pryv Documentation

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Contents

CHAPTER 1

Quickstart

If you want to quickly have a server running up so to publish, install and explore packages, you found the right place! This page will guide you in the very first steps of installing and configuring a *pryv* server.

pryv is available on https://pypi.org. Use the following command to install it:

```
pip install pryv
```

Note: If you want to use *pryv* with its integrations to Amazon Web Services, you should install it using the `aws` extra option:

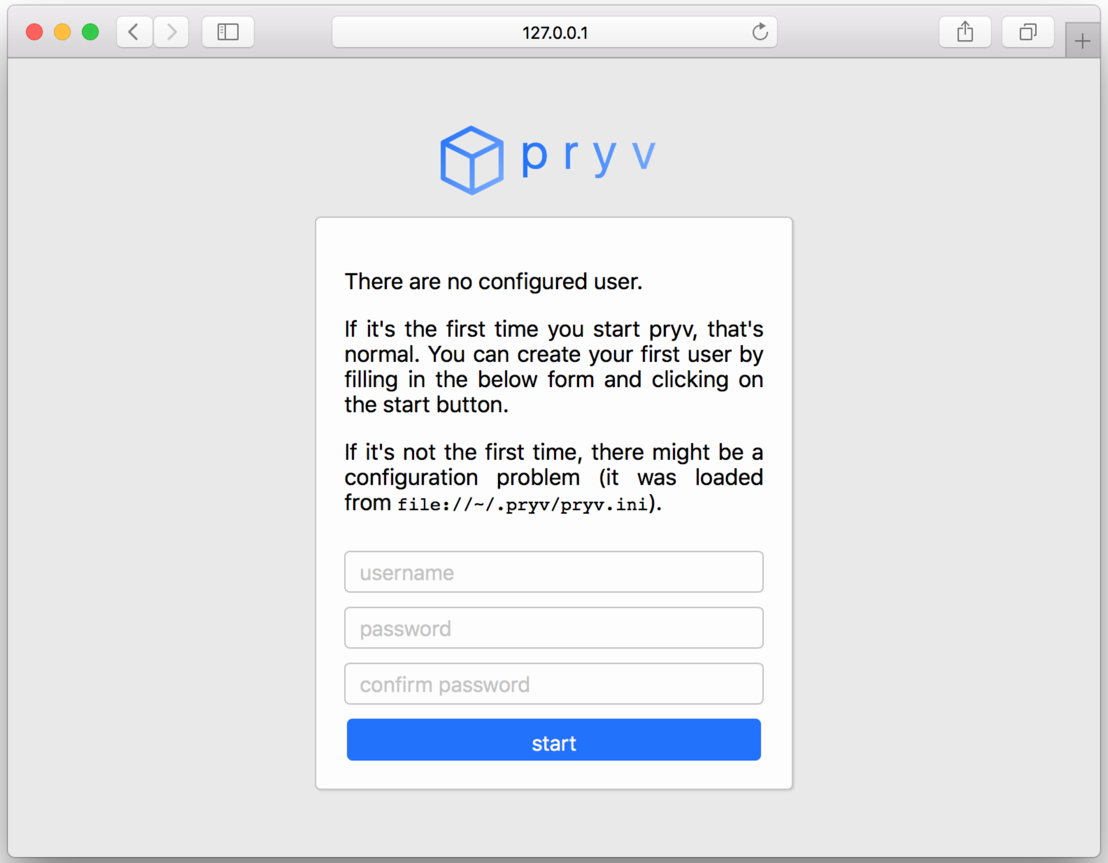
```
pip install pryv[aws]
```

You can as well install *pryv* in a *virtualenv*, however it is not recommended for production environment.

Now that *pryv* is installed on your machine, you can start it by using:

```
pryv start
```

The api and the explorer are then available. Open your browser and navigate to http://127.0.0.1:5555. You should land on pryv's setup interface, that looks like this:

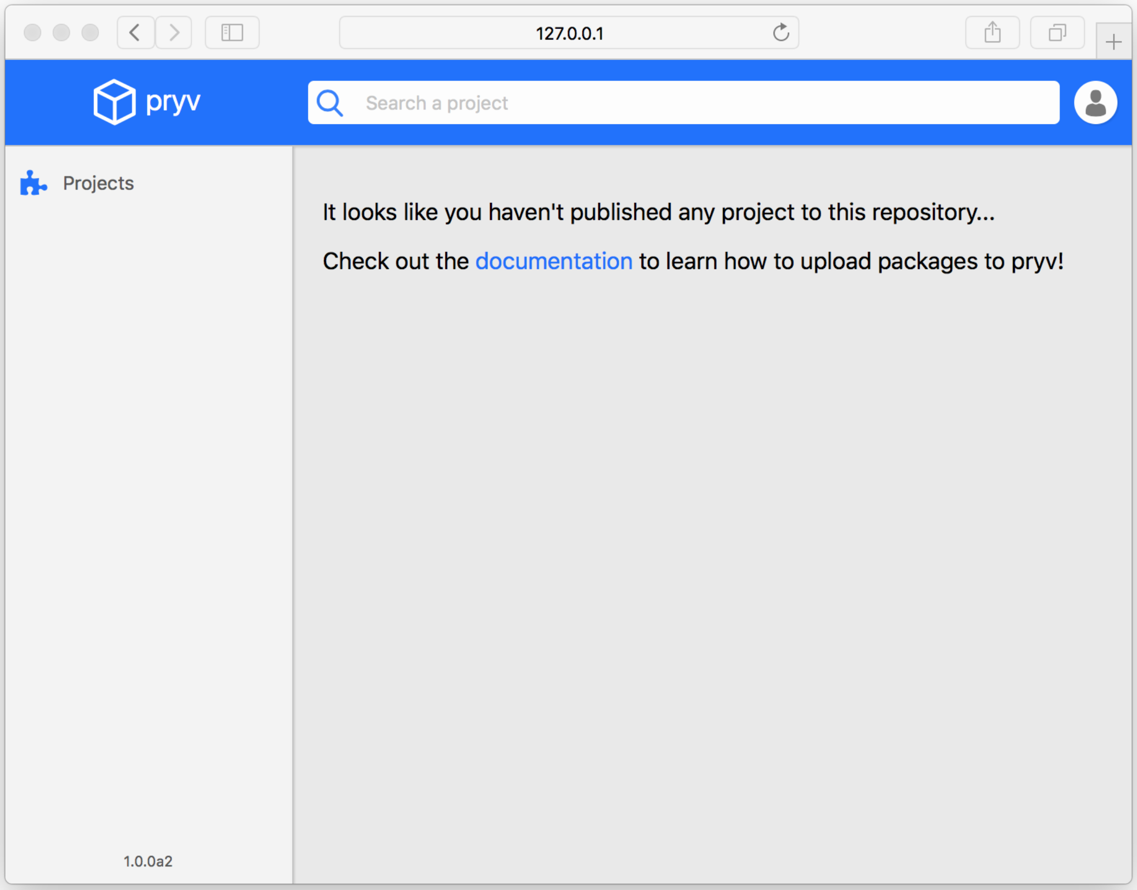


There are no configured user.

If it's the first time you start pryv, that's normal. You can create your first user by filling in the below form and clicking on the start button.

If it's not the first time, there might be a configuration problem (it was loaded from `file://~/.pryv/pryv.ini`).

Once you have filled in the username, password and password confirmation fields, click on the start button. You have just created your first user and *pryv* is now ready for use. You should land on a page that looks like:



It looks like you haven't published any project to this repository...

Check out the documentation to learn how to upload packages to pryv!

As mentioned on the above image, we now recommend you to have a look at the *packages section* in order to read more about how to create projects, upload and install packages to and from your *pryv* server.

You could as well visit the *configuration section* to learn more on how to configure *pryv* to meet your requirements.

CHAPTER 2

Packages

Publishing to your *pryv* server allows you to manage your private projects and packages. It also enables you, and others, to access and install your private libraries and applications while keeping them out of public visibility and use. In this section, you will find details on the core concepts of *pryv* and guides on how to publish and install packages to and from *pryv*.

