wordle

Release 0.2.1

Create a wordcloud for a Git repository.

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Sep 09, 2022

Contents

Can also create wordclouds from directories of source files or a single source file.

Chapter

ONE

from PyPI

```
$ python3 -m pip install wordle --user
```

Chapter

TWO

from GitHub

```
$ python3 -m pip install git+https://github.com/domdfcoding/wordle@master --user
```

Part I

Documentation

Chapter

THREE

wordle

Create wordclouds from git repositories, directories and source files.

Classes:

Wordle([font_path, width, height, ...])	Generate word clouds from source code.

Functions:

export_wordcloud(word_cloud, outfile)	Export a wordcloud to a file.

class Wordle (*font_path=None*, *width=400*, *height=200*, *prefer_horizontal=0.9*, *mask=None*, *contour_width=0*, *contour_color='black'*, *scale=1*, *min_font_size=4*, *font_step=1*, *max_words=200*, *background_color='black'*, *max_font_size=None*, *mode='RGB'*, *relative_scaling='auto'*, *color_func=None*, *regexp=None*, *collocations=True*, *colormap=None*, *repeat=False*, *include_numbers=False*, *min_word_length=0*, *random_state=None*)

Bases: `WordCloud`

Generate word clouds from source code.

Parameters

- **font_path** (`Optional[str]`) – Font path to the font that will be used (OTF or TTF). Defaults to DroidSansMono path on a Linux machine. If you are on another OS or don't have this font, you need to adjust this path. Default `None`.
- **width** (`int`) – The width of the canvas. Default `400`.
- **height** (`int`) – The height of the canvas. Default `200`.
- **prefer_horizontal** (`float`) – The ratio of times to try horizontal fitting as opposed to vertical. If prefer_horizontal < 1, the algorithm will try rotating the word if it doesn't fit. (There is currently no built-in way to get only vertical words.) Default `0.9`.
- **mask** (`Optional[ndarray]`) – If not `None`, gives a binary mask on where to draw words. If mask is not `None`, width and height will be ignored and the shape of mask will be used instead. All white (`#FF` or `#FFFFFF`) entries will be considerd "masked out" while other entries will be free to draw on. Default `None`.
- **contour_width** (`float`) – If mask is not `None` and contour_width > 0, draw the mask contour. Default `0`.
- **contour_color** (`str`) – Mask contour color. Default `'black'`.
- **scale** (`float`) – Scaling between computation and drawing. For large word-cloud images, using scale instead of larger canvas size is significantly faster, but might lead to a coarser fit for the words. Default `1`.

- **min_font_size** (int) – Smallest font size to use. Will stop when there is no more room in this size. Default 4.
- **font_step** (int) – Step size for the font. font_step > 1 might speed up computation but give a worse fit. Default 1.
- **max_words** (int) – The maximum number of words. Default 200.
- **background_color** (str) – Background color for the word cloud image. Default 'black'.
- **max_font_size** (Optional[int]) – Maximum font size for the largest word. If None the height of the image is used. Default None.
- **mode** (str) – Transparent background will be generated when mode is "RGBA" and background_color is None. Default 'RGB'.
- **relative_scaling** (Union[str, float]) – Importance of relative word frequencies for font-size. With relative_scaling=0, only word-ranks are considered. With relative_scaling=1, a word that is twice as frequent will have twice the size. If you want to consider the word frequencies and not only their rank, relative_scaling around .5 often looks good. If 'auto' it will be set to 0.5 unless repeat is true, in which case it will be set to 0. Default 'auto'.
- **color_func** (Optional[Callable]) – Callable with parameters word, font_size, position, orientation, font_path, random_state which returns a PIL color for each word. Overwrites "colormap". See colormap for specifying a matplotlib colormap instead. To create a word cloud with a single color, use color_func=lambda *args, **kwargs: "white". The single color can also be specified using RGB code. For example color_func=lambda *args, **kwargs: (255,0,0) sets the color to red. Default None.
- **regexp** (Optional[str]) – Regular expression to split the input text into tokens in process_text. If None is specified, r"\w[\w']+" is used. Ignored if using generate_from_frequencies. Default None.
- **collocations** (bool) – Whether to include collocations (bigrams) of two words. Ignored if using generate_from_frequencies. Default True.
- **colormap** (Union[None, str, Colormap]) – Matplotlib colormap to randomly draw colors from for each word. Ignored if "color_func" is specified. Default "viridis".
- **repeat** (bool) – Whether to repeat words and phrases until max_words or min_font_size is reached. Default False.
- **include_numbers** (bool) – Whether to include numbers as phrases or not. Default False.
- **min_word_length** (int) – Minimum number of letters a word must have to be included. Default 0.
- **random_state** (Union[RandomState, int, None]) – Seed for the randomness that determines the colour and position of words. Default None.

