Writing Python Scripts

Simple Examples of the Power of Python for Beginners

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]

Large Scale

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

```python
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:
       ...
```

Large Scale

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

```python
class BlockManager(DataManager):

   def __setstate__(self, state):
       def unpickle_block(values, mgr_locs, ndim: int):
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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:
       ...
```

Small Scale

```python
# 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

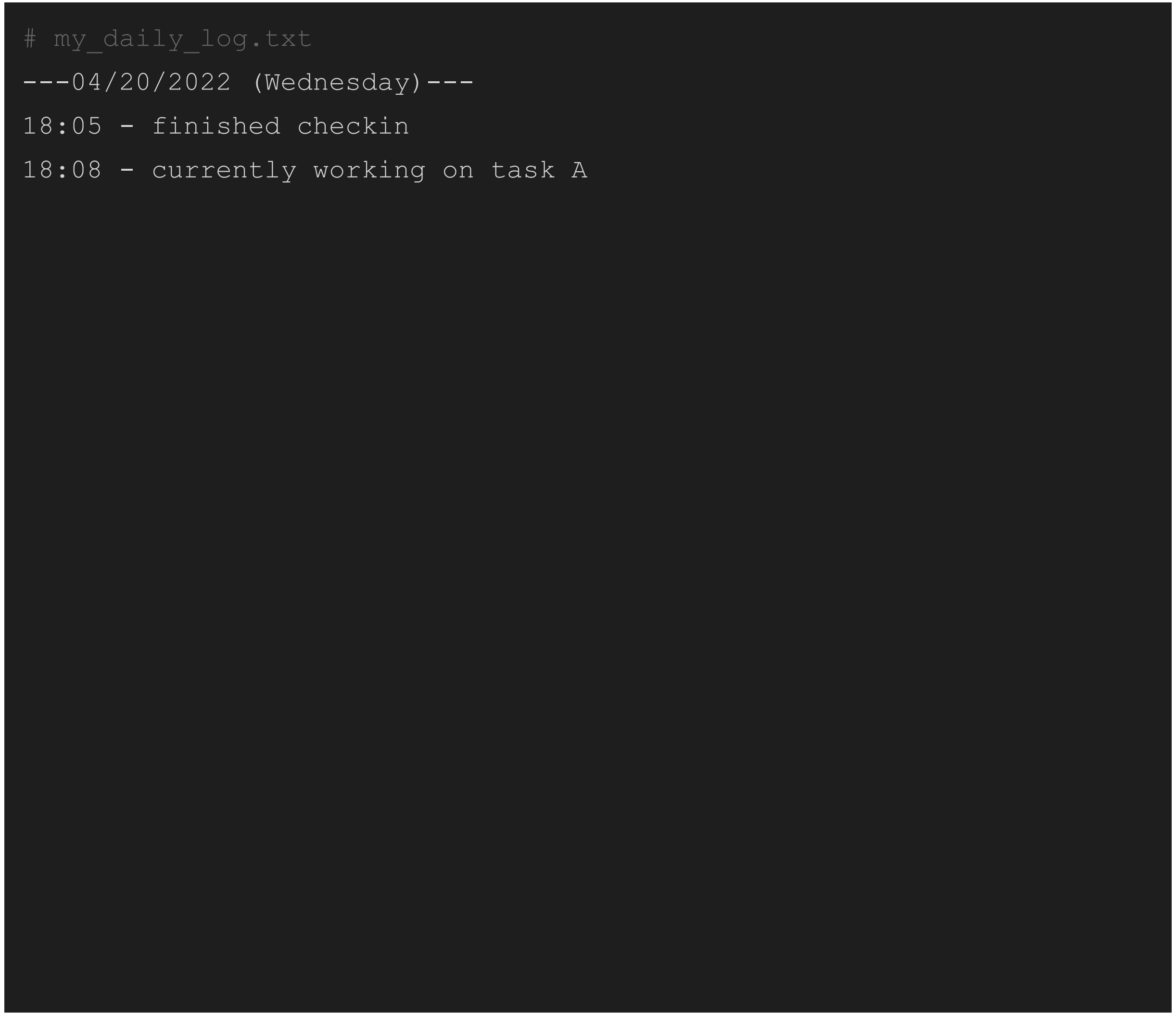
JLog (Demo)

