
PyFunceble Documentation

Release 3.3.2

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Contents

1	What can PyFuncible do?	3
2	Contributors	5
3	Special Thanks	7
4	Supporting the project	9
4.1	GitHub Sponsor	9
4.2	Ko-Fi	9
5	License	11
6	Code of Conduct	13
6.1	Our Pledge	13
6.2	Our Standards	13
6.3	Our Responsibilities	14
6.4	Scope	14
6.5	Enforcement	14
6.6	Attribution	14
7	They use-d PyFuncible!	15
8	Frequently Asked Questions	17
8.1	How to speed up the test process?	17
8.1.1	I have multiple CPU	17
8.1.2	I do not have multiple CPU	18
9	Known issues	19
9.1	Ubuntu 20.04.1 LTS Focal	19
10	Discovered an issue?	21
11	Need help?	23
12	Need information?	25
13	Dead-Hosts	27
13.1	Why Dead-Hosts?	27

13.2	How do Dead-Hosts work?	27
13.3	History of Dead-Hosts	27
14	Installation	29
14.1	Requirements	29
14.1.1	Python 3.6.11+	29
14.1.2	alembic	30
14.1.3	colorama	30
14.1.4	cryptography	30
14.1.5	dnspython	30
14.1.6	domain2idna	30
14.1.7	inflection	30
14.1.8	PyMySQL	30
14.1.9	python-box	30
14.1.10	python-dotenv	30
14.1.11	PyYAML	30
14.1.12	requests	31
14.1.13	setuptools	31
14.1.14	sqlalchemy	31
14.2	Stable version	31
14.2.1	Using pip	31
14.2.2	Using the AUR (for Arch Linux users)	31
14.2.3	Using docker (hub)	32
14.2.4	Using conda	32
14.2.5	Pure Python method	32
14.3	Development version	33
14.3.1	For development	33
14.3.2	For usage	33
14.4	First steps	35
15	Update	37
15.1	Stable version	37
15.1.1	Using pip	37
15.1.2	IMPORTANT INFORMATION for master >= 3.3.0	37
15.1.3	Using the AUR (for Arch Linux users)	38
15.1.4	Using docker (hub)	38
15.1.5	Using conda	38
15.1.6	Pure Python method	39
15.2	Development version	39
15.2.1	IMPORTANT INFORMATION for dev >= 3.2.11	39
15.2.2	For development	39
15.2.3	For usage	40
16	Configuration	43
16.1	Location	43
16.1.1	Problematics	43
16.1.2	Repository clone	43
16.1.3	Travis CI	43
16.1.4	GitLab CI/CD	44
16.1.5	Linux and MacOS (Darwin Kernel)	44
16.1.6	Windows	44
16.1.7	Custom location	45
16.2	Autoconfiguration	45
16.3	Indexes	45

16.3.1	adblock	45
16.3.2	aggressive	46
16.3.3	auto_continue	46
16.3.4	command	46
16.3.5	command_before_end	46
16.3.6	cooldow_time	46
16.3.7	custom_ip	47
16.3.8	days_between_db_retest	47
16.3.9	days_between_inactive_db_clean	47
16.3.10	db_type	47
16.3.11	debug	48
16.3.12	dns_lookup_over_tcp	48
16.3.13	dns_server	48
16.3.14	filter	49
16.3.15	generate_complements	49
16.3.16	generate_hosts	49
16.3.17	generate_json	49
16.3.18	header_printed	49
16.3.19	hierarchical_sorting	50
16.3.20	iana_whois_server	50
16.3.21	idna_conversion	50
16.3.22	inactive_database	50
16.3.23	less	50
16.3.24	local	51
16.3.25	logs	51
16.3.26	maximal_processes	51
16.3.27	mining	51
16.3.28	multiprocess	51
16.3.29	multiprocess_merging_mode	51
16.3.30	no_files	52
16.3.31	no_special	52
16.3.32	no_whois	52
16.3.33	plain_list_domain	52
16.3.34	print_dots	52
16.3.35	quiet	53
16.3.36	referer	53
16.3.37	reputation	53
16.3.38	shadow_file	53
16.3.39	share_logs	53
16.3.40	show_execution_time	54
16.3.41	show_percentage	54
16.3.42	simple	54
16.3.43	split	54
16.3.44	store_whois_record	54
16.3.45	syntax	55
16.3.46	timeout	55
16.3.47	ci	55
16.3.48	ci_autosave_commit	55
16.3.49	ci_autosave_final_commit	55
16.3.50	ci_autosave_minutes	55
16.3.51	ci_distribution_branch	56
16.3.52	ci_branch	56
16.3.53	unified	56
16.3.54	use_reputation_data	56

16.3.55	verify_ssl_certificate	57
16.3.56	whois_database	57
16.3.57	wildcard	57
16.3.58	user_agent	57
16.3.59	outputs	58
16.3.60	status	65
16.3.61	http_codes	68
16.3.62	links	70
17	Usage	73
17.1	From a terminal	73
17.1.1	--help	73
17.1.2	-v --version	73
17.1.3	Source	73
17.1.4	Source filtering, decoding, conversion and expansion	75
17.1.5	Test control	75
17.1.6	DNS (resolver) control	78
17.1.7	Databases	78
17.1.8	Output control	80
17.1.9	Multiprocessing	83
17.1.10	CI / CD	83
17.1.11	Unique actions	85
17.1.12	Global overview	86
17.2	From a GitLab CI/CD environment	91
17.2.1	Configuration	91
17.3	From a Travis CI container	92
17.3.1	Configuration	92
17.3.2	Getting a GitHub token	93
17.3.3	Encrypting the token for future usage under the Travis CIs' containers	93
17.4	Using the PyFuncible (Python) API	94
17.4.1	Get the availability of domains or IP	94
17.4.2	Get the availability of URL	95
17.4.3	Complete dataset while getting the availability of domains, IPs or URL	96
17.4.4	Set custom configuration index while getting the availability of domains, IPs or URL	97
17.4.5	Globally	97
17.4.6	Check the syntax of domains	98
17.4.7	Check the syntax of IPv4s	99
17.4.8	Check the syntax of URLs	100
18	Responses	103
18.1	Subject	103
18.2	Status	103
18.2.1	ACTIVE	103
18.2.2	INACTIVE	104
18.2.3	INVALID	104
18.2.4	VALID	104
18.2.5	MALICIOUS	104
18.2.6	SANE	104
18.3	Source	105
18.3.1	HTTP Code	105
18.3.2	SYNTAX	105
18.3.3	DNSLOOKUP	105
18.3.4	SPECIAL	105
18.4	_status (API)	107

18.5	_status_source (API)	107
18.6	dns_lookup (API)	107
18.6.1	Format 1: Normal DNS Lookup	107
18.6.2	Format 2: get_hosts_by_addr (local subjects?)	107
18.7	HTTP Code	108
18.7.1	As active	108
18.7.2	As potentially active	108
18.7.3	As inactive or potentially inactive	109
18.8	Expiration Date	110
18.8.1	Unknown (CLI)	110
18.8.2	None (API)	110
18.8.3	A date	110
18.9	whois_record (API)	110
18.10	whois_server (API)	111
18.11	domain_syntax_validation (API)	111
18.12	subdomain_syntax_validation (API)	111
18.13	url_syntax_validation (API)	111
18.14	ipv4_syntax_validation (API)	111
18.15	ipv6_syntax_validation (API)	111
18.16	ipv4_range_syntax_validation (API)	112
18.17	ipv6_range_syntax_validation (API)	112
19	API Documentation	113
19.1	Endpoints	113
19.2	File generation while using the API	119
19.2.1	Global configuration load	119
19.2.2	Local configuration load	119
20	Components	121
20.1	AdBlock/Filter list decoding	121
20.1.1	Why do we need it?	121
20.1.2	How does it work?	121
20.1.3	How to use it?	121
20.2	Autocontinue	122
20.2.1	Why do we need it?	122
20.2.2	How does it work?	122
20.2.3	How to use it?	122
20.3	Autosave	122
20.3.1	Why do we need it?	122
20.3.2	How does it work?	123
20.3.3	How to use it?	123
20.4	Certificate verification	123
20.4.1	Why do we need it?	123
20.4.2	How does it work?	123
20.4.3	How to use it?	123
20.5	Cleaning	124
20.5.1	Why do we need it?	124
20.5.2	How does it work?	124
20.5.3	How to clean?	124
20.5.4	Differences between simple and complete cleaning?	124
20.6	Complements Generation	124
20.6.1	Why do we need it?	125
20.6.2	How does it work?	125
20.6.3	How to use it?	125

20.7	Configuration	125
20.7.1	Why do we need it?	125
20.7.2	How does it work?	125
20.7.3	How to configure?	126
20.8	Custom DNS Server	126
20.8.1	Why do we need it?	126
20.8.2	How does it work?	126
20.8.3	How to use it?	126
20.9	Custom User-Agent	126
20.9.1	Why do we need it?	126
20.9.2	How does it work?	127
20.9.3	How to use it?	127
20.9.4	What if we don't give a custom User-Agent?	127
20.10	Databases	128
20.10.1	Why do we use "databases"?	128
20.10.2	How do we manage them?	128
20.10.3	Warnings around Database (self) management	128
20.10.4	Databases types	128
20.11	Directory Structure	129
20.11.1	Why do we need it?	129
20.11.2	How does it work?	129
20.11.3	How to generate it manually?	130
20.12	DNS Lookup	130
20.12.1	Why do we need it?	130
20.12.2	How does it work?	130
20.13	Environment variables	131
20.13.1	Dotenv files	131
20.13.2	What do we use and why ?	131
20.14	Execution time	132
20.14.1	Why do we need it?	132
20.14.2	How does it work?	132
20.14.3	How to use it?	133
20.15	List filtering	133
20.15.1	Why do we need it?	133
20.15.2	How does it work?	133
20.15.3	How to use it?	133
20.16	IANA Root Zone Database	133
20.16.1	Why do we need it?	133
20.16.2	How does it work?	134
20.16.3	How to generate it manually?	134
20.17	Test in/for local hostnames, IPs, components	134
20.17.1	Why do we need it?	134
20.17.2	How does it work?	134
20.17.3	How to use it?	134
20.18	Logs Sharing	135
20.18.1	Why do we need it?	135
20.18.2	What do we share/collect?	135
20.18.3	How to share logs?	135
20.19	Mining	135
20.19.1	Why do we need it?	135
20.19.2	How does it work?	136
20.19.3	How to use it?	136
20.20	Multiprocessing	136
20.20.1	Why do we need it?	136

20.20.2	How does it work?	137
20.20.3	How to use it?	137
20.21	Outputed Files	138
20.21.1	Why do we need it?	138
20.21.2	How does it work?	138
20.22	Percentage	139
20.22.1	Why do we need it?	139
20.22.2	How does it work?	139
20.22.3	How to use it?	139
20.23	The Public Suffix List	139
20.23.1	Why do we need it?	139
20.23.2	How does it work?	140
20.23.3	How to generate it manually?	140
20.24	Sorting	140
20.24.1	Why do we need it?	140
20.24.2	How does it work?	140
20.24.3	How to activate the hierarchical sorting?	141
20.25	Whois Lookup	141
20.25.1	Why do we need it?	141
20.25.2	How does it work?	141
20.25.3	How to use it?	142
21	Contribute	143
21.1	Submit changes	143
21.2	Coding conventions	143
21.2.1	Format	143
21.2.2	Linting	143
21.2.3	Coverage	144
21.2.4	Distribution	144
21.2.5	Commit	144
21.2.6	Git Hook	144
22	Code Documentation	147
22.1	Logic representation	147
22.1.1	Domain testing	149
22.1.2	IP testing	150
22.1.3	URL testing	152
22.2	Check	153
22.2.1	Problematic	153
22.2.2	Documentation	153
22.3	Exceptions	155
22.3.1	Problematic	155
22.3.2	Documentation	155
22.4	Abstracts	157
22.4.1	Problematic	157
22.4.2	Documentation	157
22.5	CLI	161
22.5.1	Problematic	161
22.5.2	Documentation	161
22.6	Config	164
22.6.1	Problematic	164
22.6.2	Documentation	164
22.7	Converter	166
22.7.1	Problematic	166

22.7.2	Documentation	166
22.8	Core	169
22.8.1	Problematic	169
22.8.2	Documentation	169
22.9	Database	175
22.9.1	Problematic	175
22.9.2	Documentation	175
22.10	Downloader	177
22.10.1	Problematic	177
22.10.2	Documentation	177
22.11	Engine	179
22.11.1	Problematic	179
22.11.2	Documentation	179
22.12	Extractor	184
22.12.1	Problematic	184
22.12.2	Documentation	184
22.13	Helpers	185
22.13.1	Problematic	185
22.13.2	Documentation	186
22.14	Lookup	194
22.14.1	Problematic	194
22.14.2	Documentation	194
22.15	Output	203
22.15.1	Problematic	203
22.15.2	Documentation	203
22.16	Status	209
22.16.1	Problematic	209
22.16.2	Documentation	209
23	Indices and tables	215
	Python Module Index	217
	Index	219



build passing

coverage 100%

license Apache-2.0

pypi v3.3.2

issues 12 open

PyFunceble is the little sister of [Funceble](#) which was archived on 13th March 2018.

Its main objective is to provide the availability of domains, IPs and since recently URL by generating an accurate result based on results from WHOIS, NSLOOKUP and HTTP status codes.

PyFunceble provides some useful features for continuous testing.

As an example, its auto-continue system coupled with its auto-save system allows it to run nice and smoothly under Travis CI without even reaching Travis CI time restriction. In the other side, its internal inactive database system let INACTIVE and INVALID caught domains, IPs or URLs being automatically retested over time on next run.

CHAPTER 1

What can PyFunceble do?

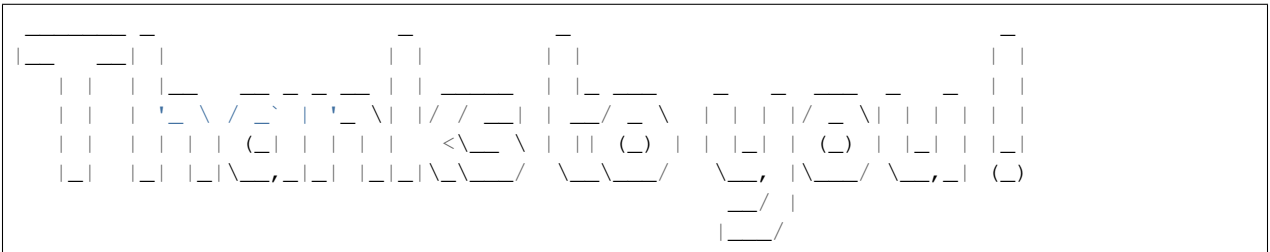
- Test the availability of a domain.
- Test the availability of an IPv4.
- Test the availability of an IPv6.
- Test the availability of a URL.
- Test the availability of a domain/DNS name in a private or local network.
- Test the availability of an IPv4 in a private or local network.
- Test the availability of an IPv6 in a private or local network.
- Test the availability of a URL in a private or local network.
- Test the syntax of a domain.
- Test the syntax of an IPv4.
- Test the syntax of an IPv6.
- Test the syntax of a URL.
- Test the AlienVault's reputation of an IPv4.
- Test of domain or IP which are present into an Adblock formatted file.
- Test from a given raw link.
- Test using multiprocessing (from CLI only).
- Save test result(s) in file(s) (hosts file, plain text and/or JSON format).
- Save test result in a SQL database.
- Show test result(s) on screen.
- Show percentage of each status (ACTIVE, INACTIVE, INVALID)
- Sort outputs hierarchically.
- "Mining" of domain or IP which are related to the tested element.

- Auto-continuation of tests in case of system crash or script stop.
- Filtering of a file content.
 - This feature will let us for example test all blogspot domain of the given file no matter the content of the file.
- Set the user-agent to use for the tests.
- Give some analytic depending of the HTTP status code (ACTIVE, POTENTIALLY_ACTIVE, POTENTIALLY_INACTIVE, SUSPICIOUS).
- Retest overtime of INACTIVE and INVALID domains.
- Print the execution time on screen and file.
- Customisation of the different option via command-line arguments or configuration file.
- Continuous tests under Travis CI or GitLab CI/CI
 - ... with the help of an auto saving and database system.
 - Set the branch to push the result to. For the autosaving system.
 - Set the minimal time before we autosave in order to avoid CI/CD limitation.
 - Set a command to execute at the end of the test.
 - Set the commit message for the autosaving system.
- ... and a lot more!

CHAPTER 2

Contributors

Thanks to those awesome peoples for their awesome and crazy idea(s), contribution(s) and or issue report which made or make [PyFunceble](#) a better tool.



- Daniel - [@dnmTX](#)
- hawkeye116477 - [@hawkeye116477](#)
- Imre Kristoffer Eilertsen - [@DandelionSprout](#)
- jawz101 - [@jawz101](#)
- kowith337 - [@kowith337](#)
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- ScriptTiger - [@ScriptTiger](#)
- sjhgvr - [@sjhgvr](#)
- speedmann - [@speedmann](#)
- spirillen - [@spirillen](#)

- The Unknown - [@AnonymousPoster](#)
- WaLLy3K - [@WaLLy3K](#)
- xxcriticxx - [@xxcriticxx](#)
- ZeroDot1 - [@ZeroDot1](#)

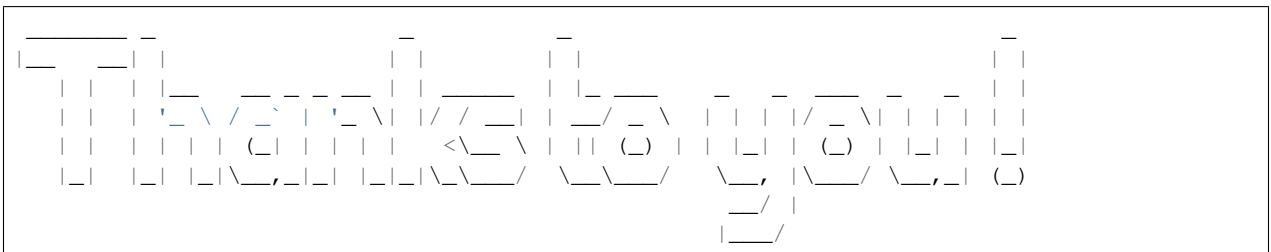
CHAPTER 3

Special Thanks

Thanks to those awesome organization(s), tool(s) and or people(s) for

- Their awesome documentation
- Their awesome repository
- Their awesome tool/software/source code
- Their breaking reports
- Their contributions
- Their current work/purpose
- Their promotion of Py-Funceble
- Their support
- Their testings reports

which helped and/or still help me build, test and or make [PyFunceble](#) a better tool.



- Adam Warner - [@PromoFaux](#)
- Adblock Plus - [@adblockplus](#)
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- Chris Griffith - [@cdgriffith](#) (Box)

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- ScriptTiger - @ScriptTiger
- SMed79 - @SMed79
- spirillen - @spirillen
- The YAML Project - @yaml (pyyaml)
- yWorks - (yEd Graph Editor)

Supporting the project

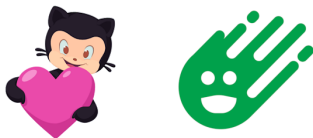
PyFunceble, Dead-Hosts, and all other analogue projects are powered by my free time and a lot of coffee!

If you like this project and/or it have helped you. Please consider buying me more coffee.

4.1 GitHub Sponsor

@funilrys is part of the GitHub Sponsor program!

GitHub will match all donation for the coming months!



Sponsor me!

4.2 Ko-Fi

Don't want to use the GitHub Sponsor program ? Single donation are welcome too!



Buy me a coffee!

CHAPTER 5

License

Copyright 2017, 2018, 2019, 2020 Nissar Chababy

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<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an “AS IS” BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

6.1 Our Pledge

In the interest of fostering an open and welcoming environment, we as contributors and maintainers pledge to making participation in our project and our community a harassment-free experience for everyone, regardless of age, body size, disability, ethnicity, gender identity and expression, level of experience, nationality, personal appearance, race, religion, or sexual identity and orientation.

6.2 Our Standards

Examples of behavior that contributes to creating a positive environment include:

- Using welcoming and inclusive language
- Being respectful of differing viewpoints and experiences
- Gracefully accepting constructive criticism
- Focusing on what is best for the community
- Showing empathy towards other community members

Examples of unacceptable behavior by participants include:

- The use of sexualized language or imagery and unwelcome sexual attention or advances
- Trolling, insulting/derogatory comments, and personal or political attacks
- Public or private harassment
- Publishing others' private information, such as a physical or electronic address, without explicit permission
- Other conduct which could reasonably be considered inappropriate in a professional setting

6.3 Our Responsibilities

Project maintainers are responsible for clarifying the standards of acceptable behavior and are expected to take appropriate and fair corrective action in response to any instances of unacceptable behavior.

Project maintainers have the right and responsibility to remove, edit, or reject comments, commits, code, wiki edits, issues, and other contributions that are not aligned to this Code of Conduct, or to ban temporarily or permanently any contributor for other behaviors that they deem inappropriate, threatening, offensive, or harmful.

6.4 Scope

This Code of Conduct applies both within project spaces and in public spaces when an individual is representing the project or its community. Examples of representing a project or community include using an official project e-mail address, posting via an official social media account, or acting as an appointed representative at an online or offline event. Representation of a project may be further defined and clarified by project maintainers.

6.5 Enforcement

Instances of abusive, harassing, or otherwise unacceptable behavior may be reported by contacting the project team at contact@funilrys.com. The project team will review and investigate all complaints, and will respond in a way that it deems appropriate to the circumstances. The project team is obligated to maintain confidentiality with regard to the reporter of an incident. Further details of specific enforcement policies may be posted separately.

Project maintainers who do not follow or enforce the Code of Conduct in good faith may face temporary or permanent repercussions as determined by other members of the project's leadership.

6.6 Attribution

This Code of Conduct is adapted from the [Contributor Covenant](http://contributor-covenant.org/version/1/4), version 1.4, available at <http://contributor-covenant.org/version/1/4>.

CHAPTER 7

They use-d PyFunceble!

Just a list of tool/repository/code/infrastructure which uses or used PyFunceble!

- [.pl-host-file](#)
- [add.2o7Net](#)
- [add.Dead](#)
- [add.Risk](#)
- [add.Spam](#)
- [adfilt](#)
- [Asads-Hosts](#)
- [Badd-Boyz-Hosts](#)
- [Badger Sett](#)
- [blacklist](#)
- [CoinBlockerLists](#)
- [cookies_filters](#)
- [DNS test](#)
- [Facebook Zero Hosts Block](#)
- [finnish-easylist-addition](#)
- [Frellwits-filter-lists](#)
- [Google AdService and ID.Google tracking hosts](#)
- [KADhosts](#)
- [MobileAdTrackers](#)
- [My Privacy DNS](#)
- [Phishing-URL-Testing-Database-of-Link-Statuses](#)

- [Phishing.Database](#)
- [polish-adblock-filters](#)
- [polish-pihole-filters](#)
- [pornhosts](#)
- [Stop.Google.Analytics.Ghost.Spam.HOWTO](#)
- [The-Big-List-of-Hacked-Malware-Web-Sites](#)
- [Top-Attacking-IP-Addresses-Against-Wordpress-Sites](#)
- [Ultimate.Hosts.Blacklist // Ultimate-Hosts-Blacklist](#)
- [UncheckyAds](#)

Frequently Asked Questions

8.1 How to speed up the test process?

Warning: Beware, when talking about speed a lot of things have to be taken in consideration. Indeed here is a non exhaustive list of things which fluctuate testing speed.

- Bandwidth.
- DNS Server response time.
- CPU.
- ISP blocking a big amount of connection to the outside world.
- Our databases management (do not apply for MySQL and MariaDB format).
- Amount of data to test.
- ...

8.1.1 I have multiple CPU

Simply use the `-m | --multiprocess` argument to activate the usage of multiple processes. You should in addition to the `-m` specify the `-p | --processes` argument.

If `-p | --processes` is avoided, the script will use the number of available CPU cores.

You might therefore wish to specify the number of simultaneous processes to be used, otherwise you will be “unable” to use the computer/server for other things while running PyFuncible as all of your CPU threads is used by PyFuncible.

Note: A good number for `-p` is your number of `CPU_cores - 1`, to leave room for other processes to work. Unless you have a dedicated installation for this work.

Inside a Unix based system, you can use this code snippet to see how many CPU and cores you have.

```
$: lscpu | grep -E '^Thread|^Core|^Socket|^CPU\{'
```

or

```
$: nproc --ignore=1
```

This will count the number of CPU threads subtracted 1 to use for DB, SQL. If you runs PyFunceble on your workstation you might subtract 2 threads, or you computer will be pretty "dead"

See also ``man nproc`` or ``nproc --help``

Warning: DO NOT try to exceed your total number of CPU cores with (-p | --processes), if you want to keep your machine somehow alive and healthy.

8.1.2 I do not have multiple CPU

In case you only have a single core, you should disable the usage of the WHOIS lookup by adding the --no-whois to your command line or switching the value of no_whois to True in your configuration file.

As example:

```
$ PyFunceble --no-whois -d example.net
```

This action will speed up the script because it only use the equivalent of nslookup and the HTTP status code to determine the availability status.

Warning: PyFunceble request the WHOIS record in order to avoid specific false positive cases. If the usage of WHOIS request is disabled, all domains which are still registered but not assigned to an IP address, would be flagged as INACTIVE.

It's not a problem if you keep/use the database system because the domain will be retested over time. But please keep in mind, that without the database system, the accuracy of the result is not guaranteed.

This is the list of issues which are not or will not be fixed (yet...).

- Under Travis CI the coloration may not be shown.
- Under GitLab CI/CD the coloration may not be shown.

9.1 Ubuntu 20.04.1 LTS Focal

In Ubuntu release 20.04 they have removed a package name `libffi.so.6` and upgraded it with version `libffi.so.7`

This means PyFunceble will throw an error like:

```
ImportError: libffi.so.6: cannot open shared object file: No such file or directory
```

The fix for this issue is then rather simple, add a softlink between the versions with `ln -s`

The complete line in my case was:

```
sudo ln -s /usr/lib/x86_64-linux-gnu/libffi.so.7 /usr/lib/x86_64-linux-gnu/libffi.so.6
```

However, the right way to do this is by first locate where your's `libffi.so.7` is by

`find /usr/lib/ -type f -iname 'libffi.so.*'` and then apply the softlink to `libffi.so.7`

CHAPTER 10

Discovered an issue?

Want to talk with [@funilrys](#) about it? Contact [@funilrys](#) on Keybase.

Want to make it public? Fill out a [new issue](#).

Don't want to fill out an issue on GitHub? Let's discuss it on our [issues team](#) on Keybase.

CHAPTER 11

Need help?

Do you need help with the usage of PyFuncible? We can help!
Want to talk with [@funilrys](#) about it? Contact [@funilrys](#) on [Keybase](#).
Otherwise, let's discuss it on our [support team](#) on [Keybase](#)!

CHAPTER 12

Need information?

You can get information and discuss about PyFuncible on our [main Keybase team](#). @Funilrys (me) will do his best to keep it up-to-date with some information about the development and other news about PyFuncible.

If you need more information, the [support team](#) or [issues team](#), is the place to ask!

13.1 Why Dead-Hosts?

We are conscient that PyFunceble may run for days. We would therefore offer you, to have your list. [Request for Dead-Hosts](#) testing.

13.2 How do Dead-Hosts work?

[Dead-Hosts](#) is like a wrapper of PyFunceble. Indeed, we use Travis CI containers in order to test lists with PyFunceble.

Once a list is set up inside our infrastructure, PyFunceble will test the list regularly and the Dead-Hosts infrastructure will produce a `clean.list` file which represents the list of domains/IP/URL which remains or became `ACTIVE`.

In addition, if needed, we can set up a list of GitHub username to `@ping` once a new test is finished.

Do you want your list to be tested at [Dead-Hosts](#) ? You can [request it](#) !

13.3 History of Dead-Hosts

The project started on 3rd March 2017 at [funilrys/dead-hosts](#).

The original idea was to test [Funceble](#) against hosts file in order to find bugs inside [Funceble](#) but also letting me (@funilrys) have a shorter hosts file.

On 23rd January 2018, I (@funilrys) decided to shut [funilrys/dead-hosts](#) down, as it became impossible to test all members of the project without having to wait for weeks. I then decided it was time to move on to another level.

That was the beginning of [Dead-Hosts](#).

Today [Dead-Hosts](#)'s is objective to provide project and lists to maintainers or individuals, with the help of PyFunceble, to provide more information about their favourite project/list or domains, IP or URL.

14.1 Requirements

Here is the list of requirements:

- Python 3.6.11+
- alembic
- colorama
- cryptography
- dnspython
- domain2idna
- inflection
- PyMySQL
- python-box
- python-dotenv
- PyYAML
- requests
- setuptools
- sqlalchemy

14.1.1 Python 3.6.11+

The specification 3.6.11+ is because we test PyFunceble (daily) in all (3.x) versions from 3.6.11. Otherwise, more semantically, PyFunceble is written for all Python 3.6+ version.

14.1.2 alembic

As we want to automate database (MySQL/MariaDB) schema migration, we chose `alembic` for the job.

14.1.3 colorama

As we use some coloration, `colorama` is required.

14.1.4 cryptography

As we use some cryptography algorithm for message hashing as example, `cryptography` is required.

14.1.5 dnspython

As we use it to do the DNS lookups, `dnspython` is required.

14.1.6 domain2idna

As we propose the conversion of domains to IDNA, `domain2idna` is required.

Note: `domain2idna` is maintained and developed by [Nissar Chababy \(@funilrys\)](#), the developer of PyFunceble. Its source code can be found [on GitHub](#).

14.1.7 inflection

We don't necessarily want to reinvent the wheel while generating the (database) tables name from our schema descriptions. This tool is a relief!

14.1.8 PyMySQL

As we propose the MariaDB or MySQL database types, `PyMySQL` is required.

14.1.9 python-box

As we use `python-box` for a better code access to the configuration, it is required.

14.1.10 python-dotenv

As we are able to load `dotenv` files, `python-dotenv` is required.

14.1.11 PyYAML

As our configuration file is written in `.yaml`, `PyYAML` is required.

14.1.12 requests

As we use `requests` multiple times to communicate with webservices, `requests` is required.

14.1.13 setuptools

As we use `install_requires=xx` inside our `setup.py`, `setuptools` is required.

14.1.14 sqlalchemy

As we don't want to maintain several RAW SQL files, we use `sqlalchemy` for the database communication and manipulation.

14.2 Stable version

14.2.1 Using pip

From PyPi

```
$ pip3 install --user PyFunceble
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using `PyFunceble` into containers like - for example - Travis CI.

From GitHub

```
$ pip3 install --user git+https://github.com/funilrys/PyFunceble.git@master  
↪#egg=PyFunceble
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using `PyFunceble` into containers like - for example - Travis CI.

14.2.2 Using the AUR (for Arch Linux users)

The package can be found at <https://aur.archlinux.org/packages/pyfunceble/>.

With makepkg

```
$ wget https://aur.archlinux.org/cgit/aur.git/plain/PKGBUILD?h=pyfunceble
$ makepkg
$ sudo pacman -U pyfunceble*.tar.xz
```

With your favorite AUR helper

Warning: We do not recommend any AUR helper but keep in mind that some AUR helpers are “better” than other. For more information about your current (or any other) AUR helper please report to [the ArchWiki page](#).

```
$ yourFavoriteAurHelper -S pyfunceble
```

14.2.3 Using docker (hub)

The image description can be found at <https://hub.docker.com/r/pyfunceble/pyfunceble>

```
$ docker pull pyfunceble/pyfunceble
```

14.2.4 Using conda

Our repository is located at <https://anaconda.org/pyfunceble/pyfunceble>

```
conda install -c conda-forge -c pyfunceble pyfunceble=3
```

14.2.5 Pure Python method

Execute the following and enjoy PyFunceble!

```
$ git clone https://github.com/funilrys/PyFunceble.git
$ cd PyFunceble
$ python3 setup.py test
$ python3 setup.py install # Avoid this if you want to uninstall one day.
$ pip3 install --user -e .
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

14.3 Development version

The development version of PyFunceble represents the `dev` branch. It's intended for the development of next features but is always at a usable state.

Indeed, We should not push to the `dev` branch until we are sure that the new commit does not break or introduce critical issue under PyFunceble.

14.3.1 For development

Execute the following and let's hack PyFunceble!

Note: We highly recommend you to develop PyFunceble under a `virtualenv`.

```
$ git clone https://github.com/funilrys/PyFunceble.git
$ cd PyFunceble
$ git checkout dev
$ virtualenv venv
$ source venv/bin/activate
$ pip3 install -e .
```

Note: After installing with:

```
$ source venv/bin/activate
$ pip3 install -e .
```

- you only need to update the repository.
 - you don't have to rerun the `pip` command.
-

14.3.2 For usage

Using `pip`

Execute one of the following and enjoy PyFunceble!

From PyPi

```
$ pip3 install --user PyFunceble-dev
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

From GitHub

```
$ pip3 install --user git+https://github.com/funilrys/PyFunceble.git@dev
↪ #egg=PyFunceble
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

Using the AUR (for Arch Linux users)

The package can be found at <https://aur.archlinux.org/packages/pyfunceble-dev/>.

With makepkg

```
$ wget https://aur.archlinux.org/cgit/aur.git/plain/PKGBUILD?h=pyfunceble-dev
$ makepkg
$ sudo pacman -U pyfunceble-dev*.tar.xz
```

With your favorite AUR helper

Warning: We do not recommend any AUR helper but keep in mind that some AUR helpers are “better” than other. For more information about your current (or any other) AUR helper please report to [the ArchWiki page](#).

```
$ yourFavoriteAurHelper -S pyfunceble-dev
```

Using docker (hub)

The image description can be found at <https://hub.docker.com/r/pyfunceble/pyfunceble-dev>

```
$ docker pull pyfunceble/pyfunceble-dev
```

Using conda

Our repository is located at <https://anaconda.org/pyfunceble/pyfunceble-dev>

```
conda install -c conda-forge -c pyfunceble pyfunceble-dev=3
```

Pure Python method

Execute the following and enjoy PyFunceble!

```
$ git clone https://github.com/funilrys/PyFunceble.git
$ cd PyFunceble && git checkout dev
$ python3 setup.py test
$ python3 setup.py install # Avoid this if you want to uninstall one day.
$ pip3 install --user -e .
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

14.4 First steps

Make sure that you can run

```
$ PyFunceble --version
```

and enjoy PyFunceble!!

15.1 Stable version

15.1.1 Using pip

15.1.2 IMPORTANT INFORMATION for master >= 3.3.0

When you update **from version** before 3.3.0 to newer release, there will be made a SQL conversion of the databases table layout. This can take up a significant amount of time based on the size of the Database.