Note: Larger canvases with make the code significantly slower. If you need a large word cloud, try a lower canvas size, and set the scale parameter. The algorithm might give more weight to the ranking of the words than their actual frequencies, depending on the max_font_size and the scaling heuristic.

Methods:

__array__()	Returns the wordcloud image as numpy array.

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generate_from_directory(directory[, ...])	Create a word_cloud from a directory of source code files.
generate_from_file(filename[, outfile, ...])	Create a word_cloud from a source code file.
generate_from_git(git_url[, outfile, sha, ...])	Create a word_cloud from a directory of source code files.
recolor([random_state, color_func, colormap])	Recolour the existing layout.
to_array()	Returns the wordcloud image as numpy array.
to_file(filename)	Export the wordle to a file.
to_image()	Returns the wordcloud as an image.
to_svg(*[, embed_font, ...])	Export the wordle to an SVG.

Attributes:

color_func	Callable with parameters `word`, `font_size`, `position`, `orientation`, `font_path`, `random_state` which returns a PIL color for each word.

__array__()
Returns the wordcloud image as numpy array.

Return type ndarray

color_func
Type: Callable

Callable with parameters `word`, `font_size`, `position`, `orientation`, `font_path`, `random_state` which returns a PIL color for each word.

generate_from_directory(*directory*, *outfile=None*, ***, *exclude_words=()*, *exclude_dirs=()*, *max_font_size=None*)
Create a word_cloud from a directory of source code files.

Parameters

- **directory** (Union[str, Path, PathLike]) – The directory to process
- **outfile** (Union[str, Path, PathLike, None]) – The file to save the wordle as. Supported formats are PNG, JPEG and SVG. If None the wordle is not saved. Default None.
- **exclude_words** (Sequence[str]) – An optional list of words to exclude. Default ().
- **exclude_dirs** (Sequence[Union[str, Path, PathLike]]) – An optional list of directories to exclude. Each entry is treated as a regular expression to match at the beginning of the relative path. Default ().
- **max_font_size** (Optional[int]) – Use this font-size instead of max_font_size. Default None.

Changed in version 0.2.1: exclude_words, exclude_dirs, max_font_size are now keyword-only.

Return type *Wordle*

generate_from_file(*filename*, *outfile=None*, ***, *exclude_words=()*, *max_font_size=None*)

Create a word_cloud from a source code file.

Parameters

- **filename** (Union[str, Path, PathLike]) – The file to process
- **outfile** (Union[str, Path, PathLike, None]) – The file to save the wordle as. Supported formats are PNG, JPEG and SVG. If None the wordle is not saved. Default None.
- **exclude_words** (Sequence[str]) – An optional list of words to exclude. Default ().
- **max_font_size** (Optional[int]) – Use this font-size instead of max_font_size. Default None.

Changed in version 0.2.1: exclude_words, max_font_size are now keyword-only.

Return type *Wordle*

generate_from_git(*git_url*, *outfile=None*, ***, *sha=None*, *depth=None*, *exclude_words=()*, *exclude_dirs=()*, *max_font_size=None*)

Create a word_cloud from a directory of source code files.

Parameters

- **git_url** (str) – The url of the git repository to process
- **outfile** (Union[str, Path, PathLike, None]) – The file to save the wordle as. Supported formats are PNG, JPEG and SVG. If None the wordle is not saved. Default None.
- **sha** (Optional[str]) – An optional SHA hash of a commit to checkout. Default None.
- **depth** (Optional[int]) – An optional depth to clone at. If None and sha is None the depth is 1. If None and sha is given the depth is unlimited. Default None.
- **exclude_words** (Sequence[str]) – An optional list of words to exclude. Default ().
- **exclude_dirs** (Sequence[Union[str, Path, PathLike]]) – An optional list of directories to exclude. Default ().
- **max_font_size** (Optional[int]) – Use this font-size instead of self.max_font_size. Default None.