2.1 Core concepts

The fundamentals behind *pryv* mechanisms are pretty simple. In this section, we provide details on the model used by *pryv* and explain what each entity was designed for and how to manage it.

These were not invented by *pryv*'s **creators**. They are only formalized here, for their use in the context of *pryv*.

2.1.1 Overview

The following figure provides an overview of the different entities and their relation. A detailed description is provided for each of them below.

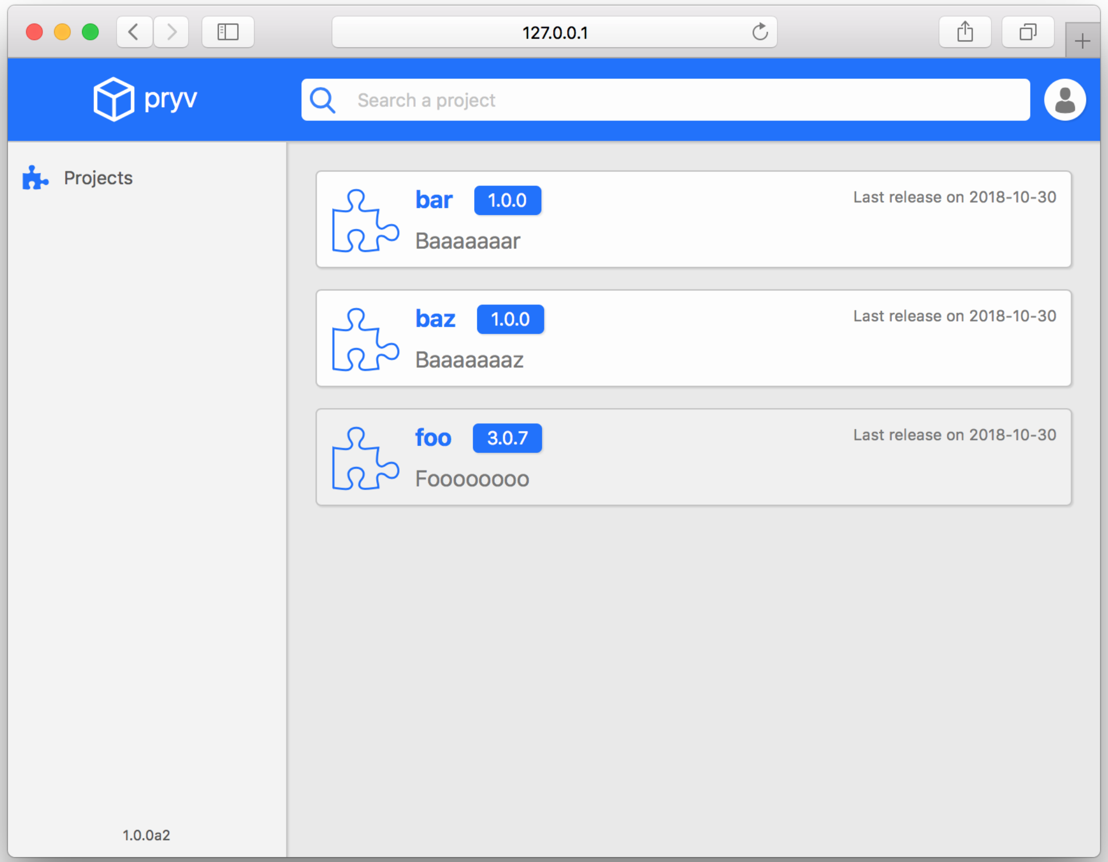
2.1.2 Project

A project is a set of source files that aim at solving a problem. In *pryv*, a project is a collection of releases and is identified by its name.

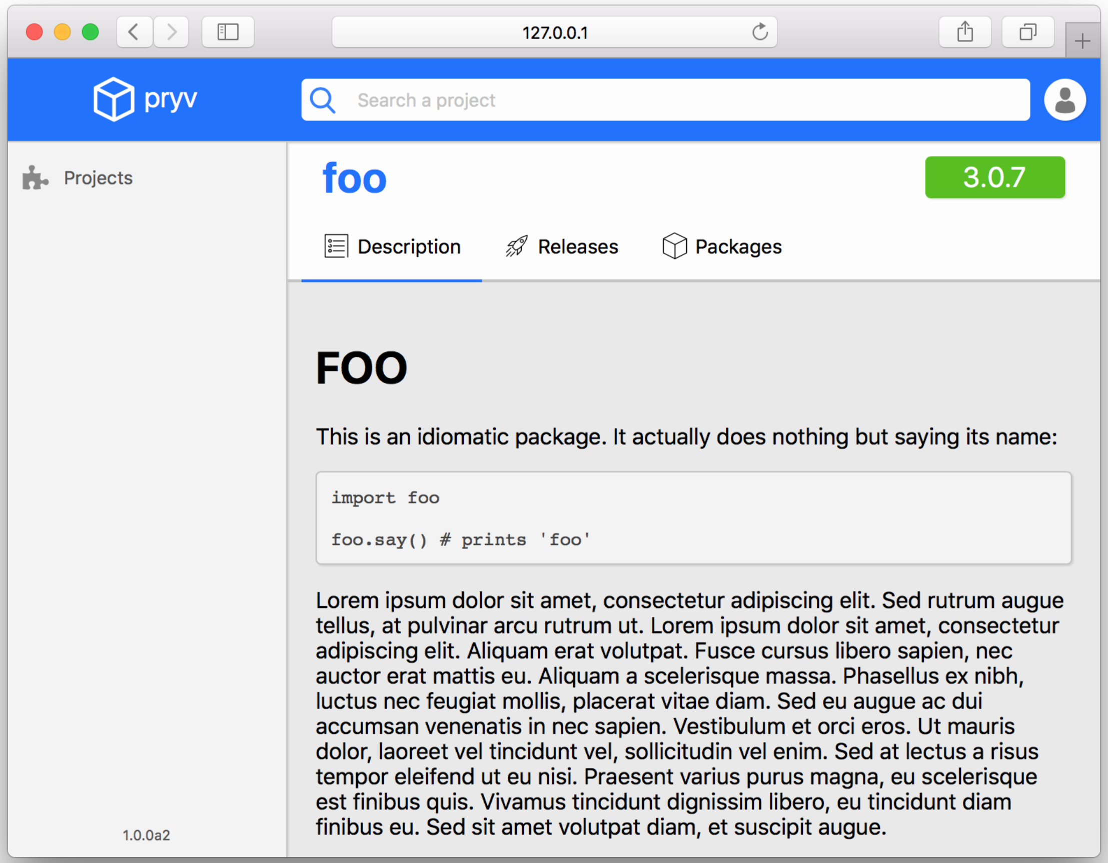
Different projects in *pryv* **must** have different names. The name used by *pryv* to resolve a project is its normalized Python name (see PEP 503 for details). **Hence several projects with names that evaluate to the same normalized name are considered as the same project by** *pryv* (for example `my-project`, `my.project` and `My_Project` all evaluate to the normalized name `my-project` and thus are considered as a single project named `my-project`).

When *uploading a package* to *pryv*, you **automatically** create a project and its associated release.