The table layout conversion **is** being made to:

1. Minimize the total size
2. Optimize the sql flow **and** minimizing the read/write to save disk I/O
3. Minimize the number of SQL queries being made

It have been seen taking days to convert these tables on very large installations.

From PyPi

```
$ pip3 install --user --upgrade PyFunceble
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information

about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

From GitHub

```
$ pip3 install --user --upgrade git+https://github.com/funilrys/PyFunceble.git@master
↪ #egg=PyFunceble
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

15.1.3 Using the AUR (for Arch Linux users)

With makepkg

```
$ wget https://aur.archlinux.org/cgit/aur.git/plain/PKGBUILD?h=python-pyfunceble
$ makepkg
$ sudo pacman -U python-pyfunceble*.tar.xz
```

With your favorite AUR helper

Warning: We do not recommend any AUR helper but keep in mind that some AUR helpers are “better” than other. For more information about your current (or any other) AUR helper please report to [the ArchWiki page](#).

```
$ yourFavoriteAurHelper -Syu python-pyfunceble
```

15.1.4 Using docker (hub)

The image description can be found at <https://hub.docker.com/r/pyfunceble/pyfunceble>

```
$ docker pull pyfunceble/pyfunceble
```

15.1.5 Using conda

Our repository is located at <https://anaconda.org/pyfunceble/pyfunceble>

```
conda update -c conda-forge -c pyfunceble pyfunceble
```

15.1.6 Pure Python method

Execute the following and enjoy PyFunceble!

```
$ cd PyFunceble
$ git checkout master && git fetch origin && git merge origin/master
$ python3 setup.py test
$ python3 setup.py install # Avoid this if you want to uninstall one day.
$ pip3 install --user --upgrade -e .
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

15.2 Development version

15.2.1 IMPORTANT INFORMATION for dev >= 3.2.11

When you update **from dev@<=3.2.10 or master@<=3.2.2** to newer release, there will be made a SQL conversion of the databases table layout. This can take up a significant amount of time based on the size of the Database.

The table layout conversion **is** being made to:

1. Minimize the total size
2. Optimize the sql flow **and** minimizing the read/write to save disk I/O
3. Minimize the number of SQL queries being made

It have been seen taking days to convert these tables on very large installations.

15.2.2 For development

```
$ cd PyFunceble && git checkout dev
$ git fetch origin && git merge origin/dev
```

Note: As you previously installed with

```
$ . venv/bin/activate && pip3 install -e .
```

Only code/repository update is required.

15.2.3 For usage

Using pip

From PyPi

```
$ pip3 install --user --upgrade PyFunceble-dev
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

From GitHub

```
$ pip3 install --user --upgrade git+https://github.com/funilrys/PyFunceble.git@dev  
↪ #egg=PyFunceble
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

Using the AUR (for Arch Linux users)

With makepkg

```
$ wget https://aur.archlinux.org/cgit/aur.git/plain/PKGBUILD?h=python-pyfunceble-dev  
$ makepkg  
$ sudo pacman -U python-pyfunceble-dev*.tar.xz
```

With your favorite AUR helper

Warning: We do not recommend any AUR helper but keep in mind that some AUR helpers are “better” than other. For more information about your current (or any other) AUR helper please report to [the ArchWiki page](#).

```
$ yourFavoriteAurHelper -Syu python-pyfunceble-dev
```

Using docker (hub)

The image description can be found at <https://hub.docker.com/r/pyfunceble/pyfunceble-dev>

```
$ docker pull pyfunceble/pyfunceble-dev
```

Using conda

Our repository is located at <https://anaconda.org/pyfunceble/pyfunceble-dev>

```
conda update -c conda-forge -c pyfunceble pyfunceble-dev
```

Pure Python method

Execute the following and enjoy PyFunceble!

```
$ cd PyFunceble && git checkout dev
$ git fetch origin && git merge origin/dev
$ python3 setup.py test
$ python3 setup.py install # Avoid this if you want to uninstall one day.
$ pip3 install --user --upgrade -e .
```

Note: We recommend the `--user` flag which installs the required dependencies at the user level. More information about it can be found on [pip documentation](#).

Warning: We do not recommend the `--user` flag when using PyFunceble into containers like - for example - Travis CI.

16.1 Location

16.1.1 Problematics

- How can we create a more efficient way to work with configuration?
- How can we make the configuration file(s) available globally so that PyFuncible can be run everywhere in the user workspace?

To answer those problematics, we moved the configuration location elsewhere in the place where most users expect to have their configuration file(s).

16.1.2 Repository clone

If you cloned the repository and you're trying to test from a cloned directory (the one with for example `CONTRIBUTING.md`) we consider the configuration directory as the current one.

Note: This behavior allows us to not modify the way we develop PyFuncible.

16.1.3 Travis CI

Under [Travis CI](#), we search or initiate the configuration at the directory we are currently located.

Warning: We don't care about the distribution, as long as the `TRAVIS_BUILD_DIR` environment variable is set, we search or initiate the configuration in the current directory.

Note: If you want to force the directory where we should work, you can initiate the `PYFUNCEBLE_CONFIG_DIR` environment variable with the path where we should work.

16.1.4 GitLab CI/CD

Under [GitLab CI/CD](#), we search or initiate the configuration at the directory we are currently located.

Warning: We don't care about the distribution, as long as the `PROJECT_CI` and `GITLAB_CI` environment variables are set, we search or initiate the configuration in the current directory.

Note: If you want to force the directory where we should work, you can initiate the `PYFUNCEBLE_CONFIG_DIR` environment variable with the path where we should work.

16.1.5 Linux and MacOS (Darwin Kernel)

Under Linux and MacOS, we look for the following directories in their order. If any configuration directory is found, the system proposes you to install them automatically on the first configuration file.

1. `~/ .config/PyFunceble`
2. `~/ .PyFunceble`
3. `${PWD}`

Note: If the parent directory does not exist, we move to the next possible location in the given order.

This means that under most Linux distributions and MacOS versions, we consider `~/ .config/PyFunceble` as the configuration location. But if the `~/ .config` directory does not exist, we fallback to `~/ .PyFunceble` as the configuration location.

16.1.6 Windows

As mentioned by [Pat Altimore's Blog](#), we used the Per user configuration files synchronized across domain joined machines via Active Directory Roaming section in order to understand what we should do to find our configuration directory.

Under Windows, we look for the following directories in their order. If any configuration directory is found, the system proposes you to install them automatically on the first configuration file.

1. `%APPDATA%\PyFunceble` (environnement variable)
2. `%CD%`

Note: `%CD%` is explained by the `set /?` command:

`%CD%` - expands to the current directory string.

Note: If the parent directory does not exist, we move to the next possible location in the given order.

This means that under most Windows versions, we consider `%APPDATA%\PyFunceble` - also known as `C:\Users\userName\AppData\Roaming\PyFunceble` - as the configuration location. But if the `%APPDATA%` directory does not exist, we fall back to the current directory as the configuration location.

16.1.7 Custom location

Sometimes, you may find yourself in a position where you absolutely do not want PyFunceble to use its default configuration location.

For that reason, if you set your desired configuration location along with the `PYFUNCEBLE_CONFIG_DIR` environment variable, we take that location as the (default) configuration location.

16.2 Autoconfiguration

Sometimes, you may find yourself in a position that you do not or you can't answer the question which asks you if you would like to install the default configuration file.

For that reason, if you set `PYFUNCEBLE_AUTO_CONFIGURATION` as an environment variable with what you want an assignment, we do not ask that question. We simply do what we have to do without asking anything.

16.3 Indexes

This page will try to detail each configuration available into `.PyFunceble.yaml` along with the location of where we are looking for the configuration file.

16.3.1 adblock

Type: `boolean`

Default value: `False`

Description: Enable / disable the adblock format decoding.

Note: If this index is set to `True`, every time we read a given file, we try to extract the elements that are present.

We basically only decode the adblock format.

Note: If this index is set to `False`, every time we read a given file, we will consider one line as an element to test.

16.3.2 aggressive

Type: boolean

Default value: False

Description: Enable / disable some aggressive settings.

Warning: This option is available but please keep in mind that the some settings which it enable are experimental.

16.3.3 auto_continue

Type: boolean

Default value: True

Description: Enable / disable the auto continue system.

16.3.4 command

Type: string

Default value: ""

Description: Set the command to run before each commit (except the final one).

Note: The parsed command is called only if `auto_continue` and `ci` are set to `True`.

16.3.5 command_before_end

Type: string

Default value: ""

Description: Set the command to run before the final commit.

Note: The parsed command is called only if `auto_continue` and `ci` are set to `True`.

Note: Understand by final commit the commit which will deliver the last element we have to test.

16.3.6 cooldow_time

Type:: float

Default value: null

Description: Set the cooldown time to apply between each test.

Note: This index take only effect from the CLI. Not from the API.

16.3.7 custom_ip

Type: string

Default value: "0.0.0.0"

Description: Set the custom IP to use when we generate a line in the hosts file format.

Note: This index has no effect if `generate_hosts` is set to `False`.

16.3.8 days_between_db_retest

Type: integer

Default value: 1

Description: Set the number of day(s) between each retest of the `INACTIVE` and `INVALID` elements which are present into `inactive_db.json`.

Note: This index has no effect if `inactive_database` is set to `False`.

16.3.9 days_between_inactive_db_clean

Type: integer

Default value: 28

Description: Set the numbers of days since the introduction of a subject into `inactive-db.json` for it to qualifies for deletion.

Note: This index has no effect if `inactive_database` is set to `False`.

16.3.10 db_type

Type: string

Default value: json

Available values: json, mariadb, mysql

Description: Set the database type to use everytime we create a database.

Note: This feature is applied to the following subsystems:

- Autocontinue physically located (JSON) at `output/continue.json`.
- InactiveDB physically located (JSON) at `[config_dir]/inactive_db.json`.

- Mining physically located (JSON) at `[config_dir]/mining.json`.
 - WhoisDB physically located (JSON) at `[config_dir]/whois.json`.
-

16.3.11 debug

Type: `boolean`

Default value: `False`

Description: Enable / disable the generation of debug file(s).

Note: This index has no effect if `logs` is set to `False`

Warning: Do not touch this index unless you have good reason to.

Warning: Do not touch this index unless you have been invited to.

16.3.12 dns_lookup_over_tcp

Type: `boolean`

Default value: `False`

Description: Make all DNS lookup with TCP instead of UDP.

16.3.13 dns_server

Type: `None` or `list`

Default value: `null`

Description: Set the DNS server(s) to work with.

Note: When a list is given the following format is expected.

```
dns_server:
- dns1.example.org
- dns2.example.org
```

Note: You can specify a port number to use to the DNS server if needed.

As example:

```
- 127.0.1.53:5353
```

Warning: We expect a DNS server(s). If no DNS server(s) is given. You'll almost for certain get all results as INACTIVE

This could happens in case you use `--dns -f`

16.3.14 filter

Type: string

Default value: ""

Description: Set the element to filter.

Note: This index should be initiated with a regular expression.

16.3.15 generate_complements

Type: boolean

Default value: False

Description: Enable / disable the generation and test of the complements.

Note: A complement is for example `example.org` if `www.example.org` is given and vice-versa.

16.3.16 generate_hosts

Type: boolean

Default value: True

Description: Enable / disable the generation of the hosts file(s).

16.3.17 generate_json

Type: boolean

Default value: False

Description: Enable / disable the generation of the JSON file(s).

16.3.18 header_printed

Type: boolean

Default value: False

Description: Say to the system if the header has been already printed or not.

Warning: Do not touch this index unless you have a good reason to.

16.3.19 hierarchical_sorting

Type: boolean

Default value: False

Description: Say to the system if we have to sort the list and the outputs in a hierarchical order.

16.3.20 iana_whois_server

Type: string

Default value: whois.iana.org

Description: Set the server to call to get the whois referer of a given element.

Note: This index is only used when generating the `iana-domains-db.json` file.

Warning: Do not touch this index unless you have good reason to.

16.3.21 idna_conversion

Type: boolean

Default value: False

Description: Tell the system to convert all domains to IDNA before testing.

Note: We use `domain2idna` for the conversion.

16.3.22 inactive_database

Type: boolean

Default value: True

Description: Enable / Disable the usage of a database to store the INACTIVE and INVALID element to retest overtime.

16.3.23 less

Type: boolean

Default value: True

Description: Enable / Disable the output of every information of screen.

16.3.24 local

Type: boolean

Default value: False

Description: Enable / Disable the execution of the test(s) in a local or private network.

16.3.25 logs

Type: boolean

Default value: True

Description: Enable / Disable the output of all logs.

16.3.26 maximal_processes

Type: integer

Default value: 25

Description: Set the number of maximal simultaneous processes to use/create/run.

Warning: If you omit the `--processes` argument, we overwrite the default with the number of available CPU.

16.3.27 mining

Type: boolean

Default value: True

Description: Enable / Disable the mining subsystem.

16.3.28 multiprocess

Type: boolean

Default value: False

Description: Enable / Disable the usage of multiple processes instead of the default single process.

16.3.29 multiprocess_merging_mode

Type: string

Default value: end

Available values: end, live

Description: Set the multiprocess merging mode.

Note: With the `end` value, the merging of cross process data is made at the very end of the current instance.

Note: With the `live` value, the merging of cross process data is made after the processing of the maximal number of process.

Which means that if you allow 5 processes, we will run 5 tests, merge, run 5 tests, merge and so on until the end.

16.3.30 `no_files`

Type: `boolean`

Default value: `False`

Description: Enable / Disable the generation of any file(s).

16.3.31 `no_special`

Type: `boolean`

Default value: `False`

Description: Enable / Disable the usage of the SPECIAL rules - which are describes in the source column section.

16.3.32 `no_whois`

Type: `boolean`

Default value: `False`

Description: Enable / Disable the usage of `whois` in the tests.

16.3.33 `plain_list_domain`

Type: `boolean`

Default value: `False`

Description: Enable / Disable the generation of the plain list of elements sorted by statuses.

Warning: Do not touch this index unless you a have good reason to.
--

16.3.34 `print_dots`

Type: `boolean`

Default value: `False`

Description: Enable / Disable the printing of dots (.) for the skipped subjects.

Note: The idea is to not given the impression that we hang. Because most of the time, we don't.

16.3.35 quiet

Type: boolean

Default value: False

Description: Enable / Disable the generation of output on the screen.

16.3.36 referer

Type: string

Default value: ""

Description: Set the referer of the element that is currently under test.

Warning: Do not touch this index unless you have good reason to.

16.3.37 reputation

Type: boolean

Default value: False

Description: Enable / disable the reputation (only) testing.

Warning: If this index is set to `True`, we **ONLY** check for reputation, not availability nor syntax.

16.3.38 shadow_file

Type: boolean

Default value: False

Description: Enable / Disable the usage and generation of a shadow file before a the test of a file.

Note: The shadow file, will just contain the actual list of subjects to test.

16.3.39 share_logs

Type: boolean

Default value: True

Description: Enable / disable the logs sharing.

Note: This index has no effect if `logs` is set to `False`.

16.3.40 `show_execution_time`

Type: `boolean`

Default value: `False`

Description: Enable / disable the output of the execution time.

16.3.41 `show_percentage`

Type: `boolean`

Default value: `True`

Description: Enable / disable the output of the percentage of each status.

16.3.42 `simple`

Type: `boolean`

Default value: `False`

Description: Enable / disable the simple output mode.

Note: If this index is set to `True`, the system will only return the result in format: `tested.element STATUS`.

16.3.43 `split`

Type: `boolean`

Default value: `True`

Description: Enable / disable the split of the results files.

Note: Understand with “results files” the mirror of what is shown on screen.

16.3.44 `store_whois_record`

Type: `boolean`

Default value: `False`

Description: Enable / disable the storage of the WHOIS record into the WHOIS DB.

Warning: This does not disable the WHOIS DB functionality. It just not storing the full WHOIS reply in the database.

16.3.45 syntax

Type: `boolean`

Default value: `False`

Description: Enable / disable the syntax (only) testing.

Warning: If this index is set to `True`, we **ONLY** check for syntax, not availability nor reputation.

16.3.46 timeout

Type: `integer`

Default value: `5`

Description: Set the timeout to apply everytime it's possible to set one.

16.3.47 ci

Type: `boolean`

Default value: `False`

Description: Enable / disable the CI autosaving system.

Warning: Do not activate this index unless you are using PyFunceble under a supported CI environment/platform.

16.3.48 ci_autosave_commit

Type: `string`

Default value: `"PyFunceble - AutoSave"`

Description: Set the default commit message we want to use when have to commit (save) but our tests are not yet completed.

16.3.49 ci_autosave_final_commit

Type: `string`

Default value: `"PyFunceble - Results"`

Description: Set the default final commit message we want to use when we all tests are finished.

16.3.50 ci_autosave_minutes

Type: `integer`

Default value: `15`

Description: Set the minimum of minutes we have to run before to automatically save our test results.

Note: As many services are setting a rate limit per IP, it's a good idea to set this value between 1 and 15 minutes.

16.3.51 `ci_distribution_branch`

Type: `string`

Default value: `master`

Description: Set the git branch where we are going to push our results.

Note: The difference between this and `ci_branch` is the fact that this branch will get the result only when the test were finished under the given `ci_branch`.

As example, this allow us to have 2 branches:

- `proceessing` (ci branch), for the tests with PyFunceble.
 - `master` (ci distribution branch), for the distribution of the results of PyFunceble.
-

16.3.52 `ci_branch`

Type: `string`

Default value: `master`

Description: Set the git branch where we are going to push our results.

16.3.53 `unified`

Type: `boolean`

Default value: `False`

Description: Enable / Disable the generation of the unified results.

Note: This index has no effect if `split` is set to `True`.

16.3.54 `use_reputation_data`

Type: `boolean`

Default value: `False`

Description: Enable / Disable the usage of reputation data while testing the availability of a given subject.

Warning: This only have an effect when used along with the availability test.

16.3.55 verify_ssl_certificate

Type: boolean

Default value: False

Description: Enable / Disable the verification of the SSL/TLS certificate when testing for URL.

Warning: If you set this index to True, you may get **false positive** result.

Indeed if the certificate is not registered to the CA or is simply invalid and the domain is still alive, you will always get INACTIVE as output.

16.3.56 whois_database

Type: boolean

Default value: True

Description: Enable / Disable the usage of the whois database to avoid/bypass whois server requests rate limit.

16.3.57 wildcard

Type: boolean

Default value: False

Description: Enable / Disable the test of wildcards when testing for syntax.

Warning: This is not taken into consideration if syntax is set to False.

16.3.58 user_agent

Type: dict

Description: Configures the user agent.

user_agent[browser]

Type: string

Default value: chrome

Description: Sets the browser to get the latest user agent from. Available values: chrome, edge, firefox, ie, opera, safari

Warning: This option is not taken in consideration if user_agent[custom] is not set to null.

`user_agent [platform]`

Type: string

Default value: linux

Description: Sets the platform to get the latest user agent for. Available values: linux, macosx, win10

Warning: This option is not taken in consideration if `user_agent [custom]` is not set to null.

`user_agent [custom]`

Type: string

Default value: null

Description: Sets the user agent to use.

Warning: Setting this index will overwrite the choices made into `user_agent [platform]` and `user_agent [browser]`.

16.3.59 outputs

Type: dict

Description: Set the needed output tree/names.

Warning: If you choose to change anything please consider deleting our `output/` directory and the `dir_structure*.json` files.

`outputs [default_files]`

Type: dict

Description: Set the default name of some important files.

`outputs [default_files] [dir_structure]`

Type: string

Default value: `dir_structure.json`

Description: Set the default filename of the file which has the structure to re-construct.

Note: This index has no influence with `dir_structure_production.json`

outputs[default_files][iana]

Type: string

Default value: iana-domains-db.json

Description: Set the default filename of the file which has the formatted copy of the IANA root zone database.

outputs[default_files][inactive_db]

Type: string

Default value: inactive_db.json

Description: Set the default filename of the file which will save the list of elements to retest overtime.

outputs[default_files][results]

Type: string

Default value: results.txt

Description: Set the default filename of the file which will save the formatted copy of the public suffix database.

outputs[default_files][public_suffix]

Type: string

Default value: public-suffix.json

Description: Set the default filename of the file which will save the mirror of what is shown on screen.

outputs[default_files][mining]

Type: string

Default value: mining.json

Description: Set the default filename of the file which will save the temporary list of mined subject to test.

outputs[default_files][whois_db]

Type: string

Default value: whois_db.json

Description: Set the default filename of the file which will save the whois information for caching.

`outputs[domains]`

Type: dict

Description: Set the default name of some important files related to the `plain_list_domain` index.

`outputs[domains][directory]`

Type: string

Default value: domains/

Description: Set the default directory where we have to save the plain list of elements for each status.

`outputs[domains][filename]`

Type: string

Default value: list

Description: Set the default filename of the file which will save the plain list of elements.

`outputs[hosts]`

Type: dict

Description: Set the default name of some important files related to the `generate_hosts` index.

`outputs[hosts][directory]`

Type: string

Default value: hosts/

Description: Set the default directory where we have to save the hosts files of the elements for each status.

`outputs[hosts][filename]`

Type: string

Default value: hosts

Description: Set the default filename of the file which will save the hosts files of the elements.

`outputs[json]`

Type: dict

Description: Set the default name of some important files related to the `generate_json` index.

outputs[json][directory]

Type: string

Default value: json

Description: Set the default directory where we have to save the JSON files of the elements for each status.

outputs[json][filename]

Type: string

Default value: dump.json

Description: Set the default filename of the file which will save the JSON files of the elements.

outputs[complements]

Type: dict

Description: Set the default name of some important files/directories related to the generate_complements index.

outputs[complements][directory]

Type: string

Default value: complements

Description: Set the default directory where we have to save the complements related files sorted by status.

outputs[analytic]

Type: dict

Description: Set the default name of some important files and directories related to the generate_hosts index.

outputs[analytic][directories]

Type: dict

Description: Set the default name of some important directories related to the http_codes[active] index.

outputs[analytic][directories][parent]

Type: string

Default value: Analytic/

Description: Set the default directory where we are going to put everything related to the HTTP analytic.

`outputs[analytic][directories][potentially_down]`

Type: string

Default value: POTENTIALLY_INACTIVE/

Description: Set the default directory where we are going to put all potentially inactive data.

`outputs[analytic][directories][potentially_up]`

Type: string

Default value: POTENTIALLY_INACTIVE/

Description: Set the default directory where we are going to put all potentially active data.

`outputs[analytic][directories][up]`

Type: string

Default value: POTENTIALLY_INACTIVE/

Description: Set the default directory where we are going to put all active data.

`outputs[analytic][directories][suspicious]`

Type: string

Default value: SUSPICIOUS/

Description: Set the default directory where we are going to put all suspicious data.

`outputs[analytic][filenames]`

Type: dict

Description: Set the default name of some important files related to the `http_codes[active]` index and the HTTP analytic subsystem.

`outputs[analytic][filenames][potentially_down]`

Type: string

Default value: down_or_potentially_down

Description: Set the default filename where we are going to put all potentially inactive data.

`outputs[analytic][filenames][potentially_up]`

Type: string

Default value: potentially_up

Description: Set the default filename where we are going to put all potentially active data.

`outputs[analytic][filenames][up]`

Type: string

Default value: active_and_merged_in_results

Description: Set the default filename where we are going to put all active data.

`outputs[analytic][filenames][suspicious]`

Type: string

Default value: suspicious_and_merged_in_results

Description: Set the default filename where we are going to put all suspicious data.

`outputs[logs]`

Type: dict

Description: Set the default name of some important files and directories related to the logs index.

`outputs[logs][directories]`

Type: dict

Description: Set the default name of some important directories related to the logs index.

`outputs[logs][directories][date_format]`

Type: string

Default value: date_format/

Description: Set the default directory where we are going to put everything related to the data when the dates are in the wrong format.

`outputs[logs][directories][no_referer]`

Type: string

Default value: no_referer/

Description: Set the default directory where we are going to put everything related to the data when no referer is found.

`outputs[logs][directories][parent]`

Type: string

Default value: no_referer/

Description: Set the default directory where we are going to put everything related to the data when no referer is found.

`outputs[logs][directories][percentage]`

Type: string

Default value: percentage/

Description: Set the default directory where we are going to put everything related to percentages.

`outputs[logs][directories][whois]`

Type: string

Default value: whois/

Description: Set the default directory where we are going to put everything related to whois data.

Note: This is the location of all files when the `debug` index is set to `True`.

`outputs[logs][filenames]`

Type: dict

Description: Set the default filenames of some important files related to the `logs` index.

`outputs[logs][filenames][auto_continue]`

Type: string

Default value: continue.json

Description: Set the default filename where we are going to put the data related to the `auto continue` subsystem.

Note: This file is allocated if the `auto_continue` is set to `True`.

`outputs[logs][filenames][execution_time]`

Type: string

Default value: execution.log

Description: Set the default filename where we are going to put the data related to the execution time.

Note: This file is allocated if the `show_execution_time` is set to `True`.

`outputs[logs][filenames][percentage]`

Type: string

Default value: `percentage.txt`

Description: Set the default filename where we are going to put the data related to the percentage.

Note: This file is allocated if the `show_percentage` is set to `True`.

`outputs[main]`

Type: string

Default value: ""

Description: Set the default location where we have to generate the `parent_directory` directory and its dependencies.

`outputs[parent_directory]`

Type: string

Default value: `output/`

Description: Set the directory name of the parent directory which will contain all previously nounced directories.

`outputs[splited]`

Type: dict

Description: Set the default name of some important files and directory related to the `split` index.

`outputs[splited][directory]`

Type: string

Default value: `splited/`

Description: Set the default directory name where we are going to put the split data.

16.3.60 status

Type: dict

Description: Set the needed, accepted and status name.

`status[list]`

Type: dict

Description: Set the needed and accepted status name.

Warning: All status should be in lowercase.

`status[list][valid]`

Type: list

Default value: ["valid", "syntax_valid", "valid_syntax"]

Description: Set the accepted VALID status.

Note: This status is only shown if the `syntax` index is activated.

`status[list][up]`

Type: list

Default value: ["up", "active"]

Description: Set the accepted ACTIVE status.

`status[list][generic]`

Type: list

Default value: ["generic"]

Description: Set the accepted generic status.

Note: This status is the one used to say the system that we have to print the complete information on the screen.

`status[list][http_active]`

Type: list

Default value: ["http_active"]

Description: Set the accepted status for the `outputs[analytic][filenames][up]` index.

`status[list][down]`

Type: list

Default value: ["down", "inactive", "error"]

Description: Set the accepted status INACTIVE index.

`status[list][invalid]`

Type: list

Default value: ["ouch", "invalid"]

Description: Set the accepted status INVALID index.

`status[list][potentially_down]`

Type: list

Default value: ["potentially_down", "potentially_inactive"]

Description: Set the accepted status for the `outputs[analytic][filenames][potentially_down]` index.

`status[list][potentially_up]`

Type: list

Default value: ["potentially_up", "potentially_active"]

Description: Set the accepted status for the `outputs[analytic][filenames][potentially_up]` index.

`status[list][suspicious]`

Type: list

Default value: ["strange", "hum", "suspicious"]

Description: Set the accepted status for the `outputs[analytic][filenames][suspicious]` index.

`status[official]`

Type: dict

Description: Set the official status name.

Note: Those status are the ones that are printed on the screen.

Warning: After any changes here please delete `dir_structure.json` and the `output/` directory.

`status[official][up]`

Type: string

Default value: ACTIVE

Description: Set the returned status for the ACTIVE case.

`status[official][down]`

Type: string

Default value: INACTIVE

Description: Set the returned status for the INACTIVE case.

`status[official][invalid]`

Type: string

Default value: INVALID

Description: Set the returned status for the INVALID case.

`status[official][valid]`

Type: string

Default value: VALID

Description: Set the returned status for the VALID case.

Note: This status is only shown if the `syntax index` is activated.

16.3.61 http_codes

Type: dict

Description: Handle the interpretation of each status codes when we do and generate our analytic data.

`http_codes[active]`

Type: boolean

Default value: True

Description: Enable / Disable the usage of the HTTP status code extraction.

`http_codes[list]`

Type: dict

Description: Categorize the http status code as mentioned in the documentation related to the HTTP Code column.

`http_codes[list][up]`

Type: list

Default value:

```
- 100
- 101
- 200
- 201
- 202
- 203
- 204
- 205
- 206
```

Description: List the HTTP status codes which are considered as ACTIVE.

`http_codes[list][potentially_down]`

Type: list

Default value:

```
- 400
- 402
- 403
- 404
- 409
- 410
- 412
- 414
- 415
- 416
```

Description: List the HTTP status code which are considered as INACTIVE or POTENTIALLY_INACTIVE.

`http_codes[list][potentially_up]`

Type: list

Default value:

```
- 000
- 300
- 301
- 302
```

(continues on next page)

(continued from previous page)

```
- 303
- 304
- 305
- 307
- 403
- 405
- 406
- 407
- 408
- 411
- 413
- 417
- 500
- 501
- 502
- 503
- 504
- 505
```

Description: List the HTTP status code which are considered as `ACTIVE` or `POTENTIALLY_ACTIVE`.

16.3.62 links

Type: dict

Description: Set the list of links which can be used/called by the system when needed.

Note: The objective of this index is to avoid hardcoded links when the configuration file is readable.

`links[api_date_format]`

Type: string

Default value: `https://pyfunceble.funilrys.com/api/date-format`

Description: Set the link to use when we share logs.

`links[api_no_referer]`

Type: string

Default value: `https://pyfunceble.funilrys.com/api/no-referer`

Description: Set the link to use when we share logs.

`links[config]`

Type: string

Default value: `https://raw.githubusercontent.com/funilrys/PyFunceble/master/.PyFunceble_production.yaml`

Description: Set the upstream link to the configuration file.

links[dir_structure]

Type: string

Default value: `https://raw.githubusercontent.com/funilrys/PyFunceble/master/dir_structure_production.json`

Description: Set the upstream link to the directory structure dump file.

links[iana]

Type: string

Default value: `https://raw.githubusercontent.com/funilrys/PyFunceble/master/iana-domains-db.json`

Description: Set the upstream link to the IANA zone file configuration file.

links[psl]

Type: string

Default value: `https://raw.githubusercontent.com/funilrys/PyFunceble/master/public-suffix.json`

Description: Set the upstream link to the public suffix database file.

links[repo]

Type: string

Default value: `https://github.com/funilrys/PyFunceble`

Description: Set the upstream link to the repository.

links[requirements]

Type: string

Default value: `https://raw.githubusercontent.com/funilrys/PyFunceble/master/requirements.txt`

Description: Set the upstream link to the `requirements.txt` file.

17.1 From a terminal

17.1.1 `--help`

Show the help message and exit.

17.1.2 `-v | --version`

Show the version of PyFunceble and exit.

17.1.3 Source

`-d "something" | --domain "something"`

Test one or more domains, separated by spaces.

Note: This argument takes 1 or more values.

As example:

```
$ PyFunceble -d example.org example.net
```

Note: When this option is used, no output files are generated.

`-url "something" | --url "something"`

Test one or more full URL, separated by spaces.

Note: When we test the availability of a URL, we (only) check the HTTP status code of the given URL.

Note: This argument takes 1 or more values.

As example:

```
$ PyFunceble -u https://example.org https://example.com
```

`-f "something" | --file "something"`

Read a local or remote (RAW link) file and test all domains inside it. If remote (RAW link) file is given, PyFunceble will download it, and test the content of the given RAW link as if it was a locally stored file.

Note: The system understands the following format:

- plain list of subjects.
 - hosts file format.
-

`-uf "something" | --url-file "something"`

Read a local or remote (RAW link) file and test all (full) URLs inside it. If remote (RAW link) file is given, PyFunceble will download it, and test the content of the given RAW link as if it was a locally stored file.

Note: We consider one line as one URL to test.

Note: This argument test if a URL which is inside the given file is available. It **ONLY** tests full URLs.

As example:

```
$ PyFunceble -uf `https://raw.githubusercontent.com/funilrys/PyFunceble/master/.  
↪travis/lists/url`
```

will download the given URL and test for its content assuming that each line represents a URL to test.

Warning: A test with this argument consists of the comparison of the status code. No WHOIS record will be requested nor DNS Lookup will be done.

17.1.4 Source filtering, decoding, conversion and expansion

`-ad | --adblock`

Switch the decoding of the adblock format.

Default value: `False`

If this argument is activated the system will extract all domains or IP from the given adblock file.

`--complements`

Switch the value of the generation and test of the complements. A complement is for example `example.org` if `www.example.org` is given and vice-versa.

Default value: `False`

`--filter "something"`

Domain to filter (regex).

Want to test all `blogspot` from your list? This argument allows you to do that!

Note: This argument should be a regex expression.

`--idna`

Switch the value of the IDNA conversion.

Default value: `False`

This argument allows the conversion of the domains using `domain2idna`

`--mining`

Switch the value of the mining subsystem usage.

Default value: `False`

Want to find domain or URL linked to a domain in your list? This argument will exactly do that.

17.1.5 Test control

`-c | --auto-continue | --continue`

Switch the value of the auto continue mode.

Default value: `True`

This argument activates or deactivates the auto-continue subsystem. Indeed, as we can automatically continue if the script has been stopped, this switch allows us to disable or enable the usage of that specific subsystem.

`--cooldown-time`

Switch the value of the cool-down time to apply between each test.

Default value: `None`

This argument applies a number of seconds to sleep before/between each test.

`--http`

Switch the value of the usage of HTTP code.

Default value: `True`

You don't want to take the result of the HTTP code execution into consideration? This argument allows you to disable that!

Note: If activated the subsystem will bypass the HTTP status code extraction logic-representation.rst

`--local`

Switch the value of the local network testing.

Default value: `False`

Want to run a test over a local or private network? This argument will disable the limitation which does not apply to private networks.

`-ns | --no-special`

Switch the value of the usage of the SPECIAL rules.

Default value: `False`

Don't want to use/apply the SPECIAL rules - which are explained in the source column section? This argument disables them all.

`-nw | --no-whois`

Switch the value of the usage of WHOIS to test the domain's status.

Default value: `False`

Don't want to use or take into consideration the results from `whois`? This argument allows you to disable it!

`--reputation`

Switch the value of the reputation test mode.

Default value: `False`

Warning: This will disable all other forms of test, will check against AlienVault's reputation data and output its result into `output/*/ {MALICIOUS, SANE}/*`.

--shadow-file | --shadow

Switch the value of the usage and generation of a shadow file before a file test starts.

A shadow file is a file which only contain the actual list of subject to test. For its generation we check each subjects as we normally do on-the-fly.

Default value: False

Note: The shadow file, will just contain the actual list of subjects to test.

--syntax

Switch the value of the syntax test mode.

Default value: False

Warning: This will disable all other forms of test, will validate the syntax of a given test subject, and output its results in plain format into `output/domains/{VALID,INVALID}/list`

-t "something" | --timeout "something"

Switch the value of the timeout in seconds.

Default value: 5

This argument will set the default timeout to apply everywhere it is possible to set a timeout.

--use-reputation-data

Switch the value of the reputation data usage.

Default value: False

Warning: This only affects when used along with the availability test.

-ua "something" | --user-agent "something"

Set the user-agent to use and set every time we interact with everything which is not the logs sharing system.

-vsc | --verify-ssl-certificate

Switch the value of the verification of the SSL/TLS certificate when testing for URL.

Default value: False

Warning: If you activate the verification of the SSL/TLS certificate, you may get **false-positive** results.

Indeed if the certificate is not registered to the CA or is simply invalid and the domain is still alive, you will always get `INACTIVE` as output.

wildcard

Switch the value of the wildcards test.

Default value: `False`

Warning: This argument is not taken into consideration if the `--syntax` argument is not given.

17.1.6 DNS (resolver) control

--dns

Set one or more specific DNS servers to use during the test. Separated by spaces.

Default value: `Follow OS DNS ==> None`

Warning: We expect a DNS server(s). If no DNS server(s) is given. You'll almost for certain get all results as `INACTIVE`

This could happen in case you use `--dns -f`

Note: You can specify a port number to use to the DNS server if needed.

As example:

