Writing Python Scripts

Simple Examples of the Power of Python for Beginners

Overview

We'll start more basic and slowly build to larger concepts.

1. Introduction to Scripting
2. Simple Adding Script: input, sys.argv
3. Time Logging: input loops, datetime module, writing to a file
4. Bulk Image Organizer: pathlib.Path, PIL, datetime.strptime
5. Jisho API: APIs, requests, JSON
6. EBook Writer: ebooklib, beautifulsoup, HTML

Questions after each section and at the end

What is a script?

Etymology

https://www.etymonline.com/word/script

script (n.)

late 14c., "something written, a written document," earlier *scrite* (c. 1300), from

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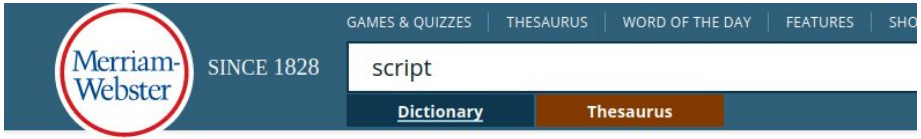
script (n.)

late 14c., "something written, a written document," earlier *scrite* (c. 1300), from Anglo-French *scrit,* Old French *escrit* "piece of writing, written paper; credit note, IOU; deed, bond" (Modern French *écrit*) and directly from Latin *scriptum* "a writing, book; law; line, mark," noun use of neuter past participle of *scribere* "to write"



Definition

https://www.merriam-webster.com/dictionary/script

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Merriam-Webster SINCE 1828

GAMES & QUIZZES | THESAURUS | WORD OF THE DAY | FEATURES | SHO

script

Dictionary | Thesaurus

script noun (1)

Save Word

\ ˈskript \

plural **scripts**

Definition of *script* (Entry 1 of 3)

1 **a** : something written : TEXT

b : an original or principal instrument or document

c **(1)** : MANUSCRIPT sense 1

(2) : the written text of a stage play, screenplay, or broadcast

specifically : the one used in production or performance

2 **a** : a style of printed letters that resembles handwriting

b : written characters : HANDWRITING

c : ALPHABET

3 : a plan of action

4 *computing* : a sequence of instructions or commands for a computer to execute

especially : one that automates a small task (such as assembling or sorting a set of data)

// Two engineers, a biologist and a zoologist wrote a computer *script* that downloaded the lyrics, band names and genre categories from all songs on the website www.metalkingdom.net.

— Fedor Zarkhin

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How to write a script?

Scripting Language

Bash / Shell

```
# example_bash_script.sh

#!/bin/bash
while true; do
   git status
   read -p "Do you wish to create $1? [y/n] " yn
   case $yn in
       [Yy]* ) break;;
       [Nn]* ) exit 1;;
       * ) echo "Please answer yes or no.";;
   esac
done
# echo "created $1"
git branch $1
git checkout $1
git push --set-upstream origin $1
```

But we already know a scripting language!

But we already know a scripting language!

Python (programming language)

From Wikipedia, the free encyclopedia

But we already know a scripting language!

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Python is a high-level, general-purpose programming language.

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Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small- and large-scale projects.[30]

Python Example

https://github.com/pandas-dev/pandas/blob/9a678df32112fdac7fa082954dd4b44f82d9301c/pandas/core/internals/managers.py#L62

```
class BlockManager(DataManager):

    def __setstate__(self, state):
        def unpickle_block(values, mgr_locs, ndim: int):
            # TODO(EA2D): ndim would be unnecessary with 2D EAs
            return make_block(values, placement=mgr_locs, ndim=ndim)

        if isinstance(state, tuple) and len(state) >= 4 and "0.14.1" in
state[3]:
            state = state[3]["0.14.1"]
            self.axes = [ensure_index(ax) for ax in state["axes"]]
            ndim = len(self.axes)
            self.blocks = tuple(
                unpickle_block(b["values"], b["mgr_locs"], ndim=ndim)
                for b in state["blocks"]
            )
        else:
            raise NotImplementedError("pre-0.14.1 pickles are no longer
supported")

        self._post_setstate()

    def _post_setstate(self) -> None:
        ...
```

Python Example

https://github.com/pandas-dev/pandas/blob/9a678df32112fdac7fa082954dd4b44f82d9301c/pandas/core/internals/managers.py#L62

```
class BlockManager(DataManager):

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            return make_block(values, placement=mgr_locs, ndim=ndim)

        if isinstance(state, tuple) and len(state) >= 4 and "0.14.1" in
state[3]:
            state = state[3]["0.14.1"]
            self.axes = [ensure_index(ax) for ax in state["axes"]]
            ndim = len(self.axes)
            self.blocks = tuple(
                unpickle_block(b["values"], b["mgr_locs"], ndim=ndim)
                for b in state["blocks"]
            )
        else:
            raise NotImplementedError("pre-0.14.1 pickles are no longer
supported")

        self._post_setstate()

    def _post_setstate(self) -> None:
        ...
```

But we already know a scripting language!

Python (programming language)

From Wikipedia, the free encyclopedia

Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small- and large-scale projects.[30]

Small Scale Example

```
# simple_script.py
print(5 + 10)
```

Small Scale

```
# simple_script.py
print(5 + 10)

# command line
python simple_script.py
15
```

Going Further

Simple Script

```
# simple_script.py
print(5 + 10)

# command line
python simple_script.py
15
```

Simple Script

```
# simple_script_1.py
user_number = input("What number? ")
print(user_number + 10)
```

Simple Script

```
# simple_script_1.py
user_number = input("What number? ")
print(user_number + 10)

# command line
$ python simple_script_1.py
What number? 10
Traceback (most recent call last):
  File "apps/simple_script/simple_script_1.py", line 2, in <module>
    print(user_number + 10)
TypeError: can only concatenate str (not "int") to str
```

Simple Script

```
# simple_script_2.py
user_number = input("What number? ")
print(int(user_number) + 10)

# command line
$ python simple_script_1.py
What number? 10
20
```

Simple Script

```
# simple_script_3.py
import sys
print(int(sys.argv[1]) + 10)
```

Simple Script

```
# simple_script_3.py
import sys
print(int(sys.argv[1]) + 10)

# command line
$ python simple_script_3.py 10
20
```

Simple Script

```
# simple_script_3.py
import sys

print(sys.argv)  # for inspection
print(int(sys.argv[1]) + 10)

# command line
$ python simple_script_3.py 10
['simple_script_3.py', '10']
20
```

Conclusion

1. scripts
2. input
3. sys.argv

```
# simple_script_3.py
import sys

print(sys.argv)  # for inspection
print(int(sys.argv[1]) + 10)

# command line
$ python simple_script_3.py 10
['simple_script_3.py', '10']
20
```

Time Logging (JLog): Demo

JLog (Demo)

```
# command line
$ python jlog.py
log: newday
note? yesterday I had coco curry for dinner

Yesterday, worked on tasks A B C
Today, will continue those tasks
Next meeting: tech talk 14:00
Next meeting:
[ ] will continue those tasks # 18:05
log: currently working on task A
18:08 - currently working on task A
log: q
$
```

JLog (Demo)

```
# jlog_output.txt
---04/20/2022 (Wednesday)--- yesterday I had coco curry for dinner
in 18:05
Yesterday, worked on tasks A B C
Today, will continue those tasks
> tech talk 14:00
--- 04/20/2022 (Wednesday) tech talk 14:00 ---



<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

TODO:
[ ] will continue those tasks # 18:05


18:05 - finished checkin
18:08 - currently working on task A
```

JLog Origins

```
# my_daily_log.txt
---04/20/2022 (Wednesday)---
18:05 - finished checkin
18:08 - currently working on task A
```

JLog Goals

- Input loops
- Datetime module
- Writing to a file

```
# my_daily_log.txt
---04/20/2022 (Wednesday)---
18:05 - finished checkin
18:08 - currently working on task A
```

JLog

```python
# jlog_0.py
OUTPATH = "output/my_logs_0.txt"

while True:
    user_input = input("log: ")
    with open(OUTPATH, mode="a") as f:
        print(user_input, file=f)
    print(user_input)
```

JLog

```python
# jlog_0.py
OUTPATH = "output/my_logs_0.txt"

while True:
    user_input = input("log: ")
    with open(OUTPATH, mode="a") as f:
        print(user_input, file=f)
    print(user_input)
```

JLog

https://docs.python.org/3/library/functions.html#open

open(*file*, *mode='r'*, *buffering=- 1*, *encoding=None*, *errors=None*, *newline=None*, *closefd=True*, *opener=None*)

Open *file* and return a corresponding file object. If the file cannot be opened, an `OSError` is raised. See Reading and Writing Files for more examples of how to use this function.

file is a path-like object giving the pathname (absolute or relative to the current working directory) of the file to be opened or an integer file descriptor of the file to be wrapped. (If a file descriptor is given, it is closed when the returned I/O object is closed unless *closefd* is set to `False`.)

mode is an optional string that specifies the mode in which the file is opened. It defaults to `'r'` which means open for reading in text mode. Other common values are `'w'` for writing (truncating the file if it already exists), `'x'` for exclusive creation, and `'a'` for appending (which on *some* Unix systems, means that *all* writes append to the end of the file regardless of the current seek position). In text mode, if *encoding* is not specified the encoding used is platform-dependent: `locale.getpreferredencoding(False)` is called to get the current locale encoding. (For reading and writing raw bytes use binary mode and leave *encoding* unspecified.) The available modes are:

Character	Meaning
`'r'`	open for reading (default)
`'w'`	open for writing, truncating the file first
`'x'`	open for exclusive creation, failing if the file already exists
`'a'`	open for writing, appending to the end of file if it exists
`'b'`	binary mode
`'t'`	text mode (default)
`'+'`	open for updating (reading and writing)

JLog

https://docs.python.org/3/library/functions.html#open

```
open(file, mode='r',
```

Character	Meaning
`'r'`	open for reading (default)
`'a'`	open for writing, appending to the end of file if it exists

JLog

```python
# jlog_0.py
OUTPATH = "output/my_logs_0.txt"

while True:
    user_input = input("log: ")
    with open(OUTPATH, mode="a") as f:
        print(user_input, file=f)
    print(user_input)
```

JLog

```
# jlog_0.py
OUTPATH = "output/my_logs_0.txt"

while True:
    user_input = input("log: ")
    with open(OUTPATH, mode="a") as f:
        print(user_input, file=f)
    print(user_input)

# command line
$ python apps/jlog/jlog_0.py
log: test 1
test 1
log: test 2
test 2
```

JLog

```
# jlog_0.py
OUTPATH = "output/my_logs_0.txt"

while True:
    user_input = input("log: ")
    with open(OUTPATH, mode="a") as f:
        print(user_input, file=f)
    print(user_input)

# command line
$ python apps/jlog/jlog_0.py
log: test 1
test 1
log: test 2
test 2

$ cat output/my_logs_0.txt
test 1
test 2
```

JLog

```python
# jlog_0.py
from datetime import datetime

OUTPATH = "output/my_logs_1.txt"

def main():
    while True:
        user_input = input("log: ")
        log = f"{datetime.now()} - {user_input}"
        with open(OUTPATH, mode="a") as f:
            f.write(f"{log}\n")
        print(log)


if __name__ == "__main__":
    main()
```

JLog

Python » English 3.10.4 3.10.4 Documentation » The Python Standard Library » Data Types » **datetime** — Basic date and time types

Table of Contents

- **datetime** — Basic date and time types
  - Aware and Naive Objects
  - Constants

datetime — Basic date and time types

Source code: Lib/datetime.py

classmethod datetime.**now**(*tz=None*)

Return the current local date and time.

If optional argument *tz* is None or not specified, this is like today(), but, if possible, supplies more precision than can be gotten from going through a time.time() timestamp (for example, this may be possible on platforms supplying the C gettimeofday() function).

If *tz* is not None, it must be an instance of a tzinfo subclass, and the current date and time are converted to *tz*'s time zone.

This function is preferred over today() and utcnow().