Changed in version 0.2.1:

- exclude_words, exclude_dirs, max_font_size are now keyword-only.
- Added the sha and depth keyword-only arguments.

Return type *Wordle*

recolor(*random_state=None*, *color_func=None*, *colormap=None*)

Recolour the existing layout.

Applying a new coloring is much faster than regenerating the whole wordle.

Parameters

- **random_state** (Union[RandomState, int, None]) – If not None, a fixed random state is used. If an int is given, this is used as seed for a random.Random state. Default None.
- **color_func** (Optional[Callable]) – Function to generate new color from word count, font size, position and orientation. If None, *color_func* is used. Default None.

- **colormap** (Union[None, str, Colormap]) – Use this colormap to generate new colors. Ignored if color_func is specified. If None, *color_func* or color_map is used. Default None.

Return type *Wordle*

Returns self

to_array()
Returns the wordcloud image as numpy array.

to_file(*filename*)
Export the wordle to a file.

Parameters **filename** (Union[str, Path, PathLike]) – The file to save as.

Returns self

to_image()
Returns the wordcloud as an image.

to_svg(*, *embed_font=False*, *optimize_embedded_font=True*, *embed_image=False*)
Export the wordle to an SVG.

Parameters

- **embed_font** (bool) – Whether to include font inside resulting SVG file. Default False.
- **optimize_embedded_font** (bool) – Whether to be aggressive when embedding a font, to reduce size. In particular, hinting tables are dropped, which may introduce slight changes to character shapes (w.r.t. *to_image* baseline). Default True.
- **embed_image** (bool) – Whether to include rasterized image inside resulting SVG file. Useful for debugging. Default False.

Return type str

Returns The content of the SVG image.

export_wordcloud(*word_cloud*, *outfile*)
Export a wordcloud to a file.

Parameters

- **word_cloud** (WordCloud)
- **outfile** (Union[str, Path, PathLike]) – The file to export the wordcloud to.

Chapter

FOUR

wordle.frequency

Functions to determine word token frequency for wordclouds.

New in version 0.2.0.

Functions:

frequency_from_directory(directory[, ...])	Returns a dictionary mapping the words in files in `directory` to their frequencies.
frequency_from_file(filename[, exclude_words])	Returns a dictionary mapping the words in the file to their frequencies.
frequency_from_git(git_url[, sha, depth, ...])	Returns a dictionary mapping the words in files in `directory` to their frequencies.
get_tokens(filename)	Returns a `collections.Counter` of the tokens in a file.

frequency_from_directory(*directory*, *exclude_words=()*, *exclude_dirs=()*)

Returns a dictionary mapping the words in files in `directory` to their frequencies.

Parameters

- **directory** (Union[str, Path, PathLike]) – The directory to process
- **exclude_words** (Sequence[str]) – An optional list of words to exclude. Default `()`.
- **exclude_dirs** (Sequence[Union[str, Path, PathLike]]) – An optional list of directories to exclude. Default `()`.

New in version 0.2.0.

Return type Counter

frequency_from_file(*filename*, *exclude_words=()*)

Returns a dictionary mapping the words in the file to their frequencies.

Parameters

- **filename** (Union[str, Path, PathLike]) – The file to process
- **exclude_words** (Sequence[str]) – An optional list of words to exclude. Default `()`.

New in version 0.2.0.

See also:

func:~.*get_tokens*

Return type Counter

frequency_from_git(*git_url*, *sha=None*, *depth=None*, *exclude_words=()*, *exclude_dirs=()*)

Returns a dictionary mapping the words in files in `directory` to their frequencies.

Parameters

- **git_url** (`str`) – The url of the git repository to process
- **sha** (`Optional[str]`) – An optional SHA hash of a commit to checkout. Default `None`.
- **depth** (`Optional[int]`) – An optional depth to clone at. If `None` and `sha` is `None` the depth is `1`. If `None` and `sha` is given the depth is unlimited. Default `None`.
- **exclude_words** (`Sequence[str]`) – An optional list of words to exclude. Default `()`.
- **exclude_dirs** (`Sequence[Union[str, Path, PathLike]]`) – An optional list of directories to exclude. Default `()`.

New in version 0.2.0.

Return type `Counter`

get_tokens(*filename*)

Returns a `collections.Counter` of the tokens in a file.

Parameters **filename** (`Union[str, Path, PathLike]`) – The file to parse.

Return type `Counter[str]`

Returns A count of words etc. in the file.