```
- 127.0.1.53:5353
```

--dns-lookup-over-tcp

Make all DNS queries through TCP instead of UDP.

Default value: `False`

17.1.7 Databases

-db | --database

Switch the value of the usage of a database to store inactive domains of the currently tested list.

Default value: `True`

This argument will disable or enable the usage of a database which saves all *INACTIVE* and *INVALID* domain of the given file over time.

Note: The database is retested every x day(s), where x is the number set in `-dbr "something"`.

`--database-type`

Tell us the type of database to use. You can choose between the following: `json`, `mariadb`, `mysql`.

Default value: `json`

This argument let us use different types of database.

Note: This feature is applied to the following subsystems:

- Autocontinue physically located (JSON) at `output/continue.json`.
 - InactiveDB physically located (JSON) at `[config_dir]/inactive_db.json`.
 - Mining physically located (JSON) at `[config_dir]/mining.json`.
 - WhoisDB physically located (JSON) at `[config_dir]/whois.json`.
-

`-dbr "something" | --days-between-db-retest "something"`

Set the numbers of days between each retest of domains present into the database of *INACTIVE* and *INVALID* domains.

Default value: `1`

Note: This argument is only used if `-db` or `inactive_database : true` (under `.PyFunceble.yaml`) are activated.

`-dbc "something" | --days-between-db-clean`

Set the numbers of days since the introduction of a subject into `inactive-db.json` for it to qualifies for deletion.

Default value: `28`

Note: This argument is only used if `-db` or `inactive_database : true` (under `.PyFunceble.yaml`) are activated.

`-wdb | --whois-database`

Switch the value of the usage of a database to store whois data to avoid whois servers rate limit.

Default value: `True`

17.1.8 Output control

-a | --all

Output all available information on the screen.

Default value: False

When activated:

Domain	Status	Expiration Date	Source	HTTP Code
pyfunceble.readthedocs.io	ACTIVE	Unknown	NSLOOKUP	302

When deactivated:

Domain	Status	HTTP Code
pyfunceble.readthedocs.io	ACTIVE	302

--dots

Output dots (.) to stdout instead of giving the impression that we hang on.

Default value: False

-ex | --execution

Switch the default value of the execution time showing.

Default value: False

Want to know the execution time of your test? Well, this argument will let you know!

--hierarchical

Switch the value of the hierarchical sorting of the tested file.

Default value: True

This argument will output the result listed in a hierarchical order.

-h | --host

Switch the value of the generation of hosts file.

Default value: True

This argument will let the system know if it has to generate the hosts file version of each status.

-ip "something"

Change the IP to print in the hosts files with the given one.

Default value: 0.0.0.0

--json

Switch the value of the generation of the JSON formatted list of domains.

Default value: False

--less**When activated:**

Domain	Status	HTTP Code
pyfuncible.readthedocs.io	ACTIVE	302

When deactivated:

Domain	Status	Expiration Date	Source	HTTP Code
pyfuncible.readthedocs.io	ACTIVE	Unknown	NSLOOKUP	302

-nf | --no-files

Switch the value of the production of output files.

Default value: False

Want to disable the production of the outputted files? This argument is for you!

-nl | --no-logs

Switch the value of the production of logs files in the case we encounter some errors.

Default value: False

Don't want any logs to go out of PyFuncible? This argument disables every log subsystem.

-nu | --no-unified

Switch the value of the production unified logs under the output directory.

Default value: True

This argument disables the generation of *result.txt*.

--percentage

Switch the value of the percentage output mode.

Default value: True

This argument will disable or enable the generation of the percentage of each status.

`--plain`

Switch the value of the generation of the plain list of domains.

Default value: `False`:

Want to get a list with all domains for each status? The activation of this argument does the work while testing!

`-q | --quiet`

Run the script in quiet mode.

Default value: `False`

You prefer to run a program silently? This argument is for you!

`--share-logs`

Switch the value of the sharing of logs.

Default value: `False`

Want to make PyFunceble a better tool? Share your logs with our API which collect all logs!

`-s | --simple`

Switch the value of the simple output mode.

Default value: `False`

Want as less as possible data on screen? This argument returns as less as possible on screen!

`--split`

Switch the value of the split of the generated output.

Default value: `True`

Want to get the logs (copy of what you see on screen) on different files? This argument is suited to you!

`--store-whois`

Switch the value of the WHOIS record storage in the WHOIS DB.

Default value: `False`

The difference between `False` or `True` is whether we are saving a full dump of the *WHOIS* reply into the database.

If you for some reason believes you need to fill up your database with a complete dump of the whois reply, this is the right value to switch on.

Warning: Before switching this value, you should read these comments carefully...

You can test the amount of data by running `whois mypdns.org` from your Linux terminal, to see an example of what will be stored in the database.

You're hearby warned...

```
store_whois_record comment
Brainstorm whois data comment
```

17.1.9 Multiprocessing

-m | --multiprocess

Switch the value of the usage of multiple processes.

Default value: False

Want to speed up the test time? This argument will allow the usage of multiple processes for testing.

--multiprocess-merging-mode

Sets the multiprocessing merging mode. You can choose between the following *livelends*.

Default value: end

Note: With the `end` value, the merging of cross-process data is made at the very end of the current instance.

Note: With the `live` value, the merging of cross-process data is made after the processing of the maximal number of processes.

Which means that if you allow 5 processes, we will run 5 tests, merge, run 5 tests, merge and so on until the end.

-p | --processes

Set the number of simultaneous processes to use while using multiple processes.

Default value: 25

Warning: DO not try to exceed your number of CPU if you want to keep your machine somehow alive and healthy!!

Note: If omitted, the number of available CPU cores will be used instead.

17.1.10 CI / CD

--autosave-minutes

Update the minimum of minutes before we start committing to upstream under the CI mode.

Default value: 15

`--ci`

Switch the value of the CI mode.

Default value: `False`

Note: If you combine this argument with the `--quiet` argument, the test will output a dotted line, where each dot (.) represent one test result or input which was skipped because it was previously tested.

Want to use PyFunceble under a supporter CI infrastructure/network? This argument is suited for your needs!

`--ci-branch`

Switch the branch name where we are going to push the temporary results.

Default value: `master`

Note: Currently the branch need to exist, but there are being worked on a path to have PyFunceble to create the sub-branch and finally merge it into the `--ci-distribution-branch`

`--ci-distribution-branch`

Switch the branch name where we are going to push the final results.

Default value: `master`

Note: The difference between this and `--ci-branch` is the fact that this branch will get the (final) result only when the test is finished under the given `--ci-branch`.

As an example, this allows us to have 2 branches:

- `proceessing` (CI branch), for the tests with PyFunceble.
 - `master` (CI distribution branch), for the distribution of the results of PyFunceble.
-

`--cmd "something"`

Pass a command before each commit (except the final one).

Default value: `' '`

Note: In this example, `something` should be a script or a program which have to be executed when we reached the end of the given file.

Note: This argument is only used if `--ci` or `ci: true` (under `.PyFunceble.yaml`) are activated.

--cmd-before-end "something"

Pass a command before the results (final) commit under the CI mode.

Default value: ' '

Note: In this example, `something` should be a script or a program which have to be executed when we reached the end of the given file.

Note: This argument is only used if `--ci` or `ci: true` (under `.PyFunceble.yaml`) are activated.

--commit-autosave-message "something"

Replace the default autosave commit message.

Default value: `PyFunceble - AutoSave`

This argument allows us to set a custom commit message which is going to be used as a commit message when saving.

Note: This argument is only used if `--ci` or `ci: true` (under `.PyFunceble.yaml`) are used.

Note: This argument is only used if we have to split the work into multiple processes because a list is too long or the timeout is reached.

Warning: Please avoid the usage of `[ci skip]` here.

--commit-results-message "something"

Replace the default results (final) commit message.

Default value: `PyFunceble - Results`

Note: This argument is only used if `--ci` or `ci: true` (under `.PyFunceble.yaml`) are used.

Note: This argument is only used if we reached the end of the list we are or have to test.

17.1.11 Unique actions

--clean

Clean all files under the output directory.

As it is sometimes needed to clean our `output/` directory, this argument does the job automatically.

Warning: This argument delete everything which are `.keep` or `.gitignore`

`--clean-all`

Clean all files under the output directory along with all file generated by PyFunceble.

Warning: This deletes almost everything we generated without any warning.

Note: We don't delete the whois database file/table because they are (almost) static data which are shared across launches in your environment.

Warning: If you plan to clean manually do not delete the whois database file or table as it will make your test finish under a much longer time as usual for you.

Warning: If you don't combine this argument alongside with the `--database-type` argument or its configurable equivalent, this argument will only clean the JSON formatted databases.

`--directory-structure`

Generate the directory and files that are needed and which does not exist in the current directory.

Want to start without anything? This argument generates the output directory automatically for you!

Note: In case of a file or directory not found issue, it's recommended to remove the `dir_structure.json` along with the `output/` directory before using this argument.

17.1.12 Global overview

```
usage: PyFunceble [-d DOMAIN [DOMAIN ...]] [-u URL [URL ...]] [-f FILE]
                  [-uf URL_FILE] [-ad] [--complements] [--filter FILTER]
                  [--idna] [--mining] [-c] [--cooldown-time COOLDOWN_TIME]
                  [--http] [--local] [-ns] [-nw] [--reputation]
                  [--shadow-file] [--syntax] [-t TIMEOUT]
                  [--use-reputation-data] [-ua USER_AGENT] [-vsc] [--wildcard]
                  [--dns DNS [DNS ...]] [--dns-lookup-over-tcp] [-db]
                  [--database-type DATABASE_TYPE]
                  [-dbr DAYS_BETWEEN_DB_RETEST] [-dbc DAYS_BETWEEN_DB_CLEAN]
                  [-wdb] [-a] [-ex] [--hierarchical] [-h] [-ip IP] [--json]
                  [--less] [-nf] [-nl] [-nu] [--percentage] [--plain] [--dots]
                  [-q] [--share-logs] [-s] [--split] [--store-whois] [-m]
```

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```

[--multiprocess-merging-mode MULTIPROCESS_MERGING_MODE]
[-p PROCESSES] [--autosave-minutes AUTOSAVE_MINUTES] [--ci]
[--ci-branch CI_BRANCH]
[--ci-distribution-branch CI_DISTRIBUTION_BRANCH]
[--cmd CMD] [--cmd-before-end CMD_BEFORE_END]
[--commit-autosave-message COMMIT_AUTOSAVE_MESSAGE]
[--commit-results-message COMMIT_RESULTS_MESSAGE] [--clean]
[--clean-all] [--directory-structure] [--help] [-v]

```

PyFunceble - The tool to check the availability or syntax of domain, IP or URL.

optional arguments:

```

--help          Show this help message and exit.
-v, --version   Show the version of PyFunceble and exit.

```

Source:

```

-d DOMAIN [DOMAIN ...], --domain DOMAIN [DOMAIN ...]
    Test one or more domains, separated by spaces.

```

```

    When this option is used, no output files are generated.
-u URL [URL ...], --url URL [URL ...]
    Test one or more full URL, separated by spaces.

```

```

-f FILE, --file FILE  Read a local or remote (RAW link) file and test all domains
↳inside it.

```

```

    If remote (RAW link) file is given, PyFunceble will
↳download it,
    and test the content of the given RAW link as if it was a
↳locally stored file.

```

```

-uf URL_FILE, --url-file URL_FILE
    Read a local or remote (RAW link) file and test all
↳(full) URLs inside it.

```

```

    If remote (RAW link) file is given, PyFunceble will
↳download it,
    and test the content of the given RAW link as if it was a
↳locally stored file.

```

```

    This argument test if an URL is available. It ONLY test
↳full URLs.

```

Source filtering, decoding, conversion and expansion:

```

-ad, --adblock        Switch the decoding of the adblock format.

```

Configured value: False

```

--complements          Switch the value of the generation and test of the
↳complements.

```

```

    A complement is for example `example.org` if `www.example.
↳org` is given and vice-versa.

```

Configured value: False

```

--filter FILTER        Domain to filter (regex).

```

```

--idna                 Switch the value of the IDNA conversion.

```

Configured value: False

```

--mining               Switch the value of the mining subsystem usage.

```

Configured value: False

Test control:

```

-c, --auto-continue, --continue

```

Switch the value of the auto continue mode.

Configured value: True

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```

--cooldown-time COOLDOWN_TIME
    Switch the value of the cooldown time to apply between
↪each test.
    Configured value: None
--http
    Switch the value of the usage of HTTP code.
    Configured value: True
--local
    Switch the value of the local network testing.
    Configured value: True
--ns, --no-special
    Switch the value of the usage of the SPECIAL rules.
    Configured value: False
--nw, --no-whois
    Switch the value of the usage of WHOIS to test the domain's
↪status.
    Configured value: False
--reputation
    Switch the value of the reputation test mode.
    Configured value: False
--shadow-file, --shadow
    Switch the value of the usage and generation of a shadow
↪file before a file test starts.
    A shadow file is a file which only contain the actual
↪list of subject to test. For its generation we check each subjects as we normally
↪do on-the-fly.
    Configured value: False
--syntax
    Switch the value of the syntax test mode.
    Configured value: False
-t TIMEOUT, --timeout TIMEOUT
    Switch the value of the timeout in seconds.
    Configured value: 5
--use-reputation-data
    Switch the value of the reputation data usage.
    Configured value: False
-ua USER_AGENT, --user-agent USER_AGENT
    Set the user-agent to use and set every time we interact
↪with everything which
    is not the logs sharing system.
-vsc, --verify-ssl-certificate
    Switch the value of the verification of the SSL/TLS
↪certificate when testing for URL.
    Configured value: False
--wildcard
    Switch the value of the wildcards test.
    When used, wildcards will be proprely tested.
    Warning: This is not taken in consideration if the '--
↪syntax' argument is not given.
    Configured value: False

DNS (resolver) control:
--dns DNS [DNS ...]
↪Separated by spaces.
    Set one or more DNS server(s) to use during testing.
    To specify a port number for the DNS server you append it
↪as :port [ip:port].
    If no port is specified, the default DNS port (53) is
↪used.
    Configured value: OS (declared) DNS server

```

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```

--dns-lookup-over-tcp
    Make all DNS queries with TCP.
    Configured value: False

Databases:
  -db, --database
    Switch the value of the usage of a database to store
    ↪inactive domains of the currently tested list.
    Configured value: True
  --database-type DATABASE_TYPE
    Tell us the type of database to use.
    You can choose between the following: `json | mariadb |
    ↪mysql`
    Configured value: 'json'
  -dbr DAYS_BETWEEN_DB_RETEST, --days-between-db-retest DAYS_BETWEEN_DB_RETEST
    Set the numbers of days between each retest of domains
    ↪present into inactive-db.json.
    Configured value: 1
  -dbc DAYS_BETWEEN_DB_CLEAN, --days-between-db-clean DAYS_BETWEEN_DB_CLEAN
    Set the numbers of days since the introduction of a
    ↪subject into inactive-db.json for it to qualifies for deletion.
    Configured value: 28
  -wdb, --whois-database
    Switch the value of the usage of a database to store
    ↪whois data to avoid whois servers rate limit.
    Configured value: True

Output control:
  -a, --all
    Output all available information on the screen.
    Configured value: True
  -ex, --execution
    Switch the default value of the execution time showing.
    Configured value: False
  --hierarchical
    Switch the value of the hierarchical sorting of the tested
    ↪file.
    Configured value: False
  -h, --host
    Switch the value of the generation of hosts file.
    Configured value: True
  -ip IP
    Change the IP to print in the hosts files with the given
    ↪one.
    Configured value: '0.0.0.0'
  --json
    Switch the value of the generation of the JSON formatted
    ↪list of domains.
    Configured value: False
  --less
    Output less informations on screen.
    Configured value: False
  -nf, --no-files
    Switch the value of the production of output files.
    Configured value: False
  -nl, --no-logs
    Switch the value of the production of logs files in the
    ↪case we encounter some errors.
    Configured value: False
  -nu, --no-unified
    Switch the value of the production unified logs under the
    ↪output directory.
    Configured value: False
  --percentage
    Switch the value of the percentage output mode.
    Configured value: True
  --plain
    Switch the value of the generation of the plain list of
    ↪domains.
    Configured value: False

```

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```

--dots                Prints dots to stdout instead of giving the impression that
↳we hang on.
                        Configured value: False
-q, --quiet           Run the script in quiet mode.
                        Configured value: False
--share-logs          Switch the value of the sharing of logs.
                        Configured value: False
-s, --simple           Switch the value of the simple output mode.
                        Configured value: False
--split              Switch the value of the split of the generated output files.
                        Configured value: True
--store-whois         Switch the value of the WHOIS record storage in the WHOIS
↳DB.
                        Configured value: False

Multiprocessing:
-m, --multiprocess    Switch the value of the usage of multiple processes.
                        Configured value: False
--multiprocess-merging-mode MULTIPROCESS_MERGING_MODE
                        Sets the multiprocess merging mode.
                        You can choose between the following: `live|ends`.
                        Configured value: 'end'
-p PROCESSES, --processes PROCESSES
                        Set the number of simultaneous processes to use while
↳using multiple processes.
                        If omitted, the number of available CPU cores will be used
↳instead.
                        Configured value: 25

CI / CD:
--autosave-minutes AUTOSAVE_MINUTES
                        Update the minimum of minutes before we start committing
↳to upstream under the CI mode.
                        Configured value: 15
--ci                  Switch the value of the CI mode.
                        Configured value: False
--ci-branch CI_BRANCH
                        Switch the branch name where we are going to push the
↳temporary results.
                        Configured value: 'master'
--ci-distribution-branch CI_DISTRIBUTION_BRANCH
                        Switch the branch name where we are going to push the
↳final results.
                        Configured value: 'master'
--cmd CMD             Pass a command to run before each commit (except the final
↳one) under the CI mode.
                        Configured value: ''
--cmd-before-end CMD_BEFORE_END
                        Pass a command to run before the results (final) commit
↳under the CI mode.
                        Configured value: ''
--commit-autosave-message COMMIT_AUTOSAVE_MESSAGE
                        Replace the default autosave commit message.
                        Configured value: None
--commit-results-message COMMIT_RESULTS_MESSAGE
                        Replace the default results (final) commit message.
                        Configured value: None

```

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```

Unique actions:
  --clean          Clean all files under the output directory.
  --clean-all     Clean all files under the output directory along with all
↳file generated by PyFunceble.
  --directory-structure
                        Generate the directory and files that are needed and
↳which does not exist in the current directory.

For an in-depth usage, explanation and examples of the arguments, you should read the
↳documentation at https://pyfunceble.readthedocs.io/en/master/

Crafted with by Nissar Chababy (@funilrys) with the help of https://pyfunceble.github.io/contributors.html && https://pyfunceble.github.io/special-thanks.html

```

17.2 From a GitLab CI/CD environment

As we offer an argument named `--ci` which will autosave in a GitLab CI/CI environment, this document try to describe how it works!

17.2.1 Configuration

Personal Access Token

A personal access token is needed in order for PyFunceble to automatically push the results.

You should get a [personal GitLab access token](#) with the `read_repository` and `write_repository` scopes.

Once created and copied in a safe place, create a **new masked variable** named `GL_TOKEN` inside the CI/CD settings of your project. The value of the variable should be the newly generated personal access token.

`.gitlab-ci.yml`

Note: This part only present a commented `.gitlab-ci.yml`. This is just an example do not take the following as necessarily true.

You're invited to submit changes if something stated in this document is wrong.

```

# Python needed, so we use the python image.
image: python:latest

variables:
  # This is the Git name we have to set. (git config user.name)
  GIT_EMAIL: "dead-hosts@funilrys.com"
  # This is the Git Email we have to set. (git config user.email)
  GIT_NAME: "GitLab CI/CD"

before_script:
  # We install the development version of PyFunceble.
  # If you prefer the stable version replace `pyfunceble-dev`

```

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```

# with `pyfunceble`.
- pip3 install PyFunceble-dev

run:
  script:
    # Let's say we want our results and our PyFunceble
    # infrastructure to be saved in a directory called `PyFunceble-tests`

    # We move inside it.
    - cd PyFunceble-tests
    # We test the file `my_awesome_list` which is located inside the current_
↪directory.
    # Note: we precise the `--ci` argument here,
    # but you work without it if you set `ci: true` inside your `.PyFunceble.
↪yaml`
    - PyFunceble --ci -f my_awesome_list --plain

```

17.3 From a Travis CI container

As we offer an argument named `--ci` to activate the usage of PyFunceble in a Travis CI instance, we document here what you need to know!

17.3.1 Configuration

Note: This part only present a commented `.travis.yml` so that you can understand where to start.

If you need more practical examples, feel free to report to one of [Dead-Hosts](#) repositories which use PyFunceble with Travis CI.

```

env:
  global:
    # The following is your encrypted GitHub API key.
    # Indeed as we are going to push to the repository, this is needed.
    #- GH_TOKEN: # This can be set in the travis-ci https://travis-ci.com/repo/
↪settings as 'Environment Variables'
    # or as below: secure: encrypted code
    - secure: QQdKFquFFojFT9XJlXZp4EMoDTVoXFgqZq8XU+sCVf+pJQR6d/
↪oKBp8rnSTCnZizWOQXUjGXUUxUpSG/
↪dYGyBLjo3rH3rsn9ciZHVfubxbwK860w4sqibl4DvhCv2rdsFtvzXnhm4P9OL3i+krKdewh9fxpNyUU58qOgfnS7mK9FcFhb8z
↪dc0y36q6vjfgJR+QchetOtHgNbKYbLB8c26Di900ZCFJsxMNcl1Wct4qFPXkFGvjXrISW6pbdPL5Plto0Ig3iLiulhYOPVAryst
↪67d+F9ocQdIoFpDDTdgIjHerQnD2wRglaKPzLDb4jJTpggr5ssPrqUAKl3st7gyaAZzCEADPDnIBDjOJS+mFWbx9DKgc=
    # This is the Git name we have to set. (git config user.name)
    - GIT_NAME: Travis CI
    # This is the Git Email we have to set. (git config user.email)
    - GIT_EMAIL: dead-hosts@funilrys.com

# This is the language we use.
language: python

# This is the python version we are going to use for the tests.
# Note: you can add any 3.x version to the list.

```

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```
python:
- "3.8"

# The following will tell Travis CI to ends as fast as possible.
matrix:
    fast_finish: true

# Here we are setting what Travis CI have to cache.
cache:
    # We are caching pip3 as we use it to install PyFunceble
    - pip3

install:
    # We install the development version of PyFunceble. If you prefer the stable_
    ↪version replace
    # `pyfunceble-dev` with `pyfunceble`.
    - pip3 install pyfunceble-dev

# Our tests start here.
script:
    # Let's say we want our results and our PyFunceble infrastructure to be saved in_
    ↪a directory
    # called `PyFunceble-tests`

    # We move inside it.
    - cd PyFunceble-tests
    # We test the file `my_awesome_list` which is located inside the current_
    ↪directory.
    # Note: we precise the `--ci` argument here,
    # but you work without it if you set `travis: true` inside your `.PyFunceble.
    ↪yaml`
    - PyFunceble --ci -f my_awesome_list --plain

# The following initiate email notification logic.
notifications:
    # As we want to get a mail on failure and on status change, we set the following.
    on_success: change
    on_failure: always
```

17.3.2 Getting a GitHub token

For the secure index of the `.travis.yml` file, you have to generate a [new GitHub token](#).

After you got your token, please write it or save it in a safe place as you're going to need it every time you're going to interact with Travis CI.

Note: The scope to set is `public_repo` but you can also set others depending on your needs.

17.3.3 Encrypting the token for future usage under the Travis CIs' containers

To encrypt the token simply replace and execute the following according to your personal case.

```
$ travis encrypt 'GH_TOKEN=theGeneratedToken' -r 'The content of TRAVIS_REPO_SLUG' --  
↪add
```

Warning: Please do not execute the following explicitly without replacing `theGeneratedToken` with your previously generated GitHub token and `The content of TRAVIS_REPO_SLUG` with your repository slug.

Note: The usage of `--add` ensure that the `travis` program automatically add the secure index to the `.travis.yml` file.

17.4 Using the PyFunceble (Python) API

If you are working with a python script, module or even class, you can integrate **PyFunceble** to your main logic by importing it and using its API (cf: [API Documentation](#)).

This section will present some example of the way you can interact with PyFunceble from anything written in Python.

17.4.1 Get the availability of domains or IP

Note: This example can be found in our [examples repository](#).

Todo: Add IPs in the loop.

```
"""  
This is an example which respond to the following problematic(s):  
  
    * How can I get the avaibility of a domain or IP with PyFunceble ?  
"""  
  
# We want some coloration so we import the tool do to that :)  
from PyFunceble import initiate_colorama, Fore, Style  
# We import the tool to print the colored CLI logo.  
from PyFunceble.cli_core import CLICore  
# We import the configuration loader.  
from PyFunceble import load_config  
# We import the test method of the PyFunceble API.  
from PyFunceble import test as PyFunceble  
  
# We initiate the list of domains we are going to test.  
DOMAINS = [  
    "google.com",  
    "tweeetttter.com",  
    "github.com",  
    "examplessss.ooooorgg",  
    "twitter.com",  
    "forest-jump"
```

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```

]

# We initiate colorama.
initiate_colorama(True)

# We load our configuration.
#
# Note: We need this to print the logo but if you
# doesn't need the logo, you can ignore this.
load_config(generate_directory_structure=False)

# We print the PyFunceble logo.
CLICore.colorify_logo(home=True)

def print_result(subject, status):
    """
    Given the subject and its status, we print it to STDOUT.

    :param str subject: The subject we are going to print.
    :param str status: The status of the domain.
    """

    if status == "ACTIVE":
        print(f"{Fore.GREEN + Style.BRIGHT}{domain} is {status}")
    elif status == "INACTIVE":
        print(f"{Fore.RED + Style.BRIGHT}{domain} is {status}")
    else:
        print(f"{Fore.CYAN + Style.BRIGHT}{domain} is {status}")

for domain in DOMAINS:
    # We loop through the list of domain.

    # And we print the domain and status with the right coloration!
    print_result(domain, PyFunceble(domain))

```

17.4.2 Get the availability of URL

Note: This example can be found in our examples repository.

```

"""
This is an example which respond to the following problematic(s):

    * How can I get the availability of an URL with PyFunceble ?
"""

# We want some coloration so we import the tool do to that :)
from PyFunceble import initiate_colorama, Fore, Style
# We import the tool to print the colored CLI logo.
from PyFunceble.cli_core import CLICore
# We import the configuration loader.
from PyFunceble import load_config
# We import the test method of the PyFunceble API.
from PyFunceble import url_test as PyFunceble

```

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```

# We initiate the list of URLs we are going to test.
URLS = [
    "https://google.com",
    "http://tweeetttter.com",
    "ftp://github.com",
    "http://examplessss.ooooorgg",
    "http://twitter.com",
]

# We initiate colorama.
initiate_colorama(True)

# We load our configuration.
#
# Note: We need this to print the logo but if you
# doesn't need the logo, you can ignore this.
load_config(generate_directory_structure=False)

# We print the PyFunceble logo.
CLICore.colorify_logo(home=True)

def print_result(subject, status):
    """
    Given the subject and its status, we print it to STDOUT.

    :param str subject: The subject we are going to print.
    :param str status: The status of the domain.
    """

    if status == "ACTIVE":
        print(f"{Fore.GREEN + Style.BRIGHT}{domain} is {status}")
    elif status == "INACTIVE":
        print(f"{Fore.RED + Style.BRIGHT}{domain} is {status}")
    else:
        print(f"{Fore.CYAN + Style.BRIGHT}{domain} is {status}")

for url in URLS:
    # We loop through the list of domain.

    # And we print the domain and status with the right coloration!
    print_result(url, PyFunceble(url))

```

17.4.3 Complete dataset while getting the availability of domains, IPs or URL

While using our API, you can request to see/get everything with the help of the `complete=True` argument.

You'll then get the following dict as output.

```

{
    "_status": None, # If some extra rules are applied, this index will keep the_
    ↪status before the extra rules was applied.
    "_status_source": None, # If some extra rules are applied, this index will keep_
    ↪the source before the extra rules was applied.
    "domain_syntax_validation": None, # The domain syntax validation status.

```

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```

"expiration_date": None, # The expiration date of the tested subject (if found).
"http_status_code": None, # The status code of the tested subejct.
"ip4_syntax_validation": None, # The IPv4 syntax validation status.
"dns_lookup": [], # The DNS Lookup output.
"status_source": None, # The (final) source which gave us the status.
"status": None, # The (final) status returned by PyFunceble.
"tested": None, # The tested subject.
"url_syntax_validation": None, # The url syntax validation status.
"whois_record": None, # The whois record (if found).
"whois_server": None, # The whois server we use to get the whois record (if_
↪found).
}

```

17.4.4 Set custom configuration index while getting the avaiability of domains, IPs or URL

While using PyFunceble, you might want to set or overwrite a default behaviour.

You can do that in 2 ways. Globally or locally.

17.4.5 Globally

To set globally simply initiate the configuration loader and parse your custom configuration along with the initialization.

As example, you can do it like follow:

```

# We import the configuration loader.
from PyFunceble import load_config

# We set our list of indexes to overwrite.
OUR_PYFUNCEBLE_CONFIG = {"share_logs":False, "no_files": True}

# We load our configuration and parse our custom indexes.
load_config(generate_directory_structure=False, custom=OUR_PYFUNCEBLE_CONFIG)

## We can then play with PyFunceble and/or other business logic ...

```

Locally

To set globally simply parse your configuration along with the test method.

As example, you can do it like follow:

```

# We import the test method.
from PyFunceble import test as AvailabilityTest

# We set our list of indexes to overwrite.
OUR_PYFUNCEBLE_CONFIG = {"share_logs":False, "no_files": True}

# We get the status and parse our configuration.
status = AvailabilityTest("hello.world", config=OUR_PYFUNCEBLE_CONFIG)

```

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```
## We can then manipulate the status and/or other business logic ...
```

17.4.6 Check the syntax of domains

Note: This example can be found in our [examples repository](#).

```
"""
This is an example which respond to the following problematic(s):

    * How can I check the syntax of a domain with PyFunceble ?
"""

# We want some coloration so we import the tool do to that :)
from PyFunceble import initiate_colorama, Fore, Style
# We import the tool to print the colored CLI logo.
from PyFunceble.cli_core import CLICore
# We import the configuration loader.
from PyFunceble import load_config
# We import the test method of the PyFunceble API.
from PyFunceble import is_domain as PyFunceble

# We initiate the list of domains we are going to test.
DOMAINS = [
    "google.com",
    "tweeetttter.com",
    "github.com",
    "examplessss.ooooorgg",
    "twitter.com",
    "forest-jump",
]

# We initiate colorama.
initiate_colorama(True)

# We load our configuration.
#
# Note: We need this to print the logo but if you
# doesn't need the logo, you can ignore this.
load_config(generate_directory_structure=False)

# We print the PyFunceble logo.
CLICore.colorify_logo(home=True)

def print_syntax_result(subject, status):
    """
    Given the subject and its validation, we print it to STDOUT.

    :param str subject: The subject we are going to print.
    :param bool status: The validation state.
    """
```

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```

if status is True:
    print(f"{Fore.GREEN + Style.BRIGHT}{subject} is VALID")
else:
    print(f"{Fore.CYAN + Style.BRIGHT}{subject} is INVALID")

for domain in DOMAINS:
    # We loop through the list of domain.

    # And we print the domain and status with the right coloration!
    print_syntax_result(domain, PyFunceble(domain))

```

17.4.7 Check the syntax of IPv4s

Note: This example can be found in our [examples repository](#).

```

"""
This is an example which respond to the following problematic(s):

    * How can I check the syntax of an IPv4/IPv6 with PyFunceble ?
"""

# We want some coloration so we import the tool do to that :)
from PyFunceble import initiate_colorama, Fore, Style
# We import the tool to print the colored CLI logo.
from PyFunceble.cli_core import CLICore
# We import the configuration loader.
from PyFunceble import load_config
# We import the test method of the PyFunceble API.
from PyFunceble import is_ip as PyFunceble

# We initiate the list of IPs we are going to test.
IPS = ["216.58.207.46", "257.58.207.46"]

# We initiate colorama.
initiate_colorama(True)

# We load our configuration.
#
# Note: We need this to print the logo but if you
# doesn't need the logo, you can ignore this.
load_config(generate_directory_structure=False)

# We print the PyFunceble logo.
CLICore.colorify_logo(home=True)

def print_syntax_result(subject, status):
    """
    Given the subject and its validation, we print it to STDOUT.

    :param str subject: The subject we are going to print.
    :param bool status: The validation state.
    """

```

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```

    if status is True:
        print(f"{Fore.GREEN + Style.BRIGHT}{subject} is VALID")
    else:
        print(f"{Fore.CYAN + Style.BRIGHT}{subject} is INVALID")

for ip in IPS:
    # We loop through the list of IP.

    # And we print the IP and status with the right coloration!
    print_syntax_result(ip, PyFunceble(ip))

```

17.4.8 Check the syntax of URLs

Note: This example can be found in our examples repository.

```

"""
This is an example which respond to the following problematic(s):

    * How can I check the syntax of an URL with PyFunceble ?
"""

# We want some coloration so we import the tool do to that :)
from PyFunceble import initiate_colorama, Fore, Style
# We import the tool to print the colored CLI logo.
from PyFunceble.cli_core import CLICore
# We import the configuration loader.
from PyFunceble import load_config
# We import the test method of the PyFunceble API.
from PyFunceble import is_url as PyFunceble

# We initiate the list of URLs we are going to test.
URLS = [
    "https://google.com",
    "http://tweeetttter.com",
    "http://github.com",
    "http://examplessss.oooooorgg",
    "https://twitter.com",
    "http:forest-jump",
]

# We initiate colorama.
initiate_colorama(True)

# We load our configuration.
#
# Note: We need this to print the logo but if you
# doesn't need the logo, you can ignore this.
load_config(generate_directory_structure=False)

# We print the PyFunceble logo.
CLICore.colorify_logo(home=True)

```

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```
def print_syntax_result(subject, status):  
    """  
    Given the subject and its validation, we print it to STDOUT.  
  