You can see all projects that were created in your *pryv* server by browsing the explorer to the *projects* page. The following image shows an example:



By clicking on a project you access the project's details:



FOO

This is an idiomatic package. It actually does nothing but saying its name:

```
import foo

foo.say() # prints 'foo'
```

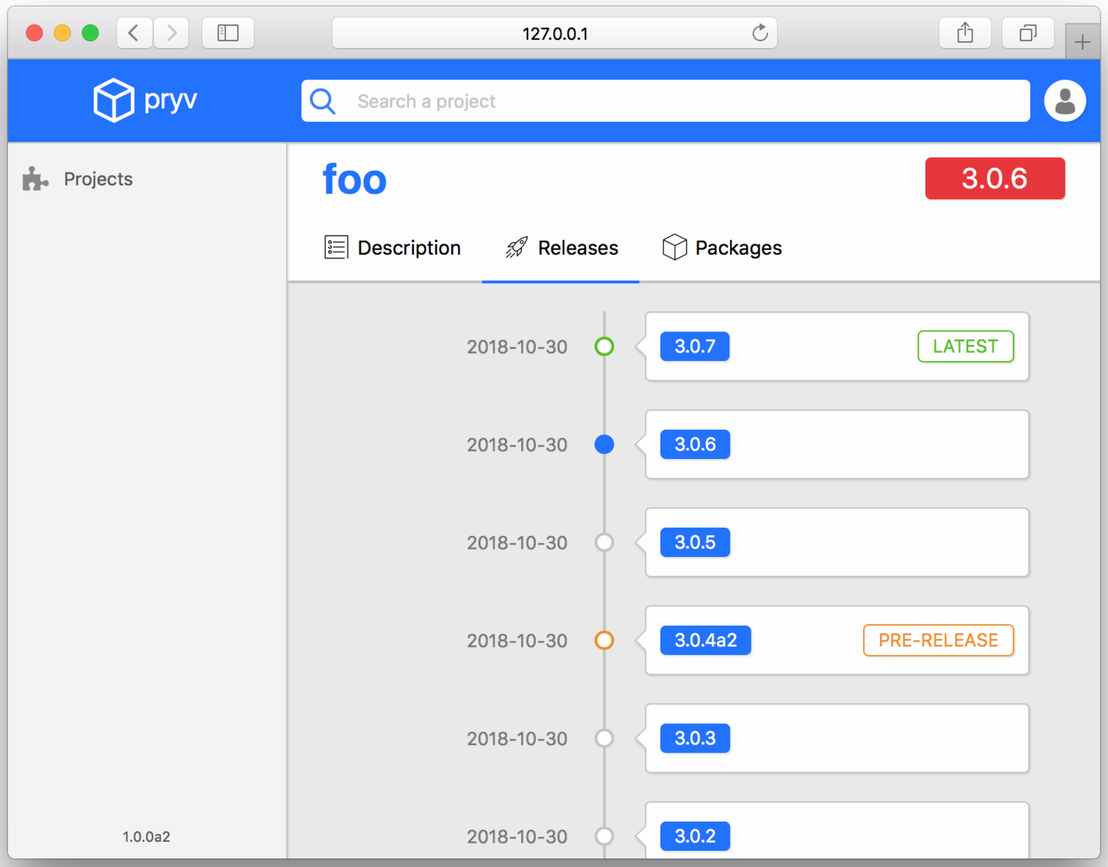
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed rutrum augue tellus, at pulvinar arcu rutrum ut. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aliquam erat volutpat. Fusce cursus libero sapien, nec auctor erat mattis eu. Aliquam a scelerisque massa. Phasellus ex nibh, luctus nec feugiat mollis, placerat vitae diam. Sed eu augue ac dui accumsan venenatis in nec sapien. Vestibulum et orci eros. Ut mauris dolor, laoreet vel tincidunt vel, sollicitudin vel enim. Sed at lectus a risus tempor eleifend ut eu nisi. Praesent varius purus magna, eu scelerisque est finibus quis. Vivamus tincidunt dignissim libero, eu tincidunt diam finibus eu. Sed sit amet volutpat diam, et suscipit augue.

2.1.3 Release

A release is a snapshot of a project at a given time. It is uniquely identified within a project by its version number (see PEP 440 for details).

When *uploading a package* to *pryv*, you **automatically** create a release. The first time you upload a package, you will create a release for a project. Subsequent package uploads will create a new release **only for releases with a new version number** (i.e. only if no release with the same version number exist in *pryv*).

You can see all releases of a project by going to the *Releases* tab of the project's page:



2.1.4 Metadata

Metadata provide information on a release (see PEP 566 for details). They are loaded when *uploading a package* to *pryv*. Subsequent uploads of packages to the same release with different metadata overwrite the original metadata.

Metadata are defined in the `setup.py` file of a project (see something for details). Using a tool, such as Twine or Setuptools, for uploading your packages ensures metadata are correctly provided.

The list of metadata fields supported by *pryv* is:

- `metadata_version`: **Only metadata with version** `2.1` **were tested**. Other versions of metadata are not guaranteed to work.
- `name`: This field is used to determine the name of the project.
- `version`: This field is used to determine the version of the release.
- `summary`
- `description`: This field is used to display the project's description.
- `description_content_type`: This field is used to determine the description's content type. Currently only `text/x-rst` is supported. Other content types might be incorrectly rendered.
- `keywords`

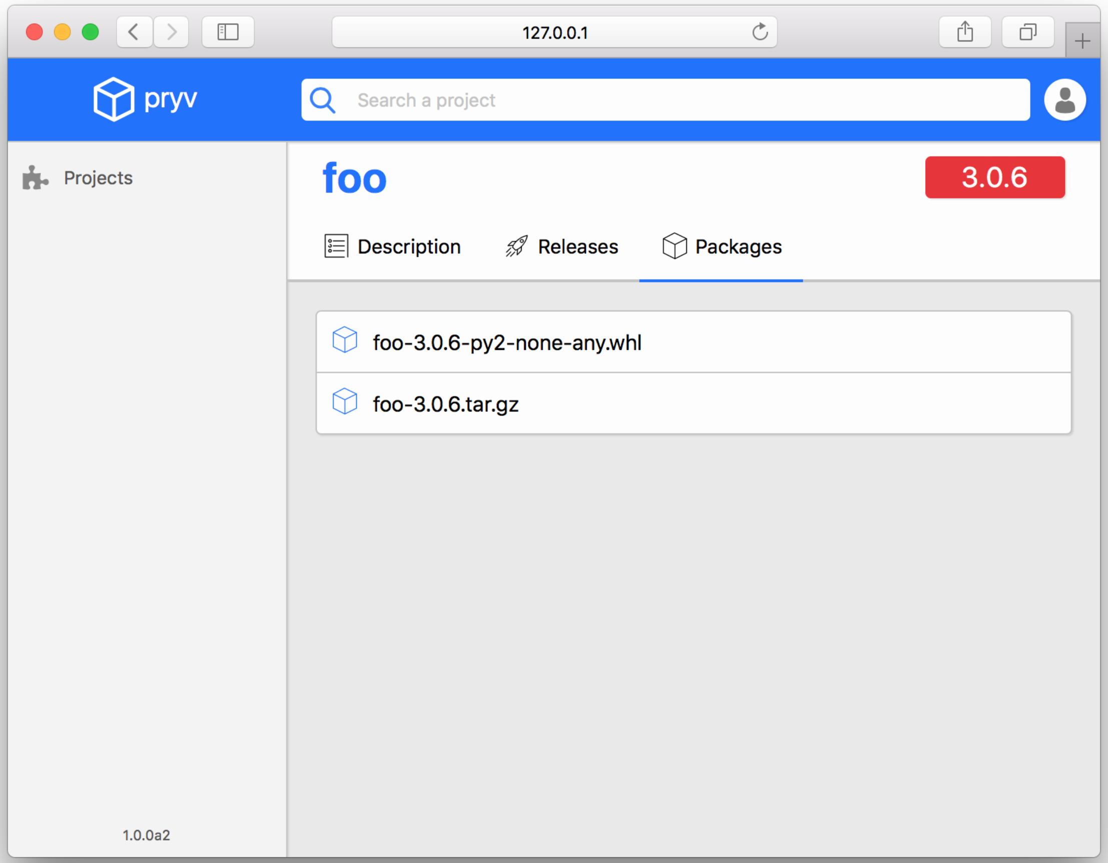
- `home_page`
- `download_url`
- `author`
- `author_email`
- `maintainer`
- `maintainer_email`
- `license`
- `classifiers`
- `requires_dist`
- `requires_python`
- `requires_external`
- `project_url`
- `provides_extra`

2.1.5 Package

A package is a file that contains everything required for others to use a specific release of a project. There might be several packages per project's release. This is up to you.

Read the *uploading* and *using* sections to learn more about how to upload and use packages to and from *pryv*.

You can see all packages that belong to a project's release by going to the *Packages* tab of the project's page:



foo-3.0.6-py2-none-any.whl

foo-3.0.6.tar.gz

2.2 Uploading a package

2.2.1 Prerequisites

pryv expects packaged Python's file to be uploaded. We assume you have basic skills on packaging your code. We only provide a quick overview on how to proceed.