JLog

```python
# jlog_0.py
...
def main():
    while True:
        user_input = input("log: ")
        log = f"{datetime.now()} - {user_input}"
        with open(OUTPATH, mode="a") as f:
            f.write(f"{log}\n")
        print(log)
...
```

JLog

```
# jlog_0.py
...
def main():
    while True:
        user_input = input("log: ")
        log = f"{datetime.now()} - {user_input}"
        with open(OUTPATH, mode="a") as f:
            f.write(f"{log}\n")
        print(log)
...

# command line
$ python jlog_1.py
log: finish presentation
2022-04-20 18:47:56.725245 - finish presentation
log: play with my cats
2022-04-20 18:48:00.552193 - play with my cats
```

JLog

```
# jlog_0.py
...
def main():
    while True:
        user_input = input("log: ")
        log = f"{datetime.now()} - {user_input}"
        with open(OUTPATH, mode="a") as f:
            f.write(f"{log}\n")
        print(log)
...

# command line
$ python jlog_1.py
log: finish presentation
2022-04-20 18:47:56.725245 - finish presentation
log: play with my cats
2022-04-20 18:48:00.552193 - play with my cats

$ cat output/my_logs_1.txt
2022-04-20 18:47:56.725245 - finish presentation
2022-04-20 18:48:00.552193 - play with my cats
```

Conclusion

- Input loops
- Datetime module
- Writing to a file

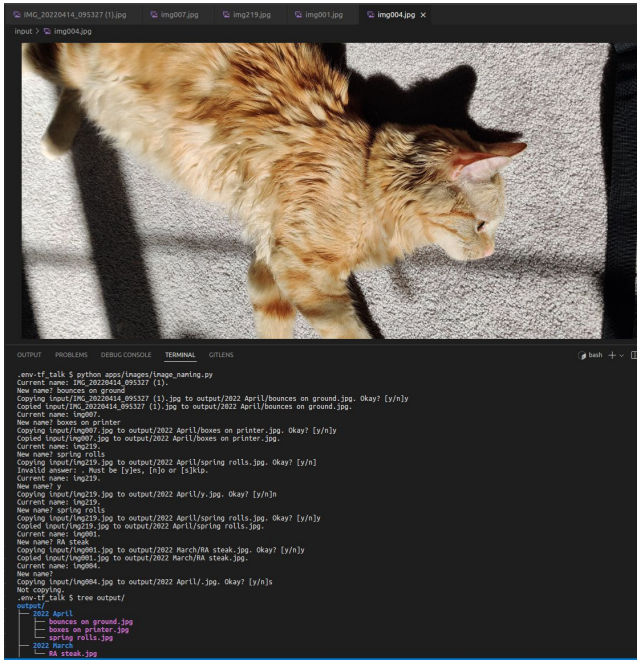
```
# jlog_0.py
...
def main():
    while True:
        user_input = input("log: ")
        log = f"{datetime.now()} - {user_input}"
        with open(OUTPATH, mode="a") as f:
            f.write(f"{log}\n")
        print(log)
...

# command line
$ python jlog_1.py
log: finish presentation
2022-04-20 18:47:56.725245 - finish presentation
log: play with my cats
2022-04-20 18:48:00.552193 - play with my cats

$ cat output/my_logs_1.txt
2022-04-20 18:47:56.725245 - finish presentation
2022-04-20 18:48:00.552193 - play with my cats
```

Image Sorting: Demo

Images (Demo)

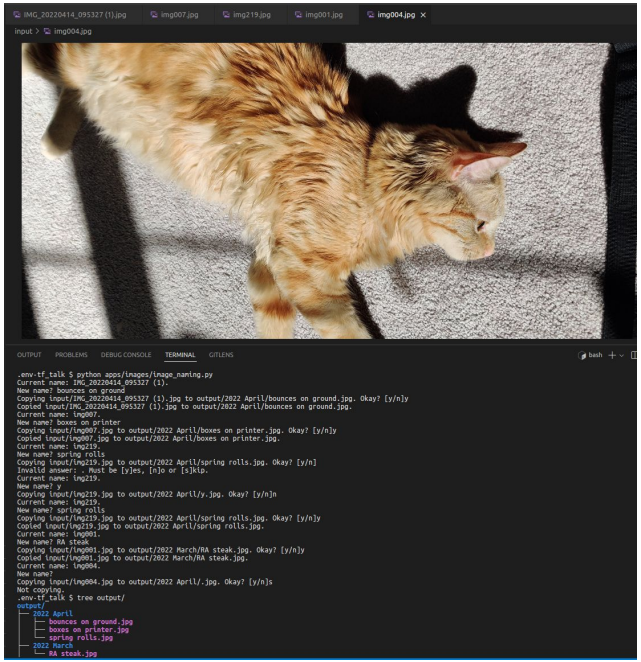
```
# jlog_0.py
$ tree input/
input/
├── Cryptocurrencies The Power of Memes | Research Affiliates.html
├── ESG Is a Preference, Not a Strategy | Research Affiliates.html
├── example_log.txt
├── img001.jpg
├── img004.jpg
├── img007.jpg
├── IMG_20220414_095327 (1).jpg
├── img219.jpg
├── presentation.md
└── ra_cryptocurrencies.txt
```

Images (Demo)




```
.env-tf_talk $ python apps/images/image_naming.py
Current name: IMG_20220414_095327 (1).
New name? bounces on ground
Copying input/IMG_20220414_095327 (1).jpg to output/2022 April/bounces on
ground.jpg. Okay? [y/n]y
Copied input/IMG_20220414_095327 (1).jpg to output/2022 April/bounces on
ground.jpg.
Current name: img007.
New name? boxes on printer
Copying input/img007.jpg to output/2022 April/boxes on printer.jpg. Okay? [y/n]y
Copied input/img007.jpg to output/2022 April/boxes on printer.jpg.
Current name: img219.
New name? spring rolls
Copying input/img219.jpg to output/2022 April/spring rolls.jpg. Okay? [y/n]
Invalid answer: . Must be [y]es, [n]o or [s]kip.
Current name: img219.
New name? y
Copying input/img219.jpg to output/2022 April/y.jpg. Okay? [y/n]n
Current name: img219.
New name? spring rolls
Copying input/img219.jpg to output/2022 April/spring rolls.jpg. Okay? [y/n]y
Copied input/img219.jpg to output/2022 April/spring rolls.jpg.
Current name: img001.
New name? RA steak
Copying input/img001.jpg to output/2022 March/RA steak.jpg. Okay? [y/n]y
Copied input/img001.jpg to output/2022 March/RA steak.jpg.
Current name: img004.
New name?
Copying input/img004.jpg to output/2022 April/.jpg. Okay? [y/n]s
Not copying.
```

Images (Demo)




```
.env-tf_talk $ tree output/
output/
├── 2022 April
│   ├── bounces on ground.jpg
│   ├── boxes on printer.jpg
│   └── spring rolls.jpg
├── 2022 March
│   └── RA steak.jpg
```

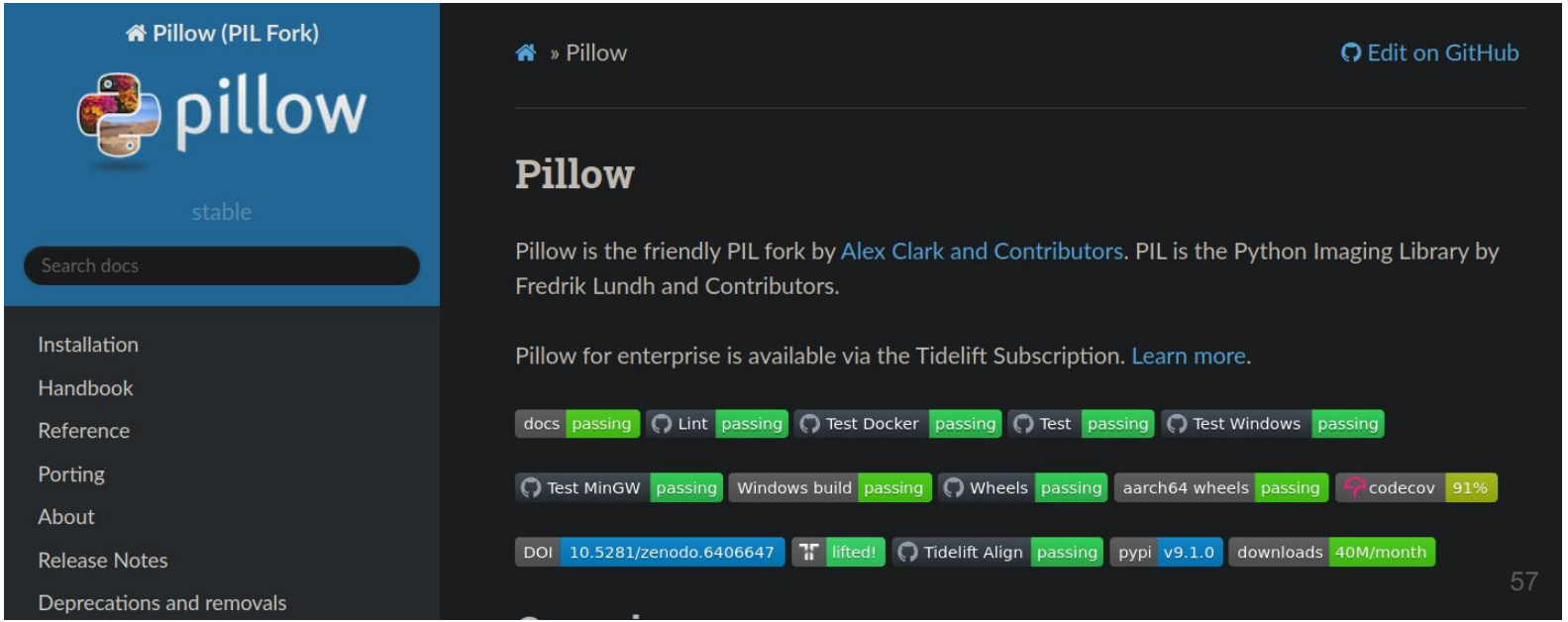
Images Goals

- pathlib.Path
- PIL.Image
- datetime.strptime

```
.env-tf_talk $ tree output/
output/
├── 2022 April
│   ├── bounces on ground.jpg
│   ├── boxes on printer.jpg
│   └── spring rolls.jpg
├── 2022 March
│   └── RA steak.jpg
```

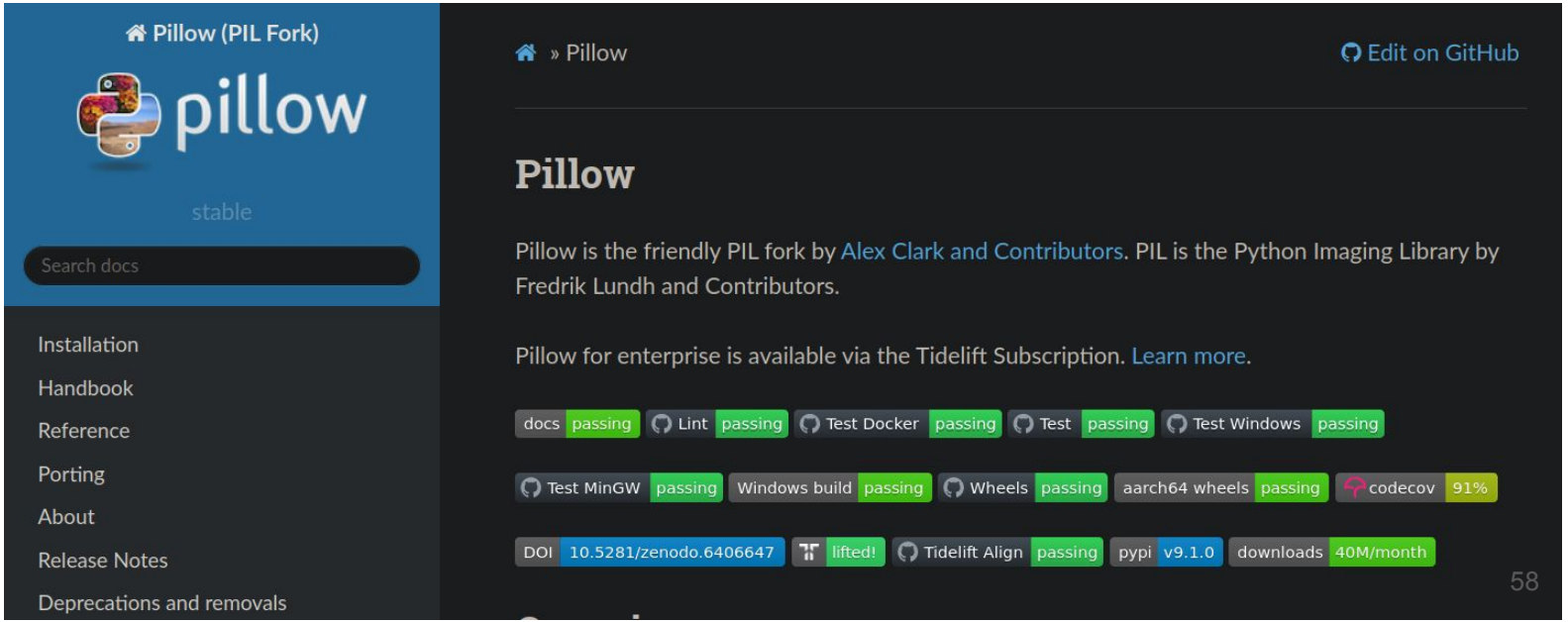
PIL(low)

https://pillow.readthedocs.io/en/stable/index.html



PIL(low)