Chapter

FIVE

wordle.utils

Utility functions.

New in version 0.2.0.

Functions:

clone_into_tmpdir(git_url, tmpdir[, sha, depth])	Clone the git repository at `git_url` into `tmpdir`.

clone_into_tmpdir(*git_url*, *tmpdir*, *sha=None*, *depth=None*)

Clone the git repository at `git_url` into `tmpdir`.

Parameters

- **git_url** (`str`) – The url of the git repository to process
- **tmpdir** (`Union[str, Path, PathLike]`)
- **sha** (`Optional[str]`) – An optional SHA hash of a commit to checkout. Default `None`.
- **depth** (`Optional[int]`) – An optional depth to clone at. If `None` and `sha` is `None` the depth is `1`. If `None` and `sha` is given the depth is unlimited. Default `None`.

New in version 0.2.0.

Return type `Path`

Chapter

SIX

Examples

6.1 Python Source File

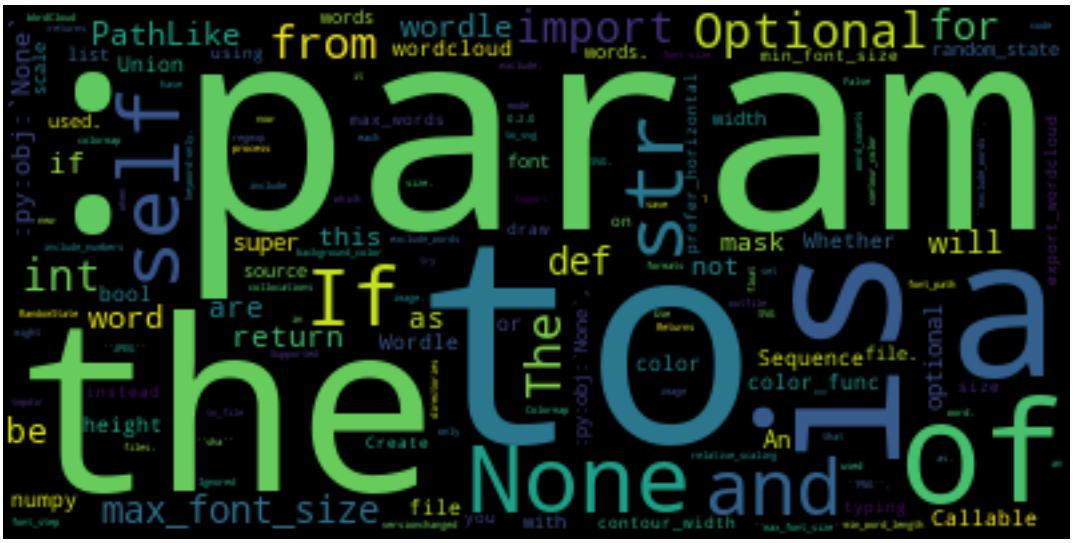
```
"""
Create a wordcloud from a single Python source file
"""

# stdlib
import pathlib

# this package
from wordle import Wordle, export_wordcloud

filename = pathlib.Path('.').absolute().parent / "wordle/__init__.py"

w = Wordle(random_state=5678)
w.generate_from_file(filename, outfile="python_wordcloud.svg")
export_wordcloud(w, outfile="python_wordcloud.png")
```