You need to install Setuptools on your machine:

```
pip install --upgrade setuptools
```

You should architecture your project's directory similarly to the following:

```
myproject/
  setup.py
  myproject/
    __init__.py
    other modules...
```

A minimal `setup.py` file looks like the following:

```
from setuptools import setup, find_packages

setup(
    name = 'MyProject',
    version = '1.0.0',
    url = 'https://github.com/me/myproject.git',
    author = 'Me',
    author_email = 'me@gmail.com',
    description = 'Short description of my project',
    packages = find_packages(),
    install_requires = [],
)
```

Now, in order to upload your project to *pryv*, you'll need to package it. You can do the following:

```
python setup.py sdist bdist_wheel
```

Note: To ensure your project's packages to not be published on the public Pypi, you can add the following to your `setup.py`:

```
setup(
    # ...
    classifiers=[
        'Private :: Do Not Upload to pypi server',
    ],
)
```

See also:

- Packages - Python's official documentation
- Packaging Python Projects - Python's official documentation

2.2.2 Uploading a package with Twine

You can upload your packages to *pryv* using Twine.

First, install `setuptools` and `twine`:

```
pip install --upgrade setuptools twine
```

Then you should package your code using `setuptools`. Use the following for both source and wheel distributions:

```
python setup.py sdist bdist_wheel
```

Finally, you upload your freshly built distribution using:

```
twine upload --repository-url http://username:password@127.0.0.1:5555/simple dist/*
```

Alternatively, if you don't want to write the URL to your *pryv* server each time you upload a package, you can use a `.pypirc` configuration file. To do so, create a `.pypirc` file either at the root of your project's directory or in your home directory (i.e. `~/.pypirc`). Set its content to:

```
[distutils]
index-servers =
    pryv

[pryv]
repository = http://127.0.0.1:5555/simple
username =
password =
```

You can now use the following shorthand syntaxes for uploading. If you created the `.pypirc` file at the root of your project's directory:

```
twine upload --config-file .pypirc --repository pryv dist/*
```

Or, if you created a `~/.pypirc` file:

```
twine upload --repository pryv dist/*
```

See also:

- Twine - Project on Pypi
- Twine - Documentation on Read the Docs

2.2.3 Uploading a package with Setuptools

You can also upload your packages to *pryv* by simply using Setuptools:

```
python setup.py sdist bdist_wheel upload --repository pryv
```

Note: In the above example, we assume that a `~/.pypirc` file exists with a `pryv` index server configured, as detailed in the *Twine paragraph*.

Warning: Uploading packages with Setuptools is now deprecated. Use Twine instead.

pryv was tested with Setuptools, but no maintenance is guaranteed on this feature. You should consider using Twine for compatibility.

See also:

- Setuptools - Documentation on Read the Docs
- distutils - Official Python's documentation - The Python Package Index (PyPI)

2.3 Using a package

Using a package uploaded to *pryv* is pretty simple. You will need pip to be installed.

To install a package uploaded to *pryv*, use the following:

```
pip install myproject --index-url http://username:password@127.0.0.1:5555/simple
```

Note: If your *pryv* server is accessed by *HTTPS*, you might consider using:

```
pip install myproject \
--index-url https://username:password@pryv.host.com/simple \
--trusted-host pryv.host.com
```

Alternatively, if you don't want to write the URL to your *pryv* server each time you install a package, you can use a `pip.conf` file located under `~/.pip` (i.e. `~/.pip/pip.conf`). Set its content to:

```
[global]
extra-index-url = https://username:password@pryv.host.com/simple
trusted-host = pryv.host.com
```

Now, you are able to install packages as usual, directly from your *pryv* repository:

```
pip install myproject
```

CHAPTER 3

Users

Users management in *pryv* is done by editing files. You can use either:

- `users.json` (which path can be set using the *user path* option)
- `.htpasswd` (which path can be set using the *htpasswd path* option).

Currently, you can only use either, not both. If the `htpasswd-path` configuration option is set, the `user-path` option will be ignored.

3.1 `users.json`

This is a flat JSON file, with one field per user, its username. Each user entry has one field, the user's password hash (SHA-256).

Its content looks like:

```
{
  "user1": {
    "password": "superlongsha256"
  },
  "user2": {
    "password": "anothersuperlongsha256"
  }
}
```

To add a new user, simply add a new entry to this file.

3.2 `.htpasswd`

This file uses Apache's `.htpasswd` file format (see apache's documentation for details).

Use this file if you want to share your users credentials among several applications using `.htpasswd` files on your machine.

CHAPTER 4

Configuration

pryv can be configured using a configuration file. By default, the configuration is read from `~/.pryv/pryv.ini`, however you can set the path to the configuration path be either using the `PRYV_CONFIG_PATH` environment variable or by setting the `-c`/`--config` option at start-up, i.e.:

```
pryv start -c path/to/pryv.ini
```

The configuration file has the following format:

```
# Comments
[section]
option1 = value1
option2 = value2
```

pryv uses three different sections:

Paths

All paths can be given in several format. For use of the local file system (i.e. the machine *pryv* runs on), you can either use a standard path, or explicitely prefix it with `file://`:

```
/some/absolute/path
file:///some/absolute/path

some/relative/path
file://some/relative/path
```

Relative paths are interpreted as relative to the current working directory.

You can optionally choose to use *pryv*'s integration with Amazon Web Services (AWS), and in particular write and read files to an AWS S3 Bucket. To enable this behavior, make sure you installed *pryv* using the `aws` option (see the *quickstart*). In addition you should configure you credentials for AWS (see AWS - Configuration and Credential Files for details) and ensure your AWS user has the required access level to the AWS S3 Bucket. Using paths prefixed with `s3` will tell *pryv* to save and load files to an AWS S3 Bucket. Paths should look as below:

```
s3://bucket-name/key/to/object
```

where the object can either be a directory or a file.

4.1 Core

This section configures the core of *pryv*: where projects data and packages are stored.

4.1.1 Projects path

This option defines the path to the **directory** where projects data are stored.

Usage

```
[core]
projects-path = file:///path/to/projects
```

Default

```
file://~/.pryv/projects
```

4.1.2 Packages path

This option defines the path to the **directory** where packages are stored.

Usage

```
[core]
packages-path = file:///path/to/packages
```

Default

```
file://~/.pryv/packages
```

4.2 User

This section configures the path to the files were users data are loaded from. These files are used to load authentication data.

4.2.1 Users path

This option defines the path to the **file** where users data are stored.

Note: If the `htpasswd-path` option is set, this option is not used.

Warning: The users file contains sensitive data (username and password hash). Make sure its location is safe.

Usage

```
[user]
users-path = file:///path/to/users.json
```

Default

```
file://~/.pryv/users.json
```

4.2.2 `.htpasswd` path

This option defines the path to the `.htpasswd` where users credentials are stored. Use this option if you want to share the credentials among different servers on the same machine. The file at the configured path is expected to be `.htpasswd` file that meets the required format (see apache's documentation for details).

Usage

```
[user]
htpasswd-path = file:///path/to/.htpasswd
```

Default: None

4.3 Server

This section configures the server's options.

4.3.1 Host

This option defines the host name the server listens to. By default, it is set such that the server only listens for requests from the same machine (i.e. `127.0.0.1`). Set its value to `0.0.0.0` to listen to everyone.

Usage

```
[server]
host = 123.234.123.234
```

Default

```
127.0.0.1
```

4.3.2 Port

This options defines the port the server listens to.

Usage

```
[server]
port = 1234
```

Default

```
5555
```

4.3.3 Secret key

This option defines the secret key used by the explorer to sign cookies.

Usage

```
[server]
secret-key = super-secret-key
```

Default: By default, the server generates a new random secret key each time you start it. It uses the host operating system's `urandom` function.

Note: Generating a new random secret key at each start up means all old sessions are obsolete. The users will have to login again.

4.3.4 Debug

This option defines whether the server should show logs or not. If set, logs will be shown on request.