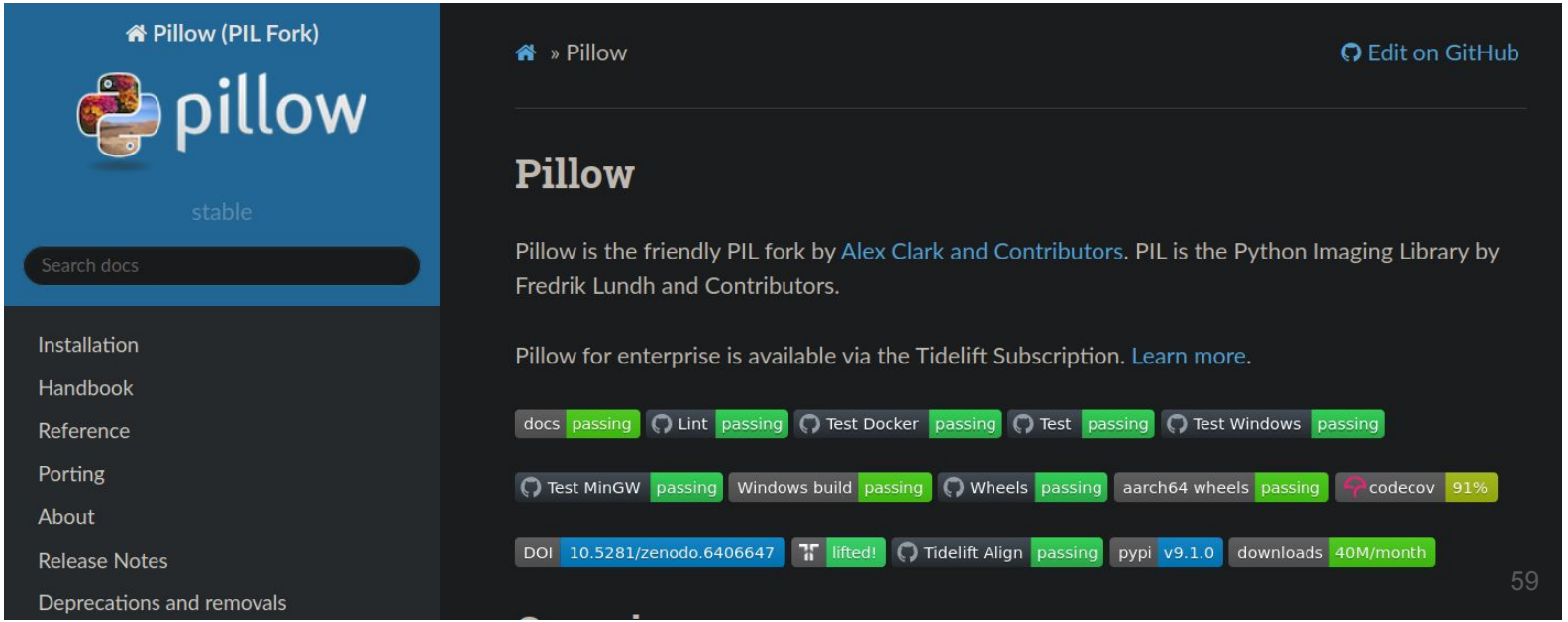
https://pillow.readthedocs.io/en/stable/index.html



PIL(low)

https://pillow.readthedocs.io/en/stable/index.html

Do not install arbitrary packages on your RA platform



PIL(low)

https://pillow.readthedocs.io/en/stable/index.html

Do not install arbitrary packages on your RA platform

```
(.env38) $ python -m venv ~/.env-simple_scripting_tf_talk
(.env38) $ . ~/.env-simple_scripting_tf_talk/bin/activate
(.env-simple_scripting_tf_talk) $ pip freeze
(.env-simple_scripting_tf_talk) $ pip install Pillow
Collecting Pillow
 Using cached
Pillow-9.1.0-cp38-cp38-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (4.3 MB)
Installing collected packages: Pillow
Successfully installed Pillow-9.1.0
WARNING: You are using pip version 21.1.1; however, version 22.0.4 is available.
You should consider upgrading via the
'/home/mccloskey/.env-simple_scripting_tf_talk/bin/python -m pip install
--upgrade pip' command.
(.env-simple_scripting_tf_talk) $ pip freeze
Pillow==9.1.0
```

PIL(low)

https://pillow.readthedocs.io/en/stable/handbook/tutorial.html

Tutorial

Using the Image class

The most important class in the Python Imaging Library is the `Image` class, defined in the module with the same name. You can create instances of this class in several ways; either by loading images from files, processing other images, or creating images from scratch.

To load an image from a file, use the `open()` function in the `Image` module:

```
>>> from PIL import Image
>>> im = Image.open("hopper.ppm")
```

If successful, this function returns an `Image` object. You can now use instance attributes to examine the file contents:

```
>>> print(im.format, im.size, im.mode)
PPM (512, 512) RGB
```

The `format` attribute identifies the source of an image. If the image was not read from a file, it is set to None. The size attribute is a 2-tuple containing width and height (in pixels). The `mode` attribute defines the number and names of the bands in the image, and also the pixel type and depth. Common modes are “L” (luminance) for greyscale images, “RGB” for true color images, and “CMYK” for pre-press images.

If the file cannot be opened, an `OSError` exception is raised.

Once you have an instance of the `Image` class, you can use the methods defined by this class to process and manipulate the image. For example, let’s display the image we just loaded:

```
>>> im.show()
```

PIL(low)

https://pillow.readthedocs.io/en/stable/handbook/tutorial.html

Tutorial

Using the Image class

To load an image from a file, use the `open()` function in the `Image` module:

```
>>> from PIL import Image
>>> im = Image.open("hopper.ppm")
```

Once you have an instance of the `Image` class, you can use the methods defined by this class to process and manipulate the image. For example, let's display the image we just loaded:

```
>>> im.show()
```

Images

```python
# images.py
from pathlib import Path
import shutil
from PIL import Image

input_path = Path("input")
output_path = Path("output")
output_path.mkdir(exist_ok=True)

for path in input_path.iterdir():
    if path.suffix != ".jpg":
        continue

    Image.open(path).show()

    new_name = input(f"Current name: {path.stem}.\nNew name? ")
    new_path = output_path / f"{new_name}{path.suffix}"

    shutil.copyfile(path, new_path)
    print(f"Copied {path} to {new_path}. ")
```

Images

```python
# images.py
from pathlib import Path
import shutil
from PIL import Image

input_path = Path("input")
output_path = Path("output")
output_path.mkdir(exist_ok=True)

for path in input_path.iterdir():
    if path.suffix != ".jpg":
        continue

    Image.open(path).show()

    new_name = input(f"Current name: {path.stem}.\nNew name? ")
    new_path = output_path / f"{new_name}{path.suffix}"

    shutil.copyfile(path, new_path)
    print(f"Copied {path} to {new_path}. ")
```

pathlib

https://docs.python.org/3/library/pathlib.html

Python » English 3.10.4 3.10.4 Documentation » The Python Standard Library » File and Directory Access » **pathlib** — Object-oriented filesystem paths

Table of Contents

pathlib — Object-oriented filesystem paths

New in version 3.4.

Source code: Lib/pathlib.py

Path.**iterdir**()

When the path points to a directory, yield path objects of the directory contents:

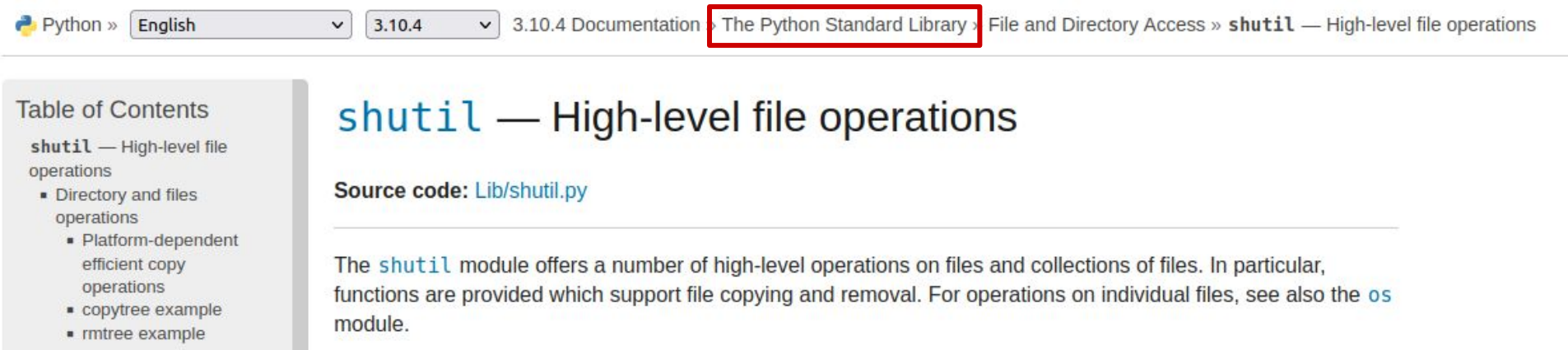
```
>>> p = Path('docs')
>>> for child in p.iterdir(): child
...
PosixPath('docs/conf.py')
PosixPath('docs/_templates')
PosixPath('docs/make.bat')
PosixPath('docs/index.rst')
PosixPath('docs/_build')
PosixPath('docs/_static')
PosixPath('docs/Makefile')
```

Images

```python
# images.py
from pathlib import Path
import shutil
from PIL import Image

input_path = Path("input")
output_path = Path("output")
output_path.mkdir(exist_ok=True)

for path in input_path.iterdir():
    if path.suffix != ".jpg":
        continue

    Image.open(path).show()

    new_name = input(f"Current name: {path.stem}.\nNew name? ")
    new_path = output_path / f"{new_name}{path.suffix}"

    shutil.copyfile(path, new_path)
    print(f"Copied {path} to {new_path}. ")
```

shutil

https://docs.python.org/3/library/pathlib.html



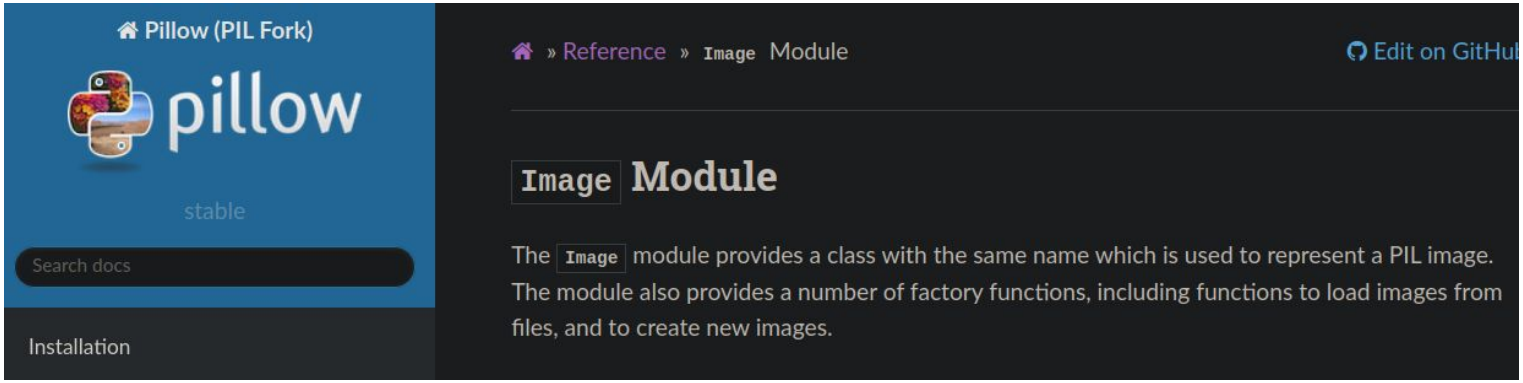
Images

```python
# images.py
from pathlib import Path
import shutil
from PIL import Image

input_path = Path("input")
output_path = Path("output")
output_path.mkdir(exist_ok=True)

for path in input_path.iterdir():
    if path.suffix != ".jpg":
        continue

    Image.open(path).show()

    new_name = input(f"Current name: {path.stem}.\nNew name? ")
    new_path = output_path / f"{new_name}{path.suffix}"

    shutil.copyfile(path, new_path)
    print(f"Copied {path} to {new_path}. ")
```

Images

```
# images.py
...
    image.show()
    while True:
        new_name = input(f"Current name: {path.stem}.\nNew name? ")
        new_path = output_path / f"{new_name}{path.suffix}"

        msg = f"Copying {path} to {new_path}. "
        if new_path.exists():
            msg += f"WARNING: {new_path} already exists. "
        answer = input(msg + "Okay? [y/n]").lower()
        if answer in {"y", "yes"}:
            shutil.copyfile(path, new_path)
            print(f"Copied {path} to {new_path}. ")
            break
        elif answer in {"n", "no"}:
            pass
        elif answer in {"s", "skip"}:
            print("Not copying.")
            break
        else:
            print(f"Invalid answer: {answer}. Must be [y]es, [n]o or
[s]kip.")
```

Images



https://pillow.readthedocs.io/en/stable/reference/Image.html

Images

```
>>> Image.open(path).getexif()
# {296: 2, 282: 72.0, 256: 4000, 257: 1824, 34853: 788, 34665: 240,
271: 'OnePlus', 272: 'GM1917', 305: 'Picasa', 274: 1, 306: '2022:04:14
09:53:28', 530: (2, 2), 531: 1, 283: 72.0}
```

Images

```
>>> Image.open(path).getexif()
# {296: 2, 282: 72.0, 256: 4000, 257: 1824, 34853: 788, 34665: 240,
271: 'OnePlus', 272: 'GM1917', 305: 'Picasa', 274: 1, 306: '2022:04:14
09:53:28', 530: (2, 2), 531: 1, 283: 72.0}


# we want (year, month), like 2022 April
def extract_month(image: Image.Image) -> str | None:
    metadata = image.getexif()
    if 306 not in metadata:
        return None
    timestamp_text = metadata[306]
    try:
        timestamp = datetime.strptime(timestamp_text, "%Y:%m:%d
%H:%M:%S")
    except ValueError:
        return None

    return timestamp.strftime("%Y %B")
```

strftime / strptime

https://docs.python.org/3/library/datetime.html#strftime-strptime-behavior

`strftime()` and `strptime()` Behavior

`date`, `datetime`, and `time` objects all support a `strftime(format)` method, to create a string representing the time under the control of an explicit format string.

