
timeutils Documentation

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Submodules

timeutils.stopwatch module

Stopwatch

class `timeutils.stopwatch.Stopwatch` (*start=False, verbose=False, label=None, logger=None, logger_level=None*)

Provides a set of methods and properties that you can use to accurately measure elapsed time.

Parameters

- **start** (*bool, optional*) – if set to *True*, immediately starts measuring the time (by calling *start()*). By default set to *False*.
- **verbose** (*bool, optional*) – if set to *True*, logs the elapsed time when the *stop()* method is called. By default set to *False*.
- **label** (*str, optional*) – Optional stopwatch label to be included in the log messages (only if *verbose* is *True*).
- **logger** (`logging.Logger`, optional) – logger object for logging stopwatch messages if *verbose* is *True*. If set to *None* (the default), the logger is set to `sys.stdout`.
- **logger_level** (*int, optional*) – logging level as defined in the build-in `logging` package (only if the *logger* object is set).

Examples

Simple time measurement:

```
sw = Stopwatch(start=True)
# code to be measured
sw.stop()
```

Getting the elapsed time:

```
print(sw.elapsed) # hh:mm:ss.ms
print(sw.elapsed.human_str()) # human-readable time
```

Restarting the stopwatch instance:

```
sw.restart()
```

Pausing and resuming the stopwatch:

```
sw.suspend()
# code block not included in the measurement
sw.resume()
```

Using a logger:

```
import logging

logger = logging.getLogger()
logger.setLevel(logging.INFO)
logger.addHandler(logging.FileHandler(filename='example.log'))

sw = Stopwatch(verbose=True, label='Example', logger=logger)
sw.start()
# code to be measured
sw.stop()
```

Note: *Stopwatch* methods are protected against inappropriate calls. It is an error to start or stop a *Stopwatch* object that is already in the desired state.

See also:

Documentation of the *TimeSpan* class.

elapsed

The total elapsed time measured by the current instance.

elapsed_seconds

The total elapsed time in fractions of a second measured by the current instance.

is_running

Indicates whether the *Stopwatch* instance is running.

is_suspended

Indicates whether the *Stopwatch* instance is suspended.

reset()

Stops time interval measurement and resets the *Stopwatch* instance. The time elapsed before reset is set to zero.

restart()

Stops time interval measurement, resets the *Stopwatch* instance, and starts measuring elapsed time. The time elapsed before restart is set to zero.

resume()

Resumes measuring elapsed time after calling *suspend()*.

start()

Starts measuring elapsed time for an interval.

start_time

The time at which the time measurement has been started.

stop()

Stops the time measurement. Returns the total elapsed time measured by the current instance.

stop_time

The time at which the time measurement has been stopped.

suspend()

Pauses the time measurement until the *Stopwatch* instance is resumed or stopped. Returns the total elapsed time measured by the current instance.

Call *resume()* to resume measuring elapsed time.

timeutils.timespan module

TimeSpan

class timeutils.timespan.**TimeSpan**

Bases: *datetime.timedelta*

Represents a time span.

All arguments are optional and default to 0. Arguments may be integers or floats, and may be positive or negative.

As in the base *datetime.timedelta* class, only days, seconds and microseconds are stored internally. Arguments are converted to those units:

- A millisecond is converted to 1000 microseconds.
- A minute is converted to 60 seconds.
- An hour is converted to 3600 seconds.

and days, seconds and microseconds are then normalized so that the representation is unique.

If any argument is a float and there are fractional microseconds, the fractional microseconds left over from all arguments are combined and their sum is rounded to the nearest microsecond using round-half-to-even tiebreaker.

Parameters

- **seconds** (*float, optional*) – number of seconds in the time span.
- **microseconds** (*float, optional*) – number of microseconds in the time span.
- **milliseconds** (*float, optional*) – number of milliseconds in the time span.
- **minutes** (*float, optional*) – number of minutes in the time span.
- **hours** (*float, optional*) – number of hours in the time span.
- **days** (*float, optional*) – number of days in the time span.

__str__

days

Number of days.

human_str (*trim_zeros=True, significant_digits=None*)

Returns a human-readable string representation of the *TimeSpan* object, using time units such as days, hours, minutes, and seconds.

Parameters

- **trim_zeros** (*bool, optional*) – indicates whether the leading zeros in the result should be skipped
- **significant_digits** (*int, optional*) – if set, returns a string representation of a single number with an appropriate time unit and using the specified number of significant figures

Returns human-readable time span

Return type *str*

New in version 0.3.1: The *significant_digits* parameter.

microseconds

Number of microseconds (≥ 0 and less than 1 second).

seconds

Number of seconds (≥ 0 and less than 1 day).

total_hours ()

Total hours in the duration.

total_milliseconds ()

Total milliseconds in the duration.

total_minutes ()

Total minutes in the duration.

total_seconds ()

Total seconds in the duration.

Module contents

A set of methods and classes to accurately measure elapsed time.

See <https://gitlab.com/cmick/timeutils> for more information.

Examples

```
>>> from timeutils import Stopwatch
>>> sw = Stopwatch(start=True)
>>> sw.elapsed_seconds
16.282313108444214
>>> str(sw.stop())
'00:01:30.416'
>>> sw.elapsed_human_str()
'1 min, 30 secs'
```

See also:

Documentation of the *Stopwatch* class.

`timeutils.current_time_millis()`

Returns the difference, measured in milliseconds, between the current time and midnight, January 1, 1970 UTC.

`timeutils.timeit(func, number=1000, repeat=1, args=None, kwargs=None)`

Measures the execution time of the provided function.

Parameters

- **func** (*Callable*) – function to be executed
- **number** (*int*) – number of executions (1000 by default)
- **repeat** (*int*) – indicates the number of times the time is measured; if greater than 1, a list of results is returned.
- **args** (*tuple*, *list*) – positional arguments to be passed to function *func*
- **kwargs** (*dict* [*str*, *Any*]) – keyword arguments to be passed to function *func*

Returns measured time, or list of time measurements if *repeat* > 1

Return type *TimeSpan* or list[*TimeSpan*]

New in version 0.3.0.

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