```
# 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

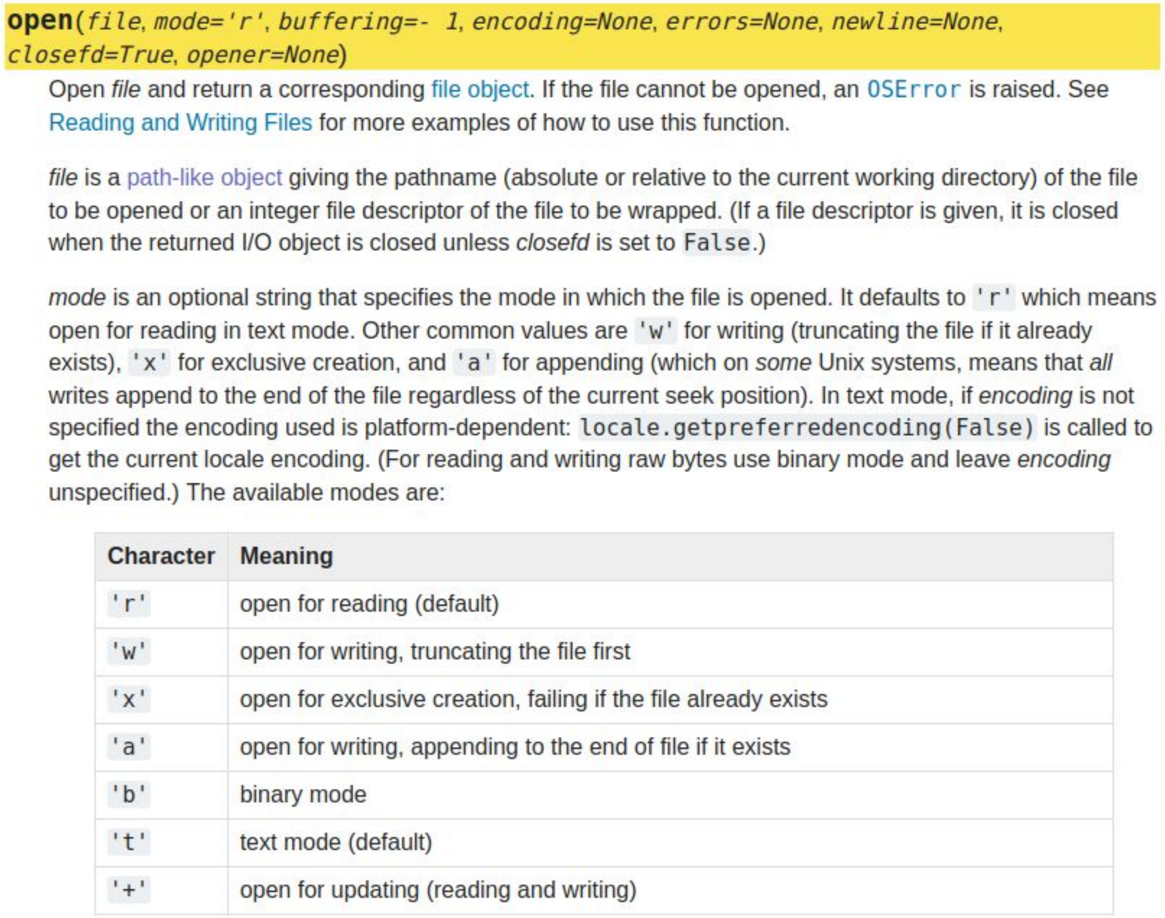
```python
# jlog_0.py
OUTPATH = "output/my_logs_0.txt"

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.

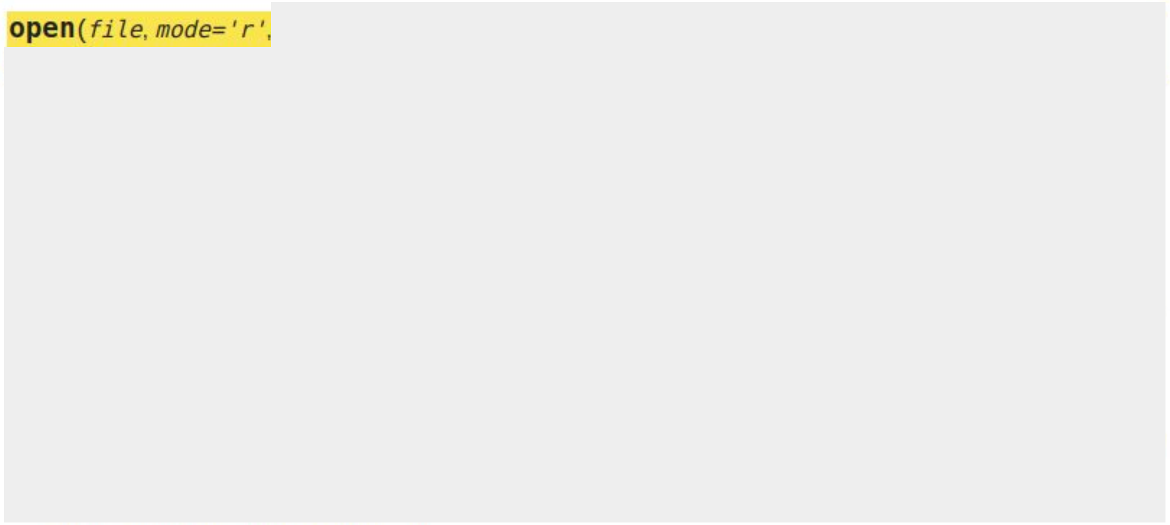
file is a path-like object giving the pathname (absolute or relative to the current working directory) of the file to be opened or an integer file descriptor of the file to be wrapped. (If a file descriptor is given, it is closed when the returned I/O object is closed unless *closefd* is set to `False`.)