Conversely, the `datetime.strptime()` class method creates a `datetime` object from a string representing a date and time and a corresponding format string.

The table below provides a high-level comparison of `strftime()` versus `strptime()`:

	strftime	**strptime**
Usage	Convert object to a string according to a given format	Parse a string into a `datetime` object given a corresponding format
Type of method	Instance method	Class method
Method of	`date`; `datetime`; `time`	`datetime`
Signature	`strftime(format)`	`strptime(date_string, format)`

strftime / strptime

https://docs.python.org/3/library/datetime.html#strftime-strptime-behavior

`strftime()` and `strptime()` Behavior

The table below provides a high-level comparison of `strftime()` versus `strptime()`:

	`strftime`	**`strptime`**
Usage	Convert object to a string according to a given format	Parse a string into a `datetime` object given a corresponding format
Signature	`strftime(format)`	`strptime(date_string, format)`

strftime / strptime

https://docs.python.org/3/library/datetime.html#strftime-and-strptime-format-codes

`strftime()` and `strptime()` Format Codes

The following is a list of all the format codes that the 1989 C standard requires, and these work on all platforms with a standard C implementation.

Directive	Meaning	Example	Notes
`%a`	Weekday as locale's abbreviated name.	Sun, Mon, …, Sat (en_US); So, Mo, …, Sa (de_DE)	(1)
`%A`	Weekday as locale's full name.	Sunday, Monday, …, Saturday (en_US); Sonntag, Montag, …, Samstag (de_DE)	(1)
`%w`	Weekday as a decimal number, where 0 is Sunday and 6 is Saturday.	0, 1, …, 6	
`%d`	Day of the month as a zero-padded decimal number.	01, 02, …, 31	(9)
`%b`	Month as locale's abbreviated name.	Jan, Feb, …, Dec (en_US); Jan, Feb, …, Dez (de_DE)	(1)
`%B`	Month as locale's full name.	January, February, …, December (en_US); Januar, Februar, …, Dezember (de_DE)	(1)
`%m`	Month as a zero-padded decimal number.	01, 02, …, 12	(9)
`%y`	Year without century as a zero-padded decimal number.	00, 01, …, 99	(9)
`%Y`	Year with century as a decimal number.	0001, 0002, …, 2013, 2014, …, 9998, 9999	(2)
`%H`	Hour (24-hour clock) as a zero-padded decimal number.	00, 01, …, 23	(9)
`%I`	Hour (12-hour clock) as a zero-padded decimal number.	01, 02, …, 12	(9)
`%p`	Locale's equivalent of either AM or PM.	AM, PM (en_US); am, pm (de_DE)	(1), (3)
`%M`	Minute as a zero-padded decimal number.	00, 01, …, 59	(9)
`%S`	Second as a zero-padded decimal number.	00, 01, …, 59	(4), (9)
`%f`	Microsecond as a decimal number, zero-padded to 6 digits.	000000, 000001, …, 999999	(5)
`%z`	UTC offset in the form `±HHMM[SS[.ffffff]]` (empty string if the	(empty), +0000, -0400, +1030, +063415, -030712.345216	(6)

`strftime()` and `strptime()` Format Codes

The following is a list of all the format codes that the 1989 C standard requires, and these work on all platforms with a standard C implementation.

Directive	Meaning	Example	Notes
`%a`	Weekday as locale's abbreviated name.	Sun, Mon, ..., Sat (en_US); So, Mo, ..., Sa (de_DE)	(1)
`%A`	Weekday as locale's full name.	Sunday, Monday, ..., Saturday (en_US); Sonntag, Montag, ..., Samstag (de_DE)	(1)
`%w`	Weekday as a decimal number, where 0 is Sunday and 6 is Saturday.	0, 1, ..., 6	
`%d`	Day of the month as a zero-padded decimal number.	01, 02, ..., 31	(9)
`%b`	Month as locale's abbreviated name.	Jan, Feb, ..., Dec (en_US); Jan, Feb, ..., Dez (de_DE)	(1)
`%B`	Month as locale's full name.	January, February, ..., December (en_US); Januar, Februar, ..., Dezember (de_DE)	(1)
`%m`	Month as a zero-padded decimal number.	01, 02, ..., 12	(9)
`%y`	Year without century as a zero-padded decimal number.	00, 01, ..., 99	(9)
`%Y`	Year with century as a decimal number.	0001, 0002, ..., 2013, 2014, ..., 9998, 9999	(2)
`%H`	Hour (24-hour clock) as a zero-padded decimal number.	00, 01, ..., 23	(9)
`%I`	Hour (12-hour clock) as a zero-padded decimal number.	01, 02, ..., 12	(9)
`%p`	Locale's equivalent of either AM or PM.	AM, PM (en_US); am, pm (de_DE)	(1), (3)
`%M`	Minute as a zero-padded decimal number.	00, 01, ..., 59	(9)
`%S`	Second as a zero-padded decimal number.	00, 01, ..., 59	(4), (9)
`%f`	Microsecond as a decimal number, zero-padded to 6 digits.	000000, 000001, ..., 999999	(5)
`%z`	UTC offset in the form `±HHMM[SS[.ffffff]]` (empty string if the	(empty), +0000, -0400, +1030, +063415, -030712.345216	(6)

```
>>> Image.open(path).getexif()
# {296: 2, 282: 72.0, 256: 4000, 257: 1824, 34853: 788,
34665: 240, 271: 'OnePlus', 272: 'GM1917', 305:
'Picasa', 274: 1, 306: '2022:04:14 09:53:28', 530: (2,
2), 531: 1, 283: 72.0}

# we want (year, month), like 2022 April
def extract_month(image: Image.Image) -> str | None:
    metadata = image.getexif()
    if 306 not in metadata:
        return None
    timestamp_text = metadata[306]
    try:
        timestamp = datetime.strptime(timestamp_text,
"%Y:%m:%d %H:%M:%S")
    except ValueError:
        return None

    return timestamp.strftime("%Y %B")
```

Images

```python
# images.py
...
for path in input_path.iterdir():
    if path.suffix != ".jpg":
        continue
    image = Image.open(path)
    subprocess.run(["code", path])  # for WSL, open in vscode server
    # image.show() # for Windows/Linux/Mac

    month = extract_month(image)
    month_path = output_path if month is None else output_path / month
    month_path.mkdir(parents=True, exist_ok=True)
    while True:
        new_name = input(f"Current name: {path.stem}.\nNew name? ")
        new_path = month_path / f"{new_name}{path.suffix}"
...
```

Conclusion

- pathlib.Path
- PIL.Image
- datetime.strptime

```
# images.py
...
for path in input_path.iterdir():
    if path.suffix != ".jpg":
        continue
    image = Image.open(path)
    subprocess.run(["code", path])  # for WSL, open in vscode server
    # image.show() # for Windows/Linux/Mac

    month = extract_month(image)
    month_path = output_path if month is None else output_path / month
    month_path.mkdir(parents=True, exist_ok=True)
    while True:
        new_name = input(f"Current name: {path.stem}.\nNew name? ")
        new_path = month_path / f"{new_name}{path.suffix}"
...
```

APIs (Jisho)

Other APIs

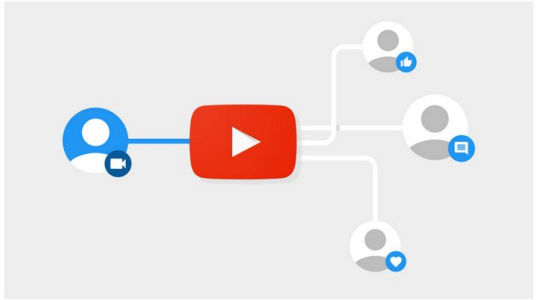
YouTube > Data API

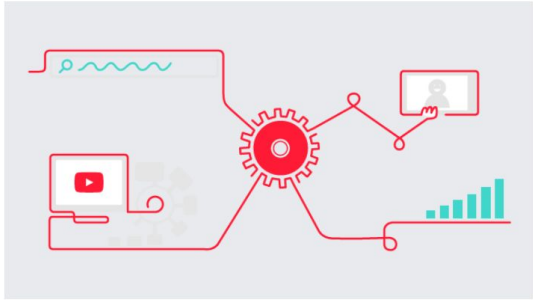
Search Language

Add YouTube features to your application, including the ability to upload videos, create and manage playlists, and more.

Home Guides Reference Samples Support

Add YouTube functionality to your app





Add YouTube functionality to your site

With the YouTube Data API, you can add a variety of YouTube features to your application. Use the API to upload videos, manage playlists and subscriptions, update channel settings, and more.

Get started Implementation guide

Search for content

Use the API to search for videos matching specific search terms, topics, locations, publication dates, and much more. The APIs `search.list` method also supports searches for playlists and channels.

Search for content

Other Resources

Tools

The APIs Explorer lets you test unauthorized and authorized requests. The Quota Calculator shows how different requests impact your quota usage.

Code Samples

Use our code samples to jump-start your project. Samples are available for Apps Script, Go, Java, JavaScript, .NET, PHP, Python, and Ruby.

Other APIs

Walk Score® Professional

Go to WalkScore.com

Products | Why Walk Score? | Customers | Real Estate Professionals | Contact Us

Walk Score APIs Overview

Next Steps

- Start free API trial
- Features & pricing
- Get more information

API Resources

- APIs Overview
- Branding Requirements
- Walk Score API Docs
- Public Transit API Docs
- Travel Time API Docs

Walk Score APIs

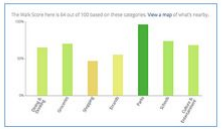
Software and website developers can use the Walk Score APIs to:

- Display the Walk Score or Transit Score of a location
- Enable search by Walk Score on your site
- Show public transit on a map
- Visualize travel time on a map
- Provide neighborhood insight
- Use for websites, mobile sites and mobile applications

Score API

Get the Walk Score, Transit Score or Bike Score for any location.
View Documentation.

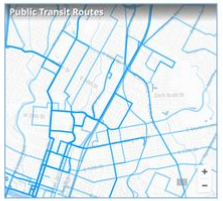
Score details report:



Sign up

Public Transit API

Get nearby public transit route and stop data.
View Documentation.



Bus lines:

17 Cesar Chavez	0.1 mi
171 Oak Hill Flyer	0.1 mi
127 Dove Springs Flyer	0.1 mi
111 South Mopac Flyer	0.1 mi
935 Tech Ridge Express	0.1 mi

Sign up

Travel Time API and Widget

Calculate travel time between locations and show travel time on your map.
View Documentation.

Sign up

Other APIs

Twitter API Playground

Sign up for the Twitter API

POST /2/tweets

Run

Creation of a Tweet

Go to docs

Looks like you don't have an access token. Don't worry, clicking **Run** will open the OAuth authorization window so you can get one.