Usage

```
[server]
debug = true
```

Default: None

CHAPTER 5

Reference

> **Warning:** This section is not meant for *pryv*'s users, but targets developers.

This section provides with the reference for *pryv*'s **internals**.

5.1 `pryv.core`

This package defines the core modules of pryv. Those are related to projects and packages management.

5.1.1 `pryv.core.project`

This module defines the `Project` class and functions related to project retrieval or creation.

class `pryv.core.project.`**`Project`**(*name*)

Bases: `object`

This class defines a project.

It uses lazy loading for the `packages` and `releases` attributes.

`__init__`(*name*)

Creates a new instance of a project.

Parameters **`name`** (`str`) – The name of the project.

`add_package`(*package*)

Adds a package to the project.

Parameters **`package`** (`Package`) – The package.

`add_release`(*metadata*)

Adds a release with the given metadata to the project.

Parameters **`metadata`** (*`Metadata`*) – The metadata of the release.

Returns The added release.

Return type *`Release`*

`latest_release`
The latest release of the project.

Returns The release.

Return type *`Release`*

`normalized_name`
The project's normalized name.

Returns The normalized name.

Return type `str`

`packages`
The packages of the project.

Returns The packages.

Return type `list`

`releases`
The releases of the project.

Returns The releases.

Return type `list`

`url`
The URL to the project.

Returns The URL.

Return type `str`

`pryv.core.project.`**`create`**`(`*metadata*`)`
Creates a project with the given metadata.

Parameters **`metadata`** (*`pryv.core.metadata.Metadata`*) – The metadata of the project.

Returns The created project.

Return type *`Project`*

`pryv.core.project.`**`find`**`(`*name=None*, *normalized_name=None*`)`
Finds the project with the given name or normalized name.

Parameters

- **`name`** (`str`) – The name of the project.
- **`normalized_name`** (`str`) – The normalized name of the project.

Returns The project if found; `None` otherwise.

Return type *`Project`* or `None`

`pryv.core.project.`**`find_all`**`()`
Finds all projects.

Returns A list of projects.

Return type `list`

5.1.2 `pryv.core.release`

This module defines the *`Release`* class.

A release is equivalent to a version of a project. It can contain several packages.

class `pryv.core.release.`**`Release`**(*name*, *project_name*)

Bases: `object`

This class defines a release of a project.

It uses lazy loading for the `timestamp`, `metadata` and `packages` attributes.

`__init__`(*name*, *project_name*)

Creates a new instance of a release.

Parameters

- **`name`** (`str`) – The name of the release (its vernum).
- **`project_name`** (`str`) – The name of the project.

`add_package`(*package_name*, *package_stream*, *package_hash*)

Adds a package to the release.

Parameters

- **`package_name`** (`str`) – The name of the package.
- **`package_stream`** (`stream`) – The stream of the package.
- **`package_hash`** (`dict`) – The dictionary of hash of the package.

Returns The package if successful; `None` otherwise.

Return type *`Package`*

`html_description`

The HTML description of the package.

Returns The HTML description.

Return type `str`

`metadata`

The metadata of the release.

Returns The metadata.

Return type *`Metadata`*

`packages`

The packages of the release.

Returns The packages.

Return type `list`

`save`(*new_metadata=None*)

Saves the release to the filesystem.

If the `new_metadata` parameter is given, this method saves the release with the given one; otherwise, it saves the release with the already stored metadata on the file system.

Parameters **`new_metadata`** – The new metadata.

Type *`Metadata`*

timestamp
The timestamp of the release.

Returns The timestamp.

Return type `datetime.datetime`

5.1.3 `pryv.core.metadata`

This module defines the *Metadata* class.

Metadata describe a release of a project.

See also:

PEP 566 – Metadata for Python Software Packages 2.1 | Python.org Official python's documentation for a packages metadata.

class `pryv.core.metadata.`**Metadata**(*fields*)
Bases: `object`

This class defines the metadata of a project.

__init__(*fields*)
Creates a new instance of a metadata object.

Parameters **fields** (`dict`) – The fields of the metadata.

static deserialize(*raw*)
Deserializes a raw dictionary into an instance of metadata.

Parameters **raw** (`dict`) – The raw dictionary to deserialize.

Returns An instance of metadata.

Return type *Metadata*

serialize()
Serializes the metadata to a dictionary.

Returns A serialized package.

Return type `dict`

`pryv.core.metadata.`**parse**(*raw*)
Parses the given raw object into a metadata instance.

Parameters **raw** – The raw object to parse.

Returns An instance of metadata.

Return type *Metadata*

5.1.4 `pryv.core.package`

This module defines the *Package* class.

A package is a file that contains a distribution. It is linked to a release of a project.

class `pryv.core.package.`**Package**(*name*, *file_hash=None*, *file_size=None*)
Bases: `object`

This class defines a package of a project's release.

`__init__`(*name*, *file_hash=None*, *file_size=None*)
Creates a new instance of a package.

Parameters

- **`name`** (`str`) – The name of the package (its file name).
- **`file_hash`** (`str`) – The hash of the package's file (its SHA256 digest).
- **`file_size`** (`int`) – The size of the package's file (the number of bytes).

`static deserialize`(*raw*)
Deserializes a raw dictionary into an instance of a package.

Parameters **`raw`** (`dict`) – The raw dictionary to deserialize.

Returns An instance of a package.

Return type *`Package`*

`exists`
Gets a value indicating whether the package exists or not.

Returns `True` if the package exists; `False` otherwise.

Return type `bool`

`file`
Gets the file of the package.

Returns The file of the package.

Return type `File`

`save`(*file_stream*, *file_hash*)
Saves the package.

Depending on the tool used to upload the package (e.g. setuptools, twine), the provided hash might differ. In some situations only md5 might be available (setuptools), in others both md5 and sha256 are available (twine). In any cases, this method computes the hash and check their digest for each provided hash name and value. *Note that if no hash is provided (i.e. an empty dictionary is provided), no hash check is performed.*

Parameters

- **`file_stream`** (`File`) – The byte stream of the package's file.
- **`file_hash`** (`dict`) – The hash map of the package's file.

`serialize`()
Serializes the package to a dictionary.

Returns A serialized package.

Return type `dict`

`url`
The URL to the package.

Returns The URL.

Return type `str`

`pryv.core.package.`**`find`**(*name*)
Finds a package by its name.

Parameters **`name`** (`str`) – The name of the package.

Returns The package if found; `None` otherwise.

Return type *`Package`* or `None`

5.2 `pryv.user`

This module defines users related functions. In particular, it defines the functions used to authenticate a user.

class `pryv.user.`**`User`**(*name*)

Bases: `object`

This class defines a user.

`__init__`(*name*)

Creates a new instance of a user.

Parameters **`name`** (`str`) – The name of the user.

`pryv.user.`**`authenticate`**(*username*, *password*)

Authenticates the user with the given name and password.

Parameters

- **`username`** (`str`) – The name of the user.
- **`password`** (`str`) – The password.

Returns `True` if the pair user name / password is valid; `False` otherwise.

Return type `bool`

`pryv.user.`**`count`**()

Counts the number of configured users.

Returns The number of users.

Return type `int`

`pryv.user.`**`create`**(*username*, *password*)

Creates a new user and returns it.

Parameters

- **`username`** (`str`) – The name of the user.
- **`password`** (`str`) – The password of the user.

Returns The instance of the user.

Return type *`User`*

`pryv.user.`**`find`**(*username*)

Finds the user with the given name.

Parameters **`username`** (`str`) – The name of the user.

Returns The instance of the user if found; `None` otherwise.

Return type *`User`*

`pryv.user.`**`get_current`**()

Gets the current logged in user.

Warning: This function works only in a Flask environment, with an already existing session.

Returns The current logged in user or `None`.

Return type *`User`* or `None`

5.3 `pryv.api`

This package defines the API controllers.

`pryv.api.`**`mount`**`(`*app*`)`
Mounts the API onto the given Flask instance.

Parameters **`app`** (`flask.Flask`) – The Flask instance.