    :param str subject: The subject we are going to print.  
    :param bool status: The validation state.  
    """  
  
    if status is True:  
        print(f"{Fore.GREEN + Style.BRIGHT}{subject} is VALID")  
    else:  
        print(f"{Fore.CYAN + Style.BRIGHT}{subject} is INVALID")  
  
for url in URLs:  
    # We loop through the list of URL.  
  
    # And we print the URL and status with the right coloration!  
    print_syntax_result(url, PyFunceble(url))
```


18.1 Subject

Give us the tested element.

Note: The API equivalent is `tested`.

18.2 Status

Give us the test result/status of the tested element.

Note: The API equivalent is `status`.

18.2.1 ACTIVE

This status is returned when **one of the following cases** is met:

- We can extract the expiration date from `PyFunceble.lookup.whois.WhoisLookup.request()`.

Note: We don't check if the extracted date is in the past. Indeed, if we start to do the registry work, it becomes a never ending work for us.

- `PyFunceble.lookup.dns.DNSLookup.request()` does not return `{}`.

Note: We don't read nor interpret the returned data.

As the request `PyFunceble.lookup.dns.DNSLookup.request()` method already handle everything, we don't need to read the given data.

We just check that it is not an empty dictionary.

- `PyFunceble.lookup.dns.DNSLookup.request()` returns {}, `PyFunceble.lookup.whois.WhoisLookup.request()` provides nothing exploitable, but `PyFunceble.lookup.http_code.HTTPCode.get()` returned something which is not the default value (XXX).

18.2.2 INACTIVE

This status is returned when **all the following cases** are met:

- We could not extract the expiration date from `PyFunceble.lookup.whois.WhoisLookup.request()`.
- `PyFunceble.lookup.dns.DNSLookup.request()` returns nothing.
- `PyFunceble.lookup.http_code.HTTPCode.get()` is not in the list of ACTIVE status codes.

18.2.3 INVALID

This status is returned when **all the following cases** are met:

- The Domain/IP does not match/pass our syntax checker.
- The domain extension is unregistered in the [IANA Root Zone Database](#), our internal list nor in the [Public Suffix List](#).

Note: Understand by this that the extension is not present:

- in the `iana-domains-db.json` file
 - in the `public-suffix.json` file
 - in the `PyFunceble.check.Check.SPECIAL_USE_DOMAIN_NAMES_EXTENSIONS` attribute.
-

18.2.4 VALID

This status is returned when we are checking for syntax. It is the equivalent of ACTIVE but for syntax checking.

18.2.5 MALICIOUS

This status is returned when we are checking for the reputation.

18.2.6 SANE

This status is returned when we are checking for the reputation.

18.3 Source

Give us the source of the status.

Note: The API equivalent is `status_source`.

18.3.1 HTTP Code

This source is returned when **all the following cases** are met:

- We can't extract the expiration date from `PyFunceble.lookup.whois.WhoisLookup.request()`.
- The `INACTIVE` status is the one returned by other methods.
- `PyFunceble.lookup.http_code.HTTPCode.get()` outputs is different from the default one (`XXX`) and the other methods gives the `INACTIVE` status.

18.3.2 SYNTAX

This source is always returned when the domain has the status `INVALID` or in the case that we are only checking for syntax instead of availability. The usage of this source comes from the comparison of the element against our domain, IP or URL syntax validation system.

18.3.3 DNSLOOKUP

This source is always returned when the taken decision of the status of the domain/IP comes from `PyFunceble.lookup.dns.DNSLookup.request()` outputs.

18.3.4 SPECIAL

As `PyFunceble` grows, I thought that a bit of filtering for special cases would be great. So I introduced the `SPECIAL` source.

Note: Please consider all 3 digits number that are listed in this section as the HTTP status code caught by `PyFunceble.lookup.http_code.HTTPCode.get()`.

Warning: Do not want those rules ? You can use the following to disable them.

- `-ns|--no-special` arguments from the CLI.
- `no_special: True` into your local configuration file.

*.000webhostapp.com

- All 410 are returned as `INACTIVE`.

.blogspot.

- All 404 are returned as INACTIVE
- All 301 which are blocked by Google or does not exist are returned as INACTIVE
- All 302 which are blocked by Google are returned as INACTIVE

***.canalblog.com**

- All 404 are returned as INACTIVE

***.github.io**

- All 404 are returned as INACTIVE

***.hpg.com.br**

- All 404 are returned as INACTIVE

***.liveadvert.com**

- All 404 are returned as INACTIVE

***.skyrock.com**

- All 404 are returned as INACTIVE

***.tumblr.com**

- All 404 are returned as INACTIVE

***.wix.com**

- All 404 are returned as INACTIVE

***.wordpress.com**

- All 301 which match doesn't exist are returned as INACTIVE

IP with range

- All IPv4 with a range (for example 0.0.0.0/24) are returned as ACTIVE
- All IPv6 with a range (for example 2001:db8::/43) are returned as ACTIVE

Reputation

Note: If the `--use-reputation-data` argument is activated or the `use_reputation_data` index of your configuration file is active, the following apply.

- All IPv4 and IPv6 which are present into the AlienVault public reputation data are returned as `ACTIVE`

18.4 `_status` (API)

This index has the same proprieties as `status` but before any extra rules were applied.

18.5 `_status_source` (API)

This index has the same proprieties as `status_source` but before any extra rules were applied.

18.6 `dns_lookup` (API)

Provides the output of the DNS lookup.

18.6.1 Format 1: Normal DNS Lookup

The first and most common output will be like follow:

```
{
  "A": ["string"],
  "AAAA": ["string"],
  "CNAME": ["string"],
  "NS": ["string"],
  "PTR": ["string"]
}
```

where each list item represents the response from the DNS server.

18.6.2 Format 2: `get_hosts_by_addr` (local subjects?)

For the system to not miss something, it will try to execute the `socket.gethostbyaddr()` (for IP) and `socket.gethostbyname()` (for the rest). In both cases, the result will be like follow:

```
{
  "hostname": "string",
  "aliases": ["string"],
  "ips": ["string"]
}
```

18.7 HTTP Code

Note: The API equivalent is `http_status_code`.

Note: This section reflects exactly what the code does. So any changes made here should also be reported to the code or at least the configuration file.

Note: A XXX in this column means that it was impossible to catch the HTTP status code from the web server.

Note: The Status Codes we give to PyFunceble to test with can be fully customized in your own `.PyFunceble.yaml`.

18.7.1 As active

Note: While testing for domain and IP, a subject which has an HTTP code listed below, will be saved/logged into the `output/Analytic/ACTIVE` directory.

Warning: While testing for domain and IP, a subject which has an HTTP code listed below and a global status `INACTIVE` or `INVALID` will get its status updated to `ACTIVE`.

Warning: While testing for URL, if the extracted HTTP code is in the following list, the global status will be `ACTIVE`.

- 100 - Continue
- 101 - Switching Protocols
- 200 - OK
- 201 - Created
- 202 - Accepted
- 203 - Non-Authoritative Information
- 204 - No Content
- 205 - Reset Content
- 206 - Partial Content

18.7.2 As potentially active

Note: While testing for domain and IP, a subject which has an HTTP code listed below, will be saved/logged into the `output/Analytic/POTENTIALLY_ACTIVE` directory.

Warning: While testing for domain and IP, a subject which has an HTTP code listed below and a global status `INACTIVE` or `INVALID` will get its status updated to `ACTIVE`.

Warning: While testing for URL, if the extracted HTTP code is in the following list, the global status will be `ACTIVE`.

- 000
- 300 - Multiple Choices
- 301 - Moved Permanently
- 302 - Found
- 303 - See Other
- 304 - Not Modified
- 305 - Use Proxy
- 307 - Temporary Redirect
- 403 - Forbidden
- 405 - Method Not Allowed
- 406 - Not Acceptable
- 407 - Proxy Authentication Required
- 408 - Request Timeout
- 411 - Length Required
- 413 - Request Entity Too Large
- 417 - Expectation Failed
- 500 - Internal Server Error
- 501 - Not Implemented
- 502 - Bad Gateway
- 503 - Service Unavailable
- 504 - Gateway Timeout
- 505 - HTTP Version Not Supported

18.7.3 As inactive or potentially inactive

Note: While testing for domain and IP, a subject which has an HTTP code listed below, will be saved/logged into the `output/Analytic/POTENTIALLY_INACTIVE` directory.

Warning: While testing for URL, if the extracted HTTP code is in the following list, the global status will be `INACTIVE`.

- 400 - Bad Request
- 401 - Unauthorized
- 402 - Payment Required (Not in use but may be seen in the future)
- 404 - Not Found
- 409 - Conflict
- 410 - Gone
- 412 - Precondition Failed
- 414 - Request-URI Too Long
- 415 - Unsupported Media Type
- 416 - Requested Range Not Satisfiable

18.8 Expiration Date

Give us the expiration date of the tested element.

Note: The API equivalent is `expiration_date`.

18.8.1 Unknown (CLI)

Unknown is returned when we could not extract the expiration date from `PyFunceble.lookup.whois.WhoisLookup.request()` outputs.

18.8.2 None (API)

None is returned when we could not extract the expiration date from `PyFunceble.lookup.whois.WhoisLookup.request()` outputs.

18.8.3 A date

Only if we could extract the expiration date from `PyFunceble.lookup.whois.WhoisLookup.request()`, the date becomes formatted like `02-jan-2017`.

18.9 whois_record (API)

Give us the WHOIS record.

Warning: You may get `DATE EXTRACTED FROM WHOIS DATABASE` as response when it's coming from the JSON database.

The reason behind this is that we don't want to grow the size of the JSON file.

18.10 whois_server (API)

Give us the WHOIS server we contacted in order to get the WHOIS record.

18.11 domain_syntax_validation (API)

The `domain_syntax_validation` provides the response we got while trying to validate (with `PyFunceble.check.Check.is_domain()`) the given subject.

The response will be `True` for the case of a successful validation, `False` otherwise, and `None` for the case that the validation was not executed.

18.12 subdomain_syntax_validation (API)

The `subdomain_syntax_validation` provides the response we got while trying to validate (with `PyFunceble.check.Check.is_subdomain()`) the given subject.

The response will be `True` for the case of a successful validation, `False` otherwise, and `None` for the case that the validation was not executed.

18.13 url_syntax_validation (API)

The `url_syntax_validation` provides the response we got while trying to validate (with `PyFunceble.check.Check.is_url()`) the given subject.

The response will be `True` for the case of a successful validation, `False` otherwise, and `None` for the case that the validation was not executed.

18.14 ipv4_syntax_validation (API)

The `ipv4_syntax_validation` provides the response we got while trying to validate (with `PyFunceble.check.Check.is_ipv4()`) the given subject.

The response will be `True` for the case of a successful validation, `False` otherwise, and `None` for the case that the validation was not executed.

18.15 ipv6_syntax_validation (API)

The `ipv6_syntax_validation` provides the response we got while trying to validate (with `PyFunceble.check.Check.is_ipv6()`) the given subject.

The response will be `True` for the case of a successful validation, `False` otherwise, and `None` for the case that the validation was not executed.

18.16 `ipv4_range_syntax_validation` (API)

The `ipv4_range_syntax_validation` provides the response we got while trying to validate (with `PyFunceble.check.Check.is_ipv4_range()`) the given subject.

The response will be `True` for the case of a successful validation, `False` otherwise, and `None` for the case that the validation was not executed.

18.17 `ipv6_range_syntax_validation` (API)

The `ipv6_range_syntax_validation` provides the response we got while trying to validate (with `PyFunceble.check.Check.is_ipv6_range()`) the given subject.

The response will be `True` for the case of a successful validation, `False` otherwise, and `None` for the case that the validation was not executed.

19.1 Enpoints

Note: This section document what you can call directly when you use PyFunceble as an imported module.

The tool to check the availability or syntax of domain, IP or URL.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFunceble>

Project documentation: <https://pyfunceble.readthedocs.io/en/master/>

Project homepage: <https://pyfunceble.github.io/>

License:

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```

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`PyFunceble.dns_lookup(subject, dns_server=None, complete=False, lifetime=3)`

Make a DNS lookup of the given subject.

Parameters

- **subject** (*str*) – The subject we are working with.
- **dns_server** (*str/int*) – A (or list of) DNS server to use while resolving.
- **complete** (*bool*) – Tell us to look for everything instead of NS only.
- **lifetime** (*int*) – The query lifetime.

Returns

A dict with following index if the given subject is not registered into the given DNS server. (More likely local subjects).

```
{
    "hostname": "",
    "aliases": [],
    "ips": []
}
```

A dict with following index for everything else (and if found).

```
{
    "A": [],
    "AAAA": [],
    "CNAME": [],
    "MX": [],
    "NS": [],
    "TXT": [],
    "PTR": []
}
```

Return type `dict`

`PyFunceble.get_complements(subject, include_given=False)`

Provides the complements of the given subject(s).

A complement is for example `example.com` if `www.example.com` is given and vice-versa.

Parameters

- **subject** (*str, list*) – The subject to get the complement for.
- **include_given** (*bool*) – Tell us to add the given one into the result.

Return type `list`

`PyFunceble.ipv4_syntax_check(ip)`

Check the syntax of the given IPv4.

Parameters `ip` (*str/list*) – The IPv4 to check the syntax for.

Returns The syntax validity.

Return type `boolldict`

Warning: This method will be deprecated one day in the future.

Please report to `is_ipv4()`.

`PyFunceble.is_domain(subject)`

Check if the given subject is a syntactically valid domain.

Parameters `subject` (*str/list*) – The subject to check the syntax from.

Returns The syntax validity.

Return type `boolldict`

`PyFunceble.is_domain_malicious(subject)`

Checks if the given domain is malicious.

Parameters `subject` (*str*) – The subject to work with.

Return type `bool`

`PyFunceble.is_ip(subject)`

Checks if the given subject is a syntactically valid IPv4 or IPv6.

Parameters `subject` (*str/list*) – The subject to check the syntax from.

Returns The syntax validity.

Return type `boolldict`

`PyFunceble.is_ip_range(subject)`

Check if the given subject is a syntactically valid IPv4 or IPv6 range.

Parameters `subject` (*str/list*) – The subject to check the syntax from.

Returns The IPv4 range state.

Return type `boolldict`

`PyFunceble.is_ipv4(subject)`

Check if the given subject is a syntactically valid IPv4.

Parameters `subject` (*str/list*) – The subject to check the syntax from.

Returns The syntax validity.

Return type `boolldict`

`PyFunceble.is_ipv4_malicious(subject)`

Checks if the given IPv4 is malicious.

Return type `bool`

`PyFunceble.is_ipv4_range(subject)`

Check if the given subject is a syntactically valid IPv4 range.

Parameters `subject` (*str/list*) – The subject to check the syntax from.

Returns The IPv4 range state.

Return type `boolldict`

`PyFunceble.is_ipv6(subject)`

Checks if the given subject is syntactically valid IPv6.

Parameters `subject` (*str*, *list*) – The subject to check the syntax from.

Returns The syntax validity.

Return type `boolldict`

`PyFunceble.is_subdomain(subject)`

Check if the given subject is a syntactically valid subdomain.

Parameters `subject` (*str*/*list*) – The subject to check the syntax from.

Returns The syntax validity.

Return type `boolldict`

`PyFunceble.is_url(subject)`

Check if the given subject is a syntactically valid URL.

Parameters `subject` (*str*/*list*) – The subject to check the syntax from.

Returns The syntax validity.

Return type `boolldict`

`PyFunceble.is_url_malicious(subject)`

Checks if the given URL is malicious.

Parameters `subject` (*str*) – The subject to work with.

Return type `bool`

`PyFunceble.load_config(generate_directory_structure=False, custom=None, sanity_check=False)`

Load the configuration.

Parameters

- **generate_directory_structure** (*bool*) – Tell us if we generate the directory structure along with loading the configuration file.
- **custom** (*dict*) – A dict with the configuration index (from `.PyFunceble.yaml`) to update.
- **sanity_check** (*bool*) – Tell us to run the safety check of the configuration.

Note: If `config` is given, the given `dict` overwrite the last value of the given indexes in the configuration.

It's actually something like following:

```
pyfunceble.configuration.update(config_given_by_user)
```

`PyFunceble.syntax_check(domain)`

Check the syntax of the given domain.

Parameters `domain` (*str*/*list*) – The domain to check the syntax from.

Returns The syntax validity.

Return type `boolldict`

Warning: This method will be deprecated one day in the future.

Please report to `is_domain()`.

`PyFunceble.test` (*subject*, *complete=False*, *config=None*)

Test the availability of the given subject (domain or IP).

Parameters

- **subject** (*str/list*) – The subject (IP or domain) to test.
- **complete** (*bool*) – Activate the return of a dict with some significant data from the test.
- **config** (*dict*) – A dict with the configuration index (from `.PyFunceble.yaml`) to update.

Returns The status or the informations of the domain.

Return type `strdict`

Note: If `config` is given, the given `dict` overwrite the last value of the given indexes in the configuration.

It's actually something like following:

```
pyfunceble.configuration.update(config_given_by_user)
```

Note: If `complete` is set to `True`, we return the following indexes.

```
{
  "_status_source": None,
  "_status": None,
  "dns_lookup": [],
  "domain_syntax_validation": None,
  "expiration_date": None,
  "http_status_code": None,
  "ipv4_range_syntax_validation": None,
  "ipv4_syntax_validation": None,
  "ipv6_range_syntax_validation": None,
  "ipv6_syntax_validation": None,
  "status": None,
  "status_source": None,
  "subdomain_syntax_validation": None,
  "tested": None,
  "url_syntax_validation": None,
  "whois_record": None,
  "whois_server": None,
}
```

`PyFunceble.url_syntax_check` (*url*)

Check the syntax of the given URL.

Parameters `url` (*str/list*) – The URL to check the syntax for.

Returns The syntax validity.

Return type `boolldict`

Warning: This method will be deprecated one day in the future.

Please report to `is_url()`.

`PyFuncible.url_test(subject, complete=False, config=None)`

Test the availability of the given subject (URL).

Parameters

- **subject** (*str/list*) – The subject (URL) to test.
- **complete** (*bool*) – Activate the return of a dict with some significant data from the test.
- **config** (*dict*) – A dict with the configuration index (from `.PyFuncible.yaml`) to update.

Returns The status or the informations of the URL.

Return type `strdict`

Note: If `config` is given, the given `dict` overwrite the last value of the given indexes in the configuration.

It's actually something like following:

```
pyfuncible.configuration.update(config_given_by_user)
```

Note: If `complete` is set to `True`, we return the following indexes.

```
{
  "_status_source": None,
  "_status": None,
  "dns_lookup": [],
  "domain_syntax_validation": None,
  "expiration_date": None,
  "http_status_code": None,
  "ipv4_range_syntax_validation": None,
  "ipv4_syntax_validation": None,
  "ipv6_range_syntax_validation": None,
  "ipv6_syntax_validation": None,
  "status": None,
  "status_source": None,
  "subdomain_syntax_validation": None,
  "tested": None,
  "url_syntax_validation": None,
  "whois_record": None,
  "whois_server": None,
}
```

`PyFuncible.whois(subject, server=None, timeout=3)`

Request the WHOIS record of the given subject.

Parameters

- **subject** (*str*) – The subject we are working with.
- **server** (*str*) – The WHOIS server to communicate with.

Note: If None is given, we look for the best one.

- **timeout** (*int*) – The timeout to apply to the request.

Returns None or the WHOIS record.

Return type None|str

19.2 File generation while using the API

You may want to test using the API but still want the result structured normally like a CLI usage. For that case simply add the following.

19.2.1 Global configuration load

```
import PyFunceble

OUR_CUSTOM_PYFUNCEBLE_CONFIGURATION = {"api_file_generation": True}

PyFunceble.load_config(
    generate_directory_structure=True, custom=OUR_CUSTOM_PYFUNCEBLE_CONFIGURATION
)

# The output directory is then generated, and the file(s) too.
# You logic or whatever you want.
```

19.2.2 Local configuration load

```
import PyFunceble

OUR_CUSTOM_PYFUNCEBLE_CONFIGURATION = {"api_file_generation": True}

print(
    "google.com is "
    f"{PyFunceble.test('google.com', config=OUR_CUSTOM_PYFUNCEBLE_CONFIGURATION)}"
)

# The output directory is then generated, and the file(s) too.
```


20.1 AdBlock/Filter list decoding

Warning: This component is not activated by default.

20.1.1 Why do we need it?

As some people may want to test the content of their AdBlock/Filter list, we offer a way to decode them!

20.1.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.converter.adblock.AdBlock.get_converted()`!

We keep it simple by trying to comply with the [Adblock Plus filters explained](#) documentation. For us, the relevant parts are the one which defines/explains which domains are being blocked from a given rule.

Note: A more aggressive extraction might be planned in the future.

20.1.3 How to use it?

You can simply change

```
adblock: False
```

to

```
adblock: True
```

into your personal `.PyFunceble.yaml` or use the `--adblock` argument from the CLI to activate it.

20.2 Autocontinue

20.2.1 Why do we need it?

The auto-continue logic was mainly created for one purpose: Testing long files inside Travis CI. As Travis CI has a time limit of 45 minutes, it became vital for us to be able to stop and continue the test from where we were under those 45 minutes. That's how it started.

Today, - and it might be controversial - it is used by most people who aren't under a Travis CI container to continue when the machine or tool crashes.

20.2.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.engine.auto_continue.AutoContinue()`!

We log every subject already tested previously and remove them when the same file path is given again.

20.2.3 How to use it?

It is activated by default but if not simply change

```
auto_continue: False
```

to

```
auto_continue: True
```

into your personal `.PyFunceble.yaml` or use the `--auto-continue` argument from the CLI to reactivate it.

20.3 Autosave

Warning: This component is not activated by default.

20.3.1 Why do we need it?

This component comes along with the auto-continue one. Indeed, after constructing the logic to auto-continue we needed something to autosave.

20.3.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.engine.auto_save.AutoSave()`!

After a given amount of minutes, we stop the tool, generate the percentage, run a given command (if found), commit all the changes we made to the repository and finally, push to the git repository.

20.3.3 How to use it?

For Travis CI and GitLab CI/CD

The following (from the configuration) or their equivalent from the CLI are required.

```
ci: False
ci_autosave_commit: "Your awesome commit message"
ci_autosave_final_commit: "Your awesome final commit message"
ci_autosave_minutes: 15
ci_branch: master
```

Note: If you give the `command_index` something, we will run it at the end of each commits except the last one.

The command on the last commit is executed based on the given `command_before_end` index.

20.4 Certificate verification

Warning: This component is not activated by default.

20.4.1 Why do we need it?

You might sometime be sure that every URL tested with PyFunceble have a valid certificate. This what it's all about!

20.4.2 How does it work?

If the certificate is not valid (catched with `requests`). An `INACTIVE` status is returned (if this component is activated of course)

20.4.3 How to use it?

Simply change

```
verify_ssl_certificate: False
```

to

```
auto_verify_ssl_certificatecontinue: True
```

into your personal `.PyFunceble.yaml` or use the `--verify-ssl-certificate` argument from the CLI to activate it.

20.5 Cleaning

20.5.1 Why do we need it?

Because we constantly need to clean files which are not needed before starting a new test, we embedded our cleaning logic.

20.5.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.output.clean.Clean()`!

It has an internal map of what has to be deleted and how.

20.5.3 How to clean?

For a simple clean, run PyFunceble with the `--clean` argument.

For a complete cleaning, run PyFunceble with the `--clean-all` argument.

20.5.4 Differences between simple and complete cleaning?

The `--clean` logic cleans the `output/` directory along with the `pyfunceble_tested` table when the `mariadb` or `mysql` database type are choosen.

The `--clean-all` deletes all files generated along with the content of all database tables when the `mariadb` or `mysql` database type are choosen.

Warning: `--clean-all` does not delete the following files (even if generated by us):

- `.pyfunceble-env`
- `whois_db.json`

Warning: `--clean-all` does not delete the content of the following tables:

- `pyfunceble_whois`

20.6 Complements Generation

Warning: This component is not activated by default.

20.6.1 Why do we need it?

Let's say we have `example.org` but `www.example.org` (or vice-versa) is not into my list. This component (if activated) let us test `www.example.org` (or vice-versa) even if it's not into the given list.

20.6.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.get_complements()` !

At the end of the normal test process, we generate the list of complements and test them.

20.6.3 How to use it?

You can simply change

```
generate_complements: False
```

to

```
generate_complements: True
```

into your personal `.PyFunceble.yaml` or use the `--complements` argument from the CLI to activate it.

20.7 Configuration

20.7.1 Why do we need it?

As we wanted to be hybrid and allow different modes and options, we introduced the configuration logic.

20.7.2 How does it work?

Note: Want to read the configuration loader code ? It's here `PyFunceble.config.load.Load()` !

We first look for the `.PyFunceble.yaml`. If not found, we get/generate it. Then we parse it to the system.

Note: Because we also wanted to get rid of the configuration for an end-user point of view, almost all configuration indexed can be updated from the CLI.

In that case, we update the configuration with the different argument you gives us before parsing it to the system.

Note: If in the future a new configuration key is introduced, you will be asked to choose if you want to merge it into your `.PyFunceble.yaml`.

In that case, we get a copy of the new one and keep/set all previously set indexes. Which means that you don't have to care about reconfiguring previously set indexes.

20.7.3 How to configure?

Update the `.PyFunceble.yaml` file or use the CLI.

20.8 Custom DNS Server

20.8.1 Why do we need it?

Some times the testing environment is setup to use DNS-server which isn't suited for running a PyFunceble test of actually expired or active domains or urls. This could by example be your own DNS-Firewall.

To avoid these situations, the program allows you to setup test DNS-Server.

20.8.2 How does it work?

Thanks to `python-dns` we can parse the given DNS server.

20.8.3 How to use it?

By default, PyFunceble will use the system-wide DNS settings. This can be changed with the ability to configure which DNS-Servers you like PyFunceble to use doing the test.

You set this up with the CLI command `--dns` **or** insert it into your personal `.PyFunceble.yaml`

```
dns_server: null
```

to

```
dns_server:
  - "8.8.8.8"
  - "8.8.8.8"
```

Since `v3.0.0` it is possible to assign a specific port to use with the DNS-Server.

Hint: `--dns 95.216.209.53:53 116.203.32.67:53 9.9.9.9:853`

Warning: If you don't append a port number, the default DNS port (53) will be used.

20.9 Custom User-Agent

20.9.1 Why do we need it?

As we need to be one in a middle of a connection to a webserver, the custom user agent is there for that!

20.9.2 How does it work?

We set the user-agent every time we request something with the `http` and `https` protocols.

If a custom user agent is given, it will be used.

Otherwise, every 24 hours, we update our `user-agents.json` file which will be fetched by your local version to determine the user-agent to use.

20.9.3 How to use it?

Simply choose your browser and platform or provide us your custom one!

```
user_agent:
  browser: chrome
  platform: linux
  custom: null
```

into your personal `.PyFunceble.yaml` or use the `--user-agent` (custom UA) argument from the CLI.

Available Browser

Here is a list of available and accepted browsers at this time.

- `chrome`
- `edge`
- `firefox`
- `ie`
- `opera`
- `safari`

Available Platform

Here is a list of available and accepted platform at this time.

- `linux`
- `macosx`
- `win10`

20.9.4 What if we don't give a custom User-Agent?

If you don't set a custom User-Agent, we will try to get the latest one for the chosen browser and platform.

20.10 Databases

20.10.1 Why do we use “databases”?

We use databases to store data while we run the tests. When globally talking about databases, we are indirectly talking about the following subsystems.

- Autocontinue
- InactiveDB
- Mining
- WhoisDB

Warning: There is a difference between what we are talking here and the `--database` argument which only enable/disable the InactiveDB subsystem.

20.10.2 How do we manage them?

They consist of simple JSON files which are read and updated on the fly.

20.10.3 Warnings around Database (self) management

Warning: If you plan to delete everything and still manage to use PyFunceble in the future, please use the `--clean-all` argument.

Indeed, it will delete everything which is related to what we generated, except things like the whois database file/table which saves (almost) static data which can be reused in the future.

Deleting, for example, the whois database file/table will just make your test run for a much longer time if you retest subject that used to be indexed into the whois database file/table.

20.10.4 Databases types

Since PyFunceble 2.0.0 (equivalent of `>=1.18.0.dev`), we offer multiple database types which are (as per configuration) `json` (default), `mariadb` and `mysql`.

Why different database types?

With the introduction of the multiprocessing logic, it became natural to introduce other database format as it's a nightmare to update a JSON formatted file.

In order to write or use a JSON formatted database, we have to load it and overwrite it completely. It's great while working with a single CPU/process but as soon as we get out of that scope it become unmanageable.

How to use the `mysql` or `mariadb` format?

1. Create a new user, password and database (optional) for PyFunceble to work with.

2. Create a `.pyfunceble-env` file at the root of your configuration directory.
3. Complete it with the following content (example)

```
PYFUNCEBLE_DB_CHARSET=utf8mb4
PYFUNCEBLE_DB_HOST=localhost
PYFUNCEBLE_DB_NAME=PyFunceble
PYFUNCEBLE_DB_PASSWORD=Hello,World!
PYFUNCEBLE_DB_PORT=3306
PYFUNCEBLE_DB_USERNAME=pyfunceble
```

Note: Since version 2.4.3.dev it is possible to use the UNIX socket for the `PYFUNCEBLE_DB_HOST` environment variable.

The typical location for `mysqld.sock` is `/var/run/mysqld/mysqld.sock`.

This have been done to make

1. It easier to use the `socket` in conjunction with a supported CI environment/platform.
2. Leaving more space on the IP-stack on local DB installations.
3. The `UNIX:SOCKET` is usually faster than the IP connection on local runs.

```
PYFUNCEBLE_DB_CHARSET=utf8mb4
PYFUNCEBLE_DB_HOST=/var/run/mysqld/mysqld.sock
PYFUNCEBLE_DB_NAME=PyFunceble
PYFUNCEBLE_DB_PASSWORD=Hello,World!
PYFUNCEBLE_DB_PORT=3306
PYFUNCEBLE_DB_USERNAME=pyfunceble
```

-
4. Switch the `db_type` index of your configuration file to `mysql` or `mariadb`.
 5. Play with PyFunceble!

Note: If the environment variables are not found, you will be asked to prompt the information.

20.11 Directory Structure

20.11.1 Why do we need it?

As we wanted the end-user to be able to work from everywhere into the filesystem, we created a logic which will create and keep the `output/` directory which complies with our code.

20.11.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.output.constructor.Constructor()`!

After each version, the maintainer does a `--production` which will prepare the repository for production. That has the side effect to map the maintainer version of the `output/` directory into a file called `dir_structure_production.json`.

Once pushed, on the end-user side, when testing for file, that file is downloaded into a file called `dir_structure.json` which is then used to restore/create a perfect copy of the output directory the maintainer had when pushing the new version.

Note: If you find yourself in a case that a directory is not found, please try first to delete the `dir_structure*.json` files to force a resynchronization.

20.11.3 How to generate it manually?

You can't. But using the `--dir-structure` argument will do the job on purpose.

20.12 DNS Lookup

20.12.1 Why do we need it?

As our main purpose is to check the availability of the given subjects, we make a DNS lookup to determine it.

20.12.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.lookup.dns.DNSLookup.request()` !

For domains

In order:

1. Request the NS record.
2. If not found, request the A record.
3. If not found, request the AAAA record.
4. If not found, request the CNAME record.
5. If not found, request the DNAME record.

Warning: If none is found, we call the UNIX/C equivalent of `getaddrinfo()`.

For IP

We request the PTR record for the IP.

Warning: If none is found, we call the UNIX/C equivalent of `gethostbyaddr()`.

20.13 Environment variables

20.13.1 Dotenv files

Since PyFunceble 2.0.0 (equivalent of PyFunceble-dev >=1.18.0), we load (thanks to [python-dotenv](#)) the content of the following files into the (local) list of environment variables.

1. `.env` (current directory)
2. `.pyfunceble-env` (current directory)
3. `.env` (configuration directory)
4. `.pyfunceble-env` (configuration directory)

To quote the [python-dotenv](#) documentation, a `.env` should look like the following:

```
# a comment and that will be ignored.  
REDIS_ADDRESS=localhost:6379  
MEANING_OF_LIFE=42  
MULTILINE_VAR="hello\nworld"
```

20.13.2 What do we use and why ?

Here is the list of environment variables we use and how we use them if they are set.

Environment Variable	How do we use it?
DEBUG_PYFUNCIBLE	Same as PYFUNCIBLE_DEBUG it's just present for retro-compatibility.
DEBUG_PYFUNCIBLE_ON_SCREEN	Same as PYFUNCIBLE_DEBUG_ON_SCREEN it's just present for retro-compatibility.
PYFUNCIBLE_AUTO_CONFIGURE	Tell us if we have to install/update the configuration file automatically.
PYFUNCIBLE_DB_CHARSET	Tell us the MySQL charset to use.
PYFUNCIBLE_DB_HOST	Tell us the host or the Unix socket (absolute file path) of the MySQL database.
PYFUNCIBLE_DB_NAME	Tell us the name of the MySQL database to use.
PYFUNCIBLE_DB_PASSWORD	Tell us the MySQL user password to use.
PYFUNCIBLE_DB_PORT	Tell us the MySQL connection port to use.
PYFUNCIBLE_DB_USERNAME	Tell us the MySQL user-name to use.
PYFUNCIBLE_DEBUG	Tell us to log everything into the output/logs/*.log files.
PYFUNCIBLE_DEBUG_ON_SCREEN	Tell us to log everything to stdout
PYFUNCIBLE_CONFIG_DIR	Tell us the location of the directory to use as the configuration directory.
PYFUNCIBLE_OUTPUT_DIR	Same as PYFUNCIBLE_CONFIG_DIR it's just present for retro-compatibility.
PYFUNCIBLE_OUTPUT_LOCATION	Tell us where we should generate the output/ directory.
APPDATA	Used under Windows to construct/get the configuration directory if PYFUNCIBLE_CONFIG_DIR is not found.
GH_TOKEN	Tell us the GitHub token to set into the repository configuration when using PyFuncible under Travis CI.
GL_TOKEN	Tell us the GitLab token to set into the repository configuration when using PyFuncible under GitLab CI/CD.
GIT_EMAIL	Tell us the git.email configuration to set when using PyFuncible under any supported CI environment.
GIT_NAME	Tell us the git.name configuration to set when using PyFuncible under any supported CI environment.
TRAVIS_BUILD_DIR	Used to confirm that we are running under a Travis CI container.
GITLAB_CI	Used to confirm that we are running under a GitLab CI/CD environment.
GITLAB_USER_ID	Used to confirm that we are running under a GitLab CI/CD environment.

20.14 Execution time

Warning: This component is not activated by default.

20.14.1 Why do we need it?

As it is always nice to see how long we worked, we added this logic!

20.14.2 How does it work?

Note: Want to read the code ? It's here `PyFuncible.cli.execution_time.ExecutionTime()`!

It shows the execution time on screen (stdout) and at the end of the output/logs/percentage/percentage.txt file if show_percentage is activated.

20.14.3 How to use it?

You can simply change

```
show_execution_time: False
```

to

```
show_execution_time: True
```

into your personal `.PyFunceble.yaml` or use the `--execution` argument from the CLI to activate it.

20.15 List filtering

Warning: This component is not activated by default.

20.15.1 Why do we need it?

While testing for file, you may find yourself in a situation where you only want to test subject which matches a given pattern. That's what this component do.

20.15.2 How does it work?

We scan the list against the given pattern/regex and only test those who match it.

20.15.3 How to use it?

You can simply change

```
filter: ""
```

to

```
filter: "\.org"
```

(for example)

into your personal `.PyFunceble.yaml` or use the `--filter` argument from the CLI.

20.16 IANA Root Zone Database

20.16.1 Why do we need it?

We use it to check if an extension is valid/exists.

20.16.2 How does it work?

Note: Want to read the parser code ? It's here `PyFunceble.lookup.iana.IANA()` !

The root zone database is saved into the `iana-domains-db.json` file. It is formatted like below and is automatically merged for the end-user before each test run.