Request body

The JSON payload for the request.

```
{"text":"👋"}
```

Run

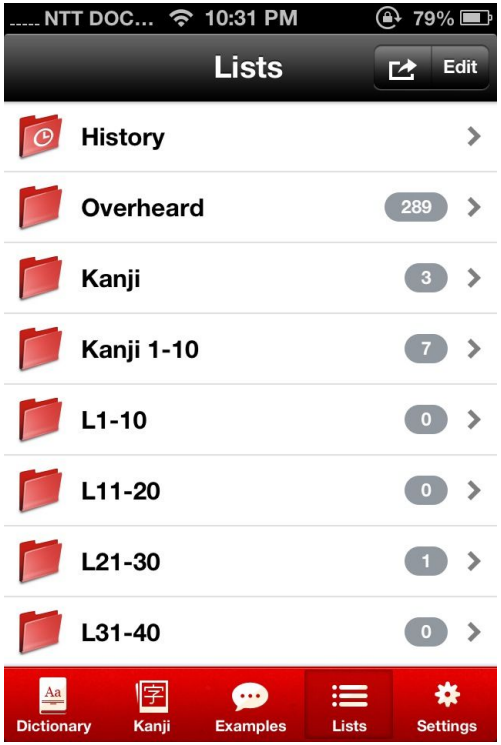
Jisho Origins: imiwa

https://is2-ssl.mzstatic.com/image/thumb/PurpleSource114/v4/a2/b0/31/a2b03127-f76a-fda6-8cbe-2dc4010b3ae3/ac3b9f29-8667-440e-b438-afa6fe2137cb_iPhone_8_Plus-00-Dictionary_search.png/392x696bb.png

Jisho Origins: imiwa

https://www.davidbcalhoun.com/wp-content/uploads/2013/02/imiwa-ios-list.jpg

https://www.davidbcalhoun.com/wp-content/uploads/2013/02/imiwa-ios-list-export.jpg



Jisho

https://jisho.org/

jisho

Forum About Theme Log in / Sign up

Draw 部 Radicals

All ▾ English, Japanese, Romaji, words or text

Jisho is a powerful Japanese-English dictionary. It lets you find words, kanji, example sentences and more quickly and easily.

Enter any Japanese text or English word in the search box and Jisho will search a myriad of data for you.

Here's a few example searches to give you a taste of what Jisho can do.

- Great English search: house
- Text reading assistance: 昨日すき焼きを食べました
- Inflection information: 走った
- Multi word search: 日 sunlight
- JLPT N3 adjectives: #jlpt-n3 #adjective
- Grade 1 jōyō kanji: #grade:1 #kanji
- Common words that end with 家: #word #common ?*家
- Convert Japanese years: 昭和５２
- Convert Japanese numbers: ４７７８万

There are more examples and explanations on the search options page.

Jisho

https://jisho.org/search/jisho

jisho

Draw 部 Radicals

All ▾ jisho

Searched for じしょ. You can also try a search for "jisho".

Words — 45 found

辞書 (じしょ)

common word

jlpt n5

wanikani level 16

Play audio

Show 1 collocation

Links

Noun

1. dictionary; lexicon

正確(せいかく)なつづりは辞書(じしょ)で調(しら)べなさい。

I refer you to the dictionary for the correct spelling.

Noun

2. letter of resignation Archaism, See also 辞表

Details ▸

地所 (じしょ)

Links

Noun

1. estate; plot of land

Other forms

地所 【ちしょ】

Details ▸

字書 (じしょ)

Links

Noun

1. dictionary of Chinese characters; kanji dictionary

Noun

Jisho: Demo

Jisho (Demo)


```
.env-tf_talk $ python sketch/jisho_og.py
Welcome to John's Jisho. Type .h for help.
Loaded Favorites from output/jisho/lists.json.
[Favorites]> .h
John's Jisho.
Current list: Favorites
Current json: output/jisho/lists.json
Type in a keyword or a special argument. Arguments
Q: quit
.H: helpstring
.CL <list>: change list to <list>
.NL <list>: create new list <list>
.SL: show current list
.EL: export list
M: more definitions
letter+number combo: save word-sense pair to list.
[Favorites]> jisho
...
```

Jisho (Demo)


```
[Favorites]> jisho

jisho
Showing entries 1-5/10
A. 辞書 (じしょ)
(1) dictionary, lexicon; (2) letter of resignation

B. 地所 (じしょ); 地所 (ちしょ)
(1) estate, plot of land

C. 字書 (じしょ)
(1) dictionary of Chinese characters, kanji dictionary; (2)
dictionary; (3) Chinese dictionary

D. 自署 (じしょ)
(1) autograph, signature

E. 自書 (じしょ)
(1) one's own writing
Press m to show more

[Favorites]> a1
Saved to Favorites. 辞書:dictionary, lexicon.
[Favorites]> .sl
Favorites:
1. 辞書 じしょ dictionary.
```

Jisho: Goals

- JSON
- requests


```
[Favorites]> jisho

jisho
Showing entries 1-5/10
A. 辞書 (じしょ)
(1) dictionary, lexicon; (2) letter of resignation

B. 地所 (じしょ); 地所 (ちしょ)
(1) estate, plot of land

C. 字書 (じしょ)
(1) dictionary of Chinese characters, kanji dictionary; (2)
dictionary; (3) Chinese dictionary

D. 自署 (じしょ)
(1) autograph, signature

E. 自書 (じしょ)
(1) one's own writing
Press m to show more

[Favorites]> a1
Saved to Favorites. 辞書:dictionary, lexicon.
[Favorites]> .sl
Favorites:
1. 辞書 じしょ dictionary.
```

Jisho: API

https://jisho.org/api/v1/search/words?keyword=jisho

https://jisho.org/api/v1/sear

jisho.org/api/v1/search/words?keyword=jisho


```
{"meta":{"status":200},"data":[{"slug":"辞書","is_common":true,"tags":
["wanikani16"],"jlpt":["jlpt-n5"],"japanese":[{"word":"辞
書","reading":"じしょ"}],"senses":[{"english_definitions":
["dictionary","lexicon"],"parts_of_speech":["Noun"],"links":[],"tags":
[],"restrictions":[],"see_also":[],"antonyms":[],"source":[],"info":[]},
{"english_definitions":["letter of resignation"],"parts_of_speech":
["Noun"],"links":[],"tags":["Archaism"],"restrictions":[],"see_also":
["辞表"],"antonyms":[],"source":[],"info":[]}],"attribution":
{"jmdict":true,"jmnedict":false,"dbpedia":false}},{"slug":"地
所","is_common":false,"tags":[],"jlpt":[],"japanese":[{"word":"地
所","reading":"じしょ"},{"word":"地所","reading":"ちしょ"}],"senses":
[{"english_definitions":["estate","plot of land"],"parts_of_speech":
["Noun"],"links":[],"tags":[],"restrictions":[],"see_also":
[],"antonyms":[],"source":[],"info":[]}],"attribution":
{"jmdict":true,"jmnedict":false,"dbpedia":false}},{"slug":"字
書","is_common":false,"tags":[],"jlpt":[],"japanese":[{"word":"字
書","reading":"じしょ"}],"senses":[{"english_definitions":["dictionary of
Chinese characters","kanji dictionary"],"parts_of_speech":
["Noun"],"links":[],"tags":[],"restrictions":[],"see_also":
[],"antonyms":[],"source":[],"info":[]},{"english_definitions":
["dictionary"],"parts_of_speech":["Noun"],"links":[],"tags":
[],"restrictions":[],"see_also":["辞書"],"antonyms":[],"source":
[],"info":[]},{"english_definitions":["Chinese
dictionary"],"parts_of_speech":["Wikipedia definition"],"links":
[{"text":"Read “Chinese dictionary” on English
Wikipedia","url":"http://en.wikipedia.org/wiki/Chinese_dictionary?
```

Jisho: API

https://jisho.org/api/v1/search/words?keyword=jisho

https://jisho.org/api/v1/searc

jisho.org/api/v1/search/words?keyword=jis


```
{"meta":{"status":200},"data"
["wanikani16"],"jlpt":["jlpt-
書","reading":"じしょ"}],"sens
["dictionary","lexicon"],"par
[],"restrictions":[],"see_als
{"english_definitions":["lett
["Noun"],"links":[],"tags":["
["辞表"],"antonyms":[],"source
{"jmdict":true,"jmnedict":fal
所","is_common":false,"tags":
所","reading":"じしょ"},{"word
[{"english_definitions":["est
["Noun"],"links":[],"tags":[]
[],"antonyms":[],"source":[],
{"jmdict":true,"jmnedict":fal
書","is_common":false,"tags":
書","reading":"じしょ"}],"sens
Chinese characters","kanji di
["Noun"],"links":[],"tags":[]
[],"antonyms":[],"source":[],
["dictionary"],"parts_of_spee
[],"restrictions":[],"see_als
[],"info":[]},{"english_defin
dictionary"],"parts_of_speech
[{"text":"Read “Chinese dicti
Wikipedia","url":"http://en.w
```


JSON Raw Data Headers

Save Copy Collapse All Expand All Filter JSON


```
meta:
  status: 200
data:
  0:
    slug: "辞書"
    is_common: true
    tags:
      0: "wanikani16"
    jlpt:
      0: "jlpt-n5"
    japanese:
      0:
        word: "辞書"
        reading: "じしょ"
    senses:
      0:
        english_definitions:
          0: "dictionary"
          1: "lexicon"
        parts_of_speech:
          0: "Noun"
        links: []
        tags: []
        restrictions: []
        see_also: []
        antonyms: []
        source: []
        info: []
      1:
        english_definitions:
          0: "letter of resignation"
        parts_of_speech:
          0: "Noun"
```

Jisho


```python
# jisho.py
import requests
import typing as tp

BASE_URL = "https://jisho.org/api/v1/search"

def call_api(keyword: str) -> dict[str, tp.Any]:
    response = requests.get(f"{BASE_URL}/words?keyword={keyword}")
    response.raise_for_status()
    return response.json()

def main() -> None:
    keyword = input("Keyword? ")
    print(call_api(keyword))

if __name__ == "__main__":
    main()

# command line
$ python jisho_0.py
Keyword? jisho
{'meta': {'status': 200}, 'data': [{'slug': '辞書', 'is_common': True,
'tags': ['wanikani16'], 'jlpt': ['jlpt-n5'], 'japanese': [{'word': '辞
書', 'reading': 'じしょ'}], 'senses': [{'english_definitions': ...
```

Jisho


```
# jisho.py
...
def main() -> None:
    keyword = input("Keyword? ")
    print(json.dumps(call_api(keyword), indent=2, ensure_ascii=False))
...

# command line
$ python jisho_1.py
Keyword? jisho
{
  "meta": {
      "status": 200
  },
  "data": [
      {
      "slug": "辞書",
      "is_common": true,
      "tags": [
      "wanikani16"
      ],
...
```

Jisho


```python
# jisho.py
...
def call_api(keyword: str) -> JsonT:
    response = requests.get(f"{BASE_URL}/words?keyword={keyword}")
    response.raise_for_status()
    return response.json()


def main() -> None:
    keyword = input("Keyword? ")
    response_json = call_api(keyword)

    print(json.dumps(parse_response(response_json), indent=2))
...
```

Jisho

JSON Raw Data Headers

Save Copy Collapse All Expand All Filter JSON

```
▼ meta:
    status:                 200
▼ data:
  ▶ 0:                      {…}
  ▶ 1:                      {…}
  ▶ 2:                      {…}
  ▼ 3:
      slug:                 "自署"
      is_common:            false
      tags:                 []
      jlpt:                 []
    ▼ japanese:
      ▼ 0:
          word:             "自署"
          reading:          "じしょ"
    ▼ senses:
      ▼ 0:
```

Jisho


```
[Favorites]> jisho

jisho
Showing entries 1-5/10
A. 辞書 (じしょ)
(1) dictionary, lexicon; (2) letter of resignation

B. 地所 (じしょ); 地所 (ちしょ)
(1) estate, plot of land

C. 字書 (じしょ)
(1) dictionary of Chinese characters, kanji dictionary; (2)
dictionary; (3) Chinese dictionary

D. 自署 (じしょ)
(1) autograph, signature

E. 自書 (じしょ)
(1) one's own writing
Press m to show more

[Favorites]> a1
Saved to Favorites. 辞書:dictionary, lexicon.
[Favorites]> .sl
Favorites:
1. 辞書 じしょ dictionary.
```

Jisho


```python
# jisho.py
def parse_response(response_json: JsonT):
    data = response_json["data"]
    parsed_response = {}
    for i, entry in enumerate(data, 1):
        parsed_response[num_to_letter(i)] = parse_entry(entry)
    return parsed_response

def num_to_letter(num: int) -> str:
    return chr(num + 64)
```

Jisho

JSON Raw Data Headers

Save Copy Collapse All Expand All Filter JSON

```
meta:
    status:                 200
data:
  0:                        {…}
  1:                        {…}
  2:                        {…}
  3:
      slug:                 "自署"
      is_common:            false
      tags:                 []
      jlpt:                 []
    japanese:
      0:
          word:             "自署"
          reading:          "じしょ"
    senses:
      0:
        english_definitions:
            0:              "autograph"
            1:              "signature"
        parts_of_speech:
```