5.3.1 `pryv.api.simple`

This module defines the controller for the simple API. The simple API enables package manager to explore projects in the repository and upload new packages.

See also:

PEP 503 – Simple Repository API | Python.org Official python's documentation for the simple API.

`pryv.api.simple.`**`get_simple_index`**`(`**args*, ***kwargs*`)`
Gets the index of all available projects.

`pryv.api.simple.`**`get_simple_project`**`(`**args*, ***kwargs*`)`
Gets the index of a project.

Parameters **`project_normalized_name`** (`str`) – The normalized project name.

`pryv.api.simple.`**`post_simple_index`**`(`**args*, ***kwargs*`)`
Posts a new package.

5.3.2 `pryv.api.package`

This module defines the controller for the packages API. The packages API enables package managers to download packages from the repository.

`pryv.api.package.`**`get_package`**`(`**args*, ***kwargs*`)`
Gets the package with the given name from the project with the given name.

Parameters **`package_name`** (`str`) – The name of the package.

5.4 `pryv.explorer`

This packages defines the explorer.

The explorer is the web application that enables users to browse through the repository. It uses a Flask application to handle the HTTP routing. It uses Jinja and templates located in `templates/admin` to render the served HTML. In addition, resources located in `static` are used to enhance the application. Both styles (in `static/styles`) and Javascript scripts (in `static/scripts`) are used.

pryv.explorer.**mount**(*app*)

Mounts the explorer onto the given Flask instance.

Parameters **app** (flask.Flask) – The Flask instance.

5.4.1 pryv.explorer.auth

This module defines the authentication functions and routes.

pryv.explorer.auth.**get_login**()

Gets the login page.

pryv.explorer.auth.**get_logout**()

Gets the logout. This route destroys the session and logs out the user. Finally, it redirects the user to the login page.

pryv.explorer.auth.**mount**(*app*)

Mounts the authentication controller onto the given Flask instance.

Parameters **app** (flask.Flask) – The Flask instance.

pryv.explorer.auth.**post_login**()

Handles the post of the login's form. If the login is successful, redirects to the projects page after creating a session.

pryv.explorer.auth.**requires_auth**(*func*)

Decorates the given function as requiring the user to be authenticated. If the user is authenticated, this decorator passes the call through; however, if the user is not authenticated, this decorator redirects the user to the login page.

Parameters **func** (function) – The function (route) to decorate.

Returns A decorated function.

Return type function

5.4.2 pryv.explorer.project

This module defines the routes to view the projects and their details.

pryv.explorer.project.**get_project**(*project_normalized_name*, *release_name*)

Gets the project's page for the given release name. This route is a shortcut to the page with detailed information on a project with the description tab open.

Parameters

- **project_normalized_name** (str) – The project's normalized name.
- **release_name** (str) – The name of the release to view.

pryv.explorer.project.**get_project_default**(*project_normalized_name*)

Gets the default project's page. This route is a shortcut to the page with detailed information on a project. It sets the release name to latest.

Parameters **project_normalized_name** (str) – The project's normalized name.

pryv.explorer.project.**get_project_tab**(**_args*, ***_kwargs*)

Gets the project's page for the given release name, with the tab with the given name open.

Parameters

- **project_normalized_name** (str) – The project's normalized name.

- **release_name** (`str`) – The name of the release to view.
- **tab_name** (`str`) – The name of the tab.

`pryv.explorer.project.`**`get_projects`**(**_args*, ***_kwargs*)
Gets the main projects page.

`pryv.explorer.project.`**`mount`**(*app*)
Mounts the project controller onto the given Flask instance.

Parameters **app** (`flask.Flask`) – The Flask instance.

`pryv.explorer.project.`**`post_projects`**(**_args*, ***_kwargs*)
Posts a search to the projects page. This route is used to handle use of the project's search bar from another page than the main projects page.

5.4.3 `pryv.explorer.setup`

This module defines the routes to view the setup at the user's first visit.

`pryv.explorer.setup.`**`get_setup`**()
Gets the setup page.

`pryv.explorer.setup.`**`mount`**(*app*)
Mounts the setup controller onto the given Flask instance.

Parameters **app** (`flask.Flask`) – The Flask instance.

`pryv.explorer.setup.`**`post_setup`**()
Handles for submission from the setup page.

5.5 `pryv.proxy`

This module defines proxy access functions to file storage. It enables manipulating files in the local file system and AWS S3 in a unified way.

`pryv.proxy.`**`ensure_directory`**(**paths*)
Gets a file system proxy to the given root path and ensures it is a directory.

Parameters **paths** (`str`) – The components of the root path.

Returns A file system proxy.

Return type *`FileSystemProxy`*

`pryv.proxy.`**`ensure_file`**(**paths*, ***kwargs*)
Gets a file system proxy to the given root path and ensures it is a file.

Parameters

- **paths** (`str`) – The components of the root path.
- **content** (`str` or `None`) – The content of the file (if the file didn't exist).

Returns A file system proxy.

Return type *`FileSystemProxy`*

`pryv.proxy.`**`get`**(**paths*)
Gets a proxy to the root path.

Parameters **paths** (`str`) – The components of the root path.

Returns A file system proxy.

Return type *FileSystemProxy* or `None`

5.5.1 `pryv.proxy.base`

This module defines the *FileSystemProxy* and *FileProxy* classes. These are the base classes for the file proxies.

class `pryv.proxy.base.`**`FileProxy`**

Bases: `object`

This class defines a file proxy.

A file proxy enables to manipulate files located on the local system or on an AWS S3 bucket in the same manner.

`__init__``()`

Creates a new file proxy.

`read``(`*size=0*`)`

Reads data from the file proxy.

> **Warning:** To override.

Parameters **`size`** (`int`) – The number of bytes to read.

Returns Data read.

`readline``()`

Reads a line of data from the file proxy.

> **Warning:** To override.

Returns Data read.

`write``(`*data*`)`

Writes data to the file proxy.

> **Warning:** To override.

Parameters **`data`** – The data to write.

class `pryv.proxy.base.`**`FileSystemProxy`**

Bases: `object`

This class defines a file system proxy.

A file system proxy enables interacting files located on different storage in an unified manner.

`__init__``()`

Creates a new abstract file system proxy.

`exists`(**paths*, ***kwargs*)
Gets a value indicating whether the file at the given path exists or not.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path to the file.

Type path: `str`

Returns `True` if the path targets a file that exist; `False` otherwise.

Return type `bool`

`is_directory`(**paths*, ***kwargs*)
Gets a value indicating whether the file at the given path is a directory or not.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path to the file.

Type path: `str`

Returns `True` if the path targets a directory; `False` otherwise.

Return type `bool`

`is_file`(**paths*, ***kwargs*)
Gets a value indicating whether the file at the given path is a file or not.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path to the file.

Type path: `str`

Returns `True` if the path targets a file; `False` otherwise.

Return type `bool`

`list_directories`(**paths*, ***kwargs*)
Lists the directories located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters

- **`path`** – The path.
- **`exclude`** (`list`) – A list of directory names to exclude.

Type path: `str`

Returns A list of directory names.

Return type `list`

`list_files`(**paths*, ***kwargs*)
Lists the files located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters

- **`path`** – The path to the file.
- **`exclude`** (`list`) – A list of file names to exclude.

Type path: `str`

Returns A list of file names.

Return type `list`

`make_directory`(**paths*, ***kwargs*)
Creates a directory at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path.

Type path: `str`

`open_file`(**paths*, ***kwargs*)
Opens the file located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters

- **`path`** – The path to the file.
- **`mode`** (`str`) – The opening mode (`r` or `w`).

Type path: `str`

Returns A file instance.

Return type *`FileProxy`*

`remove_file`(**paths*, ***kwargs*)
Removes the file located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path to the file.

Type path: `str`

`pryv.proxy.base.`**`join_path`**(**paths*)
Joins the given path components into a single path.

Parameters **`paths`** (`str`) – The path components.

Returns A path.

Return type `str`

`pryv.proxy.base.`**`with_path`**(*func*)

Decorates the given function as requiring a path. It converts the given path components into a single path.

