTTP Headers*
- *Useless Method Alias*
- *Isset() On The Whole Array*
- *Self Using Trait*
- *Multiple Usage Of Same Trait*
- *Possible Missing Subpattern*
- *array_key_exists() Speedup*
- *ext/pcov*
- *Constant Dynamic Creation*
- *An OOP Factory*
- *Type Must Be Returned*
- *Inconsistent Variable Usage*
- *Self-Transforming Variables*
- *Caught Variable*
- *Implode One Arg*
- *Insecure Integer Validation*
- *Incoming Values*
- *Useless Default Argument*
- *Trait Not Found*
- *Concat And Addition*
- *Minus One On Error*
- *Autoappend*
- *Memoize MagicCall*

- *Regex On Arrays*
- *Always Use Function With array_key_exists()*
- *curl_version() Has No Argument*
- *Unused Class Constant*
- *Could Use Trait*
- *Generator Cannot Return*
- *Methods That Should Not Be Used*
- *Use Array Functions*
- *Avoid mb_dectect_encoding()*
- *mb_strrpos() Third Argument*
- *array_key_exists() Works On Arrays*
- *Reflection Export() Is Deprecated*
- *Numeric Literal Separator*
- *Class Without Parent*
- *Serialize Magic Method*
- *Scalar Are Not Arrays*
- *Php Native Reference Variable*
- *Create Compact Variables*
- *Propagate Constants*
- *No ENT_IGNORE*
- *Overwritten Properties*
- *Set Clone Link*
- *Create Magic Property*
- *Set Parent Definition*
- *Make Class Method Definition*
- *Create Default Values*
- *Makes Class Constant Definition*
- *Set Class Remote Definition With Injection*
- *Solve Trait Methods*
- *Follow Closure Definition*
- *Implode() Arguments Order*
- *Hash Algorithms Incompatible With PHP 7.4-*
- *No Spread For Hash*
- *Set Class Remote Definition With Return Typehint*
- *Set Class Remote Definition With Local New*
- *Set Class Remote Definition With Typehint*

- *Set Class Remote Definition With Global*
- *Set Class Property Definition With Typehint*
- *Set Array Class Definition*
- *Set Class Method Remote Definition*
- *Use Arrow Functions*
- *Environment Variable Usage*
- *Indentation Levels*
- *Nested Ternary Without Parenthesis*
- *Cyclomatic Complexity*
- *Use array_slice()*
- *Comparison Is Always The Same*
- *Interfaces Is Not Implemented*
- *No Literal For Reference*
- *Interfaces Don't Ensure Properties*
- *Duplicate Literal*
- *No Weak SSL Crypto*
- *No mb_substr In Loop*
- *Collect Parameter Counts*
- *Collect Local Variable Counts*
- *Use The Case Value*
- *Too Many Dereferencing*
- *Can't Implement Traversable*
- *Is_A() With String*
- *Filter To add_slashes()*
- *Typehinting Stats*
- *Wrong Case Namespaces*
- *Create Foreach Default*
- *Merge If Then*
- *Inclusions*
- *Typehint Order*
- *New Order*
- *Links Between Parameter And Argument*
- *Exceeding Typehint*
- *Collect Class Interface Counts*
- *Collect Class Depth*
- *Collect Class Children Count*

- *Coalesce Equal*
- *Possible Interfaces*
- *Php 8.0 Only TypeHints*
- *Uninitialized Property*
- *Throw Was An Expression*
- *Unused Trait In Class*
- *Keep Files Access Restricted*
- *Possible Alias Confusion*
- *Collect Property Counts*
- *Collect Method Counts*
- *Safe Phpvariables*
- *Extended Typehints*
- *Double Object Assignation*
- *Call Order*
- *Array_merge Needs Array Of Arrays*
- *Abstract Away*
- *Large Try Block*
- *Catch With Undefined Variable*
- *Fossilized Methods List*
- *Collect Static Class Changes*
- *Use PHP Attributes*
- *Use NullSafe Operator*
- *Collect Readability*
- *Collect Class Traits Counts*
- *Collect Native Calls Per Expressions*
- *Function With Dynamic Code*
- *$php_errormsg Usage*
- *Mismatch Parameter Name*
- *Multiple Declaration Of Strict_types*
- *Assumptions*
- *Collect Use Counts*
- *Useless Typehint*
- *Negative Start Index In Array*
- *Php Ext Stub Property And Method*
- *Optimize Explode()*
- *Unused Exception Variable*

- *Cancelled Parameter*
- *Missing __isset() Method*
- *Long Preparation For Throw*
- *Modify Immutable*
- *Avoid get_object_vars()*
- *Cannot Use Static For Closure*
- *Only First Byte*
- *Restrict Global Usage*
- *Inherited Static Variable*
- *Htmlentities Using Default Flag*
- *Openssl Encrypt Default Algorithm Change*
- *PHP Native Class Type Compatibility*
- *Missing Attribute Attribute*
- *$FILES full_path*
- *No Null For Native PHP Functions*
- *Calling Static Trait Method*
- *PHP Native Interfaces and Return Type*
- *Final Constant*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Never Keyword*
- *Float Conversion As Index*
- *Nested Attributes*
- *Promoted Properties*
- *Null Type Favorite*
- *Variable Anf Property Typehint*
- *Extends stdClass*
- *Scope Resolution Operator*
- *Cant Overload Constants*
- *Variable Is A Local Constant*
- *This Could Be Iterable*
- *Abstract Class Constants*
- *Check Division By Zero*
- *Getter And Setter*
- *Multiple Similar Calls*

- *Use File Append*
- *Readonly Usage*
- *Missing Visibility*
- *Could Use Existing Constant*
- *Collect Dependency Extension*
- *Public Reach To Private Methods*
- *Unreachable Method*
- *String Int Comparison*
- *Add Return Typehint*
- *Create Magic Method*
- *PHP 8.1 Resources Turned Into Objects*
- *Do Not Cast To Int*
- *Constant Scalar Expression*
- *No Readonly Assignation In Global*
- *Could Set Property Default*
- *No Private Abstract Method In Trait*
- *Typehints/CouldBeResource*
- *New Functions In PHP 8.2*
- *Ip*
- *Could Inject Parameter*
- *date() versus DateTime Preference*
- *Unused Public Methods*
- *Solve Trait Constants*
- *No Keyword In Namespace*
- *Ambiguous Types With Variables*
- *Set Chaining Exception*
- *Could Use Class Operator*
- *Mbstring Unknown Encodings*
- *Named Argument And Variadic*
- *Coalesce And Ternary Operators Order*
- *Useless Assignation Of Promoted Property*
- *Method Property Confusion*
- *Could Use Namespace Magic Constant*
- *Incompatible Types With Incoming Values*
- *Method Usage*
- *Empty Loop*

- *Too Many Extractions*
- *Possible TypeError*
- *Collect Calls*
- *Set Method Fnp*
- *Type Dodging*
- *Skip Empty Array*
- *Weak Type With Array*
- *Filter Not Raw*
- *Collect SetLocale*
- *No Max On Empty Array*
- *No Empty String With explode()*
- *Array Access On Literal Array*
- *strpos() With Integers*
- *Unvalidated Data Cached In Session*
- *Ellipsis Merge*
- *New Functions In PHP 8.3*
- *Missing Assignation In Command*
- *Short Ternary*
- *Deprecated Mb_string Encodings*
- *Pre-Calculate Use*
- *Init Then Update*
- *Different Constructors*
- *Misused Yield*
- *Substr() In Loops*
- *Php 8.3 New Classes*
- *Recalled Condition*
- *Incompatible Property Between Class And Trait*
- *Could Be array_combine()*
- *Comparison On Different Types*
- *No Null For Index*
- *Useless Try*
- *Class Injection Count*
- *Collect Property Usage*
- *Collect Structures*
- *Collect Catch Calls*
- *Identical Case In Switch*

- *StandaloneType True False Null*
- *Constants In Traits*
- *Short Or Complete Comparison*
- *Could Use Yield From*
- *Static Variable Can Default To Arbitrary Expression*
- *Multiline Expressions*
- *Append And Assign Arrays*
- *Property Cannot Be Readonly*
- *Static Variable Initialisation*
- *Collect Graph Triplets*
- *Don't Use The Type As Variable Name*
- *Friend Attribute*
- *Count() To Array Append*
- *Useless Trailing Comma*
- *Reserved Methods*
- *Void Is Not A Reference*
- *Non Integer Nor String As Index*
- *PHP Native Attributes*
- *Injectable Version*
- *Multiple Property Declaration*
- *Could Cast To Array*
- *Check After Null Safe Operator*
- *No Null With Null Safe Operator*
- *Invalid Cast*
- *Could Use strcontains()*
- *Could Drop Variable*
- *Could Be Readonly Property*
- *Try Without Catch*
- *Wrong Precedence In Expression*
- *Only Variable Passed By Reference*
- *Property Export*
- *File_Put_Contents Using Array Argument*
- *Useless NullSafe Operator*
- *Nested Match*
- *Useless Short Ternary*
- *Combined Calls*

- *Empty Json Error*
- *Useless Coalesce*
- *Count() Is Not Negative*
- *Exit Without Argument*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*
- *Variable Parameter Ambiguity In Arrow Function*
- *Strpos() Less Than One*

Specs

Short name	ChangedBehavior
Available in	Entreprise Edition, Community Edition, Exakat Cloud

15.3.8 Class Review

This ruleset focuses on classes construction issues, and their related structures : traits, interfaces, methods, properties, constants.

Total : 100 analysis

- *Final Class Usage*
- *Final Methods Usage*
- *Classes Mutually Extending Each Other*
- *Could Use self*
- *Constant Class*
- *Redefined Property*
- *Useless Interfaces*
- *Could Be Class Constant*
- *Could Be A Static Variable*
- *No Self Referencing Constant*
- *Property Could Be Private*
- *Redefined Methods*
- *Class Should Be Final By Ocramius*
- *Could Be Protected Property*
- *Raised Access Level*
- *Could Be Private Class Constant*
- *Could Be Protected Class Constant*
- *Method Could Be Private Method*

- *Could Be Protected Method*
- *Property Could Be Local*
- *Could Be Abstract Class*
- *Class Could Be Final*
- *Wrong Access Style to Property*
- *Unreachable Class Constant*
- *Avoid Self In Interface*
- *Self Using Trait*
- *Method Could Be Static*
- *Avoid option arrays in constructors*
- *Memoize MagicCall*
- *Unused Class Constant*
- *Dependant Abstract Classes*
- *Wrong Type Returned*
- *Disconnected Classes*
- *Class Without Parent*
- *Interfaces Is Not Implemented*
- *Interfaces Don't Ensure Properties*
- *Non Nullable Getters*
- *Insufficient Property Typehint*
- *Exceeding Typehint*
- *Nullable Without Check*
- *Fossilized Method*
- *Uninitialized Property*
- *Wrong Typed Property Default*
- *Hidden Nullable Typehint*
- *Missing Abstract Method*
- *Unused Trait In Class*
- *Cyclic References*
- *Double Object Assignation*
- *Mismatch Properties Typehints*
- *Different Argument Counts*
- *Could Be Parent Method*
- *Cancel Common Method*
- *Modified Typed Parameter*
- *Useless Typehint*

- *Could Be Stringable*
- *Final Private Methods*
- *Missing __isset() Method*
- *No Static Variable In A Method*
- *Inherited Property Type Must Match*
- *Abstract Class Constants*
- *Missing Visibility*
- *Unreachable Method*
- *Undefined Methods*
- *Unfinished Object*
- *Undefined Enumcase*
- *Can't Overwrite Final Constant*
- *No Constructor In Interface*
- *Lowered Access Level*
- *Used Once Trait*
- *Parent Is Not Static*
- *No Magic Method For Enum*
- *No Readonly Assignation In Global*
- *Could Set Property Default*
- *Wrong Type With Default*
- *Same Name For Property And Method*
- *Magic Method Returntype Is Restricted*
- *Could Inject Parameter*
- *Set Chaining Exception*
- *Useless Assignation Of Promoted Property*
- *Type Dodging*
- *Class Could Be Readonly*
- *Class Invasion*
- *Property Invasion*
- *Different Constructors*
- *Sidelined Method*
- *Rewrote Final Class Constant*
- *Useless Constant Overwrite*
- *Incompatible Property Between Class And Trait*
- *Static Call With Self*
- *Property Cannot Be Readonly*

- *Static Methods Cannot Call Non-Static Methods*
- *Untyped No Default Properties*
- *Trait Is Not A Type*
- *Cant Instantiate Non Class*
- *Multiple Property Declaration*
- *No Null With Null Safe Operator*
- *Could Be Readonly Property*
- *New Object Then Immediate Call*
- *Property Export*
- *Useless NullSafe Operator*

Specs

Short name	ClassReview
Available in	Entreprise Edition, Exakat Cloud

15.3.9 Classdependencies

This ruleset list all dependencies between classes : heritage and type.

Total : 1 analysis

- *Collect Classes Dependencies*

Specs

Short name	Classdependencies
Available in	Entreprise Edition, Exakat Cloud
Reports	report-classdependencies

15.3.10 Coding conventions

This ruleset centralizes all analysis related to coding conventions. Sometimes, those are easy to extract with static analysis, and so here they are. No all o them are available.

Total : 29 analysis

- *No Plus One*
- *All Uppercase Variables*
- *Use With Fully Qualified Name*
- *Non-lowercase Keywords*
- *Echo Or Print*
- *Constant Comparison*

- *Closing Tags*
- *One Letter Functions*
- *Wrong Class Name Case*
- *Bracketless Blocks*
- *Use const*
- *Unusual Case For PHP Functions*
- *Interpolation*
- *Empty Slots In Arrays*
- *Multiple Classes In One File*
- *Return With Parenthesis*
- *Should Be Single Quote*
- *Yoda Comparison*
- *Mixed Concat And Interpolation*
- *Order Of Declaration*
- *Heredoc Delimiter*
- *Mistaken Concatenation*
- *Don't Be Too Manual*
- *Similar Integers*
- *Wrong Function Name Case*
- *Wrong Case Namespaces*
- *Wrong Typehinted Name*
- *Multiple Property Declaration On One Line*
- *Useless Trailing Comma*

Specs

Short name	Coding Conventions
Available in	Entreprise Edition, Exakat Cloud

15.3.11 CompatibilityPHP53

This ruleset centralizes all analysis for the migration from PHP 5.2 to 5.3.

Total : 98 analysis

- *Non Static Methods Called In A Static*
- *ext/dba*
- *Use Lower Case For Parent, Static And Self*
- *Break With 0*

- *Binary Glossary*
- *Malformed Octal*
- *Short Syntax For Arrays*
- *New Functions In PHP 5.4*
- *New Functions In PHP 5.5*
- *New Functions In PHP 5.6*
- *Multiple Definition Of The Same Argument*
- *Function Subscripting*
- *Closure May Use $this*
- *Switch With Too Many Default*
- *Ellipsis Usage*
- *Exponent Usage*
- *Dereferencing String And Arrays*
- *::class*
- *Foreach With list()*
- *Use Const And Functions*
- *Constant Scalar Expressions*
- *__debugInfo() Usage*
- *Mixed Keys In Array*
- *Const With Array*
- *Methodcall On New*
- *Hash Algorithms Incompatible With PHP 5.3*
- *Class Const With Array*
- *Variable Global*
- *Null On New*
- *isset() With Constant*
- *Anonymous Classes*
- *Unicode Escape Syntax*
- *New Functions In PHP 7.0*
- *PHP 7.0 New Classes*
- *PHP 7.0 New Interfaces*
- *Parenthesis As Parameter*
- *PHP5 Indirect Variable Expression*
- *Php 7 Indirect Expression*
- *Unicode Escape Partial*
- *Define Constants With Array*

- *No List With String*
- *PHP7 Dirname*
- *Php7 Relaxed Keyword*
- *Cant Use Return Value In Write Context*
- *Php 7.1 New Class*
- *List With Keys*
- *List Short Syntax*
- *Use Nullable Type*
- *Multiple Exceptions Catch()*
- *No String With Append*
- *Group Use Declaration*
- *New Functions In PHP 7.3*
- *Cant Inherit Abstract Method*
- *Group Use Trailing Comma*
- *Child Class Removes Typehint*
- *No Substr Minus One*
- *Integer As Property*
- *No get_class() With Null*
- *Php 7.2 New Class*
- *List With Reference*
- *PHP 7.3 Last Empty Argument*
- *Flexible Heredoc*
- *Const Visibility Usage*
- *Hash Algorithms Incompatible With PHP 7.1-*
- *PHP 7.0 Scalar Typehints*
- *PHP 7.1 Scalar Typehints*
- *PHP 7.2 Scalar Typehints*
- *Continue Is For Loop*
- *Trailing Comma In Calls*
- *Direct Call To __clone()*
- *No Return For Generator*
- *No Reference For Static Property*
- *Typed Property Usage*
- *Concat And Addition*
- *Unpacking Inside Arrays*
- *Generator Cannot Return*

- *Coalesce Equal*
- *Enum Usage*
- *$FILES full_path*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *Cant Overload Constants*
- *Constant Scalar Expression*
- *No Private Abstract Method In Trait*
- *Clone Constant*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP53
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*

15.3.12 CompatibilityPHP54

This ruleset centralizes all analysis for the migration from PHP 5.3 to 5.4.

Total : 95 analysis

- *Non Static Methods Called In A Static*
- *Use Lower Case For Parent, Static And Self*
- *Functions Removed In PHP 5.4*
- *Break With Non Integer*

- *Calltime Pass By Reference*
- *Malformed Octal*
- *New Functions In PHP 5.5*
- *New Functions In PHP 5.6*
- *Multiple Definition Of The Same Argument*
- *Switch With Too Many Default*
- *crypt() Without Salt*
- *Ellipsis Usage*
- *Exponent Usage*
- *Dereferencing String And Arrays*
- *::class*
- *Foreach With list()*
- *Use Const And Functions*
- *Constant Scalar Expressions*
- *__debugInfo() Usage*
- *Mixed Keys In Array*
- *Const With Array*
- *Hash Algorithms Incompatible With PHP 5.3*
- *Hash Algorithms Incompatible With PHP 5.4/5.5*
- *Class Const With Array*
- *Variable Global*
- *Null On New*
- *isset() With Constant*
- *Anonymous Classes*
- *Unicode Escape Syntax*
- *New Functions In PHP 7.0*
- *PHP 7.0 New Classes*
- *PHP 7.0 New Interfaces*
- *Parenthesis As Parameter*
- *PHP5 Indirect Variable Expression*
- *Php 7 Indirect Expression*
- *Unicode Escape Partial*
- *Define Constants With Array*
- *No List With String*
- *PHP7 Dirname*
- *Php7 Relaxed Keyword*

- *Cant Use Return Value In Write Context*
- *Php 7.1 New Class*
- *List With Keys*
- *List Short Syntax*
- *Use Nullable Type*
- *Multiple Exceptions Catch()*
- *No String With Append*
- *Group Use Declaration*
- *New Functions In PHP 7.3*
- *Cant Inherit Abstract Method*
- *Group Use Trailing Comma*
- *Child Class Removes Typehint*
- *No Substr Minus One*
- *Integer As Property*
- *No get_class() With Null*
- *Php 7.2 New Class*
- *List With Reference*
- *PHP 7.3 Last Empty Argument*
- *Flexible Heredoc*
- *Const Visibility Usage*
- *Hash Algorithms Incompatible With PHP 7.1-*
- *PHP 7.0 Scalar Typehints*
- *PHP 7.1 Scalar Typehints*
- *PHP 7.2 Scalar Typehints*
- *Continue Is For Loop*
- *Trailing Comma In Calls*
- *Direct Call To __clone()*
- *No Return For Generator*
- *No Reference For Static Property*
- *Typed Property Usage*
- *Concat And Addition*
- *Unpacking Inside Arrays*
- *Generator Cannot Return*
- *Coalesce Equal*
- *Enum Usage*
- *$FILES full_path*

- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *Cant Overload Constants*
- *Constant Scalar Expression*
- *No Private Abstract Method In Trait*
- *Clone Constant*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP54
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*

15.3.13 CompatibilityPHP55

This ruleset centralizes all analysis for the migration from PHP 5.4 to 5.5.

Total : 88 analysis

- *Non Static Methods Called In A Static*
- *ext/apc*
- *ext/mysql*
- *Functions Removed In PHP 5.5*
- *Malformed Octal*
- *New Functions In PHP 5.6*
- *Multiple Definition Of The Same Argument*

- *Switch With Too Many Default*
- *Ellipsis Usage*
- *Exponent Usage*
- *Use password_hash()*
- *Use Const And Functions*
- *Constant Scalar Expressions*
- *__debugInfo() Usage*
- *Const With Array*
- *Hash Algorithms Incompatible With PHP 5.3*
- *Hash Algorithms Incompatible With PHP 5.4/5.5*
- *Class Const With Array*
- *Variable Global*
- *Null On New*
- *isset() With Constant*
- *Anonymous Classes*
- *Unicode Escape Syntax*
- *New Functions In PHP 7.0*
- *PHP 7.0 New Classes*
- *PHP 7.0 New Interfaces*
- *Parenthesis As Parameter*
- *PHP5 Indirect Variable Expression*
- *Php 7 Indirect Expression*
- *Unicode Escape Partial*
- *Define Constants With Array*
- *No List With String*
- *PHP7 Dirname*
- *Php7 Relaxed Keyword*
- *Php 7.1 New Class*
- *List With Keys*
- *List Short Syntax*
- *Use Nullable Type*
- *Multiple Exceptions Catch()*
- *No String With Append*
- *Group Use Declaration*
- *New Functions In PHP 7.3*
- *Cant Inherit Abstract Method*

- *Group Use Trailing Comma*
- *Child Class Removes Typehint*
- *No Substr Minus One*
- *Integer As Property*
- *No get_class() With Null*
- *Php 7.2 New Class*
- *List With Reference*
- *PHP 7.3 Last Empty Argument*
- *Flexible Heredoc*
- *Const Visibility Usage*
- *Hash Algorithms Incompatible With PHP 7.1-*
- *PHP 7.0 Scalar Typehints*
- *PHP 7.1 Scalar Typehints*
- *PHP 7.2 Scalar Typehints*
- *Continue Is For Loop*
- *Trailing Comma In Calls*
- *Direct Call To __clone()*
- *No Return For Generator*
- *No Reference For Static Property*
- *Typed Property Usage*
- *Concat And Addition*
- *Unpacking Inside Arrays*
- *Generator Cannot Return*
- *Coalesce Equal*
- *Enum Usage*
- *$FILES full_path*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *Cant Overload Constants*
- *Constant Scalar Expression*
- *No Private Abstract Method In Trait*
- *Clone Constant*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*

- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP55
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*

15.3.14 CompatibilityPHP56

This ruleset centralizes all analysis for the migration from PHP 5.5 to 5.6.

Total : 78 analysis

- *Non Static Methods Called In A Static*
- *Malformed Octal*
- *$HTTP_RAW_POST_DATA Usage*
- *Multiple Definition Of The Same Argument*
- *Switch With Too Many Default*
- *Hash Algorithms Incompatible With PHP 5.3*
- *Hash Algorithms Incompatible With PHP 5.4/5.5*
- *Variable Global*
- *Null On New*
- *isset() With Constant*
- *Anonymous Classes*
- *Unicode Escape Syntax*
- *New Functions In PHP 7.0*
- *PHP 7.0 New Classes*
- *PHP 7.0 New Interfaces*
- *Parenthesis As Parameter*
- *PHP5 Indirect Variable Expression*

- *Php 7 Indirect Expression*
- *Unicode Escape Partial*
- *Define Constants With Array*
- *No List With String*
- *PHP7 Dirname*
- *Php7 Relaxed Keyword*
- *Php 7.1 New Class*
- *List With Keys*
- *List Short Syntax*
- *Use Nullable Type*
- *Multiple Exceptions Catch()*
- *No String With Append*
- *Group Use Declaration*
- *New Functions In PHP 7.3*
- *Cant Inherit Abstract Method*
- *Group Use Trailing Comma*
- *Child Class Removes Typehint*
- *No Substr Minus One*
- *Integer As Property*
- *No get_class() With Null*
- *Php 7.2 New Class*
- *List With Reference*
- *PHP 7.3 Last Empty Argument*
- *Flexible Heredoc*
- *Const Visibility Usage*
- *Hash Algorithms Incompatible With PHP 7.1-*
- *PHP 7.0 Scalar Typehints*
- *PHP 7.1 Scalar Typehints*
- *PHP 7.2 Scalar Typehints*
- *Continue Is For Loop*
- *Trailing Comma In Calls*
- *Direct Call To __clone()*
- *No Return For Generator*
- *No Reference For Static Property*
- *Typed Property Usage*
- *Concat And Addition*

- *Unpacking Inside Arrays*
- *Generator Cannot Return*
- *Coalesce Equal*
- *Php 8.0 Only TypeHints*
- *Enum Usage*
- *$FILES full_path*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *Cant Overload Constants*
- *Constant Scalar Expression*
- *No Private Abstract Method In Trait*
- *Clone Constant*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP56
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*

15.3.15 CompatibilityPHP70

This ruleset centralizes all analysis for the migration from PHP 5.6 to 7.0.

Total : 69 analysis

- *mcrypt_create_iv() With Default Values*
- *Magic Visibility*
- *Hash Algorithms Incompatible With PHP 5.3*
- *Hash Algorithms Incompatible With PHP 5.4/5.5*
- *Reserved Keywords In PHP 7*
- *Break Outside Loop*
- *PHP 7.0 Removed Functions*
- *Empty List*
- *List With Array Appends*
- *Simple Global Variable*
- *Foreach Don't Change Pointer*
- *Php 7 Indirect Expression*
- *PHP 7.0 Removed Directives*
- *preg_replace With Option e*
- *Setlocale() Uses Constants*
- *Usort Sorting In PHP 7.0*
- *Hexadecimal In String*
- *func_get_arg() Modified*
- *set_exception_handler() Warning*
- *Php 7.1 New Class*
- *List With Keys*
- *List Short Syntax*
- *Use Nullable Type*
- *Multiple Exceptions Catch()*
- *New Functions In PHP 7.3*
- *Cant Inherit Abstract Method*
- *Group Use Trailing Comma*
- *Child Class Removes Typehint*
- *No Substr Minus One*
- *Integer As Property*
- *No get_class() With Null*
- *Php 7.2 New Class*
- *List With Reference*

- *PHP 7.3 Last Empty Argument*
- *Flexible Heredoc*
- *Const Visibility Usage*
- *Hash Algorithms Incompatible With PHP 7.1-*
- *PHP 7.1 Scalar Typehints*
- *PHP 7.2 Scalar Typehints*
- *Continue Is For Loop*
- *Trailing Comma In Calls*
- *No Reference For Static Property*
- *Typed Property Usage*
- *Concat And Addition*
- *Unpacking Inside Arrays*
- *Coalesce Equal*
- *Php 8.0 Only TypeHints*
- *Union Typehint*
- *Enum Usage*
- *$FILES full_path*
- *Final Constant*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *Cant Overload Constants*
- *No Private Abstract Method In Trait*
- *Clone Constant*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP70
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*

15.3.16 CompatibilityPHP71

This ruleset centralizes all analysis for the migration from PHP 7.0 to 7.1.

Total : 59 analysis

- *ext/mcrypt*
- *Hash Algorithms Incompatible With PHP 5.3*
- *Hash Algorithms Incompatible With PHP 5.4/5.5*
- *Avoid Substr() One*
- *PHP 7.0 Removed Functions*
- *PHP 7.0 Removed Directives*
- *preg_replace With Option e*
- *Hexadecimal In String*
- *Use random_int()*
- *Using $this Outside A Class*
- *PHP 7.1 Removed Directives*
- *New Functions In PHP 7.1*
- *PHP 7.1 Microseconds*
- *Invalid Octal In String*
- *New Functions In PHP 7.3*
- *Cant Inherit Abstract Method*
- *Group Use Trailing Comma*
- *Child Class Removes Typehint*
- *Integer As Property*
- *No get_class() With Null*
- *Php 7.2 New Class*
- *List With Reference*
- *PHP 7.3 Last Empty Argument*
- *Flexible Heredoc*
- *PHP 7.2 Scalar Typehints*
- *Continue Is For Loop*
- *Trailing Comma In Calls*

- *No Reference For Static Property*
- *Typed Property Usage*
- *Array With String Initialization*
- *Concat And Addition*
- *Unpacking Inside Arrays*
- *Coalesce Equal*
- *Php 8.0 Only TypeHints*
- *Union Typehint*
- *Signature Trailing Comma*
- *Enum Usage*
- *$FILES full_path*
- *Final Constant*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *Cant Overload Constants*
- *array_merge With Ellipsis*
- *No Private Abstract Method In Trait*
- *Clone Constant*
- *No Keyword In Namespace*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP71
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*

15.3.17 CompatibilityPHP72

This ruleset centralizes all analysis for the migration from PHP 7.1 to 7.2.

Total : 52 analysis

- *Undefined Constants*
- *Hash Algorithms Incompatible With PHP 5.3*
- *Hash Algorithms Incompatible With PHP 5.4/5.5*
- *preg_replace With Option e*
- *PHP 7.2 Deprecations*
- *PHP 7.2 Removed Functions*
- *New Functions In PHP 7.2*
- *New Constants In PHP 7.2*
- *New Functions In PHP 7.3*
- *PHP 7.2 Object Keyword*
- *No get_class() With Null*
- *Php 7.2 New Class*
- *Avoid set_error_handler $context Argument*
- *Hash Will Use Objects*
- *Can't Count Non-Countable*
- *List With Reference*
- *PHP 7.3 Last Empty Argument*
- *Flexible Heredoc*
- *Continue Is For Loop*
- *Trailing Comma In Calls*
- *No Reference For Static Property*
- *Typed Property Usage*
- *Concat And Addition*
- *Unpacking Inside Arrays*
- *Coalesce Equal*
- *Php 8.0 Only TypeHints*
- *Union Typehint*

- *Signature Trailing Comma*
- *Throw Was An Expression*
- *Enum Usage*
- *$FILES full_path*
- *Final Constant*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *Cant Overload Constants*
- *array_merge With Ellipsis*
- *No Private Abstract Method In Trait*
- *Clone Constant*
- *No Keyword In Namespace*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP72
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*

15.3.18 CompatibilityPHP73

This ruleset centralizes all analysis for the migration from PHP 7.2 to 7.3.

Total : 43 analysis

- *New Functions In PHP 7.3*
- *Unknown Pcre2 Option*
- *Nonexistent Variable In compact()*
- *Case Insensitive Constants*
- *Assert Function Is Reserved*
- *Continue Is For Loop*
- *PHP 7.3 Removed Functions*
- *Don't Read And Write In One Expression*
- *Typed Property Usage*
- *Concat And Addition*
- *Unpacking Inside Arrays*
- *Numeric Literal Separator*
- *PHP 74 New Directives*
- *Coalesce Equal*
- *Php 8.0 Only TypeHints*
- *Union Typehint*
- *Signature Trailing Comma*
- *Throw Was An Expression*
- *Enum Usage*
- *$FILES full_path*
- *Final Constant*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *Nested Attributes*
- *New Initializers*
- *Cant Overload Constants*
- *array_merge With Ellipsis*
- *No Private Abstract Method In Trait*
- *Clone Constant*
- *No Keyword In Namespace*
- *Use Enum Case In Constant Expression*

- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP73
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*

15.3.19 CompatibilityPHP74

This ruleset centralizes all analysis for the migration from PHP 7.3 to 7.4.

Total : 55 analysis

- *Detect Current Class*
- *Don't Read And Write In One Expression*
- *idn_to_ascii() New Default*
- *Concat And Addition*
- *New Functions In PHP 7.4*
- *curl_version() Has No Argument*
- *Php 7.4 New Classes*
- *New Constants In PHP 7.4*
- *PHP 7.4 Removed Functions*
- *mb_strrpos() Third Argument*
- *array_key_exists() Works On Arrays*
- *Reflection Export() Is Deprecated*
- *Unbinding Closures*
- *Scalar Are Not Arrays*
- *PHP 7.4 Reserved Keyword*
- *No More Curly Arrays*

- *PHP 7.4 Constant Deprecation*
- *PHP 7.4 Removed Directives*
- *Hash Algorithms Incompatible With PHP 7.4-*
- *openssl_random_pseudo_byte() Second Argument*
- *Nested Ternary Without Parenthesis*
- *Filter To add_slashes()*
- *Php 8.0 Variable Syntax Tweaks*
- *New Functions In PHP 8.0*
- *Php 8.0 Only TypeHints*
- *Union Typehint*
- *Signature Trailing Comma*
- *Throw Was An Expression*
- *Uses PHP 8 Match()*
- *Avoid get_object_vars()*
- *Enum Usage*
- *$FILES full_path*
- *Final Constant*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*
- *PHP 8.0 Typehints*
- *Named Parameter Usage*
- *Nested Attributes*
- *New Initializers*
- *Cant Overload Constants*
- *No Private Abstract Method In Trait*
- *Clone Constant*
- *No Keyword In Namespace*
- *Constants In Traits*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*

- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP74
Available in	Entreprise Edition, Community Edition, Exakat Cloud
Reports	*Diplomat*, *Ambassador*

15.3.20 CompatibilityPHP80

This ruleset centralizes all analysis for the migration from PHP 7.4 to 8.0.

Total : 45 analysis

- *Old Style Constructor*
- *Wrong Optional Parameter*
- *PHP 8.0 Removed Functions*
- *PHP 8.0 Removed Constants*
- *Concat And Addition*
- *PHP 7.4 Removed Directives*
- *Cast Unset Usage*
- *$php_errormsg Usage*
- *Mismatch Parameter Name*
- *PHP 8.0 Removed Directives*
- *Unsupported Types With Operators*
- *Negative Start Index In Array*
- *Nullable With Constant*
- *PHP 8.0 Resources Turned Into Objects*
- *PHP 80 Named Parameter Variadic*
- *Final Private Methods*
- *Array_Map() Passes By Value*
- *Reserved Match Keyword*
- *Avoid get_object_vars()*
- *Enum Usage*
- *Final Constant*
- *Never Typehint Usage*
- *PHP 8.1 Typehints*

- *Mixed Keyword*
- *Nested Attributes*
- *New Initializers*
- *Cant Overload Constants*
- *String Int Comparison*
- *PHP 8.1 Resources Turned Into Objects*
- *Clone Constant*
- *Named Argument And Variadic*
- *Multiple Type Cases In Switch*
- *No Max On Empty Array*
- *Constants In Traits*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP80
Available in	Entreprise Edition, Community Edition, Exakat Cloud
Reports	*Diplomat*, *Ambassador*

15.3.21 CompatibilityPHP81

This ruleset centralizes all analysis for the migration from PHP 8.0 to 8.1.

Total : 34 analysis

- *PHP 7.4 Removed Directives*
- *PHP 8.0 Removed Directives*
- *Restrict Global Usage*
- *Inherited Static Variable*

- *PHP 8.1 Removed Directives*
- *Openssl Encrypt Default Algorithm Change*
- *PHP 8.1 Removed Constants*
- *PHP Native Class Type Compatibility*
- *No Null For Native PHP Functions*
- *Calling Static Trait Method*
- *No Referenced Void*
- *PHP Native Interfaces and Return Type*
- *New Functions In PHP 8.1*
- *PHP 8.1 Removed Functions*
- *Never Keyword*
- *Mixed Keyword*
- *False To Array Conversion*
- *Float Conversion As Index*
- *Cannot Call Static Trait Method Directly*
- *version_compare Operator*
- *Named Argument And Variadic*
- *Constants In Traits*
- *Use Enum Case In Constant Expression*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Static Variable Initialisation*
- *Void Is Not A Reference*
- *PHP 8.1 New Types*
- *PHP 8.2 New Types*

Specs

Short name	CompatibilityPHP81
Available in	Entreprise Edition, Community Edition, Exakat Cloud
Reports	*Diplomat*, *Ambassador*

15.3.22 CompatibilityPHP82

This ruleset centralizes all analysis for the migration from PHP 8.1 to 8.2.

Total : 22 analysis

- *Undefined Properties*
- *False To Array Conversion*
- *Float Conversion As Index*
- *Cannot Call Static Trait Method Directly*
- *Deprecated Callable*
- *Checks Property Existence*
- *Extends stdClass*
- *version_compare Operator*
- *Dollar Curly Interpolation Is Deprecated*
- *Utf8 Encode And Decode Are Deprecated*
- *New Functions In PHP 8.2*
- *Deprecated Mb_string Encodings*
- *Constants In Traits*
- *Readonly Property Changed By Cloning*
- *New Dynamic Class Constant Syntax*
- *class_alias() Supports Internal Classes*
- *Redeclared Static Variable*
- *Static Variable Can Default To Arbitrary Expression*
- *Inherited Class Constant Visibility*
- *Final Traits Are Final*
- *Typed Class Constants Usage*
- *Static Variable Initialisation*

Specs

Short name	CompatibilityPHP82
Available in	Entreprise Edition, Community Edition, Exakat Cloud
Reports	*Diplomat*, *Ambassador*

15.3.23 CompatibilityPHP83

This ruleset centralizes all analysis for the migration from PHP 8.2 to 8.3.

Total : 5 analysis

- *New Functions In PHP 8.3*
- *Php 8.3 New Classes*
- *Constants In Traits*
- *Inherited Class Constant Visibility*
- *get_class() Without Argument*

Specs

Short name	CompatibilityPHP83
Available in	Entreprise Edition, Community Edition, Exakat Cloud
Reports	*Diplomat*, *Ambassador*

15.3.24 Dead code

This ruleset focuses on dead code : expressions or even structures that are written, valid but never used.

Total : 33 analysis

- *Empty Traits*
- *Unused Use*
- *Unused Private Properties*
- *Unused Private Methods*
- *Unused Functions*
- *Unused Constants*
- *Unreachable Code*
- *Empty Instructions*
- *Unused Methods*
- *Unused Classes*
- *Locally Unused Property*
- *Unresolved Instanceof*

- *Unthrown Exception*
- *Unused Label*
- *Unused Interfaces*
- *Unresolved Catch*
- *Unset In Foreach*
- *Empty Namespace*
- *Can't Extend Final*
- *Exception Order*
- *Undefined Caught Exceptions*
- *Unused Protected Methods*
- *Unused Returned Value*
- *Rethrown Exceptions*
- *Unused Inherited Variable In Closure*
- *Self Using Trait*
- *Useless Type Check*
- *Unreachable Method*
- *Identical Elseif*
- *Use Variable Created Inside Loop*
- *Unused Enumeration Case*
- *Static Variable In Namespace*
- *Could Drop Variable*

Specs

Short name	Dead code
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*, *Rector*

15.3.25 Deprecated

This ruleset centralizes all analysis that are marked as 'deprecated feature' for some versions.

For example :

- Php/NestedTernaryWithoutParenthesis : deprecated PHP 7.4, removed PHP 8.0
- Php/NoMoreCurlyArrays : deprecated PHP 7.4, removed PHP 8.0
- Classes/NoParent : deprecated PHP 7.4, removed PHP 8.0
- Php/Php74RemovedDirective : deprecated PHP 7.4, removed PHP 8.0
- Php/ArrayKeyExistsWithObjects : deprecated PHP 7.4, removed PHP 8.0

Total : 8 analysis

- *Is An Extension Function*
- *Case Insensitive Constants*
- *Assert Function Is Reserved*
- *Nested Ternary Without Parenthesis*
- *No Null For Native PHP Functions*
- *Calling Static Trait Method*
- *No Referenced Void*
- *PHP Native Interfaces and Return Type*

Specs

Short name	Deprecated
Available in	Entreprise Edition, Exakat Cloud

15.3.26 Dump

This ruleset collects various names given to different structures in the code : for example, variables, classes, methods, constants, etc. It also collects networks of data, like file inclusion or external dependencies.

Total : 56 analysis

- *Caught Exceptions*
- *Environment Variable Usage*
- *Indentation Levels*
- *Cyclomatic Complexity*
- *Collect Literals*
- *Collect Parameter Counts*
- *Collect Local Variable Counts*
- *Dereferencing Levels*
- *Foreach() Favorite*
- *Collect Mbstring Encodings*
- *Typehinting Stats*
- *Inclusions*
- *Typehint Order*
- *New Order*
- *Collect Class Interface Counts*
- *Collect Class Depth*
- *Collect Class Children Count*

- *Constant Order*
- *Collect Property Counts*
- *Collect Method Counts*
- *Collect Class Constant Counts*
- *Call Order*
- *Collect Parameter Names*
- *Fossilized Methods List*
- *Collect Static Class Changes*
- *Collects Variables*
- *Collect Global Variables*
- *Collect Readability*
- *Collect Definitions Statistics*
- *Collect Class Traits Counts*
- *Collect Native Calls Per Expressions*
- *Collect Files Dependencies*
- *Collect Atom Counts*
- *Collect Classes Dependencies*
- *Collect Php Structures*
- *Collect Use Counts*
- *Collect Block Size*
- *Collect Dependency Extension*
- *Could Be A Constant*
- *Collect Stub Structures*
- *Collect Vendor Structures*
- *Collect Calls*
- *Collect SetLocale*
- *Argument Counts Per Calls*
- *Collect Methods Throwing Exceptions*
- *Collect Throw Calls*
- *Collect Compared Literals*
- *Comparison On Different Types*
- *Collects Names*
- *Class Injection Count*
- *Collect Property Usage*
- *Collect Structures*
- *Collect Catch Calls*

- *Collect Graph Triplets*
- *Try Without Catch*
- *Combined Calls*

Specs

Short name	Dump
Available in	Entreprise Edition, Community Edition, Exakat Cloud
Reports	

15.3.27 First

A set of rules that are always run at the beginning of a project, because they are frequently used. It is mostly used internally.

Total : 3 analysis

- *Variable Anf Property Typehint*
- *Variable Is A Local Constant*
- *Add Return Typehint*

Specs

Short name	First
Available in	Entreprise Edition, Community Edition, Exakat Cloud

15.3.28 Inventory

This ruleset collect all free-text names used in the code : variables, global, arguments, methods, classes, etc…

For example :

- Classes/MagicProperties
- Constants/Constantnames : names of global Constants
- Php/CookieVariables : names of cookies
- Php/DateFormats : date formats
- Php/IncomingVariables : names of the GET/POST arguments
- Php/SessionVariables : names of the session variables
- Type/ArrayIndex : indices used in arrays
- Type/Binary : binary values
- Type/CharString : string values
- Type/Email : hardcoded emails
- Type/GPCIndex : GET, POST and COOKIE names

- Type/Hexadecimal : hexadecimal values
- Type/HexadecimalString : hexadecimal values
- Type/HttpHeader : HTTP headers
- Type/HttpStatus : HTTP status
- Type/Md5String : MD5 string
- Type/MimeType : Mime types
- Type/OctalInString : octal values
- Type/OpensslCipher : names of OpenSSL cipher
- Type/Pack : pack() formats
- Type/Pcre : regex strings
- Type/Ports : server ports mentioned
- Type/Printf : printf() and co formatting strings
- Type/Regex : regex strings
- Type/SpecialIntegers : integer, with special values
- Type/Sql : SQL strings
- Type/UdpDomains : UDP domains
- Type/UnicodeBlock : Unicode blocks
- Type/Url : URL

Total : 37 analysis

- *Constants Names*
- *Binary Glossary*
- *Email Addresses*
- *Heredoc Delimiter Glossary*
- *Hexadecimal Glossary*
- *Http Headers*
- *HTTP Status Code*
- *Md5 Strings*
- *Mime Types*
- *Perl Regex*
- *Internet Ports*
- *Special Integers*
- *All strings*
- *Unicode Blocks*
- *URL List*
- *Hexadecimal In String*
- *Invalid Octal In String*

- *SQL queries*
- *Regex Inventory*
- *Switch Fallthrough*
- *Session Variables*
- *Incoming Variables*
- *Cookies Variables*
- *Date Formats*
- *Type Array Index*
- *Incoming Variable Index Inventory*
- *Pack Format Inventory*
- *Printf Format Inventory*
- *Multiple Identical Closure*
- *Magic Properties*
- *Internet Domains*
- *OpenSSL Ciphers Used*
- *Promoted Properties*
- *Extends stdClass*
- *Incoming Date Formats*
- *Ip*
- *Init Then Update*

Specs

Short name	Inventory
Available in	Entreprise Edition, Exakat Cloud
Reports	

15.3.29 IsExt

This is automatically filled, based on the documentation's isExt attribute.

Total : 19 analysis

- *Non Static Methods Called In A Static*
- *Static Methods Called From Object*
- *Defined Class Constants*
- *Uses Default Values*
- *Wrong Number Of Arguments*
- *Access Protected Structures*

- *Unusual Case For PHP Functions*
- *Is Interface Method*
- *Can't Extend Final*
- *Only Variable Passed By Reference*
- *Too Many Native Calls*
- *Redefined Private Property*
- *PHP Overridden Function*
- *Don't Collect Void*
- *Array_Map() Passes By Value*
- *Wrong Argument Name With PHP Function*
- *Undefined Enumcase*
- *Lowered Access Level*
- *Overload Existing Names*

Specs

Short name	IsExt
Available in	Entreprise Edition, Exakat Cloud

15.3.30 IsPHP

This is automatically filled, based on the documentation's isPHP attribute.

Total : 19 analysis

- *Non Static Methods Called In A Static*
- *Static Methods Called From Object*
- *Defined Class Constants*
- *Uses Default Values*
- *Wrong Number Of Arguments*
- *Access Protected Structures*
- *Unusual Case For PHP Functions*
- *Is Interface Method*
- *Can't Extend Final*
- *Only Variable Passed By Reference*
- *Too Many Native Calls*
- *Redefined Private Property*
- *PHP Overridden Function*
- *Don't Collect Void*

- *Array_Map() Passes By Value*
- *Wrong Argument Name With PHP Function*
- *Undefined Enumcase*
- *Lowered Access Level*
- *Overload Existing Names*

Specs

Short name	IsPHP
Available in	Entreprise Edition, Exakat Cloud

15.3.31 IsStub

This is automatically filled, based on the documentation's isStub attribute.

Total : 17 analysis

- *Non Static Methods Called In A Static*
- *Static Methods Called From Object*
- *Defined Class Constants*
- *Uses Default Values*
- *Wrong Number Of Arguments*
- *Access Protected Structures*
- *Is Interface Method*
- *Can't Extend Final*
- *Only Variable Passed By Reference*
- *Redefined Private Property*
- *PHP Overridden Function*
- *Don't Collect Void*
- *Array_Map() Passes By Value*
- *Wrong Argument Name With PHP Function*
- *Undefined Enumcase*
- *Lowered Access Level*
- *Overload Existing Names*

Specs

Short name	IsStub
Available in	Entreprise Edition, Exakat Cloud

15.3.32 LintButWontExec

This ruleset focuses on PHP code that lint (php -l), but that will not run. As such, this ruleset tries to go further than PHP, by connecting files, just like during execution.

Total : 47 analysis

- *Final Class Usage*
- *Final Methods Usage*
- *$this Belongs To Classes Or Traits*
- *Classes Mutually Extending Each Other*
- *Undefined Class Constants*
- *Must Return Methods*
- *Undefined Interfaces*
- *No Self Referencing Constant*
- *Using $this Outside A Class*
- *Undefined Trait*
- *Raised Access Level*
- *self, parent, static Outside Class*
- *Implemented Methods Must Be Public*
- *No Magic Method With Array*
- *Method Signature Must Be Compatible*
- *Mismatch Type And Default*
- *Can't Throw Throwable*
- *Abstract Or Implements*
- *Incompatible Signature Methods*
- *Undefined Insteadof*
- *Method Collision Traits*
- *Only Variable For Reference*
- *Repeated Interface*
- *Avoid Self In Interface*
- *Useless Method Alias*
- *Type Must Be Returned*
- *Clone With Non-Object*

- *Trait Not Found*
- *Wrong Type Returned*
- *Interfaces Is Not Implemented*
- *Can't Implement Traversable*
- *Wrong Typed Property Default*
- *Mismatch Properties Typehints*
- *Could Be Stringable*
- *Inherited Property Type Must Match*
- *Duplicate Named Parameter*
- *PHP Native Interfaces and Return Type*
- *False To Array Conversion*
- *Deprecated Callable*
- *Cant Overload Constants*
- *Can't Overwrite Final Constant*
- *Implicit Conversion To Int*
- *No Magic Method For Enum*
- *Wrong Type With Default*
- *Clone Constant*
- *Invalid Cast*
- *Only Variable Passed By Reference*

Specs

Short name	LintButWontExec
Available in	Entreprise Edition, Exakat Cloud

15.3.33 NoDoc

Ruleset with analysis which are not published in the docs.

Total : 36 analysis

- *Php Native Reference Variable*
- *Create Compact Variables*
- *Propagate Constants*
- *Overwritten Properties*
- *Overwritten Methods*
- *Overwritten Constant*
- *Set Clone Link*

- *Create Magic Property*
- *Set Parent Definition*
- *Make Class Method Definition*
- *Create Default Values*
- *Set class_alias() Definition*
- *Makes Class Constant Definition*
- *Set Class Remote Definition With Injection*
- *Solve Trait Methods*
- *Follow Closure Definition*
- *Set Class Remote Definition With Return Typehint*
- *Set Class Remote Definition With Local New*
- *Set Class Remote Definition With Typehint*
- *Set Class Remote Definition With Global*
- *Set Class Remote Definition With Parenthesis*
- *Set Class Property Definition With Typehint*
- *Set Array Class Definition*
- *Set Class Method Remote Definition*
- *Make Functioncall With Reference*
- *Create Foreach Default*
- *Extended Typehints*
- *Php Ext Stub Property And Method*
- *Variable Anf Property Typehint*
- *Variable Is A Local Constant*
- *Is Stub Structure*
- *Is PHP Structure*
- *Is Extension Structure*
- *Add Return Typehint*
- *Create Magic Method*
- *Make All Statics*

Specs

Short name	NoDoc
Available in	Entreprise Edition, Exakat Cloud

15.3.34 One Liners

This ruleset focuses on reporting one liners, which makes using an IDE had.

Total : 5 analysis

- *Coalesce*
- *Use Arrow Functions*
- *Throw Was An Expression*
- *Use NullSafe Operator*
- *Short Ternary*

Specs

Short name	OneLiners
Available in	Entreprise Edition, Exakat Cloud
Reports	

15.3.35 PHP recommendations

This ruleset is a collection of warnings and notes that are available in the PHP manual. For example, return do not require parenthesis.

Total : 22 analysis

- *Eval() Usage*
- *Using Short Tags*
- *Strpos()-like Comparison*
- *Bad Constants Names*
- *Use With Fully Qualified Name*
- *Dangling Array References*
- *Return With Parenthesis*
- *No Real Comparison*
- *Use Constant Instead Of Function*
- *Throw In Destruct*
- *Useless Type Casting*
- *No isset() With empty()*

- *Avoid array_push()*
- *Crc32() Might Be Negative*
- *Not A Scalar Type*
- *Implode One Arg*
- *Could Be Stringable*
- *Missing Attribute Attribute*
- *No Constructor In Interface*
- *Unsupported Operand Types*
- *Do Not Cast To Int*
- *Reserved Methods*

Specs

Short name	PHP recommendations
Available in	Entreprise Edition, Exakat Cloud

15.3.36 Performances

This ruleset focuses on performances issues : anything that slows the code's execution.

Total : 60 analysis

- *Eval() Usage*
- *For Using Functioncall*
- *@ Operator*
- *Nested Loops*
- *While(List() = Each())*
- *Unpreprocessed Values*
- *Avoid array_unique()*
- *Echo With Concat*
- *Slow Functions*
- *No array_merge() In Loops*
- *Could Use Short Assignation*
- *Pre-increment*
- *Avoid Substr() One*
- *Global Inside Loop*
- *Joining file()*
- *Simplify Regex*
- *Make One Call With Array*

- *No Count With 0*
- *Use ::Class Operator*
- *time() Vs strtotime()*
- *Getting Last Element*
- *Avoid array_push()*
- *Should Use Function*
- *Fetch One Row Format*
- *Avoid glob() Usage*
- *Avoid Large Array Assignation*
- *Should Use array_column()*
- *Avoid Concat In Loop*
- *Use pathinfo() Arguments*
- *Simple Switch And Match*
- *Substring First*
- *Use PHP7 Encapsed Strings*
- *Slice Arrays First*
- *Double array_flip()*
- *Processing Collector*
- *Do In Base*
- *Cache Variable Outside Loop*
- *Use The Blind Var*
- *Closure Could Be A Callback*
- *fputcsv() In Loops*
- *Isset() On The Whole Array*
- *array_key_exists() Speedup*
- *Autoappend*
- *Make Magic Concrete*
- *Regex On Arrays*
- *Always Use Function With array_key_exists()*
- *No mb_substr In Loop*
- *Optimize Explode()*
- *Scope Resolution Operator*
- *Static Call May Be Truly Static*
- *Simplify Foreach*
- *Too Many Extractions*
- *Skip Empty Array*

- *Ellipsis Merge*
- *Pre-Calculate Use*
- *Substr() In Loops*
- *Should Cache Local*
- *Recalled Condition*
- *Could Use Yield From*
- *Count() To Array Append*

Specs

Short name	Performances
Available in	Entreprise Edition, Exakat Cloud
Reports	

15.3.37 Preferences

This ruleset identify code with multiple forms, and report when one is more frequent than the others. Echo vs print, shell_exec() vs ``, etc.

Total : 40 analysis

- *True False Inconsistant Case*
- *Echo Or Print*
- *Constant Comparison*
- *Die Exit Consistence*
- *Array() / [ ] Consistence*
- *$GLOBALS Or global*
- *Unset() Or (unset)*
- *Close Tags Consistency*
- *One Expression Brackets Consistency*
- *New On Functioncall Or Identifier*
- *New Line Style*
- *Regex Delimiter*
- *Empty Final Element In Array*
- *Difference Consistence*
- *Concatenation Interpolation Consistence*
- *Heredoc Delimiter*
- *strict_types Preference*
- *Declare strict_types Usage*
- *Encoding Usage*

- *Ticks Usage*
- *Logical Operators Favorite*
- *Shell Favorite*
- *Properties Declaration Consistence*
- *Strict Or Relaxed Comparison*
- *Comparisons Orientation*
- *Const Or Define Preference*
- *Constant Case Preference*
- *Caught Variable*
- *Not Or Tilde*
- *Null Type Favorite*
- *String Interpolation Favorite*
- *Constant : With Or Without Use*
- *If Then Return Favorite*
- *Empty Array Detection*
- *Strict In_Array() Preference*
- *date() versus DateTime Preference*
- *Mono Or Multibytes Favorite*
- *Short Or Complete Comparison*
- *Favorite Casting Method*
- *is_a() Versus instanceof*

Specs

Short name	Preferences
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*, *Diplomat*

15.3.38 Rector

RectorPHP is a reconstructor tool. It applies modifications in the PHP code automatically. Exakat finds results which may be automatically updated with rector.

Total : 15 analysis

- *Adding Zero*
- *Multiple Index Definition*
- *For Using Functioncall*
- *Multiply By One*
- *Multiples Identical Case*

- *Preprocessable*
- *Implied If*
- *Else If Versus Elseif*
- *Could Use Short Assignation*
- *Should Typecast*
- *No Choice*
- *Never Called Parameter*
- *Closure Could Be A Callback*
- *Is_A() With String*
- *Could Use strcontains()*

Specs

Short name	Rector
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*, *Rector*

15.3.39 Security

This ruleset focuses on code security.

Total : 47 analysis

- *Eval() Usage*
- *Phpinfo*
- *var_dump()… Usage*
- *Hardcoded Passwords*
- *Direct Injection*
- *Avoid sleep()/usleep()*
- *parse_str() Warning*
- *Avoid Those Hash Functions*
- *No Hardcoded Port*
- *Should Use Prepared Statement*
- *No Hardcoded Ip*
- *Compare Hash*
- *preg_replace With Option e*
- *eval() Without Try*
- *Register Globals*
- *Safe Curl Options*

- *Use random_int()*
- *No Hardcoded Hash*
- *Random Without Try*
- *Indirect Injection*
- *Unserialize Second Arg*
- *Don't Echo Error*
- *Should Use session_regenerateid()*
- *Encoded Simple Letters*
- *Set Cookie Safe Arguments*
- *No Return Or Throw In Finally*
- *Mkdir Default*
- *Switch Fallthrough*
- *Upload Filename Injection*
- *Always Anchor Regex*
- *Session Lazy Write*
- *Sqlite3 Requires Single Quotes*
- *No Net For Xml Load*
- *Dynamic Library Loading*
- *Configure Extract*
- *move_uploaded_file Instead Of copy*
- *filter_input() As A Source*
- *Safe HTTP Headers*
- *Insecure Integer Validation*
- *Minus One On Error*
- *No ENT_IGNORE*
- *No Weak SSL Crypto*
- *Keep Files Access Restricted*
- *Check Crypto Key Length*
- *Incompatible Types With Incoming Values*
- *Filter Not Raw*
- *Unvalidated Data Cached In Session*

Specs

Short name	Security
Available in	Entreprise Edition, Exakat Cloud
Reports	*Ambassador*, *Owasp*

15.3.40 Semantics

This ruleset focuses on human interpretation of the code. It reviews special values of literals, and named structures.

Total : 35 analysis

- *Ambiguous Array Index*
- *Constants With Strange Names*
- *Function Called With Other Case Than Defined*
- *Variables With One Letter Names*
- *One Letter Functions*
- *Property Variable Confusion*
- *PHP Keywords As Names*
- *Strange Names In Classes*
- *Class Function Confusion*
- *Strange Name For Variables*
- *Strange Name For Constants*
- *Ambiguous Static*
- *Ambiguous Visibilities*
- *Could Be Constant*
- *Similar Integers*
- *Duplicate Literal*
- *Parameter Hiding*
- *Weird Array Index*
- *Wrong Typehinted Name*
- *Semantic Typing*
- *Fn Argument Variable Confusion*
- *Prefix And Suffixes With Typehint*
- *Static Global Variables Confusion*
- *Possible Alias Confusion*
- *Mismatch Parameter And Type*
- *Wrong Locale*
- *Overload Existing Names*

- *Same Name For Property And Method*
- *Ambiguous Types With Variables*
- *Method Property Confusion*
- *Too Many Chained Calls*
- *No Variable Needed*
- *No Initial S In Variable Names*
- *Array Access On Literal Array*
- *Don't Use The Type As Variable Name*

Specs

Short name	Semantics
Available in	Entreprise Edition, Exakat Cloud

15.3.41 Suggestions

This ruleset focuses on possibly better syntax than the one currently used. Those may be code modernization, alternatives, more efficient solutions, or simply left over from older versions.

Total : 128 analysis

- *While(List() = Each())*
- *Function Subscripting, Old Style*
- *** For Exponent*
- *Too Many Children*
- *Empty With Expression*
- *list() May Omit Variables*
- *Unreachable Code*
- *Overwritten Exceptions*
- *Return With Parenthesis*
- *Strict Comparison With Booleans*
- *Logical Should Use Symbolic Operators*
- *Could Use self*
- *Preprocess Arrays*
- *Repeated print()*
- *Echo With Concat*
- *No Parenthesis For Language Construct*
- *Unused Interfaces*
- *Avoid Substr() One*

- *PHP7 Dirname*
- *preg_match_all() Flag*
- *Already Parents Interface*
- *Could Use __DIR__*
- *Should Use Coalesce*
- *Could Use Alias*
- *Drop Else After Return*
- *Unitialized Properties*
- *Should Use array_column()*
- *Randomly Sorted Arrays*
- *No Return Used*
- *Could Make A Function*
- *Use session_start() Options*
- *Mismatched Ternary Alternatives*
- *Isset Multiple Arguments*
- *Should Use Foreach*
- *Substring First*
- *Use List With Foreach*
- *Slice Arrays First*
- *Parent First*
- *Never Called Parameter*
- *Should Use array_filter()*
- *Reuse Existing Variable*
- *Should Use Math*
- *Could Use Compact*
- *Could Use array_fill_keys*
- *Use Count Recursive*
- *Too Many Parameters*
- *Should Preprocess Chr()*
- *Possible Increment*
- *Drop Substr Last Arg*
- *One If Is Sufficient*
- *Could Use array_unique*
- *Nonexistent Variable In compact()*
- *Should Use Operator*
- *Could Be Static Closure*

- *Use is_countable*
- *Detect Current Class*
- *Avoid Real*
- *Use json_decode() Options*
- *Closure Could Be A Callback*
- *Add Default Value*
- *Named Regex*
- *Could Use Try*
- *Use Basename Suffix*
- *Don't Loop On Yield*
- *Should Have Destructor*
- *Directly Use File*
- *Isset() On The Whole Array*
- *Multiple Usage Of Same Trait*
- *array_key_exists() Speedup*
- *Should Deep Clone*
- *Multiple Unset()*
- *Implode One Arg*
- *Useless Default Argument*
- *No Need For get_class()*
- *Substr To Trim*
- *Complex Dynamic Names*
- *Use DateTimeImmutable Class*
- *Set Aside Code*
- *Use Array Functions*
- *Use The Case Value*
- *Should Use Url Query Functions*
- *Too Long A Block*
- *Static Global Variables Confusion*
- *Possible Alias Confusion*
- *Too Much Indented*
- *Avoid Compare Typed Boolean*
- *Abstract Away*
- *Large Try Block*
- *Cancel Common Method*
- *Useless Typehint*

- *Could Use Promoted Properties*
- *Use get_debug_type()*
- *Use str_contains()*
- *Unused Exception Variable*
- *Searching For Multiple Keys*
- *Long Preparation For Throw*
- *No Static Variable In A Method*
- *Declare Static Once*
- *Could Use Match*
- *Could Use Null-Safe Object Operator*
- *This Could Be Iterable*
- *Multiple Similar Calls*
- *Could Be Ternary*
- *Use File Append*
- *Could Use Existing Constant*
- *Could Use array_sum()*
- *Too Many Stringed Elseif*
- *Could Be Spaceship*
- *Throw Raw Exceptions*
- *Lowered Access Level*
- *Could Set Property Default*
- *Could Be Enumeration*
- *Magic Method Returntype Is Restricted*
- *Could Be Abstract Method*
- *Could Use Class Operator*
- *Could Use Namespace Magic Constant*
- *Json_encode() Without Exceptions*
- *Class Could Be Readonly*
- *Use str_ends_with()*
- *Use str_starts_with()*
- *Blind Variable Used Beyond Loop*
- *Could Be array_combine()*
- *Multiline Expressions*
- *Could Cast To Array*
- *Check After Null Safe Operator*
- *Could Use strcontains()*

- *Could Drop Variable*
- *Could Be Readonly Property*

Specs

Short name	Suggestions
Available in	Entreprise Edition, Exakat Cloud
Reports	*Diplomat*, *Ambassador*

15.3.42 Surprising

PHP is full of exceptional situations where something doesn't work as expected, or as we thought would be expected. Then, exakat gets a rule for that, and it is listed here. Watch out, unusual beasts are hidden in this list : the most interesting is possibly the docs.

Total : 2 analysis

- *Sequences In For*
- *Strpos() Less Than One*

Specs

Short name	Surprising
Available in	Entreprise Edition, Exakat Cloud
Reports	*Text*

15.3.43 Top10

This ruleset is a selection of analysis, with the top 10 most common. Actually, it is a little larger than that.