Jisho


```
[Favorites]> jisho

jisho
Showing entries 1-5/10
A. 辞書 (じしょ)
(1) dictionary, lexicon; (2) letter of resignation

B. 地所 (じしょ); 地所 (ちしょ)
(1) estate, plot of land

C. 字書 (じしょ)
(1) dictionary of Chinese characters, kanji dictionary; (2)
dictionary; (3) Chinese dictionary

D. 自署 (じしょ)
(1) autograph, signature

E. 自書 (じしょ)
(1) one's own writing
Press m to show more

[Favorites]> a1
Saved to Favorites. 辞書:dictionary, lexicon.
[Favorites]> .sl
Favorites:
1. 辞書 じしょ dictionary.
```

Jisho


```python
# jisho.py
def parse_response(response_json: JsonT):
    data = response_json["data"]
    parsed_response = {}
    for i, entry in enumerate(data, 1):
        parsed_response[num_to_letter(i)] = parse_entry(entry)
    return parsed_response

def parse_entry(entry: JsonT):
    new_entry = {
        "definitions": get_english_definitions(entry["senses"]),
        "entry": entry["japanese"],
    }
    return new_entry

def get_english_definitions(senses: JsonT):
    eng_definitions = {}
    for i, sense in enumerate(senses, 1):
        eng_definitions[i] = ", ".join(sense["english_definitions"])
    return eng_definitions
```

Jisho

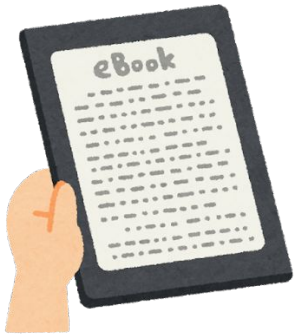

```
# command line
.env-tf_talk $ python jisho_2.py
Keyword? jisho
{
  "A": {
       "definitions": {
       "1": "dictionary, lexicon",
       "2": "letter of resignation"
       },
       "entry": [
       {
       "word": "辞書",
       "reading": "じしょ"
       }
       ]
  },
  "B": {
       "definitions": {
       "1": "estate, plot of land"
       },
       "entry": [
       {
       "word": "地所",
       "reading": "じしょ"
       },
       {
       "word": "地所",
       "reading": "ちしょ"
...
```

Conclusion

- JSON
- requests

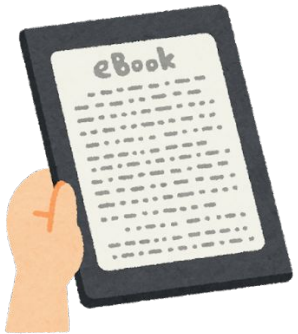

```
# jisho.py
imports, constants

def get_english_definitions(senses: JsonT) -> str:
    eng_definitions = {}
    for i, sense in enumerate(senses, 1):
        eng_definitions[i] = ", ".join(sense["english_definitions"])
    return eng_definitions

def parse_entry(entry: JsonT) -> JsonT:
    new_entry = {
        "definitions": get_english_definitions(entry["senses"]),
        "entry": entry["japanese"],
    }
    return new_entry

def parse_response(response_json: JsonT) -> JsonT:
    data = response_json["data"]
    parsed_response = {}
    for i, entry in enumerate(data, 1):
        parsed_response[num_to_letter(i)] = parse_entry(entry)
    return parsed_response

def call_api(keyword: str) -> JsonT:
    response = requests.get(f"{BASE_URL}/words?keyword={keyword}")
    response.raise_for_status()
    return response.json()

def main() -> None:
    keyword = input("Keyword? ")
    response_json = call_api(keyword)

    print(json.dumps(parse_response(response_json), indent=2, ensure_ascii=False))

if __name__ == "__main__":
    main()
```

Ebook: Demo

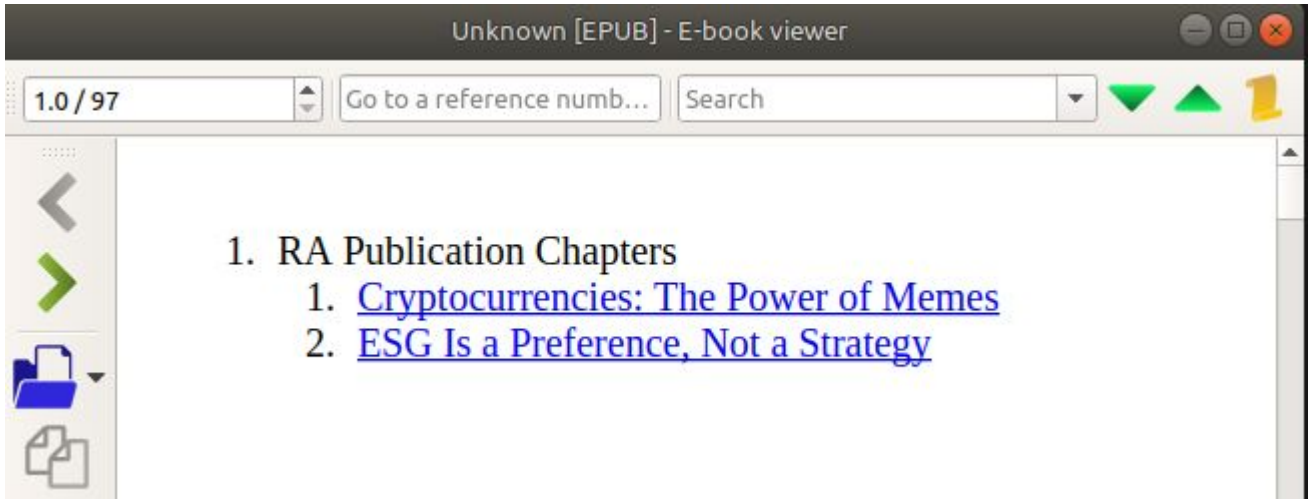


Ebook (Demo)

```
# command line
$ python ebook_4.py
/home/mccloskey/src/john/techforum_talk/output/RA Publication
Chapters.epub
```



Ebook (Demo)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1.0 / 97
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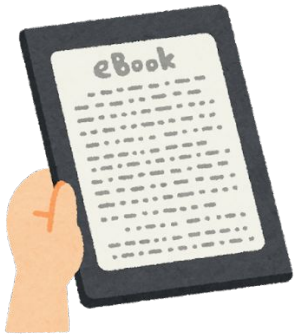
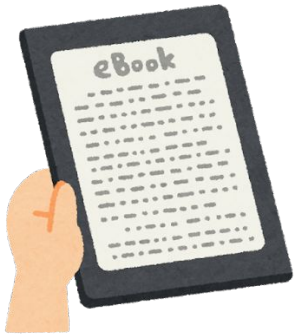
Search
1. RA Publication Chapters
1. Cryptocurrencies: The Power of Memes
2. ESG Is a Preference, Not a Strategy


eBook

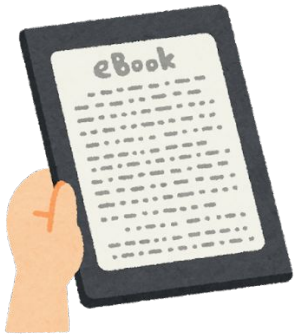
Ebook (Demo)

https://www.researchaffiliates.com/publications/articles/913-cryptocurrencies-the-power-of-memes



Ebook (Demo)

https://www.researchaffiliates.com/publications/articles/853-esg-is-a-preference-not-a-strategy



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Articles

ESG Is a Preference, Not a Strategy

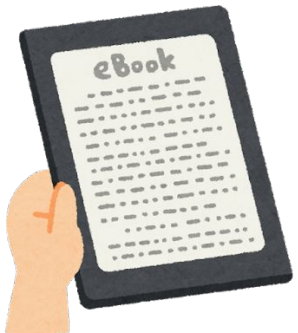
By
Brent Leadbetter
,
Ari Polychronopoulos
January 2022
Read Time: 20 min
Key Points

- A portfolio's return is driven by its investment strategy—a set of decisions that governs allocation and timing of capital among the portfolio's positions. Modest exclusions designed to align a broadly diversified portfolio with an investor's ESG principles do not change the underlying investment strategy and therefore are not responsible for driving the portfolio's return.

- ESG investing is a preference, not a strategy. We view this trait as a benefit to investors, who can align their portfolios' composition with their beliefs without

Ebook: Goals

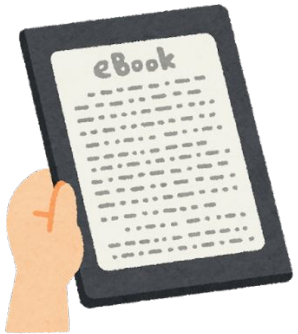
- ebooklib
- beautifulsoup / html




```
# command line
$ python ebook_4.py
/home/mccloskey/src/john/techforum_talk/output/RA Publication
Chapters.epub
```

Ebooklib

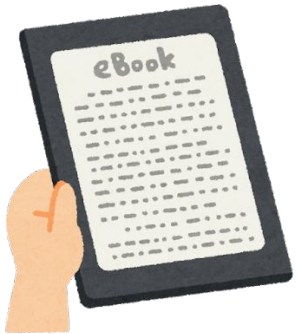
https://pypi.org/project/EbookLib/




```
from ebooklib import epub

book = epub.EpubBook()

# set metadata
book.set_identifier('id123456')
book.set_title('Sample book')
book.set_language('en')

book.add_author('Author Authorowski')
book.add_author('Danko Bananko', file_as='Gospodin Danko Bananko',
role='ill', uid='coauthor')

# create chapter
c1 = epub.EpubHtml(title='Intro', file_name='chap_01.xhtml',
lang='hr')
c1.content=u'<h1>Intro heading</h1><p>Zaba je skocila u baru.</p>'

# add chapter
book.add_item(c1)
```

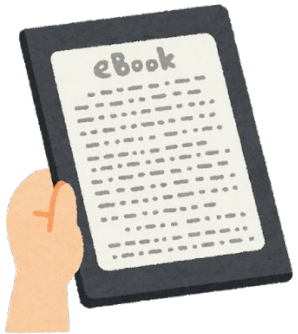
Ebooklib

https://pypi.org/project/EbookLib/



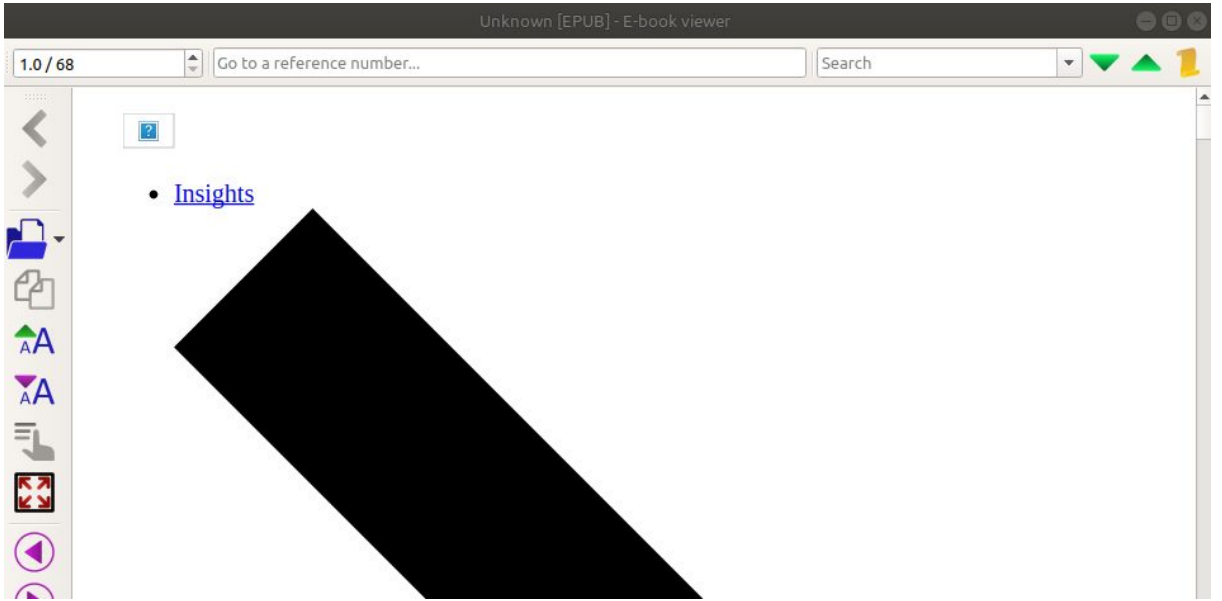

```
# define Table Of Contents
book.toc = (epub.Link('chap_01.xhtml', 'Introduction', 'intro'),
            (epub.Section('Simple book'),
            (c1, ))
           )

# add default NCX and Nav file
book.add_item(epub.EpubNcx())
book.add_item(epub.EpubNav())

# define CSS style
style = 'BODY {color: white;}'
nav_css = epub.EpubItem(uid="style_nav", file_name="style/nav.css",
media_type="text/css", content=style)

# add CSS file
book.add_item(nav_css)

# basic spine
book.spine = ['nav', c1]

# write to the file
epub.write_epub('test.epub', book, {})
```