Parameters **`func`** (`function`) – The function to decorate.

Returns A decorated function.

Return type `function`

5.5.2 `pryv.proxy.local`

This module defines the *`LocalFileSystemProxy`* and *`LocalFileProxy`* classes that enable manipulating files on the local file system.

`class` `pryv.proxy.local.`**`LocalFileProxy`**(*path*, *mode*)

Bases: *`pryv.proxy.base.FileProxy`*

This class defines a proxy to a file located on the local file system.

`__init__`(*path*, *mode*)

Creates a new instance of a local file proxy.

Parameters

- **`path`** (`str`) – The path to the file.
- **`mode`** (`str`) – The opening mode of the file.

`read`(*size=None*)

Reads data from the file proxy.

Warning: To override.

Parameters **`size`** (`int`) – The number of bytes to read.

Returns Data read.

`readline`()

Reads a line of data from the file proxy.

Warning: To override.

Returns Data read.

`write`(*data*)

Writes data to the file proxy.

Warning: To override.

Parameters **`data`** – The data to write.

class `pryv.proxy.local.`**`LocalFileSystemProxy`**(*path*)

Bases: *`pryv.proxy.base.FileSystemProxy`*

This class defines a proxy to the local file system.

`__init__`(*path*)

Creates a new instance of a proxy to the local file system. :param path:

`exists`(**paths*, ***kwargs*)

Gets a value indicating whether the file at the given path exists or not.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path to the file.

Type path: `str`

Returns `True` if the path targets a file that exist; `False` otherwise.

Return type `bool`

`is_directory`(**paths*, ***kwargs*)

Gets a value indicating whether the file at the given path is a directory or not.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path to the file.

Type path: `str`

Returns `True` if the path targets a directory; `False` otherwise.

Return type `bool`

`is_file`(**paths*, ***kwargs*)

Gets a value indicating whether the file at the given path is a file or not.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path to the file.

Type path: `str`

Returns `True` if the path targets a file; `False` otherwise.

Return type `bool`

`list_directories`(**paths*, ***kwargs*)

Lists the directories located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters

- **`path`** – The path.
- **`exclude`** (`list`) – A list of directory names to exclude.

Type path: `str`

Returns A list of directory names.

Return type `list`

`list_files`(**paths*, ***kwargs*)
Lists the files located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters

- **`path`** – The path to the file.
- **`exclude`** (`list`) – A list of file names to exclude.

Type path: `str`

Returns A list of file names.

Return type `list`

`make_directory`(**paths*, ***kwargs*)
Creates a directory at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path.

Type path: `str`

`open_file`(**paths*, ***kwargs*)
Opens the file located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters

- **`path`** – The path to the file.
- **`mode`** (`str`) – The opening mode (`r` or `w`).

Type path: `str`

Returns A file instance.

Return type *`FileProxy`*

`remove_file`(**paths*, ***kwargs*)
Removes the file located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path to the file.

Type path: `str`

`pryv.proxy.local.`**`with_full_path`**`(`*func*`)`

Decorates the given function as requiring a full path. This decorator merges the root path of decorated file system instance and the given path (either as a single parameter or as a list of path components).

Parameters **`func`** (`function`) – The function to decorate.

Returns A decorated function.

Return type `function`

5.5.3 `pryv.proxy.s3`

This module defines the *`S3FileSystemProxy`* and *`S3FileProxy`* classes that enable manipulating files located on an AWS S3 bucket.

`class` `pryv.proxy.s3.`**`S3FileProxy`**`(`*client*, *bucket*, *key*`)`

Bases: *`pryv.proxy.base.FileProxy`*

This class defines a proxy to a file located in an AWS S3 Bucket.

`__init__``(`*client*, *bucket*, *key*`)`

Creates a new proxy to an object with the given key located in the AWS S3 Bucket with the given name.

Parameters

- **`client`** (`botocore.client.BaseClient`) – The AWS S3 client.
- **`bucket`** (`str`) – The name of the AWS S3 Bucket.
- **`key`** (`str`) – The key of the AWS S3 Object.

`read``(`*size=None*`)`

Reads data from the file proxy.

Warning: To override.

Parameters **`size`** (`int`) – The number of bytes to read.

Returns Data read.

`readline``()`

Reads a line of data from the file proxy.

Warning: To override.

Returns Data read.

write(*data*)

Writes data to the file proxy.

Warning: To override.

Parameters **data** – The data to write.

class pryv.proxy.s3.**S3FileSystemProxy**(*bucket*, *prefix*)

Bases: *pryv.proxy.base.FileSystemProxy*

This class defines a proxy to a file system located on an AWS S3 bucket.

__init__(*bucket*, *prefix*)

Creates a new instance of a proxy to an AWS S3 bucket.

Parameters

- **bucket** (str) – The name of the bucket.
- **prefix** (str) – The key prefix to the objects.

exists(**paths*, ***kwargs*)

Gets a value indicating whether the file at the given path exists or not.

Note: The path can be given either as a single parameter or by components.

Parameters **path** – The path to the file.

Type path: str

Returns True if the path targets a file that exist; False otherwise.

Return type bool

is_directory(**paths*, ***kwargs*)

Gets a value indicating whether the file at the given path is a directory or not.

Note: The path can be given either as a single parameter or by components.

Parameters **path** – The path to the file.

Type path: str

Returns True if the path targets a directory; False otherwise.

Return type bool

is_file(**paths*, ***kwargs*)

Gets a value indicating whether the file at the given path is a file or not.

Note: The path can be given either as a single parameter or by components.

Parameters **path** – The path to the file.

Type path: `str`

Returns `True` if the path targets a file; `False` otherwise.

Return type `bool`

`list_directories`(**paths*, ***kwargs*)
Lists the directories located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters

- **`path`** – The path.
- **`exclude`** (`list`) – A list of directory names to exclude.

Type path: `str`

Returns A list of directory names.

Return type `list`

`list_files`(**paths*, ***kwargs*)
Lists the files located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters

- **`path`** – The path to the file.
- **`exclude`** (`list`) – A list of file names to exclude.

Type path: `str`

Returns A list of file names.

Return type `list`

`make_directory`(**paths*, ***kwargs*)
Creates a directory at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path.

Type path: `str`

`open_file`(**paths*, ***kwargs*)
Opens the file located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters

- **`path`** – The path to the file.
- **`mode`** (`str`) – The opening mode (`r` or `w`).

Type path: `str`

Returns A file instance.

Return type *`FileProxy`*

`remove_file`(**paths*, ***kwargs*)

Removes the file located at the given path.

Note: The path can be given either as a single parameter or by components.

Parameters **`path`** – The path to the file.

Type path: `str`

`pryv.proxy.s3.`**`with_key`**(*func*)

Decorates the given function as requiring an AWS S3 Object's key. This decorator merges the prefix of the decorated file system instance and the given path.

Parameters **`func`** (`function`) – The function to decorate.

Returns A decorated function.

Return type `function`

5.6 `pryv.config`

This module defines the configuration interface. It reads the file `file://~/.pryv/pryv.ini` and exposes its values.

The *`Config`* and *`ConfigSection`* wrap the class `ConfigParser.ConfigParser` in order to enable one to access configuration section and options directly from the code, i.e. using attribute notation. In addition, it handles automatically default values.

`class` `pryv.config.`**`Config`**(*path='file://~/.pryv/pryv.ini'*)

Bases: `object`

This class defines a configuration object. It is a wrapper around the standard `ConfigParser.ConfigParser` class.

It is designed as a convenience class to access configuration sections and options from code and return default values dynamically.

Example:

```
config = pryv.config.Config()

config.my_section.my_option # -> my-value
```

`__init__`(*path='file://~/.pryv/pryv.ini'*)

Creates a new instance of a configuration object. This method loads the configuration from the file `file://~/.pryv/pryv.ini`.

Parameters **path** (str) – The path to the configuration file.

get (*section_name*)
Gets a section by its name.

Parameters **section_name** (str) – The name of the section.

Returns A configuration section.

Return type *ConfigSection* or None

class pryv.config.**ConfigSection** (*name*, *options*)
Bases: object

This class defines a configuration section.