```
{
    "extension": "whois_server"
}
```

In-app, while testing for a domain, we check if the extension is listed there before doing some extra verifications. If not, domain(s) will be flagged as `INVALID`.

20.16.3 How to generate it manually?

You can't and should not as we are automatically generating it every 24 hours. But using the `--iana` argument will do the job on purpose.

20.17 Test in/for local hostnames, IPs, components

Warning: This component is not activated by default.

20.17.1 Why do we need it?

As we may need to test for local hostnames, IPs, components in a local network, this component allows a less aggressive way of syntax validation.

20.17.2 How does it work?

We simply use a less aggressive syntax validation so that everything you give us is being tested.

20.17.3 How to use it?

Simply change

```
local: False
```

to

```
local: True
```

into your personal `.PyFunceble.yaml` or use the `--local` argument from the CLI to activate it.

20.18 Logs Sharing

Warning: This component is not activated by default.

20.18.1 Why do we need it?

We chose to initiate the logs sharing as some actions can really be random when working with millions of domains. The idea and purpose of this feature are **ONLY** to make PyFunceble a better tool.

20.18.2 What do we share/collect?

Event	Shared	URL
No WHOIS server (referrer) is found.	The extension of the currently tested domain.	<code>https://pyfunceble.funilrys.com/api/no-referer</code>
The expiration date is not correctly formatted.	- The extracted expiration date. - The currently tested domain. - The currently used WHOIS server (DNS) name.	<code>https://pyfunceble.funilrys.com/api/date-format</code>

20.18.3 How to share logs?

If you wish to share your logs simply change

```
share_logs: False
```

to

```
share_logs: True
```

into your personal `.PyFunceble.yaml` or use the `--share-logs` argument from the CLI to activate it.

20.19 Mining

Warning: This component is not activated by default.

20.19.1 Why do we need it?

Sometimes you might, for example, want to get the list of domain(s) / URL(s) in a redirecting loop. This feature reveals them.

20.19.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.engine.mining.Mining()`!

We access the given domain/URL and get the redirection history which we then test once we finished the normal test.

Note: This component might evolve with time.

20.19.3 How to use it?

You can simply change

```
mining: False
```

to

```
mining: True
```

into your personal `.PyFunceble.yaml` or use the `--mining` argument from the CLI to activate it.

20.20 Multiprocessing

Warning: This component is not activated by default.

20.20.1 Why do we need it?

Many people around the web who talked about PyFunceble were talking about one thing: We take time to run.

This component allows you to use more than one process if your machine has multiple CPU.

Note: If you use this component you have to consider some limits:

- Your connection speed.
- Your machine.

You might not even see a speed if one of both is slow or very slow.

The following might not be touched by the limits but it really depends:

- URL availability test.
 - Syntax test.
 - Test with DNS LOOKUP only - without WHOIS.
-

20.20.2 How does it work?

We test multiple subjects at the same time over several processes (1 process = 1 subject tested) and generate our results normally.

Note: While using the JSON format for the database you might have to wait a bit at the very end as we need to merge all data we generated across the past created processes.

Therefore, we recommend using the MySQL/MariaDB format which will get rid of that as everything is saved/synchronized at an almost real-time scale.

20.20.3 How to use it?

Activation

You can simply change

```
multiprocess: False
```

to

```
multiprocess: True
```

Number of processes to create

Simply update the default value of

```
maximal_processes: 25
```

Warning: If you do not explicitly set the `--processes` argument, we overwrite the default to the number of available CPU.

Warning: If this value is less than 2, the system will automatically deactivate the multiprocessing.

Merging mode

2 merging cross process (data) merging mode are available:

- `end`
- `live`

With the `end` mode, we merge all data at the very end of the current instance. With the `live` mode, we merge all data while testing.

Simply update the default value of

```
multiprocess_merging_mode: end
```

to the mode you want.

20.21 Outputed Files

Note: This section does not cover the logs files.

20.21.1 Why do we need it?

We need a way to deliver our results.

20.21.2 How does it work?

After testing a given subject, we generate its output file based on what's needed.

Host format

This is the default output file.

A line is formatted like `0.0.0.0 example.org`.

Note: A custom IP can be set with the help of the `custom_ip` index or the `-ip` argument from the CLI.

Don't need it? Simply change

```
generate_hosts: True
```

to

```
generate_hosts: False
```

into your personal `.PyFunceble.yaml` or use the `--hosts` argument from the CLI to deactivate it.

Plain format

A line is formatted like `example.org`. . Need it? Simply change

```
plain_list_domain: False
```

to

```
plain_list_domain: True
```

into your personal `.PyFunceble.yaml` or use the `--plain` argument from the CLI to activate it.

JSON format

Need it? Simply change

```
generate_json: False
```

to

```
generate_json: True
```

into your personal `.PyFunceble.yaml` or use the `--json` argument from the CLI to activate it.

20.22 Percentage

Warning: This component is activated by default while testing files.

Note: The percentage doesn't show up - by design - while testing for single domains (whilst using `--domain`).

20.22.1 Why do we need it?

We need it in order to get information about the amount of data we just tested.

20.22.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.output.percentage.Percentage()` !

Regularly or at the very end of a test we get the number of subjects for each status along with the number of tested subjects. We then generate and print the percentage calculation on the screen (`stdout`) and into `output/logs/percentage/percentage.txt`

20.22.3 How to use it?

It is activated by default, but if not please update

```
show_percentage: False
```

to

```
show_percentage: True
```

into your personal `.PyFunceble.yaml` or use the `--percentage` argument from the CLI to reactivate it.

20.23 The Public Suffix List

20.23.1 Why do we need it?

We use it in the process of checking the validity of domains.

20.23.2 How does it work?

Note: Want to read the parser code ? It's here `PyFunceble.lookup.publicsuffix.PublicSuffix()`!

The copy of the public suffix list we use is saved into the `public-suffix.json` file. It is formatted like below and is automatically merged for the end-user before each test run.

```
{
  "extension": [
    "suffix1.extension",
    "suffix2.extension",
    "suffix3.extension"
  ]
}
```

In-app, while testing for domain(s), we use it in order to know if we are checking for a subdomain or not.

20.23.3 How to generate it manually?

You can't and should not as we are automatically generating it every 24 hours. But, using the `--public-suffix` argument will do the job on purpose.

20.24 Sorting

Note: While using the multiprocessing option, the data are tested as given.

20.24.1 Why do we need it?

Because sorted is better, we sort by default!

20.24.2 How does it work?

Note: Want to read the code ? It's here: `Sort()`!

Alphabetically

This is the default one. The default python `sorted()` function is used for that purpose.

Hierarchically

The objective of this is to provide sorting by service/domains.

Note: This is a simplified version of what we do.

1. Let's say we have `aaa.bbb.ccc.tdl`.

Note: The TDL part is determined. Indeed we first look at the IANA Root Zone database, then at the Public Suffix List.

2. Let's split the points. We then get a list `[aaa, bbb, ccc, tdl]`
3. Put the TDL first. It will gives us `[tdl, aaa, bbb, ccc]`
4. Reverse everything after the TDL. It will gives us `[tdl, ccc, bbb, aaa]`.
5. Get the string to use for sorting. It will gives us `tdl.ccc.bbb.aaa`.

20.24.3 How to activate the hierarchical sorting?

Simply change

```
hierarchical_sorting: False
```

to

```
hierarchical_sorting: True
```

into your personal `.PyFunceble.yaml` or use the `--hierarchical` argument from the CLI to activate it.

20.25 Whois Lookup

Note: While testing using PyFunceble, subdomains, IPv4 and IPv6 are not used against our whois lookup logic.

20.25.1 Why do we need it?

As our main purpose is to check the availability of the given subjects, we make a WHOIS lookup (if authorized) to determine it.

20.25.2 How does it work?

Note: Want to read the code ? It's here `PyFunceble.lookup.whois.WhoisLookup()` !

For us the only relevant part is the extraction of the expiration date. Indeed, it's an indicator if a domains is still owned by someone, we use it first to get the availability of domains.

20.25.3 How to use it?

It is activated by default but if not simply change

```
no_whois: True
```

to

```
no_whois: False
```

into your personal `.PyFunceble.yaml` or use the `--no-whois` argument from the CLI to reactivate it.

21.1 Submit changes

Before anything, please keep in mind the following. If one or more of those conditions are not filled. Your Pull Request to PyFunceble may not be merged.

The `master` branch is used only for releasing a new or stable version of the code. That's why we require that all contributions/modifications must be done under the `dev` or a new branch.

In order to gain some time and also understand what you are working on, your pull requests submission as long as your commit descriptions should be clear and complete as much as possible. We do an exception to commit with minor changed but big changes should have a complete description. Please ensure to use the following method when committing a big change.

21.2 Coding conventions

21.2.1 Format

1. We should format our code with `Black`, *The uncompromising Python code formatter*.
2. We should write **docstrings** for every public method, function and classes. It does not have to be elaborate. Just explain what it simply does!

```
$ black PyFunceble && black tests
```

21.2.2 Linting

Our code should pass a `pylint` check without any issue (exit 0).

```
$ pylint PyFunceble && pylint tests
```

21.2.3 Coverage

Our code should have at least 60% of coverage.

Note: Coverage irrelevant code/files can be muted.

```
$ coverage run setup.py test && coverage report -m
```

21.2.4 Distribution

Our code should be shipped (after each commit) with a new version and a new `version.yaml` file. That file should **ALWAYS** be generated with the following.

Note: An exception is granted for detached branch (not dev nor master) and no code changes.

```
$ # Prepare our files, :code:`version.yaml` and code for production/dev usage.
$ PyFunceble --production
```

21.2.5 Commit

All your commits should be - when possible - be signed with **PGP**. (More information can be found on [GitHub documentation](#)) Please note the usage of `-S` into the commit command which means that we sign the commit.

The commit message may be formatted like follow:

Note: An exception is granted for no code changes.

:: Short explanation (max 79 char).

Paragraphs with some details/context (if needed).

21.2.6 Git Hook

If one may want to automate the process.

Here is a git hook (as proposition) to be set into `.git/hooks/pre-commit`.

```
#!/usr/bin/env bash

# We print what's going on.
set -x
# We stop on error.
set -e

# We get top level path.
rootDirectory="$(git rev-parse --show-toplevel)"
# We construct our list of directories.
ourDirectories="${rootDirectory}/PyFunceble ${rootDirectory}/tests"
```

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```
if [[ ! -z "$(git status --porcelain | awk '{ if ($NF > 0 && substr($1,1,1) != "?" &&
↪$2 ~ '/\.py/' ) print $2}')" ]]
then
    hash find
    hash isort
    hash black
    hash pylint
    hash coverage

    for directory in $(echo ${ourDirectories})
    do
        # We sort the imports.
        find "${directory}" -name "*.py" -exec isort {} \;
        # We format the code.
        black "${directory}"
        # We lint the code.
        pylint "${directory}"
    done

    cd "${rootDirectory}"
    coverage run setup.py test
fi

set +e
set +x
exit 0
```

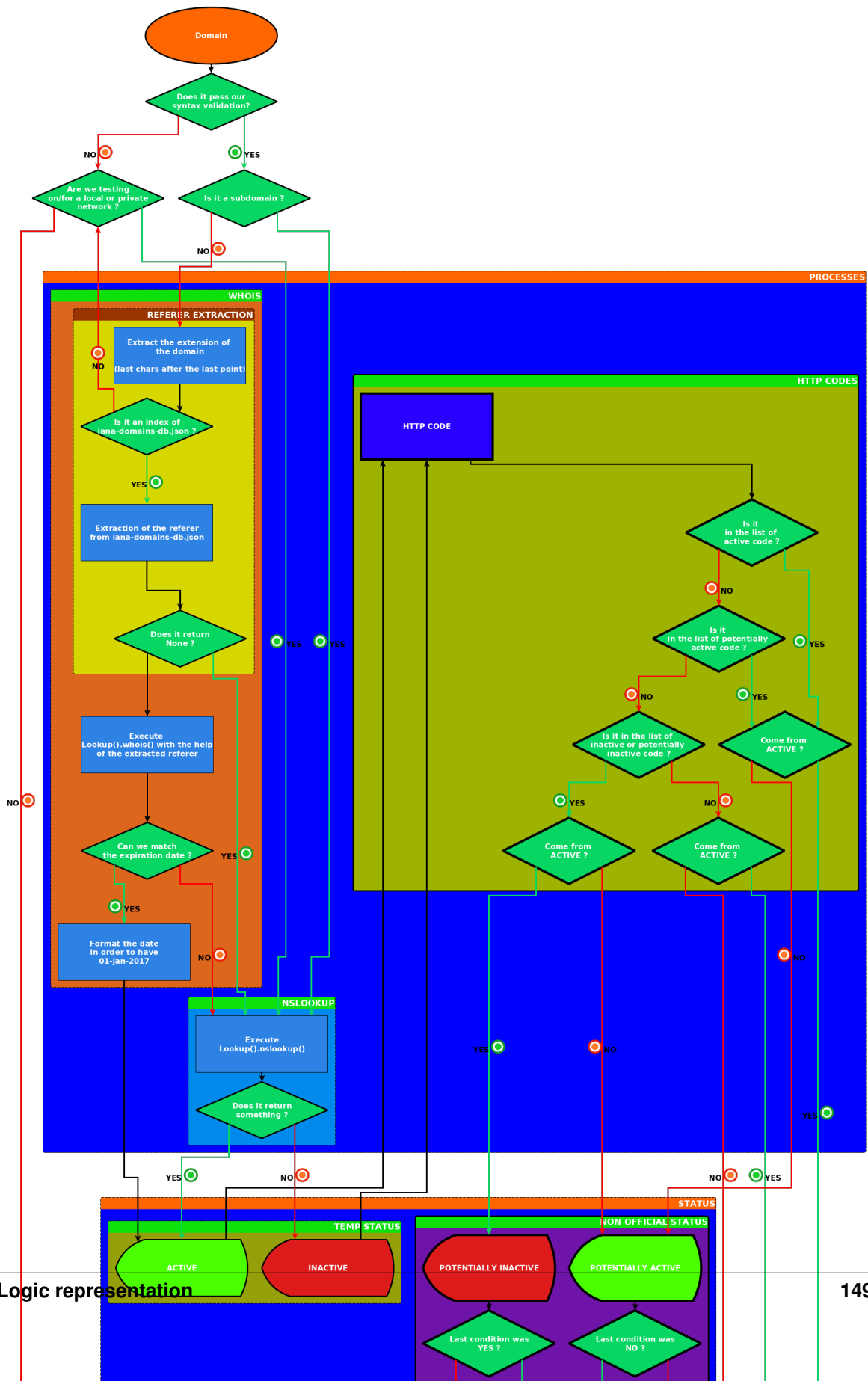

22.1 Logic representation

Don't have time to review the code and want to know exactly what PyFuncible does in general? This flowchart is there for you!

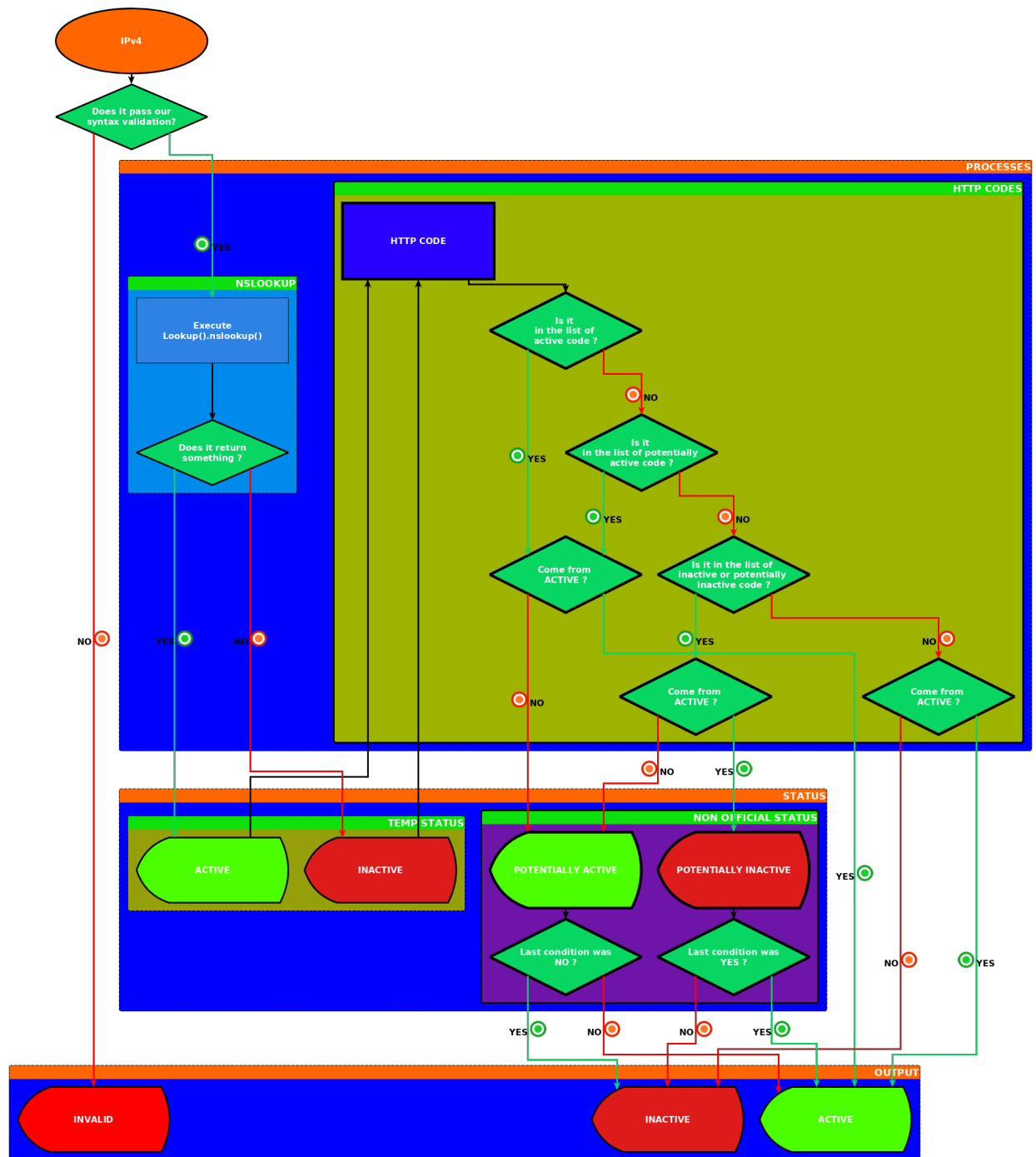
Note: This is a simplified version of what we do.

Note: The diagrams were generated with the help of [yEd Graph Editor](#).

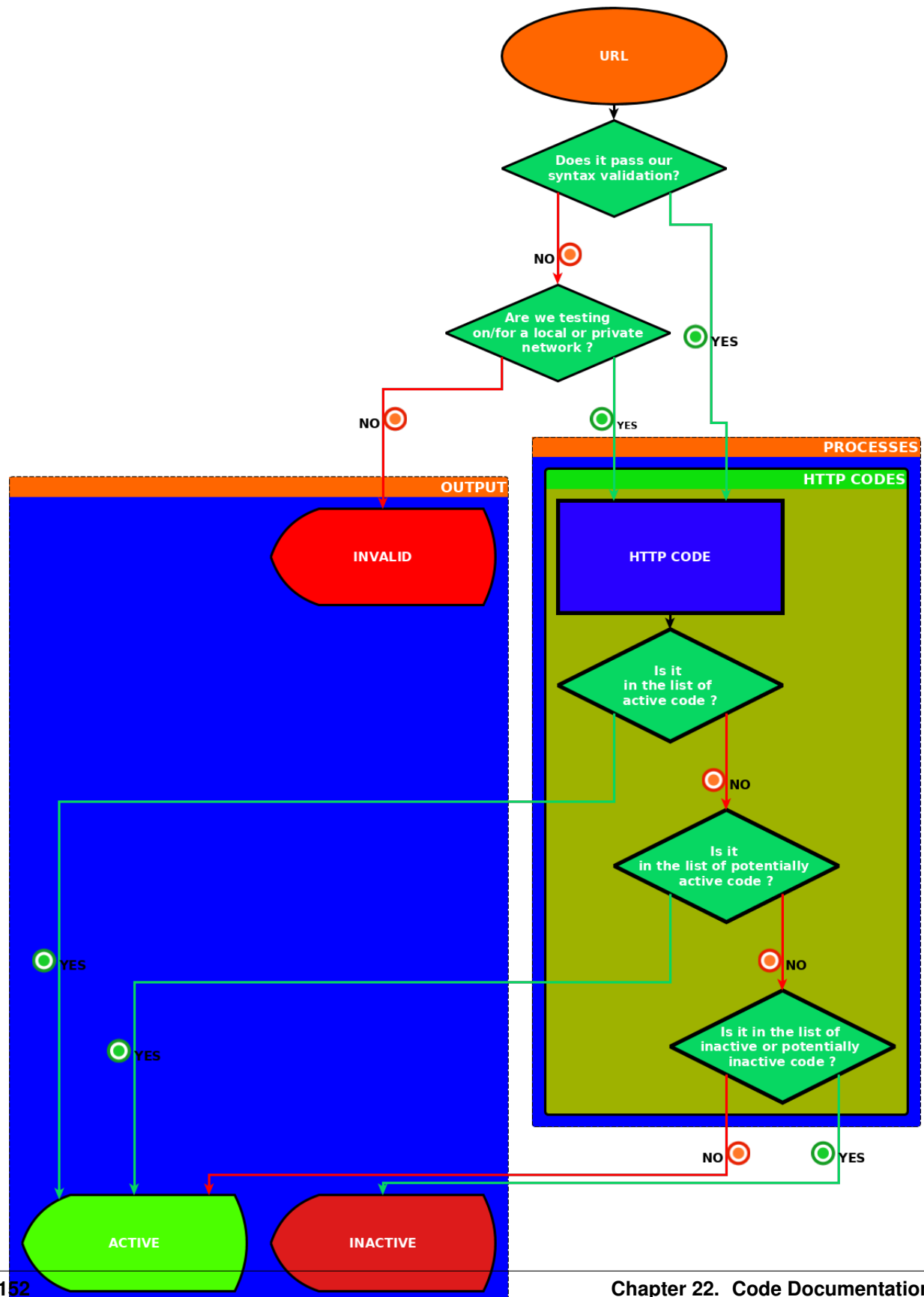
22.1.1 Domain testing



22.1.2 IP testing



22.1.3 URL testing



22.2 Check

22.2.1 Problematic

How can we efficiently check the syntax of IP, domains, and URL?

22.2.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.

Provides the syntax checker interface.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFunceble>

Project documentation: <https://pyfunceble.readthedocs.io/en/master/>

Project homepage: <https://pyfunceble.github.io/>

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limitations under the License.
```

class `PyFunceble.check.Check` (*subject*)

Provides our syntax checkers.

Parameters `subject` (*str*) – The subject (URL, IP or domain) to check.

SPECIAL_USE_DOMAIN_NAMES_EXTENSIONS = `['onion']`

Specifies the extension which are specified as “Special-Use Domain Names” and supported by our project.

Type `list`

See also:

- [RFC6761](#)

- [IANA Special-Use Domain Names](#) assignments.
- [RFC7686](#)

is_domain (*subdomain_check=False*)

Checks if the given subject is a valid domain.

Parameters **subdomain_check** (*bool*) – Activates the subdomain checking.

Warning: Do not manually use.
Please report to `is_subdomain()`.

Returns The validity.

Return type `bool`

is_ip ()

Checks if the given subject is a valid IPv4 or IPv6.

Returns The validity.

Return type `bool`

is_ip_range ()

Checks if the given subject is a valid IPv4 or IPv6 range.

Returns The validity.

Return type `bool`

is_ipv4 ()

Checks if the given subject is a valid IPv4.

Returns The validity.

Return type `bool`

is_ipv4_range ()

Checks if the given subject is a valid IPv4 range.

Returns The validity.

Return type `bool`

is_ipv6 ()

Checks if the given subject is a valid IPv6.

Returns The validity.

Return type `bool`

is_ipv6_range ()

Checks if the given subject is a valid IPv6 range.

Returns The validity.

Return type `bool`

is_reserved_ip ()

Checks if the given subject is a reserved IPv4 or IPv6.

Returns The validity.

Return type `bool`

is_reserved_ipv4()

Checks if the given subject is a reserved IPv4.

Note: This method has been written on basis of the following links:

- https://en.wikipedia.org/wiki/Reserved_IP_addresses
 - <https://www.iana.org/assignments/iana-ipv4-special-registry/iana-ipv4-special-registry.xhtml>
-

Returns The validity.

Return type `bool`

is_reserved_ipv6()

Checks if the given subject is a reserved IPv6.

Returns The validity.

Return type `bool`

is_subdomain()

Checks if the given subject is a valid subdomain.

Returns The validity.

Return type `bool`

is_url(return_base=False, return_formatted=False)

Checks if the given subject is a valid URL.

Parameters

- **return_base** (`bool`) – Allow us the return of the url base (if URL formatted correctly).
- **return_formatted** (`bool`) – Allow us to get the formatted URL as response.

Returns The validity or the base if asked.

Return type `bool, str`

22.3 Exceptions

22.3.1 Problematic

How can we provide our very own exceptions ?

22.3.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.



Provides our exceptions.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFunceble>

Project documentation: <https://pyfunceble.readthedocs.io/en/master/>

Project homepage: <https://pyfunceble.github.io/>

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distributed under the License is distributed on an "AS IS" BASIS,  
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.  
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limitations under the License.
```

exception `PyFunceble.exceptions.ConfigurationFileNotFound`
Describes a missing configuration file.

exception `PyFunceble.exceptions.GitEmailNotFound`
Describes a missing Git Email.

exception `PyFunceble.exceptions.GitHubTokenNotFound`
Describes a missing GitHub token.

exception `PyFunceble.exceptions.GitLabTokenNotFound`
Describes a missing GitLab token.

exception `PyFunceble.exceptions.GitNameNotFound`
Describes a missing Git Name.

exception `PyFunceble.exceptions.NoConversionMade`
Describes the fact that a conversion was expected but none was made.

exception `PyFunceble.exceptions.NoDownloadDestinationGiven`
Describes the fact that the download destination was not declared.

exception `PyFunceble.exceptions.NoDownloadLinkGiven`
Describes the fact that no download link was declared.

exception `PyFunceble.exceptions.NoExtractionMade`
Describes the fact that an extraction was expected but none was made.

exception `PyFunceble.exceptions.NoInternetConnection`
Describes a missing connection.

exception `PyFunceble.exceptions.PleaseUpdatePyFunceble`
Describes the impossibility to continue with an older version.

exception `PyFunceble.exceptions.PyFuncebleException`
Describes our own exceptions.

exception `PyFunceble.exceptions.PyFuncebleExternalException`
Describes an exception which is caused by an external input.

exception `PyFunceble.exceptions.PyFuncebleInternalException`
Describes an exception which is caused by our own logic.

exception `PyFunceble.exceptions.UnableToDownload`
Describes a failing download.

exception `PyFunceble.exceptions.UnknownSubject`
Describes the fact that an unknown subject is inputed.

exception `PyFunceble.exceptions.UserAgentBrowserNotFound`
Describes the fact that we could not find a valid browser to work with.

exception `PyFunceble.exceptions.UserAgentNotFound`
Describes the fact that we could not find a user agent to work with.

exception `PyFunceble.exceptions.UserAgentPlatformNotFound`
Describes the fact that we could not find a valid browser to work with.

exception `PyFunceble.exceptions.WrongParameterType`
Describes a wrong parameter type.

exception `PyFunceble.exceptions.WrongParameterValue`
Describes a wrong parameter value.

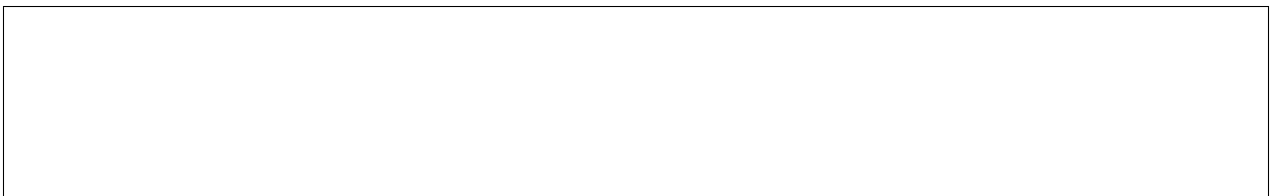
22.4 Abstracts

22.4.1 Problematic

How can we work with abstracted data and information which are not directly related to our project main logic?

22.4.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.



Provides the abstracted logics/data.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

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```

Infrastructure()

class PyFunceble.abstracts.infrastructure.Infrastructure

Provides some infrastructure related abstractions.

ALEMBIC_DIRECTORY_NAME = 'alembic'

Sets the name of the alembic related directory.

Type str

CI_MIGRATION_TRIGGER_FILE = '.trigger'

Sets the name of the file to write into for the case that we are migrating to sqlalchemy from inside a CI engine.

Type str

CONFIGURATION_FILENAME = '.PyFunceble.yaml'

Sets the name of the user editable configuration file.

Type str

DEFAULT_CONFIGURATION_FILENAME = '.PyFunceble_production.yaml'

Sets the name of the default configuration file.

Type str

DOWN_FILENAME = '.pyfunceble_intern_downtime.json'

Sets the name of our own download time record file.

Type str

ENV_FILENAME = '.pyfunceble-env'

Sets the name of our own environment file.

Type str

HASHES_FILENAME = 'hashes_tracker.json'

Sets the name of the file which will save the hashes of the files we are testing.

IPV4_REPUTATION_FILENAME = 'ipv4_reputation.data'

Sets the name of our own copy of the IPv4 reputation data file.

Type str

PROD_CONFIG_LINK = 'https://raw.githubusercontent.com/funilrys/PyFunceble/master/.PyF'
 Sets the link to the production configuration file.

Type `str`

REPO_LINK = 'https://git.io/vpZoI'
 Sets the link to the repository.

Type `str`

USER_AGENT_FILENAME = 'user_agents.json'
 Sets the name of our own copy of the user agents file.

Package()

class PyFunceble.abstracts.package.**Package**
 Provides some packaging related abstractions.

NAME = 'PyFunceble'
 Sets the package name.

Type `str`

VERSION = '3.3.2. (Teal Blauwbok: Tick)'
 Sets the package version.

Type `str`

Platform()

class PyFunceble.abstracts.platform.**Platform**
 Provides an easy way to get the current platform.

MAC = ['darwin']
 Provides the list of supported MAC platform.

Type `list`

UNIX = ['linux', 'darwin']
 Provides the list of supported unix platform.

Type `list`

WINDOWS = ['windows', 'cygwin', 'cygwin_nt-10.0']
 Provides the list of supported windows platform.

Type `list`

classmethod **get**()
 Returns the current platform.

Return type `str`

classmethod **is_mac_os**()
 Checks if the current platform is in our OSX list.

Return type `bool`

classmethod **is_unix**()
 Checks if the current platform is in our unix list.

Return type `bool`

classmethod `is_windows()`

Checks if the current platform is in our windows list.

Return type `bool`

Version()

class `PyFuncible.abstracts.package.Version`

Provides a simple way to compare our own versions.

classmethod `compare(upstream)`

Compares the given versions with the local one.

Parameters

- **local** (*list*) – The local version converted by `split_versions()`.
- **upstream** (*list*) – The upstream version converted by `split_versions()`.

Returns

- `True`: `local < upstream`
- `None`: `local == upstream`
- `False`: `local > upstream`

Return type `bool, None`

classmethod `is_local_cloned()`

Checks if the local version is was downloaded per `git clone`.

classmethod `is_local_dev()`

Checks if the local version is the development version.

classmethod `literally_compare(local, upstream)`

Compares the given versions, literally.

Parameters

- **local** (*str*) – The local version converted by `split_versions()`.
- **upstream** (*str*) – The upstream version converted by `split_versions()`.

Returns

- `True`: `local == upstream`
- `False`: `local != upstream`

Return type `bool`

classmethod `split_versions(version, return_non_digits=False)`

Converts the versions to a shorter one.

Parameters

- **version** (*str*) – The version to split.
- **return_non_digits** (*bool*) – Activate the return of the non-digits parts of the splitted version.

Returns A tuple. The first index is the digit part of the version, when the second one is the the non-digit part of the version.

Return type `tuple`

22.5 CLI

22.5.1 Problematic

How can we easily work and distribute some CLI related logic?

22.5.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.