Total : 28 analysis

- *For Using Functioncall*
- *Strpos()-like Comparison*
- *Used Once Variables*
- *Dangling Array References*
- *Queries In Loops*
- *Use const*
- *Logical Should Use Symbolic Operators*
- *Repeated print()*
- *Objects Don't Need References*
- *No Real Comparison*
- *No array_merge() In Loops*

- *Unresolved Instanceof*
- *Avoid Substr() One*
- *No Choice*
- *Failed Substr() Comparison*
- *Unitialized Properties*
- *Could Use str_repeat()*
- *Logical Operators Favorite*
- *Avoid Concat In Loop*
- *Next Month Trap*
- *Substring First*
- *Use List With Foreach*
- *Don't Unset Properties*
- *Avoid Real*
- *Should Yield With Key*
- *fputcsv() In Loops*
- *Possible Missing Subpattern*
- *Concat And Addition*

Specs

Short name	Top10
Available in	Entreprise Edition, Exakat Cloud
Reports	*Top10*

15.3.44 Typechecks

This ruleset focuses on typehinting. Missing typehints, or inconsistent typehint, are reported.

Total : 28 analysis

- *Argument Should Be Typehinted*
- *Useless Interfaces*
- *No Class As Typehint*
- *Mismatched Default Arguments*
- *Mismatched Typehint*
- *Child Class Removes Typehint*
- *Not A Scalar Type*
- *Mismatch Type And Default*
- *Insufficient Typehint*

- *Bad Type Relay*
- *Wrong Type With Call*
- *Missing Typehint*
- *Fossilized Method*
- *Could Be String*
- *Could Be Void*
- *Could Be Callable*
- *Wrong Argument Type*
- *Type Could Be Integer*
- *Could Be Null*
- *Typehint Could Be Iterable*
- *Could Be Float*
- *Could Be Self*
- *Could Be Parent*
- *Could Be Generator*
- *This Could Be Iterable*
- *Type Could Be Never*
- *Typehints/CouldBeResource*
- *Possible TypeError*

Specs

Short name	Typechecks
Available in	Entreprise Edition, Exakat Cloud

15.3.45 php-cs-fixable

php-cs-fixer is a tool to automatically fix PHP Coding Standards issues. It applies modifications in the PHP code automatically. Exakat finds results which may be automatically updated with PHP-CS-FIXER.

Total : 12 analysis

- *Unused Use*
- *Use === null*
- *** For Exponent*
- *Logical Should Use Symbolic Operators*
- *Use Constant Instead Of Function*
- *Else If Versus Elseif*
- *PHP7 Dirname*

- *Could Use __DIR__*
- *Isset Multiple Arguments*
- *Don't Unset Properties*
- *Multiple Unset()*
- *Implode One Arg*

Specs

Short name	php-cs-fixable
Available in	Entreprise Edition, Exakat Cloud
Reports	*Phpcsfixer*

CHAPTER

SIXTEEN

REPORTS

16.1 Introduction

Exakat provides multiple view to explore issue or metric generated by the rules.

16.2 Summary

- *Ambassador*
- *BeautyCanon*
- *ClassReview*
- *Classes dependencies HTML*
- *Clustergrammer*
- *Code Flower*
- *Code Sniffer*
- *CompatibilityPHP56*
- *CompatibilityPHP74*
- *CompatibilityPHP80*
- *CompatibilityPHP81*
- *CompatibilityPHP82*
- *CompatibilityPHP83*
- *Composer*
- *Dependency Wheel*
- *Diplomat*
- *Emissary*
- *Exakat Json*
- *Exakatyaml*
- *File dependencies*
- *File dependencies HTML*
- *History*

- *Inventory*
- *Json*
- *Marmelab*
- *Meters*
- *Migration74*
- *Migration80*
- *Migration81*
- *Migration82*
- *Naming*
- *None*
- *OneLiners*
- *Owasp*
- *Perfile*
- *Perfule*
- *PhpCompilation*
- *PhpConfiguration*
- *Phpcity*
- *Phpcsfixer*
- *PlantUml*
- *PublicAccess*
- *RadwellCode*
- *Rector*
- *Sarb*
- *Sarif*
- *SimpleTable*
- *Sonarcube*
- *Stats*
- *Stubs*
- *StubsJson*
- *Text*
- *Top10*
- *Topology Order*
- *TypeChecks*
- *TypeSuggestion*
- *Uml*
- *Unused*

- *Weekly*
- *Xml*
- *Yaml*

16.3 List of Reports

16.3.1 Ambassador

Ambassador

Ambassador is the most complete Exakat report. It used to be the default report, until Exakat 1.7.0

The Ambassador report many reports.

- Full configuration for the audit
- Full documentation of the analysis
- All results, searchable and browsable by file and analysis
- **Extra reports for**
  - Minor versions compatibility
  - PHP Directive usage
  - PHP compilation recommendations
  - Error messages list
  - List of processed files

`Reference/images/report.ambassador.png`

Ambassador includes the report from 3 other reports : PhpCompilation, PhpConfiguration, Stats.

Specs

Short name	Ambassador
Rulesets	*CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *Analyze*, *Preferences*, *Inventory*, *Performances*, *Appinfo*, *Dead code*, *Security*, *Suggestions*.
Type	HTML
Target	This report is written in 'report'.
Available in	Entreprise Edition

16.3.2 BeautyCanon

BeautyCanon

The Beauty Canon report lists all rules that report no issues.

The Beauty Canon report displays one result per line. This report lists all issues in the provided ruleset that are reporting no error.

The title of the analysis is listed on the left, and the analysis short name is listed on the right, for further documentation.

This analysis uses "Analysis" as default rule. It may otherwise configured with the -T option.

```
Compare Hash                                                    Security/
↪CompareHash
Configure Extract                                               Security/
↪ConfigureExtract
Dynamic Library Loading                                         Security/DynamicDl
Encoded Simple Letters                                          Security/
↪EncodedLetters
Indirect Injection                                              Security/
↪IndirectInjection
Integer Conversion                                              Security/
↪IntegerConversion
Minus One On Error                                              Security/
↪MinusOneOnError
Mkdir Default                                                   Security/
↪MkdirDefault
No ENT_IGNORE                                                   Security/
↪NoEntIgnore
No Hardcoded Hash                                               Structures/
↪NoHardcodedHash
No Hardcoded Ip                                                 Structures/
↪NoHardcodedIp
No Hardcoded Port                                               Structures/
↪NoHardcodedPort
```

Specs

Short name	BeautyCanon
Rulesets	This reports works with an arbitrary list of results.
Type	Text
Target	This report is written to the standard output.
Available in	Entreprise Edition

16.3.3 ClassReview

ClassReview

The ClassReview report focuses on reviewing classes, traits and interfaces.

The ` *ClassReview* `` report focuses on good code hygiene for classes, interfaces, enumerations and traits.

It checks the internal structure of classes, and suggest visibility, typehint updates.

Reference/images/report.classreview.png

Specs

Short name	ClassReview
Rulesets	ClassReview.
Type	HTML
Target	This report is written in 'classreview'.
Available in	Entreprise Edition

16.3.4 Classes dependendies HTML

Classes dependendies HTML

This reports displays the class dependencies, based on definition usages.

This report displays all dependencies between classes, interfaces and traits. A class (or interface or trait) depends on another class (or interface or trait) when it makes usage of one of its definitions : extends, implements, use, and static calls.

For example, *A* depends on *B*, because *A* extends *B*.

The resulting diagram is in HTML file, which is readable with most browsers, from a web server.

Warning : for browser security reasons, the report will NOT load as a local file. It needs to be served by an HTTP server, so all resources are correctly located.

Warning : large applications (> 1000 classes) will require a lot of resources to open.

Reference/images/report.classdependencies.png

Specs

Short name	Classes dependendies HTML
Rulesets	Classes dependendies HTML doesn't depend on rulesets.
Type	HTML
Target	This report is written in 'class_dependencies'.
Available in	Entreprise Edition

16.3.5 Clustergrammer

Clustergrammer

The Clustergrammar report format data for a clustergrammer diagram.

` *Clustergrammer* ` is a visualisation tool that may be found online. After generation of this report, a TEXT file is available in the project directory. Upload it on http://amp.pharm.mssm.edu/clustergrammer/ to visualize it.

See a live report here : Clustergrammer.

`Reference/images/report.clustergrammer.png`

Specs

Short name	Clustergrammer
Rulesets	Clustergrammer doesn't depend on rulesets.
Type	TEXT
Target	This report is written in 'clustergrammer.txt'.
Available in	Entreprise Edition

16.3.6 Code Flower

Code Flower

The Code Flower represents hierarchies in a code source.

Codeflower is a javascript visualization of the code. It is based on Francois Zaninotto's CodeFlower Source code visualization.

It represents :

- Class hierarchy
- Namespace hierarchy
- Inclusion

Reference/images/report.codeflower.png

Specs

Short name	Code Flower
Rulesets	Code Flower doesn't depend on rulesets.
Type	HTML
Target	This report is written in 'codeflower'.
Available in	Entreprise Edition

16.3.7 Code Sniffer

Code Sniffer

The CodeSniffer report exports in the CodeSniffer format.

This format reports analysis using the Codesniffer's result format.

See also Code Sniffer Report.

```
FILE : /Path/To/View/The/File.php
--------------------------------------------------------------------------------
FOUND 3 ISSUES AFFECTING 3 LINES
--------------------------------------------------------------------------------
 32 | MINOR | Could Use Alias
 41 | MINOR | Could Make A Function
 43 | MINOR | Could Make A Function
--------------------------------------------------------------------------------
```

Specs

Short name	Code Sniffer
Rulesets	This reports works with an arbitrary list of results.
Type	TEXT
Target	This report is written in 'exakat.txt'.
Available in	Entreprise Edition

16.3.8 CompatibilityPHP56

CompatibilityPHP56

The CompatibilityPHP56 report list all detected issues with PHP 5.6 compatibility.

The CompatibilityPHP56 report displays one result per line, grouped by rule, and ordered by file and line number. Here is an example :

```
/path/from/project/root/to/file:line[space]name of analysis
```

This format is fast, and fitted for human review. It is the same format as PerRule.

```
-----------------------------------------------------------------------------------------
↪-----------
 Coalesce Equal (https://exakat.readthedocs.io/en/latest/Reference/Rules.html#php-
↪coalesceequal)
-----------------------------------------------------------------------------------------
↪-----------
 /src/Bridges/Tracy/BlueScreenPanel.php:25                    $blueScreen ??= Tracy\
↪Debugger::getBlueScreen( )
 /src/Bridges/Tracy/LattePanel.php:32                         $bar ??= Tracy\
↪Debugger::getBar( )
 /src/Latte/Compiler/Lexer.php:371                            $type ??= $this->
↪defaultSyntax
 /src/Latte/Compiler/Nodes/FragmentNode.php:38                $this->line ??= $node->line
 /src/Latte/Compiler/Parser.php:723                           $layer ??= $this->layer
 /src/Latte/Compiler/PhpWriter.php:137                        $uniq ??= '$' .␣
↪bin2hex(random_bytes(5))
 /src/Latte/Compiler/PhpWriter.php:194                        $tokens ??= $this->tokens
 /src/Latte/Extensions/Blueprint.php:83                       $native ??= (PHP_VERSION_
↪ID >= 70400)
 /src/Latte/Extensions/Filters.php:52                         $info->contentType ??=
↪'html'
 /src/Latte/Runtime/Template.php:340                          $block ??= new Block
 /src/Latte/Runtime/Template.php:399                          $destId ??= $staticId
-----------------------------------------------------------------------------------------
↪-----------



-----------------------------------------------------------------------------------------
↪-----------
 Const Visibility Usage (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#classes-constvisibilityusage)
-----------------------------------------------------------------------------------------
↪-----------
 /src/Latte/Compiler/Lexer.php:26                             public const RE_STRING = '\
↪'(?:\\\\.|[^\'\\\\])*+\'|"(?:\\\\.|[^"\\\\])*+"'
 /src/Latte/Compiler/Lexer.php:29                             public const RE_TAG_NAME =
↪'[a-zA-Z][a-zA-Z0-9:_.-]*'
 /src/Latte/Compiler/Lexer.php:30                             public const RE_VALUE_NAME␣
↪= '[^\p{C} "\'<>=`/{}]+'
 /src/Latte/Compiler/Lexer.php:31                             public const RE_INDENT =
↪'((?<=\n|^)[ \t]+)?'
```

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```
/src/Latte/Compiler/Lexer.php:34                            public const N_PREFIX = 'n:
↪'
/src/Latte/Compiler/Lexer.php:37                            public const STATE_PLAIN_
↪TEXT = 'statePlain', STATE_HTML_TEXT = 'stateHtmlText'
/src/Latte/Compiler/MacroTokens.php:18                      public const T_WHITESPACE␣
↪= 1, T_COMMENT = 2, T_SYMBOL = 3, T_NUMBER = 4, T_VARIABLE = 5, T_STRING = 6, T_CAST =␣
↪7, T_KEYWORD = 8, T_CHAR = 9
/src/Latte/Compiler/MacroTokens.php:29                      public const SIGNIFICANT =␣
↪[self::T_SYMBOL, self::T_NUMBER, self::T_VARIABLE, self::T_STRING, self::T_CAST,␣
↪self::T_KEYWORD, self::T_CHAR], NON_SIGNIFICANT = [self::T_COMMENT, self::T_WHITESPACE]
/src/Latte/Compiler/NodeTraverser.php:15                    public const DONT_TRAVERSE_
↪CHILDREN = 1
/src/Latte/Compiler/NodeTraverser.php:16                    public const STOP_
↪TRAVERSAL = 2
/src/Latte/Compiler/Parser.php:30                           public const LOCATION_HEAD␣
↪= 1, LOCATION_TEXT = 2, LOCATION_TAG = 3
/src/Latte/Compiler/Tag.php:25                              public const PREFIX_INNER␣
↪= 'inner', PREFIX_TAG = 'tag', PREFIX_NONE = ''
/src/Latte/Compiler/Token.php:20                            public const TEXT = 'text'
/src/Latte/Compiler/Token.php:21                            public const WHITESPACE =
↪'whitespace'
/src/Latte/Compiler/Token.php:22                            public const SLASH = 'slash
↪'
/src/Latte/Compiler/Token.php:23                            public const EQUALS =
↪'equals'
/src/Latte/Compiler/Token.php:24                            public const QUOTE = 'quote
↪'
/src/Latte/Compiler/Token.php:26                            public const LATTE_TAG_
↪OPEN = 'latteTagOpen'
/src/Latte/Compiler/Token.php:27                            public const LATTE_TAG_END␣
↪= 'latteTagEnd'
/src/Latte/Compiler/Token.php:28                            public const LATTE_NAME =
↪'latteName'
/src/Latte/Compiler/Token.php:29                            public const LATTE_ARGS =
↪'latteArgs'
/src/Latte/Compiler/Token.php:30                            public const LATTE_COMMENT_
↪OPEN = 'latteCommentOpen'
/src/Latte/Compiler/Token.php:31                            public const LATTE_COMMENT_
↪CLOSE = 'latteCommentClose'
/src/Latte/Compiler/Token.php:33                            public const HTML_TAG_OPEN␣
↪= 'htmlTagOpen'
/src/Latte/Compiler/Token.php:34                            public const HTML_TAG_
↪CLOSE = 'htmlTagClose'
/src/Latte/Compiler/Token.php:35                            public const HTML_COMMENT_
↪OPEN = 'htmlCommentOpen'
/src/Latte/Compiler/Token.php:36                            public const HTML_COMMENT_
↪CLOSE = 'htmlCommentClose'
/src/Latte/Compiler/Token.php:37                            public const HTML_BOGUS_
↪TAG_OPEN = 'htmlBogusTagOpen'
/src/Latte/Compiler/Token.php:38                            public const HTML_NAME =
↪'htmlName'
/src/Latte/Compiler/Tokenizer.php:25                        public const VALUE = 0,␣
```

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```
↪OFFSET = 1, TYPE = 2
 /src/Latte/Context.php:19                                    public const TEXT = 'text',
↪ HTML = 'html', XML = 'xml', JS = 'js', CSS = 'css', ICAL = 'ical'
 /src/Latte/Context.php:27                                    public const HTML_TEXT =␣
↪null, HTML_COMMENT = 'Comment', HTML_BOGUSTAG = 'Bogus', HTML_CSS = 'Css', HTML_JS =
↪'Js', HTML_TAG = 'Tag', HTML_ATTRIBUTE = 'Attr', HTML_ATTRIBUTE_JS = 'AttrJs', HTML_
↪ATTRIBUTE_CSS = 'AttrCss', HTML_ATTRIBUTE_URL = 'AttrUrl', HTML_ATTRIBUTE_UNQUOTED =
↪'Unquoted'
 /src/Latte/Context.php:40                                    public const XML_TEXT =␣
↪null, XML_COMMENT = 'Comment', XML_BOGUSTAG = 'Bogus', XML_TAG = 'Tag', XML_ATTRIBUTE␣
↪= 'Attr'
 /src/Latte/Engine.php:20                                     public const VERSION = '3.
↪0.0-dev'
 /src/Latte/Engine.php:21                                     public const VERSION_ID =␣
↪30000
 /src/Latte/Engine.php:24                                     public const CONTENT_HTML␣
↪= Context::HTML, CONTENT_XML = Context::XML, CONTENT_JS = Context::JS, CONTENT_CSS =␣
↪Context::CSS, CONTENT_ICAL = Context::ICAL, CONTENT_TEXT = Context::TEXT
 /src/Latte/Runtime/SnippetDriver.php:23                      public const TYPE_STATIC =
↪'static', TYPE_DYNAMIC = 'dynamic', TYPE_AREA = 'area'
 /src/Latte/Runtime/Template.php:24                           public const LAYER_TOP = 0,
↪ LAYER_SNIPPET = 'snippet', LAYER_LOCAL = 'local'
 /src/Latte/Runtime/Template.php:29                           protected const CONTENT_
↪TYPE = Latte\Context::HTML
 /src/Latte/Runtime/Template.php:31                           protected const BLOCKS = [␣
↪]
 /src/Latte/Sandbox/SecurityPolicy.php:22                     public const ALL = ['*']
 /src/Latte/exceptions.php:45                                 public const MESSAGES =␣
↪[PREG_INTERNAL_ERROR => 'Internal error', PREG_BACKTRACK_LIMIT_ERROR => 'Backtrack␣
↪limit was exhausted', PREG_RECURSION_LIMIT_ERROR => 'Recursion limit was exhausted',␣
↪PREG_BAD_UTF8_ERROR => 'Malformed UTF-8 data', PREG_BAD_UTF8_OFFSET_ERROR => 'Offset␣
↪didn\'t correspond to the begin of a valid UTF-8 code point', 6 => 'Failed due to␣
↪limited JIT stack space',  ]
------------------------------------------------------------------------------------
↪-----------

------------------------------------------------------------------------------------
↪-----------
 Generator Cannot Return (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#functions-generatorcannotreturn)
------------------------------------------------------------------------------------
↪-----------
 /src/Latte/Compiler/Lexer.php:321                            private function␣
↪match(string $re) : \Generator { /**/ }
 /src/Latte/Compiler/Node.php:21                              public function &
↪getIterator( ) : \Generator { /**/ }
 /src/Latte/Extensions/CoreExtension.php:229                  public function␣
↪parseSyntax(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/BlockNode.php:37                 public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/CaptureNode.php:33               public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
```

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```
 /src/Latte/Extensions/Nodes/DefineNode.php:36                public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/EmbedNode.php:38                 public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/FirstLastSepNode.php:36          public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/ForNode.php:31                   public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/ForeachNode.php:37               public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/IfChangedNode.php:32             public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/IfContentNode.php:33             public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/IfNode.php:40                    public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/IterateWhileNode.php:34          public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/SnippetAreaNode.php:36           public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/SnippetNode.php:41               public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/SpacelessNode.php:30             public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/SwitchNode.php:32                public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/TranslateNode.php:34             public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/TryNode.php:30                   public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/WhileNode.php:32                 public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
------------------------------------------------------------------------------------
↪-----------



------------------------------------------------------------------------------------
↪-----------
 List Short Syntax (https://exakat.readthedocs.io/en/latest/Reference/Rules.html#php-
↪listshortsyntax)
------------------------------------------------------------------------------------
↪-----------
 /src/Latte/Compiler/Parser.php:311                           [$prevDepth, $this->
↪htmlDepth]
 /src/Latte/Compiler/Parser.php:644                           [$gen, $line]
 /src/Latte/Compiler/PhpHelpers.php:35                        [$name, $token]
 /src/Latte/Compiler/PhpWriter.php:85                         [ , $l, $source, $format,
↪$cond, $r]
 /src/Latte/Compiler/PhpWriter.php:865                        [$contentType, $context,
↪$flag]
 /src/Latte/Compiler/PhpWriter.php:866                        [$lq, $rq]
 /src/Latte/Compiler/Tokenizer.php:76                         [$line, $col]
```

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```
 /src/Latte/Extensions/CoreExtension.php:233                  [$inner]
 /src/Latte/Extensions/CoreExtension.php:247                  [$name, $mod]
 /src/Latte/Extensions/Nodes/BlockNode.php:40                 [$name, $local]
 /src/Latte/Extensions/Nodes/BlockNode.php:53                 [$node->content]
 /src/Latte/Extensions/Nodes/CaptureNode.php:42               [$node->content]
 /src/Latte/Extensions/Nodes/DefineNode.php:39                [$name, $local]
 /src/Latte/Extensions/Nodes/DefineNode.php:49                [$node->content]
 /src/Latte/Extensions/Nodes/EmbedNode.php:43                 [$node->name, $mode]
 /src/Latte/Extensions/Nodes/EmbedNode.php:50                 [$node->blocks]
 /src/Latte/Extensions/Nodes/FirstLastSepNode.php:51          [$node->then, $nextTag]
 /src/Latte/Extensions/Nodes/FirstLastSepNode.php:54          [$node->else]
 /src/Latte/Extensions/Nodes/ForNode.php:36                   [$node->content]
 /src/Latte/Extensions/Nodes/ForeachNode.php:57               [$node->content, $nextTag]
 /src/Latte/Extensions/Nodes/ForeachNode.php:60               [$node->else]
 /src/Latte/Extensions/Nodes/IfChangedNode.php:43             [$node->then, $nextTag]
 /src/Latte/Extensions/Nodes/IfChangedNode.php:46             [$node->else]
 /src/Latte/Extensions/Nodes/IfContentNode.php:38             [$node->content]
 /src/Latte/Extensions/Nodes/IfNode.php:158                   [$name, $block]
 /src/Latte/Extensions/Nodes/IfNode.php:54                    [$node->then, $nextTag]
 /src/Latte/Extensions/Nodes/IfNode.php:61                    [$node->else, $nextTag]
 /src/Latte/Extensions/Nodes/IncludeBlockNode.php:40          [$name]
 /src/Latte/Extensions/Nodes/IncludeFileNode.php:37           [$node->file]
 /src/Latte/Extensions/Nodes/IterateWhileNode.php:49          [$node->content, $nextTag]
 /src/Latte/Extensions/Nodes/SnippetAreaNode.php:44           [$node->content]
 /src/Latte/Extensions/Nodes/SnippetNode.php:85               [$node->content]
 /src/Latte/Extensions/Nodes/SpacelessNode.php:34             [$node->content]
 /src/Latte/Extensions/Nodes/SwitchNode.php:109               [&$case, &$stmt]
 /src/Latte/Extensions/Nodes/SwitchNode.php:43                [$content, $nextTag]
 /src/Latte/Extensions/Nodes/SwitchNode.php:55                [$content, $nextTag]
 /src/Latte/Extensions/Nodes/SwitchNode.php:63                [$content, $nextTag]
 /src/Latte/Extensions/Nodes/SwitchNode.php:82                [$condition, $stmt]
 /src/Latte/Extensions/Nodes/TranslateNode.php:48             [$node->content]
 /src/Latte/Extensions/Nodes/TryNode.php:40                   [$node->try, $nextTag]
 /src/Latte/Extensions/Nodes/TryNode.php:43                   [$node->else]
 /src/Latte/Extensions/Nodes/WhileNode.php:41                 [$node->content, $nextTag]
 /src/Latte/Runtime/FilterExecutor.php:119                    [$callback, $aware]
 /src/Latte/Runtime/FilterExecutor.php:67                     [$callback, $aware]
 /src/Latte/Runtime/SnippetDriver.php:76                      [$name, $obStarted]
 /src/Latte/Runtime/Template.php:402                          [$method, $contentType]
-----------------------------------------------------------------------------------------
↪-----------
```

Specs

Short name	CompatibilityPHP56
Rulesets	CompatibilityPHP56.
Type	Text
Target	This report is written in 'stdout'.
Available in	Entreprise Edition

16.3.9 CompatibilityPHP74

CompatibilityPHP74

The CompatibilityPHP74 report list all detected issues with PHP 7.4 compatibility.

The CompatibilityPHP74 report displays one result per line, grouped by rule, and ordered by file and line number. Here is an example :

```
/path/from/project/root/to/file:line[space]name of analysis
```

This format is fast, and fitted for human review. It is the same format as PerRule.

```
-----------------------------------------------------------------------------------------
↪-----------
 PHP 7.4 Removed Functions (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#php-php74removedfunctions)
-----------------------------------------------------------------------------------------
↪-----------
 /src/wp-includes/ID3/getid3.php:443                          get_magic_quotes_runtime( )
-----------------------------------------------------------------------------------------
↪-----------

-----------------------------------------------------------------------------------------
↪-----------
 idn_to_ascii() New Default (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#php-idnuts46)
-----------------------------------------------------------------------------------------
↪-----------
 /src/wp-includes/PHPMailer/PHPMailer.php:1468                idn_to_ascii($domain,
↪$errorcode)
-----------------------------------------------------------------------------------------
↪-----------
```

Specs

Short name	CompatibilityPHP74
Rulesets	CompatibilityPHP74.
Type	Text
Target	This report is written in 'stdout'.
Available in	Entreprise Edition

16.3.10 CompatibilityPHP80

CompatibilityPHP80

The CompatibilityPHP80 report list all detected issues with PHP 8.0 compatibility.

The CompatibilityPHP80 report displays one result per line, grouped by rule, and ordered by file and line number. Here is an example :

```
/path/from/project/root/to/file:line[space]name of analysis
```

This format is fast, and fitted for human review. It is the same format as PerRule.

```
-----------------------------------------------------------------------------------------
↪-----------
 PHP 8.0 Resources Turned Into Objects (https://exakat.readthedocs.io/en/latest/
↪Reference/Rules.html#php-php80removesresources)
-----------------------------------------------------------------------------------------
↪-----------
 /src/wp-includes/Requests/Transport/cURL.php:116             is_resource($this->handle)
-----------------------------------------------------------------------------------------
↪-----------



-----------------------------------------------------------------------------------------
↪-----------
 PHP 80 Named Parameter Variadic (https://exakat.readthedocs.io/en/latest/Reference/
↪Rules.html#php-php80namedparametervariadic)
-----------------------------------------------------------------------------------------
↪-----------
 /src/wp-includes/capabilities.php:44                         function map_meta_cap($cap,
↪ $user_id, ...$args) { /**/ }
 /src/wp-includes/class-wp-walker.php:286                     public function paged_walk(
↪$elements, $max_depth, $page_num, $per_page, ...$args) { /**/ }
 /src/wp-includes/functions.php:1108                          function add_query_arg(...
↪$args) { /**/ }
 /src/wp-includes/plugin.php:439                              function do_action($hook_
↪name, ...$arg) { /**/ }
 /src/wp-includes/theme.php:2568                              function add_theme_support(
↪$feature, ...$args) { /**/ }
 /src/wp-includes/theme.php:2899                              function get_theme_support(
↪$feature, ...$args) { /**/ }
 /src/wp-includes/theme.php:3029                              function current_theme_
```

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```
↪supports($feature, ...$args) { /**/ }
 /src/wp-includes/wp-db.php:1395                                public function prepare(
↪$query, ...$args) { /**/ }
------------------------------------------------------------------------------------
↪-----------
```

Specs

Short name	CompatibilityPHP80
Rulesets	CompatibilityPHP80.
Type	Text
Target	This report is written in 'stdout'.
Available in	Entreprise Edition

16.3.11 CompatibilityPHP81

CompatibilityPHP81

The CompatibilityPHP56 report list all detected issues with PHP 8.1 compatibility.

The CompatibilityPHP81 report displays one result per line, grouped by rule, and ordered by file and line number. Here is an example :

```
/path/from/project/root/to/file:line[space]name of analysis
```

This format is fast, and fitted for human review. It is the same format as PerRule.

```
------------------------------------------------------------------------------------
↪-----------
 PHP 8.1 Removed Directives (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#php-php81removeddirective)
------------------------------------------------------------------------------------
↪-----------
 /src/wp-includes/pomo/po.php:24                                @ini_set('auto_detect_line_
↪endings', 1)
------------------------------------------------------------------------------------
↪-----------



------------------------------------------------------------------------------------
↪-----------
 PHP Native Class Type Compatibility (https://exakat.readthedocs.io/en/latest/Reference/
↪Rules.html#php-nativeclasstypecompatibility)
------------------------------------------------------------------------------------
↪-----------
 /src/wp-includes/Requests/Cookie/Jar.php:102                   public function␣
↪offsetUnset($key) { /**/ }
 /src/wp-includes/Requests/Cookie/Jar.php:63                    public function␣
↪offsetExists($key) { /**/ }
```

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```
 /src/wp-includes/Requests/Cookie/Jar.php:73                 public function offsetGet(
↪$key) { /**/ }
 /src/wp-includes/Requests/Cookie/Jar.php:89                 public function offsetSet(
↪$key, $value) { /**/ }
 /src/wp-includes/Requests/Response/Headers.php:26           public function offsetGet(
↪$key) { /**/ }
 /src/wp-includes/Requests/Response/Headers.php:43           public function offsetSet(
↪$key, $value) { /**/ }
 /src/wp-includes/Requests/Utility/CaseInsensitiveDictionary.php:40 public function␣
↪offsetExists($key) { /**/ }
 /src/wp-includes/Requests/Utility/CaseInsensitiveDictionary.php:51 public function␣
↪offsetGet($key) { /**/ }
 /src/wp-includes/Requests/Utility/CaseInsensitiveDictionary.php:68 public function␣
↪offsetSet($key, $value) { /**/ }
 /src/wp-includes/Requests/Utility/CaseInsensitiveDictionary.php:82 public function␣
↪offsetUnset($key) { /**/ }
 /src/wp-includes/Requests/Utility/FilteredIterator.php:40    public function current( )
↪{ /**/ }
 /src/wp-includes/Requests/Utility/FilteredIterator.php:53    public function␣
↪unserialize($serialized) { /**/ }
 /src/wp-includes/Requests/Utility/FilteredIterator.php:53    public function␣
↪unserialize($serialized) { /**/ }
 /src/wp-includes/sodium_compat/src/PHP52/SplFixedArray.php:103 public function␣
↪offsetGet($index) { /**/ }
 /src/wp-includes/sodium_compat/src/PHP52/SplFixedArray.php:114 public function␣
↪offsetSet($index, $newval) { /**/ }
 /src/wp-includes/sodium_compat/src/PHP52/SplFixedArray.php:122 public function␣
↪offsetUnset($index) { /**/ }
 /src/wp-includes/sodium_compat/src/PHP52/SplFixedArray.php:35 public function count( )
↪{ /**/ }
 /src/wp-includes/sodium_compat/src/PHP52/SplFixedArray.php:94 public function␣
↪offsetExists($index) { /**/ }
------------------------------------------------------------------------------------
↪-----------
```

Specs

Short name	CompatibilityPHP81
Rulesets	CompatibilityPHP81.
Type	Text
Target	This report is written in 'stdout'.
Available in	Entreprise Edition

16.3.12 CompatibilityPHP82

CompatibilityPHP82

The CompatibilityPHP82 report list all detected issues with PHP 8.2 compatibility.

The CompatibilityPHP82 report displays one result per line, grouped by rule, and ordered by file and line number. Here is an example :

```
/path/from/project/root/to/file:line[space]name of analysis
```

This format is fast, and fitted for human review. It is the same format as PerRule.

```
-----------------------------------------------------------------------------------------
↪-----------
 Checks Property Existence (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#classes-checkspropertyexistence)
-----------------------------------------------------------------------------------------
↪-----------
 /app/Domain/Service/Project/ProjectIssue/Update.php:31       isset($params->tags)
 /app/Domain/Service/Project/ProjectIssue/Update.php:35       isset($params->releases)
 /app/Domain/Service/Project/ProjectIssue/Update.php:39       isset($params->modules)
 /app/Domain/Service/Project/ProjectIssue/Update.php:43       isset($params->content)
 /app/Domain/Service/Project/ProjectIssue/Update.php:47       isset($params->completed)
 /app/Domain/Service/Project/ProjectIssue/Update.php:49       isset($params->
↪completedDate)
 /app/Domain/Service/Project/ProjectRelease/UpdateParams.php:42 isset($this->
↪completedDate)
-----------------------------------------------------------------------------------------
↪-----------



-----------------------------------------------------------------------------------------
↪-----------
 Undefined Properties (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#classes-undefinedproperty)
-----------------------------------------------------------------------------------------
↪-----------
 /app/Controller/Api/V1/Attachment/Upload.php:36              $request->files
 /app/Controller/Api/V1/Login/Code.php:39                     $request->query
 /app/Controller/BaseBrand.php:103                            $this->in
 /app/Controller/BaseBrand.php:115                            $this->in
 /app/Controller/BaseBrand.php:120                            $this->in
 /app/Controller/BaseBrand.php:132                            $this->in
 /app/Controller/BaseBrand.php:137                            $this->in
 -----------------------------------------------------------------------------------------
↪------------
```

Specs

Short name	CompatibilityPHP82
Rulesets	CompatibilityPHP82.
Type	Text
Target	This report is written in 'stdout'.
Available in	Entreprise Edition

16.3.13 CompatibilityPHP83

CompatibilityPHP83

The CompatibilityPHP83 report list all detected issues with PHP 8.2 compatibility.

The CompatibilityPHP83 report displays one result per line, grouped by rule, and ordered by file and line number. Here is an example :

```
/path/from/project/root/to/file:line[space]name of analysis
```

This format is fast, and fitted for human review. It is the same format as PerRule.

```
-----------------------------------------------------------------------------------------
↪-----------
New Functions In PHP 8.3 (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#php-php83newfunctions)
-----------------------------------------------------------------------------------------
↪-----------

-----------------------------------------------------------------------------------------
↪-----------
```

Specs

Short name	CompatibilityPHP83
Rulesets	CompatibilityPHP83.
Type	Text
Target	This report is written in 'stdout'.
Available in	Entreprise Edition

16.3.14 Composer

Composer

The Composer report provide elements for the require attribute in the composer.json.

It helps documenting the composer.json, by providing more information, extracted from the code.

This report makes a copy then updates the composer.json, when available; otherwise, it creates a totally new composer.json.

The report provides a calculated value for "php": "^7.3" and all the identified PHP extensions (such as "ext-exif", "ext-gd", "ext-finfo", etc). Core PHP extensions are omitted.

It is recommended to review manually the results of the suggested composer.json before using it.

```
Name,File,Line
0,/features/bootstrap/FeatureContext.php,61
10000,/features/bootstrap/FeatureContext.php,61
777,/features/bootstrap/FeatureContext.php,63
20,/features/bootstrap/FeatureContext.php,73
0,/features/bootstrap/FeatureContext.php,334
0,/features/bootstrap/FeatureContext.php,339
0,/features/bootstrap/FeatureContext.php,344
0,/features/bootstrap/FeatureContext.php,362
0,/features/bootstrap/FeatureContext.php,366
0,/features/bootstrap/FeatureContext.php,368
0,/features/bootstrap/FeatureContext.php,372
777,/features/bootstrap/FeatureContext.php,423
777,/features/bootstrap/FeatureContext.php,431
0,/src/Behat/Behat/Context/ContextClass/SimpleClassGenerator.php,68
1,/src/Behat/Behat/Context/ContextClass/SimpleClassGenerator.php,69
0,/src/Behat/Behat/Context/Environment/InitializedContextEnvironment.php,84
0,/src/Behat/Behat/Context/Environment/InitializedContextEnvironment.php,150
```

Specs

Short name	Composer
Rulesets	Appinfo.
Type	JSON
Target	This report is written in 'composer.json'.
Available in	Entreprise Edition

16.3.15 Dependency Wheel

Dependency Wheel

The DependencyWheel represents dependencies in a code source.

Dependency Wheel is a javascript visualization of the classes dependencies in the code. Every class, interface and trait are represented as a circle, and every relation between the classes are represented by a link between them, inside the circle.

It is based on Francois Zaninotto's DependencyWheel and the d3.js.

Reference/images/report.dependencywheel.png

Specs

Short name	Dependency Wheel
Rulesets	Dependency Wheel doesn't depend on rulesets.
Type	HTML
Target	This report is written in 'wheel'.
Available in	Entreprise Edition

16.3.16 Diplomat

Diplomat

The Diplomat is the default human readable report.

The Diplomat report is the default report since Exakat 1.7.0. It is a light version of the Ambassador report, and uses a shorter list of analysis.

Reference/images/report.diplomat.png

Specs

Short name	Diplomat
Rulesets	*CompatibilityPHP53*, *CompatibilityPHP54*, *CompatibilityPHP55*, *CompatibilityPHP56*, *CompatibilityPHP70*, *CompatibilityPHP71*, *CompatibilityPHP72*, *CompatibilityPHP73*, *CompatibilityPHP74*, *CompatibilityPHP80*, *Top10*, *Preferences*, *Appinfo*, *Suggestions*.
Type	HTML
Target	This report is written in 'diplomat'.
Available in	Entreprise Edition, Community Edition

16.3.17 Emissary

Emissary

Emissary is the template for other HTML reports : Ambassador and Diplomat

The Emissary report is not to be used directly. Use Ambassador or Diplomat instead.

Emissary includes the report from 3 other reports : PhpCompilation, PhpConfiguration, Stats.

Specs

Short name	Emissary
Rulesets	This reports works with an arbitrary list of results.
Type	HTML
Target	This report is written in 'report'.
Available in	Entreprise Edition

16.3.18 Exakat Json

Exakat Json

The Exakat JSON report exports in a flat JSON format.

Simple Json format. It is a flat array of objects, all with the same structure.

```
[
  {
    "exakatVersion": "2.2.2",
    "exakatFingerprint": "f93c98ed693f29abc75b52154482ac4f6ff1b59b",
    "analyzedAt": "2021-09-10T16:59:20+00:00",
    "uuid": "1234567abcd",
    "project": "sculpin",
    "branch": "master",
    "lastCommitId": "b7c9027f05d9bff4dc6e92f36d29c4738bfc0b42",
    "ruleId": "Classes\\/ChildRemoveTypehint",
    "type": "warning",
    "severity": "major",
    "fixable": "fixable",
    "file": "\\/src\\/Sculpin\\/Core\\/Source\\/SourceInterface.php",
    "namespace": "\\sculpin\\core\\source",
    "class": "",
    "function": "",
    "message": "Child Class Removes Typehint",
    "startLine": 144,
    "endLine": 144,
    "fullCode": "public function duplicate(string $newSourceId) : SourceInterface ;",
  },

]
```

This Report may be configured with the [Exakatjson] section, to provide the uuid value.

```
[Exakatjson]
uuid="1234567abcd";
```

Specs

Short name	Exakat Json
Rulesets	This reports works with an arbitrary list of results.
Type	Json
Target	
Available in	Entreprise Edition, Exakat Cloud

16.3.19 Exakatyaml

Exakatyaml

Builds a list of ruleset, based on the number of issues from the previous audit.

Exakatyaml helps with the configuration of exakat in a CI. It builds a list of ruleset, based on the number of issues from the previous audit.

Continuous Integration require steps that yield no issues. This is good for analysis that yield no results : in a word, all analysis that are currently clean should be in the CI. That way, any return will be monitored.

On the other hand, other analysis that currently yield issues needs to be fully cleaned before usage.

```
project: my_project
project_name: my_project
project_themes: {  }
project_reports:
    - Ambassador
rulesets:
    ruleset_0: # 0 errors found
         "Accessing Private":                                Classes/AccessPrivate
         "Adding Zero":                                      Structures/AddZero
         "Aliases Usage":                                    Functions/AliasesUsage
         "Already Parents Interface":                        Interfaces/
↪AlreadyParentsInterface
         "Already Parents Trait":                            Traits/AlreadyParentsTrait
         "Altering Foreach Without Reference":               Structures/
↪AlteringForeachWithoutReference
         "Alternative Syntax Consistence":                   Structures/
↪AlternativeConsistenceByFile
         "Always Positive Comparison":                       Structures/NeverNegative
# Other results here
    ruleset_1: # 1 errors found
         "Constant Class":                                   Classes/ConstantClass
         "Could Be Abstract Class":                          Classes/
↪CouldBeAbstractClass
         "Dependant Trait":                                  Traits/DependantTrait
         "Double Instructions":                              Structures/
↪DoubleInstruction
# Other results here
    ruleset_2: # 2 errors found
         "Always Anchor Regex":                              Security/AnchorRegex
         "Forgotten Interface":                              Interfaces/
```

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```
↪CouldUseInterface
# Other results here
    ruleset_3: # 3 errors found
         "@ Operator":                                    Structures/Noscream
         "Indices Are Int Or String":                     Structures/
↪IndicesAreIntOrString
         "Modernize Empty With Expression":                Structures/ModernEmpty
         "Property Variable Confusion":                   Structures/
↪PropertyVariableConfusion
# Other results here
    ruleset_4: # 4 errors found
         "Buried Assignation":                            Structures/
↪BuriedAssignation
         "Identical Consecutive Expression":              Structures/
↪IdenticalConsecutive
# Other results here
    ruleset_122: # 122 errors found
         "Method Could Be Static":                        Classes/CouldBeStatic
```

```
project: page_manager
project_name: drupal_page_manager
project_themes: {  }
project_reports:
    - Ambassador
rulesets:
    ruleset_0: # 0 errors found
         "$HTTP_RAW_POST_DATA Usage":                     Php/RawPostDataUsage
         "$this Belongs To Classes Or Traits":            Classes/ThisIsForClasses
         "$this Is Not An Array":                         Classes/ThisIsNotAnArray
         "$this Is Not For Static Methods":               Classes/ThisIsNotForStatic
         "Abstract Or Implements":                        Classes/
↪AbstractOrImplements
         "Access Protected Structures":                   Classes/AccessProtected
         "Accessing Private":                             Classes/AccessPrivate
         "Adding Zero":                                   Structures/AddZero
         "Aliases Usage":                                 Functions/AliasesUsage
         "Already Parents Interface":                     Interfaces/
↪AlreadyParentsInterface
         "Already Parents Trait":                         Traits/AlreadyParentsTrait
         "Altering Foreach Without Reference":            Structures/
↪AlteringForeachWithoutReference
         "Alternative Syntax Consistence":                Structures/
↪AlternativeConsistenceByFile
         "Always Positive Comparison":                    Structures/NeverNegative
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        "Should Chain Exception":                            Structures/
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        "Should Use SetCookie()":                            Php/UseSetCookie
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        "String May Hold A Variable":                        Type/StringHoldAVariable
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        "Unset In Foreach":                                 Structures/UnsetInForeach
        "Unthrown Exception":                               Exceptions/Unthrown
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        "Unused Label":                                     Structures/UnusedLabel
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        "Upload Filename Injection":                        Security/
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        "Use Constant As Arguments":                        Functions/
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        "Use Nullable Type":                                Php/UseNullableType
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        "Useless Unset":                                        Structures/UselessUnset
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        "Wrong Parameter Type":                                 Php/InternalParameterType
        "Wrong Range Check":                                    Structures/WrongRange
        "Wrong fopen() Mode":                                   Php/FopenMode
        "__DIR__ Then Slash":                                   Structures/DirThenSlash
        "__toString() Throws Exception":                        Structures/
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        "error_reporting() With Integers":                      Structures/
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        "eval() Without Try":                                   Structures/EvalWithoutTry
        "ext/ereg":                                             Extensions/Extereg
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        "filter_input() As A Source":                           Security/FilterInputSource
        "func_get_arg() Modified":                              Functions/
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        "include_once() Usage":                                 Structures/OnceUsage
        "isset() With Constant":                                Structures/
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        "move_uploaded_file Instead Of copy":                   Security/MoveUploadedFile
        "parse_str() Warning":                                  Security/
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        "preg_replace With Option e":                           Structures/pregOptionE
        "self, parent, static Outside Class":                   Classes/NoPSSOutsideClass
        "set_exception_handler() Warning":                      Php/SetExceptionHandlerPHP7
        "var_dump()... Usage":                                  Structures/VardumpUsage
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        "Dependant Trait":                                      Traits/DependantTrait
        "Double Instructions":                                  Structures/
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        "Empty Classes":                                        Classes/EmptyClass
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        "Inconsistent Elseif":                                  Structures/
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        "Instantiating Abstract Class":                         Classes/
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        "No Need For Else":                                 Structures/NoNeedForElse
        "Same Conditions In Condition":                     Structures/SameConditions
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        "Static Loop":                                      Structures/StaticLoop
        "Too Many Injections":                              Classes/TooManyInjections
        "Undefined Caught Exceptions":                      Exceptions/
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        "Unresolved Catch":                                 Classes/UnresolvedCatch
        "Unserialize Second Arg":                           Security/
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        "Useless Catch":                                    Exceptions/UselessCatch
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    ruleset_2: # 2 errors found
        "Always Anchor Regex":                              Security/AnchorRegex
        "Forgotten Interface":                              Interfaces/
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        "No Class As Typehint":                             Functions/NoClassAsTypehint
        "No array_merge() In Loops":                        Performances/
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        "Should Make Ternary":                              Structures/
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        "Should Use Coalesce":                              Php/ShouldUseCoalesce
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    ruleset_3: # 3 errors found
        "@ Operator":                                       Structures/Noscream
        "Indices Are Int Or String":                        Structures/
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        "Modernize Empty With Expression":                  Structures/ModernEmpty
        "Property Variable Confusion":                      Structures/
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        "Too Many Local Variables":                         Functions/
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        "Usort Sorting In PHP 7.0":                         Php/UsortSorting
    ruleset_4: # 4 errors found
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        "Empty Function":                                     Functions/EmptyFunction
        "Relay Function":                                     Functions/RelayFunction
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        "Use Class Operator":                                 Classes/UseClassOperator
        "strpos() Too Much":                                  Performances/StrposTooMuch
    ruleset_6: # 6 errors found
        "Used Once Property":                                 Classes/UsedOnceProperty
    ruleset_7: # 7 errors found
        "No Class In Global":                                 Php/NoClassInGlobal
        "Uncaught Exceptions":                                Exceptions/
↪UncaughtExceptions
        "Unused Functions":                                   Functions/UnusedFunctions
        "Wrong Number Of Arguments In Methods":               Functions/
↪WrongNumberOfArgumentsMethods
    ruleset_8: # 8 errors found
        "Could Make A Function":                              Functions/CouldCentralize
        "Insufficient Typehint":                              Functions/
↪InsufficientTypehint
        "Long Arguments":                                     Structures/LongArguments
        "Property Used In One Method Only":                   Classes/
↪PropertyUsedInOneMethodOnly
        "Static Methods Called From Object":                  Classes/
↪StaticMethodsCalledFromObject
    ruleset_9: # 9 errors found
        "PHP Keywords As Names":                              Php/ReservedNames
        "Undefined Trait":                                    Traits/UndefinedTrait
        "Written Only Variables":                             Variables/
↪WrittenOnlyVariable
    ruleset_10: # 10 errors found
        "Bail Out Early":                                     Structures/BailOutEarly
        "Hardcoded Passwords":                                Functions/
↪HardcodedPasswords
        "Multiple Alias Definitions":                         Namespaces/
↪MultipleAliasDefinitions
    ruleset_11: # 11 errors found
        "Variable Is Not A Condition":                        Structures/
↪NoVariableIsACondition
    ruleset_13: # 13 errors found
        "Undefined Functions":                                Functions/
↪UndefinedFunctions
        "Unused Use":                                         Namespaces/UnusedUse
    ruleset_14: # 14 errors found
        "Iffectations":                                       Structures/Iffectation
        "No Public Access":                                   Classes/NoPublicAccess
    ruleset_16: # 16 errors found
        "Overwriting Variable":                               Variables/Overwriting
```

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```
    ruleset_17: # 17 errors found
         "No Net For Xml Load":                                  Security/NoNetForXmlLoad
         "Unresolved Instanceof":                                Classes/
↪UnresolvedInstanceof
    ruleset_21: # 21 errors found
         "Undefined Class Constants":                            Classes/UndefinedConstants
    ruleset_27: # 27 errors found
         "Locally Unused Property":                              Classes/
↪LocallyUnusedProperty
         "Never Used Properties":                                Classes/PropertyNeverUsed
    ruleset_35: # 35 errors found
         "Useless Referenced Argument":                          Functions/
↪UselessReferenceArgument
    ruleset_38: # 38 errors found
         "Uses Default Values":                                  Functions/
↪UsesDefaultArguments
    ruleset_47: # 47 errors found
         "Unused Arguments":                                     Functions/UnusedArguments
    ruleset_49: # 49 errors found
         "Undefined Properties":                                 Classes/UndefinedProperty
    ruleset_77: # 77 errors found
         "Undefined Parent":                                     Classes/UndefinedParentMP
    ruleset_78: # 78 errors found
         "Undefined ::class":                                    Classes/
↪UndefinedStaticclass
    ruleset_82: # 82 errors found
         "Class Could Be Final":                                 Classes/CouldBeFinal
    ruleset_86: # 86 errors found
         "Unused Protected Methods":                             Classes/
↪UnusedProtectedMethods
    ruleset_89: # 89 errors found
         "Unresolved Classes":                                   Classes/UnresolvedClasses
    ruleset_94: # 94 errors found
         "Used Once Variables (In Scope)":                       Variables/
↪VariableUsedOnceByContext
    ruleset_122: # 122 errors found
         "Method Could Be Static":                               Classes/CouldBeStatic
    ruleset_133: # 133 errors found
         "Should Use Local Class":                               Classes/ShouldUseThis
    ruleset_159: # 159 errors found
         "Undefined Interfaces":                                 Interfaces/
↪UndefinedInterfaces
    ruleset_160: # 160 errors found
         "Unused Methods":                                       Classes/UnusedMethods
    ruleset_183: # 183 errors found
         "Undefined Variable":                                   Variables/UndefinedVariable
    ruleset_337: # 337 errors found
         "Unresolved Use":                                       Namespaces/UnresolvedUse
    ruleset_595: # 595 errors found
         "Undefined Classes":                                    Classes/UndefinedClasses
```

Specs

Short name	Exakatyaml
Rulesets	Exakatyaml doesn't depend on rulesets.
Type	Yaml
Target	This report is written in '.exakat.yaml'.
Available in	Entreprise Edition

16.3.20 File dependendies

File dependendies

This reports displays the file dependencies, based on definition usages.

This report displays all dependencies between files. A file depends on another when it makes usage of one of its definitions : constant, functions, classes, traits, interfaces.

For example, *A.php* depends on *B.php*, because *A.php* uses the function *foo*, which is defined in the *B.php* file. On the other hand, *B.php* doesn't depends on *A.php*, as a function may be defined, but not used.

This diagram shows which files may be used without others.

The resulting diagram is a DOT file, which is readable with [Graphviz](https://www.graphviz.org/about/). Those viewers will display the diagram, and also convert it to other format, such as PNG, JPEG, PDF or others.

Another version of the same diagram is called Filedependencieshtml

`Reference/images/report.filedependencies.png`

Specs

Short name	File dependendies
Rulesets	This reports works with an arbitrary list of results.
Type	DOT
Target	This report is written in 'dependencies.dot'.
Available in	Entreprise Edition

16.3.21 File dependendies HTML

File dependendies HTML

This reports displays the file dependencies, based on definition usages.

This report displays all dependencies between files. A file depends on another when it makes usage of one of its definitions : constant, functions, classes, traits, interfaces.

For example, *A.php* depends on *B.php*, because *A.php* uses the function *foo*, which is defined in the *B.php* file. On the other hand, *B.php* doesn't depends on *A.php*, as a function may be defined, but not used.

This diagram shows which files may be used without others.

The resulting diagram is in HTML file, which is readable with most browsers, from a web server.

Warning : for browser security reasons, the report will NOT load as a local file. It needs to be served by an HTTP server, so all resources are correctly located.

Warning : large applications (> 1000 files) will require a lot of resources to open.

Another version of the same diagram is called Filedependencies, and produces a DOT file

```
Reference/images/report.filedependencieshtml.png
```

Specs

Short name	File dependendies HTML
Rulesets	This reports works with an arbitrary list of results.
Type	HTML
Target	This report is written in 'dependencies'.
Available in	Entreprise Edition

16.3.22 History

History

The History report collects meta information between audits. It saves the values from the current audit into a separate 'history.sqlite' database.

The history tables are the same as the dump.sqlite tables, except for the extra 'serial' table. Each audit comes with 3 identifiers :

- 'dump_timestamp' : this is a timmestamp taken when the dump was build
- 'dump_serial' : this is a serial number, based on the previous audit, and incremented by one. This is handy to keep the values in sequence
- 'dump_id' : this is a unique random id, which helps distinguish audits which may have inconsistency between serial or timestamp.

This report provides a 'history.sqlite' database. The following tables are inventoried :

- hash
- resultsCounts

Specs

Short name	History
Rulesets	This reports works with an arbitrary list of results.
Type	Sqlite
Target	This report is written in 'history.sqlite'.
Available in	Entreprise Edition

16.3.23 Inventory

Inventory

The Inventory report collects literals and names trhoughout the code.

This report provides the value, the file and line where a type of value is present.

The following values and names are inventoried :

- Variables
- Incoming Variables
- Session Variables
- Global Variables
- Date formats
- Constants
- Functions
- Classes
- Interface names
- Trait names
- Namespaces
- Exceptions
- Regex
- SQL queries
- URL
- Unicode blocks
- Integers
- Reals numbers
- Literal Arrays
- Strings

Every type of values is exported to a file. If no value of such type was found during the audit, the file only contains the headers. It is always produced.

```
Name,File,Line
0,/features/bootstrap/FeatureContext.php,61
10000,/features/bootstrap/FeatureContext.php,61
777,/features/bootstrap/FeatureContext.php,63
20,/features/bootstrap/FeatureContext.php,73
0,/features/bootstrap/FeatureContext.php,334
0,/features/bootstrap/FeatureContext.php,339
0,/features/bootstrap/FeatureContext.php,344
0,/features/bootstrap/FeatureContext.php,362
0,/features/bootstrap/FeatureContext.php,366
0,/features/bootstrap/FeatureContext.php,368
0,/features/bootstrap/FeatureContext.php,372
777,/features/bootstrap/FeatureContext.php,423
777,/features/bootstrap/FeatureContext.php,431
0,/src/Behat/Behat/Context/ContextClass/SimpleClassGenerator.php,68
1,/src/Behat/Behat/Context/ContextClass/SimpleClassGenerator.php,69
0,/src/Behat/Behat/Context/Environment/InitializedContextEnvironment.php,84
0,/src/Behat/Behat/Context/Environment/InitializedContextEnvironment.php,150
```

Specs

Short name	Inventory
Rulesets	Inventories.
Type	CSV
Target	This report is written in 'Internal'.
Available in	Entreprise Edition

16.3.24 Json

Json

The JSON report exports in JSON format.

Simple Json format. It is a structured array with all results, described as object.

```
Filename => [
                errors   => count,
                warning  => count,
                fixable  => count,
                filename => string,
                message  => [
                    line => [
                        type,
                        source,
                        severity,
                        fixable,
                        message
```

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```
                    ]
                ]
            ]
```


```
{
   "\/src\/Path\/To\/File.php":{
      "errors":0,
      "warnings":105,
      "fixable":0,
      "filename":"\/src\/Path\/To\/File.php",
      "messages":{
         "55":[
            [
               {
                  "type":"warning",
                  "source":"Php/EllipsisUsage",
                  "severity":"Major",
                  "fixable":"fixable",
                  "message":"... Usage"
               }
            ]
         ],
         }
    }
}
```


Reference/images/report.json.png

Specs

Short name	Json
Rulesets	This reports works with an arbitrary list of results.
Type	Json
Target	This report is written in 'exakat.json'.
Available in	Entreprise Edition

16.3.25 Marmelab

Marmelab

The Marmelab report format data to use with a GraphQL server.

Marmelab is a report format to build GraphQL server with exakat's results. Export the results of the audit in this JSON file, then use the json-graphql-server to have a GraphQL server with all the results.

You may also learn more about GraphQL at Introducing Json GraphQL Server.

```
php exakat.phar report -p -format Marmelab -file marmelab
cp projects/myproject/marmelab.json path/to/marmelab
json-graphql-server db.json
```

Specs

Short name	Marmelab
Rulesets	Analyze.
Type	JSON
Target	This report is written in 'exakat.json'.
Available in	Entreprise Edition

16.3.26 Meters

Meters

The Meters report export various dimensions of the audited code.

Exakat measures a large number of code dimensions, such as number of files, lines of code, tokens. All those are collected in this report.

```
{
    "loc": 95950,
    "locTotal": 140260,
    "files": 1824,
    "tokens": 677213
}
```

Specs

Short name	Meters
Rulesets	None.
Type	JSON
Target	This report is written in 'exakat.meters.json'.
Available in	Entreprise Edition

16.3.27 Migration74

Migration74

The Migration74 is the report dedicated to migrating PHP code to version 7.4.

The Migration74 report runs the backward incompatibilities tests for PHP 7.4, from a PHP 7.3 compatible code.

Reference/images/report.migration74.png

Specs

Short name	Migration74
Rulesets	*CompatibilityPHP73*, *Suggestions*.
Type	HTML
Target	This report is written in 'migration74'.
Available in	Entreprise Edition

16.3.28 Migration80

Migration80

The Migration80 is the report dedicated to migrating PHP code to version 8.0.

The Migration 80 report runs the backward incompatibilities tests for PHP 8.0, from a PHP 7.4 compatible code.

Reference/images/report.migration80.png

Specs

Short name	Migration80
Rulesets	*CompatibilityPHP80*, *Suggestions*.
Type	HTML
Target	This report is written in 'migration80'.
Available in	Entreprise Edition

16.3.29 Migration81

Migration81

The Migration81 is the report dedicated to migrating PHP code to version 8.1.

The Migration 81 report runs the backward incompatibilities tests for PHP 8.1, from a PHP 8.0 compatible code.

Reference/images/report.migration81.png

Specs

Short name	Migration81
Rulesets	*CompatibilityPHP81*, *Suggestions*.
Type	HTML
Target	This report is written in 'migration81'.
Available in	Entreprise Edition

16.3.30 Migration82

Migration82

The Migration82 is the report dedicated to migrating PHP code to version 8.2.

The Migration 82 report runs the backward incompatibilities tests for PHP 8.2, from a PHP 8.1 compatible code.

Reference/images/report.migration82.png

Specs

Short name	Migration82
Rulesets	*CompatibilityPHP82*, *Suggestions*.
Type	HTML
Target	This report is written in 'migration82'.
Available in	Entreprise Edition

16.3.31 Naming

Naming

The Naming report checks spelling with named element in the code.

The Naming report checks spelling with named element in the code.

Reference/images/report.naming.png

Specs

Short name	Naming
Rulesets	Naming doesn't depend on rulesets.
Type	html
Target	This report is written in 'naming.html'.
Available in	Entreprise Edition

16.3.32 None

None

None is the empty report. It runs the report generating stack, but doesn't produce any result.

None is a utility report, aimed to test exakat's installation.

Specs

Short name	None
Rulesets	Any.
Type	None
Target	This report is written in 'none'.
Available in	Entreprise Edition, Community Edition

16.3.33 OneLiners

OneLiners

The One Liners report collects one liner usages, which makes using IDE hard.

The One Liners report is based on Andreas Möllers's post Avoiding one-liners in PHP. It reports all the one liners from that article.

```
/app/Infra/functions.php:305        Php/Coalesce    Coalesce        $message ?: __('')
/app/Infra/functions.php:305        Php/ShortTernary        Short Ternary   $message ?: _
↪_('')
/app/Infra/Model.php:797    Php/Coalesce    Coalesce        $fields ?: $options['field']
/app/Infra/Model.php:797    Php/Coalesce    Coalesce        $table ?: $this->
↪getTableName( )
/app/Infra/Model.php:797    Php/ShortTernary        Short Ternary   $fields ?: $options[
↪'field']
/app/Infra/Model.php:797    Php/ShortTernary        Short Ternary   $table ?: $this->
↪getTableName( )
/app/Infra/Model.php:1581   Php/Coalesce    Coalesce        preg_replace('/[A-Z]/', '_\\0
↪', $name) ?: ''
/app/Infra/Model.php:1581   Php/ShortTernary        Short Ternary   preg_replace('/[A-Z]/
↪', '_\\0', $name) ?: ''
/app/Infra/Model.php:999    Php/Coalesce    Coalesce        $type ?: (!empty($data[$this-
↪>getPk( )]) ? self::MODEL_UPDATE : self::MODEL_INSERT)
/app/Infra/Model.php:999    Php/ShortTernary        Short Ternary   $type ?: (!empty(
↪$data[$this->getPk( )]) ? self::MODEL_UPDATE : self::MODEL_INSERT)
/app/Infra/Model.php:1326   Php/Coalesce    Coalesce        $fields ?: '*'
/app/Infra/Model.php:1326   Php/ShortTernary        Short Ternary   $fields ?: '*'
/app/Infra/Model.php:1578   Php/Coalesce    Coalesce        preg_replace_callback('/_([a-
↪zA-Z])/', function ($match) { /**/ } , $name) ?: ''
/app/Infra/Model.php:1578   Php/ShortTernary        Short Ternary   preg_replace_
↪callback('/_([a-zA-Z])/', function ($match) { /**/ } , $name) ?: ''
/app/Infra/Code.php:28      Php/Coalesce    Coalesce        Cache::get('captcha:' . $id)␣
↪?: ''
/app/Infra/Code.php:28      Php/ShortTernary        Short Ternary   Cache::get('captcha:
↪' . $id) ?: ''
/app/Infra/PermissionCache.php:27   Php/Coalesce    Coalesce        (array) Cache::get(
↪'permission:' . $id) ?: ['static' => [ ], 'dynamic' => [ ]]
/app/Infra/PermissionCache.php:27   Php/ShortTernary        Short Ternary   (array)␣
↪Cache::get('permission:' . $id) ?: ['static' => [ ], 'dynamic' => [ ]]
/app/Controller/Swagger/Index.php:39        Php/Coalesce    Coalesce        json_encode(
↪$openApi) ?: ''
/app/Controller/Swagger/Index.php:39        Php/ShortTernary        Short Ternary   json_
↪encode($openApi) ?: ''
/app/Domain/Service/Search/Search.php:45    Php/Coalesce    Coalesce        $subService ?
↪: $v
/app/Domain/Service/Search/Search.php:45    Php/ShortTernary        Short Ternary
↪$subService ?: $v
/app/Infra/Repository/User/User.php:28      Functions/UseArrowFunctions     Use Arrow␣
↪Functions     fn (Select $select) => $select->where('name', $name)
/app/Infra/Repository/User/User.php:41      Functions/UseArrowFunctions     Use Arrow␣
↪Functions     fn (Select $select) => $select->where('id', $id)
/app/Infra/ModelTest.php:3472       Functions/UseArrowFunctions     Use Arrow Functions ␣
↪    fn ( ) => $baseBrandModel->trans2(['first' => 'new1', 'second' => 'new2',  ])
/app/Infra/ModelTest.php:3500       Functions/UseArrowFunctions     Use Arrow Functions ␣
↪    fn ( ) => $baseBrandModel->trans3(['first' => 'new1', 'second' => 'new2',  ])
/app/Domain/Service/User/User/Users.php:23  Functions/UseArrowFunctions     Use Arrow␣
↪Functions     fn (Select $select) => $select->eager(['role'])
/app/Domain/Entity/Product/BaseBrandModel.php:237   Functions/UseArrowFunctions     Use␣
↪Arrow Functions     fn ( ) => $this->trans3($in)
/app/Domain/Entity/Product/BaseBrandModel.php:242   Functions/UseArrowFunctions     Use␣
```

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```
↪Arrow Functions     fn ( ) => $this->trans3($in)
/app/Middleware/Filter.php:73       Functions/UseArrowFunctions     Use Arrow Functions ␣
↪   fn (mixed &$value, string $key) => $value = $this->transformValue($value, $key)
```

Specs

Short name	OneLiners
Rulesets	This reports works with an arbitrary list of results.
Type	Text
Target	This report is written in 'oneliners'.
Available in	Entreprise Edition

16.3.34 Owasp

Owasp

The OWASP report is a security report.