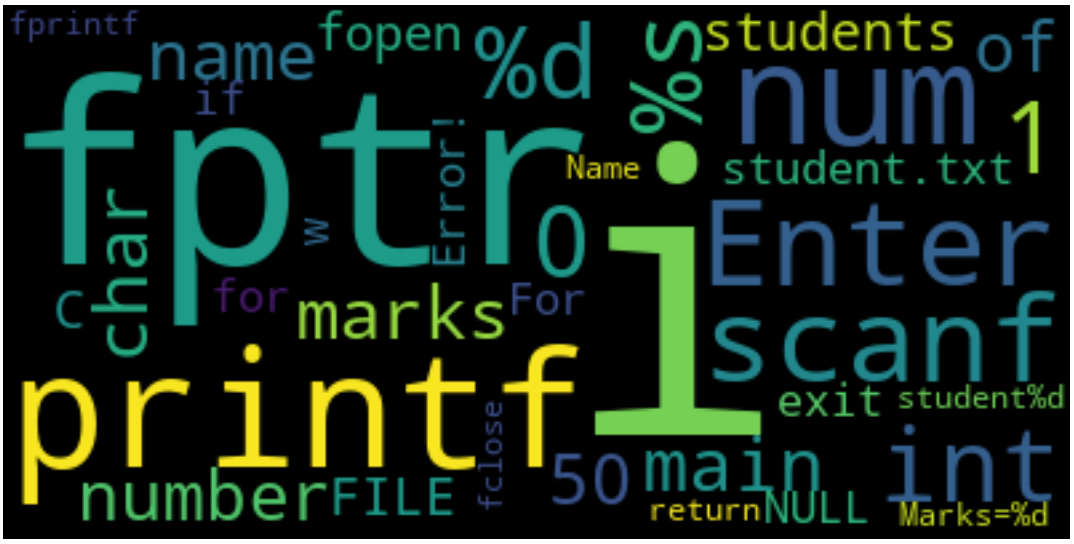


6.2 C Source File

```
"""
Create a wordcloud from a single C source file
"""

# this package
from wordle import Wordle, export_wordcloud

w = Wordle(random_state=5678)
w.generate_from_file("example.c", outfile="c_wordcloud.svg")
export_wordcloud(w, outfile="c_wordcloud.png")
```



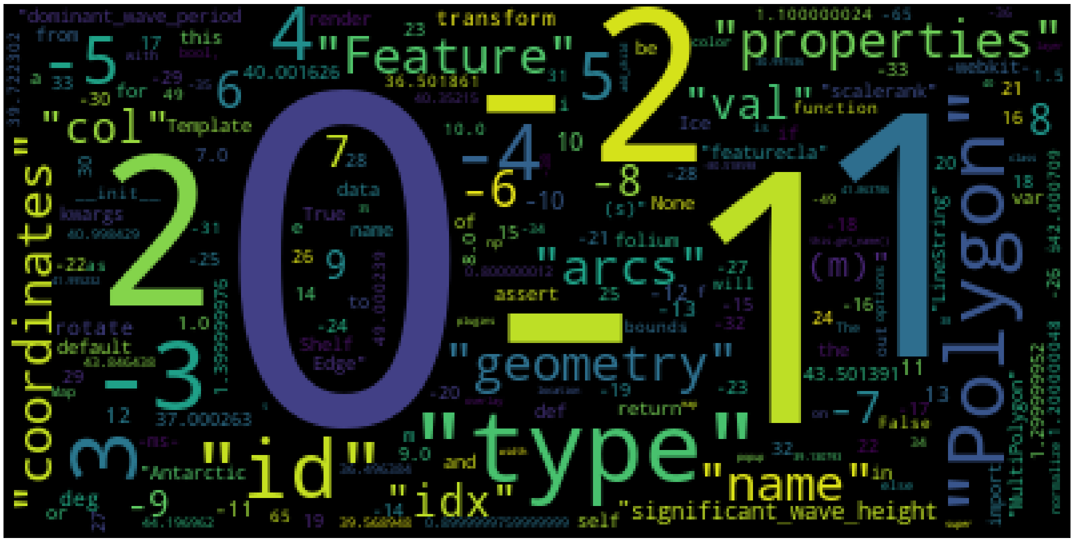
6.3 Folium git repository

```
"""
Create a wordcloud from the Folium git repository.

https://github.com/python-visualization/folium
"""

# this package
from wordle import Wordle, export_wordcloud

w = Wordle(random_state=5678)
w.generate_from_git("https://github.com/python-visualization/folium", outfile="folium_
↪wordcloud.svg")
export_wordcloud(w, outfile="folium_wordcloud.png")
```



0
-1
2
-2
1
"type"
"coordinates"
"Polygon"
"properties"
"Feature"
"geometry"
"arcs"
"id"
"name"
"idx"
"val"
"col"
-3
3
-4
4
-5
5
-6
6
7
-7
-8
8
9
-9
"significant_wave_height"
"dominant_wave_period
transform

Part II

Contributing

Chapter

SEVEN

Overview

`wordle` uses tox to automate testing and packaging, and pre-commit to maintain code quality.

Install `pre-commit` with `pip` and install the git hook:

```
$ python -m pip install pre-commit
$ pre-commit install
```

Chapter

EIGHT

Coding style

formate is used for code formatting.