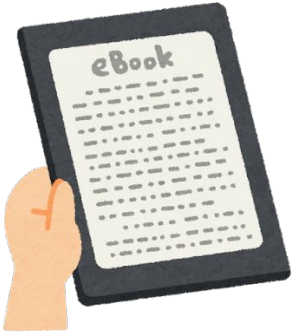
Ebook

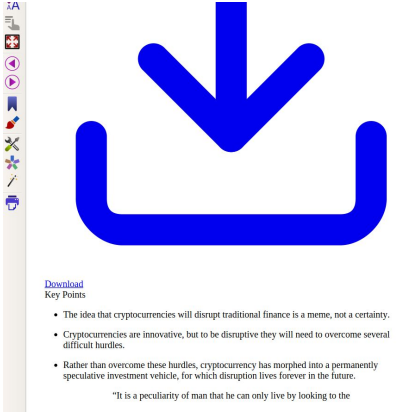



```python
# ebook.py
from ebooklib import epub
from pathlib import Path

OUTPUT_DIR = Path("output")
INPUT_DIR = Path("input")


def main(title: str, input_path: Path) -> Path:
    # make chapter
    chapter = epub.EpubHtml(
        title=title, content=input_path.read_text(), file_name="file1.xhtml"
    )

    # make book
    book = epub.EpubBook()
    book.add_item(chapter)
    book.spine = [chapter]

    # write book
    OUTPUT_DIR.mkdir(exist_ok=True)
    output_path = OUTPUT_DIR / f"{title}.epub"
    epub.write_epub(output_path, book)

    return output_path


if __name__ == "__main__":
    input_path = (
        INPUT_DIR / "Cryptocurrencies The Power of Memes | Research Affiliates.html"
    )
    print(main(title="RA Crypto Currency Article HTML", input_path=input_path))
```

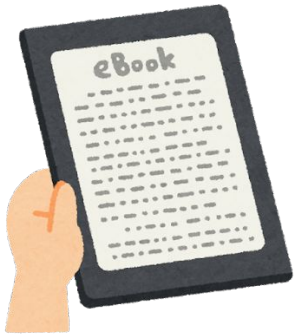
Ebook

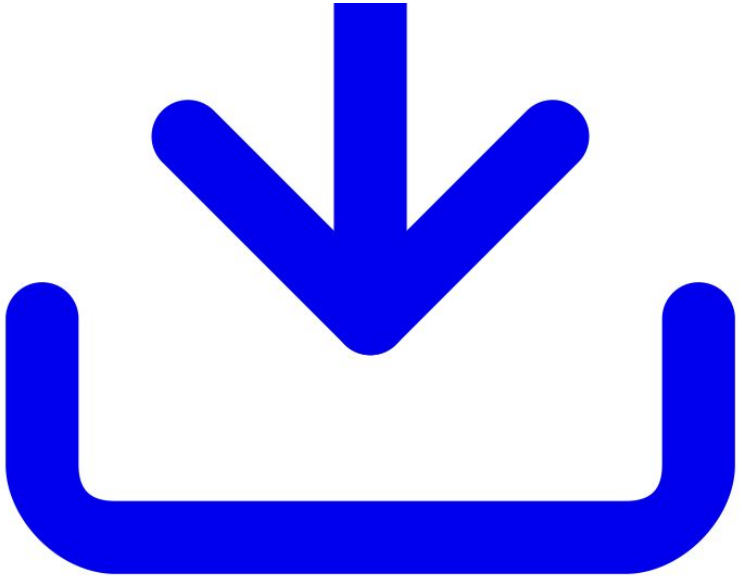

Unknown [EPUB] - E-book viewer
1.0 / 68
Go to a reference number...
Search
Insights


eBook


Download
Key Points
The idea that cryptocurrencies will disrupt traditional finance is a meme, not a certainty.
Cryptocurrencies are innovative, but to be disruptive they will need to overcome several difficult hurdles.
Rather than overcome these hurdles, cryptocurrency has morphed into a permanently speculative investment vehicle, for which disruption lives forever in the future.
"It is a peculiarity of man that he can only live by looking to the

Ebook



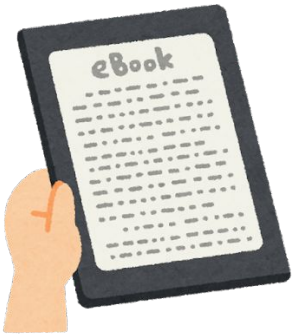


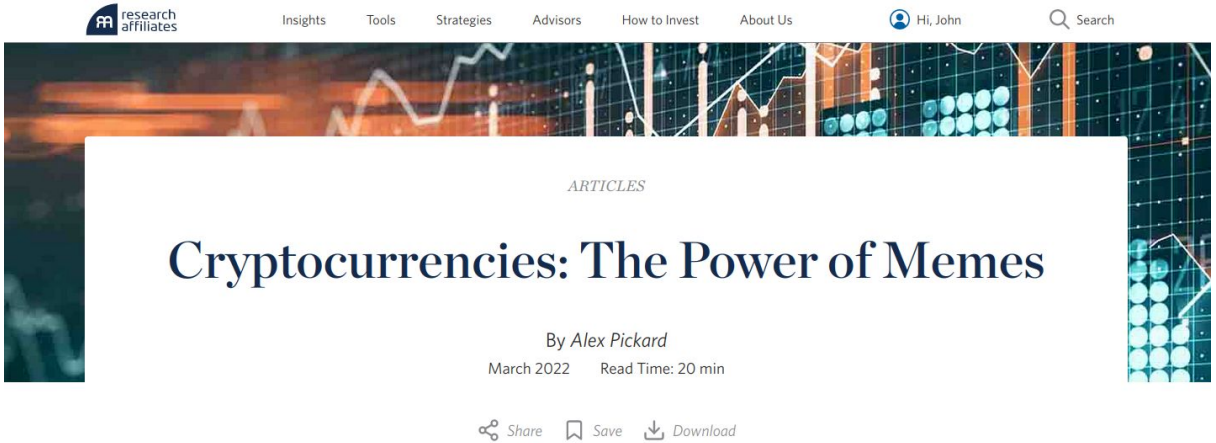
[Download]
Key Points

- The idea that cryptocurrencies will disrupt traditional finance is a meme, not a certainty.
- Cryptocurrencies are innovative, but to be disruptive they will need to overcome several difficult hurdles.
- Rather than overcome these hurdles, cryptocurrency has morphed into a permanently speculative investment vehicle, for which disruption lives forever in the future.

"It is a peculiarity of man that he can only live by looking to the

Ebook


eBook


research affiliates
Insights
Tools
Strategies
Advisors
How to Invest
About Us
Hi, John
Search
ARTICLES
Cryptocurrencies: The Power of Memes
By Alex Pickard
March 2022
Read Time: 20 min
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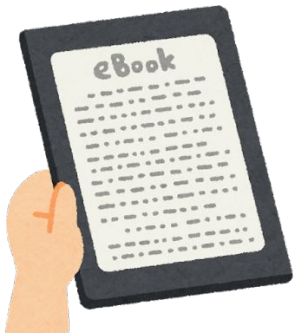
Key Points
• The idea that cryptocurrencies will disrupt traditional finance is a meme, not a
certainty

Ebook




```python
# ebook.py
def main(title: str, input_path: Path) -> Path:
    # make chapter
    chapter = epub.EpubHtml(
        title=title, content=input_path.read_text(),
file_name="file1.xhtml"
    )
```

Beautiful Soup

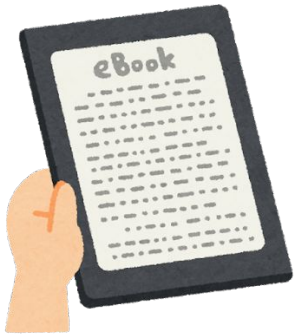
Quick Start

Here's an HTML document I'll be using as an example throughout this document. It's part of a story from *Alice in Wonderland*:

```
html_doc = """<html><head><title>The Dormouse's story</title></head>
<body>
<p class="title"><b>The Dormouse's story</b></p>

<p class="story">Once upon a time there were three little sisters; and their names were
<a href="http://example.com/elsie" class="sister" id="link1">Elsie</a>,
<a href="http://example.com/lacie" class="sister" id="link2">Lacie</a> and
<a href="http://example.com/tillie" class="sister" id="link3">Tillie</a>;
and they lived at the bottom of a well.</p>

<p class="story">...</p>
"""
```



```
<html><head><title>The Dormouse's story</title></head>
<body>
<p class="title"><b>The Dormouse's story</b></p>

<p class="story">Once upon a time there were three little sisters; and their names were
<a href="http://example.com/elsie" class="sister" id="link1">Elsie</a>,
<a href="http://example.com/lacie" class="sister" id="link2">Lacie</a> and
<a href="http://example.com/tillie" class="sister" id="link3">Tillie</a>;
and they lived at the bottom of a well.</p>

<p class="story">...</p>
```

```
<html><head><title>The Dormouse's
story</title></head>
<body>
<p class="title"><b>The Dormouse's
story</b></p>

<p class="story">Once upon a time
there were three little sisters; and
their names were
<a href="http://example.com/elsie"
class="sister" id="link1">Elsie</a>,
<a href="http://example.com/lacie"
class="sister" id="link2">Lacie</a>
and
<a href="http://example.com/tillie"
class="sister"
id="link3">Tillie</a>;
and they lived at the bottom of a
well.</p>

<p class="story">...</p>
```

Here are some simple ways to navigate that data structure:

```
soup.title
# <title>The Dormouse's story</title>

soup.title.name
# u'title'

soup.title.string
# u'The Dormouse's story'

soup.title.parent.name
# u'head'

soup.p
# <p class="title"><b>The Dormouse's story</b></p>

soup.p['class']
# u'title'

soup.a
# <a class="sister" href="http://example.com/elsie" id="link1">Elsie</a>

soup.find_all('a')
# [<a class="sister" href="http://example.com/elsie" id="link1">Elsie</a>,
#  <a class="sister" href="http://example.com/lacie" id="link2">Lacie</a>,
#  <a class="sister" href="http://example.com/tillie" id="link3">Tillie</a>]

soup.find(id="link3")
# <a class="sister" href="http://example.com/tillie" id="link3">Tillie</a>
```

One common task is extracting all the URLs found within a page's <a> tags:

```
for link in soup.find_all('a'):
    print(link.get('href'))
# http://example.com/elsie
# http://example.com/lacie
# http://example.com/tillie
```

ARTICLES

Cryptocurrencies: The Power of Memes

By *Alex Pickard*

March 2022 Read Time: 20 min

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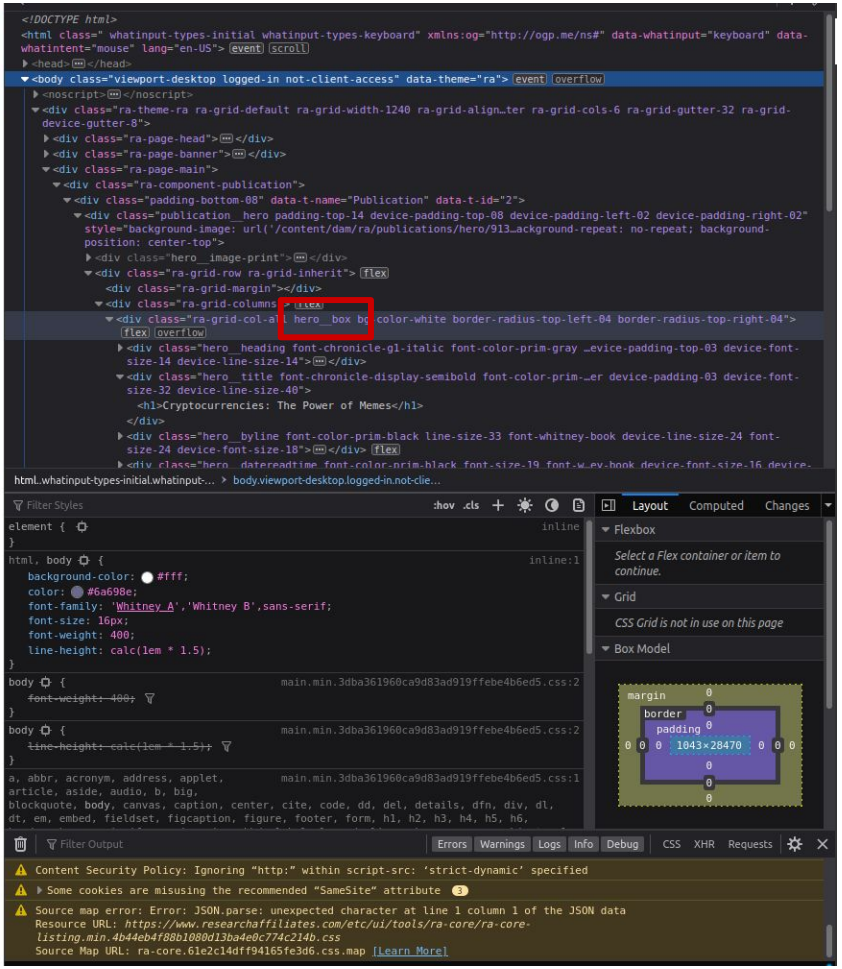
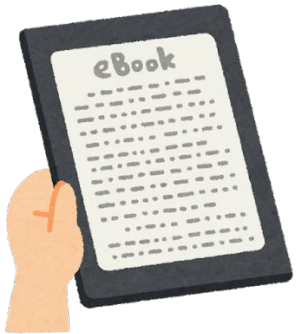
Key Points