The OWASP report focuses on the OWASP top 10. It reports all the security analysis, distributed across the 10 categories of vulnerabilities.

Reference/images/report.owasp.png

Specs

Short name	Owasp
Rulesets	This reports works with an arbitrary list of results.
Type	HTML
Target	This report is written in 'owasp'.
Available in	Entreprise Edition

16.3.35 Perfile

Perfile

The Perfile report lays out the results file per file.

The Perfile report displays one result per line, grouped by file, and ordered by line number. Here is an example :

```
/path/from/project/root/to/file:line[space]name of analysis
```

This format is fast, and fitted for human review.

```
-------------------------------------------------------
 line  /themes/Rozier/Controllers/LoginController.php
-------------------------------------------------------
   34  Multiple Alias Definitions
   36  Unresolved Use
   43  Multiple Alias Definitions
   51  Class Could Be Final
   58  Undefined Interfaces
   81  Undefined Interfaces
   81  Unused Arguments
   81  Used Once Variables (In Scope)
   91  Undefined Interfaces
   91  Unused Arguments
   91  Used Once Variables (In Scope)
  101  Undefined Interfaces
  103  Nested Ifthen
  104  Unresolved Classes
  106  Buried Assignation
  106  Iffectations
  106  Use Positive Condition
  121  Uncaught Exceptions
  121  Unresolved Classes
  129  Uncaught Exceptions
-------------------------------------------------------
```

Specs

Short name	Perfile
Rulesets	This reports works with an arbitrary list of results.
Type	Text
Target	This report is written in 'stdout'.
Available in	Entreprise Edition, Community Edition

16.3.36 Perfule

Perfule

The Perrule report lays out the results, rule by rue.

The Perrule report displays one result per line, grouped by rule, and ordered by file and line number. Here is an example :

```
/path/from/project/root/to/file:line[space]name of analysis
```

This format is fast, and fitted for human review.

```
-------------------------------------------------------------------------------------
↪-----------
 Coalesce Equal (https://exakat.readthedocs.io/en/latest/Reference/Rules.html#php-
↪coalesceequal)
```

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```
-----------------------------------------------------------------------------------------
↪-----------
 /src/Bridges/Tracy/BlueScreenPanel.php:25                    $blueScreen ??= Tracy\
↪Debugger::getBlueScreen( )
 /src/Bridges/Tracy/LattePanel.php:32                         $bar ??= Tracy\
↪Debugger::getBar( )
 /src/Latte/Compiler/Lexer.php:371                            $type ??= $this->
↪defaultSyntax
 /src/Latte/Compiler/Nodes/FragmentNode.php:38                $this->line ??= $node->line
 /src/Latte/Compiler/Parser.php:723                           $layer ??= $this->layer
 /src/Latte/Compiler/PhpWriter.php:137                        $uniq ??= '$' .␣
↪bin2hex(random_bytes(5))
 /src/Latte/Compiler/PhpWriter.php:194                        $tokens ??= $this->tokens
 /src/Latte/Extensions/Blueprint.php:83                       $native ??= (PHP_VERSION_
↪ID >= 70400)
 /src/Latte/Extensions/Filters.php:52                         $info->contentType ??=
↪'html'
 /src/Latte/Runtime/Template.php:340                          $block ??= new Block
 /src/Latte/Runtime/Template.php:399                          $destId ??= $staticId
-----------------------------------------------------------------------------------------
↪-----------



-----------------------------------------------------------------------------------------
↪-----------
 Const Visibility Usage (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#classes-constvisibilityusage)
-----------------------------------------------------------------------------------------
↪-----------
 /src/Latte/Compiler/Lexer.php:26                             public const RE_STRING = '\
↪'(?:\\\\.|[^\'\\\\])*+\'|"(?:\\\\.|[^"\\\\])*+"'
 /src/Latte/Compiler/Lexer.php:29                             public const RE_TAG_NAME =
↪'[a-zA-Z][a-zA-Z0-9:_.-]*'
 /src/Latte/Compiler/Lexer.php:30                             public const RE_VALUE_NAME␣
↪= '[^\p{C} "\'<>=`/{}]+'
 /src/Latte/Compiler/Lexer.php:31                             public const RE_INDENT =
↪'((?<=\n|^)[ \t]+)?'
 /src/Latte/Compiler/Lexer.php:34                             public const N_PREFIX = 'n:
↪'
 /src/Latte/Compiler/Lexer.php:37                             public const STATE_PLAIN_
↪TEXT = 'statePlain', STATE_HTML_TEXT = 'stateHtmlText'
 /src/Latte/Compiler/MacroTokens.php:18                       public const T_WHITESPACE␣
↪= 1, T_COMMENT = 2, T_SYMBOL = 3, T_NUMBER = 4, T_VARIABLE = 5, T_STRING = 6, T_CAST =␣
↪7, T_KEYWORD = 8, T_CHAR = 9
 /src/Latte/Compiler/MacroTokens.php:29                       public const SIGNIFICANT =␣
↪[self::T_SYMBOL, self::T_NUMBER, self::T_VARIABLE, self::T_STRING, self::T_CAST,␣
↪self::T_KEYWORD, self::T_CHAR], NON_SIGNIFICANT = [self::T_COMMENT, self::T_WHITESPACE]
 /src/Latte/Compiler/NodeTraverser.php:15                     public const DONT_TRAVERSE_
↪CHILDREN = 1
 /src/Latte/Compiler/NodeTraverser.php:16                     public const STOP_
↪TRAVERSAL = 2
 /src/Latte/Compiler/Parser.php:30                            public const LOCATION_HEAD␣
```

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```
↪= 1, LOCATION_TEXT = 2, LOCATION_TAG = 3
/src/Latte/Compiler/Tag.php:25                              public const PREFIX_INNER␣
↪= 'inner', PREFIX_TAG = 'tag', PREFIX_NONE = ''
/src/Latte/Compiler/Token.php:20                            public const TEXT = 'text'
/src/Latte/Compiler/Token.php:21                            public const WHITESPACE =
↪'whitespace'
/src/Latte/Compiler/Token.php:22                            public const SLASH = 'slash
↪'
/src/Latte/Compiler/Token.php:23                            public const EQUALS =
↪'equals'
/src/Latte/Compiler/Token.php:24                            public const QUOTE = 'quote
↪'
/src/Latte/Compiler/Token.php:26                            public const LATTE_TAG_
↪OPEN = 'latteTagOpen'
/src/Latte/Compiler/Token.php:27                            public const LATTE_TAG_END␣
↪= 'latteTagEnd'
/src/Latte/Compiler/Token.php:28                            public const LATTE_NAME =
↪'latteName'
/src/Latte/Compiler/Token.php:29                            public const LATTE_ARGS =
↪'latteArgs'
/src/Latte/Compiler/Token.php:30                            public const LATTE_COMMENT_
↪OPEN = 'latteCommentOpen'
/src/Latte/Compiler/Token.php:31                            public const LATTE_COMMENT_
↪CLOSE = 'latteCommentClose'
/src/Latte/Compiler/Token.php:33                            public const HTML_TAG_OPEN␣
↪= 'htmlTagOpen'
/src/Latte/Compiler/Token.php:34                            public const HTML_TAG_
↪CLOSE = 'htmlTagClose'
/src/Latte/Compiler/Token.php:35                            public const HTML_COMMENT_
↪OPEN = 'htmlCommentOpen'
/src/Latte/Compiler/Token.php:36                            public const HTML_COMMENT_
↪CLOSE = 'htmlCommentClose'
/src/Latte/Compiler/Token.php:37                            public const HTML_BOGUS_
↪TAG_OPEN = 'htmlBogusTagOpen'
/src/Latte/Compiler/Token.php:38                            public const HTML_NAME =
↪'htmlName'
/src/Latte/Compiler/Tokenizer.php:25                        public const VALUE = 0,␣
↪OFFSET = 1, TYPE = 2
/src/Latte/Context.php:19                                   public const TEXT = 'text',
↪ HTML = 'html', XML = 'xml', JS = 'js', CSS = 'css', ICAL = 'ical'
/src/Latte/Context.php:27                                   public const HTML_TEXT =␣
↪null, HTML_COMMENT = 'Comment', HTML_BOGUSTAG = 'Bogus', HTML_CSS = 'Css', HTML_JS =
↪'Js', HTML_TAG = 'Tag', HTML_ATTRIBUTE = 'Attr', HTML_ATTRIBUTE_JS = 'AttrJs', HTML_
↪ATTRIBUTE_CSS = 'AttrCss', HTML_ATTRIBUTE_URL = 'AttrUrl', HTML_ATTRIBUTE_UNQUOTED =
↪'Unquoted'
/src/Latte/Context.php:40                                   public const XML_TEXT =␣
↪null, XML_COMMENT = 'Comment', XML_BOGUSTAG = 'Bogus', XML_TAG = 'Tag', XML_ATTRIBUTE␣
↪= 'Attr'
/src/Latte/Engine.php:20                                    public const VERSION = '3.
↪0.0-dev'
/src/Latte/Engine.php:21                                    public const VERSION_ID =␣
↪30000
```

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```
 /src/Latte/Engine.php:24                                    public const CONTENT_HTML␣
↪= Context::HTML, CONTENT_XML = Context::XML, CONTENT_JS = Context::JS, CONTENT_CSS =␣
↪Context::CSS, CONTENT_ICAL = Context::ICAL, CONTENT_TEXT = Context::TEXT
 /src/Latte/Runtime/SnippetDriver.php:23                     public const TYPE_STATIC =
↪'static', TYPE_DYNAMIC = 'dynamic', TYPE_AREA = 'area'
 /src/Latte/Runtime/Template.php:24                          public const LAYER_TOP = 0,
↪ LAYER_SNIPPET = 'snippet', LAYER_LOCAL = 'local'
 /src/Latte/Runtime/Template.php:29                          protected const CONTENT_
↪TYPE = Latte\Context::HTML
 /src/Latte/Runtime/Template.php:31                          protected const BLOCKS = [␣
↪]
 /src/Latte/Sandbox/SecurityPolicy.php:22                    public const ALL = ['*']
 /src/Latte/exceptions.php:45                                public const MESSAGES =␣
↪[PREG_INTERNAL_ERROR => 'Internal error', PREG_BACKTRACK_LIMIT_ERROR => 'Backtrack␣
↪limit was exhausted', PREG_RECURSION_LIMIT_ERROR => 'Recursion limit was exhausted',␣
↪PREG_BAD_UTF8_ERROR => 'Malformed UTF-8 data', PREG_BAD_UTF8_OFFSET_ERROR => 'Offset␣
↪didn\'t correspond to the begin of a valid UTF-8 code point', 6 => 'Failed due to␣
↪limited JIT stack space',  ]
------------------------------------------------------------------------------------
↪-----------

------------------------------------------------------------------------------------
↪-----------
 Generator Cannot Return (https://exakat.readthedocs.io/en/latest/Reference/Rules.html
↪#functions-generatorcannotreturn)
------------------------------------------------------------------------------------
↪-----------
 /src/Latte/Compiler/Lexer.php:321                           private function␣
↪match(string $re) : \Generator { /**/ }
 /src/Latte/Compiler/Node.php:21                             public function &
↪getIterator( ) : \Generator { /**/ }
 /src/Latte/Extensions/CoreExtension.php:229                 public function␣
↪parseSyntax(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/BlockNode.php:37                public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/CaptureNode.php:33              public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/DefineNode.php:36               public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/EmbedNode.php:38                public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/FirstLastSepNode.php:36         public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/ForNode.php:31                  public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/ForeachNode.php:37              public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/IfChangedNode.php:32            public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/IfContentNode.php:33            public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/IfNode.php:40                   public static function␣
```

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```
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/IterateWhileNode.php:34          public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/SnippetAreaNode.php:36           public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/SnippetNode.php:41               public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/SpacelessNode.php:30             public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/SwitchNode.php:32                public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/TranslateNode.php:34             public static function␣
↪parse(Tag $tag, Parser $parser) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/TryNode.php:30                   public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
 /src/Latte/Extensions/Nodes/WhileNode.php:32                 public static function␣
↪parse(Tag $tag) : \Generator { /**/ }
------------------------------------------------------------------------------------------
↪-----------



------------------------------------------------------------------------------------------
↪-----------
 List Short Syntax (https://exakat.readthedocs.io/en/latest/Reference/Rules.html#php-
↪listshortsyntax)
------------------------------------------------------------------------------------------
↪-----------
 /src/Latte/Compiler/Parser.php:311                           [$prevDepth, $this->
↪htmlDepth]
 /src/Latte/Compiler/Parser.php:644                           [$gen, $line]
 /src/Latte/Compiler/PhpHelpers.php:35                        [$name, $token]
 /src/Latte/Compiler/PhpWriter.php:85                         [ , $l, $source, $format,
↪$cond, $r]
 /src/Latte/Compiler/PhpWriter.php:865                        [$contentType, $context,
↪$flag]
 /src/Latte/Compiler/PhpWriter.php:866                        [$lq, $rq]
 /src/Latte/Compiler/Tokenizer.php:76                         [$line, $col]
 /src/Latte/Extensions/CoreExtension.php:233                  [$inner]
 /src/Latte/Extensions/CoreExtension.php:247                  [$name, $mod]
 /src/Latte/Extensions/Nodes/BlockNode.php:40                 [$name, $local]
 /src/Latte/Extensions/Nodes/BlockNode.php:53                 [$node->content]
 /src/Latte/Extensions/Nodes/CaptureNode.php:42               [$node->content]
 /src/Latte/Extensions/Nodes/DefineNode.php:39                [$name, $local]
 /src/Latte/Extensions/Nodes/DefineNode.php:49                [$node->content]
 /src/Latte/Extensions/Nodes/EmbedNode.php:43                 [$node->name, $mode]
 /src/Latte/Extensions/Nodes/EmbedNode.php:50                 [$node->blocks]
 /src/Latte/Extensions/Nodes/FirstLastSepNode.php:51          [$node->then, $nextTag]
 /src/Latte/Extensions/Nodes/FirstLastSepNode.php:54          [$node->else]
 /src/Latte/Extensions/Nodes/ForNode.php:36                   [$node->content]
 /src/Latte/Extensions/Nodes/ForeachNode.php:57               [$node->content, $nextTag]
 /src/Latte/Extensions/Nodes/ForeachNode.php:60               [$node->else]
 /src/Latte/Extensions/Nodes/IfChangedNode.php:43             [$node->then, $nextTag]
```

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```
 /src/Latte/Extensions/Nodes/IfChangedNode.php:46              [$node->else]
 /src/Latte/Extensions/Nodes/IfContentNode.php:38              [$node->content]
 /src/Latte/Extensions/Nodes/IfNode.php:158                    [$name, $block]
 /src/Latte/Extensions/Nodes/IfNode.php:54                     [$node->then, $nextTag]
 /src/Latte/Extensions/Nodes/IfNode.php:61                     [$node->else, $nextTag]
 /src/Latte/Extensions/Nodes/IncludeBlockNode.php:40           [$name]
 /src/Latte/Extensions/Nodes/IncludeFileNode.php:37            [$node->file]
 /src/Latte/Extensions/Nodes/IterateWhileNode.php:49           [$node->content, $nextTag]
 /src/Latte/Extensions/Nodes/SnippetAreaNode.php:44            [$node->content]
 /src/Latte/Extensions/Nodes/SnippetNode.php:85                [$node->content]
 /src/Latte/Extensions/Nodes/SpacelessNode.php:34              [$node->content]
 /src/Latte/Extensions/Nodes/SwitchNode.php:109                [&$case, &$stmt]
 /src/Latte/Extensions/Nodes/SwitchNode.php:43                 [$content, $nextTag]
 /src/Latte/Extensions/Nodes/SwitchNode.php:55                 [$content, $nextTag]
 /src/Latte/Extensions/Nodes/SwitchNode.php:63                 [$content, $nextTag]
 /src/Latte/Extensions/Nodes/SwitchNode.php:82                 [$condition, $stmt]
 /src/Latte/Extensions/Nodes/TranslateNode.php:48              [$node->content]
 /src/Latte/Extensions/Nodes/TryNode.php:40                    [$node->try, $nextTag]
 /src/Latte/Extensions/Nodes/TryNode.php:43                    [$node->else]
 /src/Latte/Extensions/Nodes/WhileNode.php:41                  [$node->content, $nextTag]
 /src/Latte/Runtime/FilterExecutor.php:119                     [$callback, $aware]
 /src/Latte/Runtime/FilterExecutor.php:67                      [$callback, $aware]
 /src/Latte/Runtime/SnippetDriver.php:76                       [$name, $obStarted]
 /src/Latte/Runtime/Template.php:402                           [$method, $contentType]
-----------------------------------------------------------------------------------------
↪-----------
```

Specs

Short name	Perfule
Rulesets	This reports works with an arbitrary list of results.
Type	Text
Target	This report is written in 'stdout'.
Available in	Entreprise Edition

16.3.37 PhpCompilation

PhpCompilation

The PhpCompilation suggests a list of compilation directives when compiling the PHP binary, tailored for the code

PhpCompilation bases its selection on the code and its usage of features. PhpCompilation also recommends disabling unused standard extensions : this helps reducing the footprint of the binary, and prevents unused features to be available for intrusion. PhpCompilation is able to detects over 150 PHP extensions.

```
;;;;;;;;;;;;;;;;;;;;;;;;;;
; Suggestion for php.ini ;
;;;;;;;;;;;;;;;;;;;;;;;;;;
```

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```
; The directives below are selected based on the code provided.
; They only cover the related directives that may have an impact on the code
;
; The list may not be exhaustive
; The suggested values are not recommendations, and should be reviewed and adapted
;


[date]
; It is not safe to rely on the system's timezone settings. Make sure the
; directive date.timezone is set in php.ini.
date.timezone = Europe/Amsterdam



[pcre]
; More information about pcre :
;http://php.net/manual/en/pcre.configuration.php



[standard]
; This sets the maximum amount of memory in bytes that a script is allowed to
; allocate. This helps prevent poorly written scripts for eating up all available
; memory on a server. It is recommended to set this as low as possible and avoid
; removing the limit.
memory_limit = 120

; This sets the maximum amount of time, in seconds, that a script is allowed to
; run. The lower the value, the better for the server, but also, the better has
; the script to be written. Avoid really large values that are only useful for
; admin, and set them per directory.
max_execution_time = 90

; Exposes to the world that PHP is installed on the server. For security reasons,
; it is better to keep this hidden.
expose_php = Off

; This determines whether errors should be printed to the screen as part of the
; output or if they should be hidden from the user.
display_errors = Off

; Set the error reporting level. Always set this high, so as to have the errors
; reported, and logged.
error_reporting = E_ALL

; Always log errors for future use
log_errors = On

; Name of the file where script errors should be logged.
error_log = Name of a writable file, suitable for logging.
```

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```
; More information about standard :
;http://php.net/manual/en/info.configuration.php

; Name of the file where script errors should be logged.
disable_functions = curl_init,ftp_connect,ftp_ssl_connect,ldap_connect,mail,mysqli_
↪connect,mysqli_pconnect,pg_connect,pg_pconnect,socket_create,socket_accept,socket_
↪connect,socket_listen
disable_classes = mysqli
```

Specs

Short name	PhpCompilation
Rulesets	Appinfo.
Type	Text
Target	This report is written in 'compilePHP.txt'.
Available in	Entreprise Edition

16.3.38 PhpConfiguration

PhpConfiguration

The PhpConfiguration suggests a list of directives to check when setting up the hosting server, tailored for the code

PhpConfiguration bases its selection on the code, and classic recommendations. For example, memory_limit or expose_php are always reported, though they have little impact in the code. Extensions also get a short list of important directive, and offer a link to the documentation for more documentation.

```
;;;;;;;;;;;;;;;;;;;;;;;;;;
; Suggestion for php.ini ;
;;;;;;;;;;;;;;;;;;;;;;;;;;

; The directives below are selected based on the code provided.
; They only cover the related directives that may have an impact on the code
;
; The list may not be exhaustive
; The suggested values are not recommendations, and should be reviewed and adapted
;


[date]
; It is not safe to rely on the system's timezone settings. Make sure the
; directive date.timezone is set in php.ini.
date.timezone = Europe/Amsterdam



[pcre]
; More information about pcre :
;http://php.net/manual/en/pcre.configuration.php
```

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```
[standard]
; This sets the maximum amount of memory in bytes that a script is allowed to
; allocate. This helps prevent poorly written scripts for eating up all available
; memory on a server. It is recommended to set this as low as possible and avoid
; removing the limit.
memory_limit = 120

; This sets the maximum amount of time, in seconds, that a script is allowed to
; run. The lower the value, the better for the server, but also, the better has
; the script to be written. Avoid really large values that are only useful for
; admin, and set them per directory.
max_execution_time = 90

; Exposes to the world that PHP is installed on the server. For security reasons,
; it is better to keep this hidden.
expose_php = Off

; This determines whether errors should be printed to the screen as part of the
; output or if they should be hidden from the user.
display_errors = Off

; Set the error reporting level. Always set this high, so as to have the errors
; reported, and logged.
error_reporting = E_ALL

; Always log errors for future use
log_errors = On

; Name of the file where script errors should be logged.
error_log = Name of a writable file, suitable for logging.

; More information about standard :
;http://php.net/manual/en/info.configuration.php

; Name of the file where script errors should be logged.
disable_functions = curl_init,ftp_connect,ftp_ssl_connect,ldap_connect,mail,mysqli_
↪connect,mysqli_pconnect,pg_connect,pg_pconnect,socket_create,socket_accept,socket_
↪connect,socket_listen
disable_classes = mysqli
```

Specs

Short name	PhpConfiguration
Rulesets	Appinfo.
Type	Text
Target	This report is written in 'php.suggested.ini-dist'.
Available in	Entreprise Edition

16.3.39 Phpcity

Phpcity

The Phpcity report represents your code as a city.

Phpcity is a code visualisation tool : it displays the source code as a city, with districts and buildings. Ther will be high sky crappers, signaling large classes, entire districts of small blocks, large venues and isolated parks. Some imagination is welcome too.

The original idea is Richard Wettel's Code city, which has been adapted to many languages, including PHP. The PHP version is based on the open source PHPcity project, which is itself build with JScity.

To use this tool, run an exakat audit, then generate the 'PHPcity' report : *php exakat.phar report -p mycode -format PHPcity -v*

This generates the *exakat.phpcity.json* file, in the *projects/mycode/* folder.

You may test your own report online, at Adrian Huna's website, by uploading the results and seeing it live immediately.

Or, you can install the PHPcity application, and load it locally.

`Reference/images/report.phpcity.png`

Specs

Short name	Phpcity
Rulesets	Phpcity doesn't depend on rulesets.
Type	JSON
Target	This report is written in 'exakat.phpcity.json'.
Available in	Entreprise Edition

16.3.40 Phpcsfixer

Phpcsfixer

The Phpcsfixer report provides a configuration file for php-cs-fixer, that automatically fixes issues found in related analysis in exakat.

This report builds a configuration file for php-cs-fixer.

- *Use === null* : **is_null**
- *Else If Versus Elseif* : **elseif**
- *Multiple Unset()* : **combine_consecutive_unsets**
- Classes/DontUnsetProperties: **no_unset_on_property**
- *Use Constant Instead Of Function* : **function_to_constant**
- *PHP7 Dirname* : **combine_nested_dirname**
- *Could Use __DIR__* : **dir_constant**
- *Isset Multiple Arguments* : **combine_consecutive_issets**
- *Logical Should Use Symbolic Operators* : **logical_operators**
- *Not Not* : **no_short_bool_cast**

PHP-cs-fixer is a tool to automatically fix PHP Coding Standards issues. Some of the modifications are more than purely coding standards, such has replacing `dirname(dirname($path))` with `dirname($path, 2)`.

Exakat builds a configuration file for php-cs-fixer, that will automatically fix a number of results from the audit. Here is the process :

- Run exakat audit
- Get Phpcsfixer report from exakat : `php exakat.phar report -p <project> -format Phpcsfixer`
- Update the target repository in the generated code
- Save this new configuration in a file called '.php_cs'
- Run php-cs-fixer on your code : `php php-cs-fixer.phar fix /path/to/code --dry-run`
- Fixed your code with php-cs-fixer : `php php-cs-fixer.phar fix /path/to/code`
- Run a new exakat audit

This configuration file should be reviewed before being used. In particular, the target files should be updated with the actual repository : this is the first part of the configuration.

It is also recommended to use the option '–dry-run' with php-cs-fixer to check the first run.

Php-cs-fixer runs fixes for coding standards : this reports focuses on potential fixes. It is recommended to complete this base report with extra coding conventions fixes. The building of a coding convention is outside the scope of this report.

Exakat may find different issues than php-cs-fixer : using this report reduces the number of reported issues, but may leave some issues unsolved. In that case, manual fixing is recommended.

Specs

Short name	Phpcsfixer
Rulesets	php-cs-fixable.
Type	JSON
Target	This report is written in 'phpcsfixer.exakat.php'.
Available in	Entreprise Edition

16.3.41 PlantUml

PlantUml

The PlantUml export data structure to PlantUml format.

This report produces a .puml file, compatible with PlantUML.

PlantUML is an Open Source component that dislays class diagrams.

Reference/images/report.plantuml.png

Specs

Short name	PlantUml
Rulesets	PlantUml doesn't depend on rulesets.
Type	puml
Target	This report is written in 'exakat.puml'.
Available in	Entreprise Edition

16.3.42 PublicAccess

PublicAccess

This report is a map on how to access private methods from public methods.

The Public Access report displays a map that show how to reach private methods by calling.

Public methods are in green, protected methods are in orange and private methods are in red.

When creating tests for a class, it is often difficult to find the various ways to hit a private method, and, as such, test it.

This map is built by find all internal calls within a class. Those calls are not systematically made, as conditions may apply. Yet, the map show all possible ways to reach a method, starting from a public one.

Reference/images/publicaccess.png

Specs

Short name	PublicAccess
Rulesets	PublicAccess doesn't depend on rulesets.
Type	Dot
Target	This report is written in 'exakat.publicaccess'.
Available in	Entreprise Edition

16.3.43 RadwellCode

RadwellCode

The RadwellCode is a report based on Oliver Radwell's [PHP Do And Don't](https://blog.radwell.codes/2016/11/php-dos-donts-aka-programmers-dont-like/).

Note that all rules are not implemented, especially the 'coding conventions' ones, as this is beyond the scope of this tool.

```
/Phrozn/Vendor/Extra/scss.inc.php:594 Slow PHP built-in functions
/Phrozn/Vendor/Extra/scss.inc.php:2554 Too many nested if statements
/Phrozn/Vendor/Extra/scss.inc.php:1208 Long if-else blocks
/Phrozn/Vendor/Extra/scss.inc.php:1208 Too many nested if statements
/Phrozn/Vendor/Extra/scss.inc.php:3935 Wrong function / class name casing
/Phrozn/Vendor/Extra/scss.inc.php:3452 Too many nested if statements
/Phrozn/Site/View/OutputPath/Entry/Parametrized.php:58 Slow PHP built-in functions
/Phrozn/Runner/CommandLine/Callback/Init.php:82 Extra brackets and braces and quotes
```

Specs

Short name	RadwellCode
Rulesets	RadwellCodes.
Type	Text
Target	This report is written in 'radwell.txt'.
Available in	Entreprise Edition

16.3.44 Rector

Rector

Suggest configuration for Rector refactoring tool.

The Rector report is a helper report for Tomas Votruba's Rector tool.

Some issues spotted by Exakat may be fixed automagically by Rector. Rector offers more than 550 (and counting) rules, that may save countless hours of work.

For example, CombinedAssignRector, simplifies `$value = $value + 5` into `+$value += 5;`. On Exakat, the rule Structures/CouldUseShortAssignation spot those too.

Not all exakat rules are covered by Rector, and vice-versa. CompactToVariablesRector aims at skipping usage of compact(), while Structures/CouldUseCompact suggest the contrary.

Rector and Exakat both use different approaches to code review. It is recommended to review the changes before committing them.

Check RectorPHP website, its rector github repository, and Tomas Votruba account.

```
# Add this to your rector.yaml file
# At the root of the source to be analyzed
# Generated on 2021-10-14 04:15:14, by Exakat (2.2.3- build 1255)

services:
    Rector\CodeQuality\Rector\If_\ShortenElseIfR
    Rector\CodeQuality\Rector\Concat\JoinStringConcatRector
```

Specs

Short name	Rector
Rulesets	Rector.
Type	Text
Target	This report is written in 'rector.exakat.yaml'.
Available in	Entreprise Edition

16.3.45 Sarb

Sarb

The Sarb report is a compatibility report with SARB

SARB is the Static Analysis Results Baseliner. SARB is used to create a baseline of these results. As work on the project progresses SARB can takes the latest static analysis results, removes those issues in the baseline and report the issues raised since the baseline. SARB does this, in conjunction with git, by tracking lines of code between commits. SARB is the brainchild of Dave Liddament.

```
[
    {
        "type": "Classes\/NonPpp",
        "file": "\/home\/exakat\/elation\/code\/include\/base_class.php",
```

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```
        "line": 37
    },
    {
        "type": "Structures\/NoSubstrOne",
        "file": "\/home\/exakat\/elation\/code\/include\/common_funcs.php",
        "line": 890
    },
    {
        "type": "Structures\/DropElseAfterReturn",
        "file": "\/home\/exakat\/elation\/code\/include\/smarty\/SmartyValidate.class.php
↪",
        "line": 638
    },
    {
        "type": "Variables\/UndefinedVariable",
        "file": "\/home\/exakat\/elation\/code\/components\/ui\/ui.php",
        "line": 174
    },
    {
        "type": "Functions\/TooManyLocalVariables",
        "file": "\/home\/exakat\/elation\/code\/include\/dependencymanager_class.php",
        "line": 43
    }
]
```


Specs

Short name	Sarb
Rulesets	This reports works with an arbitrary list of results.
Type	Json
Target	This report is written in 'exakat.sarb.json'.
Available in	Entreprise Edition

16.3.46 Sarif

Sarif

The SARIF report publishes the results in SARIF format.

Static Analysis Results Interchange Format (SARIF) a standard format for the output of static analysis tools. The format is referred to as the "Static Analysis Results Interchange Format" and is abbreviated as SARIF.

SARIF is a flexible JSON format, that describes in details the rules, the issues and their context.

More details are available at sarifweb and SARIF support for code scanning at Github.

Reference/images/report.sarif.png

Specs

Short name	Sarif
Rulesets	This reports works with an arbitrary list of results.
Type	Json
Target	This report is written in 'exakat.json'.
Available in	Entreprise Edition, Community Edition

16.3.47 SimpleTable

SimpleTable

The Simpletable is a simple table presentation.

Simpletable is suitable for any list of results provided by exakat. It is inspired from the Clang report. The result is a HTML file, with Javascript and CSS.

Reference/images/report.simpletable.png

Specs

Short name	SimpleTable
Rulesets	SimpleTable doesn't depend on rulesets.
Type	HTML
Target	This report is written in 'table'.
Available in	Entreprise Edition

16.3.48 Sonarcube

Sonarcube

The SonarCube is a generic format of Sonar Cube.

Generic issue import format allows the upload of external analysis into Sonar Cube.

See also Importing third-party issues.

Reference/images/report.sonarcube.png

Specs

Short name	Sonarcube
Rulesets	This reports works with an arbitrary list of results.
Type	Json
Target	This report is written in 'exakat.sonarcube'.
Available in	Entreprise Edition

16.3.49 Stats

Stats

The Stats report collects various stats about the code.

Stats reports PHP structures definition, like class, interfaces, variables, and also features, like operator, control flow instructions, etc.

```
{
    "Summary": {
        "Namespaces": 82,
        "Classes": 59,
        "Interfaces": 29,
        "Trait": 0,
        "Functions": 0,
        "Variables": 4524,
        "Constants": 0
    },
    "Classes": {
        "Classes": 59,
        "Class constants": 10,
        "Properties": 140,
        "Methods": 474
    },
    "Structures": {
        "Ifthen": 568,
```

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```
        "Else": 76,
        "Switch": 15,
        "Case": 62,
        "Default": 9,
        "Fallthrough": 0,
        "For": 5,
        "Foreach": 102,
        "While": 21,
        "Do..while": 0,
        "New": 106,
        "Clone": 0,
        "Class constant call": 34,
        "Method call": 1071,
        "Static method call": 52,
        "Properties usage": 0,
        "Static property": 65,
        "Throw": 35,
        "Try": 12,
        "Catch": 12,
        "Finally": 0,
        "Yield": 0,
        "Yield From": 0,
        "?  :": 60,
        "?: ": 2,
        "Variables constants": 0,
        "Variables variables": 7,
        "Variables functions": 1,
        "Variables classes": 5
    }
}
```


Specs

Short name	Stats
Rulesets	Stats.
Type	JSON
Target	This report is written in 'exakat.stat.json'.
Available in	Entreprise Edition

16.3.50 Stubs

Stubs

Stubs produces a skeleton from the source code, with all defined structures : constants, functions, classes, interfaces, traits and namespaces.

Stubs takes the original code, and export all defined structures (constants, functions, classes, interfaces, traits and namespaces) in a single and compilable PHP file.

This is convenient for tools that requires documentations for completion, such as IDE.

Constants are exported with their values, properties too. Methods hold their full signature.

The resulting report is in one file, called *stubs.php*.

```
Reference/images/report.stubs.png
```

Specs

Short name	Stubs
Rulesets	Stubs doesn't depend on rulesets.
Type	PHP
Target	This report is written in 'stubs.php'.
Available in	Entreprise Edition

16.3.51 StubsJson

StubsJson

StubsJson produces a complete description of definitions from the code.

StubsJson produces a complete description of definitions from the code.

- Global variables
- Functions
- Constants
- Classes + constants + properties + methods
- Interfaces + constants + methods
- Traits + properties + methods

```
Reference/images/report.stubs.json.png
```

Specs

Short name	StubsJson
Rulesets	StubsJson doesn't depend on rulesets.
Type	JSON
Target	This report is written in 'stubs.ini'.
Available in	Entreprise Edition

16.3.52 Text

Text

The Text report is a very simple text format.

The Text report displays one result per line, with the following format :

```
/path/from/project/root/to/file:line[space]name of analysis
```

This format is fast, and fitted for machine communications.

```
/classes/test.php:1002      Php/ShouldUseFunction   Should Use Function     array_
↪values(array_unique(array_merge($classTags, $annotations['tags'])))
/classes/test.php:1002      Php/ShouldUseFunction   Should Use Function     array_merge(
↪$classTags, $annotations['tags'])
/classes/test.php:1005      Structures/NoArrayUnique        Avoid array_unique()    ␣
↪array_unique(array_merge($classTags, $this->testMethods[$testMethodName]['tags']))
/classes/test.php:1005      Performances/SlowFunctions      Slow Functions  array_
↪unique(array_merge($classTags, $this->testMethods[$testMethodName]['tags']))
```

Specs

Short name	Text
Rulesets	This reports works with an arbitrary list of results.
Type	Text
Target	This report is written to the standard output.
Available in	Entreprise Edition, Community Edition

16.3.53 Top10

Top10

The top 10 is the companion report for the 'Top 10 classic PHP traps' presentation.

The Top 10 report is based on the 'Top 10 classic PHP traps' presentation. You can run it on your code and check immediately where those classic traps are waiting for you. Read the whole presentation online

Reference/images/report.top10.png

Reference/images/report.top10.png

Specs

Short name	Top10
Rulesets	Top10.
Type	HTML
Target	This report is written in 'top10'.
Available in	Entreprise Edition

16.3.54 Topology Order

Topology Order

This represents a topological order in the code.

Topology displays all dependencies between code structures. Such dependencies lead to a code hierarchy, which is presented here.

There are currently two topology available:

- Typehint Order : it represents the order in which classes are organized, based on argument and return type.
- New Order : it represents the order in which classes are instantiated, with new.

Reference/images/report.topology.png

Reference/images/report.topology.typehints.png

Specs

Short name	Topology Order
Rulesets	Topology Order doesn't depend on rulesets.
Type	DOT
Target	This report is written in 'exakat.topology.dot'.
Available in	Entreprise Edition

16.3.55 TypeChecks

TypeChecks

The TypeChecks report focuses on reviewing type usage.

The TypeChecks report focuses on usage and good usage of types.

It checks the presence of types, suggests possible types, and check the systemic organisation of the types.

`Reference/images/report.typehint.png`

Specs

Short name	TypeChecks
Rulesets	TypeChecks.
Type	HTML
Target	This report is written in 'typechecks'.
Available in	Entreprise Edition

16.3.56 TypeSuggestion

TypeSuggestion

The TypeSuggestion report provides suggestions to add typehints to methods and properties.

The TypeSuggestion offers suggestions to add typehints to methods and properties.

It provides its suggestion based on the way the code is implemented : by usage or by calling.

Type usage is the way a typed container is use later. For example, an argument that is used later with the array syntax `$x['a']` or as an object ``$x->b``will receive a suggestion for using array or object.

Type calling is the way the typed container is assigned. For example, a property may receive integer or boolean during assignations : they will receive such suggestions.

Not all types can be guessed : for example, a property may simply hold a value, for later use, such as in a cache system. In such situation, no type is suggested.

`mixed` is not used as suggestion : rather a list of possible types is offered, and it may be upgraded to `mixed`.

This report is ready for PHP 8.0 : the suggestions may be combined together, and multiples suggestions are possible.

`Reference/images/report.typesuggestion.png`

Specs

Short name	TypeSuggestion
Rulesets	TypeChecks.
Type	HTML
Target	This report is written in 'typehint.suggestion.html'.
Available in	Entreprise Edition

16.3.57 Uml

Uml

The Uml exports data structure to UML format.

This report produces a dot file with a representation of the classes used in the repository.

Classes, interfaces and traits are represented, along with their constants, methods and properties.

.dot files are best seen with graphviz : they are easily convert into PNG or PDF.

`Reference/images/report.uml.general.png`

`Reference/images/report.uml.detail.png`

Specs

Short name	Uml
Rulesets	This reports works with an arbitrary list of results.
Type	dot
Target	This report is written in 'exakat.uml.dot'.
Available in	Entreprise Edition

16.3.58 Unused

Unused

Unused lists unused pieces of code in the source.

The Unused report reports structures that are defined in the code, but never used.

- Constants
- Functions, methods, properties
- Classes, enumerations, traits and interfaces
- Return values and parameters
- Default values
- Never used
- Written only variables and properties
- Unreachable methods and constants
- Unreachable code

Reference/images/report.unused.png

Specs

Short name	Unused
Rulesets	Unused.
Type	HTML
Target	This report is written in 'report'.
Available in	Entreprise Edition

16.3.59 Weekly

Weekly

Weekly report draw a selection of issues to check in your code, each week.

The weekly report draws issues from 5 rules, randomly or chosen specially for that week. The rules of a week are stored on exakat.io, and everyone will work on the same errors. You can work on yours, and then, discuss then with your colleagues, cousins and anyone in the community : they are the focus of the week.

The selections of the previous weeks, and, the next week are offered. Just be aware that next week's selection may change, without warning.

If your code is already immune to all this week's rules : good job! You can share you experience with others!

Reference/images/report.weekly.png

Specs

Short name	Weekly
Rulesets	*Analyze*, *Suggestions*.
Type	HTML
Target	This report is written in 'weekly'.
Available in	Entreprise Edition

16.3.60 Xml

Xml

The Xml report exports in XML format.

XML version of the reports. It uses the same format than PHP Code Sniffer to output the results.

```
<?xml version="1.0" encoding="UTF-8"?>
<phpcs version="0.8.6">
<file name="/src/NlpTools/Stemmers/PorterStemmer.php" errors="0" warnings="105" fixable=
↪"0">
 <warning line="55" column="0" source="Php/EllipsisUsage" severity="Major" fixable="0">..
↪. Usage</warning>
```

Specs

Short name	Xml
Rulesets	This reports works with an arbitrary list of results.
Type	XML
Target	This report is written in 'exakat.xml'.
Available in	Entreprise Edition

16.3.61 Yaml

Yaml

The Yaml report exports in Yaml format.

Simple Yaml format. It is a structured array with all results, described as object.

```
Filename => [
                errors   => count,
                warning  => count,
                fixable  => count,
                filename => string,
                message  => [
                    line => [
                        type,
                        source,
                        severity,
                        fixable,
                        message
                    ]
                ]
            ]
```

```
/src/Altax/Module/Task/Resource/RuntimeTask.php:
    errors: 0
    warnings: 22
    fixable: 0
    filename: /src/Altax/Module/Task/Resource/RuntimeTask.php
    messages: { 77: [[{ type: warning, source: Structures/Iffectation, severity: Minor,␣
↪fixable: fixable, message: Iffectations, fullcode: '$args = $this->getArguments( )' }
↪]], 67: [[{ type: warning, source: Structures/Iffectation, severity: Minor, fixable:␣
↪fixable, message: Iffectations, fullcode: '$args = $this->input->getArgument(''args'')
↪' }, { type: warning, source: Structures/BuriedAssignation, severity: Minor, fixable:␣
↪fixable, message: 'Buried Assignation', fullcode: '$args = $this->input->getArgument('
↪'args'')' }]], 114: [[{ type: warning, source: Variables/WrittenOnlyVariable,␣
↪severity: Minor, fixable: fixable, message: 'Written Only Variables', fullcode: $input␣
↪}, { type: warning, source: Variables/VariableUsedOnceByContext, severity: Minor,␣
↪fixable: fixable, message: 'Used Once Variables (In Scope)', fullcode: $input }, {␣
↪type: warning, source: Classes/UndefinedClasses, severity: Major, fixable: fixable,␣
↪message: 'Undefined Classes', fullcode: 'new ArrayInput($arguments)' }]], 13: [[{␣
↪type: warning, source: Structures/PropertyVariableConfusion, severity: Minor, fixable:␣
↪fixable, message: 'Property Variable Confusion', fullcode: $input }]], 74: [[{ type:␣
```

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```
↪warning, source: Php/ReservedNames, severity: Major, fixable: fixable, message: 'PHP␣
↪Keywords As Names', fullcode: $default }]], 61: [[{ type: warning, source: Php/
↪ReservedNames, severity: Major, fixable: fixable, message: 'PHP Keywords As Names',␣
↪fullcode: $string }]], 59: [[{ type: warning, source: Php/ReservedNames, severity:␣
↪Major, fixable: fixable, message: 'PHP Keywords As Names', fullcode: $string }, {␣
↪type: warning, source: Functions/RelayFunction, severity: Major, fixable: fixable,␣
↪message: 'Relay Function', fullcode: 'public function write($string) { /**/ } ' }]],␣
↪56: [[{ type: warning, source: Php/ReservedNames, severity: Major, fixable: fixable,␣
↪message: 'PHP Keywords As Names', fullcode: $string }]], 54: [[{ type: warning,␣
↪source: Php/ReservedNames, severity: Major, fixable: fixable, message: 'PHP Keywords␣
↪As Names', fullcode: $string }, { type: warning, source: Functions/RelayFunction,␣
↪severity: Major, fixable: fixable, message: 'Relay Function', fullcode: 'public␣
↪function writeln($string) { /**/ } ' }]], 81: [[{ type: warning, source: Php/
↪ReservedNames, severity: Major, fixable: fixable, message: 'PHP Keywords As Names',␣
↪fullcode: $default }]], 84: [[{ type: warning, source: Php/ReservedNames, severity:␣
↪Major, fixable: fixable, message: 'PHP Keywords As Names', fullcode: $default }]], 44:␣
↪[[{ type: warning, source: Functions/RelayFunction, severity: Major, fixable: fixable,␣
↪message: 'Relay Function', fullcode: 'public function getConfig( ) { /**/ } ' }]], 78:␣
↪[[{ type: warning, source: Structures/ShouldMakeTernary, severity: Minor, fixable:␣
↪fixable, message: 'Should Make Ternary', fullcode: 'if(isset($args[$index])) { /**/ }␣
↪else { /**/ } ' }]], 108: [[{ type: warning, source: Structures/NoVariableIsACondition,
↪ severity: Minor, fixable: fixable, message: 'Variable Is Not A Condition', fullcode:
↪'!$command' }]], 109: [[{ type: warning, source: Exceptions/UncaughtExceptions,␣
↪severity: Minor, fixable: fixable, message: 'Uncaught Exceptions', fullcode: 'throw␣
↪new \RuntimeException("Not found a before task command ''$taskName''.")' }]], 95: [[{␣
↪type: warning, source: Classes/UnusedMethods, severity: Minor, fixable: fixable,␣
↪message: 'Unused Methods', fullcode: 'public function call($taskName, $arguments =␣
↪array( )) { /**/ } ' }]], 10: [[{ type: warning, source: Classes/CouldBeFinal,␣
↪severity: Minor, fixable: fixable, message: 'Class Could Be Final', fullcode: 'class␣
↪RuntimeTask { /**/ } ' }]] }
```

Specs

Short name	Yaml
Rulesets	This reports works with an arbitrary list of results.
Type	Yaml
Target	This report is written in 'exakat.yaml'.
Available in	Entreprise Edition

CHAPTER

SEVENTEEN

COBBLERS

17.1 Introduction

Cobblers mend PHP code. They apply a transformation to it.

Cobblers are a complement to code analysis : the analysis spot code to be fixed, the cobbler mends the code. Later, the analysis doesn't find those issues anymore.

17.2 List of Cobblers

17.2.1 Add Brackets To Single Instructions

This cobbler adds curly brackets to single expression, with for(), foreach(), while(); and do…while() instructions.

No brackets are added to instructions that are already bracketed.

Before

```
<?php

if ($a)
     $b = 1;
else {
     $c = ;2
}

?>
```

After

```
<?php

if ($a) {
     $b = 1;
} else {
     $c = ;2
}
```

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```
?>
```

Reverse Cobbler

- No anchor for Structures/RemoveBracketsAroundSingleInstruction.ini

Specs

Short Name	Structures/AddBracketsToSingleInstructions
Exakat version	2.4.6
Available in	Entreprise Edition, Exakat Cloud

17.2.2 Add Final Class

Adds `final` keyword to classes that can suppport it.

Before

```
<?php

class x {
    // this class is not extended, so it might be final
}

?>
```

After

```
<?php

final class x {
}

?>
```

Suggested Analysis

- *Class Could Be Final*

Related Cobblers

- No anchor for Classes/AddFinalConstant

Reverse Cobbler

- *Remove Final*

Specs

Short Name	Classes/AddFinalClass
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.3 Add No Scream @

Adds the no scream operator @ to an expression.

Before

```
<?php
    $a;
?>
```

After

```
<?php
    @$a;
?>
```

Suggested Analysis

- No anchor for Utils/Selector

Reverse Cobbler

- *Remove Noscream @*

Specs

Short Name	Structures/AddNoScream
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.4 Array To Bracket

This cobbler updates the array() syntax, and changes it to the bracket syntax.

Before

```
<?php
$a = array(1, 2, 3);
?>
```

After

```
<?php
$a = [1, 2, 3];
?>
```

Specs

Short Name	Structures/ArrayToBracket
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.5 Change Class

This cobbler replaces a class by another one, and leave the original class intact.

This cobbler is useful for inserting new classes instead of native PHP or library related ones: the usage shall be changed, but not the definition.

It might also be useful to update code, but keep older classes available for backward compatibility or fallback strategies.

Before

```
<?php

class oldClass {}

$a = new oldClass;

?>
```

After

```
<?php

class oldClass {}

$a = new newClass;

?>
```

Parameters

Name	Default	Type	Description
origin		name	The full namespace path name of the class to target.
newClass		name	The full namespace path name of the class to use.
destinationName		name	The name of the class to use. This may be used as an import alias

Related Cobblers

- *Rename Class*

Reverse Cobbler

- *Change Class*

Specs

Short Name	Classes/ChangeClass
Exakat version	2.3.0
Available in	

17.2.6 Create Phpdoc

Create PHPdoc comments for classes, interfaces, traits, methods and functions.

Parameters and return types are collected, along with the name of the structure.

Before

```
<?php

class y {
    function a1(string $error, R $r = null) : int|string
    {

    }
?>
```

After

```
<?php

/**
 * Name : y
 */
class y {
   /**
    * Name : a1
    *
    * string $error
    * null|R $r
    * @return int|string
    *
    */
    function a1(string $error, R $r = null) : int|string
    {

    }
?>
```

Reverse Cobbler

- No anchor for Attributes/RemovePhpdoc

Specs

Short Name	Attributes/CreatePhpdoc
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.7 Gather Use Expression

Move lone use expression to the beginning of the file.

Before

```
<?php
    use A;
    ++$a;
    use B;
?>
```

After

```
<?php
    use A;
    use B;
    ++$a;
?>
```

Suggested Analysis

- *Hidden Use Expression*

Specs

Short Name	Namespaces/GatherUse
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.8 Logical To in_array()

This cobbler turns lists of `or` calls into a in_array() call. This is a faster and more readable expression.

Before

```
<?php

if ($a == 1 || $a == 2) {
     // doSomething()
}

?>
```

After

```
<?php

if (in_array($a, [1, 2])) {
     // doSomething()
}

?>
```

Suggested Analysis

- *Logical To in_array*

Specs

Short Name	Structures/LogicalToInarray
Exakat version	2.6.1
Available in	

17.2.9 Make Static Closures And Arrow Functions

Add the static option to closures and arrow functions. This prevents the defining environment to be included in the closure.

Before

```
<?php
    $a = function () { return 1; };
    $b = fn () => 2;
?>
```

After

```
<?php
    $a = static function () { return 1; };
    $b = static fn () => 2;
?>
```

Suggested Analysis

- *Could Be Static Closure*

Reverse Cobbler

- No anchor for Functions/RemoveStaticFromFunction

Specs

Short Name	Functions/MakeStaticFunction
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.10 Multiple cobbler

Allows to configure multiple cobbler in one file. The file is a YAML file, and must be located in the project's folder.

The file containts a root object 'cobbler', filled with an array of cobblers, and their related configuration. Cobblers may be repeated as often as necessary.

cobblers: - Functions/RenameParameter:

oldName: $a newName: $b method: foo

- **Functions/RenameParameter:**
  oldName: $a2 newName: $b method: foo2

The order of the configuration file is the order of execution. Do not rely on it.

Before

```
```

After

```
```

Parameters

Name	Default	Type	Description
configFile		string	The .yaml file in the project folder.

Specs

Short Name	Utils/Multi
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.11 Plus One To Pre Plusplus

Transforms a + *1* or - *1* operation into a plus-plus (or minus-minus).

Before

```
<?php
    $a = $a + 1;
?>
```

After

```
<?php
    ++$a;
?>
```

Specs

Short Name	Structures/PlusOneToPre
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.12 Post to Pre Plusplus

Transforms a post plus-plus (or minus-minus) operator, into a pre plus-plus (or minus-minus) operator.

Before

```
<?php
    $a++;
?>
```

After

```
<?php
    ++$a;
?>
```

Specs

Short Name	Structures/PostToPre
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.13 Remove A Method In A Class

This removes a method in a class. The method name is provided with its fully qualified name : Name of the class:: name of the method.

The method's name is a string.

Before

```
<?php

// removing method \x::method1
class x {
    function method1() {}
    function method2() {}
}
```

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```
?>
```

After

```
<?php

// removed method \x::method1
class x {
    function method2() {}
}

?>
```

Parameters

Name	Default	Type	Description
name	x::method1	string	Fully qualified name of the method to remove. Only one allowed.

Specs

Short Name	Classes/RemoveMethod
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.14 Remove Abstract

Remove the abstract option, from classes and methods.

Before

```
<?php
abstract class x {
    function foo() {}

    abstract function moo() ;
}
?>
```

After

```
<?php
class x {
    function foo() {}

    function moo() {}
}
?>
```

Specs

Short Name	Classes/RemoveAbstract
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.15 Remove Brackets Around Single Instruction

This cobbler removes brackets when they are not compulsory. This applies to single instruction, on for(), foreach(), while(), do…while() structures.

This also means that any refactoring that grows the instruction again to multiple instructions has to add the brackets again.

There is no gain in speed or code lenght by removing those brackets.

Before

```
<?php
     foreach($i = 0; $i < 10; ++$i) { $total += 1; }
?>
```

After

```
<?php
     foreach($i = 0; $i < 10; ++$i)  $total += 1;
?>
```

Reverse Cobbler

- *Add Brackets To Single Instructions*

Specs

Short Name	Structures/RemoveBracketsAroundSingleInstruction
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.16 Remove Dollar Curly

This cobbler transforms the ```` structure into `{$ }`. It is assumed that the content of the curly braces are only a variable name.

This update is important for PHP 8.2, where the syntax is deprecated.

Before

```
<?php

$a = "";

?>
```

After

```
<?php

$a = "{$b}";

?>
```

Specs

Short Name	Structures/RemoveDollarCurly
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.17 Remove Final

This cobbler removes the `final` keyword on classes and methods.

Before

```
<?php

final class y {
    final function foo() {}
}

?>
```

After

```
<?php

class y {
    function foo() {}
}

?>
```

Related Cobblers

- *Add Final Class*
- No anchor for Classes/AddFinalMethod

Reverse Cobbler

- *Add Final Class*
- No anchor for Classes/AddFinalMethod

Specs

Short Name	Classes/RemoveFinal
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.18 Remove Instructions

Removes atomic instructions from the code. The whole expression is removed, and the slot is closed.

This cobbler works with element of a block, and not with part of larger expression (like remove a condition in a if/then, or remove the block expression of a while).

Before

```
<?php
    $a = 1; // Code to be removed
    foo(1);

    do          // can remove the while expression
        ++$a;   // removing the block of the do...wihle will generate an compilation␣
↪error
    while ($a < 10);

?>
```

After

```
<?php
    foo(1);
?>
```

Suggested Analysis

- *Useless Instructions*

Specs

Short Name	Structures/RemoveCode
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.19 Remove Noscream @

Removes the @ operator.

Before

```
<?php
    @$a;
?>
```

After

```
<?php
    $a;
?>
```

Suggested Analysis

- *@ Operator*

Reverse Cobbler

- This cobbler is its own reverse.

Specs

Short Name	Structures/RemoveNoScream
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.20 Remove Parenthesis

Remove useless parenthesis from return expression.

Before

```
<?php
function foo() {
    return (1);
}
?>
```

After

```
<?php
function foo() {
    return 1;
}
?>
```

Suggested Analysis

- *No Parenthesis For Language Construct*

Specs

Short Name	Structures/RemoveParenthesis
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.21 Remove Readonly Option

Readonly is a property and class option. This cobbler removes it from both.

The readonly keyword is removed from property and class definitions, and from promoted properties.

Before

```
<?php

readonly class x {
    private readonly string $x;
}

?>
```

After

```
<?php

class x {
    private string $x;
}

?>
```

Suggested Analysis

- *Readonly Usage*
- *Class Could Be Readonly*

Specs

Short Name	Classes/RemoveReadonly
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.22 Remove Static From Closures And Arrow Functions

Removes the static option from closures and arrow functions.

Before

```
<?php
    $a = static function () { return 1; };
    $b = static fn () => 2;
?>
```

After

```
<?php
    $a = function () { return 1; };
    $b = fn () => 2;
?>
```

Suggested Analysis

- *Cannot Use Static For Closure*

Reverse Cobbler

- *Make Static Closures And Arrow Functions*

Specs

Short Name	Functions/RemoveStaticFromClosure
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.23 Remove The Attribute

Remove attributes from all supporting structures.

Attributes are located on functions, classes, class constants, properties, methods and arguments.

Before

```
<?php

#[Attribute]
function foo(#[AttributeArgument] $arg) {

}
?>
```

After

```
<?php


function foo($arg) {

}
?>
```

Specs

Short Name	Attributes/RemoveAttribute
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.24 Remove Type

This cobbler remove the type mentions in the code. This might yield some speed when executing, since those tests will be not conveyed at runtime.

Types from arguments, method returns and properties are all removed.

Before

```
<?php

class x {
    private string $p;

    function foo(D\E $arg) : void {

    }
}

?>
```

After

```
<?php

class x {
    private $p;

    function foo($arg) {

    }
}

?>
```

Parameters

Name	Default	Type	Description
type_to_remov	all	data	A comma separated list of types to remove. For example : never,string,ABC;. Use 'All' for everyt type.

Suggested Analysis

- *PHP 8.1 Typehints*

Reverse Cobbler

- *Set Typehints*

Specs

Short Name	Functions/RemoveTypes
Exakat version	2.2.5
Available in	Entreprise Edition, Exakat Cloud

17.2.25 Remove Unused Use

Removes the unused use expression from the top of the file. Groupuse are not processed yet.

Before

```
<?php

use a\b;
use c\d;

new b();

?>
```

After

```
<?php

use a\b;

new b();

?>
```

Suggested Analysis

- *Unused Use*

Specs

Short Name	Namespaces/RemoveUse
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.26 Remove Visibility

Removes the visibility on constants, properties and methods.

For properties, the visibility is reset to public.

Before

```
<?php

class x {
    private const x = 1;
    private $p = 2;
    private function foo() {}
    private function __construct() {}
}
?>
```

After

```
<?php

class x {
    const x = 1;
    public $p = 2;
    function foo() {}
    function __construct() {}
}
?>
```

Specs

Short Name	Classes/RemoveVisibility
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.27 Remove Written Only Variable

This removes variables that are written only.

Before

```
<?php

function foo() {
    $a = 1;
    $a += 2; // No usage of $a
}

?>
```

After

```
<?php

function foo() {
}

?>
```

Suggested Analysis

- *Written Only Variables*

Specs

Short Name	Structures/RemoveVariable
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.28 Rename A Function

Give a function with a new name.

This cobbler doesn't update the name of the functioncalls.

This cobbler may be used with functions, and methods. Functions may be identified with their fully qualified name (i.e. pathfoo) and methods with the extended fully qualified name (i.e. : pathaClass::methodName).

Before

```
<?php
    function foo() {

    }
?>
```

After

```
<?php
    function bar() {

    }
?>
```

Parameters

Name	Default	Type	Description
name	foo	string	The new name of the function.

Suggested Analysis

- No anchor for Utils/Selector

Related Cobblers

- *Rename FunctionCalls*

Reverse Cobbler

- This cobbler is its own reverse.

Specs

Short Name	Structures/RenameFunction
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.29 Rename A Function

This cobbler renames a function from a name A to a name B.

Before

```
<?php

function foo() {}
foo();

?>
```

After

```
<?php

function bar() {}
bar();

?>
```

Parameters

Name	Default	Type	Description
origin		string	The function to rename
destination		string	The destination's function name

Reverse Cobbler

- *Rename A Function*

Specs

Short Name	Functions/RenameFunction
Exakat version	2.3.0
Available in	

17.2.30 Rename A Namespace

Changes the name of a namespaces from A to B.

Make sure that the new namspace is distinct from the previous ones : merging namespaces is not recommended nor checked. This cobbler is better suited a giving an unused name to a namespace.

Before

```
<?php
namespace A;

function foo() {}

?>
```

After

```
<?php
namespace B;

function foo() {}
?>
```

Parameters

Name	Default	Type	Description
origin		string	The original namespace.
destination		string	The destination namespace.

Reverse Cobbler

- *Rename A Namespace*

Specs

Short Name	Rename/RenameNamespace
Exakat version	2.6.0
Available in	

17.2.31 Rename Class

Rename a class into another one.

The rename applies the new name to the class, and its usage : static calls, types, extends and instanceof.

Before

```
<?php
class x {}

function foo(x $a) {}

?>
```

After

```
<?php
class Y {}

function foo(Y $a) {}

?>
```

Parameters

Name	Default	Type	Description
origin		string	The class to rename
destination		string	The destination's class name

Reverse Cobbler

- *Rename Class*

Specs

Short Name	Classes/RenameClass
Exakat version	2.3.0
Available in	

17.2.32 Rename Class

Rename a class into another one.

The rename applies the new name to the class, and its usage : static calls, types, extends and instanceof.

Before

```
<?php
class x {
     function m() {}
}

(new x)->m();

?>
```

After

```
<?php
class x {
     function newM() {}
}

(new x)->newM();

?>
```

Parameters

Name	Default	Type	Description
origin		string	The method to rename, along with its parent class. Like theClass::Method
destination		string	The destination's method name. Only the name.

Reverse Cobbler

- *Rename Class*

Specs

Short Name	Classes/RenameMethod
Exakat version	2.3.0
Available in	

17.2.33 Rename Class

Rename a trait into another one.

The rename applies the new name to the trait, and its usage : use cases in classes and traits, static calls (PHP 8.0-).

Before

```
<?php
trait t {}

class x {
     use t;
}

?>
```

After

```
<?php
trait newT {}

class x {
     use newT;
}

?>
```

Parameters

Name	Default	Type	Description
origin		string	The class to rename
destination		string	The destination's class name

Specs

Short Name	Traits/RenameTrait
Exakat version	2.3.0
Available in	

17.2.34 Rename Class Constant

Rename a class constant into another one.

The rename applies the new name to the class constant, and its usage.

Before

```
<?php
class x {
     const A = 1;
}

echo x::A;

?>
```

After

```
<?php
class x {
     const B = 1;
}

echo x::B;

?>
```

Parameters

Name	Default	Type	Description
origin		string	The class constant to rename, along with its class name. x::A
destination		string	The destination's class constant name. B

Reverse Cobbler

- *Rename Class Constant*

Specs

Short Name	Classes/RenameConstant
Exakat version	2.3.0
Available in	

17.2.35 Rename Constant

This cobbler renames a constant and replace it with another constant.

Before

```
<?php

const A = 1;

echo A;
echo \A;

?>
```

After

```
<?php

const B = 1;

echo B;
echo \B;

?>
```

Parameters

Name	Default	Type	Description
origin		string	The constant to rename
destination		string	The destination's constant name

Reverse Cobbler

- *Rename Constant*

Specs

Short Name	Constants/RenameConstant
Exakat version	2.3.0
Available in	

17.2.36 Rename Enums

Rename a class into another one.

The rename applies the new name to the class, and its usage : static calls, types, extends and instanceof.

Before

```
<?php
enum E {}

function foo(E $a) {}

?>
```

After

```
<?php
enum EFG {}

function foo(EFG $a) {}

?>
```

Parameters

Name	Default	Type	Description
origin		string	The class to rename
destination		string	The destination's class name

Reverse Cobbler

- *Rename Enums*

Specs

Short Name	Enums/RenameEnums
Exakat version	2.3.0
Available in	

17.2.37 Rename FunctionCalls

Rename a function call to another function.

Before

```
<?php
    foo(1, 2);
?>
```

After

```
<?php
    bar(1, 2);
?>
```

Parameters

Name	Default	Type	Description
origin	strtolower	string	The function name to rename. It will be use lower-cased, and as a fully qualified name.
destination	mb_strtolower	string	The function name to rename. It will be use as is. FQN is possible.

Suggested Analysis

- No anchor for Utils/Selector

Related Cobblers

- *Rename A Function*
- *Rename Methodcall*

Reverse Cobbler

- This cobbler is its own reverse.

Specs

Short Name	Structures/RenameFunctionCall
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.38 Rename Interface

Rename an interface into another one.

The rename applies the new name to the class, and its usage : static constants, types, extends and instanceof.

Before

```
<?php
interface i {}

function foo(i $a) : j {}

?>
```

After

```
<?php
class j {}

function foo(j $a) : j {}

?>
```

Parameters

Name	Default	Type	Description
origin		string	The class to rename
destination		string	The destination's class name

Reverse Cobbler

- *Rename Interface*

Specs

Short Name	Interfaces/RenameInterface
Exakat version	2.5.0
Available in	

17.2.39 Rename Methodcall

Rename a method, in a methodcall, with a new name.

This cobbler doesn't update the definition of the method. It works both on static and non-static methods.

Before

```
<?php
    $o->method();
?>
```

After

```
<?php
    $o->newName();
?>
```

Parameters

Name	Default	Type	Description
origin	strtolower	string	The function name to rename. It will be use lower-cased, and as a fully qualified name.
destination	mb_strtolower	string	The function name to rename. It will be use as is. FQN is possible.

Suggested Analysis

- No anchor for Utils/Selector

Related Cobblers

- *Rename FunctionCalls*
- *Rename A Function*

Reverse Cobbler

- No anchor for Structures/RemoveMethodCall

Specs

Short Name	Structures/RenameMethodcall
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.40 Rename Parameter

Change the name of a parameter to a new name.

The destination parameter name is a constant. Suggestions : rename all parameters from the top method (in classes) rename parameters $a into $b (currently, no $a available)

Limits : this cobbler doesn't check that another parameter is already using that name, nor if a local variable is also using that name. This may lead to unexpected results.

Before

```
<?php

foo(a: 1);

function foo($a) {
    return $a;
}

?>
```

After

```
<?php

foo(b: 1);

function foo($b) {
    return $b;
}

?>
```

Parameters

Name	Default	Type	Description
oldName	$A	string	The original name of the parameter.
newName	$B	string	The new name of the parameter.
method		string	The name of the target method. Use a full qualified name for a function, and the class name::method for methods.

Specs

Short Name	Functions/RenameParameter
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.41 Rename Property

Rename a property into another one.

The rename applies the new name to the property, and its usage : static calls, and normal calls.

Before

```
<?php
class x {
     private $p = 1;

     function m() {
             $this->p = 2;
     }
}

?>
```

After

```
<?php
class x {
     private $newP = 1;

     function m() {
             $this->newP = 2;
     }
}

?>
```

Parameters

Name	Default	Type	Description
origin		string	The property to rename, along with its parent class. Like theClass::$property
destination		string	The destination's property name. Only the name.

Specs

Short Name	Classes/RenameProperty
Exakat version	2.3.0
Available in	

17.2.42 Set Null Type

Adds a Null type to typehints when necessary.

This cobbler only adds a null type when there is already another type. It doesn't add a null type when no type is set.

It works on methods, functions, closures and arrow functions. It doesn't work on properties.

The null type is added as a question mark *?* when the type is unique, and as null when the types are multiple.

Before

```
<?php

function foo() : int {
    if (rand(0, 1)) {
        return 1;
    } else {
        return null;
    }
}

?>
```

After

```
<?php

function foo() : ?int {
    if (rand(0, 1)) {
        return 1;
    } else {
        return null;
    }
}

?>
```

Reverse Cobbler

- *Remove Type*

Specs

Short Name	Functions/SetNullType
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.43 Set Type Void

Adds the void typehint to functions and methods, when possible.

Before

```
<?php

function foo() {
    return;
}

?>
```

After

```
<?php

function foo() : void {
    return;
}

?>
```

Suggested Analysis

- *Could Be Void*

Related Cobblers

- *Set Typehints*
- *Set Null Type*

Reverse Cobbler

- *Remove Type*

Specs

Short Name	Functions/SetTypeVoid
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.44 Set Typehints

Automagically add scalar typehints to methods and properties. Arguments and return values are both supported.

When multiple possible types are identified, no typehint is added. If a typehint is already set, no typehint is added.

Magic methods, such as __get(), __set(), __construct(), __desctruct(), etc are not modified by this cobbler.

Methods which have parent's methods (resp. children's) are skipped for argument typing (resp return typing) : this may introduce a incompatible definition. On the other hand, methods which have children's methods (resp. parents') are modified for argument typing (resp return typing), thanks to covariance (resp. contravariance).

Void (as a scalar type) and Null types are processed in a separate cobbler.

By default, and in case of conflict, array is chosen over iterable and int is chosen over float. There are parameter to alter this behavior.

Before

```
<?php

class x {
    private int $p = 2;

    function foo(int $a = 1) : int {
        return intdiv($a, $this->p);
    }
}
?>
```

After

```
<?php

class x {
    private int $p = 2;

    function foo(int $a = 1) : int {
        return intdiv($a, $this->p);
    }
}
?>
```

Parameters

Name	Default	Type	Description
array_or_iterable	array	string	When array and iterable are the only suggestions, choose 'array', 'iterable', or 'omit'. By default, it is array.
int_or_float	float	string	When int and float are the only suggestions, choose 'int', 'float', or 'omit'. By default, it is float.

Suggested Analysis

- *Could Be Void*

Related Cobblers

- *Var To Public*
- *Split Property Definitions*
- *Set Null Type*
- *Set Type Void*

Reverse Cobbler

- No anchor for Functions/RemoveTypehint

Specs

Short Name	Functions/SetTypehints
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.45 Split Property Definitions

Split multiple properties definition into independent definitions.

This applies to classes and traits.

Before

```
<?php
    class x {
        private $x, $y, $z;
    }
?>
```

After

```
<?php
    class x {
        private $x;
        private $y;
        private $z;
    }
?>
```

Suggested Analysis

- *Multiple Property Declaration On One Line*

Specs

Short Name	Classes/SplitPropertyDefinitions
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.46 Switch To Match

Transforms a switch() into a match() expression.

The switch() syntax must have each of the cases assigning the same variable (or similar). There should not be any other operation, besides break;

Before

```
<?php
    switch($a) {
        case 1:
            $b = '1';
            break;
        case 2:
            $b = '3';
            break;
        default:
            $b = '0';
            break;
    }
?>
```

After

```
<?php
    $b = match($a) {
        1 => '1',
        2 => '3',
        default => '0'
    };
?>
```

Suggested Analysis

- *Could Use Match*

Related Cobblers

- *Post to Pre Plusplus*

Reverse Cobbler

- *Remove Instructions*

Specs

Short Name	Structures/SwitchToMatch
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.47 Use Available Alias

Apply systematically the use expression in the code.

Before

```
<?php
    use A\B\C as D;
    new A\B\C();
?>
```

After

```
<?php
    use A\B\C as D;
    new D();
?>
```

Suggested Analysis

- *Could Use Alias*

Specs

Short Name	Namespaces/UseAlias
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.48 Var To Public

Replace the var syntax with public keyword.

It is also possible to replace it with protected or private, with the parameter.

Before

```
<?php

class x {
    var $y = 1;
}
?>
```

After

```
<?php

class x {
    public $y = 1;
}
?>
```

Parameters

Name	Default	Type	Description
var_to_visibility	public	string	The destination visibility to be used. May be one of: public, protected or private.

Related Cobblers

- *Set Typehints*

Specs

Short Name	Classes/VarToPublic
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

17.2.49 array_key_exists() Speedup

array_key_exists() is sped up when declared with a use expression.

Before

```
<?php

namespace A {
    array_key_exists($a, $b);
}

?>
```

After

```
<?php

namespace A {
    use function array_key_exists;

    array_key_exists($a, $b);
}

?>
```

Suggested Analysis

- *Always Use Function With array_key_exists()*
- *array_key_exists() Speedup*

Specs

Short Name	Structures/ArrayKeysSpeedup
Exakat version	2.3.0
Available in	Entreprise Edition, Exakat Cloud

CHAPTER

EIGHTEEN

REAL CODE CASES

18.1 Introduction

All the examples in this section are real code, extracted from major PHP applications.

18.2 List of real code Cases

18.2.1 $this Belongs To Classes Or Traits

OpenEMR

$this Belongs To Classes Or Traits, in ccr/display.php:24.

$this is used to call the document_upload_download_log() method, although this piece of code is not part of a class, nor is included in a class.