Provides the CLI entry points.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

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limitations under the License.
```

```
PyFunceble.cli.tool()
    Provides the CLI.
```

Dispatcher()

```
class PyFunceble.cli.dispatcher.Dispatcher(preset, domain_or_ip=None, file_path=None,
                                           url_file_path=None, url_to_test=None,
                                           generate_results_only=False, generate_all_results_only=False)
```

Dispatches to one of the other brain.

Note: We are talking about `brain` because, each `PyFunceble.core.*` is a unique brain which has it's own function ;-)

Sometimes, 2 brains depends from the other one. But that's great because working together is always great ;-)

Parameters

- **preset** (*Preset*) – An instance of the configuration preset.
- **domain_or_ip** (*list*) – A list of subject to test.
- **file_path** (*str*) – A file path or a link.

Note: If a file path is given, we read and test its content.

Note: If a link is given, we download it's content and test it.

Warning: If given, we consider each line to be an adblock filter, a host file format or a subject to test.

- **url_file_path** (*str*) – A file path or a link.

Note: If a file path is given, we read and test its content.

Note: If a link is given, we download it's content and test it.

Warning: If given, we consider each line to be a URL to test.

- **url_to_test** (*str*) – A list of URL to test.

classmethod dispatch_file_test (*file_path*, *generate_results_only*, *generate_all_results_only*)
Dispatches to the brain in charge of file testing.

Parameters

- **file_path** (*str*) – The file path to test.
- **generate_results_only** (*bool*) – Tell us to only regenerate from the data stored into the MariaDB/MySQL databases.
- **generate_all_results_only** (*bool*) – Tell us to only regenerate from the data stored into the MariaDB/MySQL databases.

Note: The difference with `generate_results_only` is that it includes the retested which status didn't changed.

dispatch_url_file_test (*url_file_path*, *generate_results_only*, *generate_all_results_only*)

Dispatches to the brain in charge of url file testing.

Parameters

- **url_file_path** (*str*) – The file to test.
- **generate_results_only** (*bool*) – Tell us to only regenerate from the data stored into the MariaDB/MySQL databases.

ExecutionTime()

class PyFuncible.cli.execution_time.**ExecutionTime** (*action='start', last=False*)

Sets and returns the execution time of the program.

Parameters

- **action** (*str*) – The action related the execution time. Can be *start* or *stop*.
- **last** (*bool*) – Tell the subsystem if we are at the very end of the file testing.

classmethod **authorization** ()

Checks the execution authorization.

Returns The authorization status.

Return type *bool*

classmethod **calculate** (*start=None, end=None*)

Calculates the difference between starting and ending time.

Parameters

- **start** (*int, str*) – A starting time.
- **stop** (*int, str*) – A ending time.

Returns

A dict with following as index.

- days
- hours
- minutes
- seconds

as index.

Return type *dict*

format_execution_time (*start=None, end=None*)

Formats the calculated time into a human readable format.

Parameters

- **start** (*int, str*) – A starting time.
- **stop** (*int, str*) – A ending time.

Returns A human readable date.

Return type *str*

save (*last=False*)

Saves the current time to our backup file.

Parameters **last** (*bool*) – Tell us if we are at the very end of the file testing.

classmethod set_starting_time ()

Sets the starting time.

classmethod set_stopping_time ()

Sets the ending time.

22.6 Config

22.6.1 Problematic

- How can we make personalization more simple?
- How can we automatically merge the new configuration with the local one?
- How can we link some configuration endpoints with the real logic.

22.6.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.

Provides the configuration logics.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFunceble>

Project documentation: <https://pyfunceble.readthedocs.io/en/master/>

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 limitations under the License.

Load()**Merge()****Preset()****class** PyFunceble.config.preset.**Preset**

Checks or update the global configuration based on some events.

classmethod **Preset_are_we_allowed_to_overwrite**(*index*)

Checks if we are allowed to overwrite an index.

api()

Prepares the global configuration for a test from the API.

complements()

Prepares the global configuration for a complements generation.

cooldown_time()

Ensures that we always have a correct cooldown time.

classmethod **disable**(*indexes*)Sets the given configuration index to `False`.**classmethod** **dns_lookup_over_tcp**()

Ensures that the DNS lookup over tcp is properly set.

classmethod **dns_nameserver**()

Ensures that the DNS nameserver is properly set.

classmethod **enable**(*indexes*)Sets the given configuration index to `True`.**file_url**()

Prepares the global configuration for a list of URL to test.

init_all()

Initiate all presets which are independent from others.

classmethod **maximal_processes**()Ensures that the number of maximal processes is always ≥ 2 . If not, we don't authorize the multiprocessing.**multiprocess**()

Prepares the global configuration for a test with multiple processes.

classmethod **multiprocess_merging_mode**()

Ensures that a valid merging mode is given.

reputation_data()

Ensures that the usage of reputation data is activated when needed.

classmethod **reset_counters**()

Resets the counters.

simple_domain()

Prepares the global configuration for a domain test.

simple_url()

Prepares the global configuration for an URL test.

classmethod switch (*variable*, *custom=False*)

Switches `PyFunceble.CONFIGURATION` variables to their opposite.

Parameters

- **variable** (*str/bool*) – The variable name to switch. The variable should be an index our configuration system. If we want to switch a bool variable, we should parse it here.
- **custom** (*bool*) – Let us know if have to switch the parsed variable instead of our configuration index.

Returns The opposite of the configuration index or the given variable.

Return type `bool`

Raises

Exception When the configuration is not valid. In other words, if the `PyFunceble.CONFIGURATION[variable_name]` is not a bool.

syntax_test()

Disables the HTTP status code if we are testing for syntax

classmethod timeout()

Ensures that the timeout is always correct.

classmethod upgrade_database()

Ensures that the database always have the latest state.

22.7 Converter

22.7.1 Problematic

How can we convert some data into something else or something our system understand.

22.7.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.



Provides the converters.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFunceble>

Project documentation: <https://pyfunceble.readthedocs.io/en/master/>

Project homepage: <https://pyfunceble.github.io/>

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limitations under the License.
```

ConverterBase()

class PyFunceble.converter.base.**ConverterBase**(*data_to_convert*)

Provides the converter base.

Parameters *data_to_convert* – The data to convert.

get_converted()

Provides the converted data.

AdBlock()

class PyFunceble.converter.adblock.**AdBlock**(*data_to_convert*, *aggressive=False*)

Converts an adblock filter line to a list os subject to test.

__AdBlock__decode_v1(*data*)

Decodes the v1.

Parameters *data* (*str*) – A string to decode.

Return type *list*

__AdBlock__decode_v2(*data*)

Decodes the v2.

Parameters *data* (*str*) – A string to decode.

Return type *list*

__AdBlock__decode_v3(*data*)

Decodes the v3.

Parameters *data* (*str*) – A string to decode.

Return type *list*

__AdBlock__decode_v4(*data*)

Decodes the v4.

Parameters `data` (*str*) – A string to decode.

Return type `list`

extract_base (*subject*)

Extracts the base of the given element.

As an example: given "hello.world/?is=beautiful" returns "hello.world"

Parameters `subject` – The subject to work with.

extract_from_options (*options*)

Extracts the relevant data from the list of options.

Parameters `options` (*list*) – The list of options of a rule.

Returns The list of domains.

Return type `list`

format_decoded (*decoded*, *result=None*)

Formats the extracted adblock line in order to be compatible with what the system understand.

Parameters

- **decoded** (*str*) – The decoded data to work with.
- **result** (*list*) – A list of the result of this method.

Returns The list of domains or IP compatible with the system.

Return type `list`

get_converted ()

Converts and return the result of the conversion.

Return type `list`

classmethod ignore_it (*subject*)

Checks if we have to ignore the given subject.

Parameters `subject` (*str*) – The subject ot work with.

Returns The result of the check.

Return type `bool`

remove_ignored (*subject*)

Removes the ignored element from the given list of subject.

Digit2Digits()

class `PyFunceble.converter.digit2digits.Digit2Digits` (*data_to_convert*)

Converts a given digit to a 2 digits string.

File()

class `PyFunceble.converter.file.File` (*data_to_convert*)

Converts a line to a subject to test.

get_converted ()

Provides the converted data.

Warning: This method returns `None` if no subject of interest was found.

Return type `None, str, list`

`InternalUrl()`

class `PyFunceble.converter.internal_url.InternalUrl(data_to_convert)`
 Converter of the internal URLs.

Note: The internal URLs are actually the URL that has nothing to do with what we are going to test. They are only relevant for the software itself.

Parameters `data_to_convert (str)` – The data to convert

`to_right_url()`
 Process the conversion to the right URL.

22.8 Core

22.8.1 Problematic

How can we get started?

22.8.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.

Provides the core interfaces.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFunceble>

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APICore()

```
class PyFunceble.core.api.APICore(subject, complete=False, configuration=None,  
                                db_file_name='api_call', is_parent=True)
```

Provides the logic and interface for the tests from the API.

Parameters

- **subject** (*str*) – The element we are testing.
- **complete** (*bool*) – Activate the return of a dictionary with significant - if not all - data about the test.
- **configuration** (*dict*) – The custom configuration to load.

Note: This will let you overwrite any of the previously given configuration index.

```
__APICore__inactive_database_management(subject, status)
```

Given the subject and status, we add or remove the subject from the inactive database.

```
availability(subject_type)
```

Make an availability check.

Parameters **subject_type** (*str*) – Should be one of the following.

- domain
- url

```
domain_and_ip()
```

Run a domain/IP availability check over the given subject.

```
domain_syntax()
```

Run a domain syntax check over the given subject.

```
ip_range_syntax()
```

Run an IP range syntax check over the given subject.

```
ip_syntax()
```

Run an IP syntax check over the given subject.

```
ipv4_range_syntax()
```

Run an IPv4 range syntax check over the given subject.

ipv4_syntax()

Run an IPv4 syntax check over the given subject.

ipv6_range_syntax()

Run an IPv6 range syntax check over the given subject.

ipv6_syntax()

Run an IPv6 syntax check over the given subject.

reputation(subject_type)

Make a reputation check.

Parameters **subject_type** (*str*) – Should be one of the following.

- domain
- url

subdomain_syntax()

Run a subdomain syntax check over the given subject.

syntax(subject_type)

Make a syntax check.

Parameters **subject_type** (*str*) – Should be one of the following.

- domain
- url

url()

Run an URL availability check over the given subject.

url_syntax()

Run an IPv4 syntax check over the given subject.

CLICore()

class PyFuncible.core.cli.**CLICore**

Provides some methods which are dedicated for the CLI.

classmethod **_CLICore__check_deprecated** (*upstream_version*)

Checks if the local version is deprecated.

classmethod **_CLICore__check_force_update** (*upstream_version*)

Checks if we need to force the update.

If it's the case, we will stop the tool.

classmethod **_CLICore__print_messages** (*upstream_version*)

Looks at the messages and prints the one that needs to be printed.

classmethod **colorify_logo** (*home=False*)

Print the colored logo based on global results.

Parameters **home** (*bool*) – Tell us if we have to print the initial coloration.

classmethod **compare_version_and_print_messages** ()

Compares the local with the upstream version.

classmethod **get_simple_coloration** (*status*)

Given a status we give the coloration for the simple mode.

Parameters **status** (*str*) – An official status output.

```
classmethod get_up_statuses ()  
    Provides the list of up statuses.  
  
classmethod get_upstream_version_file ()  
    Provides the upstream version file.  
  
classmethod logs_sharing ()  
    Prints an information message when the logs sharing is activated.  
  
classmethod print_header ()  
    Prints the header if needed.  
  
classmethod print_nothing_to_test ()  
    Prints the nothing to test message.  
  
classmethod save_into_database (output, filename)  
    Saves the current status inside the database.  
  
classmethod sort_generated_files ()  
    Sort the content of all files we generated.  
  
classmethod stay_safe ()  
    Prints a friendly message.
```

FileCore()

```
class PyFunceble.core.file.FileCore (file, file_content_type='domain')  
    Brain of PyFunceble for file testing.
```

Parameters

- **file** (*str*) – The file we are testing.
- **file_type** (*str*) – The file type. Should be one of the following.
 - domain
 - url

```
_FileCore_run_single_test (subject, ignore_inactive_db_check=False)  
    Run a test for a single subject.
```

```
_FileCore_test_line (line, ignore_inactive_db_check=False)  
    Tests a given line.
```

```
cleanup (auto_continue_db, auto_save, test_completed=False)  
    Runs the logic to run at the end of all test.
```

```
construct_and_get_shadow_file (file_stream, ignore_inactive_db_check=False)  
    Provides a path to a file which contain the list to file.
```

The idea is to do a comparison between what we already tested and what we still have to test.

```
classmethod download_link (input_file)  
    Downloads the file if it is an URL and return the name of the new file to test.
```

```
generate_complement_status_file (subject, status)  
    Generate the complements status files.
```

```
generate_files (include_entries_without_changes=False)  
    Generates all needed files.
```

```
generate_files_of_status (status, include_entries_without_changes=False)  
    Generates the status file of all subjects of the given status.
```

Parameters

- **status** (*str*) – A status to filter.
- **include_entries_without_changes** (*bool*) – Descriptive enough.

classmethod **get_complements** (*auto_continue_db*)

Generate a list of complements to test.

classmethod **get_subjects** (*line*)

Given a line, we give the list of subjects to test.

post_test_treatment (*test_output*, *file_content_type*, *complements_test_started=False*,
auto_continue_db=None, *inactive_db=None*, *mining=None*,
whois_db=None)

Do the post test treatment.

run_test ()

Run the test of the content of the given file.

classmethod **should_be_ignored** (*subject*, *auto_continue_db*, *inactive_db*, *ignore_inactive_db_check=False*)

Given a subject which is supposed to be tested, we check if we should ignore it.

test (*subject*)

Tests the given subject and return it's results.

write_in_shadow_file_if_needed (*line*, *temp_file*, *ignore_inactive_db_check=False*, *autocontinue=None*, *inactive_db=None*)

Checks if the given line should be in the shadow file.

OurProcessWrapper ()

class `PyFunceble.core.multiprocess.OurProcessWrapper` (**args*, ***kwargs*)

Wrapper of Process. The object of this class is just to overwrite `Process.run()` in order to catch exceptions.

Note: This class takes the same arguments as `Process`.

exception

Provides a way to check if an exception was send.

run ()

Overwrites `Process.run()`.

MultiprocessCore ()

class `PyFunceble.core.multiprocess.MultiprocessCore` (*file*,
file_content_type='domain')

Brain of PyFunceble for file testing with multiple processes.s.

Parameters

- **file** (*str*) – The file we are testing.
- **file_type** (*str*) – The file type. Should be one of the following.
 - domain
 - url

`__MultiprocessCore__check_exception` (*processes, manager_data*)
Checks if an exception is present into the given pool of processes.
:param list processes. A list of running processes.

`__MultiprocessCore__merge_processes_data` (*manager_data, tracker=None*)
Reads all results and put them at the right location.

`__MultiprocessCore__process_end_merging` (*finished, manager_data, tracker*)
Processes the end merging.

`__MultiprocessCore__process_live_merging` (*finished, manager_data, tracker*)
Processes the live merging.

`__MultiprocessCore__run_multiprocess_test` (*stream, manager, ignore_inactive_db_check=False, tracker=None*) ig-
Tests the content of the given file.

`__MultiprocessCore__start_process` (*subject, manager_data, ignore_inactive_db_check=False*) ig-
Starts a new process.

`construct_and_get_shadow_file` (*file_stream, ignore_inactive_db_check=False*)
Provides a path to a file which contain the list to file.
The idea is to do a comparison between what we already tested and what we still have to test.

`run_test` ()
Runs the test of the content of the given file.

`test` (*subject, file_content_type, loader, manager_data, intern, ignore_inactive_db_check=False, custom=None*)
Tests the given subject and return the result.

`work_process` (*args)
Work process for :code'construct_and_get_shadow_file'.

`SimpleCore()`

`class` `PyFunceble.core.simple.SimpleCore` (*subject*)
Brain of PyFunceble for simple test.

Parameters **`subject`** (*str*) – The subject we are testing.

`__SimpleCore__save_in_database` (*dataset*)
Saves the given dataset (result) into the database.
Parameters **`dataset`** (*dict, list*) – The dataset to save.

`domain` ()
Handles the simple domain testing.

`test` (*subject, subject_type*)
Processes a test of the given subject and return the result.

`url` ()
Handles the simple URL testing.

22.9 Database

22.9.1 Problematic

How can we store our most relevant information?

22.9.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.



Provides the database interfaces.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfuncible.github.io/special-thanks.html>

Contributors: <https://pyfuncible.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFuncible>

Project documentation: <https://pyfuncible.readthedocs.io/en/master/>

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```

InactiveDB()

class PyFuncible.database.inactive.**InactiveDB**(filename, parent_process=False)
Provides the inactive database logic and interface.

Parameters filename (*str*) – The name of the file we are processing.

_merge()

Merges the database with the older one which has already been set into the database.

add (*subject*, *status*)

Adds the given subject into the database.

Parameters

- **subject** (*str*) – The subject we are working with.
- **status** (*str*) – The status of the given subject.

classmethod authorization ()

Provides the execution authorization.

clean ()

Cleans everything which is not needed anymore.

classmethod datetime ()

Gets the timestamp where we are going to save our current list.

Returns The timestamp to append with the currently tested element.

Return type intlstr

get_already_tested ()

Returns a set of already tested subjects.

get_to_clean ()

Returns a set of subject to clean from the database.

get_to_retest ()

Returns a set of subject to retest.

initiate ()

Initiates the databsse.

load ()

Loads the content of the database file.

remove (*subject*)

Removes all occurrences of the given subject from the database.

Parameters **subject** (*str*) – The subject we are working with.

save ()

Saves the current database into the database file.

WhoisDB()

class PyFunceble.database.whois.**WhoisDB** (*parent_process=False*)

Provides the WHOIS database interface and logic.

add (*subject*, *expiration_date*, *server*, *record=None*)

Adds the given subject and expiration date to the database.

Parameters

- **subject** (*str*) – The subject we are working with.
- **expiration_date** (*str*) – The extracted expiration date.
- **server** (*str*) – The server we got the record from.
- **record** (*str*) – The WHOIS record.

authorized

Provides the operation authorization.

get_expiration_date (*subject*)

Gets the expiration date of the given subject.

Parameters **subject** (*str*) – The subject we are working with.

Returns The expiration date from the database.

Return type *tuple*

is_time_older (*subject*)

Checks if the expiration time of the given subject is older.

Parameters **subject** (*str*) – The subject we are working with.

Note: Of course, we imply that the subject is in the database.

load ()

Loads the database file into the database.

classmethod merge (*old*)

Merges the older version of the database into the new version.

Parameters **old** (*dict*) – The old version of the database.

Returns The database in the new format.

Return type *dict*

save ()

Saves the database into the database file.

22.10 Downloader

22.10.1 Problematic

How can we easily download one of our static files ?

22.10.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.



Provides the downloaders of all our static files.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFunceble>

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```

DownloaderBase()

class PyFuncible.downloader.base.DownloaderBase

Provides the downloader base.

DOWNTIME_INDEX = None

Used to set/track the download time of the current file.

Return type `str`

REDOWNLOAD_AFTER = 1

Used to set the redownload frequency in day.

Return type `int`

get_all_downtimes()

Provides all download times.

Return type `dict`

get_downtime()

Provides the download timestamp of the current DOWNTIME_INDEX.

Return type `dict, None`

is_downtime_set()

Checks if the downtime is set for the current DOWNTIME_INDEX.

Return type `bool`

is_last_download_expired()

Checks if the last downloaded file is expired.

process()

Process the download and returns the downloaded text.

Return type `str, None`

save_downtimes()

Saves all downtimes.

update_downtime()

Updates the current download time.

`ConfigDownloader()`

class `PyFunceble.downloader.config.ConfigDownloader`
Provides the downloader of the production configuration file.

`DirectoryStructureDownloader()`

class `PyFunceble.downloader.directory_structure.DirectoryStructureDownloader`
Provides the downloader of the directory structure file.

`IANADownloader()`

class `PyFunceble.downloader.iana.IANADownloader`
Provides the downloader of the iana database file.

`IPv4ReputationDownloader()`

class `PyFunceble.downloader.ipv4_reputation.IPv4ReputationDownloader`
Provides the downloader of the IPv4 reputation file.

`PublicSuffixDownloader()`

class `PyFunceble.downloader.publicsuffix.PublicSuffixDownloader`
Provides the downloader of the public suffix list file.

22.11 Engine

22.11.1 Problematic

- How to auto continue?
- How to auto save?
- How to implement a proper debugger?
- How to get subjects related to a tested subject?
- How to work with different database types?
- How to sort our outputs?

22.11.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.



Provides the engine interfaces.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFunceble>

Project documentation: <https://pyfunceble.readthedocs.io/en/master/>

Project homepage: <https://pyfunceble.github.io/>

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```

AutoContinue()

class PyFunceble.engine.auto_continue.AutoContinue(filename, parent_process=False)

Provides the auto-continue subsystem.

__AutoContinue__generate_complements()

Generates the complements from the given list of tested.

__AutoContinue__get_or_generate_complements_json()

Gets or generates the complements while working with as JSON formatted database.

__AutoContinue__get_or_generate_complements_mysql()

Gets or generates the complements while working with as MySQL/MariaDB formatted database.

add(subject, status)

Adds the given subject into the database.

classmethod authorization()

Provides the execution authorization.

clean()

Cleans the database.

get_already_tested()

Returns the list of subjects which were already tested as a set.

get_or_generate_complements()

Gets or generates the complements.

is_empty()

Checks if the database related to the currently tested file is empty.

load()
Loads previously saved database.

save()
Saves the current state of the database.

update_counters()
Updates the counters.

AutoSave()

class PyFunceble.engine.auto_save.**AutoSave** (*start_time=None*)
Provides the autosave interface.

classmethod **get_current_ci()**
Provides the current CI to use.

is_time_exceed()
Checks if the end time is exceed.

process (*test_completed=False*)
Processes the autosave base on the current state of the test.

Parameters **test_completed** (*bool*) – Tell us if we finished the test.

Logger()

class PyFunceble.engine.logger.**Logger** (*debug=False, on_screen=False, output_directory=None*)
Provides our logging logic.

_Logger__get_handler (*handler_type*)
Provides a handler for of the given type.

_Logger__init_loggers ()
Initiates all loggers.

_Logger__set_output_directory (*output_directory*)
Shares the given output directory.

Note: If the given output directory does not exists, we create it.

Parameters **output_directory** (*string*) – The output directory.

authorization (*debug*)
Provides the operation authorization.

critical (*message*)
Logs the critical message.

debug (*message*)
Logs the debug message.

error (*message*)
Logs the error message.

exception ()
Logs the exception message.

fatal (*message*)

Logs the fatal message.

format_to_apply = '%(asctime)s::%(levelname)s::%(origin_path)s::%(origin_line)s@%(orig

The format to apply.

classmethod **get_origin_info** ()

Returns the information about where the logger was triggered.

Returns

A tuple, which is composed of the following.

(trigger file path, trigger line, trigger function/method name)

Return type `tuple`

info (*message*)

Logs the info message.

init (*output_directory=None*)

Initiates the logger.

root_logger_format = '%(asctime)s::%(levelname)s] (PID%(process)s::%(processName)s) : %

The format to parse to the root logger (if used).

warning (*message*)

Logs the warning message.

Mining()

class `PyFunceble.engine.mining.Mining` (*filename, parent_process=False*)

Manages the minig subsystem.

classmethod **authorization** ()

Provides the operation authorization.

classmethod **get_history** (*url, verify=None*)

Gets the history of the given url.

Parameters *url* (*str*) – An URL to call.

Returns The list of links.

Return type `list`

list_of_mined ()

Provides the list of mined domains so that they can be tested.

Returns

The list of mined domains.

The returned format is the following:

```
[
    (index_to_delete_after_test, mined),
    (index_to_delete_after_test, mined),
    (index_to_delete_after_test, mined)
]
```

Return type `list`

load()

Loads the content of the database file.

mine (*subject*, *subject_type*)

Searches for domain or URL related to the original URL or domain. If some are found, we add them into the database.

Parameters

- **subject** (*str*) – The subject we are working with.
- **subject_typ** (*str*) – The type of the subject.

Can me one of the following:

- url
- domain

remove (*subject*, *history_member*)

Removes the given subject from the database assigned to the currently tested file.

Parameters

- **subject** (*str*) – The subject we are working with.
- **history_member** (*str*) – The history member to delete.

save()

Saves the content of the database into the database file.

Sort()

class PyFunceble.engine.sort.Sort

Provides some sorting presets which we can parse to PyFunceble.helpers.list.List.custom_format.

classmethod _Sort__get_url_base (*element*)

Provides the URL base if needed.

classmethod hierarchical (*element*)

The idea behind this method is to sort a list of domain hierarchically.

Parameters **element** (*str*) – The element we are currently reading.

Returns The formatted element.

Return type *str*

Note: For a domain like `aaa.bbb.ccc.tdl`.

A normal sorting is done in the following order:

1. aaa
2. bbb
3. ccc
4. tdl

This method allow the sorting to be done in the following order:

1. tdl

2. ccc
 3. bbb
 4. aaa
-

classmethod standard (*element*)

Implements the standard and alphabetical sorting.

Parameters **element** (*str*) – The element we are currently reading.

Returns The formatted element.

Return type *str*

22.12 Extractor

22.12.1 Problematic

How can we extract data from other data?

22.12.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.



Provides the extractors.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

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ExtractorBase()

class PyFuncible.extractor.base.**ExtractorBase**(data)

Provides the extractor base.

Parameters data (*str*) – The data to work with.

get_extracted()

Provides the converted data.

ExpirationDate()

class PyFuncible.extractor.expiration_date.**ExpirationDate**(data)

Provides a way to extract the expiration date from a given WHOIS record.

Parameters data (*str*) – The WHOIS record.s

__ExpirationDate__extract_it()

Try to extract the expiration date from the given data.

__ExpirationDate__format_it(data)

Formats the given data.

__ExpirationDate__format_management(index, matched)

A format management helper.

Note: Please note that the second value of the case represent the groups in order [day, month, year]. This means that a [2, 1, 0] will be for example for a date in format 2017-01-02 where 01 is the month.

Parameters

- **index** (*int*) – The identifiant of the regex.
- **matched** (*list*) – The matched result to format.

Returns A list representing the expiration date. The list can be “decoded” like [day, month, year]

Return type list|None

22.13 Helpers

22.13.1 Problematic

How can we avoid writing the same thing every time?

22.13.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.

Provides the helpers.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

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```

Command()

class PyFunceble.helpers.Command(*command*, *encoding*='utf-8')

Shell command execution.

Parameters

- **command** (*str*) – The command to execute.
- **encoding** (*str*) – The encoding to use to decode the shell output.

_decode_output (*to_decode*)

Decode the output of a shell command in order to be readable.

Parameters to_decode (*bytes*) – Output of a command to decode.

Returns The decoded output.

Return type *str*

execute()

Execute the given command.

Returns The output of the command.

Return type `str`

run(rstrip=True)

Run the given command and yield each line(s) one by one.

Note: The difference between this method and `execute()` is that `execute()` wait for the process to end in order to return its output while this method return each line one by one - as they are outputed.

Parameters `rstrip` (`bool`) – Deactivates the rstrip of the output.

run_to_stdout()

Run the given command and print each line(s) to stdout.

Dict()

class `PyFunceble.helpers.Dict` (`main=None`)

Simplify some dict manipulation.

Parameters `main` (`dict`) – The main dict to work with.

Raises `TypeError` – When `main` is not a dict nor a list (tolarated).

classmethod `from_json` (`json_str`, `return_dict_on_error=True`)

Converts a given JSON string to dict/list.

Parameters `return_dict_on_error` (`bool`) – Return a dict instead of a NoneType.

Return type dictllist

classmethod `from_json_file` (`file_path`, `encoding='utf-8'`, `return_dict_on_error=True`)

Reads the given file path and convert it's content to dict/list (tolarated).

Parameters

- `file_path` (`str`) – The file path.
- `return_dict_on_error` (`bool`) – Return a dict instead of a NoneType.

Return type dictllist

classmethod `from_yaml` (`yaml_str`)

Converts the given YAML string to dict/list.

Parameters `yaml_str` (`str`) – The YAML string to convert.

Return type dictllist

classmethod `from_yaml_file` (`file_path`, `encoding='utf-8'`)

Converts a given YAML formatted file, into dict/list.

Parameters

- `file_path` (`str`) – The file path.
- `encoding` (`str`) – The encoding to use.

Return type dictllist

has_same_keys_as (*to_check*, *loop=False*)

A dirty solution which checks keys are presents in both given dict.

Parameters

- **to_check** (*dict*) – The dict to check.
- **loop** (*bool*) – DO NOT USE, only used to tell us wen to return the list of dataset or the final result.

Return type *bool*

remove_key (*key_to_remove*)

Remove a given key from a given dictionary.

Parameters **key_to_remove** (*list/str*) – The key(s) to delete.

Returns The dict without the given key(s).

Return type dict|None

rename_key (*key_to_rename*, *strict=True*)

Rename the given keys from the given dictionary.

Parameters

- **key_to_rename** (*dict*) – The key(s) to rename.
Expected format: {old:new}
- **strict** (*bool*) – Tell us if we have to rename the exact index or the index which looks like the given key(s)

Returns The well formatted dict.

Return type dict|None

to_json (*ensure_ascii=False*, *indent=4*, *sort_keys=True*)

Converts a given dict to JSON and return the json string.

Parameters

- **ensure_ascii** (*bool*) – Avoids unicode.
- **indent** (*int*) – The indentation to apply.
- **sort_keys** – Sort the keys.

Return type *str*

to_json_file (*file_path*, *ensure_ascii=False*, *indent=4*, *sort_keys=True*, *encoding='utf-8'*)

Converts the given dict to JSON and save the result into a given file path.

Parameters

- **file_path** (*str*) – The file path.
- **ensure_ascii** (*bool*) – Avoids unicode.
- **indent** (*int*) – The indentation to apply.
- **sortkeys** (*bool*) – Sorts the keys.

to_yaml (*encoding='utf-8'*, *default_flow_style=False*, *indent=4*, *allow_unicode=True*, *sort_keys=True*)

Converts the given dict/list to the YAML format and return the result.

Parameters

- **encoding** (*str*) – The encoding to use.
- **default_flow_style** (*bool*) – Uses the default flow style.
- **indent** (*int*) – The indentation to apply.
- **allow_unicode** (*bool*) – Allows the decoding of unicode chars.
- **sort_keys** (*bool*) – Sorts the keys.

Return type dictlist

to_yaml_file (*file_path*, *encoding='utf-8'*, *default_flow_style=False*, *indent=4*, *allow_unicode=True*, *sort_keys=True*)

Converts the given dict/list to YAML and save the result into a file.

Parameters

- **file_path** (*str*) – The file path.
- **encoding** (*str*) – The encoding.
- **default_flow_style** (*bool*) – Uses the default flow style.
- **indent** (*int*) – The indentation to apply.
- **allow_unicode** (*bool*) – Allows the decoding of unicode chars.
- **sort_keys** (*bool*) – Sorts the keys.

Directory()

class PyFuncible.helpers.Directory (*dir_path=None*)

Simplify the directories manipulation.

:param str dir_path the path to work with.

create (*dir_path=None*)

Creates the given directory path.

Returns The output of `self.exists` after the directory creation.

Return type bool

delete (*dir_path=None*)

Deletes the given directory path.

Returns not `self.exists` after the directory deletion.

Rtypt bool

exists (*dir_path=None*)

Checks if the given directory exists.

fix_path (*dir_path=None*, *splited_path=None*)

Fix the path of the given path.

Note: We consider a path as fixed if it ends with the right directory separator.

classmethod **get_current** (*with_end_sep=False*)

Returns the current directory path.

Parameters **with_end_sep** (*bool*) – Add a directory separator at the end.

Download()

class PyFuncible.helpers.**Download** (*url*, *verify_certificate=True*, *retry=3*)
Simplification of the downloads.

Parameters

- **url** (*str*) – The url to download.
- **verify_certificate** (*bool*) – Allows/Disallows the certificate verification.
- **retry** (*int*) – The number of time we have to retry before raising an exception.

text (*destination=None*)
Download the body of the given url.

Note: if *destination* is set to *None*, we only return the output.

Otherwise, we save the output into the given destination, but we also return the output.

Parameters **destination** (*str*) – The download destination.

Return type *str*:

Raises

- **Exception** – When the status code is not 200.
- **NoInternetConnection** – When no connection could be made.

File()

class PyFuncible.helpers.**File** (*file_path=None*)
Simplify the file manipulations.

Parameters **file_path** (*str*) – The file path to work with.

copy (*destination*)
Copy the globally given file path to the given destination.

Parameters **destination** (*str*) – The destination of the copy.

delete (*file_path=None*)
Deletes the given file path if it exists.

Parameters **file_path** (*str*) – The file path to check.

Note: If *None* is given, we report to the globally given file path.

Returns The non existence state of the file.

Return type *bool*

exists (*file_path=None*)
Checks if the given file path exists.

Parameters **file_path** (*str*) – The file path to check.

Note: If `None` is given, we report to the globally given file path.

Return type `bool`

get_size (*file_path=None*)

Provides the size (in bytes) of the given file path.

Parameters **file_path** (*str*) – The file path to check.

Note: If `None` is given, we report to the globally given file path.

Return type `int`

is_empty (*file_path=None*)

Checks if the given file path is empty.

move (*destination*)

Move the globally given file path to the given destination.

Parameters **destination** (*str*) – The destination of the file.

read (*file_path=None, encoding='utf-8'*)

Read the given file path and return its content.

Parameters

- **file_path** (*str*) – The file path to check.

Note: If `None` is given, we report to the globally given file path.

- **encoding** (*str*) – The encoding to use.

Return type `str`

write (*data, overwrite=False, encoding='utf-8', file_path=None*)

Write the given data into the given file path.

Parameters

- **data** (*str*) – The data to write.
- **encoding** (*str*) – The encoding to use while opening the file.
- **file_path** (*str*) – The file path to check.

Note: If `None` is given, we report to the globally given file path.

Hash()

class `PyFunceble.helpers.Hash` (*algo='sha512_224'*)

Simplify the hashing of data or file content.

Parameters **algo** (*str*) – The algorithm to use for hashing.

Raises `ValueError` – When the given algo is not known.

data (*data*)

Hash the given data.

Parameters **data** (*str*, *bytes*) – The data to hash.

Return type *str*

file (*file_path*, *encoding*='utf-8')

Open the given file, and it's content.

Parameters **file_path** (*str*) – The file to hash.

Return type *str*

List()

class PyFunceble.helpers.**List** (*main*, *remove_empty*=False)

Simplify the list manipulation.

Parameters

- **main** (*list*) – The main list to work with.
- **remove_empty** (*bool*) – Process the deletion of empty strings.

custom_format (*key_method*, *reverse*=False)

Return a well formatted list. With the *key_method* as a function/method to format the elements before sorting.

