

How to Find Your Way Through a Million Lines of Code

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@jugmac00

Pick up a New Code Base



No Panic

Patterns



Canonical



Launchpad

Facts about Launchpad

```
> tokei .
```

Language	Files	Lines	Code	Comments	Blanks
Autocconf	4	455	447	0	8
CSS	15	1940	156	396	488
INI	2	18	16	0	2
JavaScript	229	79386	55691	15649	8046
JSON	13	729	719	0	10
Makefile	5	1070	718	181	171
Mustache	1	90	87	0	3
Perl	3	356	257	25	74
Python	2980	789658	620427	58637	110594
ReStructuredText	25	3940	2857	0	1083
Sass	8	2679	2026	124	529
Shell	9	385	257	63	65
SQL	525	67230	45692	2662	18876
SVG	67	28432	27809	64	559
Plain Text	1151	226323	0	177573	48750
XSL	1	1371	1176	132	63
XML	16	809	742	1	66
YAML	1	47	10	30	7
<hr/>					
HTML	172	24548	20080	1682	2786
- CSS	19	30	26	4	0
- JavaScript	59	2650	2348	192	110
(Total)		27228	22454	1878	2896
<hr/>					
Total	5257	1231566	782167	257219	192180

Where to Start?



Use the App



Different Ways to Go Ahead

A photograph of a railway track with a switch, set against a background of green foliage. The tracks are made of metal rails on wooden sleepers, with gravel ballast. The switch is in the center, where the tracks cross. The background is a dense, out-of-focus green forest. The text "Different Ways to Go Ahead" is overlaid in the top left.

Set up Development Environment



Unexpected Side Effects

```
> cd ~/launchpad/launchpad/  
[WARN] - (starship::utils): Executing command "/usr/bin/git" timed out.  
[WARN] - (starship::utils): You can set command_timeout in your config to a higher value to allow longer-running commands to keep executing.
```

Look at the Directory Structure

```
> ls -a
.          .eslintignore      .pytest_cache      system-packages.txt
..         .eslintrc.json    _pythonpath.py     test_on_merge.py
bin        .git                README              .testr.conf
brzplugins .gitattributes     .readthedocs.yaml .tox
build     .git-blame-ignore-requirements
configs   .gitignore         scripts             tox.ini
COPYING   lib                setup.cfg           utilities
cronscripts .librarian.log    setup.py           version-info.py
.ctags    LICENSE            sourcecode         version-info.txt
daemons   logs              standard_template.py .vscode
database  Makefile          standard_test_template.html wheels
dist      .mypy_cache       standard_test_template.js yarn
doc       ols-vms.conf      standard_test_template.py zcml
download-cache .pre-commit-config.yaml
env       __pycache__       standard_yuixhr_test_template.js
          standard_yuixhr_test_template.py
```

Look at the Directory Structure

```
> ls -a
.          .eslintignore      .pytest_cache      system-packages.txt
..         .eslintrc.json     _pythonpath.py     test_on_merge.py
bin        .git                README             .testr.conf
brzplugins .gitattributes     .readthedocs.yaml .tox
build     .git-blame-ignore-revs requirements      tox.ini
configs   .gitignore         scripts          utilities
COPYING   lib                setup.cfg        version-info.py
cronscripts librarian.log      setup.py         version-info.txt
.ctags    LICENSE           sourcecode      .vscode
daemons   logs              standard_template.py wheels
database  Makefile        standard_test_template.html yarn
dist      .mypy_cache    standard_test_template.js
doc       ols-vms.conf      standard_test_template.py
download-cache .pre-commit-config.yaml standard_yuixhr_test_template.js
env       __pycache__    standard_yuixhr_test_template.py
```

Docker / Docker Compose

```
version: "3.9"
services:
  db:
    image: postgres
    volumes:
      - ./data/db:/var/lib/postgresql/data
  web:
    build: .
    command: python manage.py runserver 0.0.0.0:8000
    ports:
      - "8000:8000"
    depends_on:
      - db
```