```
<?php
require_once(dirname(__FILE__) . /../interface/globals.php);

$type = $_GET['type'];
$document_id = $_GET['doc_id'];
$d = new Document($document_id);
$url =  $d->get_url();
$storagemethod = $d->get_storagemethod();
$couch_docid = $d->get_couch_docid();
$couch_revid = $d->get_couch_revid();

if ($couch_docid && $couch_revid) {
    $couch = new CouchDB();
    $data = array($GLOBALS['couchdb_dbase'],$couch_docid);
    $resp = $couch->retrieve_doc($data);
    $xml = base64_decode($resp->data);
    if ($content=='' && $GLOBALS['couchdb_log']==1) {
        $log_content = date('Y-m-d H:i:s')." ==> Retrieving document\r\n";
        $log_content = date('Y-m-d H:i:s')." ==> URL: ".$url."\r\n";
        $log_content .= date('Y-m-d H:i:s')." ==> CouchDB Document Id: ".$couch_docid."\
↪r\n";
        $log_content .= date('Y-m-d H:i:s')." ==> CouchDB Revision Id: ".$couch_revid."\
↪r\n";
```

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```
        $log_content .= date('Y-m-d H:i:s')." ==> Failed to fetch document content from␣
↪CouchDB.\r\n";
        //$log_content .= date('Y-m-d H:i:s')." ==> Will try to download file from␣
↪HardDisk if exists.\r\n\r\n";
        $this->document_upload_download_log($d->get_foreign_id(), $log_content);
        die(xlt("File retrieval from CouchDB failed"));
    }
```

18.2.2 ** For Exponent

Traq

*** For Exponent*, in src/views/layouts/_footer.phtm:5.

pow(1024, 2) could be (1023 ** 2), to convert bytes into Mb.

```
<?=round((microtime(true) - START_TIME), 2); ?>s, <?php echo round((memory_get_peak_
↪usage() - START_MEM) / pow(1024, 2), 3)?>mb
```

TeamPass

*** For Exponent*, in includes/libraries/Authentication/phpseclib/Math/BigInteger.php:286.

pow(2, 62) could also be hard coded with 0x4000000000000000.

```
pow(2, 62)
```

18.2.3 @ Operator

Phinx

@ Operator, in src/Phinx/Util/Util.php:239.

fopen() may be tested for existence, readability before using it. Although, it actually emits some errors on Windows, with network volumes.

```
$isReadable = @\fopen($filePath, 'r') !== false;

        if (!$filePath || !$isReadable) {
            throw new \Exception(sprintf("Cannot open file %s \n", $filename));
        }
```

PhpIPAM

@ Operator, in functions/classes/class.Log.php:322.

Variable and index existence should always be tested with isset() : it is faster than using @.

```
$_SESSION['ipamusername']
```

18.2.4 Abstract Or Implements

Zurmo

Abstract Or Implements, in app/protected/extensions/zurmoinc/framework/views/MassEditProgressView.php:30.

The class MassEditProgressView extends ProgressView, which is an abstract class. That class defines one abstract method : abstract protected function headerLabelPrefixContent(). Yet, the class MassEditProgressView doesn't implements this method. This means that the class can't be instatiated, and indeed, it isn't. The class MassEditProgressView is subclassed, by the class MarketingListMembersMassSubscribeProgressView, which implements the method headerLabelPrefixContent(). As such, MassEditProgressView should be marked abstract, so as to prevent any instantiation attempt.

```
class MassEditProgressView extends ProgressView {
    /**/
}
```

18.2.5 Add Default Value

Zurmo

Add Default Value, in wp-admin/includes/misc.php:74.

Default values may be a literal (1, 'abc', ...), or a constant : global or class. Here, MissionsListConfigurationForm::LIST_TYPE_AVAILABLE may be used directly in the signature of the method

```
public function getMetadataFilteredByOption($option)
        {
            if ($option == null)
            {
                $option = MissionsListConfigurationForm::LIST_TYPE_AVAILABLE;
            }
```

Typo3

Add Default Value, in typo3/sysext/indexed_search/Classes/FileContentParser.php:821.

$extension could get a default value to handle default situations : for example, a file is htm format by default, unless better known. Also, the if/then structure could get a 'else' clause, to handle unknown situations : those are situations where the extension is provided but not known, in particular when the icon is missing in the storage folder.

```
public function getIcon($extension)
    {
        if ($extension === 'htm') {
```

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```
            $extension = 'html';
        } elseif ($extension === 'jpeg') {
            $extension = 'jpg';
        }
        return 'EXT:indexed_search/Resources/Public/Icons/FileTypes/' . $extension . '.
↪gif';
    }
```

18.2.6 Adding Zero

Thelia

Adding Zero, in core/lib/Thelia/Model/Map/ProfileResourceTableMap.php:250.

This return statement is doing quite a lot, including a buried '0 + $offset'. This call is probably an echo to '1 + $offset', which is a little later in the expression.

```
return serialize(array((string) $row[TableMap::TYPE_NUM == $indexType ? 0 + $offset :␣
↪static::translateFieldName('ProfileId', TableMap::TYPE_PHPNAME, $indexType)], (string)
↪$row[TableMap::TYPE_NUM == $indexType ? 1 + $offset : static::translateFieldName(
↪'ResourceId', TableMap::TYPE_PHPNAME, $indexType)]));
```

OpenEMR

Adding Zero, in interface/forms/fee_sheet/new.php:466:534.

$main_provid is filtered as an integer. $main_supid is then filtered twice : one with the sufficent (int) and then, added with 0.

```
if (!$alertmsg && ($_POST['bn_save'] || $_POST['bn_save_close'] || $_POST['bn_save_stay
↪']])) {
    $main_provid = 0 + $_POST['ProviderID'];
    $main_supid  = 0 + (int)$_POST['SupervisorID'];
    //.....
```

18.2.7 Already Parents Interface

WordPress

Already Parents Interface, in src/Phinx/Db/Adapter/AbstractAdapter.php:41.

SqlServerAdapter extends PdoAdapter, PdoAdapter extends AbstractAdapter. The first and the last both implements AdapterInterface. Only one is needed.

```
/**
 * Base Abstract Database Adapter.
 */
abstract class AbstractAdapter implements AdapterInterface
{
```

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```
/// In the src/src/Phinx/Db/Adapter/SqlServerAdapter.php, line 45
/**
 * Phinx SqlServer Adapter.
 *
 */
class SqlServerAdapter extends PdoAdapter implements AdapterInterface
{
```

Thelia

Already Parents Interface, in core/lib/Thelia/Core/Template/Loop/BaseSpecificModule.php:35.

PropelSearchLoopInterface is implemented by both BaseSpecificModule and Payment

```
abstract class BaseSpecificModule extends BaseI18nLoop implements␣
↪PropelSearchLoopInterface

/* in file  core/lib/Thelia/Core/Template/Loop/Payment.php, line 28 */

class Payment extends BaseSpecificModule implements PropelSearchLoopInterface
```

18.2.8 Altering Foreach Without Reference

Contao

Altering Foreach Without Reference, in core-bundle/src/Resources/contao/classes/Theme.php:613.

$tmp[$kk] is &$vv.

```
foreach ($tmp as $kk=>$vv)
                                                                    {
                                                                            // Do not use the␣
↪FilesModel here - tables are locked!
                                                                            $objFile = $this->
↪Database->prepare("SELECT uuid FROM tl_files WHERE path=?")
                                                                                                ␣
↪                               ->limit(1)
                                                                                                ␣
↪                               ->execute($this->customizeUploadPath($vv));

                                                                            $tmp[$kk] = $objFile-
↪>uuid;
                                                                    }
```

WordPress

Altering Foreach Without Reference, in wp-admin/includes/misc.php:74.

$ids[$index] is &$rrid.

```
foreach($ids as $index => $rrid)
                {
                    if($rrid == $this->Id)
                    {
                        $ids[$index] = $_id;
                        $write = true;
                        break;
                    }
                }
```

18.2.9 Always Positive Comparison

Magento

Always Positive Comparison, in app/code/core/Mage/Dataflow/Model/Profile.php:85.

strlen(($actiosXML) will never be negative, and hence, is always false. This exception is never thrown.

```
if (strlen($actionsXML) < 0 &&
        @simplexml_load_string('<data>' . $actionsXML . '</data>', null, LIBXML_NOERROR)␣
↪=== false) {
            Mage::throwException(Mage::helper('dataflow')->__("Actions XML is not valid.
↪"));
        }
```

18.2.10 Ambiguous Array Index

PrestaShop

Ambiguous Array Index, in src/PrestaShopBundle/Install/Install.php:532.

Null, as a key, is actually the empty string.

```
$list = array(
            'products' => _PS_PROD_IMG_DIR_,
            'categories' => _PS_CAT_IMG_DIR_,
            'manufacturers' => _PS_MANU_IMG_DIR_,
            'suppliers' => _PS_SUPP_IMG_DIR_,
            'stores' => _PS_STORE_IMG_DIR_,
            null => _PS_IMG_DIR_.'l/', // Little trick to copy images in img/l/ path␣
↪with all types
        );
```

Mautic

Ambiguous Array Index, in app/bundles/CoreBundle/Entity/CommonRepository.php:314.

True is turned into 1 (integer), and false is turned into 0 (integer).

```
foreach ($metadata->getAssociationMappings() as $field => $association) {
                    if (in_array($association['type'], [ClassMetadataInfo::ONE_TO_ONE,␣
↪ClassMetadataInfo::MANY_TO_ONE])) {
                        $baseCols[true][$entityClass][]  = $association['joinColumns
↪'][0]['name'];
                        $baseCols[false][$entityClass][] = $field;
                    }
                }
```

18.2.11 Ambiguous Visibilities

Typo3

Ambiguous Visibilities, in typo3/sysext/backend/Classes/Controller/NewRecordController.php:90.

$allowedNewTables is declared once protected and once public. $allowedNewTables is rare : 2 occurences. This may lead to confusion about access to this property.

```
class NewRecordController
{
/.. many lines../
    /**
     * @var array
     */
    protected $allowedNewTables;

class DatabaseRecordList
{
/..../
    /**
     * Used to indicate which tables (values in the array) that can have a
     * create-new-record link. If the array is empty, all tables are allowed.
     *
     * @var string[]
     */
    public $allowedNewTables = [];
```

18.2.12 Argument Should Be Typehinted

Dolphin

Argument Should Be Typehinted, in Dolphin-v.7.3.5/plugins/intervention-image/Intervention/Image/Gd/Commands/WidenCommand.php

This closures make immediate use of the $constraint argument, and calls its method aspectRatio. No check is made on this argument, and it may easily be mistaken with another class, or a null. Adding a typehint here will ensure a more verbose development error and help detect misuse of the closure.

```
$this->arguments[2] = function ($constraint) use ($additionalConstraints) {
            $constraint->aspectRatio();
            if(is_callable($additionalConstraints))
                $additionalConstraints($constraint);
        };
```

Mautic

Argument Should Be Typehinted, in app/bundles/PluginBundle/Helper/IntegrationHelper.php:374.

This piece of code inside a 275 lines method. Besides, there are 11 classes that offer a 'getPriority' method, although $returnServices could help to semantically reduce the number of possible classes. Here, typehints on $a and $b help using the wrong kind of object.

```
if (empty($alphabetical)) {
            // Sort by priority
            uasort($returnServices, function ($a, $b) {
                $aP = (int) $a->getPriority();
                $bP = (int) $b->getPriority();

                if ($aP === $bP) {
                    return 0;
                }

                return ($aP < $bP) ? -1 : 1;
            });
```

18.2.13 Assign And Lettered Logical Operator Precedence

xataface

Assign And Lettered Logical Operator Precedence, in Dataface/LanguageTool.php:265.

The usage of 'and' here is a workaround for PHP version that have no support for the coalesce. $autosubmit receives the value of $params['autosubmit'] only if the latter is set. Yet, with = having higher precedence over 'and', $autosubmit is mistaken with the existence of $params['autosubmit'] : its value is actually omitted.

```
$autosubmit = isset($params['autosubmit']) and $params['autosubmit'];
```

18.2.14 Assign Default To Properties

LiveZilla

Assign Default To Properties, in livezilla/_lib/functions.external.inc.php:174.

Flags may default to array() in the class definition. Filled array(), with keys and values, are also possible.

```
class OverlayChat
{
    public $Botmode;
    public $Human;
    public $HumanGeneral;
    public $RepollRequired;
    public $OperatorCount;
    public $Flags;
    public $LastMessageReceived;
    public $LastPostReceived;
    public $IsHumanChatAvailable;
    public $IsChatAvailable;
    public $ChatHTML;
    public $OverlayHTML;
    public $PostHTML;
    public $FullLoad;
    public $LanguageRequired = false;
    public $LastPoster;
    public $EyeCatcher;
    public $GroupBuilder;
    public $CurrentOperatorId;
    public $BotTitle;
    public $OperatorPostCount;
    public $PlaySound;
    public $SpeakingToHTML;
    public $SpeakingToAdded;
    public $Version = 1;

    public static $MaxPosts = 50;
    public static $Response;

    function __construct()
    {
        $this->Flags = array();
        VisitorChat::$Router = new ChatRouter();
    }
```

phpMyAdmin

Assign Default To Properties, in libraries/classes/Console.ph:55.

_isEnabled may default to true. It could also default to a class constant.

```
class Console
{
    /**
     * Whether to display anything
     *
     * @access private
     * @var bool
     */
    private $_isEnabled;

// some code ignored here
    /**
     * Creates a new class instance
     */
    public function __construct()
    {
        $this->_isEnabled = true;
```

18.2.15 Avoid Concat In Loop

SuiteCrm

Avoid Concat In Loop, in include/export_utils.php:433.

$line is build in several steps, then then final version is added to $content. It would be much faster to make $content an array, and implode it once after the loop.

```
foreach($records as $record)
        {
            $line = implode("\\ . getDelimiter() . "\"", $record);
            $line = "\"" . $line;
            $line .= ""\r\n";
            $line = parseRelateFields($line, $record, $customRelateFields);
            $content .= $line;
        }
```

ThinkPHP

Avoid Concat In Loop, in ThinkPHP/Common/functions.php:720.

The foreach loop appends the $name and builds a fully qualified name.

```
if (!C('APP_USE_NAMESPACE')) {
        $class = parse_name($name, 1);
        import($module . '/' . $layer . '/' . $class . $layer);
    } else {
```

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```
        $class = $module . '\' . $layer;
        foreach ($array as $name) {
            $class .= '\' . parse_name($name, 1);
        }
        //
        if ($extend) {
            //
            $class = $extend . '\' . $class;
        }
    }
    return $class . $layer;
```

18.2.16 Avoid Optional Properties

ChurchCRM

Avoid Optional Properties, in src/ChurchCRM/BackupManager.php:401.

Backuptype is initialized with null, and yet, it isn't checked for any invalid valid values, in particular in switch() structures.

```
// BackupType is initialized with null
  class JobBase
  {
      /**
        *
        * @var BackupType
        */
      protected $BackupType;

// In the child class BackupJob, BackupType may be of any type
  class BackupJob extends JobBase
  {
      /**
       *
       * @param String $BaseName
       * @param BackupType $BackupType
       * @param Boolean $IncludeExtraneousFiles
       */
      public function __construct($BaseName, $BackupType, $IncludeExtraneousFiles,
↪$EncryptBackup, $BackupPassword)
      {
          $this->BackupType = $BackupType;


// Later, Backtype is not checked with all values :
          try {
              $this->DecryptBackup();
              switch ($this->BackupType) {
              case BackupType::SQL:
                $this->RestoreSQLBackup($this->RestoreFile);
```

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```
                break;
              case BackupType::GZSQL:
                $this->RestoreGZSQL();
                break;
              case BackupType::FullBackup:
                $this->RestoreFullBackup();
                break;
// Note  : no default case here
            }
```

Dolibarr

Avoid Optional Properties, in htdocs/product/stock/class/productlot.class.php:149.

$this->fk_product is tested for value 11 times while being used in this class. All detected situations were checking the presence of the property before usage.

```
class Productlot extends CommonObject
{
// more code
    /**
     * @var int ID
     */
    public $fk_product;

// Checked usage of fk_product
// line 341
            $sql .= ' fk_product = '.(isset($this->fk_product) ? $this->fk_product :
↪"null").',';
```

18.2.17 Avoid Substr() One

ChurchCRM

Avoid Substr() One, in src/Login.php:141.

No need to call substr() to get only one char.

```
if (substr($LocationFromGet, 0, 1) == "/") {
    $LocationFromGet = substr($LocationFromGet, 1);
}
```

LiveZilla

Avoid Substr() One, in livezilla/_lib/objects.global.inc.php:2243.

No need to call substr() to get only one char.

```
$_hex = str_replace("#", "", $_hex);
            if(strlen($_hex) == 3) {
            $r = hexdec(substr($_hex,0,1).substr($_hex,0,1));
            $g = hexdec(substr($_hex,1,1).substr($_hex,1,1));
            $b = hexdec(substr($_hex,2,1).substr($_hex,2,1));
        } else {
            $r = hexdec(substr($_hex,0,2));
            $g = hexdec(substr($_hex,2,2));
            $b = hexdec(substr($_hex,4,2));
        }
        $rgb = array($r, $g, $b);
        return $rgb;
```

18.2.18 Avoid glob() Usage

Phinx

Avoid glob() Usage, in src/Phinx/Migration/Manager.php:362.

glob() searches for a list of files in the migration folder. Those files are not known, but they have a format, as checked later with the regex : a combinaison of `FilesystemIterator` and `RegexIterator` would do the trick too.

```
$phpFiles = glob($config->getMigrationPath() . DIRECTORY_SEPARATOR . '*.php');

            // filter the files to only get the ones that match our naming scheme
            $fileNames = array();
            /** @var AbstractMigration[] $versions */
            $versions = array();

            foreach ($phpFiles as $filePath) {
                if (preg_match('/([0-9]+)_([_a-z0-9]*).php/', basename($filePath))) {
```

NextCloud

Avoid glob() Usage, in lib/private/legacy/helper.php:185.

Recursive copy of folders, based on scandir(). `DirectoryIterator` and `FilesystemIterator` would do the same without the recursion.

```
static function copyr($src, $dest) {
            if (is_dir($src)) {
                    if (!is_dir($dest)) {
                            mkdir($dest);
                    }
                    $files = scandir($src);
                    foreach ($files as $file) {
```

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```
                            if ($file != . && $file != ..) {
                                    self::copyr($src/$file, $dest/$file);
                            }
                    }
            } elseif (file_exists($src) && !\OC\Files\Filesystem::isFileBlacklisted(
↪$src)) {
                    copy($src, $dest);
            }
    }
```

18.2.19 Avoid set_error_handler $context Argument

shopware

Avoid set_error_handler $context Argument, in engine/Shopware/Plugins/Default/Core/ErrorHandler/Bootstrap.php:162.

The registered handler is a local method, called `errorHandler`, which has 6 arguments, and relays those 6 arguments to set_error_handler().

```
public function registerErrorHandler($errorLevel = E_ALL)
    {
        // Only register once.  Avoids loop issues if it gets registered twice.
        if (self::$_registeredErrorHandler) {
            set_error_handler([$this, 'errorHandler'], $errorLevel);

            return $this;
        }

        self::$_origErrorHandler = set_error_handler([$this, 'errorHandler'],
↪$errorLevel);
        self::$_registeredErrorHandler = true;

        return $this;
    }
```

Vanilla

Avoid set_error_handler $context Argument, in library/core/functions.error.php:747.

Gdn_ErrorHandler is a function that requires 6 arguments.

```
set_error_handler('Gdn_ErrorHandler', E_ALL & ~E_STRICT)
```

18.2.20 Bad Constants Names

PrestaShop

Bad Constants Names, in src/PrestaShopBundle/Install/Upgrade.php:214.

INSTALL_PATH is a valid name for a constant. __PS_BASE_URI__ is not a valid name.

```
require_once(INSTALL_PATH . 'install_version.php');
            // needed for upgrade before 1.5
            if (!defined('__PS_BASE_URI__')) {
                define('__PS_BASE_URI__', str_replace('//', '/', '/'.trim(preg_replace('
↪#/(install(-dev)?/upgrade)$#', '/', str_replace('\', '/', dirname($_SERVER['REQUEST_URI
↪']))), '/').'/'));
            }
```

Zencart

Bad Constants Names, in zc_install/ajaxTestDBConnection.php:10.

A case where PHP needs help : if the PHP version is older than 5.3, then it is valid to compensate. Though, this __DIR__ has a fixed value, wherever it is used, while the official __DIR__ change from dir to dir.

```
if (!defined('__DIR__')) define('__DIR__', dirname(__FILE__));
```

18.2.21 Bail Out Early

OpenEMR

Bail Out Early, in interface/modules/zend_modules/module/Carecoordination/src/Carecoordination/Controller/EncounterccdadispatchC

This is a typical example of a function mostly controlled by one condition. It could be rewrite as 'if($validResult != 'existingpatient')' then return. The 'else' clause is not used anymore, and the whole block of code is now the main sequence of the method.

```
public function ccdaFetching($parameterArray = array())
    {
        $validResult = $this->getEncounterccdadispatchTable()->valid($parameterArray[0]);
        // validate credentials
        if ($validResult == 'existingpatient') {
/// Long bloc of code
        } else {
            return '<?xml version="1.0" encoding="UTF-8"?>
                    <!-- Edited by XMLSpy -->
                    <note>

                            <heading>Authetication Failure</heading>
                            <body></body>
                    </note>
                    ';
        }
```

opencfp

Bail Out Early, in chair/assign_auto_reviewers_weighted_topic_match.inc:105.

This long example illustrates two aspects : first, the shortcut to the end of the method may be the 'then' clause, not necessarily the 'else'. '!in_array($pid.'-'.$rid, $conflictAR)' leads to return, and the 'else' should be removed, while keeping its content. Secondly, we can see 3 conditions that all lead to a premature end to the method. After refactoring all of them, the method would end up with 1 level of indentation, instead of 3.

```
function oc_inConflict(&$conflictAR, $pid, $rid=null) {
    if ($rid == null) {
            $rid = $_SESSION[OCC_SESSION_VAR_NAME]['acreviewerid'];
    }
    if (!in_array($pid.'-'.$rid, $conflictAR)) {
            return false; // not in conflict
    } else {
            $tempr = ocsql_query("SELECT COUNT(*) AS `count` FROM `" . OCC_TABLE_
↪PAPERREVIEWER . "` WHERE `paperid`='" . safeSQLstr($pid) . "' AND `reviewerid`='" .␣
↪safeSQLstr($rid) . "'");
            if ((ocsql_num_rows($tempr) == 1)
                    && ($templ = ocsql_fetch_assoc($tempr))
                    && ($templ['count'] == 1)
            ) {
                    return false; // assigned as reviewer
            } else {
                    $tempr = ocsql_query("SELECT COUNT(*) AS `count` FROM `" . OCC_TABLE_
↪PAPERADVOCATE . "` WHERE `paperid`='" . safeSQLstr($pid) . "' AND `advocateid`='" .␣
↪safeSQLstr($rid) . "'");
                    if ((ocsql_num_rows($tempr) == 1)
                            && ($templ = ocsql_fetch_assoc($tempr))
                            && ($templ['count'] == 1)
                    ) {
                            return false; // assigned as advocate
                    }
            }
    }
    return true;
}
```

18.2.22 Buried Assignation

XOOPS

Buried Assignation, in htdocs/image.php:170.

Classic iffectation : the condition also collects the needed value to process the drawing. This is very common in PHP, and the Yoda condition, with its constant on the left, shows that extra steps were taken to strengthen that piece of code.

```
if (0 < ($radius = $radii[2] * $q)) { // left bottom
        imagearc($workingImage, $radius - 1, $workingHeight - $radius, $radius * 2,
↪$radius * 2, 90, 180, $alphaColor);
        imagefilltoborder($workingImage, 0, $workingHeight - 1, $alphaColor,
```

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```
↪$alphaColor);
    }
```

Mautic

Buried Assignation, in app/bundles/CoreBundle/Controller/ThemeController.php:47.

The setting of the variable $cancelled is fairly hidden here, with its extra operator !. The operator is here for the condition, as $cancelled needs the 'cancellation' state, while the condition needs the contrary. Note also that isset() could be moved out of this condition, and made the result easier to read.

```
$form        = $this->get('form.factory')->create('theme_upload', [], ['action' =>
↪$action]);

        if ($this->request->getMethod() == 'POST') {
            if (isset($form) && !$cancelled = $this->isFormCancelled($form)) {
                if ($this->isFormValid($form)) {
                    $fileData = $form['file']->getData();
```

18.2.23 Callback Function Needs Return

Contao

Callback Function Needs Return, in core-bundle/src/Resources/contao/modules/ModuleQuicklink.php:91.

The empty closure returns *null*. The array_flip() array has now all its values set to null, and reset, as intended. A better alternative is to use the array_fill_keys() function, which set a default value to every element of an array, once provided with the expected keys.

```
$arrPages = array_map(function () {}, array_flip($tmp));
```

Phpdocumentor

Callback Function Needs Return, in src/phpDocumentor/Plugin/ServiceProvider.php:24.

The array_walk() function is called on the plugin's list. Each element is registered with the application, but is not used directly : this is for later. The error mechanism is to throw an exception : this is the only expected feedback. As such, no return is expected. May be a 'foreach' loop would be more appropriate here, but this is syntactic sugar.

```
array_walk(
            $plugins,
            function ($plugin) use ($app) {
                /** @var Plugin $plugin */
                $provider = (strpos($plugin->getClassName(), '\') === false)
                    ? sprintf('phpDocumentor\Plugin\%s\ServiceProvider', $plugin->
↪getClassName())
                    : $plugin->getClassName();
                if (!class_exists($provider)) {
                    throw new \RuntimeException('Loading Service Provider for ' .
↪$provider . ' failed.');
```

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```
                }

                try {
                    $app->register(new $provider($plugin));
                } catch (\InvalidArgumentException $e) {
                    throw new \RuntimeException($e->getMessage());
                }
            }
        );
```

18.2.24 Can't Instantiate Class

WordPress

Can't Instantiate Class, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( "\n", implode( '', file( $filename ) ) );
```

18.2.25 Cast To Boolean

MediaWiki

Cast To Boolean, in includes/page/WikiPage.php:2274.

$options['changed'] and $options['created'] are documented and used as boolean. Yet, SiteStatsUpdate may require integers, for correct storage in the database, hence the type casting. `(int)` `(bool)` may be an alternative here.

```
$edits = $options['changed'] ? 1 : 0;
            $pages = $options['created'] ? 1 : 0;


            DeferredUpdates::addUpdate( SiteStatsUpdate::factory(
                    [ 'edits' => $edits, 'articles' => $good, 'pages' => $pages ]
            ) );
```

Dolibarr

Cast To Boolean, in htdocs/societe/class/societe.class.php:2777.

Several cases are built on the same pattern there. Each of the expression may be replaced by a cast to `(bool)`.

```
case 3:
                                $ret=(!$conf->global->SOCIETE_IDPROF3_UNIQUE?false:true);
                                break;
```

18.2.26 Catch Overwrite Variable

PhpIPAM

Catch Overwrite Variable, in app/subnets/scan/subnet-scan-snmp-route.php:58.

$e is used both as 'local' variable : it is local to the catch clause, and it is a blind variable in a foreach(). There is little overlap between the two occurrences, but one reader may wonder why the caught exception is shown later on.

```
try {
        $res = $Snmp->get_query("get_routing_table");
        // remove those not in subnet
        if (sizeof($res)>0) {
           // save for debug
           $debug[$d->hostname][$q] = $res;

           // save result
           $found[$d->id][$q] = $res;
        }
    } catch (Exception $e) {
       // save for debug
       $debug[$d->hostname][$q] = $res;
       $errors[] = $e->getMessage();
    }

// lots of code
// on line 132
    // print errors
    if (isset($errors)) {
        print "<hr>";
        foreach ($errors as $e) {
            print $Result->show ("warning", $e, false, false, true);
        }
    }
```

SuiteCrm

Catch Overwrite Variable, in modules/Emails/EmailUIAjax.php:1082.

$e starts as an Email(), in the 'getMultipleMessagesFromSugar' case, while a few lines later, in 'refreshSugarFolders', $e is now an exception. Breaks are in place, so both occurrences are separated, yet, one may wonder why an email is a warning, or a mail is a warning.

```
// On line 900, $e is a Email
        case "getMultipleMessagesFromSugar":
            $GLOBALS['log']->debug("********** EMAIL 2.0 - Asynchronous - at:␣
↪getMultipleMessagesFromSugar");
            if (isset($_REQUEST['uid']) && !empty($_REQUEST['uid'])) {
                $exIds = explode(",", $_REQUEST['uid']);
                $out = array();

                foreach ($exIds as $id) {
                    $e = new Email();
```

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```
                    $e->retrieve($id);
                    $e->description_html = from_html($e->description_html);
                    $ie->email = $e;
                    $out[] = $ie->displayOneEmail($id, $_REQUEST['mbox']);
                }

                echo $json->encode($out);
            }

            break;


// lots of code
// on line 1082
        case "refreshSugarFolders":
            try {
                $GLOBALS['log']->debug("********** EMAIL 2.0 - Asynchronous - at:␣
↪refreshSugarFolders");
                $rootNode = new ExtNode('', '');
                $folderOpenState = $current_user->getPreference('folderOpenState',
↪'Emails');
                $folderOpenState = (empty($folderOpenState)) ? "" : $folderOpenState;
                $ret = $email->et->folder->getUserFolders(
                    $rootNode,
                    sugar_unserialize($folderOpenState),
                    $current_user,
                    true
                );
                $out = $json->encode($ret);
                echo $out;
            } catch (SugarFolderEmptyException $e) {
                $GLOBALS['log']->warn($e);
                $out = $json->encode(array(
                    'message' => 'No folder selected warning message here...',
                ));
                echo $out;
            }
            break;
```

18.2.27 Check All Types

Zend-Config

Check All Types, in src/Writer/Ini.php:122.

$value must be an array or a string here.

```
foreach ($config as $key => $value) {
            $group = array_merge($parents, [$key]);

            if (is_array($value)) {
```

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```
                $iniString .= $this->addBranch($value, $group);
            } else {
                $iniString .= implode($this->nestSeparator, $group)
                           .  ' = '
                           .  $this->prepareValue($value)
                           .  ""\n"";
            }
        }
```

Vanilla

Check All Types, in library/core/class.form.php:2488.

When $this->_FormValues is not null, then it is an array or an object, as it may be used immediately with foreach(). A check with is_array() would be a stronger option here.

```
public function formDataSet() {
        if (is_null($this->_FormValues)) {
            $this->formValues();
        }

        $result = [[]];
        foreach ($this->_FormValues as $key => $value) {
```

18.2.28 Check JSON

Woocommerce

Check JSON, in includes/admin/helper/class-wc-helper-plugin-info.php:66.

In case the body is an empty string, this will be correctly decoded, but will yield an object with an empty-named property.

```
$results = json_decode( wp_remote_retrieve_body( $request ), true );
            if ( ! empty( $results ) ) {
                    $response = (object) $results;
            }

            return $response;
```

18.2.29 Class, Interface, Enum Or Trait With Identical Names

shopware

Class, Interface, Enum Or Trait With Identical Names, in engine/Shopware/Components/Form/Interfaces/Element.php:30.

Most Element classes extends ModelEntity, which is an abstract class. There is also an interface, called Element, for forms. And, last, one of the class Element extends JsonSerializable, which is a PHP native interface. Namespaces are definitely crucial to understand which Element is which.

```
interface Element { /**/ } // in engine/Shopware/Components/Form/Interfaces/Element.
↪php:30

class Element implements \JsonSerializable { /**/ }         // in engine/Shopware/Bundle/
↪EmotionBundle/Struct/Element.php:29

class Element extends ModelEntity { /**/ }  // in /engine/Shopware/Models/Document/
↪Element.php:37
```

NextCloud

Class, Interface, Enum Or Trait With Identical Names, in lib/private/Files/Storage/Storage.php:33.

Interface Storage extends another Storage class. Here, the fully qualified name is used, so we can understand which storage is which at read time : a 'use' alias would make this line more confusing.

```
interface Storage extends \OCP\Files\Storage { /**/ }
```

18.2.30 Closure Could Be A Callback

Tine20

Closure Could Be A Callback, in tine20/Tinebase/Convert/Json.php:318.

is_scalar() is sufficient here.

```
$value = array_filter($value, function ($val) { return is_scalar($val); });
```

NextCloud

Closure Could Be A Callback, in apps/files_sharing/lib/ShareBackend/Folder.php:114.

$qb is the object for the methodcall, passed via use. The closure may have been replaced with array($qb, 'createNamedParameter').

```
$parents = array_map(function($parent) use ($qb) {
                            return $qb->createNamedParameter($parent);
                    }, $parents);
```

18.2.31 Common Alternatives

Dolibarr

Common Alternatives, in htdocs/admin/facture.php:531.

The opening an closing tag couldd be moved outside the if condition : they are compulsory in both cases.

```
// Active
                                if (in_array($name, $def))
                                {
                                    print '<td class="center">'."\n";
                                    print '<a href="'.$_SERVER["PHP_SELF"].'?action=del&
↪value='.$name.'">';
                                    print img_picto($langs->trans("Enabled"), 'switch_on
↪');
                                    print '</a>';
                                    print '</td>';
                                }
                                else
                                {
                                    print '<td class="center">'."\n";
                                    print '<a href="'.$_SERVER["PHP_SELF"].'?action=set&
↪value='.$name.'&scan_dir='.$module->scandir.'&label='.urlencode($module->name).'">'.
↪img_picto($langs->trans("SetAsDefault"), 'switch_off').'</a>';
                                    print "</td>";
                                }
```

NextCloud

Common Alternatives, in apps/encryption/lib/KeyManager.php:436.

$shareKey = $this->getShareKey($path, $uid);* is common to all three alternatives. In fact, *$uid = $this->getPublicShareKeyId();* is not common, and that shoul de reviewed, as *$uid will be undefined.

```
if ($this->util->isMasterKeyEnabled()) {
                    $uid = $this->getMasterKeyId();
                    $shareKey = $this->getShareKey($path, $uid);
                    if ($publicAccess) {
                            $privateKey = $this->getSystemPrivateKey($uid);
                            $privateKey = $this->crypt->decryptPrivateKey($privateKey,
↪$this->getMasterKeyPassword(), $uid);
                    } else {
                            // when logged in, the master key is already decrypted in␣
↪the session
                            $privateKey = $this->session->getPrivateKey();
                    }
            } else if ($publicAccess) {
                    // use public share key for public links
                    $uid = $this->getPublicShareKeyId();
                    $shareKey = $this->getShareKey($path, $uid);
                    $privateKey = $this->keyStorage->getSystemUserKey($this->
↪publicShareKeyId . '.privateKey', Encryption::ID);
                    $privateKey = $this->crypt->decryptPrivateKey($privateKey);
            } else {
                    $shareKey = $this->getShareKey($path, $uid);
                    $privateKey = $this->session->getPrivateKey();
            }
```

18.2.32 Compare Hash

Traq

Compare Hash, in src/Models/User.php:105.

This code should also avoid using SHA1.

```
sha1($password) == $this->password
```

LiveZilla

Compare Hash, in livezilla/_lib/objects.global.users.inc.php:1391.

This code is using the stronger SHA256 but compares it to another string. $_token may be non-empty, and still be comparable to 0.

```
function IsValidToken($_token)
{
    if(!empty($_token))
        if(hash("sha256",$this->Token) == $_token)
            return true;
    return false;
}
```

18.2.33 Configure Extract

Zurmo

Configure Extract, in app/protected/modules/marketing/utils/GlobalMarketingFooterUtil.php:127.

This code intent to overwrite *$hash* and *$preview* : it is even literally in the code. The overwrite is intended too, and could even skip the initialisation of the variables. Although the compact()/extract() combinaison is safe as now, it could be safer to only relay the array index, instead of extracting the variables here.

```
public static function resolveManageSubscriptionsUrlByArray(array $queryStringArray,
↪$preview = false)
        {
            $hash = $preview = null;
            extract(static::resolvePreviewAndHashFromArray($queryStringArray));
            return static::resolveManageSubscriptionsUrl($hash, $preview);
        }

// Also with :
        protected static function resolvePreviewAndHashFromArray(array $queryStringArray)
        {
            $preview    = static::resolvePreviewFromArray($queryStringArray);
            $hash       = static::resolveHashByArray($queryStringArray);
            return compact('hash', 'preview');
        }
```

Dolibarr

Configure Extract, in htdocs/includes/restler/framework/Luracast/Restler/Format/HtmlFormat.php:224.

The extract() has been cleverly set in a closure, with a limited scope. The potential overwrite may impact existing variables, such as *$_*, *$nav*, *$form*, and *$data* itself. This may impact the following including. Using EXTR_SKIP would give existing variables priority, and avoid interference.

```
$template = function ($view) use ($data, $path) {
            $form = function () {
                return call_user_func_array(
                    'Luracast\Restler\UI\Forms::get',
                    func_get_args()
                );
            };
            if (!isset($data['form']))
                $data['form'] = $form;
            $nav = function () {
                return call_user_func_array(
                    'Luracast\Restler\UI\Nav::get',
                    func_get_args()
                );
            };
            if (!isset($data['nav']))
                $data['nav'] = $nav;

            $_ = function () use ($data, $path) {
                extract($data);
                $args = func_get_args();
                $task = array_shift($args);
                switch ($task) {
                    case 'require':
                    case 'include':
                        $file = $path . $args[0];
                        if (is_readable($file)) {
                            if (
                                isset($args[1]) &&
                                ($arrays = Util::nestedValue($data, $args[1]))
                            ) {
                                $str = '';
                                foreach ($arrays as $arr) {
                                    extract($arr);
                                    $str .= include $file;
                                }
                                return $str;
                            } else {
                                return include $file;
                            }
                        }
                        break;
                    case 'if':
                        if (count($args) < 2)
                            $args[1] = '';
                        if (count($args) < 3)
```

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```
                            $args[2] = '';
                        return $args[0] ? $args[1] : $args[2];
                        break;
                    default:
                        if (isset($data[$task]) && is_callable($data[$task]))
                            return call_user_func_array($data[$task], $args);
                }
                return '';
            };
            extract($data);
            return @include $view;
        };
```

18.2.34 Continue Is For Loop

XOOPS

Continue Is For Loop, in htdocs/kernel/object.php:711.

break is used here for cases, unless the case includes a if/then structures, in which it becomes a continue. It really should be a break.

```
foreach ($this->vars as $k => $v) {
            $cleanv = $v['value'];
            if (!$v['changed']) {
            } else {
                $cleanv = is_string($cleanv) ? trim($cleanv) : $cleanv;
                switch ($v['data_type']) {
                    case XOBJ_DTYPE_TIMESTAMP:
                        $cleanv = !is_string($cleanv) && is_numeric($cleanv) ? date(_
↪DBTIMESTAMPSTRING, $cleanv) : date(_DBTIMESTAMPSTRING, strtotime($cleanv));
                        break;
                    case XOBJ_DTYPE_TIME:
                        $cleanv = !is_string($cleanv) && is_numeric($cleanv) ? date(_
↪DBTIMESTRING, $cleanv) : date(_DBTIMESTRING, strtotime($cleanv));
                        break;
                    case XOBJ_DTYPE_DATE:
                        $cleanv = !is_string($cleanv) && is_numeric($cleanv) ? date(_
↪DBDATESTRING, $cleanv) : date(_DBDATESTRING, strtotime($cleanv));
                        break;
                    case XOBJ_DTYPE_TXTBOX:
                        if ($v['required'] && $cleanv != '0' && $cleanv == '') {
                            $this->setErrors(sprintf(_XOBJ_ERR_REQUIRED, $k));
                            continue 2;
                        }
                        if (isset($v['maxlength']) && strlen($cleanv) > (int)$v[
↪'maxlength']) {
                            $this->setErrors(sprintf(_XOBJ_ERR_SHORTERTHAN, $k, (int)$v[
↪'maxlength']));
                            continue 2;
                        }
```

18.2.35 Could Be A Static Variable

Dolphin

Could Be A Static Variable, in inc/utils.inc.php:673.

Dolphin pro relies on HTMLPurifier to handle cleaning of values : it is used to prevent xss threat. In this method, oHtmlPurifier is first checked, and if needed, created. Since creation is long and costly, it is only created once. Once the object is created, it is stored as a global to be accessible at the next call of the method. In fact, oHtmlPurifier is never used outside this method, so it could be turned into a 'static' variable, and prevent other methods to modify it. This is a typical example of variable that could be static instead of global.

```
function clear_xss($val)
{
    // HTML Purifier plugin
    global $oHtmlPurifier;
    if (!isset($oHtmlPurifier) && !$GLOBALS['logged']['admin']) {

        require_once(BX_DIRECTORY_PATH_PLUGINS . 'htmlpurifier/HTMLPurifier.standalone.
↪php');

/..../

        $oHtmlPurifier = new HTMLPurifier($oConfig);
    }

    if (!$GLOBALS['logged']['admin']) {
        $val = $oHtmlPurifier->purify($val);
    }

    $oZ = new BxDolAlerts('system', 'clear_xss', 0, 0,
        array('oHtmlPurifier' => $oHtmlPurifier, 'return_data' => &$val));
    $oZ->alert();

    return $val;
}
```

Contao

Could Be A Static Variable, in system/helper/functions.php:184.

$arrScanCache is a typical cache variables. It is set as global for persistence between calls. If it contains an already stored answer, it is returned immediately. If it is not set yet, it is then filled with a value, and later reused. This global could be turned into static, and avoid pollution of global space.

```
function scan($strFolder, $blnUncached=false)
{
    global $arrScanCache;

    // Add a trailing slash
    if (substr($strFolder, -1, 1) != '/')
    {
            $strFolder .= '/';
```

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```
    }

    // Load from cache
    if (!$blnUncached && isset($arrScanCache[$strFolder]))
    {
            return $arrScanCache[$strFolder];
    }
    $arrReturn = array();

    // Scan directory
    foreach (scandir($strFolder) as $strFile)
    {
            if ($strFile == '.' || $strFile == '..')
            {
                    continue;
            }

            $arrReturn[] = $strFile;
    }

    // Cache the result
    if (!$blnUncached)
    {
            $arrScanCache[$strFolder] = $arrReturn;
    }

    return $arrReturn;
}
```

18.2.36 Could Be Abstract Class

Edusoho

Could Be Abstract Class, in src/Biz/Task/Strategy/BaseStrategy.php:14.

BaseStrategy is extended by NormalStrategy, DefaultStrategy (Not shown here), but it is not instantiated itself.

```
class BaseStrategy {
    // Class code
}
```

shopware

Could Be Abstract Class, in engine/Shopware/Plugins/Default/Core/PaymentMethods/Components/GenericPaymentMethod.php:31.

A 'Generic' class sounds like a class that could be 'abstract'.

```
class GenericPaymentMethod extends BasePaymentMethod {
    // More class code
}
```

18.2.37 Could Be Else

SugarCrm

Could Be Else, in SugarCE-Full-6.5.26/modules/Emails/ListViewGroup.php:79.

The first condition makes different checks if 'query' is in $_REQUEST or not. The second only applies to $_REQUEST['query'], as there is no else. There is also no visible sign that the first condition may change $_REQUEST or not

```
if(!isset($_REQUEST['query'])){
    //_pp('loading: '.$currentModule.'Group');
    //_pp($current_user->user_preferences[$currentModule.'GroupQ']);
    $storeQuery->loadQuery($currentModule.'Group');
    $storeQuery->populateRequest();
} else {
    //_pp($current_user->user_preferences[$currentModule.'GroupQ']);
    //_pp('saving: '.$currentModule.'Group');
    $storeQuery->saveFromGet($currentModule.'Group');
}

if(isset($_REQUEST['query'])) {
    // we have a query
    if(isset($_REQUEST['email_type']))                              $email_type = $_
↪REQUEST['email_type'];
    if(isset($_REQUEST['assigned_to']))                             $assigned_to = $_
↪REQUEST['assigned_to'];
    if(isset($_REQUEST['status']))                                  $status = $_REQUEST[
↪'status'];
    // More code
}
```

OpenEMR

Could Be Else, in library/log.inc:653.

Those two if structure may definitely merged into one single instruction.

```
$success = 1;
    $checksum = "";
    if ($outcome === false) {
        $success = 0;
    }

    if ($outcome !== false) {
        // Should use the $statement rather than the processed
        // variables, which includes the binded stuff. If do
        // indeed need the binded values, then will need
        // to include this as a separate array.

        //error_log(""STATEMENT: "".$statement,0);
        //error_log(""BINDS: "".$processed_binds,0);
        $checksum = sql_checksum_of_modified_row($statement);
```

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```
        //error_log(""CHECKSUM: "".$checksum,0);
    }
```

18.2.38 Could Be Private Class Constant

Phinx

Could Be Private Class Constant, in src/Phinx/Db/Adapter/MysqlAdapter.php:46.

The code includes a fair number of class constants. The one listed here are only used to define TEXT columns in MySQL, with their maximal size. Since they are only intented to be used by the MySQL driver, they may be private.

```
class MysqlAdapter extends PdoAdapter implements AdapterInterface
{

//.....
    const TEXT_SMALL   = 255;
    const TEXT_REGULAR = 65535;
    const TEXT_MEDIUM  = 16777215;
    const TEXT_LONG    = 4294967295;
```

18.2.39 Could Be Static Closure

Piwigo

Could Be Static Closure, in include/ws_core.inc.php:620.

The closure function($m) makes no usage of the current object : using static prevents $this to be forwarded with the closure.

```
/**
   * WS reflection method implementation: lists all available methods
   */
  static function ws_getMethodList($params, &$service)
  {
    $methods = array_filter($service->_methods,
      function($m) { return empty($m[options][hidden]) || !$m[options][hidden];} );
    return array('methods' => new PwgNamedArray( array_keys($methods),'method' ) );
  }
```

18.2.40 Could Be Typehinted Callable

Magento

Could Be Typehinted Callable, in wp-admin/includes/misc.php:74.

$objMethod argument is used to call a function, a method or a localmethod. The typehint would save the middle condition, and make a better job than 'is_array' to check if $objMethod is callable. Yet, the final 'else' means that $objMethod is also the name of a method, and PHP won't validate this, unless there is a function with the same name. Here, callable is not an option.

```
public function each($objMethod, $args = [])
    {
        if ($objMethod instanceof \Closure) {
            foreach ($this->getItems() as $item) {
                $objMethod($item, ...$args);
            }
        } elseif (is_array($objMethod)) {
            foreach ($this->getItems() as $item) {
                call_user_func($objMethod, $item, ...$args);
            }
        } else {
            foreach ($this->getItems() as $item) {
                $item->$objMethod(...$args);
            }
        }
    }
```

PrestaShop

Could Be Typehinted Callable, in controllers/admin/AdminImportController.php:1147.

$funcname is tested with is_callable() before being used as a method. Typehint callable would reduce the size of the code.

```
public static function arrayWalk(&$array, $funcname, &$user_data = false)
    {
            if (!is_callable($funcname)) return false;

            foreach ($array as $k => $row)
                    if (!call_user_func_array($funcname, array($row, $k, $user_data)))
                            return false;
            return true;
    }
```

18.2.41 Could Use Compact

WordPress

Could Use Compact, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( "\n", implode( '', file( $filename ) ) );
```

18.2.42 Could Use Short Assignation

ChurchCRM

Could Use Short Assignation, in src/ChurchCRM/utils/GeoUtils.php:74.

Sometimes, the variable is on the other side of the operator.

```
$distance = 0.6213712 * $distance;
```

Thelia

Could Use Short Assignation, in local/modules/Tinymce/Resources/js/tinymce/filemanager/include/utils.php:70.

/= is rare, but it definitely could be used here.

```
$size = $size / 1024;
```

18.2.43 Could Use Try

Mautic

Could Use Try, in app/bundles/StageBundle/Controller/StageController.php:78.

$limit is read as a session variable or a default value. There are no check here that $limit is not null, before using it in a division. It is easy to imagine this is done elsewhere, yet a try/catch could help intercept unwanted situations.

```
//set limits
        $limit = $this->get('session')->get(
            'mautic.stage.limit',
            $this->coreParametersHelper->getParameter('default_pagelimit')
        );
/... Code where $limit is read but not modified /
        $count = count($stages);
        if ($count && $count < ($start + 1)) {
            $lastPage = ($count === 1) ? 1 : (ceil($count / $limit)) ?: 1;
```

18.2.44 Could Use __DIR__

Woocommerce

Could Use __DIR__, in includes/class-wc-api.php:162.

All the 120 occurrences use *dirname(__FILE__)*, and could be upgraded to __DIR__ if backward compatibility to PHP 5.2 is not critical.

```
private function rest_api_includes() {
            // Exception handler.
            include_once dirname( __FILE__ ) . '/api/class-wc-rest-exception.php';

            // Authentication.
            include_once dirname( __FILE__ ) . '/api/class-wc-rest-authentication.php';
```

Piwigo

Could Use __DIR__, in include/random_compat/random.php:50.

dirname(__FILE__) is cached into $RandomCompatDIR, then reused three times. Using __DIR__ would save that detour.

```
$RandomCompatDIR = dirname(__FILE__);

    require_once $RandomCompatDIR.'/byte_safe_strings.php';
    require_once $RandomCompatDIR.'/cast_to_int.php';
    require_once $RandomCompatDIR.'/error_polyfill.php';
```

18.2.45 Could Use array_fill_keys

ChurchCRM

Could Use array_fill_keys, in src/ManageEnvelopes.php:107.

There are two initialisations at the same time here : that should make two call to array_fill_keys().

```
foreach ($familyArray as $fam_ID => $fam_Data) {
        $envelopesByFamID[$fam_ID] = 0;
        $envelopesToWrite[$fam_ID] = 0;
    }
```

PhpIPAM

Could Use array_fill_keys, in functions/scripts/merge_databases.php:418.

Even when the initialization is mixed with other operations, it is a good idea to extract it from the loop and give it to array_fill_keys().

```
$arr_new = array();
                            foreach ($arr as $type=>$objects) {
                                    $arr_new[$type] = array();
                                    if(sizeof($objects)>0) {
                                            foreach($objects as $ok=>$object) {
                                                    $arr_new[$type][] = $highest_ids_
↪append[$type] + $object;
                                            }
                                    }
                            }
```

18.2.46 Could Use array_unique

Dolibarr

Could Use array_unique, in htdocs/includes/restler/framework/Luracast/Restler/Format/XmlFormat.php:250.

This loop has two distinct operations : the first collect keys and keep them unique. A combinaison of array_keys() and array_unique() would do that job, while saving the in_array() lookup, and the configuration check with 'static::$importSettingsFromXml'. The second operation is distinct, and could be done with array_map().

```
$attributes = $xml->attributes();
            foreach ($attributes as $key => $value) {
                if (static::$importSettingsFromXml
                    && !in_array($key, static::$attributeNames)
                ) {
                    static::$attributeNames[] = $key;
                }
                $r[$key] = static::setType((string)$value);
            }
```

OpenEMR

Could Use array_unique, in gacl/gacl_api.class.php:441:441.

This loop is quite complex : it collects $aro_value in $acl_array['aro'][$aro_section_value], but also creates the array in $acl_array['aro'][$aro_section_value], and report errors in the debug log. array_unique() could replace the collection, while the debug would have to be done somewhere else.

```
foreach ($aro_value_array as $aro_value) {
                                    if ( count($acl_array['aro'][$aro_section_value]) !=␣
↪0 ) {
                                            if (!in_array($aro_value, $acl_array['aro'][
↪$aro_section_value])) {
                                                    $this->debug_text("append_acl(): ARO␣
↪Section Value: $aro_section_value ARO VALUE: $aro_value");
                                                    $acl_array['aro'][$aro_section_
↪value][] = $aro_value;
                                                    $update=1;
                                            } else {
                                                    $this->debug_text("append_acl():␣
↪Duplicate ARO, ignoring... ");
                                            }
                                    } else { //Array is empty so add this aro value.
                                            $acl_array['aro'][$aro_section_value][] =
↪$aro_value;
                                            $update = 1;
                                    }
                            }
```

18.2.47 Could Use self

WordPress

Could Use self, in wp-admin/includes/misc.php:74.

Securimage could be called self.

```
class Securimage
{
// Lots of code
            Securimage::$_captchaId = $id;
}
```

LiveZilla

Could Use self, in livezilla/_lib/objects.global.users.inc.php:1599.

Using self makes it obvious that Operator::GetSystemId() is a local call, while Communication::GetParameter() is external.

```
class Operator extends BaseUser
{
    static function ReadParams()
    {
        if(!empty($_POST[POST_EXTERN_REQUESTED_INTERNID]))
            return Communication::GetParameter(POST_EXTERN_REQUESTED_INTERNID,"",$c,
↪FILTER_SANITIZE_SPECIAL_CHARS,null,32);
        else if(!empty($_GET["operator"]))
        {
            $userid = Communication::GetParameter("operator","",$c,FILTER_SANITIZE_
↪SPECIAL_CHARS,null,32,false,false);
            $sysid = Operator::GetSystemId($userid);
}
```

18.2.48 Could Use str_repeat()

Zencart

Could Use str_repeat(), in includes/functions/functions_general.php:1234.

That's a 45 repeat of

```
if ( (!zen_browser_detect('MSIE')) && (zen_browser_detect('Mozilla/4')) ) {
      for ($i=0; $i<45; $i++) $pre .= ' ';
    }
```

18.2.49 Dangling Array References

Typo3

Dangling Array References, in typo3/sysext/impexp/Classes/ImportExport.php:322.

foreach() reads $lines into $r, and augment those lines. By the end, the $r variable is not unset. Yet, several lines later, in the same method but with different conditions, another loop reuse the variable $r. If is_array($this->dat['header']['pagetree'] and is_array($this->remainHeader['records']) are arrays at the same moment, then both loops are called, and they share the same reference. Values of the latter array will end up in the formar.

```
if (is_array($this->dat['header']['pagetree'])) {
    reset($this->dat['header']['pagetree']);
    $lines = [];
    $this->traversePageTree($this->dat['header']['pagetree'], $lines);

    $viewData['dat'] = $this->dat;
    $viewData['update'] = $this->update;
    $viewData['showDiff'] = $this->showDiff;
    if (!empty($lines)) {
        foreach ($lines as &$r) {
            $r['controls'] = $this->renderControls($r);
            $r['fileSize'] = GeneralUtility::formatSize($r['size']);
            $r['message'] = ($r['msg'] && !$this->doesImport ? '<span class="text-danger
↪">' . htmlspecialchars($r['msg']) . '</span>' : '');
        }
        $viewData['pagetreeLines'] = $lines;
    } else {
        $viewData['pagetreeLines'] = [];
    }
}
// Print remaining records that were not contained inside the page tree:
if (is_array($this->remainHeader['records'])) {
    $lines = [];
    if (is_array($this->remainHeader['records']['pages'])) {
        $this->traversePageRecords($this->remainHeader['records']['pages'], $lines);
    }
    $this->traverseAllRecords($this->remainHeader['records'], $lines);
    if (!empty($lines)) {
        foreach ($lines as &$r) {
            $r['controls'] = $this->renderControls($r);
            $r['fileSize'] = GeneralUtility::formatSize($r['size']);
            $r['message'] = ($r['msg'] && !$this->doesImport ? '<span class="text-danger
↪">' . htmlspecialchars($r['msg']) . '</span>' : '');
        }
        $viewData['remainingRecords'] = $lines;
    }
}
```

SugarCrm

Dangling Array References, in SugarCE-Full-6.5.26/modules/Import/CsvAutoDetect.php:165.