Parameters

- **key_method** (*function/method*) – A function or method to use to format the readed element before sorting.
- **reverse** (*bool*) – Tell us if we have to reverse the list.

Returns A sorted list.

Return type *list*

format ()

Return a well formatted list. Basicaly, it's sort a list and remove duplicate.

Returns A sorted, without duplicate, list.

Return type *list*

Merge()

class PyFunceble.helpers.**Merge** (*main*)

Simplify the merging of dict and list.

Parameters **main** (*str*, *tuple*, *bool*, *int*, *dict*, *list*, *float*) – The main data to work with.

__Merge__dict (*origin*, *strict*=True)

Process the dict merging.

Parameters **strict** (*bool*) – Activates the strict mode.

Return type *dict*

__Merge__list (*origin*, *strict*=True)

Process the list merging.

Parameters **strict** (*bool*) – Activates the strict mode.

Return type *list*

into (*origin*, *strict=True*)

Process the mergin.

Parameters

- **origin** – The original data.
- **strict** (*bool*) – Activates the strict mode.

Regex()

class PyFuncible.helpers.Regex (*regex*, *escape=False*)

Simplify the regex matching and usage.

Parameters

- **regex** (*str*) – The regex to use.
- **escape** (*bool*) – Escapes the given regex.

get_matching_list (*data*)

Returns the strings which does the match the regex in the given data.

get_not_matching_list (*data*)

Returns the strings which does not the match the regex in the given data.

match (*data*, *rematch=False*, *group=0*, *return_match=True*)

Checks if the given data match the given regex string.

Parameters

- **data** (*str*) – The data to work with.
- **rematch** (*bool*) – The equivalent of the \$BASH_REMATCH but in Python.
It's basically a list of all groups.
- **group** (*bool*) – The group to return when return_match is set to True.
- **return_match** (*bool*) – Return the part that match the given regex string.

replace_match (*data*, *replacement*, *occurences=0*, *multiline=False*)

Replaces the string which match the regex string with the given replacement.

Parameters

- **data** (*str*) – The data to work with.
- **replacement** (*str*) – The replacement of the matched regex.
- **occurences** (*int*) – The number of occurences to replace.

Note: 0 means all occurences.

Return type *str*

split (*data*)

Split the reference of the given regex.

Parameters **data** (*str*) – The data to work with.

Return type `list`

22.14 Lookup

22.14.1 Problematic

How can we look for information about a given subject ?

22.14.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.

Provides the lookup interfaces.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

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```

DNSLookup ()

class `PyFunceble.lookup.dns.DNSLookup (dns_server=None, lifetime=3, tcp=False)`
DNS lookup interface.

Parameters

- **subject** (*str*) – The subject we are working with.
- **dns_server** (*list/tuple/str*) – The DNS server we are working with.
- **lifetime** (*int*) – Set the lifetime of a query.

`__DNSLookup__get_dns_servers_from` (*inputed_dns*)

Given a list or an input representing dns servers, we ensure that we have a list of a string which represent an IP.

Parameters **input** (*str, list, tuple*) – The inputed DNS server(s).

Returns The list of dns server to use.

Return type *list*

classmethod **`__DNSLookup__get_resolver`** (*dns_server*)

Provides the configured dns resolver.

`__DNSLookup__request_complete_not_ip` (*subject, tcp=None*)

Requests and provides the complete DNS spectrum.

Return type *dict*

`__DNSLookup__request_ip` (*subject, tcp=None*)

Handle the request for a subject which is an IP.

Parameters

- **subject** (*str*) – The subject we are working with.
- **tcp** (*bool*) – Tell us to use TCP for query.

Return type *dict*

Raises **`ValueError`** – When a non string *subject* is given.

`__DNSLookup__request_not_ip` (*subject, complete=False, tcp=None*)

Handle the request for a subject which is not an IP.

Return type *dict*

Raises **`ValueError`** – When a non string *subject* is given.

`__get_server_and_port_from` (*inputed_dns*)

Given a list or an input representing dns server, we split the server from the port.

Parameters **inputed_dns** – The inputed DNS server(s).

Returns

A tuple with:

(The DNS, the port)

Return type *tuple*

`a_record` (*subject, tcp=None*)

Return the A record of the given subject (if found).

Parameters

- **subject** (*str*) – The subject we are working with.
- **tcp** (*bool*) – Tell us to use TCP for query.

Returns A list of A record(s).

Return type *list, None*

Raises **ValueError** – When a non string `subject` is given.

aaaa_record (*subject*, *tcp=None*)

Return the AAAA record of the given subject (if found).

Parameters

- **subject** (*str*) – The subject we are working with.
- **tcp** (*bool*) – Tell us to use TCP for query.

Returns A list of A record(s).

Return type *list*, *None*

Raises **ValueError** – When a non string `subject` is given.

cname_record (*subject*, *tcp=None*)

Return the CNAME record of the given subject (if found).

Parameters

- **subject** (*str*) – The subject we are working with.
- **tcp** (*bool*) – Tell us to use TCP for query.

Returns A list of CNAME record(s).

Return type *list*, *None*

Raises **ValueError** – When a non string `subject` is given.

dname_record (*subject*, *tcp=None*)

Return the DNAME record of the given subject (if found).

Parameters

- **subject** (*str*) – The subject we are working with.
- **tcp** (*bool*) – Tell us to use TCP for query.

Returns A list of DNAME record(s).

Return type *list*, *None*

Raises **ValueError** – When a non string `subject` is given.

classmethod get_addr_info (*subject*)

Get and return the information of the given subject (address).

Parameters **subject** (*str*) – The subject we are working with.

Returns A list of address.

Return type *list*, *None*

Raises **ValueError** – When a non string `subject` is given.

classmethod get_host_by_addr (*subject*)

Get and return the host of the given subject (address).

Parameters **subject** (*str*) – The subject we are working with.

Returns

A dict in the following format or None.

```
{
    "hostname": "",
    "aliases": [],
    "ips": []
}
```

Return type `dict, None`

Raises `ValueError` – When a non string `subject` is given.

classmethod `is_record_present_in_result` (*to_check, result, allow_empty=False*)

Checks if the given record type is in the result.

Parameters

- **to_check** (*list, str, tuple*) – The record to check the presence.
- **result** (*dict*) – The result to work with.
- **allow_empty** (*bool*) – Tell to if we allow and empty result as present.

Return type `bool`

mx_record (*subject, tcp=None*)

Return the MX record of the given subject (if found).

Parameters **subject** (*str*) – The subject we are working with.

Returns A list of MX record(s).

Return type `list, None`

Raises `ValueError` – When a non string `subject` is given.

ns_record (*subject, tcp=None*)

Return the NS record of the given subject (if found).

Parameters

- **subject** (*str*) – The subject we are working with.
- **tcp** (*bool*) – Tell us to use TCP for query.

Returns A list of NS record(s).

Return type `list, None`

Raises `ValueError` – When a non string `subject` is given.

ptr_record (*subject, reverse_name=True, tcp=None*)

Return the PTR record of the given subject (if found).

Parameters

- **subject** (*str*) – The subject we are working with.
- **tcp** (*bool*) – Tell us to use TCP for query.

Returns A list of PTR record(s).

Return type `list, None`

Raises `ValueError` – When a non string `subject` is given.

request (*subject, complete=False, tcp=None*)

Perform a DNS lookup/requests.

Parameters

- **subject** (*str*) – The subject we are working with.
- **complete** (*bool*) – Tell us to return as many result as possible.
- **tcp** (*bool*) – Tell us to use TCP for query.

Returns

A dict with following index if the given subject is not registered into the given DNS server. (More likely local subjects).

```
{
    "hostname": "",
    "aliases": [],
    "ips": []
}
```

A dict with following index for everything else (and if found).

```
{
    "nameservers": [],
    "A": [],
    "AAAA": [],
    "CNAME": [],
    "DNAME": [],
    "MX": [],
    "NS": [],
    "TXT": [],
    "PTR": []
}
```

Return type `dict`

Raises **ValueError** – When a non string `subject` is given.

txt_record (*subject*, *tcp=None*)

Return the TXT record of the given subject (if found).

Parameters

- **subject** (*str*) – The subject we are working with.
- **tcp** (*bool*) – Tell us to use TCP for query.

Returns A list of TXT record(s).

Return type `list`, `None`

Raises **ValueError** – When a non string `subject` is given.

update_lifetime (*lifetime*)

Updates the lifetime of a query.

update_nameserver (*nameserver*)

Updates the nameserver to query.

`HTTPCode()`

class `PyFuncible.lookup.http_code.HTTPCode` (*subject*, *subject_type*)

Get and return the HTTP code status of a given domain.

Parameters

- **subject** (*str*) – The subject we are working with.
- **_type** (*subject*) – The type of the subject we are working with. Should be one of the following.
 - url
 - domain
 - file_url
 - file_domain
 - ipv6

_get_it()

Get the HTTP code status.

Returns The matched HTTP status code.

Return type int|None

get()

Return the HTTP code status.

Returns The matched and formatted status code.

Return type str|int|None

Iana()

class PyFunceble.lookup.iana.Iana

Let us interact with the IANA database.

_Iana__get_content()

Provides the content of our IANA database.

PublicSuffix()

class PyFunceble.lookup.publicsuffix.PublicSuffix

Let us interact with the public suffix database.

_PublicSuffix__get_content()

Provides the content of our PSL database.

Referer()

class PyFunceble.lookup.referer.Referer(*subject*)

Get the WHOIS server (referer) of the current domain extension according to the IANA database.

Parameters **subject** (*str*) – The subject we are working with.

get()

Return the referer aka the WHOIS server of the current domain extension.

Returns

- [0] None if there is no referer.
- [0] **False** if the extension is unknown which implicitly means that the subject is INVALID

- [0] `str` The resolved IP to use.
- [1] `str`, `None` the domain referer.

Return type `tuple`

`HostSSLAdapter()`

```
class PyFunceble.lookup.requests.HostSSLAdapter(pool_connections=10,  
                                                pool_maxsize=10,    max_retries=0,  
                                                pool_block=False)
```

Extends the build-in HTTP Adapter for urllib3 for our needs.

```
__HostSSLAdapter__resolve_with_cache(hostname)
```

Resolve the IP of the given hostname.

Parameters `hostname` (`str`) – The hostname to resolve.

Returns The IP of the host name or the hostname itself.

Return type `None`, `str`

```
classmethod resolve(hostname)
```

Resolve the IP of the given hostname.

Parameters `hostname` (`str`) – The hostname to resolve.

Returns The IP of the host name or the hostname itself.

Return type `None`, `str`

```
send(request, **kwargs)
```

Overwrite the upstream `:code:send` method.

We basically do the same. We only ensure that we request the IP from the chosen DNS record.

Parameters

- **request** – The `PreparedRequest` being sent.
- **stream** – (optional) Whether to stream the request content.
- **timeout** (`float` or `tuple` or `urllib3 Timeout object`) – (optional) How long to wait for the server to send data before giving up, as a float, or a (`connect timeout`, `read timeout`) tuple.
- **verify** – (optional) Either a boolean, in which case it controls whether we verify the server's TLS certificate, or a string, in which case it must be a path to a CA bundle to use
- **cert** – (optional) Any user-provided SSL certificate to be trusted.
- **proxies** – (optional) The proxies dictionary to apply to the request.

Return type `requests.Response`

`HostAdapter()`

```
class PyFunceble.lookup.requests.HostAdapter(pool_connections=10, pool_maxsize=10,  
                                              max_retries=0, pool_block=False)
```

Extends the build-in HTTP Adapter for urllib3 for our needs.

```
__HostAdapter__resolve_with_cache(hostname)
```

Resolve the IP of the given hostname.

Parameters `hostname` (*str*) – The hostname to resolve.

Returns The IP of the host name or the hostname itself.

Return type `None, str`

send (*request*, ***kwargs*)

Overwrite the upstream `:code:send` method.

We basically do the same. We only ensure that we request the IP from the chosen DNS record.

Parameters

- **request** – The PreparedRequest being sent.
- **stream** – (optional) Whether to stream the request content.
- **timeout** (*float or tuple or urllib3 Timeout object*) – (optional) How long to wait for the server to send data before giving up, as a float, or a (`connect timeout`, `read timeout`) tuple.
- **verify** – (optional) Either a boolean, in which case it controls whether we verify the server's TLS certificate, or a string, in which case it must be a path to a CA bundle to use.
- **cert** – (optional) Any user-provided SSL certificate to be trusted.
- **proxies** – (optional) The proxies dictionary to apply to the request.

Return type `requests.Response`

IPv4Reputation

class `PyFunceble.lookup.ipv4_reputation.IPv4Reputation`

Let us checks a given IPv4 against the IPv4 reputation file.

`_IPv4Reputation__is_present` (*subject*)

Checks the given subject against the input file.

Requests()

class `PyFunceble.lookup.requests.Requests` (*max_retries=None*)

Handles all usage of requests.

Parameters `url` (*str*) – The URL to work with.

delete (*url*, ***kwargs*)

Sends a DELETE request. Returns Response object.

Parameters

- **url** – URL for the new Request object.
- **kwargs** – Optional arguments that request takes.

Return type `requests.Response`

exceptions = `<module 'requests.exceptions' from '/home/docs/checkouts/readthedocs.org/`

get (*url*, ***kwargs*)

Sends a GET request. Returns Response object.

Parameters

- **url** – URL for the new Request object.

- **kwargs** – Optional arguments that `request` takes.

Return type `requests.Response`

head (*url*, ***kwargs*)

Sends a HEAD request. Returns `Response` object.

Parameters

- **url** – URL for the new `Request` object.
- **kwargs** – Optional arguments that `request` takes.

Return type `requests.Response`

options (*url*, ***kwargs*)

Sends a OPTIONS request. Returns `Response` object.

Parameters

- **url** – URL for the new `Request` object.
- **kwargs** – Optional arguments that `request` takes.

Return type `requests.Response`

patch (*url*, ***kwargs*)

Sends a PATCH request. Returns `Response` object.

Parameters

- **url** – URL for the new `Request` object.
- **kwargs** – Optional arguments that `request` takes.

Return type `requests.Response`

post (*url*, ***kwargs*)

Sends a POST request. Returns `Response` object.

Parameters

- **url** – URL for the new `Request` object.
- **kwargs** – Optional arguments that `request` takes.

Return type `requests.Response`

put (*url*, ***kwargs*)

Sends a PUT request. Returns `Response` object.

Parameters

- **url** – URL for the new `Request` object.
- **kwargs** – Optional arguments that `request` takes.

Return type `requests.Response`

WhoisLookup()

class `PyFunceble.lookup.whois.WhoisLookup` (*subject*, *server=None*, *timeout=3*)

Implementation of the UNIX *whois* command.

Parameters

- **subject** (*str*) – The subject we are working with.

- **server** (*str*) – The WHOIS server we are working with.

Note: If `None` is given, we look for the best one.

- **timeout** (*int*) – The timeout to apply.

Warning: The timeout must be a modulo of 3.

request ()
Perform the WHOIS request.

22.15 Output

22.15.1 Problematic

How can we generate or work with outputs ?

22.15.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.

Provides the output related interfaces.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfuncible.github.io/special-thanks.html>

Contributors: <https://pyfuncible.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFuncible>

Project documentation: <https://pyfuncible.readthedocs.io/en/master/>

Project homepage: <https://pyfuncible.github.io/>

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Clean()

class PyFunceble.output.clean.**Clean** (*clean_all=False, file_path=None*)

Provide the cleaning logic.

Note: By cleaning we mean the cleaning of the output directory.

Parameters

- **list_to_test** (*list/None*) – The list of domains we are testing.
- **clean_all** (*bool*) – Tell the subsystem if we need to clean all. Which include, of course, the output directory but also all other file(s) generated by our system.
- **file_path** (*str*) – The path to the file we tested.

Note: This is only relevant if you use the MariaDB/MySQL database.

almost_everything (*clean_all=False, file_path=False*)

Delete almost all discovered files.

Parameters **clean_all** (*bool*) – Tell the subsystem if we have to clean everything instead of almost everything.

classmethod **databases_to_delete** ()

Set the databases files to delete.

classmethod **file_to_delete** (*all_files=False*)

Return the list of file to delete.

Constructor()

class PyFunceble.output.constructor.**Constructor** (*production=False*)

Basically a backup/reconstructor of our output directory.

Parameters **production** (*bool*) – Tell the subsystem if we are preparing for production which imply the execution of the backup instead of the “reconstructor” mode.

classmethod **_create_directory** (*directory, loop=False*)

Creates the given directory if it does not exist.

Parameters

- **directory** (*str*) – The directory to create.
- **loop** (*bool*) – Tell us if we are in the creation loop or not.

_get_structure ()

Get the structure we are going to work with.

Returns The structure we have to work with.

Return type `dict`

`_restore_replace()`

Check if we need to replace “.gitignore” to “.keep”.

Returns The replacement status.

Return type `bool`

`_update_structure_from_config(structure)`

Update the paths according to configs.

Parameters **`structure`** (`dict`) – The read structure.

`backup()`

Backup the developer state of *output/* in order to make it restorable and portable for user.

`delete_unneeded()`

Delete the directory which are not registered into our structure.

`restore()`

Restore the ‘output/’ directory structure based on the *dir_structure.json* file.

`Generate()`

`class PyFunceble.output.generate.Generate` (*subject, subject_type, status, source=None, expiration_date=None, http_status_code=None, whois_server='Unknown', filename=None, ip_validation=False, end=False*)

Generate different sort of files.

Parameters

- **`subject`** (`str`) – The subject we are working with.
- **`subject_type`** (`str`) – The type of the subject.
- **`status`** (`str`) – The caught status.
- **`source`** (`str`) – The source of the given status.
- **`expiration_date`** (`str`) – The expiration date of the domain (if caught).
- **`http_status_code`** (`str/int`) – The HTTP status code.
- **`whois_server`** (`str`) – The whois server.
- **`filename`** (`str`) – The name of the file we are testing.
- **`ip_validation`** (`bool`) – The IP validation check of the currently written subject.

`_Generate__get_info_files_destinations` (*output_hosts, output_domains, output_json*)

Given the output directory, this method return several paths.

Note: The given output directories have to be partially completed.

Indeed, we only do `output % final_location`.

Returns

The following paths:

```
(
    hosts_destination,
    plain_destination,
    json_destination,
    splited_destination
)
```

Return type `tuple`

`_Generate__info_files_authorization()`

Provide the authorization for the generation of info files.

Basically here is what we check:

- We are not testing as an imported module.

and

- The hosts file generation is activated.

or

- The plain list generation is activated.

or

- The “api_file_generation” was set into the CONFIGURATION.

`_analytic_host_file_directory()`

Return the analytic directory to write depending of the matched status.

`_prints_status_screen()`

Logic behind the printing (on screen) when generating status file.

`analytic_file(new_status, old_status=None)`

Generate Analytic/* files based on the given old and new statuses.

Parameters

- **`new_status`** (*str*) – The new status of the domain.
- **`old_status`** (*str*) – The old status of the domain.

`complements_file()`

Generate complements files base on the current status.

`file_production`

Check if we are allowed to produce a file based from the given information.

Returns The state of the production. True: We do not produce file. False: We do produce file.

Return type `bool`

`info_files()`

Generate the hosts file, the plain list, the JSON file and the splitted files.

`prints_status_file()`

Logic behind the printing (in file) when generating status file.

`status_file(exclude_file_generation=False)`

Generate a file according to the domain status.

Parameters **`exclude_file_generation`** (*bool*) – A shorthand to disable any file generation.

unified_file()

Generate unified file. Understand by that that we use an unified table instead of a separate table for each status which could result into a misunderstanding.

Logs()

class PyFunceble.output.logs.**Logs** (*output=None*)

Provide a clean and unique way to work with logs. Indeed, it's not good to have logs spread around the code :smile:

Parameters **output** (*str*) – A path to the JSON file we are going to write.

classmethod **_get_content** (*file*)

Get and return the content of the given log file.

Parameters **file** (*str*) – The file we have to get the content from.

:return The content of the given file. :rtype: dict

classmethod **_write_content** (*content, file*)

Write the content into the given file.

Parameters

- **content** (*str*) – The dict to write.
- **file** (*str*) – The file to write.

expiration_date (*subject, extracted*)

Logs the extracted expiration date.

Parameters

- **subject** (*str*) – The currently tested subject.
- **extracted** (*str*) – The extracted expiration date (from WHOIS record).

referrer_not_found (*subject, extension*)

Logs the case that the referer was not found.

Parameters

- **subject** (*str*) – The currently tested subject.
- **extension** (*str*) – The extension of the domain we are testing.

whois (*subject, record*)

Logs the WHOIS record if needed.

Parameters

- **subject** (*str*) – The currently tested subject.
- **record** (*str*) – The record to log.

Percentage()

class PyFunceble.output.percentage.**Percentage** (*domain_status=None, init=None*)

Calculation of the percentage of each status.

Parameters

- **domain_status** (*str*) – The status to increment.

- **init** (*dict*) – The data from a previous session we are continuing.

Warning: We expect the numbers and not the percentages.

classmethod calculate ()

Calculate the percentage of each status.

count ()

Count the number of domain for each status.

log ()

Print on screen and on file the percentages for each status.

Prints()

class PyFuncible.output.prints.**Prints** (*to_print*, *template*, *output_file=None*,
only_on_file=False)

Print data on screen and into a file if needed. Template Possibilities: Percentage, Less, HTTP and any status you want.

Parameters

- **to_print** (*list*) – The list of data to print.
- **template** (*str*) – The template to use.

Note: Available templates:

- Percentage
 - Less
 - HTTP
 - any of the official status.
-

- **output_file** (*str*) – The path to the file to write.

- **only_on_file** (*bool*) – Tell us if we only have to print on file and not on screen.

__Prints__get_print_size ()

Provides the size of the element to print.

__colorify (*data*)

Return colored string.

Parameters **data** (*str*) – The string to colorify.

Returns A colored string.

Return type *str*

__json_print ()

Management of the json template.

classmethod __size_from_header (*header*)

Get the size of each columns from the header.

Parameters **header** (*dict*) – The header template we have to get the size from.

Returns The maximal size of the each data to print.

Return type `list`

before_header ()

Print informations about PyFuncible and the date of generation of a file into a given path, if doesn't exist.

data ()

Management and input of data to the table.

Raises

Exception When `self.data_to_print` is not a list.

data_constructor (*size*)

Construct the table of data according to given size.

Parameters `size` (*list*) – The maximal length of each string in the table.

Returns A dict with all information about the data and how to which what maximal size to print it.

Return type `OrderedDict`

Raises

Exception If the data and the size does not have the same length.

header (*do_not_print=False*)

Management and creation of templates of header. Please consider as “header” the title of each columns.

Parameters `do_not_print` (*bool*) – Tell us if we have to print the header or not.

classmethod header_constructor (*data_to_print, header_separator='-', column_separator=''*)

Construct header of the table according to template.

Parameters

- **data_to_print** (*list*) – The list of data to print into the header of the table.
- **header_separator** (*str*) – The separator to use between the table header and our data.
- **column_separator** (*str*) – The separator to use between each columns.

Returns The data to print in a list format.

Return type `list`

22.16 Status

22.16.1 Problematic

How can we gather, manage and provide a status for a given subject ?

22.16.2 Documentation

The tool to check the availability or syntax of domain, IP or URL.

Provides the status interfaces.

Author: Nissar Chababy, @funilrys, contactTATAfunilrysTODTODcom

Special thanks: <https://pyfunceble.github.io/special-thanks.html>

Contributors: <https://pyfunceble.github.io/contributors.html>

Project link: <https://github.com/funilrys/PyFunceble>

Project documentation: <https://pyfunceble.readthedocs.io/en/master/>

Project homepage: <https://pyfunceble.github.io/>

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```

GathererBase()

```
class PyFunceble.status.gatherer_base.GathererBase (subject,          filename=None,  
                                                    whois_db=None,          inac-  
                                                    tive_db=None)
```

Provides the gatherer base.

Parameters

- **subject** (*str*) – The subject to gather data for.
- **filename** (*str*) – The filename which the subject is associated with.
- **whois_db** – An instance of the whois db interface.
- **inactive_db** – An instance of the inactive db interface.

```
gather_http_status_code ()  
    Univertialy gather the status code.
```

```
get ()  
    Provides the status.
```

Status ()

class PyFunceble.status.status.**Status** (*subject*)

The status object.

Provides the result of one of the status gatherer.

Parameters **subject** (*str*) – The subject which we describe.

Variables

- **_status_source** (*str*) – The status source before the application of our extra rules (if activated).
- **_status** (*str*) – The status before the application of our extra rules (if activated).
- **dns_lookup** (*list*) – The result of the DNS Lookup logic.
- **domain_syntax_validation** (*bool*) – The domain syntax validation status.
- **expiration_date** (*str*) – The expiration date of the subject.
- **http_status_code** (*str*) – The HTTP status code of the subject.
- **ipv4_range_syntax_validation** (*bool*) – The IPv4 range validation status.
- **ipv4_syntax_validation** (*bool*) – The IPv4 syntax validation status.
- **ipv6_range_syntax_validation** (*bool*) – The IPv6 range validation status.
- **ipv6_syntax_validation** (*bool*) – The IPv6 syntax validation status.
- **status_source** (*str*) – The final status source.
- **status** (*str*) – The final status.
- **subdomain_syntax_validation** (*bool*) – The subdomain syntax validation status.
- **tested** (*str*) – The tested subject.
- **url_syntax_validation** (*bool*) – The URL syntax validation status.
- **whois_server** (*str*) – The WHOIS server we contact-ed to get the WHOIS record.
- **whois_record** (*str*) – The WHOIS record.

get ()

Provides the status in a dict format.

Availability: DomainAndIp ()

class PyFunceble.status.availability.domain_and_ip.**DomainAndIp** (*subject*, *file-name=None*, *whois_db=None*, *inactive_db=None*)

Gather the availability of the given IP or Domain.

_DomainAndIp__gather ()

Process the gathering.

_DomainAndIp__gather_expiration_date ()

Gather the expiration date.

`__DomainAndIp__gather_extra_rules()`
Handle the lack of WHOIS record.

Availability: `ExtraRules()`

`class PyFunceble.status.availability.extra_rules.ExtraRules` (*subject*, *sub-*
ject_type,
http_status_code)

Manage some extra rules.,

Parameters

- **subject** (*str*) – The subject we are working with.
- **subject_type** (*str*) – The type of the subject we are working with. Should be one of the following.
 - domain
 - url
- **http_status_code** (*str/int*) – The extracted status code.

`__ExtraRules__blogspot()`
Handle the blogspot SPECIAL case.

Returns (new status, new source) or None if there is any change to apply.

Return type tuple|None

`__ExtraRules__handle_http_code` (*previous_state*)
Handle the HTTP Code status escalation.

Parameters **previous_state** (*str*) – The previously caught status.

Returns (new status, new source) or None if there is any change to apply.

Return type tuple|None

`__ExtraRules__handle_ip_range()`
Handle the IP range status escalation.

Returns (new status, new source) or None if there is any change to apply.

Return type tuple|None

`__ExtraRules__handle_potentially_inactive` (*previous_state*)
Handle the potentially inactive case.

Parameters **previous_state** (*str*) – The previously caught status.

Returns (new status, new source) or None if there is any change to apply.

Return type tuple|None

`__ExtraRules__handle_potentially_up()`
Handle the potentially up case.

Returns (new status, new source) or None if there is any change to apply.

Return type tuple|None

`__ExtraRules__handle_reputation()`
Handle the reputation escalation.

Returns (new status, new source) or None if there is any change to apply.

Return type tuple|None

classmethod `_ExtraRules__http_status_code_up()`

Set what we return for the HTTP Code status escalation.

Returns (new status, new source)

Return type tuple

classmethod `_ExtraRules__special_down()`

Set what we return for the SPECIAL status de-escalation.

Returns (new status, new source)

Return type tuple

classmethod `_ExtraRules__special_down_404()`

Set what we return for the SPECIAL status de-escalation when the 404 status code is caught.

Returns (new status, new source)

Return type tuple

classmethod `_ExtraRules__special_down_410()`

Set what we return for the SPECIAL status de-escalation when the 410 status code is caught.

Returns (new status, new source)

Return type tuple

classmethod `_ExtraRules__special_up()`

Set what we return for the SPECIAL status escalation.

Returns (new status, new source)

Return type tuple

classmethod `_ExtraRules__wordpress_dot_com()`

Handle the wordpress.com SPECIAL case.

Returns (new status, new source) or None if there is any change to apply.

Return type tuple|None

handle (*previous_state*, *previous_source*)

Globally handle the case of the currently tested domain.

Availability: `Url()`

class `PyFunceble.status.availability.url.Url` (*subject*, *filename=None*, *whois_db=None*,
inactive_db=None)

Gather the availability of the given URL.

__Url__gather ()

Process the gathering.

Reputation: DomainAndIp()

```
class PyFunceble.status.reputation.domain_and_ip.DomainAndIp(subject,      file-
                                                             name=None,
                                                             whois_db=None,
                                                             inac-
                                                             tive_db=None)

    Gather the reputation of the given domain or IP.

    __DomainAndIp__gather()
        Process the gathering.
```

Reputation: Url()

```
class PyFunceble.status.reputation.url.Url(subject, filename=None, whois_db=None, in-
                                                             active_db=None)

    Gather the reputation of the given URL (base).

    __Url__gather()
        Process the gathering.
```

Syntax: DomainAndIp()

```
class PyFunceble.status.syntax.domain_and_ip.DomainAndIp(subject, filename=None,
                                                             whois_db=None,   inac-
                                                             tive_db=None)

    Gather the availability of the given IP or Domain.

    __DomainAndIp__gather()
        Process the gathering.
```

Syntax: Url()

```
class PyFunceble.status.syntax.url.Url(subject, filename=None, whois_db=None, inac-
                                                             tive_db=None)

    Gather the syntax of the given URL.

    __Url__gather()
        Process the gathering.
```

CHAPTER 23

Indices and tables

- `genindex`
- `modindex`
- `search`

p

- `PyFunceble`, [113](#)
- `PyFunceble.abstracts`, [157](#)
- `PyFunceble.check`, [153](#)
- `PyFunceble.cli`, [161](#)
- `PyFunceble.config`, [164](#)
- `PyFunceble.converter`, [166](#)
- `PyFunceble.core`, [169](#)
- `PyFunceble.database`, [175](#)
- `PyFunceble.downloader`, [177](#)
- `PyFunceble.engine`, [179](#)
- `PyFunceble.exceptions`, [155](#)
- `PyFunceble.extractor`, [184](#)
- `PyFunceble.helpers`, [186](#)

Symbols

<code>_APICore__inactive_database_management()</code>	(<i>PyFunceble.core.api.APICore</i> method), 170	<code>_DNSLookup__request_not_ip()</code>	(<i>PyFunceble.lookup.dns.DNSLookup</i> method), 195
<code>_AdBlock__decode_v1()</code>	(<i>PyFunceble.converter.adblock.AdBlock</i> method), 167	<code>_DomainAndIp__gather()</code>	(<i>PyFunceble.status.availability.domain_and_ip.DomainAndIp</i> method), 211
<code>_AdBlock__decode_v2()</code>	(<i>PyFunceble.converter.adblock.AdBlock</i> method), 167	<code>_DomainAndIp__gather()</code>	(<i>PyFunceble.status.reputation.domain_and_ip.DomainAndIp</i> method), 214
<code>_AdBlock__decode_v3()</code>	(<i>PyFunceble.converter.adblock.AdBlock</i> method), 167	<code>_DomainAndIp__gather()</code>	(<i>PyFunceble.status.syntax.domain_and_ip.DomainAndIp</i> method), 214
<code>_AdBlock__decode_v4()</code>	(<i>PyFunceble.converter.adblock.AdBlock</i> method), 167	<code>_DomainAndIp__gather_expiration_date()</code>	(<i>PyFunceble.status.availability.domain_and_ip.DomainAndIp</i> method), 211
<code>_AutoContinue__generate_complements()</code>	(<i>PyFunceble.engine.auto_continue.AutoContinue</i> method), 180	<code>_DomainAndIp__gather_extra_rules()</code>	(<i>PyFunceble.status.availability.domain_and_ip.DomainAndIp</i> method), 211
<code>_AutoContinue__get_or_generate_complements()</code>	(<i>PyFunceble.engine.auto_continue.AutoContinue</i> method), 180	<code>ExpirationDate__extract_it()</code>	(<i>PyFunceble.extractor.expiration_date.ExpirationDate</i> method), 185
<code>_AutoContinue__get_or_generate_complements_mysql()</code>	(<i>PyFunceble.engine.auto_continue.AutoContinue</i> method), 180	<code>ExpirationDate__format_it()</code>	(<i>PyFunceble.extractor.expiration_date.ExpirationDate</i> method), 185
<code>_CLICore__check_deprecated()</code>	(<i>PyFunceble.core.cli.CLICore</i> class method), 171	<code>_ExpirationDate__format_management()</code>	(<i>PyFunceble.extractor.expiration_date.ExpirationDate</i> method), 185
<code>_CLICore__check_force_update()</code>	(<i>PyFunceble.core.cli.CLICore</i> class method), 171	<code>_ExtraRules__blogspot()</code>	(<i>PyFunceble.status.availability.extra_rules.ExtraRules</i> method), 212
<code>_CLICore__print_messages()</code>	(<i>PyFunceble.core.cli.CLICore</i> class method), 171	<code>_ExtraRules__handle_http_code()</code>	(<i>PyFunceble.status.availability.extra_rules.ExtraRules</i> method), 212
<code>_DNSLookup__get_dns_servers_from()</code>	(<i>PyFunceble.lookup.dns.DNSLookup</i> method), 195	<code>_ExtraRules__handle_ip_range()</code>	(<i>PyFunceble.status.availability.extra_rules.ExtraRules</i> method), 212
<code>_DNSLookup__get_resolver()</code>	(<i>PyFunceble.lookup.dns.DNSLookup</i> class method), 195	<code>_ExtraRules__handle_potentially_inactive()</code>	(<i>PyFunceble.status.availability.extra_rules.ExtraRules</i> method), 212
<code>_DNSLookup__request_complete_not_ip()</code>	(<i>PyFunceble.lookup.dns.DNSLookup</i> method), 195	<code>_ExtraRules__handle_potentially_up()</code>	
<code>_DNSLookup__request_ip()</code>	(<i>PyFunceble.lookup.dns.DNSLookup</i> method), 195		

(PyFunceble.status.availability.extra_rules.ExtraRulesMultiprocessCore__check_exception()
method), 212 (PyFunceble.core.multiprocess.MultiprocessCore
method), 173

_ExtraRules__handle_reputation() (Py-
Funceble.status.availability.extra_rules.ExtraRulesMultiprocessCore__merge_processes_data()
method), 212 (PyFunceble.core.multiprocess.MultiprocessCore
method), 174