It is designed as a convenience class to access configuration options from code and set default values to options that are not present in the configuration file.

Example:

```
section = pryv.config.ConfigSection('my-section', {'my-option': 'my-value'})

section.my_option # -> my-value

# Assuming my-other-option has for default value my-other-value
section.my_other_option # -> my-other-value
```

__init__ (*name*, *options*)
Creates a new instance of a configuration section.

Parameters

- **name** (str) – The name of the section.
- **options** (dict) – The options of the section.

set (*option_name*, *option_value*)
Sets the value of the option with the given name.

Parameters

- **option_name** (\` str) – The name of the option.
- **option_value** – The value of the option.

pryv.config.**init** (*path*)
Initializes the configuration to read options from the file with the given path.

Note: The path can be either a path to a file on the local file system (i.e. not prefixed or using the file:// prefix) or a file located on an AWS S3 bucket (i.e. using the s3:// prefix).

Parameters **path** (str) – The path to the configuration file.

pryv.config.**pythonize_name** (*name*)
Pythonizes an option name.

Example:

```
pythonize_name('my-option') # -> my_option
```

Parameters **name** (`str`) – The name to pythonize.

Returns A pythonized name.

Return type `str`

`pryv.config.`**`unpythonize_name`**(*name*)

Unythonizes an attribute name.

Example:

```
unpythonize_name('my_option')  # -> my-option
```

Parameters **name** (`str`) – The name to unpythonize.

Returns An option name.

Return type `str`

5.7 `pryv.app`

This module defines the application. It creates a flask application instance ready to be started.

`pryv.app.`**`inject_context`**()

Injects context variables into Jinja renderer.

Returns A dictionary of variables.

Return type `dict`

5.8 `pryv.cli`

This module defines pryv's Command Line Interface. It defines the interface's groups and commands.

`pryv.cli.`**`start_options`**(*cmd*)

Applies the start options to the given command.

Parameters **cmd** (`function`) – The command.

Returns A command.

Return type `function`

CHAPTER 6

Contributing

pryv welcomes all contributions! Whether you want to report a bug, request a new feature, contribute code or documentation, you found the right place.

6.1 Reporting a bug or submitting a feature request

If you want to either report a bug or request a feature, you should create a new issue on Github.

For bug reports, include the version of *pryv* you observer the bug to happen. You can get *pryv*'s version by running:

```
pryv version
```

6.2 Contributing code

If you want to contribute with code, the following guide is made for you. You might also want to have a look at the *reference*.

6.2.1 Version control

pryv is versioned using Git and its code is available on Github on its main repository. To contribute with code to *pryv* you will need to create a Github account.

6.2.2 Getting the code

The easiest and preferred way to contribute to *pryv* is to fork its main repository on Github. To do so, browse the project's repository and click on the **Fork** button.

Now, clone the forked project to your local machine:

```
git clone git@github.com:your-username/pryv.git
```

Tip: Several tools are provided along with the code to ensure quality code. *pryv* uses tox to automate this tools (e.g. creation of an environment, installing extra dependencies). Install it using:

```
pip install --upgrade tox
```

6.2.3 Isolating your environment

In order not to *pollute* your local setup and to ensure you are using the same environment as the one required by *pryv*, you should use a virtual environment. virtualenv is the preferred method.

Install it using pip:

```
pip install --upgrade virtualenv
```

Go to the root directory of *pryv* and create a `virtualenv` (named `venv` for example) using:

```
virtualenv venv
```

Enter (activate) the `virtualenv` (**note that you need to do the following command each time you want to enter the** `virtualenv`):

```
source venv/bin/activate
```

You can now develop and issue all required installations without *polluting* your machine's Python environment.

When you are finished developing, you can exit the `virtualenv` using:

```
deactivate
```

6.2.4 Creating a branch

Never work directly on `master`, **always** branch before making any changes. Grab *ID* of the issue you target.

If the issue is a feature request, use the following to create a new branch:

```
git checkout -b feat/123-short-description
```

If the issue is a bug, use:

```
git checkout -b fix/123-short-description
```

`123` is to be replaced with the *ID* of the issue and `short-description` is a short description of the issue. Its value is up to you, just try to be as specific and concise as the same time (i.e. max 3 words). Use hyphens (-) in place of spaces.

6.2.5 Writing code

When writing code, try to follow the code conventions. Aim for maximum readability (e.g. short functions, thorough naming of functions, classes and variables). Don't hesitate to add a small line of comment in the code if you think it can help someone else in the future. **Document all functions**, even private ones. This ensures someone will be able to understand and use your code in a later stage.

Before merging your code in the main repository, your code will be analysed by several tools. The first one that *pryv* uses is Pylint. It analyses the code for bad code styling. You can run the following command, prior to your commits in order to verify whether your newly added code follows the rule or not:

```
tox -e lint
```

Tip: New code won't be merged unless they pass the linter.

6.2.6 Testing code

Testing the code is of prime importance to ensure modified code does not break another component. *pryv* uses pytest and unittest for unit testing. A unit test is an atomic test that aims at validating the behavior of a function (or class method) given some input. Unit tests are written in files located in `tests/unit`. There is one file, prefixed with `test_`, per target file to be tested, and eventually a directory, also prefixed with `test_`, per package to be tested.

pytest offers a mark API that enables one to mark tests as belonging to a specific group. *pryv* uses it to mark class tests as belonging to unit tests (versus integration tests). A minimal test file looks like:

```
import pytest
import unittest

from pryv.somewhere import something

@pytest.mark.unit
class TestSomething(unittest.TestCase):
    def test_some_behavior(self):
        self.assertSomething(something(), 'some-value')
```

To run the unit tests suite without reporting, use:

```
tox -e unit
```

To run the unit tests suite **and** generate a HTML report, use:

```
tox -e unit-report
```

The generated report will be available under your root directory in `htmlcov`.

6.2.7 Commiting code

Try to commit your code regularly. Commit files and changes related to each other.

pryv uses a similar commit naming convention than the Angular's one:

```
<type>(<scope>): <subject>

- details description
- details description

<footer>
```

where `<type>` can be:

- `feat`: for new feature
- `fix`: for bug fix
- `refactor`: for code refactoring
- `style`: for code formatting
- `test`: when adding tests or updating existing ones
- `chore`: for maintenance

`<scope>` is the scope of the change:

- for meta scopes:
  - `readme`
  - `doc`
  - `setup`
- for modules and packages:
  - `core`
  - `api`
  - `config`
  - `cli`
  - `...`

and `<subject>` is a small description of the change starting with an imperative (`change`, `add`, `fix`, **not** `changed` nor `fixing`), in lower case, with no punctuation (i.e. no final `.`).

The body of the message (optional, but recommended for bigger commits) **must** be a list of detailed changes, using imperative tenses as well, in lower case, without punctuation.

The footer (optional) can be:

```
Closes #123
```

if the commit closes an issue. For a commit that closes *several* issues, use:

```
Closes #123, #456, #789
```

6.2.8 Pushing changes

Once you have finished modifying the code (don't forget to update the documentation), you can push your local changes to Github using:

```
git push origin feat/my-branch
```

6.2.9 Opening a pull request

To merge your changes into *pryv*'s main repository, you will have to open a pull request.

To do so, go to your repository on Github, click on the **Pull request** button. Make sure all commits and all changes are there, then fill in the pull request's description and click on the **Send pull request** button.

Your changes are now sent to *pryv*'s maintainers for code review. They might accept your changes or request modifications before merging to *pryv*'s code base.

6.3 Contributing documentation

pryv uses reStructuredText and Sphinx for its documentation. It is located in the `docs/` directory of the project (and in the source file for packages, modules, classes and functions documentation).

Since contributing documentation is in many manner, and in particular since documentation is code, you should have a look at the *contributing code* paragraph of this page.

Building the documentation is all automated thanks to tox. Install it using:

```
pip install --upgrade tox
```

Then, build the documentation using:

```
tox -e docs
```

CHAPTER 7

Changelog

7.1 1.X.X

7.1.1 1.0.X

1.0.0

- Initial release

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