There are two nested foreach here : they both have referenced blind variables. The second one uses $data, but never changes it. Yet, it is reused the next round in the first loop, leading to pollution from the first rows of $this->_parser->data into the lasts. This may happen even if $data is not modified explicitly : in fact, it will be modified the next call to foreach($row as ...), for each element in $row.

```
foreach ($this->_parser->data as &$row) {
    foreach ($row as &$data) {
        $len = strlen($data);
        // check if it begins and ends with single quotes
        // if it does, then it double quotes may not be the enclosure
        if ($len>=2 && $data[0] == "'" && $data[$len-1] == "'") {
            $beginEndWithSingle = true;
            break;
        }
    }
    if ($beginEndWithSingle) {
        break;
    }
    $depth++;
    if ($depth > $this->_max_depth) {
        break;
    }
}
```

18.2.50 Deep Definitions

Dolphin

Deep Definitions, in wp-admin/includes/misc.php:74.

The ConstructHiddenValues function builds the ConstructHiddenSubValues function. Thus, ConstructHiddenValues can only be called once.

```
function ConstructHiddenValues($Values)
{
    /**
     *    Recursive function, processes multidimensional arrays
     *
     * @param string $Name  Full name of array, including all subarrays' names
     *
     * @param array  $Value Array of values, can be multidimensional
     *
     * @return string    Properly consctructed <input type="hidden"...> tags
     */
    function ConstructHiddenSubValues($Name, $Value)
    {
        if (is_array($Value)) {
            $Result = "";
            foreach ($Value as $KeyName => $SubValue) {
```

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```
                $Result .= ConstructHiddenSubValues("{$Name}[{$KeyName}]", $SubValue);
            }
        } else // Exit recurse
        {
            $Result = "<input type="hidden" name=\"" . htmlspecialchars($Name) . "\"␣
↪value=\"" . htmlspecialchars($Value) . "\" />\n";
        }

        return $Result;
    }

    /* End of ConstructHiddenSubValues function */

    $Result = '';
    if (is_array($Values)) {
        foreach ($Values as $KeyName => $Value) {
            $Result .= ConstructHiddenSubValues($KeyName, $Value);
        }
    }

    return $Result;
}
```

18.2.51 Dependant Trait

Zencart

Dependant Trait, in app/library/zencart/CheckoutFlow/src/AccountFormValidator.php:14.

Note that addressEntries is used, and is also expected to be an array or an object with ArrayAccess. $addressEntries is only defined in a class called 'Guest' which is also the only one using that trait. Any other class using the AccountFormValidator trait must define addressEntries.

```
trait AccountFormValidator
{

    abstract protected function getAddressFieldValue($fieldName);

    /**
     * @return bool|int
     */
    protected function errorProcessing()
    {
        $error = false;
        foreach ($this->addressEntries as $fieldName => $fieldDetails) {
            $this->addressEntries[$fieldName]['value'] = $this->getAddressFieldValue(
↪$fieldName);
            $fieldError = $this->processFieldValidator($fieldName, $fieldDetails);
            $this->addressEntries[$fieldName]['error'] = $fieldError;
            $error = $error | $fieldError;
        }
```

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```
        return $error;
    }
```

18.2.52 Deprecated PHP Functions

Dolphin

Deprecated PHP Functions, in Dolphin-v.7.3.5/inc/classes/BxDolAdminSettings.php:270.

Split() was abandonned in PHP 7.0

```
split(',', $aItem['extra']);
```

18.2.53 Disconnected Classes

WordPress

Disconnected Classes, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( "\n", implode( '', file( $filename ) ) );
```

18.2.54 Don't Echo Error

ChurchCRM

Don't Echo Error, in wp-admin/includes/misc.php:74.

This is classic debugging code that should never reach production. mysqli_error() and mysqli_errno() provide valuable information is case of an error, and may be exploited by intruders.

```
if (mysqli_error($cnInfoCentral) != '') {
        echo gettext('An error occured: ').mysqli_errno($cnInfoCentral).'--'.mysqli_
↪error($cnInfoCentral);
    } else {
```

Phpdocumentor

Don't Echo Error, in src/phpDocumentor/Plugin/Graphs/Writer/Graph.php:77.

Default development behavior : display the caught exception. Production behavior should not display that message, but log it for later review. Also, the return in the catch should be moved to the main code sequence.

```
public function processClass(ProjectDescriptor $project, Transformation $transformation)
    {
        try {
            $this->checkIfGraphVizIsInstalled();
        } catch (\Exception $e) {
```

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```
            echo $e->getMessage();

            return;
        }
```

18.2.55 Don't Loop On Yield

Dolibarr

Don't Loop On Yield, in htdocs/includes/sabre/sabre/dav/lib/DAV/Server.php:912.

Yield from is a straight replacement here.

```
if (($newDepth === self::DEPTH_INFINITY || $newDepth >= 1) && $childNode instanceof␣
↪ICollection) {
    foreach ($this->generatePathNodes($subPropFind) as $subItem) {
        yield $subItem;
    }
}
```

Tikiwiki

Don't Loop On Yield, in lib/goal/goallib.php:944.

The replacement with `yield from``is not straigthforward here. Yield is only called when $user hasn't been ``$done` : this is a unicity check. So, the double loop may produce a fully merged array, that may be reduced further by array_unique(). The final array, then, can be used with yield from.

```
$done = [];

foreach ($goal['eligible'] as $groupName) {
    foreach ($userlib->get_group_users($groupName) as $user) {
            if (! isset($done[$user])) {
                    yield ['user' => $user, 'group' => null];
                    $done[$user] = true;
            }
    }
}
```

18.2.56 Don't Mix ++

Contao

Don't Mix ++, in core-bundle/src/Resources/contao/drivers/DC_Table.php:1272.

Incrementing and multiplying at the same time.

```
$this->Database->prepare("UPDATE " . $this->strTable . " SET sorting=? WHERE id=?")
               ->execute(($count++ * 128), $objNewSorting->id);
```

Typo3

Don't Mix ++, in typo3/sysext/backend/Classes/Controller/SiteConfigurationController.php:74.

The post-increment is not readable at first glance.

```
foreach ($row['rootline'] as &$record) {
                $record['margin'] = $i++ * 20;
            }
```

18.2.57 Don't Send $this In Constructor

Woocommerce

Don't Send $this In Constructor, in includes/class-wc-cart.php:107.

WC_Cart_Session and WC_Cart_Fees receives $this, the current object, at a moment where it is not consistent : for example, tax_display_cart hasn't been set yet. Although it may be unexpected to have an object called WC_Cart being called by the session or the fees, this is still a temporary inconsistence.

```
/**
     * Constructor for the cart class. Loads options and hooks in the init method.
     */
    public function __construct() {
            $this->session          = new WC_Cart_Session( $this );
            $this->fees_api         = new WC_Cart_Fees( $this );
            $this->tax_display_cart = $this->is_tax_displayed();

            // Register hooks for the objects.
            $this->session->init();
```

Contao

Don't Send $this In Constructor, in system/modules/core/library/Contao/Model.php:110.

$this is send to $objRegistry. $objRegistry is obtained with a factory, ModelRegistry::getInstance(). It is probably fully prepared at that point. Yet, $objRegistry is called and used to fill $this properties with full values. At some point, $objRegistry return values without having a handle on a fully designed object.

```
/**
     * Load the relations and optionally process a result set
     *
     * @param \Database\Result $objResult An optional database result
     */
    public function __construct(\Database\Result $objResult=null)
    {
        // Some code was removed
                    $objRegistry = \Model\Registry::getInstance();

                    $this->setRow($arrData); // see #5439
                    $objRegistry->register($this);
```

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```
        // More code below
        // $this-> are set
        // $objRegistry is called
    }
```

18.2.58 Don't Unset Properties

Vanilla

Don't Unset Properties, in applications/dashboard/models/class.activitymodel.php:1073.

The _NotificationQueue property, in this class, is defined as an array. Here, it is destroyed, then recreated. The unset() is too much, as the assignation is sufficient to reset the array

```
/**
     * Clear notification queue.
     *
     * @since 2.0.17
     * @access public
     */
    public function clearNotificationQueue() {
        unset($this->_NotificationQueue);
        $this->_NotificationQueue = [];
    }
```

Typo3

Don't Unset Properties, in typo3/sysext/linkvalidator/Classes/Linktype/InternalLinktype.php:73.

The property errorParams is emptied by unsetting it. The property is actually defined in the above class, as an array. Until the next error is added to this list, any access to the error list has to be checked with isset(), or yield an 'Undefined' warning.

```
public function checkLink($url, $softRefEntry, $reference)
    {
        $anchor = '';
        $this->responseContent = true;
        // Might already contain values - empty it
        unset($this->errorParams);
//....

abstract class AbstractLinktype implements LinktypeInterface
{
    /**
     * Contains parameters needed for the rendering of the error message
     *
     * @var array
     */
    protected $errorParams = [];
```

18.2.59 Double array_flip()

NextCloud

Double array_flip(), in lib/public/AppFramework/Http/EmptyContentSecurityPolicy.php:372.

The array $allowedScriptDomains is flipped, to unset 'self', then, unflipped (or flipped again), to restore its initial state. Using array_keys() or array_search() would yield the needed keys for unsetting, at a lower cost.

```
if(is_string($this->useJsNonce)) {
                            $policy .= '\'nonce-'.base64_encode($this->useJsNonce).'\'';
                            $allowedScriptDomains = array_flip($this->
↪allowedScriptDomains);
                            unset($allowedScriptDomains['\'self\'']);
                            $this->allowedScriptDomains = array_flip(
↪$allowedScriptDomains);
                            if(count($allowedScriptDomains) !== 0) {
                                    $policy .= ' ';
                            }
                    }
```

18.2.60 Drop Substr Last Arg

SuiteCrm

Drop Substr Last Arg, in modules/UpgradeWizard/uw_utils.php:2422.

substr() is even trying to go beyond the end of the string.

```
substr($relativeFile, 1, strlen($relativeFile))
```

Tine20

Drop Substr Last Arg, in tine20/Calendar/Frontend/Cli.php:95.

Omitting the last character would yield the same result.

```
substr($opt, 18, strlen($opt))
```

18.2.61 Echo With Concat

Phpdocumentor

Echo With Concat, in src/phpDocumentor/Bootstrap.php:76.

Simply replace the dot by a comma.

```
echo 'PROFILING ENABLED' . PHP_EOL
```

TeamPass

Echo With Concat, in includes/libraries/Authentication/Yubico/PEAR.php:162.

This is less obvious, but turning print to echo, and the double-quoted string to single quoted string will yield the same optimisation.

```
print "PEAR constructor called, class=$classname\n";
```

18.2.62 Else If Versus Elseif

TeamPass

Else If Versus Elseif, in items.php:819.

This code could be turned into a switch() structure.

```
if ($field[3] === 'text') {
                echo '
                        <input type=text id=edit_field_.$field[0]._.$elem[0]. class=edit_
↪item_field input_text text ui-widget-content ui-corner-all size=40 data-field-type=.
↪$field[3]. data-field-masked=.$field[4]. data-field-is-mandatory=.$field[5]. data-
↪template-id=.$templateID.>';
            } else if ($field[3] === 'textarea') {
                echo '
                        <textarea id=edit_field_.$field[0]._.$elem[0]. class=edit_item_
↪field input_text text ui-widget-content ui-corner-all colums=40 rows=5 data-field-
↪type=.$field["3"]. data-field-masked=.$field[4]. data-field-is-mandatory=.$field[5].␣
↪data-template-id=.$templateID.></textarea>';
            }
```

Phpdocumentor

Else If Versus Elseif, in src/phpDocumentor/Plugin/Core/Transformer/Writer/Xsl.php:112.

The first then block is long and complex. The else block, on the other hand, only contains a single if/then/else. Both conditions are distinct at first sight, so a if / elseif / then structure would be the best.

```
if ($transformation->getQuery() !== '') {
/** Long then block **/
        } else {
            if (substr($transformation->getArtifact(), 0, 1) == '$') {
                // not a file, it must become a variable!
                $variable_name = substr($transformation->getArtifact(), 1);
                $this->xsl_variables[$variable_name] = $proc->transformToXml($structure);
            } else {
                $relativeFileName = substr($artifact, strlen($transformation->
↪getTransformer()->getTarget()) + 1);
                $proc->setParameter('', 'root', str_repeat('../', substr_count(
↪$relativeFileName, '/')));

                $this->writeToFile($artifact, $proc, $structure);
```

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```
            }
        }
```

18.2.63 Empty Blocks

Cleverstyle

Empty Blocks, in modules/Blogs/api/Controller.php:44.

Else is empty, but commented.

```
public static function posts_get ($Request) {
            $id = $Request->route_ids(0);
            if ($id) {
                    $post = Posts::instance()->get($id);
                    if (!$post) {
                            throw new ExitException(404);
                    }
                    return $post;
            } else {
                    // TODO: implement latest posts
            }
    }
```

PhpIPAM

Empty Blocks, in wp-admin/includes/misc.php:74.

The `then` block is empty and commented : yet, it may have been clearer to make the condition != and omitted the whole empty block.

```
/* checks */
if($_POST['action'] == "delete") {
    # no cecks
}
else {
    # remove spaces
    $_POST['name'] = trim($_POST['name']);

    # length > 4 and < 12
    if( (mb_strlen($_POST['name']) < 2) || (mb_strlen($_POST['name']) > 24) )       {
↪$errors[] = _('Name must be between 4 and 24 characters'); }
```

18.2.64 Empty Classes

WordPress

Empty Classes, in wp-includes/SimplePie/Core.php:54.

Empty class, but documented as backward compatibility.

```
/**
 * SimplePie class.
 *
 * Class for backward compatibility.
 *
 * @deprecated Use {@see SimplePie} directly
 * @package SimplePie
 * @subpackage API
 */
class SimplePie_Core extends SimplePie
{

}
```

18.2.65 Empty Function

Contao

Empty Function, in core-bundle/src/Resources/contao/modules/ModuleQuicklink.php:91.

The closure used with array_map() is empty : this means that the keys are all set to the returned value of the empty closure, which is null. The actual effect is to reset the values to NULL. A better solution, without using the empty closure, is to rely on array_fill_keys() to create an array with default values.

```
if (!empty($tmp) && \is_array($tmp))
                    {
                            $arrPages = array_map(function () {}, array_flip($tmp));
                    }
```

18.2.66 Empty Instructions

Zurmo

Empty Instructions, in app/protected/core/widgets/MentionInput.php:84.

There is no need for a semi-colon after a if/then structure.

```
public function run()
        {
            $id = $this->getId();
            $additionalSettingsJs = "showAvatars: " . var_export($this->showAvatars,␣
↪true) . ",";
            if ($this->classes)
            {
```

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```
                $additionalSettingsJs .=  $this->classes . ',';
            };
            if ($this->templates)
            {
                $additionalSettingsJs .=  $this->templates;
            };
```

ThinkPHP

Empty Instructions, in ThinkPHP/Library/Vendor/Smarty/sysplugins/smarty_internal_configfileparser.php:83.

There is no need for a semi-colon after a class structure, unless it is an anonymous class.

```
class TPC_yyStackEntry
{
    public $stateno;       /* The state-number */
    public $major;         /* The major token value.  This is the code
                      ** number for the token at this stack level */
    public $minor; /* The user-supplied minor token value.  This
                      ** is the value of the token  */
};
```

18.2.67 Empty Try Catch

LiveZilla

Empty Try Catch, in livezilla/_lib/trdp/Zend/Mail/Protocol/Pop3.php:237.

This is an aptly commented empty try/catch : the emited exception is extra check for a Zend Mail Protocol Exception. Hopefully, the Zend_Mail_Protocol_Exception only covers a already-closed situation. Anyhow, this should be logged for later diagnostic.

```
public function logout()
    {
        if (!$this->_socket) {
            return;
        }

        try {
            $this->request('QUIT');
        } catch (Zend_Mail_Protocol_Exception $e) {
            // ignore error - we're closing the socket anyway
        }

        fclose($this->_socket);
        $this->_socket = null;
    }
```

Mautic

Empty Try Catch, in app/bundles/ReportBundle/Model/ExportHandler.php:66.

Removing a file : if the file is not 'deleted' by the method call, but raises an error, it is hidden. When file destruction is impossible because the file is already destroyed (or missing), this is well. If the file couldn't be destroyed because of missing writing privileges, hiding this error will have serious consequences.

```
/**
     * @param string $fileName
     */
    public function removeFile($fileName)
    {
        try {
            $path = $this->getPath($fileName);
            $this->filePathResolver->delete($path);
        } catch (FileIOException $e) {
        }
    }
```

18.2.68 Empty With Expression

HuMo-Gen

Empty With Expression, in fanchart.php:297.

The test on $pid may be directly done on $treeid[$sosa][0]. The distance between the assignation and the empty() makes it hard to spot.

```
$pid=$treeid[$sosa][0];
                    $birthyr=$treeid[$sosa][1];
                    $deathyr=$treeid[$sosa][4];
                    $fontpx=$fontsize;
                    if($sosa>=16 AND $fandeg==180) { $fontpx=$fontsize-1; }
                    if($sosa>=32 AND $fandeg!=180) { $fontpx=$fontsize-1; }
                    if (!empty($pid)) {
```

18.2.69 Encoded Simple Letters

Zurmo

Encoded Simple Letters, in yii/framework/web/CClientScript.php:783.

This actually decodes into a copyright notice.

'function cleanAndSanitizeScriptHeader(& $output)

{
$requiredOne = "Copyright © Zurmo Inc., 2013. All rights reserved.";....'

```
eval(\x66\x75\x6e\x63\x74\x69\x6f\x6e\x20\x63\x6c\x65\x61\x6e\x41\x6e\x64\x53\x61\x6e\
↪x69\x74\x69\x7a\x65\x53\x63\x72 .
    \x69\x70\x74\x48\x65\x61\x64\x65\x72\x28\x26\x20\x24\x6f\x75\x74\x70\x75\x74\x29\
```

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```
↪x0d\x0a\x20\x20\x20\x20\x20\x20 .
    \x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x7b\x0d\
↪x0a\x20\x20\x20\x20\x20\x20\x20 .
    \x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\x20\
↪x20\x24\x72\x65\x71\x75\x69\x72 .
    // several more lines like that
```

18.2.70 Eval() Usage

XOOPS

Eval() Usage, in htdocs/modules/system/class/block.php:266.

eval() execute code that was arbitrarily stored in $this, in one of the properties. Then, it is sent to output, but collected before reaching the browser, and put again in $content. May be the echo/ob_get_contents() could have been skipped.

```
ob_start();
                    echo eval($this->getVar('content', 'n'));
                    $content = ob_get_contents();
                    ob_end_clean();
```

Mautic

Eval() Usage, in app/bundles/InstallBundle/Configurator/Step/CheckStep.php:238.

create_function() is actually an eval() in disguise : replace it with a closure for code modernization

```
create_function('$cfgValue', 'return $cfgValue > 100;')
```

18.2.71 Exception Order

Woocommerce

Exception Order, in includes/api/v1/class-wc-rest-products-controller.php:787.

This try/catch expression is able to catch both WC_Data_Exception and WC_REST_Exception.

In another file, /includes/api/class-wc-rest-exception.php, we find that WC_REST_Exception extends WC_Data_Exception (class WC_REST_Exception extends WC_Data_Exception {}). So WC_Data_Exception is more general, and a WC_REST_Exception exception is caught with WC_Data_Exception Exception. The second catch should be put in first.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
try {
                    $product_id = $this->save_product( $request );
                    $post       = get_post( $product_id );
                    $this->update_additional_fields_for_object( $post, $request );
                    $this->update_post_meta_fields( $post, $request );

                    /**
```

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```
                     * Fires after a single item is created or updated via the REST API.
                     *
                     * @param WP_Post         $post      Post data.
                     * @param WP_REST_Request $request   Request object.
                     * @param boolean         $creating  True when creating item, false␣
↪when updating.
                     */
                    do_action( 'woocommerce_rest_insert_product', $post, $request, false␣
↪);
                    $request->set_param( 'context', 'edit' );
                    $response = $this->prepare_item_for_response( $post, $request );

                    return rest_ensure_response( $response );
            } catch ( WC_Data_Exception $e ) {
                    return new WP_Error( $e->getErrorCode(), $e->getMessage(), $e->
↪getErrorData() );
            } catch ( WC_REST_Exception $e ) {
                    return new WP_Error( $e->getErrorCode(), $e->getMessage(), array(
↪'status' => $e->getCode() ) );
            }
```

18.2.72 Exit() Usage

Traq

Exit() Usage, in src/Controllers/attachments.php:75.

This acts as a view. The final 'exit' is meant to ensure that no other piece of data is emitted, potentially polluting the view. This also prevent any code cleaning to happen.

```
/**
     * View attachment page
     *
     * @param integer $attachment_id
     */
    public function action_view($attachment_id)
    {
        // Don't try to load a view
        $this->render['view'] = false;

        header("Content-type: {$this->attachment->type}");
        $content_type = explode('/', $this->attachment->type);

        // Check what type of file we're dealing with.
        if($content_type[0] == 'text' or $content_type[0] == 'image') {
            // If the mime-type is text, we can just display it
            // as plain text. I hate having to download files.
            if ($content_type[0] == 'text') {
                header("Content-type: text/plain");
            }
            header("Content-Disposition: filename=\"{$this->attachment->name}\"");
```

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```
        }
        // Anything else should be downloaded
        else {
            header("Content-Disposition: attachment; filename=\"{$this->attachment->name}
↪\"");
        }

        // Decode the contents and display it
        print(base64_decode($this->attachment->contents));
        exit;
    }
```

ThinkPHP

Exit() Usage, in ThinkPHP/Library/Vendor/EaseTemplate/template.core.php:60.

Here, exit is used as a rudimentary error management. When the version is not correctly provided via EaseTemplateVer, the application stop totally.

```
$this->version              = (trim($_GET['EaseTemplateVer']))?die('Ease Templae E3!'):'
↪';
```

18.2.73 Failed Substr() Comparison

Zurmo

Failed Substr() Comparison, in app/protected/modules/zurmo/modules/SecurableModule.php:117.

filterAuditEvent compares a six char string with '**AUDIT_EVENT_**' which contains 10 chars. This method returns only FALSE. Although it is used only once, the whole block that calls this method is now dead code.

```
private static function filterAuditEvent($s)
        {
            return substr($s, 0, 6) == 'AUDIT_EVENT_';
        }
```

MediaWiki

Failed Substr() Comparison, in includes/media/DjVu.php:263.

$metadata contains data that may be in different formats. When it is a pure XML file, it is 'Old style'. The comment helps understanding that this is not the modern way to go : the Old Style is actually never called, due to a failing condition.

```
private function getUnserializedMetadata( File $file ) {
            $metadata = $file->getMetadata();
            if ( substr( $metadata, 0, 3 ) === '<?xml' ) {
                    // Old style. Not serialized but instead just a raw string of XML.
                    return $metadata;
            }
```

18.2.74 Foreach Reference Is Not Modified

Dolibarr

Foreach Reference Is Not Modified, in htdocs/product/reassort.php:364.

$wh is an array, and is read for its index 'id', but it is not modified. The reference sign is too much.

```
if($nb_warehouse>1) {
    foreach($warehouses_list as &$wh) {

        print '<td class="right">';
        print empty($product->stock_warehouse[$wh['id']]->real) ? '0' : $product->stock_
↪warehouse[$wh['id']]->real;
        print '</td>';
    }
}
```

Vanilla

Foreach Reference Is Not Modified, in applications/vanilla/models/class.discussionmodel.php:944.

$discussion is also an object : it doesn't need any reference to be modified. And, it is not modified, but only read.

```
foreach ($result as $key => &$discussion) {
    if (isset($this->_AnnouncementIDs)) {
        if (in_array($discussion->DiscussionID, $this->_AnnouncementIDs)) {
            unset($result[$key]);
            $unset = true;
        }
    } elseif ($discussion->Announce && $discussion->Dismissed == 0) {
        // Unset discussions that are announced and not dismissed
        unset($result[$key]);
        $unset = true;
    }
}
```

18.2.75 Forgotten Visibility

FuelCMS

Forgotten Visibility, in /fuel/modules/fuel/controllers/Module.php:713.

Missing visibility for the index() method,and all the methods in the Module class.

```
class Module extends Fuel_base_controller {

    // ---------------------------------------------------------------------

    /**
     * Displays the list (table) view
     *
```

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```
     * @access      public
     * @return      void
     */
    function index()
    {
            $this->items();
    }
```

LiveZilla

Forgotten Visibility, in livezilla/_lib/objects.global.users.inc.php:2516.

Static method that could be public.

```
class Visitor extends BaseUser
{
// Lots of code

    static function CreateSPAMFilter($_userId,$_base64=true)
    {
        if(!empty(Server::$Configuration->File[gl_sfa]))
        {
```

18.2.76 Function Subscripting, Old Style

OpenConf

Function Subscripting, Old Style, in openconf/include.php:1469.

Here, $advocateid may be directly read from ocsql_fetch_assoc(), although, checking for the existence of 'advocateid' before accessing it would make the code more robust

```
$advocateid = false;
    if (isset($GLOBALS['OC_configAR']['OC_paperAdvocates']) && $GLOBALS['OC_configAR']['
↪'OC_paperAdvocates']) {
            $ar = ocsql_query(SELECT `advocateid` FROM ` . OCC_TABLE_PAPERADVOCATE . `␣
↪WHERE `paperid`=' . safeSQLstr($pid) . ') or err('Unable to retrieve advocate');
            if (ocsql_num_rows($ar) == 1) {
                    $al = ocsql_fetch_assoc($ar);
                    $advocateid = $al['advocateid'];
            }
    }
```

18.2.77 Getting Last Element

Thelia

Getting Last Element, in /core/lib/Thelia/Core/Security/AccessManager.php:61.

This code extract the last element with array_slice (position -1) as an array, then get the element in the array with current().

```
current(\array_slice(self::$accessPows, -1, 1, true))
```

18.2.78 Hidden Use Expression

Tikiwiki

Hidden Use Expression, in lib/core/Tiki/Command/DailyReportSendCommand.php:17.

Sneaky error_reporting, hidden among the use calls.

```
namespace Tiki\Command;

use Symfony\Component\Console\Command\Command;
use Symfony\Component\Console\Input\InputArgument;
use Symfony\Component\Console\Input\InputInterface;
use Symfony\Component\Console\Input\InputOption;
use Symfony\Component\Console\Output\OutputInterface;
error_reporting(E_ALL);
use TikiLib;
use Reports_Factory;
```

OpenEMR

Hidden Use Expression, in interface/patient_file/summary/browse.php:23.

Use expression is only reached when the csrf token is checked. This probably save some CPU when no csrf is available, but it breaks the readability of the file.

```
<?php
/**
 * Patient selector for insurance gui
 *
 * @package   OpenEMR
 * @link      http://www.open-emr.org
 * @author    Brady Miller <brady.g.miller@gmail.com>
 * @copyright Copyright (c) 2018 Brady Miller <brady.g.miller@gmail.com>
 * @license   https://github.com/openemr/openemr/blob/master/LICENSE GNU General Public␣
↪License 3
 */


require_once(../../globals.php);
require_once($srcdir/patient.inc);
```

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```
require_once($srcdir/options.inc.php);

if (!empty($_POST)) {
    if (!verifyCsrfToken($_POST[csrf_token_form])) {
        csrfNotVerified();
    }
}

use OpenEMR\Core\Header;
```

18.2.79 Identical Conditions

WordPress

Identical Conditions, in wp-admin/theme-editor.php:247.

The condition checks first if $has_templates or $theme->parent(), and one of the two is sufficient to be valid. Then, it checks again that $theme->parent() is activated with &&. This condition may be reduced by calling $theme->parent(), as $has_template is unused here.

```
<?php if ( ( $has_templates || $theme->parent() ) && $theme->parent() ) : ?>
```

Dolibarr

Identical Conditions, in htdocs/core/lib/files.lib.php:2052.

Better check twice that $modulepart is really 'apercusupplier_invoice'.

```
$modulepart == 'apercusupplier_invoice' || $modulepart == 'apercusupplier_invoice'
```

18.2.80 Identical On Both Sides

phpMyAdmin

Identical On Both Sides, in libraries/classes/DatabaseInterface.php:323.

This code looks like `($options & DatabaseInterface::QUERY_STORE) == DatabaseInterface::QUERY_STORE`, which would make sense. But PHP precedence is actually executing `$options & (DatabaseInterface::QUERY_STORE == DatabaseInterface::QUERY_STORE)`, which then doesn't depends on QUERY_STORE but only on $options.

```
if ($options & DatabaseInterface::QUERY_STORE == DatabaseInterface::QUERY_STORE) {
    $tmp = $this->_extension->realQuery('
        SHOW COUNT(*) WARNINGS', $this->_links[$link], DatabaseInterface::QUERY_STORE
    );
    $warnings = $this->fetchRow($tmp);
} else {
    $warnings = 0;
}
```

HuMo-Gen

Identical On Both Sides, in include/person_cls.php:73.

In that long logical expression, $personDb->pers_cal_date is tested twice

```
// *** Filter person's WITHOUT any date's ***
                    if ($user["group_filter_date"]=='j'){
                            if ($personDb->pers_birth_date=='' AND $personDb->pers_bapt_
↪date=='')
                            AND $personDb->pers_death_date=='' AND $personDb->pers_
↪buried_date=='')
                            AND $personDb->pers_cal_date=='' AND $personDb->pers_cal_
↪date=='')
                            ){
                                    $privacy_person='';
                            }
                    }
```

18.2.81 If With Same Conditions

phpMyAdmin

If With Same Conditions, in libraries/classes/Response.php:345.

The first test on $this->_isSuccess settles the situation with _JSON. Then, a second check is made. Both could be merged, also the second one is fairly long (not shown).

```
if ($this->_isSuccess) {
            $this->_JSON['success'] = true;
        } else {
            $this->_JSON['success'] = false;
            $this->_JSON['error']   = $this->_JSON['message'];
            unset($this->_JSON['message']);
        }

        if ($this->_isSuccess) {
```

Phpdocumentor

If With Same Conditions, in src/phpDocumentor/Transformer/Command/Project/TransformCommand.php:239.

$templates is extracted from $input. If it is empty, a second source is polled. Finally, if nothing has worked, a default value is used ('clean'). In this case, each attempt is an alternative solution to the previous failing call. The second test could be reported on $templatesFromConfig, and not $templates.

```
$templates = $input->getOption('template');
        if (!$templates) {
            /** @var Template[] $templatesFromConfig */
            $templatesFromConfig = $configurationHelper->getConfigValueFromPath(
↪'transformations/templates');
            foreach ($templatesFromConfig as $template) {
```

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```
                $templates[] = $template->getName();
            }
        }

        if (!$templates) {
            $templates = array('clean');
        }
```

18.2.82 Illegal Name For Method

PrestaShop

Illegal Name For Method, in admin-dev/ajaxfilemanager/inc/class.pagination.php:200.

__getBaseUrl and __setBaseUrl shouldn't be named like that.

```
/**
     * get base url for pagination links aftr excluded those key
     * identified on excluded query strings
     *
     */
    function __getBaseUrl()
    {

            if(empty($this->baseUrl))
            {

                    $this->__setBaseUrl();
            }
            return $this->baseUrl;
    }
```

Magento

Illegal Name For Method, in app/code/core/Mage/Core/Block/Abstract.php:1139.

public method, called '__'. Example : $this->__();

```
public function __()
    {
        $args = func_get_args();
        $expr = new Mage_Core_Model_Translate_Expr(array_shift($args), $this->
↪getModuleName());
        array_unshift($args, $expr);
        return $this->_getApp()->getTranslator()->translate($args);
    }
```

18.2.83 Incompatible Signature Methods

SuiteCrm

Incompatible Signature Methods, in modules/Home/Dashlets/RSSDashlet/RSSDashlet.php:138.

The class in the RSSDashlet.php file has an 'array' typehint which is not in the parent Dashlet class. While both files compile separately, they yield a PHP warning when running : typehinting mismatch only yields a warning.

```
// File /modules/Home/Dashlets/RSSDashlet/RSSDashlet.php
    public function saveOptions(
        array $req
        )
    {

// File /include/Dashlets/Dashlets.php
    public function saveOptions( $req ) {
```

18.2.84 Incompatible Signature Methods With Covariance

SuiteCrm

Incompatible Signature Methods With Covariance, in modules/Home/Dashlets/RSSDashlet/RSSDashlet.php:138.

The class in the RSSDashlet.php file has an 'array' typehint which is not in the parent Dashlet class. While both files compile separately, they yield a PHP warning when running : typehinting mismatch only yields a warning.

```
// File /modules/Home/Dashlets/RSSDashlet/RSSDashlet.php
    public function saveOptions(
        array $req
        )
    {

// File /include/Dashlets/Dashlets.php
    public function saveOptions( $req ) {
```

18.2.85 Incompilable Files

xataface

Incompilable Files, in lib/XML/Tree.php:289.

Compilation error with PHP 7.2 version.

```
syntax error, unexpected 'new' (T_NEW)
```

18.2.86 Inconsistent Concatenation

FuelCMS

Inconsistent Concatenation, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( \n, implode( '', file( $filename ) ) );
```

18.2.87 Inconsistent Variable Usage

WordPress

Inconsistent Variable Usage, in wp-includes/IXR/class-IXR-client.php:86.

$request is used successively as an object (IXR_Request), then as a string (The POST). Separatring both usage with different names will help readability.

```
$request = new IXR_Request($method, $args);
        $length = $request->getLength();
        $xml = $request->getXml();
        $r = \r\n;
        $request  = POST {$this->path} HTTP/1.0$r;
```

18.2.88 Indices Are Int Or String

Zencart

Indices Are Int Or String, in includes/modules/payment/paypaldp.php:2523.

All those strings ends up as integers.

```
// Build Currency format table
    $curFormat = Array();
    $curFormat[036]=2;
    $curFormat[124]=2;
    $curFormat[203]=2;
    $curFormat[208]=2;
    $curFormat[348]=2;
    $curFormat[392]=0;
    $curFormat[554]=2;
    $curFormat[578]=2;
    $curFormat[702]=2;
    $curFormat[752]=2;
    $curFormat[756]=2;
    $curFormat[826]=2;
    $curFormat[840]=2;
    $curFormat[978]=2;
    $curFormat[985]=2;
```

Mautic

Indices Are Int Or String, in app/bundles/CoreBundle/Entity/CommonRepository.php:315.

$baseCols has 1 and 0 (respectively) for index.

```
foreach ($metadata->getAssociationMappings() as $field => $association) {
                    if (in_array($association['type'], [ClassMetadataInfo::ONE_TO_ONE,␣
↪ClassMetadataInfo::MANY_TO_ONE])) {
                        $baseCols[true][$entityClass][]  = $association['joinColumns
↪'][0]['name'];
                        $baseCols[false][$entityClass][] = $field;
                    }
                }
```

18.2.89 Invalid Constant Name

OpenEMR

Invalid Constant Name, in library/classes/InsuranceCompany.class.php:20.

Note the dash in the name. Either a copy/paste, or a generated definition file : the file contains 25 constants definition. The constant is not found in the rest of the code.

```
define(INS_TYPE_OTHER_NON-FEDERAL_PROGRAMS, 10);
```

18.2.90 Invalid Regex

SugarCrm

Invalid Regex, in SugarCE-Full-6.5.26/include/utils/file_utils.php:513.

This yields an error at execution time : ``Compilation failed: invalid range in character class at offset 4 ``.

```
preg_replace('/[^\w-._]+/i', '', $name)
```

18.2.91 Is Actually Zero

Dolibarr

Is Actually Zero, in htdocs/compta/ajaxpayment.php:99.

Here, the $amountToBreakDown is either $currentRemain or $result.

```
$amountToBreakdown = ($result - $currentRemain >= 0 ?

↪$currentRemain :                                                          //␣
↪Remain can be fully paid

↪$currentRemain + ($result - $currentRemain));   // Remain can only partially be paid
```

SuiteCrm

Is Actually Zero, in modules/AOR_Charts/lib/pChart/class/pDraw.class.php:523.

$Xa may only amount to $iX2, though the expression looks weird.

```
if ( $X > $iX2 ) { $Xa = $X-($X-$iX2); $Ya = $iY1+($X-$iX2); } else { $Xa = $X; $Ya =
↪$iY1; }
```

18.2.92 Isset Multiple Arguments

ThinkPHP

Isset Multiple Arguments, in library/think/Request.php:1187.

This may be shortened with isset($sub), $array[$name][$sub])

```
isset($sub) && isset($array[$name][$sub])
```

LiveZilla

Isset Multiple Arguments, in livezilla/_lib/trdp/pchart/class/pDraw.class.php:3852.

This is the equivalent of !(isset($Data[Series][$SerieA][Data]) && isset($Data[Series][$SerieB][Data])), and then, !(isset($Data[Series][$SerieA][Data], $Data[Series][$SerieB][Data]))

```
!isset($Data[Series][$SerieA][Data]) || !isset($Data[Series][$SerieB][Data])
```

18.2.93 Isset() On The Whole Array

Tine20

Isset() On The Whole Array, in tine20/Crm/Model/Lead.php:208.

Only the second call is necessary : it also includes the first one.

```
isset($relation['related_record']) && isset($relation['related_record']['n_fileas'])
```

ExpressionEngine

Isset() On The Whole Array, in system/ee/legacy/libraries/Form_validation.php:1487.

This is equivalent to *isset($this->_field_data[$field], $this->_field_data[$field]['postdata'])*, and the second call may be skipped.

```
!isset($this->_field_data[$field]) OR !isset($this->_field_data[$field]['postdata'])
```

18.2.94 Joining file()

WordPress

Joining file(), in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( "\n", implode( '', file( $filename ) ) );
```

SPIP

Joining file(), in ecrire/inc/install.php:109.

When the file is not accessible, file() returns null, and can't be processed by join().

```
$s = @join('', file($file));
```

18.2.95 Logical Mistakes

Dolibarr

Logical Mistakes, in htdocs/core/lib/admin.lib.php:1165.

This expression is always true. When *$nbtabsql* is *$nbtablib*, the left part is true; When *$nbtabsql* is *$nbtabsqlsort*, the right part is true; When any other value is provided, both operands are true.

```
$nbtablib != $nbtabsql || $nbtabsql != $nbtabsqlsort
```

Cleverstyle

Logical Mistakes, in modules/HybridAuth/Hybrid/Providers/DigitalOcean.php:123.

This expression is always false. When *$data->account->email_verified* is *true*, the right part is false; When *$data->account->email_verified* is *$data->account->email*, the right part is false; The only viable solution is to have ` $data->account->email`true : this is may be the intend it, though it is not easy to understand.

```
TRUE == $data->account->email_verified and $data->account->email == $data->account->
↪email_verified
```

18.2.96 Logical Should Use Symbolic Operators

Cleverstyle

Logical Should Use Symbolic Operators, in modules/Uploader/Mime/Mime.php:171.

$extension is assigned with the results of pathinfo($reference_name, PATHINFO_EXTENSION) and ignores static::hasExtension($extension). The same expression, placed in a condition (like an if), would assign a value to $extension and use another for the condition itself. Here, this code is only an expression in the flow.

```
$extension = pathinfo($reference_name, PATHINFO_EXTENSION) and static::hasExtension(
↪$extension);
```

OpenConf

Logical Should Use Symbolic Operators, in chair/export.inc:143.

In this context, the priority of execution is used on purpose; $coreFile only collect the temporary name of the export file, and when this name is empty, then the second operand of OR is executed, though never collected. Since this second argument is a 'die', its return value is lost, but the initial assignation is never used anyway.

```
$coreFile = tempnam('/tmp/', 'ocexport') or die('could not generate Excel file (6)')
```

18.2.97 Logical To in_array

Zencart

Logical To in_array, in admin/users.php:32.

Long list of == are harder to read. Using an in_array() call gathers all the strings together, in an array. In turn, this helps readability and possibility, reusability by making that list an constant.

```
// if needed, check that a valid user id has been passed
if (($action == 'update' || $action == 'reset') && isset($_POST['user']))
{
  $user = $_POST['user'];
}
elseif (($action == 'edit' || $action == 'password' || $action == 'delete' || $action ==
↪'delete_confirm') && $_GET['user'])
{
  $user = $_GET['user'];
}
elseif(($action=='delete' || $action=='delete_confirm') && isset($_POST['user']))
{
  $user = $_POST['user'];
}
```

18.2.98 Lone Blocks

ThinkPHP

Lone Blocks, in ThinkPHP/Library/Vendor/Hprose/HproseReader.php:163.

There is no need for block in a case/default clause. PHP executes all command in order, until a break or the end of the switch. There is another occurrence of that situation in this code : it seems to be a coding convention, while only applied to a few switch statements.

```
for ($i = 0; $i < $len; ++$i) {
            switch (ord($this->stream->getc()) >> 4) {
                case 0:
                case 1:
                case 2:
                case 3:
                case 4:
                case 5:
```

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```
                case 6:
                case 7: {
                    // 0xxx xxxx
                    $utf8len++;
                    break;
                }
                case 12:
                case 13: {
                    // 110x xxxx   10xx xxxx
                    $this->stream->skip(1);
                    $utf8len += 2;
                    break;
                }
```

Tine20

Lone Blocks, in tine20/Addressbook/Convert/Contact/VCard/Abstract.php:199.

A case of empty case, with empty blocks. This is useless code. Event the curly brackets with the final case are useless.

```
switch ( $property['TYPE'] ) {
                        case 'JPG' : {}
                        case 'jpg' : {}
                        case 'Jpg' : {}
                        case 'Jpeg' : {}
                        case 'jpeg' : {}
                        case 'PNG' : {}
                        case 'png' : {}
                        case 'JPEG' : {
                            if (Tinebase_Core::isLogLevel(Zend_Log::DEBUG))
                                Tinebase_Core::getLogger()->warn(__METHOD__ . '::' . __
↪LINE__ . ' Photo: passing on invalid ' . $property['TYPE'] . ' image as is (' . strlen(
↪$property->getValue()) .')' );
                            $jpegphoto = $property->getValue();
                            break;
                        }
```

18.2.99 Long Arguments

Cleverstyle

Long Arguments, in core/drivers/DB/MySQLi.php:40.

This query is not complex, but its length tend to push the end out of the view in the IDE. It could be rewritten as a variable, on the previous line, with some formatting. The same formatting would help without the variable too, yet, mixing the SQL syntax with the PHP methodcall adds a layer of confusion.

```
$this->instance->query("SET SESSION sql_mode='ONLY_FULL_GROUP_BY,STRICT_TRANS_TABLES,NO_
↪ZERO_IN_DATE,NO_ZERO_DATE,ERROR_FOR_DIVISION_BY_ZERO,NO_AUTO_CREATE_USER,NO_ENGINE_
↪SUBSTITUTION'")
```

Contao

Long Arguments, in core-bundle/src/Resources/contao/widgets/CheckBoxWizard.php:145.

This one-liner includes 9 members and 6 variables : some are formatted by sprintf, some are directly concatenated in the string. Breaking this into two lines improves readbility and code review.

```
sprintf('<span><input type="checkbox" name="%s" id="opt_%s" class="tl_checkbox" value="%s
↪"%s%s onfocus="Backend.getScrollOffset()"> %s<label for="opt_%s">%s</label></span>',
↪$this->strName . ($this->multiple ? '[]' : ''), $this->strId . '_' . $i, ($this->
↪multiple ? \StringUtil::specialchars($arrOption['value']) : 1), (((\is_array($this->
↪varValue) && \in_array($arrOption['value'], $this->varValue)) || $this->varValue ==
↪$arrOption['value']) ? ' checked="checked"' : ''), $this->getAttributes( ),
↪$strButtons, $this->strId . '_' . $i, $arrOption['label'])
```

18.2.100 Lost References

WordPress

Lost References, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( "\n", implode( '', file( $filename ) ) );
```

18.2.101 Make One Call With Array

HuMo-Gen

Make One Call With Array, in admin/include/kcfinder/lib/helper_text.php:47.

The three calls to str_replace() could be replaced by one, using array arguments. Nesting the calls doesn't reduce the number of calls.

```
static function jsValue($string) {
        return
            preg_replace('/\r?\n/', \n,
            str_replace('"', "\"",
            str_replace("'", "\'",
            str_replace("\", "\",
        $string))));
    }
```

Edusoho

Make One Call With Array, in src/AppBundle/Common/StringToolkit.php:55.

Since str_replace is already using an array, the second argument must also be an array, with repeated empty strings. That syntax allows adding the ' ' and ' ' to those arrays. Note also that trim() should be be called early, but since some of the replacing may generate terminal spaces, it should be kept as is.

```
$text = strip_tags($text);

        $text = str_replace(array(\n, \r, \t), '', $text);
        $text = str_replace(' ', ' ', $text);
        $text = trim($text);
```

18.2.102 Method Could Be Static

FuelCMS

Method Could Be Static, in fuel/modules/fuel/models/Fuel_assets_model.php:240.

This method makes no usage of $this : it only works on the incoming argument, $file. This may even be a function.

```
public function get_file($file)
    {
            // if no extension is provided, then we determine that it needs to be decoded
            if (strpos($file, '.') === FALSE)
            {
                    $file = uri_safe_decode($file);
            }
            return $file;
    }
```

ExpressionEngine

Method Could Be Static, in system/ee/legacy/libraries/Upload.ph:859.

This method returns the list of mime type, by using a hidden global value : ee() is a functioncall that give access to the external storage of values.

```
/**
     * List of Mime Types
     *
     * This is a list of mime types.  We use it to validate
     * the "allowed types" set by the developer
     *
     * @param       string
     * @return      string
     */
    public function mimes_types($mime)
    {
            ee()->load->library('mime_type');
            return ee()->mime_type->isSafeForUpload($mime);
    }
```

18.2.103 Mismatched Default Arguments

SPIP

Mismatched Default Arguments, in ecrire/inc/lien.php:160.

generer_url_entite() takes $connect in, with a default value of empty string. Later, generer_url_entite() receives that value, but uses null as a default value. This forces the ternary test on $connect, to turn it into a null before shipping it to the next function, and having it processed accordingly.

```
// http://code.spip.net/@traiter_lien_implicite
function traiter_lien_implicite($ref, $texte = '', $pour = 'url', $connect = '') {

    // some code was edited here

    if (is_array($url)) {
            @list($type, $id) = $url;
            $url = generer_url_entite($id, $type, $args, $ancre, $connect ? $connect :␣
↪null);
    }
```

18.2.104 Mismatched Ternary Alternatives

phpadsnew

Mismatched Ternary Alternatives, in phpAdsNew-2.0/admin/lib-misc-stats.inc.php:219.

This is an unusual way to apply a condition. $bgcolor is '#FFFFFF' by default, and if $i % 2, then $bcolor is '#F6F6F6';. A more readable ternary option would be '$bgcolor = = $i % 2 ? "#FFFFFF" : "#F6F6F6";', and make a matched alternative branches.

```
$bgcolor = "#FFFFFF";
    $i % 2 ? 0 : $bgcolor = "#F6F6F6";
```

OpenEMR

Mismatched Ternary Alternatives, in portal/messaging/messages.php:132.

IS_DASHBOARD is defined as a boolean or a string. Later, it is tested as a boolean, and displayed as a integer, which will be cast to string by echo. Lots of transtyping are happening here.

```
// In two distinct if/then branch
l:29) define('IS_DASHBOARD', false);
l:41) define('IS_DASHBOARD', $_SESSION['authUser']);

l:132) echo IS_DASHBOARD ? IS_DASHBOARD : 0;
?>
```

18.2.105 Mismatched Typehint

WordPress

Mismatched Typehint, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( "\n", implode( '', file( $filename ) ) );
```

18.2.106 Missing Cases In Switch

Tikiwiki

Missing Cases In Switch, in lib/articles/artlib.php:1075.

This switch handles 3 cases, plus the default for all others. There are other switch structures which also handle the '' case. There may be a missing case here. In particular, projects/tikiwiki/code//article_image.php host another switch with the same case, plus another 'topic' case.

```
switch ($image_type) {
                    case 'article':
                            $image_cache_prefix = 'article';
                            break;
                    case 'submission':
                            $image_cache_prefix = 'article_submission';
                            break;
                    case 'preview':
                            $image_cache_prefix = 'article_preview';
                            break;
                    default:
                            return false;
            }
```

18.2.107 Mixed Concat And Interpolation

SuiteCrm

Mixed Concat And Interpolation, in modules/AOW_Actions/actions/actionSendEmail.php:89.

How long did it take to spot the hidden $checked variable in this long concatenation ? Using a consistent method of interpolation would help readability here.

```
"<input type='checkbox' id='aow_actions_param[" . $line . "][individual_email]' name=
↪'aow_actions_param[" . $line . "][individual_email]' value='1' $checked></td>"
```

Edusoho

Mixed Concat And Interpolation, in src/AppBundle/Controller/Admin/SiteSettingController.php:168.

Calling a method from a property of an object is possible inside a string, though it is rare. Setting the method outside the string make it more readable.

```
"{$this->container->getParameter('topxia.upload.public_url_path')}/" . $parsed['path']
```

18.2.108 Mkdir Default

Mautic

Mkdir Default, in app/bundles/CoreBundle/Helper/AssetGenerationHelper.php:120.

This code is creating some directories for Javascript or CSS (from the directories names) : those require universal reading access, but probably no execution nor writing access. 0711 would be sufficient in this case.

```
//combine the files into their corresponding name and put in the root media folder
                if ($env == 'prod') {
                    $checkPaths = [
                        $assetsFullPath,
                        $assetsFullPath/css,
                        $assetsFullPath/js,
                    ];
                    array_walk($checkPaths, function ($path) {
                        if (!file_exists($path)) {
                            mkdir($path);
                        }
                    });
```

OpenEMR

Mkdir Default, in interface/main/backuplog.php:27.

If $BACKUP_EVENTLOG_DIR is a backup for an event log, this should be stored out of the web server reach, with low rights, beside the current user. This is part of a CLI PHP script.

```
mkdir($BACKUP_EVENTLOG_DIR)
```

18.2.109 Multiple Alias Definitions

ChurchCRM

Multiple Alias Definitions, in Various files:–.

It is actually surprising to find FamilyQuery defined as ChurchCRMBaseFamilyQuery only once, while all other reference are for ChurchCRMFamilyQuery. That lone use is actually useful in the code, so it is not a forgotten refactorisation.

```
use ChurchCRM\Base\FamilyQuery      // in /src/MapUsingGoogle.php:7

use ChurchCRM\FamilyQuery   // in /src/ChurchCRM/Dashboard/EventsDashboardItem.php:8
                            // and 29 other files
```

Phinx

Multiple Alias Definitions, in Various files too:–.

One 'Command' is refering to a local Command class, while the other is refering to an imported class. They are all in a similar name space ConsoleCommand.

```
use Phinx\Console\Command                       //in file /src/Phinx/Console/
↪PhinxApplication.php:34
use Symfony\Component\Console\Command\Command       //in file /src/Phinx/Console/Command/
↪Init.php:31
use Symfony\Component\Console\Command\Command       //in file /src/Phinx/Console/Command/
↪AbstractCommand.php:32
```

18.2.110 Multiple Constant Definition

Dolibarr

Multiple Constant Definition, in htdocs/main.inc.php:914.

All is documented here : 'Constants used to defined number of lines in textarea'. Constants are not changing during an execution, and this allows the script to set values early in the process, and have them used later, in the templates. Yet, building constants dynamically may lead to confusion, when developpers are not aware of the change.

```
// Constants used to defined number of lines in textarea
if (empty($conf->browser->firefox))
{
    define('ROWS_1',1);
    define('ROWS_2',2);
    define('ROWS_3',3);
    define('ROWS_4',4);
    define('ROWS_5',5);
    define('ROWS_6',6);
    define('ROWS_7',7);
    define('ROWS_8',8);
    define('ROWS_9',9);
}
else
{
    define('ROWS_1',0);
    define('ROWS_2',1);
    define('ROWS_3',2);
    define('ROWS_4',3);
    define('ROWS_5',4);
    define('ROWS_6',5);
    define('ROWS_7',6);
```

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```
    define('ROWS_8',7);
    define('ROWS_9',8);
}
```

OpenConf

Multiple Constant Definition, in modules/request.php:71.

The constant is build according to the situation, in the part of the script (file request.php). This hides the actual origin of the value, but keeps the rest of the code simple. Just keep in mind that this constant may have different values.

```
0
```

18.2.111 Multiple Index Definition

Magento

Multiple Index Definition, in app/code/core/Mage/Adminhtml/Block/System/Convert/Gui/Grid.php:80.

'type' is defined twice. The first one, 'options' is overwritten.

```
$this->addColumn('store_id', array(
            'header'    => Mage::helper('adminhtml')->__('Store'),
            'type'      => 'options',
            'align'     => 'center',
            'index'     => 'store_id',
            'type'      => 'store',
            'width'     => '200px',
        ));
```

MediaWiki

Multiple Index Definition, in resources/Resources.php:223.

'target' is repeated, though with the same values. This is just dead code.

```
// inside a big array
    'jquery.getAttrs' => [
            'targets' => [ 'desktop', 'mobile' ],
            'scripts' => 'resources/src/jquery/jquery.getAttrs.js',
            'targets' => [ 'desktop', 'mobile' ],
    ],
    // big array continues
```

18.2.112 Multiple Type Variable

Typo3

Multiple Type Variable, in typo3/sysext/backend/Classes/Form/Element/InputDateTimeElement.php:270.

$fullElement is an array most of the time, but finally ends up being a string. Since the array is not the final state, it may be interesting to make it a class, which collects the various variables, and export the final string. Such class would be usefull in several places in this repository.

```
$fullElement = [];
            $fullElement[] = '<div class="checkbox t3js-form-field-eval-null-placeholder-
↪checkbox">';
            $fullElement[] =     '<label for="' . $nullControlNameEscaped . '">';
            $fullElement[] =         '<input type="hidden" name="' .
↪$nullControlNameEscaped . '" value="' . $fallbackValue . '" />';
            $fullElement[] =         '<input type="checkbox" name="' .
↪$nullControlNameEscaped . '" id="' . $nullControlNameEscaped . '" value="1"' .
↪$checked . $disabled . ' />';
            $fullElement[] =         $overrideLabel;
            $fullElement[] =     '</label>';
            $fullElement[] = '</div>';
            $fullElement[] = '<div class="t3js-formengine-placeholder-placeholder">';
            $fullElement[] =    '<div class="form-control-wrap" style="max-width:' .
↪$width . 'px">';
            $fullElement[] =        '<input type="text" class="form-control" disabled=
↪"disabled" value="' . $shortenedPlaceholder . '" />';
            $fullElement[] =    '</div>';
            $fullElement[] = '</div>';
            $fullElement[] = '<div class="t3js-formengine-placeholder-formfield">';
            $fullElement[] =    $expansionHtml;
            $fullElement[] = '</div>';
            $fullElement = implode(LF, $fullElement);
```

Vanilla

Multiple Type Variable, in library/core/functions.general.php:1427.

Here, $value may be of different type. The if() structures merges all the incoming format into one standard type (int). This is actually the contrary of this analysis, and is a false positive.

```
if (is_array($value)) {
                        $value = count($value);
                    } elseif (stringEndsWith($field, 'UserID', true)) {
                        $value = 1;
                    }
```

18.2.113 Multiple Usage Of Same Trait

NextCloud

Multiple Usage Of Same Trait, in build/integration/features/bootstrap/WebDav.php:41.

WebDav uses Sharing, and Sharing uses Webdav. Once using the other is sufficient.

```
trait WebDav {
    use Sharing;

}
//Trait Sharing is in /build/integration/features/bootstrap/Sharing.php:36
```

18.2.114 Multiples Identical Case

SugarCrm

Multiples Identical Case, in modules/ModuleBuilder/MB/MBPackage.php:439.

It takes a while to find the double 'required' case, but the executed code is actually the same, so this is dead code at worst.

```
switch ($col) {
    case 'custom_module':
            $installdefs['custom_fields'][$name]['module'] = $res;
            break;
    case 'required':
            $installdefs['custom_fields'][$name]['require_option'] = $res;
            break;
    case 'vname':
            $installdefs['custom_fields'][$name]['label'] = $res;
            break;
    case 'required':
            $installdefs['custom_fields'][$name]['require_option'] = $res;
            break;
    case 'massupdate':
            $installdefs['custom_fields'][$name]['mass_update'] = $res;
            break;
    case 'comments':
            $installdefs['custom_fields'][$name]['comments'] = $res;
            break;
    case 'help':
            $installdefs['custom_fields'][$name]['help'] = $res;
            break;
    case 'len':
            $installdefs['custom_fields'][$name]['max_size'] = $res;
            break;
    default:
            $installdefs['custom_fields'][$name][$col] = $res;
}//switch
```

ExpressionEngine

Multiples Identical Case, in ExpressionEngine_Core2.9.2/system/expressionengine/controllers/cp/admin_content.php:577.

'deft_status' is doubled, with a fallthrough. This looks like some forgotten copy/paste.

```
switch ($key){
                                                                    case 'cat_group':
                                                                        //PHP code
                                                                            break;
                                                                    case 'status_group':
                                                                    case 'field_group':
                                                                        //PHP code
                                                                            break;
                                                                    case 'deft_status':
                                                                    case 'deft_status':
                                                                        //PHP code
                                                                            break;
                                                                    case 'search_excerpt':
                                                                        //PHP code
                                                                            break;
                                                                    case 'deft_category':
                                                                        //PHP code
                                                                            break;
                                                                    case 'blog_url':
                                                                    case 'comment_url':
                                                                    case 'search_results_url':
                                                                    case 'rss_url':
                                                                        //PHP code
                                                                            break;
                                                                    default :
                                                                        //PHP code
                                                                            break;
                                                            }
```

18.2.115 Multiply By One

SugarCrm

Multiply By One, in SugarCE-Full-6.5.26/modules/Relationships/views/view.editfields.php:74.

Here, '$count % 1' is always true, after the first loop of the foreach. There is no need for % usage.

```
$count = 0;
        foreach($this->fields as $def)
        {
            if (!empty($def['relationship_field'])) {
                $label = !empty($def['vname']) ? $def['vname'] : $def['name'];
                echo "<td>" . translate($label, $this->module) . ":</td>"
                    . "<td><input id='{$def['name']}' name='{$def['name']}'>";

                if ($count%1)
                    echo "</tr><tr>";
```

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```
                $count++;
            }
        }
        echo "</tr></table></form>";
```

Edusoho

Multiply By One, in wp-admin/includes/misc.php:74.

1 is useless here, since 24 * 3600 is already an integer. And, of course, a day is not 24 * 3600… at least every day.

```
'yesterdayStart' => date('Y-m-d', strtotime(date('Y-m-d', time())) - 1 * 24 * 3600),
```

18.2.116 Named Regex

Phinx

Named Regex, in src/Phinx/Util/Util.php:127.

$matches[1] could be renamed by $matches['filename'], if the capturing subpattern was named 'filename'.

```
const MIGRATION_FILE_NAME_PATTERN = '/^\d+_([\w_]+).php$/i';
//.... More code with class definition
    public static function mapFileNameToClassName($fileName)
    {
        $matches = [];
        if (preg_match(static::MIGRATION_FILE_NAME_PATTERN, $fileName, $matches)) {
            $fileName = $matches[1];
        }

        return str_replace(' ', '', ucwords(str_replace('_', ' ', $fileName)));
    }
```

shopware

Named Regex, in engine/Library/Enlight/Components/Snippet/Resource.php:207.

$_match[3] is actually extracted two preg_match() before : by the time we read its usage, the first regex has been forgotten. A named subpattern would be useful here to remember what was captured.

```
if (!preg_match("!(.?)(name=)(.*?)(?=(\s|$))!", $_block_args, $_match) && empty($_block_
↪default)) {
                throw new SmartyException('"' . $_block_tag . '" missing name attribute
↪');
            }
            $_block_force = (bool) preg_match('#[\s]force#', $_block_args);
            $_block_json = (bool) preg_match('#[\s]json=["\']true["\']\W#', $_block_
↪args);
            $_block_name = !empty($_match[3]) ? trim($_match[3], '\'"') : $_block_
↪default;
```

18.2.117 Native Alias Functions Usage

Cleverstyle

Native Alias Functions Usage, in modules/HybridAuth/Hybrid/thirdparty/Vimeo/Vimeo.php:422.

is_writeable() should be written is_writable(). No extra 'e'.

```
is_writeable($chunk_temp_dir)
```

phpMyAdmin

Native Alias Functions Usage, in libraries/classes/Server/Privileges.php:5064.

join() should be written implode()

```
join('`, `', $tmp_privs2['Update'])
```

18.2.118 Nested Ifthen

LiveZilla

Nested Ifthen, in livezilla/_lib/objects.global.inc.php:847.

The first condition is fairly complex, and could also return early. Then, the second nested if could be merged into one : this would reduce the number of nesting, but make the condition higher.

```
if(isset(Server::$Configuration->File["gl_url_detect"]) && !Server::$Configuration->File[
↪"gl_url_detect"] && isset(Server::$Configuration->File["gl_url"]) && !empty(Server::
↪$Configuration->File["gl_url"]))
        {
            $url = Server::$Configuration->File["gl_url"];
        }
        else if(isset($_SERVER["HTTP_HOST"]) && !empty($_SERVER["HTTP_HOST"]))
        {
            $host = $_SERVER["HTTP_HOST"];
            $path = $_SERVER["PHP_SELF"];

            if(!empty($path) && !Str::EndsWith(strtolower($path),strtolower($_file)) &&␣
↪strpos(strtolower($path),strtolower($_file)) !== false)
            {
                if(empty(Server::$Configuration->File["gl_kbmr"]))
                {
                    Logging::DebugLog(serialize($_SERVER));
                    exit("err 888383; can't read \$_SERVER[\"HTTP_HOST\"] and \$_SERVER[\
↪"PHP_SELF\"]");
                }
            }

            define("LIVEZILLA_DOMAIN",Communication::GetScheme() . $host);
            $url = LIVEZILLA_DOMAIN . str_replace($_file,"",htmlentities($path,ENT_
↪QUOTES,"UTF-8"));
        }
```

MediaWiki

Nested Ifthen, in includes/Linker.php:1493.

There are 5 level of nesting here, from the beginning of the method, down to the last condition. All work on local variables, as it is a static method. May be breaking this into smaller functions would help readability.

```
public static function normalizeSubpageLink( $contextTitle, $target, &$text ) {
            $ret = $target; # default return value is no change

            # Some namespaces don't allow subpages,
            # so only perform processing if subpages are allowed
            if (
                    $contextTitle && MediaWikiServices::getInstance()->
↪getNamespaceInfo()->
                    hasSubpages( $contextTitle->getNamespace() )
            ) {
                    $hash = strpos( $target, '#' );
                    if ( $hash !== false ) {
                            $suffix = substr( $target, $hash );
                            $target = substr( $target, 0, $hash );
                    } else {
                            $suffix = '';
                    }
                    # T9425
                    $target = trim( $target );
                    $contextPrefixedText = MediaWikiServices::getInstance()->
↪getTitleFormatter()->
                            getPrefixedText( $contextTitle );
                    # Look at the first character
                    if ( $target != '' && $target[0] === '/' ) {
                            # / at end means we don't want the slash to be shown
                            $m = [];
                            $trailingSlashes = preg_match_all( '%(/+)$%', $target, $m );
                            if ( $trailingSlashes ) {
                                    $noslash = $target = substr( $target, 1, -strlen(
↪$m[0][0] ) );
                            } else {
                                    $noslash = substr( $target, 1 );
                            }

                            $ret = $contextPrefixedText . '/' . trim( $noslash ) .
↪$suffix;
                            if ( $text === '' ) {
                                    $text = $target . $suffix;
                            } # this might be changed for ugliness reasons
                    } else {
                            # check for .. subpage backlinks
                            $dotdotcount = 0;
                            $nodotdot = $target;
                            while ( strncmp( $nodotdot, "../", 3 ) == 0 ) {
                                    ++$dotdotcount;
                                    $nodotdot = substr( $nodotdot, 3 );
                            }
```

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```
                                if ( $dotdotcount > 0 ) {
                                        $exploded = explode( '/', $contextPrefixedText );
                                        if ( count( $exploded ) > $dotdotcount ) { # not␣
↪allowed to go below top level page
                                                $ret = implode( '/', array_slice( $exploded,␣
↪0, -$dotdotcount ) );

                                                # / at the end means don't show full path
                                                if ( substr( $nodotdot, -1, 1 ) === '/' ) {
                                                        $nodotdot = rtrim( $nodotdot, '/' );
                                                        if ( $text === '' ) {
                                                                $text = $nodotdot . $suffix;
                                                        }
                                                }
                                                $nodotdot = trim( $nodotdot );
                                                if ( $nodotdot != '' ) {
                                                        $ret .= '/' . $nodotdot;
                                                }
                                                $ret .= $suffix;
                                        }
                                }
                        }
                }

                return $ret;
        }
```

18.2.119 Nested Ternary

SPIP

Nested Ternary, in ecrire/inc/utils.php:2648.