It can be run manually via `pre-commit`:

```
$ pre-commit run formate -a
```

Or, to run the complete autoformatting suite:

```
$ pre-commit run -a
```

Chapter

NINE

Automated tests

Tests are run with `tox` and `pytest`. To run tests for a specific Python version, such as Python 3.6:

```
$ tox -e py36
```

To run tests for all Python versions, simply run:

```
$ tox
```

Chapter

TEN

Type Annotations

Type annotations are checked using `mypy`. Run `mypy` using `tox`:

```
$ tox -e mypy
```

Chapter

ELEVEN

Build documentation locally

The documentation is powered by Sphinx. A local copy of the documentation can be built with `tox`:

```
$ tox -e docs
```

Chapter

TWELVE

Downloading source code

The `wordle` source code is available on GitHub, and can be accessed from the following URL: `https://github.com/domdfcoding/wordle`

If you have `git` installed, you can clone the repository with the following command:

```
$ git clone https://github.com/domdfcoding/wordle
```

```
Cloning into 'wordle'...
remote: Enumerating objects: 47, done.
remote: Counting objects: 100% (47/47), done.
remote: Compressing objects: 100% (41/41), done.
remote: Total 173 (delta 16), reused 17 (delta 6), pack-reused 126
Receiving objects: 100% (173/173), 126.56 KiB | 678.00 KiB/s, done.
Resolving deltas: 100% (66/66), done.
```

Alternatively, the code can be downloaded in a 'zip' file by clicking:
Clone or download –> Download Zip

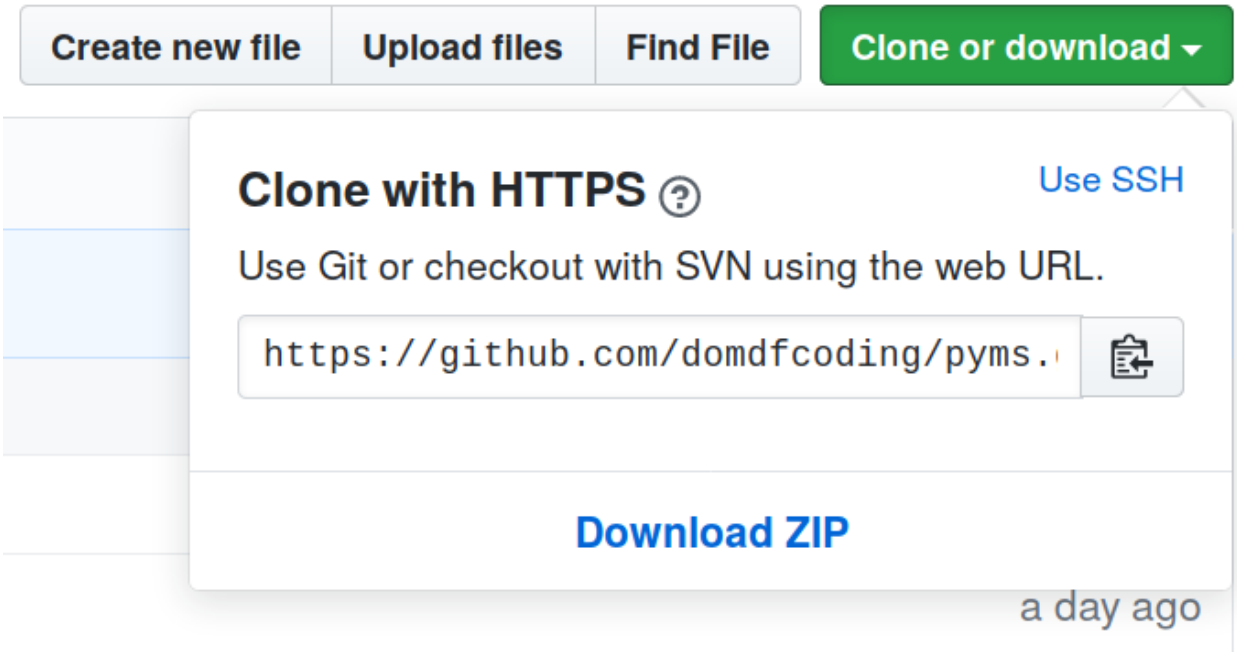


Fig. 1: Downloading a 'zip' file of the source code

12.1 Building from source

The recommended way to build `wordle` is to use tox:

```
$ tox -e build
```

The source and wheel distributions will be in the directory `dist`.

If you wish, you may also use pep517.build or another **PEP 517**-compatible build tool.

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