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:

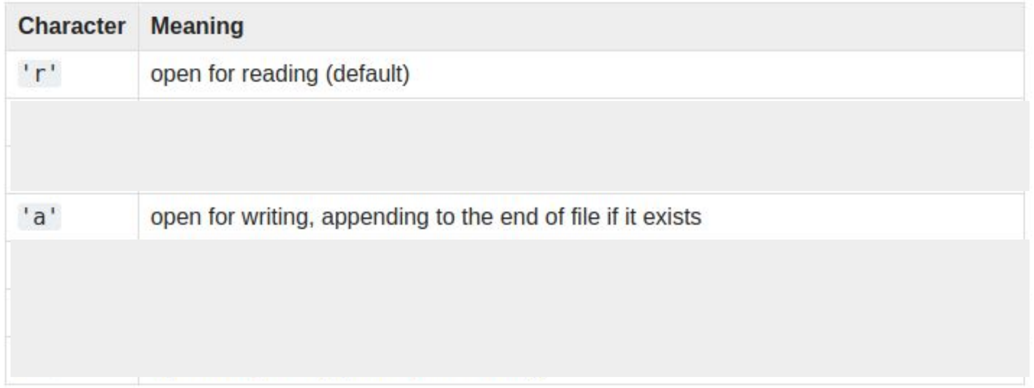
Character	Meaning
`'r'`	open for reading (default)
`'w'`	open for writing, truncating the file first
`'x'`	open for exclusive creation, failing if the file already exists
`'a'`	open for writing, appending to the end of file if it exists
`'b'`	binary mode
`'t'`	text mode (default)
`'+'`	open for updating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

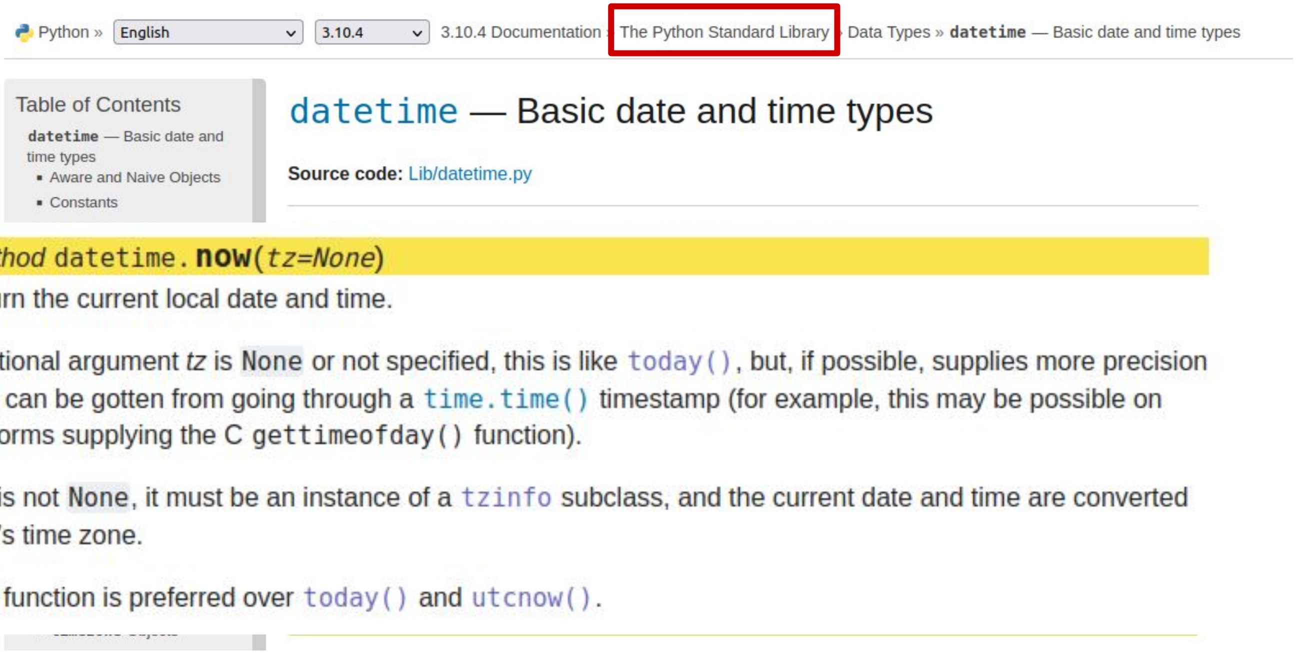
JLog