Interesting usage of both if/then, for the flow control, and ternary, for data process. Even on multiple lines, nested ternaries are quite hard to read.

```
// le script de l'espace prive
    // Mettre a "index.php" si DirectoryIndex ne le fait pas ou pb connexes:
    // les anciens IIS n'acceptent pas les POST sur ecrire/ (#419)
    // meme pb sur thttpd cf. http://forum.spip.net/fr_184153.html
    if (!defined('_SPIP_ECRIRE_SCRIPT')) {
            define('_SPIP_ECRIRE_SCRIPT', (empty($_SERVER['SERVER_SOFTWARE']) ? '' :
                    preg_match(',IIS|thttpd,', $_SERVER['SERVER_SOFTWARE']) ?
                            'index.php' : ''));
    }
```

Zencart

Nested Ternary, in app/library/zencart/ListingQueryAndOutput/src/formatters/TabularProduct.php:143.

No more than one level of nesting for this ternary call, yet it feels a lot more, thanks to the usage of arrayed properties, constants, and functioncalls.

```
$lc_text .= '<br />' . (zen_get_show_product_switch($listing->fields['products_id'],
↪'ALWAYS_FREE_SHIPPING_IMAGE_SWITCH') ? (zen_get_product_is_always_free_shipping(
↪$listing->fields['products_id']) ? TEXT_PRODUCT_FREE_SHIPPING_ICON . '<br />' : '') : '
↪');
```

18.2.120 Never Called Parameter

Piwigo

Never Called Parameter, in include/functions_html.inc.php:329.

$alternate_url is never explicitly passed to bad_request() : this doesn't show in this extract. It could be dropped from this code.

```
function bad_request($msg, $alternate_url=null)
{
  set_status_header(400);
  if ($alternate_url==null)
    $alternate_url = make_index_url();
  redirect_html( $alternate_url,
    '<div style="text-align:left; margin-left:5em;margin-bottom:5em;">
<h1 style="text-align:left; font-size:36px;">'.l10n('Bad request').'</h1><br>'
.$msg.'</div>',
    5 );
}
```

18.2.121 Never Used Properties

WordPress

Never Used Properties, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( "\n", implode( '', file( $filename ) ) );
```

18.2.122 Next Month Trap

Contao

Next Month Trap, in system/modules/calendar/classes/Events.php:515.

This code is wrong on August 29,th 30th and 31rst : 6 months before is caculated here as February 31rst, so march 2. Of course, this depends on the leap years.

```
case 'past_180':
                            return array(strtotime('-6 months'), time(), $GLOBALS['TL_
↪LANG']['MSC']['cal_empty']);
```

Edusoho

Next Month Trap, in src/AppBundle/Controller/Admin/AnalysisController.php:1426.

The last month is wrong 8 times a year : on 31rst, and by the end of March.

```
'lastMonthStart' => date('Y-m-d', strtotime(date('Y-m', strtotime('-1 month')))),
            'lastMonthEnd' => date('Y-m-d', strtotime(date('Y-m', time())) - 24 * 3600),
            'lastThreeMonthsStart' => date('Y-m-d', strtotime(date('Y-m', strtotime('-2␣
↪month')))),
```

18.2.123 No Boolean As Default

OpenConf

No Boolean As Default, in openconf/include.php:1264.

Why do we need a *chair* when printing a cell's file ?

```
function oc_printFileCells(&$sub, $chair = false) { /**/ }
```

18.2.124 No Choice

NextCloud

No Choice, in build/integration/features/bootstrap/FilesDropContext.php:71.

Token is checked, but processed in the same way each time. This actual check is done twice, in the same class, in the method droppingFileWith().

```
public function creatingFolderInDrop($folder) {
            $client = new Client();
            $options = [];
            if (count($this->lastShareData->data->element) > 0){
                    $token = $this->lastShareData->data[0]->token;
            } else {
                    $token = $this->lastShareData->data[0]->token;
            }
```

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```
            $base = substr($this->baseUrl, 0, -4);
            $fullUrl = $base . '/public.php/webdav/' . $folder;

            $options['auth'] = [$token, ''];
```

Zencart

No Choice, in admin/includes/functions/html_output.php:179.

At least, it always choose the most secure way : use SSL.

```
if ($usessl) {
        $form .= zen_href_link($action, $parameters, 'NONSSL');
      } else {
        $form .= zen_href_link($action, $parameters, 'NONSSL');
      }
```

18.2.125 No Class As Typehint

Vanilla

No Class As Typehint, in library/Vanilla/Formatting/Formats/RichFormat.php:51.

All three typehints are based on classes. When Parser or Renderer are changed, for testing, versioning or moduling reasons, they must subclass the original class.

```
public function __construct(Quill\Parser $parser, Quill\Renderer $renderer, Quill\
↪Filterer $filterer) {
        $this->parser = $parser;
        $this->renderer = $renderer;
        $this->filterer = $filterer;
    }
```

phpMyAdmin

No Class As Typehint, in libraries/classes/CreateAddField.php:29.

Although the class is named 'DatabaseInterface', it is a class.

```
public function __construct(DatabaseInterface $dbi)
    {
        $this->dbi = $dbi;
    }
```

18.2.126 No Class In Global

Dolphin

No Class In Global, in Dolphin-v.7.3.5/inc/classes/BxDolXml.php:10.

This class should be put away in a 'dolphin' or 'boonex' namespace.

```
class BxDolXml {
    /* class BxDolXML code */
}
```

18.2.127 No Count With 0

Contao

No Count With 0, in system/modules/repository/classes/RepositoryManager.php:1148.

If $elist contains at least one element, then it is not empty().

```
$ext->found = count($elist)>0;
```

WordPress

No Count With 0, in wp-admin/includes/misc.php:74.

$build or $signature are empty at that point, no need to calculate their respective length.

```
// Check for zero length, although unlikely here
    if (strlen($built) == 0 || strlen($signature) == 0) {
      return false;
    }
```

18.2.128 No Direct Usage

Edusoho

No Direct Usage, in edusoho/src/AppBundle/Controller/Admin/FinanceSettingController.php:107.

Glob() returns false, in case of error. It returns an empty array in case everything is fine, but nothing was found. In case of error, array_map() will stop the script.

```
array_map('unlink', glob($dir.'/MP_verify_*.txt'));
```

XOOPS

No Direct Usage, in htdocs/Frameworks/moduleclasses/moduleadmin/moduleadmin.php:585.

Although the file is readable, file() may return false in case of failure. On the other hand, implode doesn't accept boolean values.

```
$file = XOOPS_ROOT_PATH . "/modules/{$module_dir}/docs/changelog.txt";
            if ( is_readable( $file ) ) {
                $ret .= implode( '<br>', file( $file ) ) . "\n";
            }
```

18.2.129 No Empty Regex

Tikiwiki

No Empty Regex, in lib/sheet/excel/writer/worksheet.php:1925.

The initial 's' seems to be too much. May be a typo ?

```
// Strip URL type
        $url = preg_replace('s[^internal:]', '', $url);
```

18.2.130 No Hardcoded Hash

shopware

No Hardcoded Hash, in engine/Shopware/Models/Document/Data/OrderData.php:254.

This is actually a hashed hardcoded password. As the file explains, this is a demo order, for populating the database when in demo mode, so this is fine. We also learn that the password are securily sorted here. It may also be advised to avoid hardcoding this password, as any demo shop has the same user credential : it is the first to be tried when a demo installation is found.

```
'_userID' => '3',
    '_user' => new ArrayObject([
            'id' => '3',
            'password' => '$2y$10$GAGAC6.1kMRvN4RRcLrYleDx.EfWhHcW./cmoOQg11sjFUY73SO.C',
            'encoder' => 'bcrypt',
            'email' => 'demo@shopware.com',
            'customernumber' => '20005',
```

SugarCrm

No Hardcoded Hash, in SugarCE-Full-6.5.26/include/Smarty/Smarty.class.php:460.

The MD5('Smarty') is hardcoded in the properties. This property is not used in the class, but in parts of the code, when a unique delimiter is needed.

```
/**
     * md5 checksum of the string 'Smarty'
     *
```

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```
     * @var string
     */
    var $_smarty_md5           = 'f8d698aea36fcbead2b9d5359ffca76f';
```

18.2.131 No Hardcoded Ip

OpenEMR

No Hardcoded Ip, in wp-admin/includes/misc.php:74.

Although they are commented just above, the values provided here are suspicious.

```
// FTP parameters that you must customize.  If you are not sending
 // then set $FTP_SERVER to an empty string.
 //
 $FTP_SERVER = "192.168.0.30";
 $FTP_USER   = "openemr";
 $FTP_PASS   = "secret";
 $FTP_DIR    = "";
```

NextCloud

No Hardcoded Ip, in config/config.sample.php:1561.

Although they are documented as empty array, 3 values are provided as examples. They do not responds, at the time of writing, but they may.

```
/**
 * List of trusted proxy servers
 *
 * You may set this to an array containing a combination of
 * - IPv4 addresses, e.g. `192.168.2.123`
 * - IPv4 ranges in CIDR notation, e.g. `192.168.2.0/24`
 * - IPv6 addresses, e.g. `fd9e:21a7:a92c:2323::1`
 *
 * _(CIDR notation for IPv6 is currently work in progress and thus not
 * available as of yet)_
 *
 * When an incoming request's `REMOTE_ADDR` matches any of the IP addresses
 * specified here, it is assumed to be a proxy instead of a client. Thus, the
 * client IP will be read from the HTTP header specified in
 * `forwarded_for_headers` instead of from `REMOTE_ADDR`.
 *
 * So if you configure `trusted_proxies`, also consider setting
 * `forwarded_for_headers` which otherwise defaults to `HTTP_X_FORWARDED_FOR`
 * (the `X-Forwarded-For` header).
 *
 * Defaults to an empty array.
 */
'trusted_proxies' => array('203.0.113.45', '198.51.100.128', '192.168.2.0/24'),
```

18.2.132 No Hardcoded Path

Tine20

No Hardcoded Path, in tine20/Tinebase/DummyController.php:28.

When this script is not run on a Linux system, the file save will fail.

```
file_put_contents('/var/run/tine20/DummyController.txt', 'success ' . $n)
```

Thelia

No Hardcoded Path, in local/modules/Tinymce/Resources/js/tinymce/filemanager/include/php_image_magician.php:2317.

The *iptc.jpg* file is written. It looks like the file may be written next to the php_image_magician.php file, but this is deep in the source code and is unlikely. This means that the working directory has been set to some other place, though we don't read it immediately.

```
private function writeIPTC($dat, $value)
    {

            # LIMIT TO JPG

            $caption_block = $this->iptc_maketag(2, $dat, $value);
            $image_string = iptcembed($caption_block, $this->fileName);
            file_put_contents('iptc.jpg', $image_string);
    }
```

18.2.133 No Hardcoded Port

WordPress

No Hardcoded Port, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( "\n", implode( '', file( $filename ) ) );
```

18.2.134 No Need For Else

Thelia

No Need For Else, in core/lib/Thelia/Core/Template/Loop/Address.php:92.

After checking that $currentCustomer is null, the method returns. The block with Else may be removed and its code may be moved one level up.

```
if ($customer === 'current') {
            $currentCustomer = $this->securityContext->getCustomerUser();
            if ($currentCustomer === null) {
                return null;
```

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```
            } else {
                $search->filterByCustomerId($currentCustomer->getId(), Criteria::EQUAL);
            }
        } else {
            $search->filterByCustomerId($customer, Criteria::EQUAL);
        }
```

ThinkPHP

No Need For Else, in projects/thinkphp/code//ThinkPHP/Library/Org/Util/Rbac.class.php:187.

This code has both good and bad example. Good : no use of else, after $_SESSION[$accessGuid] check. Issue : else usage after usage of !isset($accessList[strtoupper($appName)][strtoupper(CONTROLLER_NAME)][strtoupper(ACTION_NAME)])

```
if (empty($_SESSION[C('ADMIN_AUTH_KEY')])) {
                if (C('USER_AUTH_TYPE') == 2) {
                    //
                    //
                    $accessList = self::getAccessList($_SESSION[C('USER_AUTH_KEY')]);
                } else {
                    //
                    if ($_SESSION[$accessGuid]) {
                        return true;
                    }
                    //
                    $accessList = $_SESSION['_ACCESS_LIST'];
                }
                //
                if (!isset($accessList[strtoupper($appName)][strtoupper(CONTROLLER_
↪NAME)][strtoupper(ACTION_NAME)])) {
                    $_SESSION[$accessGuid] = false;
                    return false;
                } else {
                    $_SESSION[$accessGuid] = true;
                }
```

18.2.135 No Parenthesis For Language Construct

Phpdocumentor

No Parenthesis For Language Construct, in src/Application/Renderer/Router/StandardRouter.php:55.

No need for parenthesis with require(). instanceof has a higher precedence than return anyway.

```
$this[] = new Rule(function ($node) { return ($node instanceof NamespaceDescriptor); },
↪$namespaceGenerator);
```

phpMyAdmin

No Parenthesis For Language Construct, in db_datadict.php:170.

Not only echo() doesn't use any parenthesis, but this syntax gives the illusion that echo() only accepts one argument, while it actually accepts an arbitrary number of argument.

```
echo (($row['Null'] == 'NO') ? __('No') : __('Yes'))
```

18.2.136 No Real Comparison

Magento

No Real Comparison, in app/code/core/Mage/XmlConnect/Block/Catalog/Product/Options/Configurable.php:74.

Compare prices and physical quantities with a difference, so as to avoid rounding errors.

```
if ((float)$option['price'] != 0.00) {
                        $valueNode->addAttribute('price', $option['price']);
                        $valueNode->addAttribute('formated_price', $option['formated_
↪price']);
                    }
```

SPIP

No Real Comparison, in ecrire/maj/v017.php:37.

Here, the current version number is stored as a real number. With a string, though a longer value, it may be compared using the version_compare() function.

```
$version_installee == 1.701
```

18.2.137 No Reference For Ternary

phpadsnew

No Reference For Ternary, in lib/OA/Admin/Menu/Section.php334:334.

The reference should be removed from the function definition. Either this method returns null, which is never a reference, or it returns $this, which is always a reference, or the results of a methodcall. The latter may or may not be a reference, but the Ternary operator will drop it and return by value.

```
function &getParentOrSelf($type)
    {
        if ($this->type == $type) {
            return $this;
        }
        else {
            return $this->parentSection != null ? $this->parentSection->getParentOrSelf(
↪$type) : null;
        }
    }
```

18.2.138 No Return Used

SPIP

No Return Used, in ecrire/inc/utils.php:1067.

job_queue_remove() is called as an administration order, and the result is not checked. It is considered as a fire-and-forget command.

```
function job_queue_remove($id_job) {
    include_spip('inc/queue');

    return queue_remove_job($id_job);
}
```

LiveZilla

No Return Used, in livezilla/_lib/trdp/Zend/Loader.php:114.

The loadFile method tries to load a file, aka as include. If the inclusion fails, a PHP error is emitted (an exception would do the same), and there is not error management. Hence, the 'return true;', which is not tested later. It may be dropped.

```
public static function loadFile($filename, $dirs = null, $once = false)
    {
// A lot of code to check and include files

        return true;
    }
```

18.2.139 No array_merge() In Loops

Tine20

No array_merge() In Loops, in tine20/Tinebase/User/Ldap.php:670.

Classic example of array_merge() in loop : here, the attributures should be collected in a local variable, and then merged in one operation, at the end. That includes the attributes provided before the loop, and the array provided after the loop. Note that the order of merge will be the same when merging than when collecting the arrays.

```
$attributes = array_values($this->_rowNameMapping);
        foreach ($this->_ldapPlugins as $plugin) {
            $attributes = array_merge($attributes, $plugin->getSupportedAttributes());
        }

        $attributes = array_merge($attributes, $this->_additionalLdapAttributesToFetch);
```

18.2.140 No isset() With empty()

XOOPS

No isset() With empty(), in htdocs/class/tree.php:297.

Too much vlaidation

```
isset($this->tree[$key]['child']) && !empty($this->tree[$key]['child']);
```

18.2.141 Non Ascii Variables

Magento

Non Ascii Variables, in dev/tests/functional/tests/app/Mage/Checkout/Test/Constraint/AssertOrderWithMultishippingSuccessPlacedMess

The initial C is actually a russian C.

```
$heckoutMultishippingSuccess
```

18.2.142 Non Static Methods Called In A Static

Dolphin

Non Static Methods Called In A Static, in Dolphin-v.7.3.5/xmlrpc/BxDolXMLRPCFriends.php:11.

getIdByNickname() is indeed defined in the class 'BxDolXMLRPCUtil' and it calls the database. The class relies on functions (not methods) to query the database with the correct connexion.

```
class BxDolXMLRPCFriends
{
    function getFriends($sUser, $sPwd, $sNick, $sLang)
    {
        $iIdProfile = BxDolXMLRPCUtil::getIdByNickname ($sNick);
```

Magento

Non Static Methods Called In A Static, in app/code/core/Mage/Paypal/Model/Payflowlink.php:143.

Mage_Payment_Model_Method_Abstract is an abstract class : this way, it is not possible to instantiate it and then, access its methods. The class is extended, so it could be called from one of the objects. Although, the troubling part is that isAvailable() uses $this, so it can't be static.

```
Mage_Payment_Model_Method_Abstract::isAvailable($quote)
```

18.2.143 Non-constant Index In Array

Dolibarr

Non-constant Index In Array, in htdocs/includes/OAuth/Common/Storage/DoliStorage.php:245.

The *state* constant in the *$result* array is coming from the SQL query. There is no need to make this a constant : making it a string will remove some warnings in the logs.

```
public function hasAuthorizationState($service)
    {
        // get state from db
        dol_syslog("get state from db");
        $sql = "SELECT state FROM ".MAIN_DB_PREFIX."oauth_state";
        $sql.= " WHERE service='".$this->db->escape($service)."'";
        $resql = $this->db->query($sql);
        $result = $this->db->fetch_array($resql);
        $states[$service] = $result[state];
        $this->states[$service] = $states[$service];

        return is_array($states)
        && isset($states[$service])
        && null !== $states[$service];
    }
```

Zencart

Non-constant Index In Array, in app/library/zencart/Services/src/LeadLanguagesRoutes.php:112.

The *fields* constant in the *$tableEntry* which holds a list of tables. It seems to be a SQL result, but it is conveniently abstracted with *$this->listener->getTableList()*, so we can't be sure.

```
public function updateLanguageTables($insertId)
    {
        $tableList = $this->listener->getTableList();
        if (count($tableList) == 0) {
            return;
        }
        foreach ($tableList as $tableEntry) {
            $languageKeyField = issetorArray($tableEntry, 'languageKeyField', 'language_
↪id');
            $sql = " INSERT IGNORE INTO :table: (";
            $sql = $this->dbConn->bindVars($sql, ':table:', $tableEntry ['table'],
↪'noquotestring');
            $sql .= $languageKeyField. ,;
            $fieldNames = ;
            foreach ($tableEntry[fields] as $fieldName => $fieldType) {
                $fieldNames .= $fieldName . ,;
            }
```

18.2.144 Not Not

Cleverstyle

Not Not, in modules/OAuth2/OAuth2.php:190.

This double-call returns `$results` as a boolean, preventing a spill of data to the calling method. The `(bool)` operator would be clearer here.

```
$result = $this->db_prime()->q(
                    [
                            "DELETE FROM `[prefix]oauth2_clients`
                            WHERE `id` = '%s'",
                            "DELETE FROM `[prefix]oauth2_clients_grant_access`
                            WHERE `id`      = '%s'",
                            "DELETE FROM `[prefix]oauth2_clients_sessions`
                            WHERE `id`      = '%s'"
                    ],
                    $id
            );
            unset($this->cache->{'/'});
            return !!$result;
```

Tine20

Not Not, in tine20/Calendar/Controller/MSEventFacade.php:392.

It seems that !! is almost superfluous, as a property called 'is_deleted' should already be a boolean.

```
foreach ($exceptions as $exception) {
                $exception->assertAttendee($this->getCalendarUser());
                $this->_prepareException($savedEvent, $exception);
                $this->_preserveMetaData($savedEvent, $exception, true);
                $this->_eventController->createRecurException($exception, !!$exception->
↪is_deleted);
            }
```

18.2.145 Objects Don't Need References

Zencart

Objects Don't Need References, in includes/library/illuminate/support/helpers.php:484.

No need for & operator when $class is only used for a method call.

```
/**
     * @param $class
     * @param $eventID
     * @param array $paramsArray
     */
    public function updateNotifyCheckoutflowFinishedManageSuccessOrderLinkEnd(&$class,
↪$eventID, $paramsArray = array())
```

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```
    {
        $class->getView()->getTplVarManager()->se('flag_show_order_link', false);
    }
```

XOOPS

Objects Don't Need References, in htdocs/class/theme_blocks.phps:221.

Here, $template is modified, when its properties are modified. When only the properties are modified, or read, then & is not necessary.

```
public function buildBlock($xobject, &$template)
    {
        // The lame type workaround will change
        // bid is added temporarily as workaround for specific block manipulation
        $block = array(
            'id'      => $xobject->getVar('bid'),
            'module'  => $xobject->getVar('dirname'),
            'title'   => $xobject->getVar('title'),
            // 'name'        => strtolower( preg_replace( '/[^0-9a-zA-Z_]/', '', str_
↪replace( ' ', '_', $xobject->getVar( 'name' ) ) ) ),
            'weight'  => $xobject->getVar('weight'),
            'lastmod' => $xobject->getVar('last_modified'));

        $bcachetime = (int)$xobject->getVar('bcachetime');
        if (empty($bcachetime)) {
            $template->caching = 0;
        } else {
            $template->caching        = 2;
            $template->cache_lifetime = $bcachetime;
        }
        $template->setCompileId($xobject->getVar('dirname', 'n'));
        $tplName = ($tplName = $xobject->getVar('template')) ? "db:$tplName" :
↪'db:system_block_dummy.tpl';
        $cacheid = $this->generateCacheId('blk_' . $xobject->getVar('bid'));
// more code to the end of the method
```

18.2.146 Old Style __autoload()

Piwigo

Old Style __autoload(), in include/phpmailer/PHPMailerAutoload.php:45.

This code handles situations for PHP after 5.1.0 and older. Rare are the applications that are still using those versions in 2019.

```
if (version_compare(PHP_VERSION, '5.1.2', '>=')) {
    //SPL autoloading was introduced in PHP 5.1.2
    if (version_compare(PHP_VERSION, '5.3.0', '>=')) {
        spl_autoload_register('PHPMailerAutoload', true, true);
    } else {
```

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```
        spl_autoload_register('PHPMailerAutoload');
    }
} else {
    /**
     * Fall back to traditional autoload for old PHP versions
     * @param string $classname The name of the class to load
     */
    function __autoload($classname)
    {
        PHPMailerAutoload($classname);
    }
}
```

18.2.147 One If Is Sufficient

Tikiwiki

One If Is Sufficient, in lib/wiki-plugins/wikiplugin_trade.php:152.

empty($params['inputtitle']) should have priority over $params['wanted'] == 'n'.

```
if ($params['wanted'] == 'n') {
        if (empty($params['inputtitle'])) {
            $params['inputtitle'] = 'Payment of %0 %1 from user %2 to %3';
        }
    } else {
        if (empty($params['inputtitle'])) {
            $params['inputtitle'] = 'Request payment of %0 %1 to user %2 from %3';
        }
    }
```

18.2.148 One Letter Functions

ThinkPHP

One Letter Functions, in ThinkPHP/Mode/Api/functions.php:859.

There are also the functions C, E, G… The applications is written in a foreign language, which may be a base for non-significant function names.

```
function F($name, $value = '', $path = DATA_PATH)
```

Cleverstyle

One Letter Functions, in core/drivers/DB/PostgreSQL.php:71.

There is also function f(). Those are actually overwritten methods. From the documentation, q() is for query, and f() is for fetch. Those are short names for frequently used functions.

```
public function q ($query, ...$params) {
```

18.2.149 One Variable String

Tikiwiki

One Variable String, in lib/wiki-plugins/wikiplugin_addtocart.php:228.

Double-quotes are not needed here. If casting to string is important, the (string) would be more explicit.

```
foreach ($plugininfo['params'] as $key => $param) {
            $default["$key"] = $param['default'];
    }
```

NextCloud

One Variable String, in build/integration/features/bootstrap/BasicStructure.php:349.

Both concatenations could be merged, independently. If readability is important, why not put them inside curly brackets?

```
public static function removeFile($path, $filename) {
            if (file_exists("$path" . "$filename")) {
                    unlink("$path" . "$filename");
            }
    }
```

18.2.150 Only Variable Passed By Reference

Dolphin

Only Variable Passed By Reference, in administration/charts.json.php:89.

This is not possible, as array_slice() returns a new array, and not a reference. Minimally, the intermediate result must be saved in a variable, then popped. Actually, this code extracts the element at key 1 in the $aData array, although this also works with hash (non-numeric keys).

```
array_pop(array_slice($aData, 0, 1))
```

PhpIPAM

Only Variable Passed By Reference, in functions/classes/class.Thread.php:243.

This is sneaky bug : the assignation $status = 0 returns a value, and not a variable. This leads PHP to mistake the initialized 0 with the variable $status and fails. It is not possible to initialize variable AND use them as argument.

```
pcntl_waitpid($this->pid, $status = 0)
```

18.2.151 Or Die

Tine20

Or Die, in scripts/addgrant.php:34.

Typical error handling, which also displays the MySQL error message, and leaks informations about the system. One may also note that mysql_connect is not supported anymore, and was replaced with mysqli and pdo : this may be a backward compatibile file.

```
$link = mysql_connect($host, $user, $pass) or die("No connection: " . mysql_error( ))
```

OpenConf

Or Die, in openconf/chair/export.inc:143.

or die() is also applied to many situations, where a blocking situation arise. Here, with the creation of a temporary file.

```
$coreFile = tempnam('/tmp/', 'ocexport') or die('could not generate Excel file (6)')
```

18.2.152 Overwritten Source And Value

ChurchCRM

Overwritten Source And Value, in edusoho/vendor/symfony/symfony/src/Symfony/Component/VarDumper/Dumper/CliDumper.php:194

$str is actually processed as an array (string of characters), and it is also modified along the way.

```
foreach ($str as $str) {
                if ($i < $m) {
                    $str .= "\n";
                }
                if (0 < $this->maxStringWidth && $this->maxStringWidth < $len = mb_
↪strlen($str, 'UTF-8')) {
                    $str = mb_substr($str, 0, $this->maxStringWidth, 'UTF-8');
                    $lineCut = $len - $this->maxStringWidth;
                }
                //.... More code
```

ExpressionEngine

Overwritten Source And Value, in system/ee/EllisLab/ExpressionEngine/Service/Theme/ThemeInstaller.php:595.

Looping over $filename.

```
foreach (directory_map($to_dir) as $directory => $filename)
                    {
                            if (is_string($directory))
                            {
                                    foreach ($filename as $filename)
                                    {
                                            unlink($to_dir.$directory.'/'.$filename);
                                    }

                                    @rmdir($to_dir.$directory);
                            }
                            else
                            {
                                    unlink($to_dir.$filename);
                            }
                    }
```

18.2.153 PHP Keywords As Names

ChurchCRM

PHP Keywords As Names, in src/kiosk/index.php:42.

$false may be true or false (or else…). In fact, the variable is not even defined in this file, and the file do a lot of inclusion.

```
if (!isset($_COOKIE['kioskCookie'])) {
    if ($windowOpen) {
        $guid = uniqid();
        setcookie(kioskCookie, $guid, 2147483647);
        $Kiosk = new \ChurchCRM\KioskDevice();
        $Kiosk->setGUIDHash(hash('sha256', $guid));
        $Kiosk->setAccepted($false);
        $Kiosk->save();
    } else {
        header(HTTP/1.1 401 Unauthorized);
        exit;
    }
}
```

xataface

PHP Keywords As Names, in Dataface/Record.php:1278.

This one is documented, and in the end, makes a lot of sense.

```
function &getRelatedRecord($relationshipName, $index=0, $where=0, $sort=0){
            if ( isset($this->cache[__FUNCTION__][$relationshipName][$index][$where][
↪$sort]) ){
                    return $this->cache[__FUNCTION__][$relationshipName][$index][$where][
↪$sort];
            }
            $it = $this->getRelationshipIterator($relationshipName, $index, 1, $where,
↪$sort);
            if ( $it->hasNext() ){
                    $rec =& $it->next();
                    $this->cache[__FUNCTION__][$relationshipName][$index][$where][$sort]␣
↪=& $rec;
                    return $rec;
            } else {
                    $null = null;   // stupid hack because literal 'null' can't be␣
↪returned by ref.
                    return $null;
            }
    }
```

18.2.154 PHP7 Dirname

OpenConf

PHP7 Dirname, in include.php:61.

Since PHP 7.0, dirname(, 2); does the job.

```
$OC_basepath = dirname(dirname($_SERVER['PHP_SELF']));
```

MediaWiki

PHP7 Dirname, in includes/installer/Installer.php:1173.

Since PHP 7.0, dirname(, 2); does the job.

```
protected function envPrepPath() {
            global $IP;
            $IP = dirname( dirname( __DIR__ ) );
            $this->setVar( 'IP', $IP );
    }
```

18.2.155 Parent First

shopware

Parent First, in wp-admin/includes/misc.php:74.

Here, the parent is called last. Givent that $title is defined in the same class, it seems that $name may be defined in the BaseContainer class. In fact, it is not, and BasecContainer and FieldSet are fairly independant classes. Thus, the parent::__construct call could be first here, though more as a coding convention.

```
/**
 * Class FieldSet
 */
class FieldSet extends BaseContainer
{
    /**
     * @var string
     */
    protected $title;

    /**
     * @param string $name
     * @param string $title
     */
    public function __construct($name, $title)
    {
        $this->title = $title;
        $this->name = $name;
        parent::__construct();
    }
```

PrestaShop

Parent First, in controllers/admin/AdminPatternsController.php:30.

A good number of properties are set in the current object even before the parent AdminController(Core) is called. 'table' and 'lang' acts as default values for the parent class, as it (the parent class) would set them to another default value. Many properties are used, but not defined in the current class, nor its parent. This approach prevents the constructor from requesting too many arguments. Yet, as such, it is difficult to follow which of the initial values are transmitted via protected/public properties rather than using the __construct() call.

```
class AdminPatternsControllerCore extends AdminController
{
    public $name = 'patterns';

    public function __construct()
    {
        $this->bootstrap = true;
        $this->show_toolbar = false;
        $this->context = Context::getContext();

        parent::__construct();
    }
```

18.2.156 Pathinfo() Returns May Vary

NextCloud

Pathinfo() Returns May Vary, in lib/private/Preview/Office.php:56.

$absPath is build with the toTmpFile() method, which may return a boolean (false) in case of error. Error situations include the inability to create the temporary file.

```
$absPath = $fileview->toTmpFile($path);

// More code

                    list($dirname, , , $filename) = array_values(pathinfo($absPath));
                    $pngPreview = $dirname . '/' . $filename . '.png';
```

18.2.157 Phpinfo

Dolphin

Phpinfo, in Dolphin-v.7.3.5/install/exec.php:4.

An actual phpinfo(), available during installation. Note that the phpinfo() is actually triggered by a hidden POST variable.

```
<?php

    if (!empty($_POST['phpinfo']))
        phpinfo();
    elseif (!empty($_POST['gdinfo']))
        echo '<pre>' . print_r(gd_info(), true) . '</pre>';

?>
<center>

    <form method=post>
        <input type=submit name=phpinfo value="PHP Info">
    </form>
    <form method=post>
        <input type=submit name=gdinfo value="GD Info">
    </form>

</center>
```

18.2.158 Possible Increment

Zurmo

Possible Increment, in app/protected/modules/workflows/utils/SavedWorkflowsUtil.php:196.

There are suspicious extra spaces around the +, that give the hint that there used to be something else, like a constant, there. From the name of the methods, it seems that this code was refactored from an addition to a simple method call.

```
$timeStamp =  + $workflow->getTimeTrigger()->resolveNewTimeStampForDuration(time());
```

MediaWiki

Possible Increment, in includes/filerepo/file/LocalFile.php:613.

That is a useless assignation, except for the transtyping to integer that PHP does silently. May be that should be a +=, or completely dropped.

```
$decoded[$field] = +$decoded[$field]
```

18.2.159 Possible Missing Subpattern

phpMyAdmin

Possible Missing Subpattern, in libraries/classes/Advisor.php:557.

The last capturing subpattern is `( \[(.*)\])?` and it is optional. Indeed, when the pattern succeed, the captured values are stored in `$match`. Yet, the code checks for the existence of `$match[3]` before using it.

```
if (preg_match("/rule\s'(.*)'( \[(.*)\])?$/", $line, $match)) {
                    $ruleLine = 1;
                    $ruleNo++;
                    $rules[$ruleNo] = ['name' => $match[1]];
                    $lines[$ruleNo] = ['name' => $i + 1];
                    if (isset($match[3])) {
                        $rules[$ruleNo]['precondition'] = $match[3];
                        $lines[$ruleNo]['precondition'] = $i + 1;
                    }
```

SPIP

Possible Missing Subpattern, in ecrire/inc/filtres_dates.php:73.

This code avoid the PHP notice by padding the resulting array (see comment in French : eviter === avoid)

```
if (preg_match("#^([12][0-9]{3}[-/][01]?[0-9])([-/]00)?( [-0-9:]+)?$#", $date, $regs)) {
                            $regs = array_pad($regs, 4, null); // eviter notice php
                            $date = preg_replace(@/@, -, $regs[1]) . -00 . $regs[3];
                    } else {
                            $date = date(Y-m-d H:i:s, strtotime($date));
                    }
```

18.2.160 Pre-increment

ExpressionEngine

Pre-increment, in system/ee/EllisLab/ExpressionEngine/Controller/Utilities/Communicate.php:650.

Using preincrement in for() loops is safe and straightforward.

```
for ($x = 0; $x < $number_to_send; $x++)
            {
                    $email_address = array_shift($recipient_array);

                    if ( ! $this->deliverEmail($email, $email_address))
                    {
                            $email->delete();

                            $debug_msg = ee()->email->print_debugger(array());

                            show_error(lang('error_sending_email').BR.BR.$debug_msg);
                    }
                    $email->total_sent++;
            }
```

Traq

Pre-increment, in src/Controllers/Tickets.php:84.

$this->currentProject->next_ticket_id value is ignored by the code. It may be turned into a preincrement.

```
TimelineModel::newTicketEvent($this->currentUser, $ticket)->save();

            $this->currentProject->next_ticket_id++;
            $this->currentProject->save();
```

18.2.161 Preprocessable

phpadsnew

Preprocessable, in phpAdsNew-2.0/adview.php:302.

Each call to chr() may be done before. First, chr() may be replace with the hexadecimal sequence "0x3B"; Secondly, 0x3b is a rather long replacement for a simple semi-colon. The whole pragraph could be stored in a separate file, for easier modifications.

```
echo chr(0x47).chr(0x49).chr(0x46).chr(0x38).chr(0x39).chr(0x61).chr(0x01).chr(0x00).
                  chr(0x01).chr(0x00).chr(0x80).chr(0x00).chr(0x00).chr(0x04).chr(0x02).
↪chr(0x04).
                     chr(0x00).chr(0x00).chr(0x00).chr(0x21).chr(0xF9).chr(0x04).
↪chr(0x01).chr(0x00).
                  chr(0x00).chr(0x00).chr(0x00).chr(0x2C).chr(0x00).chr(0x00).chr(0x00).
↪chr(0x00).
                  chr(0x01).chr(0x00).chr(0x01).chr(0x00).chr(0x00).chr(0x02).chr(0x02).
```

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```
↪chr(0x44).
                 chr(0x01).chr(0x00).chr(0x3B);
```

18.2.162 Printf Number Of Arguments

PhpIPAM

Printf Number Of Arguments, in functions/classes/class.Common.php:1174.

16 will not be displayed.

```
sprintf('%032s', gmp_strval(gmp_init($ipv6long, 10), 16);
```

18.2.163 Property Could Be Local

Mautic

Property Could Be Local, in app/bundles/EmailBundle/Model/SendEmailToContact.php:47.

$translator is a private property, provided at construction time. It is private, and only used in the processBadEmails() method. $translator may be turned into a parameter for processBadEmails(), and make the class slimmer.

```
class SendEmailToContact
{
    /**
     * @var TranslatorInterface
     */
    private $translator;

// Skipped code

    /**
     * SendEmailToContact constructor.
     *
     * @param MailHelper          $mailer
     * @param StatRepository      $statRepository
     * @param DoNotContact        $dncModel
     * @param TranslatorInterface $translator
     */
    public function __construct(MailHelper $mailer, StatHelper $statHelper, DoNotContact
↪$dncModel, TranslatorInterface $translator)
    {
        $this->mailer     = $mailer;
        $this->statHelper = $statHelper;
        $this->dncModel   = $dncModel;
        $this->translator = $translator;
    }

// Skipped code
```

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```
    /**
     * Add DNC entries for bad emails to get them out of the queue permanently.
     */
    protected function processBadEmails()
    {
        // Update bad emails as bounces
        if (count($this->badEmails)) {
            foreach ($this->badEmails as $contactId => $contactEmail) {
                $this->dncModel->addDncForContact(
                    $contactId,
                    ['email' => $this->emailEntityId],
                    DNC::BOUNCED,
                    $this->translator->trans('mautic.email.bounce.reason.bad_email'),
                    true,
                    false
                );
            }
        }
    }
```

Typo3

Property Could Be Local, in typo3/sysext/install/Classes/Updates/MigrateUrlTypesInPagesUpdate.php:28.

$urltypes is a private property, with a list of protocols for communicationss. It acts as a constant, being only read in the executeUpdate() method : constants may hold arrays. If this property has to evolve in the future, an accessor to update it will be necessary. Until then, this list may be hardcoded in the method.

```
/**
 * Merge URLs divided in pages.urltype and pages.url into pages.url
 * @internal This class is only meant to be used within EXT:install and is not part of␣
↪the TYPO3 Core API.
 */
class MigrateUrlTypesInPagesUpdate implements UpgradeWizardInterface
{
    private $urltypes = ['', 'http://', 'ftp://', 'mailto:', 'https://'];

// Skipped code

    /**
     * Moves data from pages.urltype to pages.url
     *
     * @return bool
     */
    public function executeUpdate(): bool
    {
        foreach ($this->databaseTables as $databaseTable) {
            $connection = GeneralUtility::makeInstance(ConnectionPool::class)
                ->getConnectionForTable($databaseTable);

            // Process records that have entries in pages.urltype
```

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```
            $queryBuilder = $connection->createQueryBuilder();
            $queryBuilder->getRestrictions()->removeAll();
            $statement = $queryBuilder->select('uid', 'urltype', 'url')
                ->from($databaseTable)
                ->where(
                    $queryBuilder->expr()->neq('urltype', 0),
                    $queryBuilder->expr()->neq('url', $queryBuilder->
↪createPositionalParameter(''))
                )
                ->execute();

            while ($row = $statement->fetch()) {
                $url = $this->urltypes[(int)$row['urltype']] . $row['url'];
                $updateQueryBuilder = $connection->createQueryBuilder();
                $updateQueryBuilder
                    ->update($databaseTable)
                    ->where(
                        $updateQueryBuilder->expr()->eq(
                            'uid',
                            $updateQueryBuilder->createNamedParameter($row['uid'], \
↪PDO::PARAM_INT)
                        )
                    )
                    ->set('url', $updateQueryBuilder->createNamedParameter($url), false)
                    ->set('urltype', 0);
                $updateQueryBuilder->execute();
            }
        }
        return true;
    }
```

18.2.164 Property Used In One Method Only

Contao

Property Used In One Method Only, in calendar-bundle/src/Resources/contao/modules/ModuleEventlist.php:38.

Date is protected property. It is used only in the compile() method, and it is not used by the parent class. As such, it may be turned into a local variable.

```
class ModuleEventlist extends Events
{

    /**
     * Current date object
     * @var Date
     */
    protected $Date;

// Date is used in function compile() only
```

18.2.165 Property Variable Confusion

PhpIPAM

Property Variable Confusion, in functions/classes/class.Admin.php:16.

There is a property called '$users'. It is easy to mistake $this->users and $users. Also, it seems that $this->users may be used as a cache system, yet it is not employed here.

```
/**
     * (array of objects) to store users, user id is array index
     *
     * @var mixed
     * @access public
     */
    public $users;

////////////

    /**
     * Fetches all users that are in group
     *
     * @access public
     * @return array of user ids
     */
    public function group_fetch_users ($group_id) {
            $out = array ();
            # get all users
            $users = $this->fetch_all_objects(users);
            # check if $gid in array
            if($users!==false) {
                    foreach($users as $u) {
                            $group_array = json_decode($u->groups, true);
                            $group_array = $this->groups_parse($group_array);

                            if(sizeof($group_array)>0) {
                                    foreach($group_array as $group) {
                                            if(in_array($group_id, $group)) {
                                                    $out[] = $u->id;
                                            }
                                    }
                            }
                    }
            }
            # return
            return isset($out) ? $out : array();
    }
```

18.2.166 Queries In Loops

TeamPass

Queries In Loops, in install/install.queries.php:551.

The value is SELECTed first in the database, and it is INSERTed if not. This may be done in one call in most databases.

```
foreach ($aMiscVal as $elem) {
    //Check if exists before inserting
    $tmp = mysqli_num_rows(
        mysqli_query(
            $dbTmp,
            "SELECT * FROM `".$var['tbl_prefix']."misc`
            WHERE type='".$elem[0]."' AND intitule='".$elem[1]."'"
        )
    );
    if (intval($tmp) === 0) {
        $queryRes = mysqli_query(
            $dbTmp,
            "INSERT INTO `".$var['tbl_prefix']."misc`
            (`type`, `intitule`, `valeur`) VALUES
            ('".$elem[0]."', '".$elem[1]."', '".
            str_replace("'", "", $elem[2])."');"
        ); // or die(mysqli_error($dbTmp))
    }

    // append new setting in config file
    $config_text .= "'".$elem[1]."' => '".str_replace("'", "", $elem[2])."',";
                        }
```

OpenEMR

Queries In Loops, in contrib/util/deidentification/deidentification.php:287.

The value is SELECTed first in the database, and it is INSERTed if not. This may be done in one call in most databases.

```
$query = "select * from facility";
$result = mysqli_query($con, $query);
while ($row = mysqli_fetch_array($result)) {
    $string = "update facility set

          `name`    = 'Facility_{$row['id']}',
          `phone`   = '(000) 000-0000'

        where `id` = {$row['id']}";

    mysqli_query($con, $string) or print "Error altering facility table \n";
    $string = '';
}
```

18.2.167 Randomly Sorted Arrays

Contao

Randomly Sorted Arrays, in system/modules/core/dca/tl_module.php:259.

The array array('maxlength', 'decodeEntities', 'tl_class') is configured multiple times in this file. Most of them is in the second form, but some are in the first form. (Multiple occurrences in this file).

```
array('maxlength' => 255, 'decodeEntities' => true, 'tl_class' => 'w50') // Line 246
array('decodeEntities' => true, 'maxlength' => 255, 'tl_class' => 'w50'); // ligne 378
```

Vanilla

Randomly Sorted Arrays, in applications/dashboard/models/class.activitymodel.php:308.

'Photo' moved from last to second. This array is used with a 'Join' key, and is the base for a SQL table JOIN. As such, order is important. If this is the case, it seems unusual that the order is not the same for a join using the same tables. If it is not the case, arrays may be reordered.

```
/* L 305 */        Gdn::userModel()->joinUsers(
            $result->resultArray(),
            ['ActivityUserID', 'RegardingUserID'],
            ['Join' => ['Name', 'Email', 'Gender', 'Photo']]
        );

// L 385
        Gdn::userModel()->joinUsers($result, ['ActivityUserID', 'RegardingUserID'], [
↪'Join' => ['Name', 'Photo', 'Email', 'Gender']]);
```

18.2.168 Redefined Default

Piwigo

Redefined Default, in admin/include/updates.class.php:34.

default_themes is defined as an empty array, then filled with new values. Same for default_plugins. Both may be defined as declaration time, and not during the constructor.

```
class updates
{
  var $types = array();
  var $plugins;
  var $themes;
  var $languages;
  var $missing = array();
  var $default_plugins = array();
  var $default_themes = array();
  var $default_languages = array();
  var $merged_extensions = array();
  var $merged_extension_url = 'http://piwigo.org/download/merged_extensions.txt';
```

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```
  function __construct($page='updates')
  {
    $this->types = array('plugins', 'themes', 'languages');

    if (in_array($page, $this->types))
    {
      $this->types = array($page);
    }
    $this->default_themes = array('clear', 'dark', 'Sylvia', 'elegant', 'smartpocket');
    $this->default_plugins = array('AdminTools', 'TakeATour', 'language_switch',
↪'LocalFilesEditor');
```

18.2.169 Redefined Private Property

Zurmo

Redefined Private Property, in app/protected/modules/zurmo/models/OwnedCustomField.php:51.

The class OwnedCustomField is part of a large class tree : OwnedCustomField extends CustomField, CustomField extends BaseCustomField, BaseCustomField extends RedBeanModel, RedBeanModel extends BeanModel.

Since $canHaveBean is distinct in BeanModel and in OwnedCustomField, the public method getCanHaveBean() also had to be overloaded.

```
class OwnedCustomField extends CustomField
    {
        /**
         * OwnedCustomField does not need to have a bean because it stores no attributes␣
↪and has no relations
         * @see RedBeanModel::canHaveBean();
         * @var boolean
         */
        private static $canHaveBean = false;

/..../

        /**
         * @see RedBeanModel::getHasBean()
         */
        public static function getCanHaveBean()
        {
            if (get_called_class() == 'OwnedCustomField')
            {
                return self::$canHaveBean;
            }
            return parent::getCanHaveBean();
        }
```

18.2.170 Register Globals

TeamPass

Register Globals, in api/index.php:25.

The API starts with security features, such as the whitelist(). The whitelist applies to IP addresses, so the query string is not sanitized. Then, the QUERY_STRING is parsed, and creates a lot of new global variables.

```
teampass_whitelist();

parse_str($_SERVER['QUERY_STRING']);
$method = $_SERVER['REQUEST_METHOD'];
$request = explode(/, substr(@$_SERVER['PATH_INFO'], 1));
```

XOOPS

Register Globals, in htdocs/modules/system/admin/images/main.php:33:33.

This code only exports the POST variables as globals. And it does clean incoming variables, but not all of them.

```
// Check users rights
if (!is_object($xoopsUser) || !is_object($xoopsModule) || !$xoopsUser->isAdmin(
↪$xoopsModule->mid())) {
    exit(_NOPERM);
}

//  Check is active
if (!xoops_getModuleOption('active_images', 'system')) {
    redirect_header('admin.php', 2, _AM_SYSTEM_NOTACTIVE);
}

if (isset($_POST)) {
    foreach ($_POST as $k => $v) {
        $\{$k\} = $v;
    }
}

// Get Action type
$op = system_CleanVars($_REQUEST, 'op', 'list', 'string');
```

18.2.171 Relay Function

TeamPass

Relay Function, in includes/libraries/Goodby/CSV/Import/Standard/Interpreter.php:88.

This example puts actually a name on the events : this method 'delegate' and it does it in the smallest amount of possible work, being given all the arguments.

```
/**
     * delegate to observer
```

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```
     *
     * @param $observer
     * @param $line
     */
    private function delegate($observer, $line)
    {
        call_user_func($observer, $line);
    }
```

SPIP

Relay Function, in ecrire/inc/json.php:73.

var2js() acts as an alternative for json_encode(). Yet, it used to be directly called by the framework's code and difficult to change. With the advent of json_encode, the native function has been used, and even, a compatibility tool was set up. Thus, the relay function.

```
if (!function_exists('json_encode')) {
    function json_encode($v) {
            return var2js($v);
    }
}
```

18.2.172 Repeated Regex

Vanilla

Repeated Regex, in library/core/class.pluginmanager.php:1200.

This regex is actually repeated 4 times across the Vanilla database, including this variation : '#^(https?:)?//#i'.

```
'`^https?://`'
```

Tikiwiki

Repeated Regex, in tiki-login.php:369.

This regex is use twice, identically, in the same file, with a few line of distance. It may be federated at the file level.

```
preg_match('/(tiki-register|tiki-login_validate|tiki-login_scr)\.php/', $url)
```

18.2.173 Repeated print()

Edusoho

Repeated print(), in app/check.php:71.

All echo may be merged into one : do this by turning the ; and . into ',', and removing the superfluous echo. Also, echo_style may be turned into a non-display function, returning the build style, rather than echoing it to the output.

```
echo PHP_EOL;
echo_style('title', 'Note');
echo '  The command console could use a different php.ini file'.PHP_EOL;
echo_style('title', '~~~~');
echo '  than the one used with your web server. To be on the'.PHP_EOL;
echo '      safe side, please check the requirements from your web'.PHP_EOL;
echo '      server using the ';
echo_style('yellow', 'web/config.php');
echo ' script.'.PHP_EOL;
echo PHP_EOL;
```

HuMo-Gen

Repeated print(), in menu.php:71.

Simply calling print once is better than three times. Here too, echo usage would reduce the amount of memory allocation due to concatenation prior display.

```
print '<input type=text name=quicksearch value=.$quicksearch. size=10 '.$pattern.'␣
↪title=.__(Minimum:).$min_chars.__(characters).>';
                    print ' <input type=submit value=.__(Search).>';
            print </form>;
```

18.2.174 Rethrown Exceptions

PrestaShop

Rethrown Exceptions, in classes/webservice/WebserviceOutputBuilder.php:731.

The setSpecificField method catches a WebserviceException, representing an issue with the call to the webservice. However, that piece of information is lost, and the exception is rethrown immediately, without any action.

```
public function setSpecificField($object, $method, $field_name, $entity_name)
    {
            try {
                    $this->validateObjectAndMethod($object, $method);
            } catch (WebserviceException $e) {
                    throw $e;
            }

            $this->specificFields[$field_name] = array('entity'=>$entity_name, 'object'␣
↪=> $object, 'method' => $method, 'type' => gettype($object));
            return $this;
    }
```

18.2.175 Return True False

Mautic

Return True False, in app/bundles/LeadBundle/Model/ListModel.php:125.

$isNew could be a typecast.

```
$isNew = ($entity->getId()) ? false : true;
```

FuelCMS

Return True False, in fuel/modules/fuel/helpers/validator_helper.php:254.

If/then is a lot of code to produce a boolean.

```
function length_min($str, $limit = 1)
    {
            if (strlen(strval($str)) < $limit)
            {
                    return FALSE;
            }
            else
            {
                    return TRUE;
            }
    }
```

18.2.176 Safe Curl Options

OpenConf

Safe Curl Options, in openconf/include.php:703.

The function that holds that code is only used to call openconf.com, over http, while openconf.com is hosted on https, nowadays. This may be a sign of hard to access certificates.

```
$ch = curl_init();
                    curl_setopt($ch, CURLOPT_URL, $f);
                    curl_setopt($ch, CURLOPT_RETURNTRANSFER, true);
                    curl_setopt($ch, CURLOPT_FOLLOWLOCATION, true);
                    curl_setopt($ch, CURLOPT_AUTOREFERER, true);
                    curl_setopt($ch, CURLOPT_SSL_VERIFYPEER, false);
                    curl_setopt($ch, CURLOPT_MAXREDIRS, 5);
                    curl_setopt($ch, CURLOPT_HEADER, false);
                    $s = curl_exec($ch);
                    curl_close($ch);
                    return($s);
```

18.2.177 Same Conditions In Condition

TeamPass

Same Conditions In Condition, in sources/identify.php:1096.

$result == 1 is use once in the main if/then, then again the second if/then/elseif structure. Both are incompatible, since, in the else, *$result* will be different from 1.

```
if ($result == 1) {
                $return = "";
                $logError = "";
                $proceedIdentification = true;
                $userPasswordVerified = false;
                unset($_SESSION['hedgeId']);
                unset($_SESSION['flickercode']);
            } else {
                if ($result < -10) {
                    $logError = "ERROR: ".$result;
                } elseif ($result == -4) {
                    $logError = "Wrong response code, no more tries left.";
                } elseif ($result == -3) {
                    $logError = "Wrong response code, try to reenter.";
                } elseif ($result == -2) {
                    $logError = "Timeout. The response code is not valid anymore.";
                } elseif ($result == -1) {
                    $logError = "Security Error. Did you try to verify the response from␣
↪a different computer?";
                } elseif ($result == 1) {
                    $logError = "Authentication successful, response code correct.
                          <br /><br />Authentification Method for SecureBrowser updated!
↪";
                    // Add necessary code here for accessing your Business Application
                }
                $return = "agses_error";
                echo '[{"value" : "'.$return.'", "user_admin":"',
                isset($_SESSION['user_admin']) ? $_SESSION['user_admin'] : "",
                '", "initial_url" : "'.@$_SESSION['initial_url'].'",
                "error" : "'.$logError.'"}]';

                exit();
            }
```

Typo3

Same Conditions In Condition, in typo3/sysext/recordlist/Classes/RecordList/DatabaseRecordList.php:1696.

$table == 'pages is caught initially, and if it fails, it is tested again in the final else. This won't happen.

```
} elseif ($table === 'pages') {
                                $parameters = ['id' => $this->id, 'pagesOnly' => 1,
↪'returnUrl' => GeneralUtility::getIndpEnv('REQUEST_URI')];
                                $href = (string)$uriBuilder->buildUriFromRoute('db_new',
```

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```
↪$parameters);
                                $icon = '<a class="btn btn-default" href="' .␣
↪htmlspecialchars($href) . '" title="' . htmlspecialchars($lang->getLL('new')) . '">'
                                    . $spriteIcon->render() . '</a>';
                            } else {
                                $params = '&edit[' . $table . '][' . $this->id . ']=new';
                                if ($table === 'pages') {
                                    $params .= '&overrideVals[pages][doktype]=' . (int)
↪$this->pageRow['doktype'];
                                }
                                $icon = '<a class="btn btn-default" href="#" onclick="' .
↪ htmlspecialchars(BackendUtility::editOnClick($params, '', -1))
                                    . '" title="' . htmlspecialchars($lang->getLL('new
↪')) . '">' . $spriteIcon->render() . '</a>';
                            }
```

18.2.178 Scalar Or Object Property

SugarCrm

Scalar Or Object Property, in SugarCE-Full-6.5.26/data/Link.php:54.

The _relationship property starts its life as a string, and becomes an object later.

```
class Link {

    /* Private variables.*/
    var $_log;
    var $_relationship_name; //relationship this attribute is tied to.
    var $_bean; //stores a copy of the bean.
    var $_relationship= '';

/// More code.....

// line 92
            $this->_relationship=new Relationship();
```

18.2.179 Several Instructions On The Same Line

Piwigo

Several Instructions On The Same Line, in tools/triggers_list.php:993.

There are two instructions on the line with the if(). Note that the condition is not followed by a bracketed block. When reviewing, it really seems that echo '<br>' and $f=0; are on the same block, but the second is indeed an unconditional expression. This is very difficult to spot.

```
foreach ($trigger['files'] as $file)
      {
        if (!$f) echo '<br>'; $f=0;
```

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```
        echo preg_replace('#\((.+)\)#', '(<i>$1</i>)', $file);
      }
```

Tine20

Several Instructions On The Same Line, in tine20/Calendar/Controller/Event.php:1594.

Here, $_event->attendee is saved in a local variable, then the property is destroyed. Same for $_event->notes; Strangely, a few lines above, the properties are unset on their own line. Unsetting properties leads to surprise bugs, and hidding the unset after ; makes it harder to spot.

```
$futurePersistentExceptionEvents->setRecurId($_event->getId());
                unset($_event->recurid);
                unset($_event->base_event_id);
                foreach(array('attendee', 'notes', 'alarms') as $prop) {
                    if ($_event->{$prop} instanceof Tinebase_Record_RecordSet) {
                        $_event->{$prop}->setId(NULL);
                    }
                }
                $_event->exdate = $futureExdates;

                $attendees = $_event->attendee; unset($_event->attendee);
                $note = $_event->notes; unset($_event->notes);
                $persistentExceptionEvent = $this->create($_event, $_checkBusyConflicts &
↪& $dtStartHasDiff);
```

18.2.180 Should Chain Exception

Magento

Should Chain Exception, in lib/Mage/Backup/Filesystem/Rollback/Ftp.php:81.

Instead of using the exception message as an argument, chaining the exception would send the whole exception, including the message, and other interesting information like file and line.

```
protected function _initFtpClient()
    {
        try {
            $this->_ftpClient = new Mage_System_Ftp();
            $this->_ftpClient->connect($this->_snapshot->getFtpConnectString());
        } catch (Exception $e) {
            throw new Mage_Backup_Exception_FtpConnectionFailed($e->getMessage());
        }
    }
```

Tine20

Should Chain Exception, in tine20/Setup/Controller.php:81.

Here, the new exception gets an hardcoded message. More details about the reasons are already available in the $e exception, but they are not logged, not chained for later processing.

```
try {
            $dirIterator = new DirectoryIterator($this->_baseDir);
        } catch (Exception $e) {
            Setup_Core::getLogger()->warn(__METHOD__ . '::' . __LINE__ . ' Could not␣
↪open base dir: ' . $this->_baseDir);
            throw new Tinebase_Exception_AccessDenied('Could not open Tine 2.0 root␣
↪directory.');
        }
```

18.2.181 Should Preprocess Chr()

phpadsnew

Should Preprocess Chr(), in phpAdsNew-2.0/adview.php:302.

Each call to chr() may be done before. First, chr() may be replace with the hexadecimal sequence "0x3B"; Secondly, 0x3b is a rather long replacement for a simple semi-colon. The whole pragraph could be stored in a separate file, for easier modifications.

```
echo chr(0x47).chr(0x49).chr(0x46).chr(0x38).chr(0x39).chr(0x61).chr(0x01).chr(0x00).
                 chr(0x01).chr(0x00).chr(0x80).chr(0x00).chr(0x00).chr(0x04).chr(0x02).
↪chr(0x04).
                     chr(0x00).chr(0x00).chr(0x00).chr(0x21).chr(0xF9).chr(0x04).
↪chr(0x01).chr(0x00).
                 chr(0x00).chr(0x00).chr(0x00).chr(0x2C).chr(0x00).chr(0x00).chr(0x00).
↪chr(0x00).
                 chr(0x01).chr(0x00).chr(0x01).chr(0x00).chr(0x00).chr(0x02).chr(0x02).
↪chr(0x44).
                 chr(0x01).chr(0x00).chr(0x3B);
```

18.2.182 Should Typecast

xataface

Should Typecast, in Dataface/Relationship.php:1612.

This is an exact example. A little further, the same applies to intval($max))

```
intval($min);
```

OpenConf

Should Typecast, in author/upload.php:62.

This is another exact example.

```
intval($_POST['pid']);
```

18.2.183 Should Use Coalesce

ChurchCRM

Should Use Coalesce, in src/ChurchCRM/Service/FinancialService.php:597.

ChurchCRM features 5 old style ternary operators, which are all in this SQL query. ChurchCRM requires PHP 7.0, so a simple code review could remove them all.

```
$sSQL = "INSERT INTO pledge_plg
                    (plg_famID,
                    plg_FYID,
                    plg_date,
                    plg_amount,
                    plg_schedule,
                    plg_method,
                    plg_comment,
                    plg_DateLastEdited,
                    plg_EditedBy,
                    plg_PledgeOrPayment,
                    plg_fundID,
                    plg_depID,
                    plg_CheckNo,
                    plg_scanString,
                    plg_aut_ID,
                    plg_NonDeductible,
                    plg_GroupKey)
                    VALUES ('".
          $payment->FamilyID."','".
          $payment->FYID."','".
          $payment->Date."','".
          $Fund->Amount."','".
          (isset($payment->schedule) ? $payment->schedule : 'NULL')."','".
          $payment->iMethod."','".
          $Fund->Comment."','".
          date('YmdHis')."',".
          $_SESSION['user']->getId().",'".
          $payment->type."',".
          $Fund->FundID.',".
          $payment->DepositID.',".
          (isset($payment->iCheckNo) ? $payment->iCheckNo : 'NULL').",'".
          (isset($payment->tScanString) ? $payment->tScanString : 'NULL')."','".
          (isset($payment->iAutID) ? $payment->iAutID : 'NULL')."','".
          (isset($Fund->NonDeductible) ? $Fund->NonDeductible : 'NULL')."','".
          $sGroupKey."')";
```

Cleverstyle

Should Use Coalesce, in modules/Feedback/index.php:37.

Cleverstyle nests ternary operators when selecting default values. Here, moving some of them to ?? will reduce the code complexity and make it more readable. Cleverstyle requires PHP 7.0 or more recent.

```
$Page->content(
    h::{'cs-form form'}(
            h::{'section.cs-feedback-form article'}(
                    h::{'header h2.cs-text-center'}($L->Feedback).
                    h::{'table.cs-table[center] tr| td'}(
                            [
                                    h::{'cs-input-text input[name=name][required]'}(
                                            [
                                                    'placeholder' => $L->feedback_name,
                                                    'value'       => $User->user() ?
↪$User->username() : (isset($_POST['name']) ? $_POST['name'] : '')
                                            ]
                                    ),
                                    h::{'cs-input-text␣
↪input[type=email][name=email][required]'}(
                                            [
                                                    'placeholder' => $L->feedback_email,
                                                    'value'       => $User->user() ?
↪$User->email : (isset($_POST['email']) ? $_POST['email'] : '')
                                            ]
                                    ),
                                    h::{'cs-textarea[autosize]␣
↪textarea[name=text][required]'}(
                                            [
                                                    'placeholder' => $L->feedback_text,
                                                    'value'       => isset($_POST['text
↪']) ? $_POST['text'] : ''
                                            ]
                                    ),
                                    h::{'cs-button button[type=submit]'}($L->feedback_
↪send)
                            ]
                    )
            )
    )
);
```

18.2.184 Should Use Existing Constants

Tine20

Should Use Existing Constants, in tine20/Sales/Controller/Invoice.php:560.

True should be replaced by COUNT_RECURSIVE. The default one is COUNT_NORMAL.

```
count($billables, true)
```

18.2.185 Should Use Foreach

ExpressionEngine

Should Use Foreach, in system/ee/EllisLab/ExpressionEngine/Service/Model/Query/Builder.php:241.