.pre-commit-config.yaml

```
repos:  
- repo: https://github.com/PyCQA/flake8  
  rev: 3.9.2  
  hooks:  
  - id: flake8  
    exclude: ^lib/contrib/  
- repo: https://github.com/PyCQA/isort  
  rev: 5.9.2  
  hooks:  
  - id: isort
```

.readthedocs.yaml

```
# Required
version: 2

# Set the version of Python and other tools you might need
build:
  os: ubuntu-20.04
  tools:
    python: "3.9"

python:
  install:
    - requirements: requirements.txt
```


tox.ini / Makefile

```
[tox]

[testenv:docs]
basepython = python3
skip_install = true
deps =
    -r {toxidir}/requirements/docs.txt
commands =
    sphinx-build -W -b html {toxidir}/doc/ {toxidir}/doc/_build/html
```

Build and Installation Configuration

- requirements.txt

- setup.cfg/setup.py

- pyproject.toml



Different Types of Dependencies



```
> python3 list_deps.py
```

```
ampoule beautifulsoup4 boto3 breezy
celery cssutils defusedxml distro
dkimpy feedparser fixtures gunicorn
launchpadlib lazr.config lazr.lifecycle launchpad-builddd
lazr.enum lazr.jobrunner lazr.uri lpjsmin lazr.restful
lazr.sshserver lazr.uri multipart lxml
Markdown meliae multipart oauth
oauthlib oops multipart paramiko
psutil pgbouncer psycopg2 pyasn1
pygettextpo pygpgme pymacaroons pymemcache
pystache python-debian python-keystoneclient python-openid2
python-subunit python-swiftclient pytz PyYAML
rabbitfixture requests requests-file requests-toolbelt
responses secure-cookie setproctitle setup tools
six soupmatchers Sphinx statsd
storm talisker tenacity testscenarios
testtools timeline transaction treq
Twisted txfixtures txpkgupload virtualenv-tools3
wadllib WebOb WebTest Werkzeug
WSGIProxy2 z3c.ptcompat zope.app.http zope.app.publication
zope.app.publisher zope.app.wsgi zope.authentication zope.browser
zope.browsermenu zope.browserpage zope.browserresource zope.component
zope.configuration zope.contenttype zope.datetime zope.error
zope.event zope.exceptions zope.formlib zope.i18n
zope.i18nmessageid zope.interface zope.lifecycleevent zope.location
zope.login zope.pagetemplate zope.principalregistry zope.processlifetime
zope.proxy zope.publisher zope.schema zope.security
zope.securitypolicy zope.sendmail zope.session zope.tal
zope.tales zope.testbrowser zope.testing zope.testrunner
zope.traversing zope.vocabularyregistry
```

```
> python3 list_deps.py
```

```
ampoule
```

```
celery
```

```
dkimpy
```

```
django-extensions
```

```
launchpadlib
```

```
lazr.enum
```

```
lazr.sshserver
```

```
Markdown
```

```
oauthlib
```

```
psutil
```

```
pygettextpo
```

```
pystache
```

```
python-subunit
```

```
rabbitfixture
```

```
responses
```

```
six
```

```
storm
```

```
testtools
```

```
Twisted
```

```
wadllib
```

```
WSGIProxy2
```

```
zope.app.publisher
```

```
zope.browsermenu
```

```
zope.configuration
```

```
zope.event
```

```
zope.i18nmessageid
```

```
zope.login
```

```
zope.proxy
```

```
zope.securitypolicy
```

```
zope.tales
```

```
zope.traversing
```

```
beautifulsoup4
```

```
cssutils
```

```
feedparser
```

```
gettext
```

```
lazer.navigational
```

```
lazr.jobrunner
```

```
lazr.uri
```

```
meliae
```

```
oops
```

```
pgbouncer
```

```
pygpgme
```

```
python-debian
```

```
python-swiftclient
```

```
requests
```

```
secure-cookie
```

```
soupmatchers
```

```
talisker
```

```
timeline
```

```
txfixtures
```

```
WebOb
```

```
z3c.ptcompat
```

```
zope.app.wsgi
```

```
zope.browserpage
```

```
zope.contenttype
```

```
zope.exceptions
```

```
zope.interface
```

```
zope.pagetemplate
```

```
zope.publisher
```

```
zope.sendmail
```

```
zope.testbrowser
```

```
zope.vocabularyregistry
```

```
boto3
```

```
defusedxml
```

```
fixtures
```

```
genshi
```

```
lazer.config
```

```
lazr.lifecycle
```

```
lpjsmin
```

```
multipart
```

```
oops_amqp
```

```
psycopg2
```

```
pymacaroons
```

```
python-keystoneclient
```

```
pytz
```

```
requests-file
```

```
setproctitle
```

```
Sphinx
```

```
tenacity
```

```
transaction
```

```
txpkgupload
```

```
WebTest
```

```
zope.app.http
```

```
zope.authentication
```

```
zope.browserresource
```

```
zope.datetime
```

```
zope.formlib
```

```
zope.lifecycleevent
```

```
zope.principalregistry
```

```
zope.schema
```

```
zope.session
```

```
zope.testing
```

```
breezy
```

```
distro
```

```
gunicorn
```

```
launchpad-builddd
```

```
lazr.delegates
```

```
lazr.restful
```

```
lxml
```

```
oauth
```

```
paramiko
```

```
pyasn1
```

```
pymemcache
```

```
python-openid2
```

```
PyYAML
```

```
requests-toolbelt
```

```
setuptools
```

```
statsd
```

```
testscenarios
```

```
treq
```

```
virtualenv-tools3
```

```
Werkzeug
```

```
zope.app.publication
```

```
zope.browser
```

```
zope.component
```

```
zope.error
```

```
zope.i18n
```

```
zope.location
```

```
zope.processlifetime
```

```
zope.security
```

```
zope.tal
```

```
zope.testrunner
```