_ExtraRules__http_status_code_up() (Py-
Funceble.status.availability.extra_rules.ExtraRulesMultiprocessCore__process_end_merging()
class method), 213 (PyFunceble.core.multiprocess.MultiprocessCore
method), 174

_ExtraRules__special_down() (PyFunce-
ble.status.availability.extra_rules.ExtraRulesMultiprocessCore__process_live_merging()
class method), 213 (PyFunceble.core.multiprocess.MultiprocessCore
method), 174

_ExtraRules__special_down_404() (Py-
Funceble.status.availability.extra_rules.ExtraRulesMultiprocessCore__run_multiprocess_test()
method), 213 (PyFunceble.core.multiprocess.MultiprocessCore
method), 174

_ExtraRules__special_down_410() (Py-
Funceble.status.availability.extra_rules.ExtraRulesMultiprocessCore__start_process() (Py-
method), 213 Funceble.core.multiprocess.MultiprocessCore
method), 174

_ExtraRules__special_up() (PyFunce-
ble.status.availability.extra_rules.ExtraRulesPreset__are_we_allowed_to_overwrite()
class method), 213 (PyFunceble.config.preset.Preset
class
method), 165

_ExtraRules__wordpress_dot_com() (Py-
Funceble.status.availability.extra_rules.ExtraRulesPrints__get_print_size() (PyFunce-
method), 213 ble.output.prints.Prints method), 208

_FileCore__run_single_test() (PyFunce-
ble.core.file.FileCore method), 172

_FileCore__test_line() (PyFunce-
ble.core.file.FileCore method), 172

_Generate__get_info_files_destinations() (PyFunceble.output.generate.Generate
method), 205

_Generate__info_files_authorization() (PyFunceble.output.generate.Generate
method), 206

_HostAdapter__resolve_with_cache() (PyFunceble.lookup.requests.HostAdapter
method), 200

_HostSSLAdapter__resolve_with_cache() (PyFunceble.lookup.requests.HostSSLAdapter
method), 200

_IPv4Reputation__is_present() (PyFunce-
ble.lookup.ipv4_reputation.IPv4Reputation
method), 201

_Iana__get_content() (PyFunce-
ble.lookup.iana.Iana method), 199

_Logger__get_handler() (PyFunce-
ble.engine.logger.Logger method), 181

_Logger__init_loggers() (PyFunce-
ble.engine.logger.Logger method), 181

_Logger__set_output_directory() (Py-
Funceble.engine.logger.Logger method), 181

_Merge__dict() (PyFunceble.helpers.Merge
method), 192

_Merge__list() (PyFunceble.helpers.Merge
method), 192

_MultiprocessCore__check_exception() (PyFunceble.core.multiprocess.MultiprocessCore
method), 173

_MultiprocessCore__merge_processes_data() (PyFunceble.core.multiprocess.MultiprocessCore
method), 174

_MultiprocessCore__process_end_merging() (PyFunceble.core.multiprocess.MultiprocessCore
method), 174

_MultiprocessCore__process_live_merging() (PyFunceble.core.multiprocess.MultiprocessCore
method), 174

_MultiprocessCore__run_multiprocess_test() (PyFunceble.core.multiprocess.MultiprocessCore
method), 174

_MultiprocessCore__start_process() (Py-
Funceble.core.multiprocess.MultiprocessCore
method), 174

_Preset__are_we_allowed_to_overwrite() (PyFunceble.config.preset.Preset
class
method), 165

_Prints__get_print_size() (PyFunce-
ble.output.prints.Prints method), 208

_PublicSuffix__get_content() (PyFunce-
ble.lookup.publicsuffix.PublicSuffix
method),
199

_SimpleCore__save_in_database() (Py-
Funceble.core.simple.SimpleCore
method),
174

_Sort__get_url_base() (PyFunce-
ble.engine.sort.Sort class method), 183

_Url__gather() (PyFunce-
ble.status.availability.url.Url method), 213

_Url__gather() (PyFunce-
ble.status.reputation.url.Url method), 214

_Url__gather() (PyFunceble.status.syntax.url.Url
method), 214

_analytic_host_file_directory() (Py-
Funceble.output.generate.Generate
method),
206

_colorify() (PyFunceble.output.prints.Prints
method), 208

_create_directory() (PyFunce-
ble.output.constructor.Constructor
class
method), 204

_decode_output() (PyFunceble.helpers.Command
method), 186

_get_content() (PyFunceble.output.logs.Logs class
method), 207

_get_it() (PyFunceble.lookup.http_code.HTTPCode
method), 199

_get_server_and_port_from() (PyFunce-
ble.lookup.dns.DNSLookup method), 195

_get_structure() (PyFunce-

`ble.output.constructor.Constructor` method), 204

`_json_print()` (`PyFunceble.output.prints.Prints` method), 208

`_merge()` (`PyFunceble.database.inactive.InactiveDB` method), 175

`_prints_status_screen()` (`PyFunceble.output.generate.Generate` method), 206

`_restore_replace()` (`PyFunceble.output.constructor.Constructor` method), 205

`_size_from_header()` (`PyFunceble.output.prints.Prints` class method), 208

`_update_structure_from_config()` (`PyFunceble.output.constructor.Constructor` method), 205

`_write_content()` (`PyFunceble.output.logs.Logs` class method), 207

A

`a_record()` (`PyFunceble.lookup.dns.DNSLookup` method), 195

`aaaa_record()` (`PyFunceble.lookup.dns.DNSLookup` method), 196

`AdBlock` (class in `PyFunceble.converter.adblock`), 167

`add()` (`PyFunceble.database.inactive.InactiveDB` method), 175

`add()` (`PyFunceble.database.whois.WhoisDB` method), 176

`add()` (`PyFunceble.engine.auto_continue.AutoContinue` method), 180

`ALEMBIC_DIRECTORY_NAME` (`PyFunceble.abstracts.infrastructure.Infrastructure` attribute), 158

`almost_everything()` (`PyFunceble.output.clean.Clean` method), 204

`analytic_file()` (`PyFunceble.output.generate.Generate` method), 206

`api()` (`PyFunceble.config.preset.Preset` method), 165

`APICore` (class in `PyFunceble.core.api`), 170

`authorization()` (`PyFunceble.cli.execution_time.ExecutionTime` class method), 163

`authorization()` (`PyFunceble.database.inactive.InactiveDB` class method), 176

`authorization()` (`PyFunceble.engine.auto_continue.AutoContinue` class method), 180

`authorization()` (`PyFunceble.engine.logger.Logger` method), 181

`authorization()` (`PyFunceble.engine.mining.Mining` class method), 182

`authorized` (`PyFunceble.database.whois.WhoisDB` attribute), 176

`AutoContinue` (class in `PyFunceble.engine.auto_continue`), 180

`AutoSave` (class in `PyFunceble.engine.auto_save`), 181

`availability()` (`PyFunceble.core.api.APICore` method), 170

B

`backup()` (`PyFunceble.output.constructor.Constructor` method), 205

`before_header()` (`PyFunceble.output.prints.Prints` method), 209

C

`calculate()` (`PyFunceble.cli.execution_time.ExecutionTime` class method), 163

`calculate()` (`PyFunceble.output.percentage.Percentage` class method), 208

`Check` (class in `PyFunceble.check`), 153

`CI_MIGRATION_TRIGGER_FILE` (`PyFunceble.abstracts.infrastructure.Infrastructure` attribute), 158

`Clean` (class in `PyFunceble.output.clean`), 204

`clean()` (`PyFunceble.database.inactive.InactiveDB` method), 176

`clean()` (`PyFunceble.engine.auto_continue.AutoContinue` method), 180

`cleanup()` (`PyFunceble.core.file.FileCore` method), 172

`CLICore` (class in `PyFunceble.core.cli`), 171

`cname_record()` (`PyFunceble.lookup.dns.DNSLookup` method), 196

`colorify_logo()` (`PyFunceble.core.cli.CLICore` class method), 171

`Command` (class in `PyFunceble.helpers`), 186

`compare()` (`PyFunceble.abstracts.package.Version` class method), 160

`compare_version_and_print_messages()` (`PyFunceble.core.cli.CLICore` class method), 171

`complements()` (`PyFunceble.config.preset.Preset` method), 165

`complements_file()` (`PyFunceble.output.generate.Generate` method), 206

`ConfigDownloader` (class in `PyFunceble.downloader.config`), 179

`CONFIGURATION_FILENAME` (`PyFunceble.abstracts.infrastructure.Infrastructure` attribute), 158

`ConfigurationFileNotFound`, 156

`construct_and_get_shadow_file()` (*PyFunceble.core.file.FileCore method*), 172

`construct_and_get_shadow_file()` (*PyFunceble.core.multiprocess.MultiprocessCore method*), 174

`Constructor` (class in *PyFunceble.output.constructor*), 204

`ConverterBase` (class in *PyFunceble.converter.base*), 167

`cooldown_time()` (*PyFunceble.config.preset.Preset method*), 165

`copy()` (*PyFunceble.helpers.File method*), 190

`count()` (*PyFunceble.output.percentage.Percentage method*), 208

`create()` (*PyFunceble.helpers.Directory method*), 189

`critical()` (*PyFunceble.engine.logger.Logger method*), 181

`custom_format()` (*PyFunceble.helpers.List method*), 192

D

`data()` (*PyFunceble.helpers.Hash method*), 191

`data()` (*PyFunceble.output.prints.Prints method*), 209

`data_constructor()` (*PyFunceble.output.prints.Prints method*), 209

`databases_to_delete()` (*PyFunceble.output.clean.Clean class method*), 204

`datetime()` (*PyFunceble.database.inactive.InactiveDB class method*), 176

`debug()` (*PyFunceble.engine.logger.Logger method*), 181

`DEFAULT_CONFIGURATION_FILENAME` (*PyFunceble.abstracts.infrastructure.Infrastructure attribute*), 158

`delete()` (*PyFunceble.helpers.Directory method*), 189

`delete()` (*PyFunceble.helpers.File method*), 190

`delete()` (*PyFunceble.lookup.requests.Requests method*), 201

`delete_unneeded()` (*PyFunceble.output.constructor.Constructor method*), 205

`Dict` (class in *PyFunceble.helpers*), 187

`Digit2Digits` (class in *PyFunceble.converter.digit2digits*), 168

`Directory` (class in *PyFunceble.helpers*), 189

`DirectoryStructureDownloader` (class in *PyFunceble.downloader.directory_structure*), 179

`disable()` (*PyFunceble.config.preset.Preset class method*), 165

`dispatch_file_test()` (*PyFunceble.cli.dispatcher.Dispatcher class method*), 162

`dispatch_url_file_test()` (*PyFunceble.cli.dispatcher.Dispatcher method*), 162

`Dispatcher` (class in *PyFunceble.cli.dispatcher*), 161

`dname_record()` (*PyFunceble.lookup.dns.DNSLookup method*), 196

`dns_lookup()` (in module *PyFunceble*), 114

`dns_lookup_over_tcp()` (*PyFunceble.config.preset.Preset class method*), 165

`dns_nameserver()` (*PyFunceble.config.preset.Preset class method*), 165

`DNSLookup` (class in *PyFunceble.lookup.dns*), 194

`domain()` (*PyFunceble.core.simple.SimpleCore method*), 174

`domain_and_ip()` (*PyFunceble.core.api.APICore method*), 170

`domain_syntax()` (*PyFunceble.core.api.APICore method*), 170

`DomainAndIp` (class in *PyFunceble.status.availability.domain_and_ip*), 211

`DomainAndIp` (class in *PyFunceble.status.reputation.domain_and_ip*), 214

`DomainAndIp` (class in *PyFunceble.status.syntax.domain_and_ip*), 214

`DOWN_FILENAME` (*PyFunceble.abstracts.infrastructure.Infrastructure attribute*), 158

`Download` (class in *PyFunceble.helpers*), 190

`download_link()` (*PyFunceble.core.file.FileCore class method*), 172

`DownloaderBase` (class in *PyFunceble.downloader.base*), 178

`DOWNTIME_INDEX` (*PyFunceble.downloader.base.DownloaderBase attribute*), 178

E

`enable()` (*PyFunceble.config.preset.Preset class method*), 165

`ENV_FILENAME` (*PyFunceble.abstracts.infrastructure.Infrastructure attribute*), 158

`error()` (*PyFunceble.engine.logger.Logger method*), 181

`exception` (*PyFunceble.core.multiprocess.OurProcessWrapper attribute*), 173

`exception()` (*PyFunceble.engine.logger.Logger method*), 181

`exceptions` (*PyFunceble.lookup.requests.Requests attribute*), 201

`execute()` (*PyFunceble.helpers.Command method*), 186

`ExecutionTime` (class in *PyFunceble.cli.execution_time*), 163

exists() (*PyFunceble.helpers.Directory method*), 189
exists() (*PyFunceble.helpers.File method*), 190
expiration_date() (*PyFunceble.output.logs.Logs method*), 207
ExpirationDate (class in *PyFunceble.extractor.expiration_date*), 185
extract_base() (*PyFunceble.converter.adblock.Adblock method*), 168
extract_from_options() (*PyFunceble.converter.adblock.Adblock method*), 168
ExtractorBase (class in *PyFunceble.extractor.base*), 185
ExtraRules (class in *PyFunceble.status.availability.extra_rules*), 212

F

fatal() (*PyFunceble.engine.logger.Logger method*), 182
File (class in *PyFunceble.converter.file*), 168
File (class in *PyFunceble.helpers*), 190
file() (*PyFunceble.helpers.Hash method*), 192
file_production (*PyFunceble.output.generate.Generate attribute*), 206
file_to_delete() (*PyFunceble.output.clean.Clean class method*), 204
file_url() (*PyFunceble.config.preset.Preset method*), 165
FileCore (class in *PyFunceble.core.file*), 172
fix_path() (*PyFunceble.helpers.Directory method*), 189
format() (*PyFunceble.helpers.List method*), 192
format_decoded() (*PyFunceble.converter.adblock.Adblock method*), 168
format_execution_time() (*PyFunceble.cli.execution_time.ExecutionTime method*), 163
format_to_apply (*PyFunceble.engine.logger.Logger attribute*), 182
from_json() (*PyFunceble.helpers.Dict class method*), 187
from_json_file() (*PyFunceble.helpers.Dict class method*), 187
from_yaml() (*PyFunceble.helpers.Dict class method*), 187
from_yaml_file() (*PyFunceble.helpers.Dict class method*), 187

G

gather_http_status_code() (*PyFunceble.status.gatherer_base.GathererBase*

method), 210
GathererBase (class in *PyFunceble.status.gatherer_base*), 210
Generate (class in *PyFunceble.output.generate*), 205
generate_complement_status_file() (*PyFunceble.core.file.FileCore method*), 172
generate_files() (*PyFunceble.core.file.FileCore method*), 172
generate_files_of_status() (*PyFunceble.core.file.FileCore method*), 172
get() (*PyFunceble.abstracts.platform.Platform class method*), 159
get() (*PyFunceble.lookup.http_code.HTTPCode method*), 199
get() (*PyFunceble.lookup.referer.Referer method*), 199
get() (*PyFunceble.lookup.requests.Requests method*), 201
get() (*PyFunceble.status.gatherer_base.GathererBase method*), 210
get() (*PyFunceble.status.status.Status method*), 211
get_addr_info() (*PyFunceble.lookup.dns.DNSLookup class method*), 196
get_all_downtimes() (*PyFunceble.downloader.base.DownloaderBase method*), 178
get_already_tested() (*PyFunceble.database.inactive.InactiveDB method*), 176
get_already_tested() (*PyFunceble.engine.auto_continue.AutoContinue method*), 180
get_complements() (in module *PyFunceble*), 114
get_complements() (*PyFunceble.core.file.FileCore class method*), 173
get_converted() (*PyFunceble.converter.adblock.Adblock method*), 168
get_converted() (*PyFunceble.converter.base.ConverterBase method*), 167
get_converted() (*PyFunceble.converter.file.File method*), 168
get_current() (*PyFunceble.helpers.Directory class method*), 189
get_current_ci() (*PyFunceble.engine.auto_save.AutoSave class method*), 181
get_downtime() (*PyFunceble.downloader.base.DownloaderBase method*), 178
get_expiration_date() (*PyFunceble.database.whois.WhoisDB method*), 177
get_extracted() (*PyFunceble*

ble.extractor.base.ExtractorBase (method), 185

get_history() (*PyFunceble.engine.mining.Mining* class method), 182

get_host_by_addr() (*PyFunceble.lookup.dns.DNSLookup* class method), 196

get_matching_list() (*PyFunceble.helpers.Regex* method), 193

get_not_matching_list() (*PyFunceble.helpers.Regex* method), 193

get_or_generate_complements() (*PyFunceble.engine.auto_continue.AutoContinue* method), 180

get_origin_info() (*PyFunceble.engine.logger.Logger* class method), 182

get_simple_coloration() (*PyFunceble.core.cli.CLICore* class method), 171

get_size() (*PyFunceble.helpers.File* method), 191

get_subjects() (*PyFunceble.core.file.FileCore* class method), 173

get_to_clean() (*PyFunceble.database.inactive.InactiveDB* method), 176

get_to_retest() (*PyFunceble.database.inactive.InactiveDB* method), 176

get_up_statuses() (*PyFunceble.core.cli.CLICore* class method), 171

get_upstream_version_file() (*PyFunceble.core.cli.CLICore* class method), 172

GitEmailNotFound, 156

GitHubTokenNotFound, 156

GitLabTokenNotFound, 156

GitNameNotFound, 156

H

handle() (*PyFunceble.status.availability.extra_rules.ExtraRules* attribute), 213

has_same_keys_as() (*PyFunceble.helpers.Dict* method), 187

Hash (class in *PyFunceble.helpers*), 191

HASHES_FILENAME (*PyFunceble.abstracts.infrastructure.Infrastructure* attribute), 158

head() (*PyFunceble.lookup.requests.Requests* method), 202

header() (*PyFunceble.output.prints.Prints* method), 209

header_constructor() (*PyFunceble.output.prints.Prints* class method), 209

hierarchical() (*PyFunceble.engine.sort.Sort* class method), 183

HostAdapter (class in *PyFunceble.lookup.requests*), 200

HostSSLAdapter (class in *PyFunceble.lookup.requests*), 200

HTTPCode (class in *PyFunceble.lookup.http_code*), 198

I

Iana (class in *PyFunceble.lookup.iana*), 199

IANADownloader (class in *PyFunceble.downloader.iana*), 179

ignore_it() (*PyFunceble.converter.adblock.Adblock* class method), 168

InactiveDB (class in *PyFunceble.database.inactive*), 175

info() (*PyFunceble.engine.logger.Logger* method), 182

info_files() (*PyFunceble.output.generate.Generate* method), 206

Infrastructure (class in *PyFunceble.abstracts.infrastructure*), 158

init() (*PyFunceble.engine.logger.Logger* method), 182

init_all() (*PyFunceble.config.preset.Preset* method), 165

initiate() (*PyFunceble.database.inactive.InactiveDB* method), 176

InternalUrl (class in *PyFunceble.converter.internal_url*), 169

into() (*PyFunceble.helpers.Merge* method), 193

ip_range_syntax() (*PyFunceble.core.api.APICore* method), 170

ip_syntax() (*PyFunceble.core.api.APICore* method), 170

ipv4_range_syntax() (*PyFunceble.core.api.APICore* method), 170

IPV4_REPUTATION_FILENAME (*PyFunceble.abstracts.infrastructure.Infrastructure* attribute), 158

ipv4_syntax() (*PyFunceble.core.api.APICore* method), 170

ipv4_syntax_check() (in module *PyFunceble*), 114

IPv4Reputation (class in *PyFunceble.lookup.ipv4_reputation*), 201

IPv4ReputationDownloader (class in *PyFunceble.downloader.ipv4_reputation*), 179

ipv6_range_syntax() (*PyFunceble.core.api.APICore* method), 171

ipv6_syntax() (*PyFunceble.core.api.APICore* method), 171

is_domain() (in module *PyFunceble*), 115

is_domain() (*PyFunceble.check.Check* method), 154

- [is_domain_malicious\(\)](#) (in module *PyFunceble*), [115](#)
[is_downtime_set\(\)](#) (*PyFunceble.downloader.base.DownloaderBase* method), [178](#)
[is_empty\(\)](#) (*PyFunceble.engine.auto_continue.AutoContinue* method), [180](#)
[is_empty\(\)](#) (*PyFunceble.helpers.File* method), [191](#)
[is_ip\(\)](#) (in module *PyFunceble*), [115](#)
[is_ip\(\)](#) (*PyFunceble.check.Check* method), [154](#)
[is_ip_range\(\)](#) (in module *PyFunceble*), [115](#)
[is_ip_range\(\)](#) (*PyFunceble.check.Check* method), [154](#)
[is_ipv4\(\)](#) (in module *PyFunceble*), [115](#)
[is_ipv4\(\)](#) (*PyFunceble.check.Check* method), [154](#)
[is_ipv4_malicious\(\)](#) (in module *PyFunceble*), [115](#)
[is_ipv4_range\(\)](#) (in module *PyFunceble*), [115](#)
[is_ipv4_range\(\)](#) (*PyFunceble.check.Check* method), [154](#)
[is_ipv6\(\)](#) (in module *PyFunceble*), [115](#)
[is_ipv6\(\)](#) (*PyFunceble.check.Check* method), [154](#)
[is_ipv6_range\(\)](#) (*PyFunceble.check.Check* method), [154](#)
[is_last_download_expired\(\)](#) (*PyFunceble.downloader.base.DownloaderBase* method), [178](#)
[is_local_cloned\(\)](#) (*PyFunceble.abstracts.package.Version* class method), [160](#)
[is_local_dev\(\)](#) (*PyFunceble.abstracts.package.Version* class method), [160](#)
[is_mac_os\(\)](#) (*PyFunceble.abstracts.platform.Platform* class method), [159](#)
[is_record_present_in_result\(\)](#) (*PyFunceble.lookup.dns.DNSLookup* class method), [197](#)
[is_reserved_ip\(\)](#) (*PyFunceble.check.Check* method), [154](#)
[is_reserved_ipv4\(\)](#) (*PyFunceble.check.Check* method), [154](#)
[is_reserved_ipv6\(\)](#) (*PyFunceble.check.Check* method), [155](#)
[is_subdomain\(\)](#) (in module *PyFunceble*), [116](#)
[is_subdomain\(\)](#) (*PyFunceble.check.Check* method), [155](#)
[is_time_exceed\(\)](#) (*PyFunceble.engine.auto_save.AutoSave* method), [181](#)
[is_time_older\(\)](#) (*PyFunceble.database.whois.WhoisDB* method), [177](#)
[is_unix\(\)](#) (*PyFunceble.abstracts.platform.Platform* class method), [159](#)
[is_url\(\)](#) (in module *PyFunceble*), [116](#)
[is_url\(\)](#) (*PyFunceble.check.Check* method), [155](#)
[is_url_malicious\(\)](#) (in module *PyFunceble*), [116](#)
[is_windows\(\)](#) (*PyFunceble.abstracts.platform.Platform* class method), [159](#)
- ## L
- [List](#) (class in *PyFunceble.helpers*), [192](#)
[list_of_mined\(\)](#) (*PyFunceble.engine.mining.Mining* method), [182](#)
[literally_compare\(\)](#) (*PyFunceble.abstracts.package.Version* class method), [160](#)
[load\(\)](#) (*PyFunceble.database.inactive.InactiveDB* method), [176](#)
[load\(\)](#) (*PyFunceble.database.whois.WhoisDB* method), [177](#)
[load\(\)](#) (*PyFunceble.engine.auto_continue.AutoContinue* method), [180](#)
[load\(\)](#) (*PyFunceble.engine.mining.Mining* method), [182](#)
[load_config\(\)](#) (in module *PyFunceble*), [116](#)
[log\(\)](#) (*PyFunceble.output.percentage.Percentage* method), [208](#)
[Logger](#) (class in *PyFunceble.engine.logger*), [181](#)
[Logs](#) (class in *PyFunceble.output.logs*), [207](#)
[logs_sharing\(\)](#) (*PyFunceble.core.cli.CLICore* class method), [172](#)
- ## M
- [MAC](#) (*PyFunceble.abstracts.platform.Platform* attribute), [159](#)
[match\(\)](#) (*PyFunceble.helpers.Regex* method), [193](#)
[maximal_processes\(\)](#) (*PyFunceble.config.preset.Preset* class method), [165](#)
[Merge](#) (class in *PyFunceble.helpers*), [192](#)
[merge\(\)](#) (*PyFunceble.database.whois.WhoisDB* class method), [177](#)
[mine\(\)](#) (*PyFunceble.engine.mining.Mining* method), [183](#)
[Mining](#) (class in *PyFunceble.engine.mining*), [182](#)
[move\(\)](#) (*PyFunceble.helpers.File* method), [191](#)
[multiprocess\(\)](#) (*PyFunceble.config.preset.Preset* method), [165](#)
[multiprocess_merging_mode\(\)](#) (*PyFunceble.config.preset.Preset* class method), [165](#)
[MultiprocessCore](#) (class in *PyFunceble.core.multiprocess*), [173](#)
[mx_record\(\)](#) (*PyFunceble.lookup.dns.DNSLookup* method), [197](#)

N

NAME (*PyFunceble.abstracts.package.Package* attribute), 159

NoConversionMade, 156

NoDownloadDestinationGiven, 156

NoDownloadLinkGiven, 156

NoExtractionMade, 156

NoInternetConnection, 156

ns_record() (*PyFunceble.lookup.dns.DNSLookup* method), 197

O

options() (*PyFunceble.lookup.requests.Requests* method), 202

OurProcessWrapper (class in *PyFunceble.core.multiprocess*), 173

P

Package (class in *PyFunceble.abstracts.package*), 159

patch() (*PyFunceble.lookup.requests.Requests* method), 202

Percentage (class in *PyFunceble.output.percentage*), 207

Platform (class in *PyFunceble.abstracts.platform*), 159

PleaseUpdatePyFunceble, 156

post() (*PyFunceble.lookup.requests.Requests* method), 202

post_test_treatment() (*PyFunceble.core.file.FileCore* method), 173

Preset (class in *PyFunceble.config.preset*), 165

print_header() (*PyFunceble.core.cli.CLICore* class method), 172

print_nothing_to_test() (*PyFunceble.core.cli.CLICore* class method), 172

Prints (class in *PyFunceble.output.prints*), 208

prints_status_file() (*PyFunceble.output.generate.Generate* method), 206

process() (*PyFunceble.downloader.base.DownloaderBase* method), 178

process() (*PyFunceble.engine.auto_save.AutoSave* method), 181

PROD_CONFIG_LINK (*PyFunceble.abstracts.infrastructure.Infrastructure* attribute), 158

ptr_record() (*PyFunceble.lookup.dns.DNSLookup* method), 197

PublicSuffix (class in *PyFunceble.lookup.publicsuffix*), 199

PublicSuffixDownloader (class in *PyFunceble.downloader.publicsuffix*), 179

put() (*PyFunceble.lookup.requests.Requests* method), 202

PyFunceble (*module*), 113

PyFunceble.abstracts (*module*), 157

PyFunceble.check (*module*), 153

PyFunceble.cli (*module*), 161

PyFunceble.config (*module*), 164

PyFunceble.converter (*module*), 166

PyFunceble.core (*module*), 169

PyFunceble.database (*module*), 175

PyFunceble.downloader (*module*), 177

PyFunceble.engine (*module*), 179

PyFunceble.exceptions (*module*), 155

PyFunceble.extractor (*module*), 184

PyFunceble.helpers (*module*), 186

PyFunceble.lookup (*module*), 194

PyFunceble.output (*module*), 203

PyFunceble.status (*module*), 209

PyFuncebleException, 156

PyFuncebleExternalException, 157

PyFuncebleInternalException, 157

R

read() (*PyFunceble.helpers.File* method), 191

REDOWNLOAD_AFTER (*PyFunceble.downloader.base.DownloaderBase* attribute), 178

Referer (class in *PyFunceble.lookup.referer*), 199

referer_not_found() (*PyFunceble.output.logs.Logs* method), 207

Regex (class in *PyFunceble.helpers*), 193

remove() (*PyFunceble.database.inactive.InactiveDB* method), 176

remove() (*PyFunceble.engine.mining.Mining* method), 183

remove_ignored() (*PyFunceble.converter.adblock.Adblock* method), 168

remove_key() (*PyFunceble.helpers.Dict* method), 188

rename_key() (*PyFunceble.helpers.Dict* method), 188

replace_match() (*PyFunceble.helpers.Regex* method), 193

REPO_LINK (*PyFunceble.abstracts.infrastructure.Infrastructure* attribute), 159

reputation() (*PyFunceble.core.api.APICore* method), 171

reputation_data() (*PyFunceble.config.preset.Preset* method), 165

request() (*PyFunceble.lookup.dns.DNSLookup* method), 197

request() (*PyFunceble.lookup.whois.WhoisLookup* method), 203

Requests (class in *PyFunceble.lookup.requests*), 201

- reset_counters() (PyFunceble.config.preset.Preset class method), 165
 resolve() (PyFunceble.lookup.requests.HostSSLAdapter class method), 200
 restore() (PyFunceble.output.constructor.Constructor method), 205
 root_logger_format (PyFunceble.engine.logger.Logger attribute), 182
 run() (PyFunceble.core.multiprocess.OurProcessWrapper method), 173
 run() (PyFunceble.helpers.Command method), 187
 run_test() (PyFunceble.core.file.FileCore method), 173
 run_test() (PyFunceble.core.multiprocess.MultiprocessCore method), 174
 run_to_stdout() (PyFunceble.helpers.Command method), 187
- ## S
- save() (PyFunceble.cli.execution_time.ExecutionTime method), 163
 save() (PyFunceble.database.inactive.InactiveDB method), 176
 save() (PyFunceble.database.whois.WhoisDB method), 177
 save() (PyFunceble.engine.auto_continue.AutoContinue method), 181
 save() (PyFunceble.engine.mining.Mining method), 183
 save_downtimes() (PyFunceble.downloader.base.DownloaderBase method), 178
 save_into_database() (PyFunceble.core.cli.CLICore class method), 172
 send() (PyFunceble.lookup.requests.HostAdapter method), 201
 send() (PyFunceble.lookup.requests.HostSSLAdapter method), 200
 set_starting_time() (PyFunceble.cli.execution_time.ExecutionTime class method), 164
 set_stopping_time() (PyFunceble.cli.execution_time.ExecutionTime class method), 164
 should_be_ignored() (PyFunceble.core.file.FileCore class method), 173
 simple_domain() (PyFunceble.config.preset.Preset method), 165
 simple_url() (PyFunceble.config.preset.Preset method), 166
 SimpleCore (class in PyFunceble.core.simple), 174
 Sort (class in PyFunceble.engine.sort), 183
 sort_generated_files() (PyFunceble.core.cli.CLICore class method), 172
 SPECIAL_USE_DOMAIN_NAMES_EXTENSIONS (PyFunceble.check.Check attribute), 153
 split() (PyFunceble.helpers.Regex method), 193
 split_versions() (PyFunceble.abstracts.package.Version class method), 160
 standard() (PyFunceble.engine.sort.Sort class method), 184
 Status (class in PyFunceble.status.status), 211
 status_file() (PyFunceble.output.generate.Generate method), 206
 stay_safe() (PyFunceble.core.cli.CLICore class method), 172
 subdomain_syntax() (PyFunceble.core.api.APICore method), 171
 switch() (PyFunceble.config.preset.Preset class method), 166
 syntax() (PyFunceble.core.api.APICore method), 171
 syntax_check() (in module PyFunceble), 116
 syntax_test() (PyFunceble.config.preset.Preset method), 166
- ## T
- test() (in module PyFunceble), 117
 test() (PyFunceble.core.file.FileCore method), 173
 test() (PyFunceble.core.multiprocess.MultiprocessCore method), 174
 test() (PyFunceble.core.simple.SimpleCore method), 174
 text() (PyFunceble.helpers.Download method), 190
 timeout() (PyFunceble.config.preset.Preset class method), 166
 to_json() (PyFunceble.helpers.Dict method), 188
 to_json_file() (PyFunceble.helpers.Dict method), 188
 to_right_url() (PyFunceble.converter.internal_url.InternalUrl method), 169
 to_yaml() (PyFunceble.helpers.Dict method), 188
 to_yaml_file() (PyFunceble.helpers.Dict method), 189
 tool() (in module PyFunceble.cli), 161
 txt_record() (PyFunceble.lookup.dns.DNSLookup method), 198
- ## U
- UnableToDownload, 157
 unified_file() (PyFunceble.output.generate.Generate method), 206
 UNIX (PyFunceble.abstracts.platform.Platform attribute), 159

UnknownSubject, [157](#)
update_counters() (PyFunceble.engine.auto_continue.AutoContinue method), [181](#)
update_downtime() (PyFunceble.downloader.base.DownloaderBase method), [178](#)
update_lifetime() (PyFunceble.lookup.dns.DNSLookup method), [198](#)
update_nameserver() (PyFunceble.lookup.dns.DNSLookup method), [198](#)
upgrade_database() (PyFunceble.config.preset.Preset class method), [166](#)
Url (class in PyFunceble.status.availability.url), [213](#)
Url (class in PyFunceble.status.reputation.url), [214](#)
Url (class in PyFunceble.status.syntax.url), [214](#)
url() (PyFunceble.core.api.APICore method), [171](#)
url() (PyFunceble.core.simple.SimpleCore method), [174](#)
url_syntax() (PyFunceble.core.api.APICore method), [171](#)
url_syntax_check() (in module PyFunceble), [117](#)
url_test() (in module PyFunceble), [118](#)
USER_AGENT_FILENAME (PyFunceble.abstracts.infrastructure.Infrastructure attribute), [159](#)
UserAgentBrowserNotFound, [157](#)
UserAgentNotFound, [157](#)
UserAgentPlatformNotFound, [157](#)

V

Version (class in PyFunceble.abstracts.package), [160](#)
VERSION (PyFunceble.abstracts.package.Package attribute), [159](#)

W

warning() (PyFunceble.engine.logger.Logger method), [182](#)
whois() (in module PyFunceble), [118](#)
whois() (PyFunceble.output.logs.Logs method), [207](#)
WhoisDB (class in PyFunceble.database.whois), [176](#)
WhoisLookup (class in PyFunceble.lookup.whois), [202](#)
WINDOWS (PyFunceble.abstracts.platform.Platform attribute), [159](#)
work_process() (PyFunceble.core.multiprocess.MultiprocessCore method), [174](#)
write() (PyFunceble.helpers.File method), [191](#)
write_in_shadow_file_if_needed() (PyFunceble.core.file.FileCore method), [173](#)
WrongParameterType, [157](#)
WrongParameterValue, [157](#)