This code could turn the string into an array, with the explode() function, and use foreach(), instead of calculating the length() initially, and then building the loop.

```
$length = strlen($str);
            $words = array();

            $word = '';
            $quote = '';
            $quoted = FALSE;

            for ($i = 0; $i < $length; $i++)
            {
                    $char = $str[$i];

                    if (($quoted == FALSE && $char == ' ') || ($quoted == TRUE && $char␣
↪== $quote))
                    {
                            if (strlen($word) > 2)
                            {
                                    $words[] = $word;
                            }

                            $quoted = FALSE;
                            $quote = '';
                            $word = '';

                            continue;
                    }

                    if ($quoted == FALSE && ($char == '"' || $char == "'") && ($word ===
↪'' || $word == '-'))
                    {
                            $quoted = TRUE;
                            $quote = $char;
                            continue;
                    }
```

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```
                    $word .= $char;
            }
```

Woocommerce

Should Use Foreach, in includes/libraries/class-wc-eval-math.php:84.

This loops reviews the 'stack' and updates its elements. The same loop may leverage foreach and references for more efficient code.

```
$stack_size = count( $stack );
                            for ( $i = 0; $i < $stack_size; $i++ ) { // freeze the state␣
↪of the non-argument variables
                                    $token = $stack[ $i ];
                                    if ( preg_match( '/^[a-z]\w*$/', $token ) and ! in_
↪array( $token, $args ) ) {
                                            if ( array_key_exists( $token, self::$v ) ) {
                                                    $stack[ $i ] = self::$v[ $token ];
                                            } else {
                                                    return self::trigger( "undefined␣
↪variable '$token' in function definition" );
                                            }
                                    }
                            }
```

18.2.186 Should Use Math

OpenEMR

Should Use Math, in controllers/C_Prescription.class.php:638.

$pdf->ez['leftMargin'] is now 0.

```
function multiprint_body(& $pdf, $p)
    {
        $pdf->ez['leftMargin'] += $pdf->ez['leftMargin'];
        $pdf->ez['rightMargin'] += $pdf->ez['rightMargin'];
        $d = $this->get_prescription_body_text($p);
        if ($pdf->ezText($d, 10, array(), 1)) {
            $pdf->ez['leftMargin'] -= $pdf->ez['leftMargin'];
            $pdf->ez['rightMargin'] -= $pdf->ez['rightMargin'];
            $this->multiprint_footer($pdf);
            $pdf->ezNewPage();
            $this->multiprint_header($pdf, $p);
```

18.2.187 Should Use Operator

Zencart

Should Use Operator, in includes/modules/payment/paypal/paypal_curl.php:378.

Here, $options is merged with $values if it is an array. If it is not an array, it is probably a null value, and may be ignored. Adding a 'array' type will strengthen the code an catch situations where TransactionSearch() is called with a string, leading to clearer code.

```
function TransactionSearch($startdate, $txnID = '', $email = '', $options) {
    // several lines of code, no mention of $options
      if (is_array($options)) $values = array_merge($values, $options);
    }
    return $this->_request($values, 'TransactionSearch');
  }
```

SugarCrm

Should Use Operator, in include/utils.php:2093:464.

$override should an an array : if not, it is actually set by default to empty array. Here, a type with a default value of 'array()' would offset the parameter validation to the calling method.

```
function sugar_config_union( $default, $override ){
    // a little different then array_merge and array_merge_recursive.  we want
    // the second array to override the first array if the same value exists,
    // otherwise merge the unique keys.  it handles arrays of arrays recursively
    // might be suitable for a generic array_union
    if( !is_array( $override ) ){
            $override = array();
    }
    foreach( $default as $key => $value ){
            if( !array_key_exists($key, $override) ){
                    $override[$key] = $value;
            }
            else if( is_array( $key ) ){
                    $override[$key] = sugar_config_union( $value, $override[$key] );
            }
    }
    return( $override );
}
```

18.2.188 Should Use Prepared Statement

Dolibarr

Should Use Prepared Statement, in htdocs/product/admin/price_rules.php:76.

This code is well escaped, as the integer type cast will prevent any special chars to be used. Here, a prepared statement would apply a modern approach to securing this query.

```
$db->query("DELETE FROM " . MAIN_DB_PREFIX . "product_pricerules WHERE level = " . (int)
↪$i)
```

18.2.189 Should Use Ternary Operator

ChurchCRM

Should Use Ternary Operator, in src/CartToFamily.php:57.

$sState could be the receiving part of a ternary operator.

```
if ($sCountry == 'United States' || $sCountry == 'Canada') {
            $sState = InputUtils::LegacyFilterInput($_POST['State']);
        } else {
            $sState = InputUtils::LegacyFilterInput($_POST['StateTextbox']);
        }
```

18.2.190 Should Use array_filter()

xataface

Should Use array_filter(), in actions/manage_build_index.php:38.

This selection process has three tests : the two first are exclusive, and the third is inclusive. They could fit in one or several closures.

```
$indexable = array();
            foreach ( $tables as $key=>$table ){
                    if ( preg_match('/^dataface__/', $table) ){
                            continue;
                    }
                    if ( preg_match('/^_/', $table) ){
                            continue;
                    }

                    if ( $index->isTableIndexable($table) ){
                            $indexable[] = $table;
                            //unset($tables[$key]);
                    }

            }
```

shopware

Should Use array_filter(), in engine/Shopware/Bundle/StoreFrontBundle/Service/Core/VariantCoverService.php:71.

Closure would be the best here, since $covers has to be injected in the array_filter callback.

```
$covers = $this->variantMediaGateway->getCovers(
            $products,
            $context
        );

        $fallback = [];
        foreach ($products as $product) {
            if (!array_key_exists($product->getNumber(), $covers)) {
                $fallback[] = $product;
            }
        }
```

18.2.191 Silently Cast Integer

MediaWiki

Silently Cast Integer, in includes/debug/logger/monolog/AvroFormatter.php:167.

Too many ff in the masks.

```
private function encodeLong( $id ) {
            $high   = ( $id & 0xffffffff00000000 ) >> 32;
            $low    = $id & 0x00000000ffffffff;
            return pack( 'NN', $high, $low );
    }
```

18.2.192 Simplify Regex

Zurmo

Simplify Regex, in app/protected/core/components/Browser.php:73.

Here, strpos() or stripos() is a valid replacement.

```
preg_match('/opera/', $userAgent)
```

OpenConf

Simplify Regex, in openconf/include.php:964.

\%e is not a special char for PCRE regex, although it look like it. It is a special char for date() or printf(). This preg_replace() may be upgraded to str_replace()

```
$conv = iconv($cp, 'utf-8', strftime(preg_replace("/\%e/", '%#d', $format), $time));
```

18.2.193 Slice Arrays First

WordPress

Slice Arrays First, in modules/InboundEmail/InboundEmail.php:1080.

Instead of reading ALL the keys, and then, keeping only the first fifty, why not read the 50 first items from the array, and then extract the keys?

```
$results = array_slice(array_keys($diff), 0 ,50);
```

18.2.194 Slow Functions

ChurchCRM

Slow Functions, in src/Reports/PrintDeposit.php:35.

You may replace this with a isset() : $_POST can't contain a NULL value, unless it was set by the script itself.

```
array_key_exists(report_type, $_POST);
```

SuiteCrm

Slow Functions, in include/json_config.php:242.

This is a equivalent for nl2br()

```
preg_replace(/\r\n/, <BR>, $focus->$field)
```

18.2.195 Static Methods Can't Contain $this

xataface

Static Methods Can't Contain $this, in Dataface/LanguageTool.php:48.

$this is hidden in the arguments of the static call to the method.

```
public static function loadRealm($name){
            return self::getInstance($this->app->_conf['default_language'])->loadRealm(
↪$name);
    }
```

SugarCrm

Static Methods Can't Contain $this, in SugarCE-Full-6.5.26/modules/ACLActions/ACLAction.php:332.

Notice how $this is tested for existence before using it. It seems strange, at first, but we have to remember that if $this is never set when calling a static method, a static method may be called with $this. Confusingly, this static method may be called in two ways.

```
static function hasAccess($is_owner=false, $access = 0){

        if($access != 0 && $access == ACL_ALLOW_ALL || ($is_owner && $access == ACL_
↪ALLOW_OWNER))return true;
       //if this exists, then this function is not static, so check the aclaccess␣
↪parameter
        if(isset($this) && isset($this->aclaccess)){
            if($this->aclaccess == ACL_ALLOW_ALL || ($is_owner && $this->aclaccess ==␣
↪ACL_ALLOW_OWNER))
            return true;
        }
        return false;
    }
```

18.2.196 Strange Name For Variables

FuelCMS

Strange Name For Variables, in fuel/modules/fuel/libraries/parser/dwoo/Dwoo/Adapters/CakePHP/dwoo.php:86.

Three _ is quite a lot for variables. Would they not be parameters but global variables, that would still be quite a lot.

```
public function _render($___viewFn, $___data_for_view, $___play_safe = true,
↪$loadHelpers = true) {
    /**/
}
```

PhpIPAM

Strange Name For Variables, in app/admin/sections/edit-result.php:56.

$sss is the end-result of a progression, from $subsections (3s) to $ss to $sss. Although it is understandable from the code, a fuller name, like $subsection_subnet or $one_subsection_subnet would make this more readable.

```
//fetch subsection subnets
            foreach($subsections as $ss) {
                    $subsection_subnets = $Subnets->fetch_section_subnets($ss->id); //
↪fetch all subnets in subsection
                    if(sizeof($subsection_subnets)>0) {
                            foreach($subsection_subnets as $sss) {
                                    $out[] = $sss;
                            }
                    }
                    $num_subnets = $num_subnets + sizeof($subsection_subnets);
```

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```
                    //count all addresses that will be deleted!
                    $ipcnt = $Addresses->count_addresses_in_multiple_subnets($out);
            }
```

18.2.197 Strict Comparison With Booleans

Phinx

Strict Comparison With Booleans, in src/Phinx/Db/Adapter/MysqlAdapter.php:1131.

ìsNull( ) ` always returns a boolean : it may be only be `true` or `false`. Until typed properties or return type are used, isNull() may return anything else.

```
$column->isNull( ) == false
```

Typo3

Strict Comparison With Booleans, in typo3/sysext/lowlevel/Classes/Command/FilesWithMultipleReferencesCommand.php:90.

When `dry-run` is not defined, the getOption() method actually returns a `null` value. So, comparing the result of getOption() to false is actually wrong : using a constant to prevent values to be inconsistent is recommended here.

```
$input->getOption('dry-run') != false
```

18.2.198 Strings With Strange Space

OpenEMR

Strings With Strange Space, in library/globals.inc.php:3270.

The name of the contry contains both an unsecable space (the first, after Tonga), and a normal space (between Tonga and Islands). Translations are stored in a database, which preserves the unbreakable spaces. This also means that fixing the translation must be applied to every piece of data at the same time. The xl() function, which handles the translations, is also a good place to clean the spaces before searching for the right translation.

```
'to' => xl('Tonga (Tonga Islands)'),
```

Thelia

Strings With Strange Space, in templates/backOffice/default/I18n/fr_FR.php:647.

This is another example with a translation sentence. Here, the unbreakable space is before the question mark : this is a typography rule, that is common to many language. This would be a false positive, unless typography is handled by another part of the software.

```
'Mot de passe oublié ?'
```

18.2.199 Strpos()-like Comparison

Piwigo

Strpos()-like Comparison, in admin/include/functions.php:2585.

preg_match may return 0 if not found, and null if the $pattern is erroneous. While hardcoded regex may be checked at compile time, dynamically built regex may fail at execution time. This is particularly important here, since the function may be called with incoming data for maintenance : 'clear_derivative_cache($_GET['type']);' is in the /admin/maintenance.php.

```
function clear_derivative_cache_rec($path, $pattern)
{
  $rmdir = true;
  $rm_index = false;

  if ($contents = opendir($path))
  {
    while (($node = readdir($contents)) !== false)
    {
      if ($node == '.' or $node == '..')
        continue;
      if (is_dir($path.'/'.$node))
      {
        $rmdir &= clear_derivative_cache_rec($path.'/'.$node, $pattern);
      }
      else
      {
        if (preg_match($pattern, $node))
```

Thelia

Strpos()-like Comparison, in core/lib/Thelia/Controller/Admin/FileController.php:198.

preg_match is used here to identify files with a forbidden extension. The actual list of extension is provided to the method via the parameter $extBlackList, which is an array. In case of mis-configuration by the user of this array, preg_match may fail : for example, when regex special characters are provided. At that point, the whole filter becomes invalid, and can't distinguish good files (returning false) and other files (returning NULL). It is safe to use === false in this situation.

```
if (!empty($extBlackList)) {
            $regex = "#^(.+)\.(".implode("|", $extBlackList).")$#i";

            if (preg_match($regex, $realFileName)) {
                $message = $this->getTranslator()
                    ->trans(
                        'Files with the following extension are not allowed: %extension,␣
↪please do an archive of the file if you want to upload it',
                        [
                            '%extension' => $fileBeingUploaded->
↪getClientOriginalExtension(),
                        ]
                    );
```

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```
            }
        }
```

18.2.200 Strtr Arguments

SuiteCrm

Strtr Arguments, in includes/vCard.php:221.

This code prepares incoming '$values' for extraction. The keys are cleaned then split with explode(). The '=' sign would stay, as strtr() can't remove it. This means that such keys won't be recognized later in the code, and gets omitted.

```
$values = explode(';', $value);
                    $key = strtoupper($keyvalue[0]);
                    $key = strtr($key, '=', '');
                    $key = strtr($key, ',', ';');
                    $keys = explode(';', $key);
```

18.2.201 Substring First

SPIP

Substring First, in ecrire/inc/filtres.php:1694.

The code first makes everything uppercase, including the leading and trailing spaces, and then, removes them : it would be best to swap those operations. Note that spip_substr() is not considered in this analysis, but with SPIP knowledge, it could be moved inside the calls.

```
function filtre_initiale($nom) {
    return spip_substr(trim(strtoupper(extraire_multi($nom))), 0, 1);
}
```

PrestaShop

Substring First, in admin-dev/filemanager/include/utils.php:197.

dirname() reduces the string (or at least, keeps it the same size), so it more efficient to have it first.

```
dirname(str_replace(' ', '~', $str))
```

18.2.202 Suspicious Comparison

PhpIPAM

Suspicious Comparison, in app/tools/vrf/index.php:110.

if $subnet['description'] is a string, the comparison with 0 turn it into a boolean. false's length is 0, and true length is 1. PHP saves the day.

```
$subnet['description'] = strlen($subnet['description']==0) ? "/" : $subnet['description
↪'];
```

ExpressionEngine

Suspicious Comparison, in ExpressionEngine_Core2.9.2/system/expressionengine/libraries/simplepie/SimplePie/Misc.php:1925.

If trim($attribs[''']['mode']) === 'base64', then it is set to lowercase (although it is already), and added to the && logical test. If it is 'BASE64', this fails.

```
if (isset($attribs['']['mode']) && strtolower(trim($attribs['']['mode']) === 'base64'))
```

18.2.203 Switch To Switch

Thelia

Switch To Switch, in core/lib/Thelia/Controller/Admin/TranslationsController.php:100.

The two first comparison may be turned into a case, and the last one could be default, or default with a check on empty().

```
if($modulePart == 'core') { /**/ } elseif($modulePart == 'admin-includes') { /**/ }␣
↪elseif(!empty($modulePart)) { /**/ }
```

XOOPS

Switch To Switch, in htdocs/search.php:74.

Here, converting this structure to switch requires to drop the === usage. Also, no default usage here.

```
if($action === 'results') { /**/ } elseif($action === 'showall') { /**/ } elseif(
↪$action === 'showallbyuser') { /**/ }
```

18.2.204 Switch Without Default

Zencart

Switch Without Default, in admin/tax_rates.php:15.

The 'action' is collected from $_GET and then, compared with various strings to handle the different actions to be taken. The default behavior is implicit here : if no 'action', display the initial form for taxes to be changed. This has to be understood as a general philosophy of ZenCart project, or by reading the rest of the HTML code. Adding a 'default' case here would help understand what happens in case 'action' is absent or unrecognized.

```
$action = (isset($_GET['action']) ? $_GET['action'] : '');

  if (zen_not_null($action)) {
    switch ($action) {
      case 'insert':
        // PHP code
        break;
      case 'save':
        // PHP code
        break;
      case 'deleteconfirm':
        // PHP code
        break;
    }
  }
?> .... HTML code
```

Traq

Switch Without Default, in src/Helpers/Ticketlist.php:311.

The default case is actually processed after the switch, by the next if/then structure. The structure deals with the customFields, while the else deals with any unknown situations. This if/then could be wrapped in the 'default' case of switch, for consistent processing. The if/then condition would be hard to use as a 'case' (possible, though).

```
public static function dataFor($column, $ticket)
    {
        switch ($column) {
            // Ticket ID column
            case 'ticket_id':
                return $ticket['ticket_id'];
                break;

            // Status column
            case 'status':
            case 'type':
            case 'component':
            case 'priority':
            case 'severity':
                return $ticket["{$column}_name"];
                break;

            // Votes
            case 'votes':
                return $ticket['votes'];
                break;
        }

        // If we're still here, it may be a custom field
        if ($value = $ticket->customFieldValue($column)) {
            return $value->value;
        }
```

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```
        // Nothing!
        return '';
    }
```

18.2.205 Ternary In Concat

TeamPass

Ternary In Concat, in includes/libraries/protect/AntiXSS/UTF8.php:5409.

The concatenations in the initial comparison are disguised casting. When $str2 is empty too, the ternary operator yields a 0, leading to a systematic failure.

```
$str1 . '' === $str2 . '' ? 0 : strnatcmp(self::strtonatfold($str1), self::strtonatfold(
↪$str2))
```

18.2.206 Test Then Cast

Dolphin

Test Then Cast, in wp-admin/includes/misc.php:74.

$aLimits['per_page'] is tested for existence and not false. Later, it is cast from string to int : yet, a '0.1' string value would pass the test, and end up filling $aLimits['per_page'] with 0.

```
if (isset($aLimits['per_page']) && $aLimits['per_page'] !== false)
            $this->aCurrent['paginate']['perPage'] = (int)$aLimits['per_page'];
```

SuiteCrm

Test Then Cast, in modules/jjwg_Maps/controller.php:1035.

$marker['lat'] is compared to the string '0', which actually transtype it to integer, then it is cast to string for map_marker_data_points() needs and finally, it is cast to float, in case of a correction. It would be safer to test it in its string type, since floats are not used as array indices.

```
if ($marker['lat'] != '0' && $marker['lng'] != '0') {

            // Check to see if marker point already exists and apply offset if needed
            // This often occurs when an address is only defined by city, state, zip.
            $i = 0;
            while (isset($this->map_marker_data_points[(string) $marker['lat']][(string)
↪$marker['lng']]) &&
            $i < $this->settings['map_markers_limit']) {
                $marker['lat'] = (float) $marker['lat'] + (float) $this->settings['map_
↪duplicate_marker_adjustment'];
                $marker['lng'] = (float) $marker['lng'] + (float) $this->settings['map_
↪duplicate_marker_adjustment'];
```

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```
                $i++;
            }
```

18.2.207 Throw Functioncall

SugarCrm

Throw Functioncall, in include/externalAPI/cmis_repository_wrapper.php:918.

SugarCRM uses exceptions to fill work in progress. Here, we recognize a forgotten 'new' that makes throw call a function named 'Exception'. This fails with a Fatal Error, and doesn't issue the right messsage. The same error had propgated in the code by copy and paste : it is available 17 times in that same file.

```
function getContentChanges()
    {
        throw Exception(Not Implemented);
    }
```

Zurmo

Throw Functioncall, in app/protected/modules/gamification/rules/collections/GameCollectionRules.php:66.

Other part of the code actually instantiate the exception before throwing it.

```
abstract class GameCollectionRules
    {
        /**
         * @return string
         * @throws NotImplementedException - Implement in children classes
         */
        public static function getType()
        {
            throw NotImplementedException();
        }
```

18.2.208 Timestamp Difference

Zurmo

Timestamp Difference, in app/protected/modules/import/jobs/ImportCleanupJob.php:73.

This is wrong twice a year, in countries that has day-ligth saving time. One of the weeks will be too short, and the other will be too long.

```
/**
         * Get all imports where the modifiedDateTime was more than 1 week ago.  Then
         * delete the imports.
         * (non-PHPdoc)
         * @see BaseJob::run()
         */
```

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```
        public function run()
        {
            $oneWeekAgoTimeStamp =␣
↪DateTimeUtil::convertTimestampToDbFormatDateTime(time() - 60 * 60 *24 * 7);
```

shopware

Timestamp Difference, in engine/Shopware/Controllers/Backend/Newsletter.php:150.

When daylight saving strike, the email may suddenly be locked for 1 hour minus 30 seconds ago. The lock will be set for the rest of the hour, until the server catch up.

```
// Check lock time. Add a buffer of 30 seconds to the lock time (default request time)
            if (!empty($mailing['locked']) && strtotime($mailing['locked']) > time() -␣
↪30) {
                echo "Current mail: '" . $subjectCurrentMailing . "'\n";
                echo "Wait " . (strtotime($mailing['locked']) + 30 - time()) . " seconds␣
↪...\n";
                return;
            }
```

18.2.209 Too Many Children

Typo3

Too Many Children, in typo3/sysext/backend/Classes/Form/AbstractNode.php:26.

More than 15 children for this class : 15 is the default configuration.

```
abstract class AbstractNode implements NodeInterface, LoggerAwareInterface {
```

Woocommerce

Too Many Children, in includes/abstracts/abstract-wc-rest-controller.php:30.

This class is extended 22 times, more than the default configuration of 15.

```
class WC_REST_Controller extends WP_REST_Controller {
```

18.2.210 Too Many Injections

NextCloud

Too Many Injections, in lib/private/Share20/Manager.php:130.

Well documented Manager class. Quite a lot of injections though, it must take a long time to prepare it.

```
/**
     * Manager constructor.
     *
     * @param ILogger $logger
     * @param IConfig $config
     * @param ISecureRandom $secureRandom
     * @param IHasher $hasher
     * @param IMountManager $mountManager
     * @param IGroupManager $groupManager
     * @param IL10N $l
     * @param IFactory $l10nFactory
     * @param IProviderFactory $factory
     * @param IUserManager $userManager
     * @param IRootFolder $rootFolder
     * @param EventDispatcher $eventDispatcher
     * @param IMailer $mailer
     * @param IURLGenerator $urlGenerator
     * @param \OC_Defaults $defaults
     */
    public function __construct(
                    ILogger $logger,
                    IConfig $config,
                    ISecureRandom $secureRandom,
                    IHasher $hasher,
                    IMountManager $mountManager,
                    IGroupManager $groupManager,
                    IL10N $l,
                    IFactory $l10nFactory,
                    IProviderFactory $factory,
                    IUserManager $userManager,
                    IRootFolder $rootFolder,
                    EventDispatcher $eventDispatcher,
                    IMailer $mailer,
                    IURLGenerator $urlGenerator,
                    \OC_Defaults $defaults
    ) {
            $this->logger = $logger;
            $this->config = $config;
            $this->secureRandom = $secureRandom;
            $this->hasher = $hasher;
            $this->mountManager = $mountManager;
            $this->groupManager = $groupManager;
            $this->l = $l;
            $this->l10nFactory = $l10nFactory;
            $this->factory = $factory;
            $this->userManager = $userManager;
            $this->rootFolder = $rootFolder;
            $this->eventDispatcher = $eventDispatcher;
            $this->sharingDisabledForUsersCache = new CappedMemoryCache();
            $this->legacyHooks = new LegacyHooks($this->eventDispatcher);
            $this->mailer = $mailer;
            $this->urlGenerator = $urlGenerator;
            $this->defaults = $defaults;
```

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```
    }
```

Thelia

Too Many Injections, in core/lib/Thelia/Core/Event/Delivery/DeliveryPostageEvent.php:58.

Classic address class, with every details. May be even shorter than expected.

```
//class DeliveryPostageEvent extends ActionEvent
    public function __construct(
        DeliveryModuleInterface $module,
        Cart $cart,
        Address $address = null,
        Country $country = null,
        State $state = null
    ) {
        $this->module = $module;
        $this->cart = $cart;
        $this->address = $address;
        $this->country = $country;
        $this->state = $state;
    }
```

18.2.211 Too Many Local Variables

HuMo-Gen

Too Many Local Variables, in relations.php:813.

15 local variables pieces of code are hard to find in a compact form. This function shows one classic trait of such issue : a large ifthen is at the core of the function, and each time, it collects some values and build a larger string. This should probably be split between different methods in a class.

```
function calculate_nephews($generX) { // handed generations x is removed from common␣
↪ancestor
global $db_functions, $reltext, $sexe, $sexe2, $language, $spantext, $selected_language,
↪$foundX_nr, $rel_arrayX, $rel_arrayspouseX, $spouse;
global $reltext_nor, $reltext_nor2; // for Norwegian and Danish

    if($selected_language==es){
            if($sexe==m) { $neph=__('nephew'); $span_postfix=o; $grson='nieto'; }
            else { $neph=__('niece'); $span_postfix=a; $grson='nieta'; }
            //$gendiff = abs($generX - $generY); // FOUT
            $gendiff = abs($generX - $generY) - 1;
            $gennr=$gendiff-1;
            $degree=$grson..$gennr.$span_postfix;
            if($gendiff ==1) { $reltext=$neph.__(' of ');}
            elseif($gendiff > 1 AND $gendiff < 27) {
                    spanish_degrees($gendiff,$grson);
                    $reltext=$neph..$spantext.__(' of ');
            }
```

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```
            else { $reltext=$neph..$degree; }
    } elseif ($selected_language==he){
            if($sexe=='m') { $nephniece = __('nephew'); }
///............
```

18.2.212 Too Many Native Calls

SPIP

Too Many Native Calls, in /ecrire/xml/analyser_dtd.php:58.

This expression counts 4 usages of count(), which is more than the default level of 3 PHP calls in one expression.

```
spip_log("Analyser DTD $avail $grammaire (" . spip_timer('dtd') . ") " . count($dtc->
↪macros) . ' macros, ' . count($dtc->elements) . ' elements, ' . count($dtc->attributs)␣
↪. " listes d'attributs, " . count($dtc->entites) . " entites")
```

18.2.213 Too Many Parameters

WordPress

Too Many Parameters, in wp-admin/includes/misc.php:74.

11 parameters is a lot for a function. Note that it is more than the default configuration, and reported there. This may be configured.

```
/**
 * [identifyUserRights description]
 * @param  string $groupesVisiblesUser  [description]
 * @param  string $groupesInterditsUser [description]
 * @param  string $isAdmin              [description]
 * @param  string $idFonctions          [description]
 * @return string                       [description]
 */
function identifyUserRights(
    $groupesVisiblesUser,
    $groupesInterditsUser,
    $isAdmin,
    $idFonctions,
    $server,
    $user,
    $pass,
    $database,
    $port,
    $encoding,
    $SETTINGS
) {
```

ChurchCRM

Too Many Parameters, in src/Reports/ReminderReport.php:192.

10 parameters is a lot for a function. Here, we may also identify a family (ID, Name), and a full address (Address1, Address2, State, Zip, Country), which may be turned into an object.

```
public function StartNewPage($fam_ID, $fam_Name, $fam_Address1, $fam_Address2, $fam_City,
↪ $fam_State, $fam_Zip, $fam_Country, $fundOnlyString, $iFYID)
{
```

18.2.214 Unconditional Break In Loop

LiveZilla

Unconditional Break In Loop, in wp-admin/includes/misc.php:74.

Only one row is read from the DBManager, and the rest is ignored. The result has no more than one result, basedd on the *LIMIT 1* clause in the SQL. The while loop may be removed.

```
$result = DBManager::Execute(true, "SELECT * FROM `" . DB_PREFIX . DATABASE_STATS_AGGS .
↪"` WHERE `month`>0 AND ((`year`='" . DBManager::RealEscape(date("Y")) . "' AND `month`<
↪'" . DBManager::RealEscape(date("n")) . "') OR (`year`<'" . DBManager::RealEscape(date(
↪"Y")) . "')) AND (`aggregated`=0 OR `aggregated`>" . (time() - 300) . ") AND `day`=0␣
↪ORDER BY `year` ASC,`month` ASC LIMIT 1;");
        if ($result)
            while ($row = DBManager::FetchArray($result)) {
                if (empty($row["aggregated"])) {
                    DBManager::Execute(true, "UPDATE `" . DB_PREFIX . DATABASE_STATS_
↪AGGS . "` SET `aggregated`=" . time() . " WHERE `year`=" . $row["year"] . " AND␣
↪`month`=" . $row["month"] . " AND `day`=0 LIMIT 1;");
                    $this->AggregateMonth($row["year"], $row["month"]);
                }
                return false;
            }
```

MediaWiki

Unconditional Break In Loop, in includes/htmlform/HTMLFormField.php:138.

The final break is useless : the execution has already reached the end of the loop.

```
for ( $i = count( $thisKeys ) - 1; $i >= 0; $i-- ) {
                    $keys = array_merge( array_slice( $thisKeys, 0, $i ), $nameKeys );
                    $data = $alldata;
                    foreach ( $keys as $key ) {
                            if ( !is_array( $data ) || !array_key_exists( $key, $data )␣
↪) {
                                    continue 2;
                            }
                            $data = $data[$key];
                    }
```

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```
                        $testValue = (string)$data;
                        break;
                }
```

18.2.215 Undefined Interfaces

xataface

Undefined Interfaces, in Dataface/Error.php:112.

Exception seems to be a typo, and leads to an always-true expression.

```
public static function isError($obj){
                if ( !PEAR::isError($obj) and !($obj instanceof Exception_) ) return false;
                return ($obj->getCode() >= DATAFACE_E_ERROR);
        }
```

18.2.216 Undefined Properties

WordPress

Undefined Properties, in wp-admin/includes/misc.php:74.

Properties are not defined, but they are thoroughly initialized when the XML document is parsed. All those definition should be in a property definition, for clear documentation.

```
$this->DeliveryLine1 = '';
        $this->DeliveryLine2 = '';
        $this->City = '';
        $this->State = '';
        $this->ZipAddon = '';
```

MediaWiki

Undefined Properties, in includes/logging/LogFormatter.php:561.

parsedParametersDeleteLog is an undefined property. Defining the property with a null default value is important here, to keep the code running.

```
protected function getMessageParameters() {
                if ( isset( $this->parsedParametersDeleteLog ) ) {
                        return $this->parsedParametersDeleteLog;
                }
```

18.2.217 Undefined static:: Or self::

xataface

Undefined static:: Or self::, in actions/forgot_password.php:194.

This is probably a typo, since the property called public static $EX_NO_USERS_WITH_EMAIL = 501; is defined in that class.

```
if ( !$user ) throw new Exception(df_translate('actions.forgot_password.null_user',
↪"Cannot send email for null user"), self::$EX_NO_USERS_FOUND_WITH_EMAIL);
```

SugarCrm

Undefined static:: Or self::, in code/SugarCE-Full-6.5.26/include/SugarDateTime.php:574.

self::$sugar_strptime_long_mon refers to the current class, which extends DateTime. No static property was defined at either of them, with the name '$sugar_strptime_long_mon'. This has been a Fatal error at execution time since PHP 5.3, at least.

```
if ( isset($regexp['positions']['F']) && !empty($dateparts[$regexp['positions']['F']])) {
                // FIXME: locale?
    $mon = $dateparts[$regexp['positions']['F']];
    if(isset(self::$sugar_strptime_long_mon[$mon])) {
        $data[tm_mon] = self::$sugar_strptime_long_mon[$mon];
    } else {
        return false;
    }
}
```

18.2.218 Unitialized Properties

SPIP

Unitialized Properties, in ecrire/public/interfaces.php:584.

The class Critere (Criteria) has no method at all. When using a class as an array, to capture values, one of the advantage of the class is in the default values for the properties. In particular, the last property here, called $not, should be initialized with a false.

```
/**
 * Description d'un critère de boucle
 *
 * Sous-noeud de Boucle
 *
 * @package SPIP\Core\Compilateur\AST
 **/
class Critere {
    /**
     * Type de noeud
     *
     * @var string
```

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```
     */
    public $type = 'critere';

    /**
     * Opérateur (>, <, >=, IN, ...)
     *
     * @var null|string
     */
    public $op;

    /**
     * Présence d'une négation (truc !op valeur)
     *
     * @var null|string
     */
    public $not;
```

18.2.219 Unpreprocessed Values

Zurmo

Unpreprocessed Values, in app/protected/core/utils/ZurmoTranslationServerUtil.php:79.

It seems that a simple concatenation could be used here. There is another call to this expression in the code, and a third that uses 'PATCH_VERSION' on top of the two others.

```
join('.', array(MAJOR_VERSION, MINOR_VERSION))
```

Piwigo

Unpreprocessed Values, in include/random_compat/random.php:34.

PHP_VERSION is actually build with PHP_MAJOR_VERSION, PHP_MINOR_VERSION and PHP_RELEASE_VERSION. There is also a compact version : PHP_VERSION_ID

```
explode('.', PHP_VERSION);
```

18.2.220 Unresolved Instanceof

WordPress

Unresolved Instanceof, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
private function resolveTag($match)
    {
        $tagReflector = $this->createLinkOrSeeTagFromRegexMatch($match);
        if (!$tagReflector instanceof Tag\SeeTag && !$tagReflector instanceof Tag\
↪LinkTag) {
```

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```
            return $match;
        }
```

18.2.221 Unserialize Second Arg

Piwigo

Unserialize Second Arg, in admin/configuration.php:491.

unserialize() extracts information from the $conf variable : this variable is read from a configuration file. It is later tested to be an array, whose index may not be all set (@$disabled[$type];). It would be safer to make $disabled an object, add the class to unserialize, and set default values to the needed properties/index.

```
$disabled = @unserialize(@$conf['disabled_derivatives']);
```

LiveZilla

Unserialize Second Arg, in livezilla/_lib/objects.global.inc.php:2600.

unserialize() only extract a non-empty value here. But its content is not checked. It is later used as an array, with multiple index.

```
$this->Customs = (!empty($_row["customs"])) ? @unserialize($_row["customs"]) : array();
```

18.2.222 Unused Functions

Woocommerce

Unused Functions, in includes/wc-core-functions.php:2124.

wc_is_external_resource() is unused. This is not obvious immediately, since there is a call from wc_get_relative_url(). Yet since wc_get_relative_url() itself is never used, then it is a dead function. As such, since wc_is_external_resource() is only called by this first function, it also dies, even though it is called in the code.

```
/**
 * Make a URL relative, if possible.
 *
 * @since 3.2.0
 * @param string $url URL to make relative.
 * @return string
 */
function wc_get_relative_url( $url ) {
    return wc_is_external_resource( $url ) ? $url : str_replace( array( 'http://',
↪'https://' ), '//', $url );
}

/**
 * See if a resource is remote.
 *
 * @since 3.2.0
```

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```
 * @param string $url URL to check.
 * @return bool
 */
function wc_is_external_resource( $url ) {
    $wp_base = str_replace( array( 'http://', 'https://' ), '//', get_home_url( null, '/
↪', 'http' ) );

    return strstr( $url, '://' ) && ! strstr( $url, $wp_base );
}
```

Piwigo

Unused Functions, in admin/include/functions.php:2167.

get_user_access_level_html_options() is unused and can't be find in the code.

```
/**
 * Returns access levels as array used on template with html_options functions.
 *
 * @param int $MinLevelAccess
 * @param int $MaxLevelAccess
 * @return array
 */
function get_user_access_level_html_options($MinLevelAccess = ACCESS_FREE,
↪$MaxLevelAccess = ACCESS_CLOSED)
{
  $tpl_options = array();
  for ($level = $MinLevelAccess; $level <= $MaxLevelAccess; $level++)
  {
    $tpl_options[$level] = l10n(sprintf('ACCESS_%d', $level));
  }
  return $tpl_options;
}
```

18.2.223 Unused Global

Dolphin

Unused Global, in Dolphin-v.7.3.5/modules/boonex/forum/classes/DbForum.php:548.

$gConf is not used in this method, and may be safely avoided.

```
function getUserPostsList ($user, $sort, $limit = 10)
    {
        global $gConf;

        switch ($sort) {
            case 'top':
                $order_by = " t1.`votes` DESC ";
                break;
            case 'rnd':
```

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```
                $order_by = " RAND() ";
                break;
            default:
                $order_by = " t1.`when` DESC ";
        }

        $sql =  "
        SELECT t1.`forum_id`, t1.`topic_id`, t2.`topic_uri`, t2.`topic_title`, t1.`post_
↪id`, t1.`user`, `post_text`, t1.`when`
            FROM " . TF_FORUM_POST . " AS t1
        INNER JOIN " . TF_FORUM_TOPIC . " AS t2
            ON (t1.`topic_id` = t2.`topic_id`)
        WHERE  t1.`user` = '$user' AND `t2`.`topic_hidden` = '0'
        ORDER BY " . $order_by . "
        LIMIT $limit";

        $a = $this->getAll ($sql);
        $this->_cutPostText($a);
        return $a;
    }
```

18.2.224 Unused Inherited Variable In Closure

shopware

Unused Inherited Variable In Closure, in recovery/update/src/app.php:129.

In the first closuree, $containere is used as the root for the method calls, but $app is not used. It may be dropped. In fact, some of the following calls to $app->map() only request one inherited, $container.

```
$app->map('/applyMigrations', function () use ($app, $container) {
    $container->get('controller.batch')->applyMigrations();
})->via('GET', 'POST')->name('applyMigrations');

$app->map('/importSnippets', function () use ($container) {
    $container->get('controller.batch')->importSnippets();
})->via('GET', 'POST')->name('importSnippets');
```

Mautic

Unused Inherited Variable In Closure, in MauticCrmBundle/Tests/Integration/SalesforceIntegrationTest.php:1202.

$max is relayed to getLeadsToCreate(), while $restart is omitted. It may be dropped, along with its reference.

```
function () use (&$restart, $max) {
                    $args = func_get_args();

                    if (false === $args[2]) {
                        return $max;
                    }
```

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```
                    $createLeads = $this->getLeadsToCreate($args[2], $max);

                    // determine whether to return a count or records
                    if (false === $args[2]) {
                        return count($createLeads);
                    }

                    return $createLeads;
                }
```

18.2.225 Unused Interfaces

Tine20

Unused Interfaces, in tine20/Tinebase/User/LdapPlugin/Interface.php:20.

Tinebase_User_LdapPlugin_Interface is mentioned as a type for a property, in a php doc document. Typed properties are available since PHP 7.4

```
interface Tinebase_User_LdapPlugin_Interface {

//----------
// in tine20/Tinebase/User/ActiveDirectory.php
/** @var Tinebase_User_LdapPlugin_Interface $plugin */
```

18.2.226 Unused Parameter

ThinkPHP

Unused Parameter, in ThinkPHP/Library/Behavior/AgentCheckBehavior.class.php:18.

$params are requested, but never used. The method is not overloading another one, as the class doesn't extends anything. $params is unused.

```
class AgentCheckBehavior
{
    public function run(&$params)
    {
        //
        $limitProxyVisit = C('LIMIT_PROXY_VISIT', null, true);
        if ($limitProxyVisit && ($_SERVER['HTTP_X_FORWARDED_FOR'] || $_SERVER['HTTP_VIA
↪'] || $_SERVER['HTTP_PROXY_CONNECTION'] || $_SERVER['HTTP_USER_AGENT_VIA'])) {
            //
            exit('Access Denied');
        }
    }
}
```

phpMyAdmin

Unused Parameter, in libraries/classes/Display/Results.php:1985.

Although $column_index is documented, it is not found in the rest of the (long) body of the function. It might have been refactored into $sorted_column_index.

```
/**
     * Prepare parameters and html for sorted table header fields
     *
     * @param array    $sort_expression             sort expression
     * @param array    $sort_expression_nodirection sort expression without direction
     * @param string   $sort_tbl                    The name of the table to which
     *                                             the current column belongs to
     * @param string   $name_to_use_in_sort         The current column under
     *                                             consideration
     * @param array    $sort_direction              sort direction
     * @param stdClass $fields_meta                 set of field properties
     * @param integer  $column_index                The index number to current column
     *
     * @return  array   3 element array - $single_sort_order, $sort_order, $order_img
     *
     * @access  private
     *
     * @see     _getOrderLinkAndSortedHeaderHtml()
     */
    private function _getSingleAndMultiSortUrls(
        array $sort_expression,
        array $sort_expression_nodirection,
        $sort_tbl,
        $name_to_use_in_sort,
        array $sort_direction,
        $fields_meta,
        $column_index
    ) {
    /**/
        // find the sorted column index in row result
        // (this might be a multi-table query)
        $sorted_column_index = false;
    /**/
    }
```

18.2.227 Unused Private Properties

OpenEMR

Unused Private Properties, in entities/User.php:46.

This class has a long list of private properties. It also has an equally long (minus one) list of accessors, and a __toString() method which exposes all of them. $oNotes is the only one never mentionned anywhere.

```
class User
{
```

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```
    /**
     * @Column(name=id, type=integer)
     * @GeneratedValue(strategy=AUTO)
     */
    private $id;

    /**
     * @OneToMany(targetEntity=ONote, mappedBy=user)
     */
    private $oNotes;
```

phpadsnew

Unused Private Properties, in lib/OA/Admin/UI/component/Form.php:23.

$dispatcher is never used anywhere.

```
class OA_Admin_UI_Component_Form
    extends HTML_QuickForm
{
    private $dispatcher;
```

18.2.228 Use ::Class Operator

Typo3

Use ::Class Operator, in typo3/sysext/install/Configuration/ExtensionScanner/Php/ConstructorArgumentMatcher.php:4.

`TYPO3\CMS\Core\Package\PackageManager` could be `TYPO3\CMS\Core\Package\PackageManager::class`.

```
return [
    'TYPO3\CMS\Core\Package\PackageManager' => [
        'required' => [
            'numberOfMandatoryArguments' => 1,
            'maximumNumberOfArguments' => 1,
```

18.2.229 Use Basename Suffix

NextCloud

Use Basename Suffix, in lib/private/URLGenerator.php:176.

This code removes the 4 last letters from the images. It may be 'png', 'jpg' or 'txt'.

```
substr(basename($image), 0, -4)
```

Dolibarr

Use Basename Suffix, in htdocs/core/website.inc.php:42.

The extension '.tpl.php' is dropped from the file name, unless it appears somewhere else in the $websitepagefile variable.

```
str_replace(array('.tpl.php', 'page'), array('', ''), basename($websitepagefile))
```

18.2.230 Use Constant As Arguments

Tikiwiki

Use Constant As Arguments, in lib/language/Language.php:112.

E_WARNING is a valid value, but PHP documentation for trigger_error() explains that E_USER constants should be used.

```
trigger_error("Octal or hexadecimal string '" . $match[1] . "' not supported", E_WARNING)
```

shopware

Use Constant As Arguments, in engine/Shopware/Plugins/Default/Core/Debug/Components/EventCollector.php:106.

One example where code review reports errors where unit tests don't : array_multisort actually requires sort order first (SORT_ASC or SORT_DESC), then sort flags (such as SORT_NUMERIC). Here, with SORT_DESC = 3 and SORT_NUMERIC = 1, PHP understands it as the coders expects it. The same error is repeated six times in the code.

```
array_multisort($order, SORT_NUMERIC, SORT_DESC, $this->results)
```

18.2.231 Use Count Recursive

WordPress

Use Count Recursive, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( \n, implode( '', file( $filename ) ) );
```

PrestaShop

Use Count Recursive, in controllers/admin/AdminSearchController.php:342.

This could be improved with count() recursive and a array_filter call, to remove empty $list.

```
$nb_results = 0;
            foreach ($this->_list as $list) {
                if ($list != false) {
                    $nb_results += count($list);
                }
            }
```

18.2.232 Use Instanceof

TeamPass

Use Instanceof, in includes/libraries/Database/Meekrodb/db.class.php:506.

In this code, `is_object()` and `instanceof` have the same basic : they both check that $ts is an object. In fact, `instanceof` is more precise, and give more information about the variable.

```
protected function parseTS($ts) {
    if (is_string($ts)) return date('Y-m-d H:i:s', strtotime($ts));
    else if (is_object($ts) && ($ts instanceof DateTime)) return $ts->format('Y-m-d H:i:s
↪');
  }
```

Zencart

Use Instanceof, in includes/modules/payment/firstdata_hco.php:104.

In this code, `is_object()` is used to check the status of the order. Possibly, $order is false or null in case of incompatible status. Yet, when $object is an object, and in particular being a global that may be assigned anywhere else in the code, it seems that the method 'update_status' is magically always available. Here, using instance of to make sure that $order is an 'paypal' class, or a 'storepickup' or any of the payment class.

```
function __construct() {
    global $order;

    // more lines, no mention of $order
    if (is_object($order)) $this->update_status();

    // more code
}
```

18.2.233 Use List With Foreach

MediaWiki

Use List With Foreach, in includes/parser/LinkHolderArray.php:372.

This foreach reads each element from $entries into entry. $entry, in turn, is written into $pdbk, $title and $displayText for easier reuse. 5 elements are read from $entry, and they could be set in their respective variable in the foreach() with a list call. The only on that can't be set is 'query' which has to be tested.

```
foreach ( $entries as $index => $entry ) {
                            $pdbk = $entry['pdbk'];
                            $title = $entry['title'];
                            $query = isset( $entry['query'] ) ? $entry['query'] : [];
                            $key = $ns:$index;
                            $searchkey = "<!--LINK'\" $key-->";
                            $displayText = $entry['text'];
                            if ( isset( $entry['selflink'] ) ) {
                                    $replacePairs[$searchkey] = Linker::makeSelfLinkObj(
```

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```
↪$title, $displayText, $query );
                                        continue;
                                }
                                if ( $displayText === '' ) {
                                        $displayText = null;
                                } else {
                                        $displayText = new HtmlArmor( $displayText );
                                }
                                if ( !isset( $colours[$pdbk] ) ) {
                                        $colours[$pdbk] = 'new';
                                }
                                $attribs = [];
                                if ( $colours[$pdbk] == 'new' ) {
                                        $linkCache->addBadLinkObj( $title );
                                        $output->addLink( $title, 0 );
                                        $link = $linkRenderer->makeBrokenLink(
                                                $title, $displayText, $attribs, $query
                                        );
                                } else {
                                        $link = $linkRenderer->makePreloadedLink(
                                                $title, $displayText, $colours[$pdbk],
↪$attribs, $query
                                        );
                                }

                                $replacePairs[$searchkey] = $link;
                        }
```

18.2.234 Use Named Boolean In Argument Definition

phpMyAdmin

Use Named Boolean In Argument Definition, in /libraries/classes/Util.php:1929.

$request is an option to *checkParameters*, although it is not visibile with is its actual role.

```
public static function checkParameters($params, $request = false) {
    /**/
}
```

Cleverstyle

Use Named Boolean In Argument Definition, in /core/classes/Response.php:129.

$httponly is an option to *cookie*, and true/false makes it readable. There may be other situations, like fallback, or forcedd usage, so the boolean may be misleading. Note also the *$expire = 0*, which may be a date, or a special value. We need to read the documentation to understand this.

```
public function cookie($name, $value, $expire = 0, $httponly = false) { /**/ }       {
    /**/
}
```

18.2.235 Use PHP Object API

WordPress

Use PHP Object API, in wp-includes/functions.php:2558.

Finfo has also a class, with the same name.

```
finfo_open(FILEINFO_MIME_TYPE)
```

PrestaShop

Use PHP Object API, in admin-dev/filemanager/include/utils.php:174.

transliterator_transliterate() has also a class named Transliterator

```
transliterator_transliterate('Accents-Any', $str)
```

18.2.236 Use Pathinfo

SuiteCrm

Use Pathinfo, in include/utils/file_utils.php:441.

Looking for the extension ? Use pathinfo() and PATHINFO_EXTENSION

```
$exp = explode('.', $filename);
```

18.2.237 Use Positive Condition

SPIP

Use Positive Condition, in ecrire/inc/utils.php:925.

if (isset($time[$t])) { } else { } would put the important case in first place, and be more readable.

```
if (!isset($time[$t])) {
            $time[$t] = $a + $b;
    } else {
            $p = ($a + $b - $time[$t]) * 1000;
            unset($time[$t]);
#                   echo "'$p'";exit;
            if ($raw) {
                    return $p;
            }
            if ($p < 1000) {
                    $s = '';
            } else {
                    $s = sprintf("%d ", $x = floor($p / 1000));
                    $p -= ($x * 1000);
            }
```

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```
            return $s . sprintf($s ? "%07.3f ms" : "%.3f ms", $p);
    }
```

ExpressionEngine

Use Positive Condition, in system/ee/EllisLab/Addons/forum/mod.forum_core.php:9138.

Let's be positive, and start processing the presence of $topic first. And let's call it empty(), not == ''.

```
if ($topic != '')
                                                {
                                                        $sql .= '('.substr($topic, 0, -3).')␣
↪OR ';
                                                        $sql .= '('.substr($tbody, 0, -3).')
↪';
                                                }
                                                else
                                                {
                                                        $sql = substr($sql, 0, -3);
                                                }
```

18.2.238 Use const

phpMyAdmin

Use const, in error_report.php:17.

This may be turned into a *const* call, with a static expression.

```
define('ROOT_PATH', __DIR__ . DIRECTORY_SEPARATOR)
```

Piwigo

Use const, in include/functions_plugins.inc.php:32.

Const works efficiently with literal

```
define('EVENT_HANDLER_PRIORITY_NEUTRAL', 50)
```

18.2.239 Use pathinfo() Arguments

Zend-Config

Use pathinfo() Arguments, in src/Factory.php:74:90.

The *$filepath* is broken into pieces, and then, only the 'extension' part is used. With the PATHINFO_EXTENSION constant used as a second argument, only this value could be returned.

```
$pathinfo = pathinfo($filepath);

        if (! isset($pathinfo['extension'])) {
            throw new Exception\RuntimeException(sprintf(
                'Filename "%s" is missing an extension and cannot be auto-detected',
                $filename
            ));
        }

        $extension = strtolower($pathinfo['extension']);
        // Only $extension is used beyond that point
```

ThinkPHP

Use pathinfo() Arguments, in ThinkPHP/Extend/Library/ORG/Net/UploadFile.class.php:508.

Without any other check, pathinfo() could be used with PATHINFO_EXTENSION.

```
private function getExt($filename) {
        $pathinfo = pathinfo($filename);
        return $pathinfo['extension'];
    }
```

18.2.240 Use random_int()

Thelia

Use random_int(), in core/lib/Thelia/Tools/TokenProvider.php:151.

The whole function may be replaced by random_int(), as it generates random tokens. This needs an extra layer of hashing, to get a long and string results.

```
/**
     * @return string
     */
    protected static function getComplexRandom()
    {
        $firstValue = (float) (mt_rand(1, 0xFFFF) * rand(1, 0x10001));
        $secondValues = (float) (rand(1, 0xFFFF) * mt_rand(1, 0x10001));

        return microtime() . ceil($firstValue / $secondValues) . uniqid();
    }
```

FuelCMS

Use random_int(), in fuel/modules/fuel/libraries/Fuel.php:235.

Security tokens should be build with a CSPRNG source. uniqid() is based on time, and though it changes anytime (sic), it is easy to guess. Those days, it looks like '5b1262e74dbb9';

```
$this->installer->change_config('config', '$config[\'encryption_key\'] = \'\';', '
↪$config[\'encryption_key\'] = \''.md5(uniqid()).'\';');
```

18.2.241 Use session_start() Options

WordPress

Use session_start() Options, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( "\n", implode( '', file( $filename ) ) );
```

18.2.242 Used Once Variables

shopware

Used Once Variables, in _sql/migrations/438-add-email-template-header-footer-fields.php:115.

In the updateEmailTemplate method, $generatedQueries collects all the generated SQL queries. $generatedQueries is not initialized, and never used after initialization.

```
private function updateEmailTemplate($name, $content, $contentHtml = null)
    {
        $sql = <<<SQL
UPDATE `s_core_config_mails` SET `content` = "$content" WHERE `name` = "$name" AND dirty␣
↪= 0
SQL;
        $this->addSql($sql);

        if ($contentHtml != null) {
            $sql = <<<SQL
UPDATE `s_core_config_mails` SET `content` = "$content", `contentHTML` = "$contentHtml"␣
↪WHERE `name` = "$name" AND dirty = 0
SQL;
            $generatedQueries[] = $sql;
        }

        $this->addSql($sql);
    }
```

Vanilla

Used Once Variables, in library/core/class.configuration.php:1461.

In this code, $cachedConfigData is collected after storing date in the cache. Gdn::cache()->store() does actual work, so its calling is necessary. The result, collected after execution, is not reused in the rest of the method (long method, not all is shown here). Removing such variable is a needed clean up after development and debug, but also prevents pollution of the variable namespace.

```
// Save to cache if we're into that sort of thing
                $fileKey = sprintf(Gdn_Configuration::CONFIG_FILE_CACHE_KEY, $this->
↪Source);
                if ($this->Configuration && $this->Configuration->caching() &&␣
↪Gdn::cache()->type() == Gdn_Cache::CACHE_TYPE_MEMORY && Gdn::cache()->activeEnabled())
↪{
                    $cachedConfigData = Gdn::cache()->store($fileKey, $data, [
                        Gdn_Cache::FEATURE_NOPREFIX => true,
                        Gdn_Cache::FEATURE_EXPIRY => 3600
                    ]);
                }
```

18.2.243 Used Once Variables (In Scope)

shopware

Used Once Variables (In Scope), in _sql/migrations/438-add-email-template-header-footer-fields.php:115.

In the updateEmailTemplate method, $generatedQueries collects all the generated SQL queries. $generatedQueries is not initialized, and never used after initialization.

```
private function updateEmailTemplate($name, $content, $contentHtml = null)
    {
        $sql = <<<SQL
UPDATE `s_core_config_mails` SET `content` = "$content" WHERE `name` = "$name" AND dirty␣
↪= 0
SQL;
        $this->addSql($sql);

        if ($contentHtml != null) {
            $sql = <<<SQL
UPDATE `s_core_config_mails` SET `content` = "$content", `contentHTML` = "$contentHtml"␣
↪WHERE `name` = "$name" AND dirty = 0
SQL;
            $generatedQueries[] = $sql;
        }

        $this->addSql($sql);
    }
```

18.2.244 Useless Brackets

ChurchCRM

Useless Brackets, in src/Menu.php:72.

Difficut to guess what was before the block here. It doesn't have any usage for control flow.

```
$new_row = false;
        $count_people = 0;

        {
            foreach ($peopleWithBirthDays as $peopleWithBirthDay) {
                if ($new_row == false) {
                    ?>

                    <div class="row">
                <?php
                    $new_row = true;
                } ?>
                <div class="col-sm-3">
```

Piwigo

Useless Brackets, in picture.php:342.

There is no need for block braces with case. In fact, it does give a false sense of break, while the case will still fall over to the next one.

```
case 'rate' :
    {
      include_once(PHPWG_ROOT_PATH.'include/functions_rate.inc.php');
      rate_picture($page['image_id'], $_POST['rate']);
      redirect($url_self);
    }
```

18.2.245 Useless Catch

Zurmo

Useless Catch, in app/protected/modules/workflows/forms/attributes/ExplicitReadWriteModelPermissionsWorkflowActionAttributeForm

Catch the exception, then return. At least, the comment is honest.

```
try
                {
                    $group = Group::getById((int)$this->type);
                    $explicitReadWriteModelPermissions->addReadWritePermitable($group);
                }
                catch (NotFoundException $e)
                {
                    //todo: handle exception better
```

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```
                    return;
                }
```

PrestaShop

Useless Catch, in src/Core/Addon/Module/ModuleManagerBuilder.php:170.

Here, the catch clause will intercept a IO problem while writing element on the disk, and will return false. Since this is a constructor, the returned value will be ignored and the object will be left in a wrong state, since it was not totally inited.

```
private function __construct()
    {
    // More code......
            try {
                $filesystem = new Filesystem();
                $filesystem->dumpFile($phpConfigFile, '<?php return ' . var_export(
↪$config, true) . ';' . \n);
            } catch (IOException $e) {
                return false;
            }
        }
```

18.2.246 Useless Check

Magento

Useless Check, in wp-admin/includes/misc.php:74.

This code assumes that $delete is an array, then checks if it empty. Foreach will take care of the empty check.

```
if (!empty($delete)) {
            foreach ($delete as $categoryId) {
                $where = array(
                    'product_id = ?'  => (int)$object->getId(),
                    'category_id = ?' => (int)$categoryId,
                );

                $write->delete($this->_productCategoryTable, $where);
            }
        }
```

Phinx

Useless Check, in src/Phinx/Migration/Manager.php:828.

If $dependencies is not empty, foreach() skips the loops.

```
private function getSeedDependenciesInstances(AbstractSeed $seed)
    {
        $dependenciesInstances = [];
        $dependencies = $seed->getDependencies();
        if (!empty($dependencies)) {
            foreach ($dependencies as $dependency) {
                foreach ($this->seeds as $seed) {
                    if (get_class($seed) === $dependency) {
                        $dependenciesInstances[get_class($seed)] = $seed;
                    }
                }
            }
        }

        return $dependenciesInstances;
    }
```

18.2.247 Useless Global

Zencart

Useless Global, in admin/includes/modules/newsletters/newsletter.php:25.

$_GET is always a global variable. There is no need to declare it global in any scope.

```
function choose_audience() {
        global $_GET;
```

HuMo-Gen

Useless Global, in relations.php:332.

It is hard to spot that $generY is useless, but this is the only occurrence where $generY is refered to as a global. It is not accessed anywhere else as a global (there are occurrences of $generY being an argument), and it is not even assigned within that function.

```
function calculate_ancestor($pers) {
    global $db_functions, $reltext, $sexe, $sexe2, $spouse, $special_spouseY, $language,
↪$ancestortext, $dutchtext, $selected_language, $spantext, $generY, $foundY_nr, $rel_
↪arrayY;
```

18.2.248 Useless Interfaces

Woocommerce

Useless Interfaces, in includes/interfaces/class-wc-order-item-data-store-interface.php:20.

WC_Order_Item_Data_Store_Interface is used to structure the class WC_Order_Item_Data_Store. It is not used anywhere else.

```
interface WC_Order_Item_Data_Store_Interface {



////////
//includes/data-stores/class-wc-order-item-data-store.php

class WC_Order_Item_Data_Store implements WC_Order_Item_Data_Store_Interface {
```

18.2.249 Useless Parenthesis

Mautic

Useless Parenthesis, in code/app/bundles/EmailBundle/Controller/AjaxController.php:85.

Parenthesis are useless around $progress[1], and around the division too.

```
$dataArray['percent'] = ($progress[1]) ? ceil(($progress[0] / $progress[1]) * 100) : 100;
```

Woocommerce

Useless Parenthesis, in includes/class-wc-coupon.php:437.

Parenthesis are useless for calculating $discount_percent, as it is a divisition. Moreover, it is not needed with $discount, (float) applies to the next element, but it does make the expression more readable.

```
if ( wc_prices_include_tax() ) {
    $discount_percent = ( wc_get_price_including_tax( $cart_item['data'] ) * $cart_item_
↪qty ) / WC()->cart->subtotal;
} else {
    $discount_percent = ( wc_get_price_excluding_tax( $cart_item['data'] ) * $cart_item_
↪qty ) / WC()->cart->subtotal_ex_tax;
}
$discount = ( (float) $this->get_amount() * $discount_percent ) / $cart_item_qty;
```

18.2.250 Useless Referenced Argument

Woocommerce

Useless Referenced Argument, in includes/data-stores/class-wc-product-variation-data-store-cpt.php:414.

$product is defined with a reference in the method signature, but it is also used as an object with a dynamical property. As such, the reference in the argument definition is too much.

```
public function update_post_meta( &$product, $force = false ) {
            $meta_key_to_props = array(
                    '_variation_description' => 'description',
            );

            $props_to_update = $force ? $meta_key_to_props : $this->get_props_to_update(
↪$product, $meta_key_to_props );

            foreach ( $props_to_update as $meta_key => $prop ) {
                                    $value   = $product->{get_$prop}( 'edit' );
                                    $updated = update_post_meta( $product->get_id(),
↪$meta_key, $value );
                    if ( $updated ) {
                            $this->updated_props[] = $prop;
                    }
            }

            parent::update_post_meta( $product, $force );
```

Magento

Useless Referenced Argument, in setup/src/Magento/Setup/Module/Di/Compiler/Config/Chain/PreferencesResolving.php:63.

$value is defined with a reference. In the following code, it is only read and never written : for index search, or by itself. In fact, $preferences is also only read, and never written. As such, both could be removed.

```
private function resolvePreferenceRecursive(&$value, &$preferences)
    {
        return isset($preferences[$value])
            ? $this->resolvePreferenceRecursive($preferences[$value], $preferences)
            : $value;
    }
```

18.2.251 Useless Return

ThinkPHP

Useless Return, in library/think/Request.php:2121.

__set() doesn't need a return, unlike __get().

```
public function __set($name, $value)
    {
```

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```
        return $this->param[$name] = $value;
    }
```

Vanilla

Useless Return, in applications/dashboard/views/attachments/attachment.php:14.

The final 'return' is useless : return void (here, return without argument), is the same as returning null, unless the 'void' return type is used. The other return, is in the two conditions, is important to skip the end of the functioncall.

```
function writeAttachment($attachment) {

        $customMethod = AttachmentModel::getWriteAttachmentMethodName($attachment['Type
↪']);
        if (function_exists($customMethod)) {
            if (val('Error', $attachment)) {
                writeErrorAttachment($attachment);
                return;
            }
            $customMethod($attachment);
        } else {
            trace($customMethod, 'Write Attachment method not found');
            trace($attachment, 'Attachment');
        }
        return;
    }
```

18.2.252 Useless Switch

Phpdocumentor

Useless Switch, in fuel/modules/fuel/libraries/Inspection.php:349.

This method parses comments. In fact, comments are represented by other tokens, which may be added or removed at time while coding.

```
public function parse_comments($code)
    {
            $comments = array();
            $tokens = token_get_all($code);

            foreach($tokens as $token)
            {
                    switch($token[0])
                    {
                            case T_DOC_COMMENT:
                                    $comments[] = $token[1];
                                    break;
                }
            }
            return $comments;
```

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```
    }
```

Dolphin

Useless Switch, in Dolphin-v.7.3.5/inc/classes/BxDolModuleDb.php:34.

$aParams is an argument : this code looks like the switch is reserved for future use.

```
function getModulesBy($aParams = array())
    {
            $sMethod = 'getAll';
        $sPostfix = $sWhereClause = "";

        $sOrderClause = "ORDER BY `title`";
        switch($aParams['type']) {
            case 'path':
                    $sMethod = 'getRow';
                $sPostfix .= '_path';
                $sWhereClause .= "AND `path`='" . $aParams['value'] . "'";
                break;
        }
```

18.2.253 Useless Type Casting

FuelCMS

Useless Type Casting, in fuel/codeigniter/core/URI.php:214.

substr() always returns a string, so there is no need to enforce this.

```
if (isset($_SERVER['SCRIPT_NAME'][0]))
            {
                    if (strpos($uri, $_SERVER['SCRIPT_NAME']) === 0)
                    {
                            $uri = (string) substr($uri, strlen($_SERVER['SCRIPT_NAME
↪']));
                    }
                    elseif (strpos($uri, dirname($_SERVER['SCRIPT_NAME'])) === 0)
                    {
                            $uri = (string) substr($uri, strlen(dirname($_SERVER['SCRIPT_
↪NAME'])));
                    }
            }
```

ThinkPHP

Useless Type Casting, in ThinkPHP/Library/Think/Db/Driver/Sqlsrv.class.php:67.

A comparison always returns a boolean, except for the spaceship operator.

```
foreach ($result as $key => $val) {
                $info[$val['column_name']] = array(
                    'name'    => $val['column_name'],
                    'type'    => $val['data_type'],
                    'notnull' => (bool) ('' === $val['is_nullable']), // not null is␣
↪empty, null is yes
                    'default' => $val['column_default'],
                    'primary' => false,
                    'autoinc' => false,
                );
            }
```

18.2.254 Useless Unset

Tine20

Useless Unset, in tine20/Felamimail/Controller/Message.php:542.

$_rawContent is unset after being sent to the stream. The variable is a parameter, and will be freed at the end of the call of the method. No need to do it explicitly.