Python Dependencies

Set up Development Environment



Ask Questions



Running Tests



Ready for Your First Task



Where to Start?



Have a Closer Look



Search



Tips for Your First Test

TEST

Set a Breakpoint



Coverage

```
313 |         if folder is None and name is not None and "/" in name:           ▶ 12 ctx
314 |             folder, name = os.path.split(name)                             ▶ 1 ctx
315 |         if storage.filename is None:                                       ▶ 12 ctx
316 |             raise ValueError("Filename must not be empty!")              ▶ 1 ctx
317 |         basename = self.get_basename(storage.filename)                     ▶ 11 ctx
318 |
319 |         if not self.file_allowed(storage, basename):                       ▶ 11 ctx
320 |             raise UploadNotAllowed()                                       ▶ 1 ctx
321 |
322 |         if name:                                                            ▶ 10 ctx
323 |             if name.endswith('.'):                                         ▶ 4 ctx
324 |                 basename = name + extension(basename)                    ▶ 3 ctx
325 |             else:
326 |                 basename = name                                           ▶ 1 ctx
327 |
328 |         if folder:                                                         ▶ 10 ctx
329 |             target_folder = os.path.join(self.config.destination, folder) ▶ 3 ctx
330 |         else:
331 |             target_folder = self.config.destination                       ▶ 7 ctx
332 |         if not os.path.exists(target_folder):                              ▶ 10 ctx
333 |             os.makedirs(target_folder)                                     ▶ 10 ctx
```

@jugmac00

tests/test_flask_reuploaded.py::TestSaving::test_folder_namedext|run
tests/test_flask_reuploaded.py::TestSaving::test_implicit_folder|run
tests/test_flask_reuploaded.py::TestSaving::test_save_folders|run

Factories



Tooling Support

```
def getattr(o: Any, /, name: str, default: Any) -> Any:
    getattr(object, name[, default]) -> value
```

Get a named attribute from an object; getattr(object, name[, default]) -> value. When a default argument is given, it is returned if the attribute does not exist; without it, an exception is raised.