- The idea that cryptocurrencies will disrupt traditional finance is a meme, not a certainty.
- Cryptocurrencies are innovative, but to be disruptive they will need to overcome several difficult hurdles.
- Rather than overcome these hurdles, cryptocurrency has morphed into a permanently speculative investment vehicle, for which



Ebook



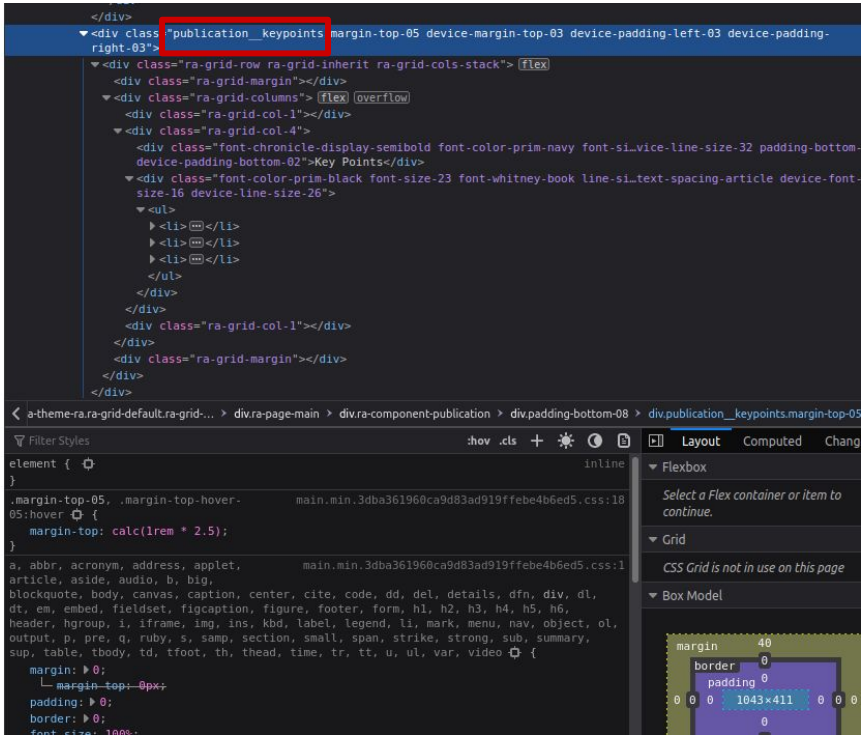

```python
# ebook.py
def main(input_path: Path, output_suffix: str = "") -> Path:
    # make chapter
    chapter = html_to_chapter(input_path)
    ...

def html_to_chapter(html_path: Path) -> epub.EpubHtml:
    soup = bs4.BeautifulSoup(html_path.read_text(),
features="html.parser")
    [title_box] = soup.findAll(**{"class": "hero__box"})
    [title_element] = title_box.findAll(**{"class": "hero__title"})
    title = title_element.text
    [publication_keypoints] = soup.findAll(**{"class":
"publication__keypoints"})
    [publication_body] = soup.findAll(**{"class": "publication__body"})
    fname = f"{uuid.uuid4()}.xhtml"
    content = f"{title_box}{publication_keypoints}{publication_body}"
    return epub.EpubHtml(title=title, content=content, file_name=fname)
```

Key Points

- The idea that cryptocurrencies will disrupt traditional finance is a meme, not a certainty.
- Cryptocurrencies are innovative, but to be disruptive they will need to overcome several difficult hurdles.
- Rather than overcome these hurdles, cryptocurrency has morphed into a permanently speculative investment vehicle, for which disruption lives forever in the future.

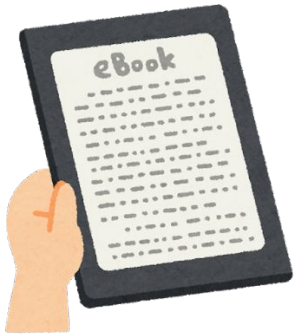
"It is a peculiarity of man that he can only live by looking to the future – sub specie aeternitatis."

— Viktor E. Frankl, *Man's Search for Meaning*

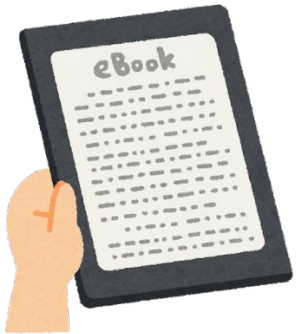


Ebook

https://www.researchaffiliates.com/publications/articles/913-cryptocurrencies-the-power-of-memes



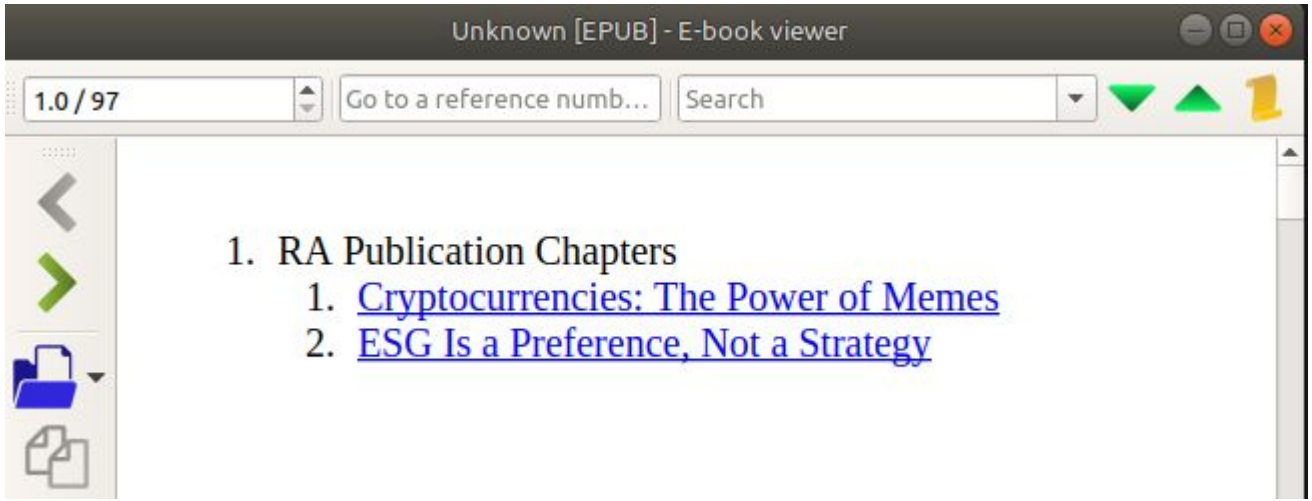
Ebook

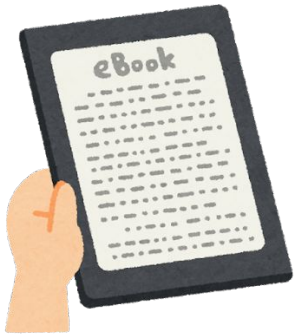



```python
# ebook.py
def main(input_paths: tp.Iterable[Path], title: str) -> Path:
    # make chapter
    chapters = [html_to_chapter(path) for path in input_paths]

    # make book
    book = epub.EpubBook()
    book.spine = ["nav"] + chapters
    for c in chapters:
        book.add_item(c)
    book.toc = ((epub.Section(title), chapters),)
    # add default Nav file
    book.add_item(epub.EpubNav())

    # write book
    OUTPUT_DIR.mkdir(exist_ok=True)
    output_path = OUTPUT_DIR / f"{title}.epub"
    epub.write_epub(output_path, book)

    return output_path
```

Conclusion

- ebooklib
- beautifulsoup / html





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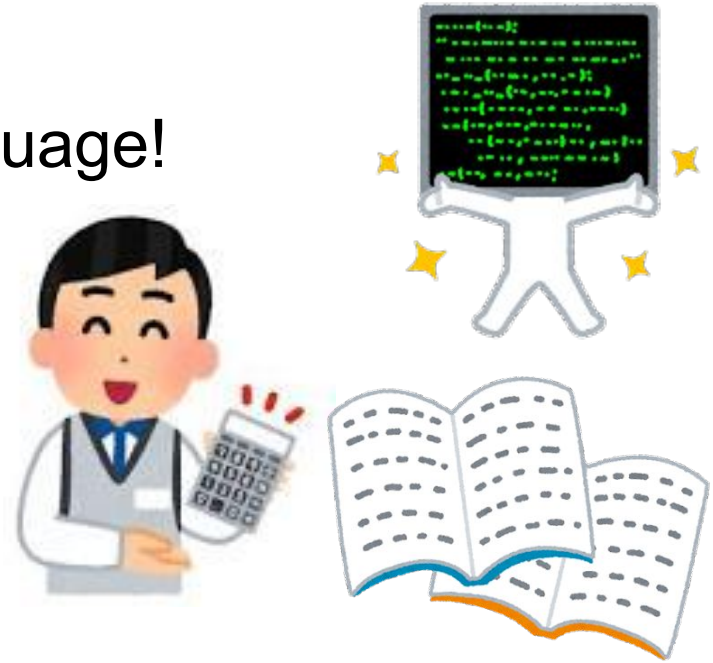

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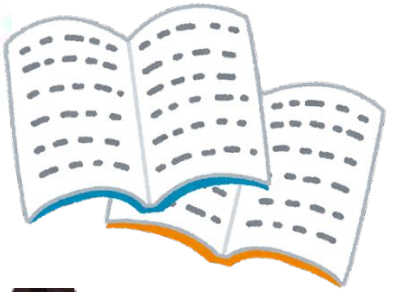

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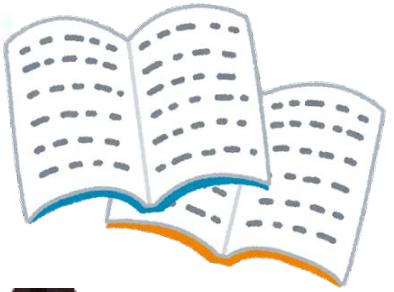

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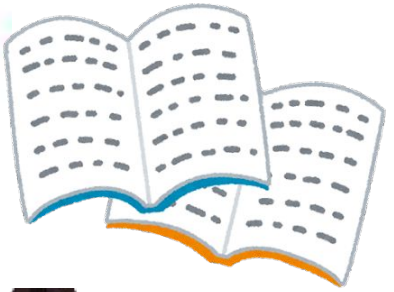

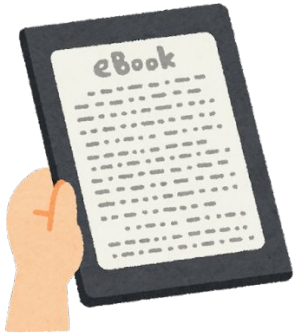

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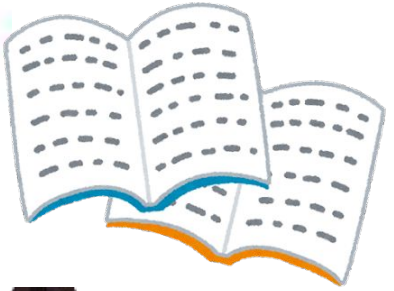
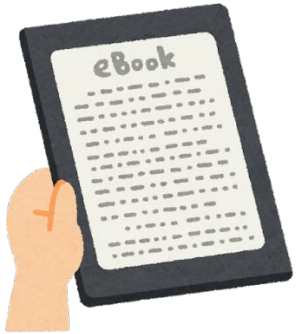
5. EBook Writer: ebooklib, beautifulsoup, HTML



And so much more!



Credits:

- Cute pictures from https://www.irasutoya.com/

Other topics

- When to not write a script?
- When to transition from small program to large program?