```
protected function _createMimePart($_rawContent, $_partStructure)
    {
        if (Tinebase_Core::isLogLevel(Zend_Log::TRACE)) Tinebase_Core::getLogger()->
↪trace(__METHOD__ . '::' . __LINE__ . ' Content: ' . $_rawContent);

        $stream = fopen("php://temp", 'r+');
        fputs($stream, $_rawContent);
        rewind($stream);

        unset($_rawContent);
        //..... More code, no usage of $_rawContent
    }
```

Typo3

Useless Unset, in typo3/sysext/frontend/Classes/Page/PageRepository.php:708.

$row is unset under certain conditions : here, we can read it in the comments. Eventually, the $row will be returned, and turned into a NULL, by default. This will also create a notice in the logs. Here, the best would be to set a null value, instead of unsetting the variable.

```
public function getRecordOverlay($table, $row, $sys_language_content, $OLmode = '')
    {
//....  a lot more code, with usage of $row, and several unset($row)
//...... Reduced for simplicity
```

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```
                    } else {
                        // When default language is displayed, we never want to return a␣
↪record carrying
                        // another language!
                        if ($row[$GLOBALS['TCA'][$table]['ctrl']['languageField']] > 0) {
                            unset($row);
                        }
                    }
                }
            }
        }
        foreach ($GLOBALS['TYPO3_CONF_VARS']['SC_OPTIONS']['t3lib/class.t3lib_page.php']['
↪'getRecordOverlay'] ?? [] as $className) {
            $hookObject = GeneralUtility::makeInstance($className);
            if (!$hookObject instanceof PageRepositoryGetRecordOverlayHookInterface) {
                throw new \UnexpectedValueException($className . ' must implement␣
↪interface ' . PageRepositoryGetRecordOverlayHookInterface::class, 1269881659);
            }
            $hookObject->getRecordOverlay_postProcess($table, $row, $sys_language_
↪content, $OLmode, $this);
        }
        return $row;
    }
```

18.2.255 Var Keyword

xataface

Var Keyword, in SQL/Parser/wrapper.php:24.

With the usage of var and a first method bearing the name of the class, this is PHP 4 code that is still in use.

```
class SQL_Parser_wrapper {

    var $_data;
    var $_tableLookup;
    var $_parser;

    function SQL_Parser_wrapper(&$data, $dialect='MySQL'){
```

18.2.256 Weak Typing

TeamPass

Weak Typing, in includes/libraries/Tree/NestedTree/NestedTree.php:100.

The is_null() test detects a special situation, that requires usage of default values. The 'else' handles every other situations, including when the $node is an object, or anything else. $this->getNode() will gain from having typehints : it may be NULL, or the results of mysqli_fetch_object() : a stdClass object. The expected properties of nleft and nright are not certain to be available.

```
public function getDescendants($id = 0, $includeSelf = false, $childrenOnly = false,
↪$unique_id_list = false)
    {
        global $link;
        $idField = $this->fields['id'];

        $node = $this->getNode($id);
        if (is_null($node)) {
            $nleft = 0;
            $nright = 0;
            $parent_id = 0;
            $personal_folder = 0;
        } else {
            $nleft = $node->nleft;
            $nright = $node->nright;
            $parent_id = $node->$idField;
            $personal_folder = $node->personal_folder;
        }
```

18.2.257 While(List() = Each())

OpenEMR

While(List() = Each()), in library/report.inc:153.

The first while() is needed, to read the arbitrary long list returned by the SQL query. The second list may be upgraded with a foreach, to read both the key and the value. This is certainly faster to execute and to read.

```
function getInsuranceReport($pid, $type = primary)
{
    $sql = select * from insurance_data where pid=? and type=? order by date ASC;
    $res = sqlStatement($sql, array($pid, $type));
    while ($list = sqlFetchArray($res)) {
        while (list($key, $value) = each($list)) {
            if ($ret[$key]['content'] != $value && $ret[$key]['date'] < $list['date']) {
                $ret[$key]['content'] = $value;
                $ret[$key]['date'] = $list['date'];
            }
        }
    }

    return $ret;
}
```

Dolphin

While(List() = Each()), in Dolphin-v.7.3.5/modules/boonex/forum/classes/Forum.php:1875.

This clever use of while() and list() is actually a foreach($a as $r) (the keys are ignored)

```
function getRssUpdatedTopics ()
    {
        global $gConf;

        $this->_rssPrepareConf ();

        $a = $this->fdb->getRecentTopics (0);

        $items = '';
        $lastBuildDate = '';
        $ui = array();
        reset ($a);
        while ( list (,$r) = each ($a) ) {
            // acquire user info
            if (!isset($ui[$r['last_post_user']]) && ($aa = $this->_
↪getUserInfoReadyArray ($r['last_post_user'], false)))
                $ui[$r['last_post_user']] = $aa;

            $td = orca_mb_replace('/#/', $r['count_posts'], '[L[# posts]]') . ' &#183; '␣
↪. orca_mb_replace('/#/', $ui[$r['last_post_user']]['title'], '[L[last reply by #]]') .
↪' &#183; ' . $r['cat_name'] . ' &#187; ' . $r['forum_title'];
```

18.2.258 Written Only Variables

Dolibarr

Written Only Variables, in htdocs/ecm/class/ecmdirectory.class.php:692.

$val is only written, as only the keys are used. $val may be skipped by applying the foreach to array_keys($this->cats), instead of the whole array.

```
// We add properties fullxxx to all elements
            foreach($this->cats as $key => $val)
            {
                    if (isset($motherof[$key])) continue;
                    $this->build_path_from_id_categ($key, 0);
            }
```

SuiteCrm

Written Only Variables, in modules/Campaigns/utils.php:820.

$email_health is used later in the method; while $email_components is only set, and never used.

```
//run query for mail boxes of type 'bounce'
        $email_health = 0;
        $email_components = 2;
        $mbox_qry = "select * from inbound_email where deleted ='0' and mailbox_type =
↪'bounce'";
        $mbox_res = $focus->db->query($mbox_qry);

        $mbox = array();
        while ($mbox_row = $focus->db->fetchByAssoc($mbox_res)) {
            $mbox[] = $mbox_row;
        }
```

18.2.259 Wrong Access Style to Property

HuMo-Gen

Wrong Access Style to Property, in wp-admin/includes/misc.php:74.

lame_binary_path is a static property, but it is accessed as a normal property in the exception call, while it is checked with a valid syntax.

```
protected function wavToMp3($data)
    {
        if (!file_exists(self::$lame_binary_path) || !is_executable(self::$lame_binary_
↪path)) {
            throw new Exception('Lame binary  . $this->lame_binary_path .  does not␣
↪exist or is not executable');
        }
```

18.2.260 Wrong Class Name Case

WordPress

Wrong Class Name Case, in wp-admin/includes/misc.php:74.

This code actually loads the file, join it, then split it again. file() would be sufficient.

```
$markerdata = explode( \n, implode( '', file( $filename ) ) );
```

18.2.261 Wrong Number Of Arguments

xataface

Wrong Number Of Arguments, in actions/existing_related_record.php:130.

df_display() actually requires only 2 arguments, while three are provided. The last argument is completely ignored. df_display() is called in a total of 9 places : this now looks like an API change that left many calls untouched.

```
df_display($context, $template, true);

// in public-api.php :
function df_display($context, $template_name){
    import( 'Dataface/SkinTool.php');
    $st = Dataface_SkinTool::getInstance();

    return $st->display($context, $template_name);
}
```

18.2.262 Wrong Optional Parameter

FuelCMS

Wrong Optional Parameter, in fuel/modules/fuel/helpers/validator_helper.php:78.

The $regex parameter should really be first, as it is compulsory. Though, if this is a legacy function, it may be better to give regex a default value, such as empty string or null, and test it before using it.

```
if (!function_exists('regex'))
{
    function regex($var = null, $regex)
    {
            return preg_match('#'.$regex.'#', $var);
    }
}
```

Vanilla

Wrong Optional Parameter, in applications/dashboard/modules/class.navmodule.php:99.

Note the second parameter, $dropdown, which has no default value. It is relayed to the addDropdown method, which as no default value too. Since both methods are documented, we can see that they should be an addDropdown : null is probably a good idea, coupled with an explicit check on the actual value.

```
/**
     * Add a dropdown to the items array if it satisfies the $isAllowed condition.
     *
     * @param bool|string|array $isAllowed Either a boolean to indicate whether to␣
↪actually add the item
     * or a permission string or array of permission strings (full match) to check.
     * @param DropdownModule $dropdown The dropdown menu to add.
     * @param string $key The item's key (for sorting and CSS targeting).
```

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```
     * @param string $cssClass The dropdown wrapper's CSS class.
     * @param array|int $sort Either a numeric sort position or and array in the style:␣
↪array('before|after', 'key').
     * @return NavModule $this The calling object.
     */
    public function addDropdownIf($isAllowed = true, $dropdown, $key = '', $cssClass = '
↪', $sort = []) {
        if (!$this->isAllowed($isAllowed)) {
            return $this;
        } else {
            return $this->addDropdown($dropdown, $key, $cssClass, $sort);
        }
    }
```

18.2.263 Wrong Parameter Type

Zencart

Wrong Parameter Type, in admin/includes/header.php:180.

setlocale() may be called with null or '' (empty string), and will set values from the environment. When called with 0 (the string), it only reports the current setting. Using an integer is probably undocumented behavior, and falls back to the zero string.

```
$loc = setlocale(LC_TIME, 0);
        if ($loc !== FALSE) echo ' - ' . $loc; //what is the locale in use?
```

18.2.264 Wrong Range Check

Dolibarr

Wrong Range Check, in htdocs/includes/phpoffice/PhpSpreadsheet/Spreadsheet.php:1484.

When $tabRatio is 1001, then the condition is valid, and the ratio accepted. The right part of the condition is not executed.

```
public function setTabRatio($tabRatio)
    {
        if ($tabRatio >= 0 || $tabRatio <= 1000) {
            $this->tabRatio = (int) $tabRatio;
        } else {
            throw new Exception('Tab ratio must be between 0 and 1000.');
        }
    }
```

WordPress

Wrong Range Check, in wp-includes/formatting.php:3634.

This condition may be easier to read as *$diff >= WEEK_IN_SECONDS && $diff < MONTH_IN_SECONDS*. When testing for outside this interval, using not is also more readable : *!($diff >= WEEK_IN_SECONDS && $diff < MONTH_IN_SECONDS)*.

```
} elseif ( $diff < MONTH_IN_SECONDS && $diff >= WEEK_IN_SECONDS ) {
            $weeks = round( $diff / WEEK_IN_SECONDS );
            if ( $weeks <= 1 ) {
                    $weeks = 1;
            }
            /* translators: Time difference between two dates, in weeks. %s: Number of␣
↪weeks */
            $since = sprintf( _n( '%s week', '%s weeks', $weeks ), $weeks );
```

18.2.265 Wrong fopen() Mode

Tikiwiki

Wrong fopen() Mode, in lib/tikilib.php:6777.

This fopen() mode doesn't exists. Use 'w' instead.

```
fopen('php://temp', 'rw');
```

HuMo-Gen

Wrong fopen() Mode, in include/phprtflite/lib/PHPRtfLite/StreamOutput.php:77.

This fopen() mode doesn't exists. Use 'w' instead.

```
fopen($this->_filename, 'wr', false)
```

18.2.266 __DIR__ Then Slash

Traq

__DIR__ Then Slash, in src/Kernel.php:60.

When executed in a path '/a/b/c', this code will require '/a../../vendor/autoload.php.

```
static::$loader = require __DIR__.'../../vendor/autoload.php';
```

18.2.267 __debugInfo() Usage

Dolibarr

__debugInfo() Usage, in htdocs/includes/stripe/lib/StripeObject.php:108.

_values is a private property from the Stripe Class. The class contains other objects, but only _values are displayed with var_dump.

```
// Magic method for var_dump output. Only works with PHP >= 5.6
    public function __debugInfo()
    {
        return $this->_values;
    }
```

18.2.268 error_reporting() With Integers

SugarCrm

error_reporting() With Integers, in modules/UpgradeWizard/silentUpgrade_step1.php:436.

This only displays E_ERROR, the highest level of error reporting. It should be checked, as it happens in the 'silentUpgrade' script.

```
ini_set('error_reporting', 1);
```

18.2.269 eval() Without Try

FuelCMS

eval() Without Try, in fuel/modules/fuel/controllers/Blocks.php:268.

The @ will prevent any error, while the try/catch allows the processing of certain types of error, namely the Fatal ones.

```
@eval($_name_var_eval)
```

ExpressionEngine

eval() Without Try, in system/ee/EllisLab/Addons/member/mod.member_memberlist.php:637.

$cond is build from values extracted from the $fields array. Although it is probably reasonably safe, a try/catch here will collect any unexpected situation cleaningly.

```
elseif (isset($fields[$val['3']]))
                                        {
                                                if (array_key_exists('m_field_id_'.$fields[
↪$val['3']], $row))
                                                {
                                                        $v = $row['m_field_id_'.$fields[$val[
↪'3']]];
```

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```
                                                    $lcond = str_replace($val['3'], "$v",
↪ $lcond);

                                                    $cond = $lcond.' '.$rcond;
                                                    $cond = str_replace("|", "|", $cond);

                                                    eval("$result = ".$cond.";");
```

18.2.270 include_once() Usage

XOOPS

include_once() Usage, in /htdocs/xoops_lib/modules/protector/admin/center.php:5.

Loading() classes should be down with autoload(). autload() may be build in several distinct functions, using spl_autoload_register().

```
require_once dirname(__DIR__) . 'class/gtickets.php'
```

Tikiwiki

include_once() Usage, in tiki-mytiki_shared.php :140.

Turn the code from tiki-mytiki_shared.php into a function or a method, and call it when needed.

```
include_once('tiki-mytiki_shared.php');
```

18.2.271 list() May Omit Variables

OpenConf

list() May Omit Variables, in openconf/author/privacy.php:29.

The first variable in the list(), $none, isn't reused anywhere in the script. In fact, its name convey the meaning that is it useless, but is in the array nonetheless.

```
list($none, $OC_privacy_policy) = oc_getTemplate('privacy_policy');
```

FuelCMS

list() May Omit Variables, in wp-admin/includes/misc.php:74.

$a is never reused again. $b, on the other hand is. Not assigning any value to $a saves some memory, and avoid polluting the local variable space.

```
list($b, $a) = array(reset($params->me), key($params->me));
```

18.2.272 preg_match_all() Flag

FuelCMS

preg_match_all() Flag, in fuel/modules/fuel/helpers/MY_array_helper.php:205.

Using PREG_SET_ORDER will remove the usage of the ``$key``variable.

```
function parse_string_to_array($str)
    {
            preg_match_all('#(\w+)=([\'"])(.*)\2#U', $str, $matches);
            $params = array();
            foreach($matches[1] as $key => $val)
            {
                    if (!empty($matches[3]))
                    {
                            $params[$val] = $matches[3][$key];
                    }
            }
            return $params;
    }
```

18.2.273 preg_replace With Option e

Edusoho

preg_replace With Option e, in vendor_user/uc_client/lib/uccode.class.php:32.

This call extract text between [code] tags, then process it with $this->codedisp() and nest it again in the original string. preg_replace_callback() is a drop-in replacement for this piece of code.

```
$message = preg_replace("/\s*\[code\](.+?)\[\/code\]\s*/ies", "$this->codedisp('\1')",
↪$message);
```

18.2.274 strpos() Too Much

WordPress

strpos() Too Much, in core/traits/Request/Server.php:127.

Instead of searching for `HTTP_`, it is faster to compare the first 5 chars to the literal `HTTP_`. In case of absence, this solution returns faster.

```
if (strpos($header, 'HTTP_') === 0) {
                            $header = substr($header, 5);
                    } elseif (strpos($header, 'CONTENT_') !== 0) {
                            continue;
                    }
```

18.2.275 time() Vs strtotime()

Woocommerce

time() Vs strtotime(), in includes/class-wc-webhook.php:384.

time() would be faster here, as an entropy generator. Yet, it would still be better to use an actual secure entropy generator, like random_byte or random_int. In case of older version, microtime() would yield better entropy.

```
public function get_new_delivery_id() {
            // Since we no longer use comments to store delivery logs, we generate a␣
↪unique hash instead based on current time and webhook ID.
            return wp_hash( $this->get_id() . strtotime( 'now' ) );
    }
```

18.2.276 var_dump()... Usage

Tine20

var_dump()... Usage, in tine20/library/Ajam/Connection.php:122.

Two usage of var_dump(). They are protected by configuration, since the debug property must be set to 'true'. Yet, it is safer to avoid them altogether, and log the information to an external file.

```
if($this->debug === true) {
            var_dump($this->getLastRequest());
            var_dump($response);
        }
```

Piwigo

var_dump()... Usage, in include/ws_core.inc.php:273.

This is a hidden debug system : when the response format is not available, the whole object is dumped in the output.

```
function run()
  {
    if ( is_null($this->_responseEncoder) )
    {
      set_status_header(400);
      @header("Content-Type: text/plain");
      echo ("Cannot process your request. Unknown response format.
Request format: ".@$this->_requestFormat." Response format: ".@$this->_responseFormat."\n
↪");
      var_export($this);
      die(0);
    }
```

CHAPTER

NINETEEN

INSTALLATION

19.1 Summary

- *Requirements*
- *Download exakat.phar*
- *Installation with exakat.phar*
- *Installation on OSX*
- *Installation on Debian/Ubuntu*
- *Installation guide with Composer*
- *Installation guide with Docker*

19.2 Requirements

Here are the requirements to run Exakat.

Basic requirements :

- exakat.phar, the main code.
- Gremlin server : exakat uses this graph database and the Gremlin 3 traversal language. Currently, only Gremlin Server is supported, with the tinkergraph and neo4j storage engine. Version 3.7.x is the recommended version, while version 3.6.x is still supported. Gremlin versions 3.5.# and older are not supported anymore.
- Java 11.x. Java 8.x is still supported, and Java 17 will be supported when Gremlin Server does.
- PHP 8.3 to run. PHP 8.2 is recommended, and PHP 7.4 or older are possible but unsupported. This version requires the PHP extensions curl, openssl, hash, phar, sqlite3, tokenizer, mbstring and json.

Optional requirements :

- PHP 5.2 to 8.4-dev for analysis purposes. Those versions only require the ext/tokenizer extension.
- VCS (Version Control Software), such as Git, SVN, bazaar, Mercurial. They all are optional, though git is recommended, and used as the default VCS.
- Archives, such as zip, tgz, tbz2 may also be opened with optional helpers (See **`Installation guide for optional tools`_**).

OS requirements :

- Exakat has beed tested on OSX, Alpine, Debian and Ubuntu (up to 22.04).

- Exakat should work on Linux distributions, may be with little work.
- Exakat hasn't been tested on Windows, and is unsupported at the moment.

For installation, curl or wget, and zip are needed.

19.3 Download exakat.phar

Download exakat directly from https://www.exakat.io/versions.

This server also provides older versions of Exakat. It is recommended to always download the last version, which is available directly with https://www.exakat.io/versions/index.php?file=latest.

For each version, MD5 and SHA256 signatures are available. The downloaded MD5 must match the one in the related .md5 file. The .md5 also has the version number, for extra check.

Here is a bash script to download and check the archive.

```
curl -O -J 'https://www.exakat.io/versions/index.php?file=latest'

curl -O -J 'https://www.exakat.io/versions/index.php?file=latest.md5'
//9c77eb52c11ee45a93654edd22cf6af8  exakat-2.6.0.phar
md5sum -c exakat-*.md5
// Example :
// exakat-2.6.0.phar: OK

curl -O -J 'https://www.exakat.io/versions/index.php?file=latest.sha256'
//adaa20a0ff1de4caf6484cc1e57079f916ae4b96dac39aa04b9615f4117b5742  exakat-2.6.0.phar
sha256sum -c exakat-*.sha256
// Example :
// exakat-2.6.0.phar: OK

rm exakat-*.md5
rm exakat-*.sha256
mv exakat*.phar exakat.phar
php exakat.phar version // quick check
```

19.4 Installation with exakat.phar

Exakat.phar includes its own installation script, as long as PHP is available. Exakat checks different pre-requisites, and proceed to install the last elements.

Exakat checks for Java and Zip installations. Then, it downloads tinkergraph and the Neo4j plugin from exakat.io and runs the *doctor* command.

The install script is the one displayed on the next section.

You can use the *install* command this way:

```
php exakat.phar install -v
```

After this step, you can go to the tutorials section.

19.5 Installation on OSX

Paste the following commands in a terminal prompt. It downloads Exakat, and installs tinkerpop version 3.7.0. PHP 8.0 or more recent, curl, homebrew are required.

19.5.1 OSX installation with tinkergraph 3.7.0

This is the installation script for Exakat and tinkergraph 3.4.11.

```
mkdir exakat
cd exakat
curl -o exakat.phar 'https://www.exakat.io/versions/index.php?file=latest'
curl -o apache-tinkerpop-gremlin-server-3.7.0-bin.zip 'https://www.exakat.io/versions/
↪externals/apache-tinkerpop-gremlin-server-3.7.0-bin.zip'
unzip apache-tinkerpop-gremlin-server-3.7.0-bin.zip
mv apache-tinkerpop-gremlin-server-3.7.0 tinkergraph
rm -rf apache-tinkerpop-gremlin-server-3.7.0-bin.zip

# Optional : install neo4j engine.
cd tinkergraph
./bin/gremlin-server.sh install org.apache.tinkerpop neo4j-gremlin 3.7.0
cd ..

php exakat.phar doctor
```

19.5.2 OSX installation troubleshooting

It has be reported that installation fails on OSX 10.11 and 10.12, with error similar to 'Error grabbing Grapes'. To fix this, use the following in command line :

```
rm -r ~/.groovy/grapes/
rm -r ~/.m2/
```

They remove some files for grapes, that it will rebuild later. Then, try again the optional install instructions.

19.6 Installation on Alpine

19.6.1 Alpine installation with Tinkergraph 3.7.0

Paste the following commands in a terminal prompt. It installs Exakat most recent version with Tinkergraph 3.7.0.

Pre-requisite: wget, java (default-jre), php8 (mbstring, sqlite3, curl, phar, tokenizer), unzip. Make sure that memory_limit=-1 in the php.ini file, or using '-d memory_limit=-1' in the command line.

```
mkdir exakat
cd exakat
wget -O exakat.phar https://www.exakat.io/versions/index.php?file=latest
wget -O apache-tinkerpop-gremlin-server-3.7.0-bin.zip 'https://www.exakat.io/versions/
↪externals/apache-tinkerpop-gremlin-server-3.7.0-bin.zip'
```

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```
unzip apache-tinkerpop-gremlin-server-3.7.0-bin.zip
mv apache-tinkerpop-gremlin-server-3.7.0 tinkergraph
rm -rf apache-tinkerpop-gremlin-server-3.7.0-bin.zip

# Optional : install neo4j engine.
cd tinkergraph
./bin/gremlin-server.sh install org.apache.tinkerpop neo4j-gremlin 3.7.0
cd ..

php exakat.phar doctor
```

19.7 Installation on Debian/Ubuntu

19.7.1 Debian/Ubuntu installation with Tinkergraph 3.7.0

Paste the following commands in a terminal prompt. It installs Exakat most recent version with Tinkergraph 3.7.0.

Pre-requisite: wget, java (default-jre), php8 (mbstring, sqlite3, curl), unzip.

```
mkdir exakat
cd exakat
wget -O exakat.phar https://www.exakat.io/versions/index.php?file=latest
wget -O apache-tinkerpop-gremlin-server-3.7.0-bin.zip 'https://www.exakat.io/versions/
↪externals/apache-tinkerpop-gremlin-server-3.7.0-bin.zip'
unzip apache-tinkerpop-gremlin-server-3.7.0-bin.zip
mv apache-tinkerpop-gremlin-server-3.7.0 tinkergraph
rm -rf apache-tinkerpop-gremlin-server-3.7.0-bin.zip

# Optional : install neo4j engine.
cd tinkergraph
./bin/gremlin-server.sh install org.apache.tinkerpop neo4j-gremlin 3.7.0
cd ..

php exakat.phar doctor
```

19.8 Installation guide with Composer

19.8.1 Composer installation first run

To install Exakat with composer, you can use the following commands:

```
mkdir exakat
cd exakat
echo '{}' > composer.json
composer require exakat/exakat:2.6.1 --dev
php vendor/bin/exakat install -v
```

The final command checks for the presence of Java and unZip utility. Then, it installs a local copy of a Gremlin server. This is needed to run Exakat.

Now, refer to the tutorial to run exakat.

19.9 Installation guide with Docker

There are several ways to use exakat with Docker. There is an image with the exakat installation, which run with a traditional installation, or inside the audited code.

image:: images/exakat-and-docker.png

19.9.1 Docker image for Exakat with projects folder

Currently, Docker installation only ships with one PHP version (8.2), and with support for git, and zip (downloads).

- Install Docker
- Start Docker
- Pull exakat/exakat:latest

The official docker page is exakat/exakat.

```
docker pull exakat/exakat:latest
```

Check-run exakat :

```
mkdir exakat
cd exakat
docker run -it -v $(pwd)/projects:/usr/src/exakat/projects --rm --name my-exakat exakat/
↪exakat exakat version
docker run -it -v $(pwd)/projects:/usr/src/exakat/projects --rm --name my-exakat exakat/
↪exakat exakat doctor
```

After the last command, there should be an empty 'projects' folder in the 'exakat' folder. With the Docker install, it is possible to analyse code directly inside the code, or with the separate 'projects' folder.

Follow up with the Tutorials.

CHAPTER

TWENTY

UPGRADING

20.1 Upgrading

Upgrade exakat with the *upgrade* command.

php exakat.phar upgrade

Exakat returns the current status :

This needs some updating (Current : 0.9.7c, Latest: 2.1.9)

To make exakat update itself, runs the same command, with the *-u* option. Exakat will then download the file, check the sums, and replace itself.

20.2 Upgrading manually

Exakat is a PHP phar archive. Download the latest version from www.exakat.io and replace it.

20.3 Upgrading gremlin-server

Exakat installs the last version of gremlin at installation time. Usually, there is no need to upgrade the database when upgrading : changing the phar file is sufficient.

However, to enjoy the new features, or keep up to date, it is recommended to upgrade the gremlin server.

To upgrade gremlin-server, remove the old 'tinkergraph' folder from your installation. If exakat was installed following the installation instruction, this folder is located next to *exakat.phar*.

Then, run again the installation instruction, only for gremlin.

CHAPTER

TWENTYONE

CONFIGURATION

21.1 Common Behavior

21.1.1 General Philosophy

Exakat tries to avoid configuration as much as possible, so as to focus on working out of the box, rather than spend time on pre-requisite.

As such, it probably does more work, but that may be dismissed later, at reading time.

More configuration options appear with the evolution of the engine.

21.1.2 Reminder of precedences

The exakat engine read directives from six places, with the following precedence :

1. The command line options
2. The .exakat.ini or .exakat.yaml file at the root of the code
3. The environment variables
4. The config.ini file in the project directory
5. The exakat.ini file in the config directory
6. The default values in the code

The precedence of the directives is the same as the list above.

Some of the directives are only available in some specific configuration locations : they may not have usefulness in every places. See *Option availability*.

21.1.3 Common Options

All options are the same, whatever the command provided to exakat. -f always means files, and -q always means quick.

Any option that a command doesn't understand is ignored.

Any option that is not recognized is ignored and reported (with visibility).

21.2 Engine configuration

Engine configuration is were the exakat engine general configuration are stored. For example, the php binaries or the neo4j folder are there. Engine configurations affect all projects.

21.2.1 Configuration File

The Exakat engine is configured in the 'config/exakat.ini' file.

This file is created with the 'doctor' command, or simply by copying another such file from another installation.

```
php exakat.phar doctor
```

When the doctor can't find the 'config/config.ini' file, it attempts to create one, with reasonable values. It is recommended to use this to create the exakat.ini skeleton, and later, modify it.

21.2.2 Available Options

Here are the currently available options in Exakat's configuration file : config/config.ini

graphdb

The graph database to use. Currently, it may be gsneo4jv3, or tinkergraphv3.

gsneo4j_host

The host to connect to reach the graph database, when using gsneo4j driver. The default value is 'localhost'

gsneo4j_host

The port to use on the host to reach the graph database, when using gsneo4j driver.. The default value is '8182'

gsneo4j_folder

The folder where the code for the graph database resides, when using gsneo4j driver. The default value is 'tinkergraph', and is located near exakat.phar

tinkergraph_host

The host to connect to reach the graph database, when using tinkergraph driver. The default value is 'localhost'

tinkergraph_port

The port to use on the host to reach the graph database, when using tinkergraph driver. The default value is '8182'

tinkergraph_folder

The folder where the code for the graph database resides, when using tinkergraph driver. The default value is 'tinkergraph', and is located near exakat.phar

gsneo4jv3_host

The host to connect to reach the graph database, when using gsneo4jv3 driver. The default value is 'localhost'

gsneo4jv3_port

The host to connect to reach the graph database, when using gsneo4jv3 driver. The default value is '8182'

gsneo4jv3_folder

The folder where the code for the graph database resides, when using gsneo4jv3 driver. The default value is 'tinkergraph', and is located near exakat.phar

tinkergraphv3_host

The host to connect to reach the graph database, when using tinkergraphv3 driver. The default value is 'localhost'

tinkergraphv3_port

The host to connect to reach the graph database, when using tinkergraphv3 driver. The default value is '8182'

tinkergraphv3_folder

The folder where the code for the graph database resides, when using tinkergraphv3 driver. The default value is 'tinkergraph', and is located near exakat.phar

project_rulesets

List of rulesets to be run. The list may include extra rulesets that are not requested by the individual reports. That way, they will be available for the generic reports.

project_rulesets[] = 'Security'

project_reports

The list of reports that produced when running 'project' command, without the -format option. This list may automatically add extra rulesets if a report requires them. For example, the 'Ambassador' report requires 'Security' ruleset, while 'Text' has no pre-requisite.

project_reports contains 'Diplomat', by default.

token_limit

Maximum size of the analyzed project, in number of PHP tokens (excluding whitespace). Use this to avoid running a really long analyze without knowing it.

Default is 1 million (1000000).

php

Link to the PHP binary. This binary is the one that runs Exakat. It is recommended to use PHP 8.0, or 8.1. The same binary may be used with the following options.

php82

Path to the PHP 8.2.x binary. This binary is needed to test the compilation with the 8.2 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php81

Path to the PHP 8.1.x binary. This binary is needed to test the compilation with the 8.1 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php80

Path to the PHP 8.0.x binary. This binary is needed to test the compilation with the 8.0 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php74

Path to the PHP 7.4.x binary. This binary is needed to test the compilation with the 7.4 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php73

Path to the PHP 7.3.x binary. This binary is needed to test the compilation with the 7.3 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php72

Path to the PHP 7.2.x binary. This binary is needed to test the compilation with the 7.2 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php71

Path to the PHP 7.1.x binary. This binary is needed to test the compilation with the 7.1 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php70

Path to the PHP 7.0.x binary. This binary is needed to test the compilation with the 7.0 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php56

Path to the PHP 5.6.x binary. This binary is needed to test the compilation with the 5.6 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php55

Path to the PHP 5.5.x binary. This binary is needed to test the compilation with the 5.5 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php54

Path to the PHP 5.4.x binary. This binary is needed to test the compilation with the 5.4 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php53

Path to the PHP 5.3.x binary. This binary is needed to test the compilation with the 5.3 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php52

Path to the PHP 5.2.x binary. This binary is needed to test the compilation with the 5.2 series or if the analyze should be run with this version (see project's config.ini).

Comment it out if you don't want this version tested. It is not recommended to use this version for the analyze

php_extensions

List of PHP extensions to use when spotting functions, methods, constants, classes, etc.

Default to 'all', which are all the extensions in the exakat installation. Can be set to 'none' to skip any the detection. Use this directive for pecl or external installation.

Write them as an array, to specify more than one value. *php_extensions[] = "ast"; php_extensions[] = "xdebug"; php_extensions[] = "apc";*

When an extension is not recognized, it is ignored.

php_core

List of PHP standard extensions to use when spotting functions, methods, constants, classes, etc.

Default to 'all', which are all the extensions in the exakat installation. That list is related to the extensions available in PHP's default installation.

Write them as an array, to specify more than one value. *php_core[] = "mysqli"; php_core[] = "pcre"; php_core[] = "bcmath";*

When an extension is not recognized, it is ignored.

stubs

List of components, to use when spotting functions, methods, constants, classes, etc.

Default to '' (empty), which are all the none. The current list of

Write them as an array, to specify more than one value. *stubs[] = "monolog/monolog"; php_core[] = "bolt"; php_core[] = "composer/composer";*

When an extension is not recognized, it is searched on exakat.io, and eventually, ignored.

Note : php** configuration may be either a valid PHP binary path, or a valid Docker image. The path on the system may be */usr/bin/php*, */usr/sbin/php80*, or */usr/local/Cellar/php71/7.1.30/bin/php*. The Docker configuration must have the form *abc/def:tag*. The image's name may be any value, as long as Exakat manage to run it, and get the valid PHP signature, with *php -v*. When using Docker, the docker server must be running.

21.2.3 Custom rulesets

Create custom rulesets by creating a 'config/rulesets.ini' directive files.

This file is a .INI file, build with multiple sections. Each section is the name of a ruleset : for example, 'mine' is the name for the ruleset below.

There may be several sections, as long as the names are distinct.

It is recommended to use all low-case names for custom rulesets. Exakat uses names with a first capital letter, which prevents conflicts. Behavior is undefined if a custom ruleset has the same name as a default ruleset.

```
['mine']
analyzer[] = 'Structures/AddZero';
analyzer[] = 'Performances/ArrayMergeInLoops';
```

The list of analyzer in the ruleset is based on the 'analyzer' array. The analyzer is identified by its 'shortname'. Analyzer shortname may be found in the documentation (*Rules* or within the Ambassador report). Analyzers names have a 'A/B' structure.

The list of available rulesets, including the custom ones, is listed with the *doctor* command.

21.3 Check Install

Once the prerequisite are installed, it is advised to run to check if all is found :

php exakat.phar doctor

After this run, you may edit 'config/config.ini' to change some of the default values. Most of the time, the default values will be OK for a quick start.

CHAPTER

TWENTYTWO

COMMANDS

22.1 List of commands :

- *anonymize*
- *baseline*
- *catalog*
- *clean*
- *cleandb*
- *cobble*
- *doctor*
- *help*
- *init*
- *project*
- *report*
- *remove*
- *show*
- *update*
- *upgrade*
- *install*

22.2 anonymize

Read files, directory or projects, and produce a anonymized version of the code. Consistence between variables and names is preserved ($a is always replaced with the same name). PHP language structures, such as eval, isset or unset are preserved, though other native functions are not.

File structure is not preserved : all files are renamed, and the hiearchy is flattented in one folder. As such, code is probably un-runnable if it relies on inclusions.

Non-PHP files, non-lintable or files that produces one PHP token are ignored.

22.2.1 Command

```
exakat anonymize -p <project>
exakat anonymize -d <directory>
exakat anonymize -file <filename>
```

22.2.2 Options

Option	Req	Description
-p	No	Project name. Should be filesystem compatible (avoid /, : or) This takes into account <project> configuration
-d	No	Directory to anonymize. Results aree in <directory>.anon
-file	No	File to anonymize. Results are in <file>.anon
-v	No	Verbose mode

22.2.3 Tips

- *-R* is not compulsory : you may omit it, then, provide PHP files in the *projects/<name>/code* folder by the mean you want.

22.3 baseline

Baseline manage previous audits that may be used as a baseline for new audits.

A Baseline is a previous audit, that has already reviewed the code. It has identified issues and code. Later, after some code modification, a new audit is run. When we want to know the new issues, or the removed ones, it has to be compared to a baseline.

This is a help command, to help find the available values for various options.

22.3.1 Commands

Command	Description
list	List all available baselines. Default action
remove	Removes a baseline, using its name or its auto-id
save	Save the current audit, when it exists, as the last base, with the provided name.

22.4 catalog

Catalog list available rules, rulesets, and reports with the current exakat.

This is a help command, to help find the available values for various options.

22.4.1 Options

Option	Req	Description
-json	No	Returns the catalog as JSON, for further processing.
-yaml	No	Returns the catalog as YAML, for further processing.

22.5 clean

Cleans the provided project of everything except the config.ini and the code.

This is a maintenance command, that removes all produced files and folder, and restores a project to its initial state.

22.5.1 Options

Option	Req	Description
-p	Yes	Project name. Should be an existing project.
-v	No	Verbose mode

22.6 cleandb

Cleans the graph database.

This is a maintenance command, that removes all produced data and scripts, and restores the exakat database to its empty state.

By default, the database is cleaned with graph commands, letting the server do the cleaning.

The -Q option makes the same cleaning with a full restart of the server. This is cleaner, and faster if the database was big or in some instable state.

22.6.1 Options

Option	Req	Description
-Q	No	Cleans the database by restarting it, and removing files.
-stop	No	Stops gremlin server
-start	No	Starts gremlin server, without removing files.
-restart	No	Restarts gremlin server, without removing files.
-v	No	Verbose mode

22.7 cobble

Runs a cobbler on the source code. A cobbler is a set of modifications, to fix or improve the source code.

22.7.1 Options

Option	Req	Description
-P	Yes	The name of the cobbler to run.
-branch	Yes	The name of the branch where the modified code will be written.

22.8 doctor

Check the current installation of Exakat.

22.8.1 Command

```
exakat doctor
```

22.8.2 Results

```
PHP :
    version              : 7.0.1
    curl                 : Yes
    sqlite3              : Yes
    tokenizer            : Yes

java :
    installed            : Yes
    type                 : Java(TM) SE Runtime Environment (build 1.8.0_40-b25)
    version              : 1.8.0_40
    $JAVA_HOME           : /Library/Java/JavaVirtualMachines/jdk1.8.0_40.jdk/Contents/
↪Home

neo4j :
    version              : Neo4j 2.2.6
    port                 : 7474
    authentication       : Not enabled (Please, enable it)
    gremlinPlugin        : Configured.
    gremlinJar           : neo4j/plugins/gremlin-plugin/gremlin-java-2.7.0-SNAPSHOT.jar
    scriptFolder         : Yes
    pid                  : 20895
    running              : Yes
    running here         : Yes
    gremlin              : Yes
    $NEO4J_HOME          : /Users/famille/Desktop/analyze/neo4j
```

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```
folders :
    config-folder        : Yes
    config.ini           : Yes
    projects folder      : Yes
    progress             : Yes
    in                   : Yes
    out                  : Yes
    projects/test        : Yes
    projects/default     : Yes
    projects/onepage     : Yes

PHP 5.2 :
    configured           : No

PHP 5.3 :
    configured           : Yes
    installed            : Yes
    version              : 5.3.29
    short_open_tags      : Off
    timezone             : Europe/Amsterdam
    tokenizer            : Yes
    memory_limit         : -1

PHP 5.4 :
    configured           : Yes
    installed            : Yes
    version              : 5.4.45
    short_open_tags      : Off
    timezone             : Europe/Amsterdam
    tokenizer            : Yes
    memory_limit         : 384M

PHP 5.5 :
    configured           : Yes
    installed            : Yes
    version              : 5.5.30
    short_open_tags      : Off
    timezone             : Europe/Amsterdam
    tokenizer            : Yes
    memory_limit         : -1

PHP 5.6 :
    configured           : /usr/local/sbin/php56
    installed            : Yes
    version              : 5.6.16
    short_open_tags      : Off
    timezone             : Europe/Amsterdam
    tokenizer            : Yes
    memory_limit         : -1

PHP 7.0 :
```

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```
    configured           : Yes
    version              : 7.0.1
    short_open_tags      : Off
    timezone             :
    tokenizer            : Yes
    memory_limit         : -1

PHP 7.1 :
    configured           : Yes
    version              : 7.1.0-dev
    short_open_tags      : Off
    timezone             :
    tokenizer            : Yes
    memory_limit         : 128M

git :
    installed            : Yes
    version              : 2.7.0

hg :
    installed            : Yes
    version              : 3.6.3

svn :
    installed            : Yes
    version              : 1.9.3

bzr :
    installed            : No
    optional             : Yes

composer :
    installed            : Yes
    version              : 1.0.0-alpha11

wget :
    installed            : Yes
    version              : GNU Wget 1.17.1 built on darwin15.2.0.

zip :
    installed            : Yes
    version              : 3.0
```

Tips

- The *PHP* section is the PHP binary used to run Exakat.
- The *PHP x.y* sections are the PHP binaries used to check the code.
- Optional installations (such as svn, zip, etc.) are not necessarily reported if they are not installed.

22.8.3 Options

Option	Req	Description
-p	No	Displays the project-specific configuration. Otherwise, only displays general configuration.
-json	No	Displays the project-specific configuration in json format, to stdout
-v	No	Verbose mode : include helpers configurations
-q	No	Quiet mode : runs doctor, and install checks, but displays nothing. This is useful to automate installation finalization

22.9 help

Displays the help section.

```
php exakat.phar help
```

22.9.1 Results

This displays :

```
[Usage] :   php exakat.phar init -p <Project name> -R <Repository>
            php exakat.phar project -p <Project name>
            php exakat.phar doctor
            php exakat.phar version
```

22.10 init

Initialize a new project.

22.10.1 Command

```
exakat init -p <project> [-R vcs_url] [-git|-svn|-bzr|-hg|-composer|-symlink|-copy|-tgz|-
↪7z|-zip] [-v] [-D]
```

22.10.2 Options

Option	Req	Description
-p	Yes	Project name. Should be filesystem compatible (avoid /, : or)
-R	No	URL to the VCS repository. Anything compatible with the expected VCS.
-git	No	Use git client (also, default value if no clue is given in the VCS URL)
-svn	No	Use SVN client
-bzr	No	Use Bazar client
-hg	No	Use Mercurial (hg) client
-composer	No	Use Composer client
-symlink	No	-R path is symlinked. Directory is never accessed for writing.
-copy	No	-R path is recursively copied.
-zip	No	-R is a ZIP archive, local or remote
-tgz	No	-R is a .tar.gzip archive, local or remote
-tbz	No	-R is a .tar.bz2 archive, local or remote
-rar	No	-R is a .rar archive, local or remote
-7z	No	-R is a .7z archive, local or remote
-v	No	Verbose mode
-D	No	First erase any pre-existing project with the same name

22.10.3 Tips

- *-R* is not compulsory : you may omit it, then, provide PHP files in the *projects/<name>/code* folder by the mean you want.
- Default VCS used is git.
- *-D* removes any previous project before doing the init.
- Archives (zip, tar.gz, tar.bz, 7z, rar, etc.) depends on external tools to unpack them. They depends on PHP to reach the file, locally or remotely.

22.10.4 Examples

```
# Clone Exakat with Git
php exakat.phar init -p exakat -R https://github.com/exakat/exakat.git

# Download Spip with Zip
php exakat init -p spip2 -zip -R http://files.spip.org/spip/stable/spip-3.1.zip

# Download PHPMyadmin,
php exakat.phar init -p pma2 -tgz -R https://files.phpmyadmin.net/phpMyAdmin/4.6.4/
↪phpMyAdmin-4.6.4-all-languages.tar.gz

# Make a local copy of PHPMyadmin,
php exakat.phar init -p copyProject -copy -R projects/phpmyadmin/code/

# Make a local symlink with the local webserver,
php exakat.phar init -p symlinkProject -symlink -R /var/www/public_html
```

22.11 project

Runs a new analyze on a project.

The results of the analysis are available in the *projects/<name>/* folder. *report* and *faceted* are two HTML reports.

22.11.1 Command

```
exakat project -p <project> [-v]
```

22.11.2 Options

Option	Req	Description
-p	Yes	Project name. Should be filesystem compatible (avoid /, : or)
-v	No	Verbose mode

22.12 remove

Destroy a project. All code source, configuration and any results from exakat are destroyed.

22.12.1 Command

```
exakat remove -p <project> [-v]
```

22.12.2 Options

Option	Req	Description
-p	Yes	Project name. Should be filesystem compatible (avoid /, : or)
-v	No	Verbose mode

22.13 show

Displays the the full command line to create an exakat project.

22.13.1 Command

```
exakat show -p <project>
```

22.13.2 Options

Option	Req	Description
-p	Yes	Project name. Should be filesystem compatible (avoid /, : or)

22.14 report

Produce a report for a project.

Reports may be produced as soon as exakat has reach the phase of 'analysis'. If the analysis phase hasn't finished, then some results may be unavailable. Run report again later to get the full report. For example, the 'Uml' report may be run fully as soon as exakat is in analysis phase.

It is possible to extract a report even after the graph database has been cleaned. This allows running several projects one after each other, yet have access to several reports.

22.14.1 Command

```
exakat report -p <project> -format <Format> [-file <file>] [-v]
```

22.14.2 Options

Option	Req	Description
-p	Yes	Project name. Should be filesystem compatible (avoid /, : or)
-v	No	Verbose mode
-forma	No	Which format to extract. Available formats : Devoops, Faceted, FacetedJson, Json, OnepageJson, Text, Uml, Xml Default is 'Text'
-file	No	File or directory name for the report. Adapted file extension is added. Report is located in the projects/<project>/ folder Default is 'stdout', but varies with format.
-T	No	Ruleset's results. All the analyses in this ruleset are reported. Note that the report format may override this configuration : for example Ambassador manage its own list of analyses. Uses this with Text format. Has priority over the -P option
-P	No	Analyzer's results. Only one analysis's is reported. Note that the report format may override this configuration : for example Ambassador manage its own list of analyses. Uses this with Text format. Has lower priority than the -T option

22.14.3 Report formats

All reports are detailed in the ref:*Reports <reports>* section.

Report	Description
Amabassador	HTML format, with all available reports in one compact format.
Devoops	HTML format, deprecated.
Json	JSON format.
Text	Text format. One issue per line, with description, file, line.
Codesniffer	Text format, similar to Codesniffer report style.
Uml	Dot format. All classes/interfaces/traits hierarchies, and grouped by name- spaces.
Xml	XML format.
All	All availble format, using default naming

22.15 update

Update the code base of a project.

22.15.1 Command

```
exakat update -p <project> [-v]
```

22.15.2 Options

Option	Req	Description
-p	Yes	Project name. Should be filesystem compatible (avoid /, : or)
-v	No	Verbose mode

22.16 upgrade

Upgrade exakat itself. By default, this command only checks for the availability of a new version : it doesn't upgrade immediately.

Use -u option to actually replace the current phar archive.

Use -version option to downgrade or upgrade to a specific version.

In case the upgrade command file, you may also download manually the *.phar* from the exakat.io website : www.exakat.io. Then replace the current version with the new one.

22.16.1 Command

```
exakat upgrade
```

22.16.2 Options

Option	Req	Description
-u	Yes	Actually upgrades exakat. Without it, it is a dry run.
-version	No	Select a specific Exakat version and update to it. By default, it upgrades to the latest version, as published on the https://www.exakat.io/ site. Example value : 1.8.8

22.17 Install

Install exakat's graph dependency. This command is an integrated installation script, and it is only accessible once the .phar is downloaded locally.

22.17.1 Command

```
mkdir exakat
cd exakat

// Download exakat.phar, like this, or any other valid means
curl -o exakat.phar https://www.exakat.io/versions/index.php?file=latest
exakat.phar upgrade
```

22.17.2 Options

Option	Req	Description
-u	Yes	Actually upgrades exakat. Without it, it is a dry run.
-version	No	Select a specific Exakat version and update to it. By default, it upgrades to the latest version, as published on the https://www.exakat.io/ site. Example value : 1.8.8

CHAPTER

TWENTYTHREE

FREQUENTLY ASKED QUESTIONS

23.1 Summary

- *I need special command to get my code*
- *Can I checkout that branch?*
- *Can I clone with my ssh keys?*
- *After init, my project has no code!*
- *The project is too big*
- *The report XXX is not available*
- *Java Out Of Memory Error*
- *How can I run a very large project?*
- *Does exakat runs on Java 8?*
- *Where can I find the report*
- *Exakat only produces the default report*
- *Can I run exakat on local code?*
- *Can I run exakat on local code, without git or VCS?*
- *Can I ignore a dir or a file?*
- *Can I audit only one folder in vendor?*
- *Can I run Exakat with PHP 5?*
- *I get the error 'The executable 'ansible-playbook' Vagrant is trying to run was not found'*
- *Can I run exakat on Windows?*
- *Does exakat send my code to a central server?*
- *"cat: write error: Broken pipe" : is it bad?*
- *Require a [gremlin]Argument*

23.2 I need special command to get my code

If Exakat has no documented method to reach your code, you may use this process :

```
php exakat.phar init -p <your project name>
cd ./projects/<your project name>
mkdir code
// here, do whatever it takes to put all your code in 'code' folder
cd -
php exakat.phar project -p <your project name>
```

Send a message on Github.com/exakat/exakat to mention your specific method.

23.3 Can I checkout that branch?

Currently (Version 0.12.2), there is no way to request a tag or a branche or a revision when cloning the code.

The best way is to reach the 'code' folder, and make the change there. Unless with 'init' or 'update', exakat doesn't make any change to the code.

```
php exakat.phar init -p myProject -R url://my/git/repository
cd ./projects/myProject/code
git branch notMasterBranch
cd -
php exakat.phar project -p myProject
```

23.4 Can I clone with my ssh keys?

When using git, or any vcs, the current shell user's SSH keys may be used to access the repository. When using a remote installation, or a docker image, the keys won't be accessible.

The fallback solution is to init an empty project, clone the code from the Shell (with the keys), and then run project.

```
php exakat.phar init -p myProject
cd ./projects/myProject
git clone url://myprivate/git/repository code
cd -
php exakat.phar project -p myProject
```

23.5 After init, my project has no code!

Check in the projects/<name>/config.ini file : if values were provided, you'll find them there.

In case the code was not found during init, then do the following :

```
cd projects/<name>/
git clone ssh://project/URL code
cd -
php exakat.phar files -p <name>
```

If you're using some other method than git, then just collect the code in a 'code' folder in the <name> project and run the 'files' command.

The 'init' command doesn't overwrite an existing project : if the *code* folder is missing, you should add it manually, or remove the project with *remove* command, and use *init* again.

23.6 The project is too big

There is a soft limit in config/exakat.ini, called 'token_limit' that initially prevents analysis of projects over 1 million tokens. That's roughly 125k LOC, more than most code source.

If you need to run exakat on larger sources, you may change this value to make it as large as possible. Then, the physical capacities of the machine, specially RAM, will be the actual limit.

It may be interesting to 'ignore_dir[]', from projects/<name>/config.ini.

23.7 The report XXX is not available

Some reports are available in the community edition, and others are in the cloud/enterprise editions.

The list of available reports are accessible via the command 'catalog', along with the Rules and Rulesets.

```
php exakat catalog
```

23.8 Java Out Of Memory Error

By default, java is allowed to run with 512mb of RAM. That may be too little for the code being studied.

Set the environment variable $JAVA_OPTIONS to give larger quantities of RAM. For example : 'export JAVA_OPTIONS='-Xms1024m -Xmx6096m'; or 'setenv JAVA_OPTIONS='-Xms1024m -Xmx6096m'

Xms is the memory allocation at start, and Xmx is the maximum allocation. With some experimentation, 6G handles the largest

23.9 How can I run a very large project?

Here are a few steps you can try when running exakat on a very large project.

- Update project/<name>/config.ini, and use ignore_dirs[] and include_dirs[] to exclude as much code as possible. Notably, frameworks, data in PHP files, tests, cache, translations, etc.
- Set environment variable $JAVA_OPTIONS to large quantities of RAM : JAVA_OPTIONS='-Xms1024m -Xmx6096m';
- Check that your installation is running with 'gsneo4j' and not 'tinkergraph', in config/exakat.ini.

23.10 Does exakat runs on Java 8?

Exakat itself runs with PHP 7.0+. Exakat runs with a gremlin database : gremlin-server 3.2.x is supported, which runs on Java 8.

Java 9 is experimental, and is being tested. Java 7 used to be working, but is not supported anymore : it may still work, though.

23.11 Where can I find the report

Reports are available after running at least the following commands :

```
php exakat.phar init -p <your project name> -R <code source repo>
php exakat.phar project -p <your project name>
```

The default report is the HTML report, called Ambassador. You'll find it in ./projects/<your project name>/report.

Other reports, build with 'report' command, will also be saved there, with different names.

23.12 Exakat only produces the default report

After a default installation, Exakat builds the Ambassador report. If you want another report, for example Migration80, you have to request it.

```
php exakat.phar report -p <your project name> --format Migration80  -v
```

You may also access other reports, such as Text, which are always available after an audit.

The 'report' command aborts the report build when insufficient rules have been run. At that point, you must configure the report or the rules, in the projects or the server, and run the audit again.

23.13 Can I run exakat on local code?

There are several ways to do that : use symbolic links, make a copy of the source.

```
php exakat.phar init -p <your project name> -R <path/to/the/code> -symlink
php exakat.phar init -p <your project name> -R <path/to/the/code> -copy
php exakat.phar init -p <your project name> -R <path/to/the/code> -git
```

Symlink will branch exakat directly into the code; -copy makes a copy of the code (this means the code will never be updated without manual intervention); git (or other vcs) may also be used with local repositories.

Exakat do not modify any existing source code : it only access it for reading purpose, then works on a separated database. As a defensive security measure, we suggest that exakat should work on a read-only copy of the code.

23.14 Can I run exakat on local code, without git or VCS?

There are several ways to do that : use symbolic links, make a copy of the source.

```
php exakat.phar init -p <your project name> -R <path/to/the/code> -symlink
php exakat.phar init -p <your project name> -R <path/to/the/code> -copy
```

Symlink will branch exakat directly into the code; -copy makes a copy of the code (this means the code will never be updated without manual intervention); git (or other vcs) may also be used with local repositories.

Exakat do not modify any existing source code : it only access it for reading purpose, then works on a separated database. As a defensive security measure, we suggest that exakat should work on a read-only copy of the code.

23.15 Can I ignore a dir or a file?

Yes. After initing a project, open the projects/<project name>/config.ini file, and update the ignore_dir line. For example, to ignore a behat test folder, and to ignore any file called 'license' :

```
ignore_dirs[] = '/behat/';
ignore_dirs[] = 'license';
```

You may also include files, by using the include_dir[] line. Including files is processed after ignoring them, so you may include files in folders that were previously ignored.

23.16 *Can I audit only one folder in vendor?*

You can use ignore_dirs to exclude everything in the source tree, then use include_dirs to include specific folders.

```
# exclude everything
ignore_dirs[] = '/';

# include intended folder
include_dirs[] = '/vendor/exakat';
```

23.17 Can I run Exakat with PHP 5?

It is recommended to run exakat with PHP 7.4 or even 8.0. PHP 7.3 is still possible, though not supported. PHP 7.2 and below won't work (we checked).

Note that you may test your code on PHP 5.x, while running Exakat on PHP 7.4. There are 2 distinct configuration options in Exakat. 'php' is the path to the PHP binary that runs Exakat : this one should be PHP 7.0+. 'phpxx' are the path to the PHP helpers, that are used to tokenized and lint the target PHP code. This is where PHP 5.x may be configured.

```
; where and which PHP executable are available
php   = /usr/local/sbin/php74

php52 =
php53 = /usr/local/sbin/php53
```

(continues on next page)

(continued from previous page)

```
php54 =
php55 =
php56 =
php70 =
php71 =
php72 =
php73 =
php74 =
php80 =
php81 =
```

Above is an example of a exakat configuration file, where Exakat is run with PHP 7.1 and process code with PHP 5.3.

23.18 I get the error 'The executable 'ansible-playbook' Vagrant is trying to run was not found'

This error is displayed when the host machine doesn't have Ansible installed. Install ansible, and try again to provision.

23.19 Can I run exakat on Windows?

Currently, Windows is not supported, though it might be some day.

Until then, you may run Exakat with Vagrant, or with Docker.

23.20 Does exakat send my code to a central server?

When run from the sources, Exakat has everything it needs to fulfill its mission. There is no central server that does the job, and requires the transmission of the code.

When running an audit on the Saas service of Exakat, the code is processed on our servers.

23.21 "cat: write error: Broken pipe" : is it bad?

Exakat currently runs some piped commands, with xargs so as to make some operations parallel. When the following command ends up before the reading all the data from the first command, such a warning is emitted.

It has no impact on exakat's processing of the code.

See also cat: write error: Broken pipe.

23.22 Require a [gremlin]Argument

Running an audit (project command) leads to an error message such as this one :

```
2/2 [==========================================================================>] 100.00%␣
↪00:00:00

Error : The request message was parseable, but the arguments supplied in the message␣
↪were in conflict or incomplete. Check the message format and retry the request. : A␣
↪message with an [eval] op code requires a [gremlin] argument.

===================  SERVER TRACE  =========================
array (
)
==========================================================

on file phar:///exakat-2.1.9/exakat.phar/vendor/brightzone/gremlin-php/src/Connection.
↪php on line 847
```

This happens when exakat couldn't stop the gremlin database. You should take it down manually, then restart the audit. No version update necessary.

Get the process ID with the following command, and then, kill it.

```
ps aux | grep gsneo4jv3.3.4
ps aux | grep gremlin
```

CHAPTER

TWENTYFOUR

GLOSSARY

Here is a list of words, commonly used when using Exakat, with their definitions and their synonyms.

- ***A***

  Analysis
  An *Analysis* is a pattern that may be detected in the code. The analysis has a human-redable description, and a specific implementation.

  AST
  The Abstract Syntax Tree : a representation of the PHP code as a graph. The AST is the first consisten organisation of the PHP tokens, after tokenization.

  Audit
  An *Audit* is the result of a set of Rules being run on a piece of code. The shape of the audit is the *Report*.

- ***B***

  Bug
  A bug is a software malfunction, which leads to undesirable output, including the halt of the execution without results.

- ***C***

  CIT
  Acronym for Class-Interface-Trait. Sometimes, this includes also Enum, as *CITE*. All those structures share the same namespace.

  CITE
  Acronym for Class-Interface-Trait-Enum. Sometimes, this excludes also Enum, as *CIT*.

  Cobbler
  The Exakat command to modify a piece of code.

  CPM
  Acronym for Constant-Property-Method.

- ***D***

  Directive
  A configuration option.

  Dump
  The phase of execution, which prepare the results from the graph database to the data storage for reports.

- ***I***

Initialisation
Set up of a data space by giving it a preset value.

Inventory
The collections of all the different values of a specific type of data, observed or measured. For example, variable names, functioncall frequency, or methods's length.

Issue
The result of an analysis, when an analysis is applied to a code.

- ***L***

Load
The phase of execution, which loads the source code into the central database.

Lint
The PHP execution phase, where the text file is read, and turned into tokens and checked for consistency.

- ***N***

Nullsafe
A nullsafe operator is able to carry a function or fail graciously. In particular, it won't stop the execution with a fatal error. For example, the null-safe operator *?*-> or coalesce *??*

- ***R***

Report
A set of issues, gathered into a consistent format, after running the analysis on the code. A report may include multiple rulesets, and use various format, such as HTML, JSON or Text.

Rule
A synonym for Analysis. This may be more descriptive, and less related to implementation.

Ruleset
A consistent group of analysis, recognizable with a specific name.

- ***S***

Stubs
Stubs are a set of PHP files which provide the methods, classes and interfaces signature for a library or component. The actual code is not provided, as the important information lies in the signature.

- ***T***

Token
The atomic element of information in a PHP script. The PHP code is broken down into tokens, such as 123 or 'if' and then organized in a consisten AST before execution.

CHAPTER

TWENTYFIVE

ANNEX

- Credits
- Contribute
- External links

25.1 Credits

The following people helped in the making of Exakat : installing, coding, suggesting, using, documenting, reporting bugs, pushing us to be better.

- (Buck / Leon)
- (Jent / Jean)
- Gérard Ernaelsten
- Philippe Gamache
- Cyrille Granval
- Eshin Kunishima
- Alexis Van Glasow

25.2 Contribute

Exakat is an Open Source project. It is also organized to collect common knowledge and encode it in its databases.

Here are some suggestions of help you may provide to enhance your own usage of Exakat :

- Suggest PHP extensions that are missing in the list of supported extensions (see *Annex*)
- Suggest new analysis, with examples of target code, and examples of good code
- Suggest missing external services
- Suggest reference article for the documentation, in the section 'See also'
- Suggestion application that may be added to the corpus of codes that we use to validate the analysis
- Provide new names and adjectives for the audit names. We like to include any first name of community members, and non-derogatory adjectives.
- Report installation or usage problems
- Report ambiguity in reports and their documentation

- Suggest interesting Coding reference, like Object Calisthenics, PSR, East-Oriented Programming, etc.
- Translate the documentation into other languages
- Suport Exakat on Windows or other OS
- Recommend article for code conception to be added in the docs
- Suggest public code source for review

Visit us on the [github repository](https://github.com/exakat/php-static-analysis-tools), or the [slack channel](https://www.exakat.io/slack-invitation/).

25.3 External links

List of external links mentioned in this documentation.

- [HttpFoundation] Make sessions secure and lazy #24523
- Ambassador
- Aronduby Dump
- Atif Shahab Qureshi
- Benoit Burnichon
- Brandon Savage
- Carbon
- Carnage
- cat: write error: Broken pipe
- Data structures
- DCDFLIB
- Deprecate and remove INTL_IDNA_VARIANT_2003
- Docker
- Docker image
- download
- Enchant spelling library
- Exakat
- Exakat Cloud
- Exakat SAS
- exakat/exakat
- ext/hash extension
- FAM
- Frederic Bouchery
- George Peter Banyard
- Github.com/exakat/exakat
- global namespace

- graphviz
- Gremlin server
- Holger Woltersdorf
- https://www.exakat.io/versions
- https://www.exakat.io/versions/index.php?file=latest
- ICU
- IERS
- Installing Exakat to monitor several projects []=>
- Internal Constructor Behavior
- Isset Ternary
- Jordi Boggiano
- Judy C library
- libeio
- libmongoc
- Marco Pivetta tweet
- Migration80
- MongoDB driver
- mysqli
- Optimize array_unique()
- original idea
- PHP
- PHP Tags
- plantuml
- PMB
- Povilas Korop
- Prepare for PHP migration with Exakat []=>
- PSR-3
- RabbitMQ AMQP client library
- Refactoring code
- RFC 7159
- RFC 7230
- RFC 822 (MIME)
- RFC 959
- Specification pattern
- Text
- Tutorial 1: Let's learn by example

- V8 Javascript Engine
- Vagrant file
- Vladimir Reznichenko
- www.exakat.io
- YAML Ain't Markup Language

25.4 Training Database

A number of applications are regularly scanned in order to find real life examples of patterns. They are listed here :

- ChurchCRM
- Cleverstyle
- Contao
- Dolibarr
- Dolphin
- Edusoho
- ExpressionEngine
- FuelCMS
- HuMo-Gen
- LiveZilla
- Magento
- Mautic
- MediaWiki
- NextCloud
- OpenConf
- OpenEMR
- Phinx
- PhpIPAM
- Phpdocumentor
- Piwigo
- PrestaShop
- SPIP
- SugarCrm
- SuiteCrm
- TeamPass
- Thelia
- ThinkPHP

- Tikiwiki
- Tine20
- Traq
- Typo3
- Vanilla
- Woocommerce
- WordPress
- XOOPS
- Zencart
- Zend-Config
- Zurmo
- opencfp
- phpMyAdmin
- phpadsnew
- shopware
- xataface