Full name: builtins getattr

```
finally:
```

```
    should_clean_environment = getattr(args, "clean", False)
```

```
    if should_clean_environment:
```

```
        cwd = Path.cwd()
```

```
        provider.clean_project_environments(
```

```
            project_name=cwd.name,
```

```
            project_path=cwd,
```

```
            instances=launched_instances,
```

```
        )
```

```
commit bdc00aebb2ba24bb584447989204a4c9ab0b45cc
Merge: 9996942467f 673619b893f
Author: Colin Watson <cjwatson@canonical.com>
Date: Thu Oct 7 11:14:20 2021 +0000
```

Your First Commit

```
Merged from https://code.launchpad.net/~cjwatson/launchpad/+git/launchpad/+merge/409769
```

```
commit d0f1bd7c2867d0251800f02e0226ede29c40a4fa (fork/prevent-committing-debug-statements)
Author: Jürgen Gmach <juergen.gmach@canonical.com>
Date: Thu Oct 7 11:40:09 2021 +0200
```

```
prevent committing debug statements
```

```
`lib/lp/testing/systemdocs.py` needs to be excluded as it contains a
legitimate use of `pdb`.
```

```
commit 673619b893f535924b73a166de90c4572b5c3c35
Author: Colin Watson <cjwatson@canonical.com>
Date: Wed Oct 6 20:08:28 2021 +0100
```

```
Add AccessToken model
```

```
This will be used for personal access tokens for the webservice API.
```

@jugmac00 We have to take some care to avoid bloat and locks when updating last-used dates.

Your First Merge Proposal

Git » lp:~jugmac00/launchpad:sqlobject-is-a-first-party-import » Merge into master

Proposed by  Jürgen Gmach on 2021-10-28

Status: **Merged** 

Approved by:  Jürgen Gmach on 2021-10-29

Approved revision: 99adcc9cffa75e69a2e0cb64b0ef76ec73c8c11f

Merge reported by:  Otto Co-Pilot

Merged at revision: not available 

Proposed branch: ~jugmac00/launchpad:sqlobject-is-a-first-party-import

Merge into: launchpad:master

Diff against target: 2238 lines (+333/-340)

▷ 89 files modified

Merge guidelines: git remote add jugmac00 git+ssh://jugmac00@git.launchpad.net/~jugmac00/launchpad

git remote update jugmac00

git checkout master

git merge jugmac00/sqlobject-is-a-first-party-import

Related bugs:  [Link a bug report](#)

@jugmac00

Many Many Questions

What

Who

Where

When

How

Why



Words of Warning

- Chat != Documentation
- Pull Requests != Documentation
- Emails != Documentation

Diátaxis by Daniele Procida

TUTORIALS

LEARNING-ORIENTED

Serve our study

UNDERSTANDING-ORIENTED

EXPLANATION

Practical steps

Theoretical knowledge

HOW-TO GUIDES

TASK-ORIENTED

Serve our work

INFORMATION-ORIENTED

REFERENCE

Deployment



Other Ways to Learn

A hallway with seven white doors set against a wall with dark blue floral wallpaper. The floor is made of dark wood planks. The doors are evenly spaced and lead to different rooms, symbolizing various learning paths.

Key Concepts

- look for familiar patterns
- ask questions
- take down notes
- be aware of what works and what does not work
- you can add value from day one

Thank you for the pictures!

- <https://pixabay.com/>
- <https://canonical.com/>
- <https://pre-commit.com/>
- <https://www.docker.com/>
- <https://readthedocs.org/>
- <https://tox.wiki/>
- <https://setuptools.pypa.io/en/latest/artwork.html>
- <https://www.python.org/>
- <https://diataxis.fr/>

Thank you!

Yuki Hattori

<https://marp.app/>

Thank you!

We Are Hiring

<https://jugmac00.github.io/hiring/>

Contact

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 juergen.gmach@googlemail.com

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