```
# 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

`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

```
# 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

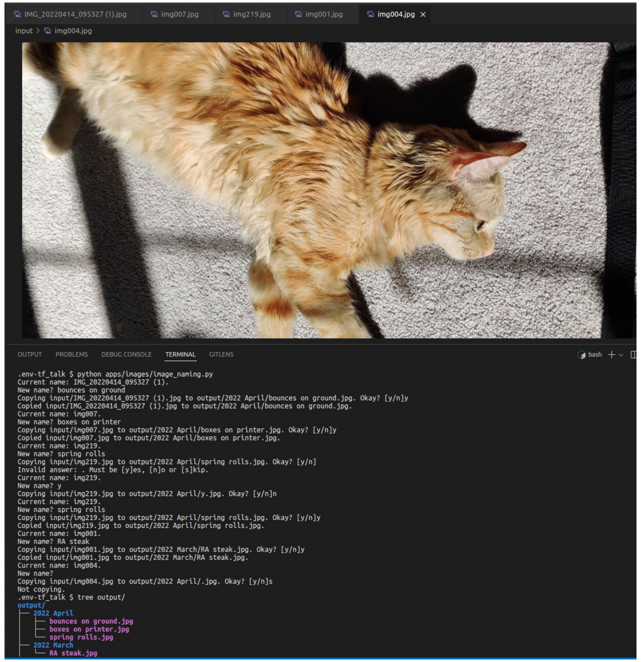
```
# jlog_0.py
...
def main():
    while True:
        user_input = input("log: ")
        log = f"{datetime.now()} - {user_input}"
        with open(OUTPATH, mode="a") as f:
            f.write(f"{log}\n")
        print(log)
...

# 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
```

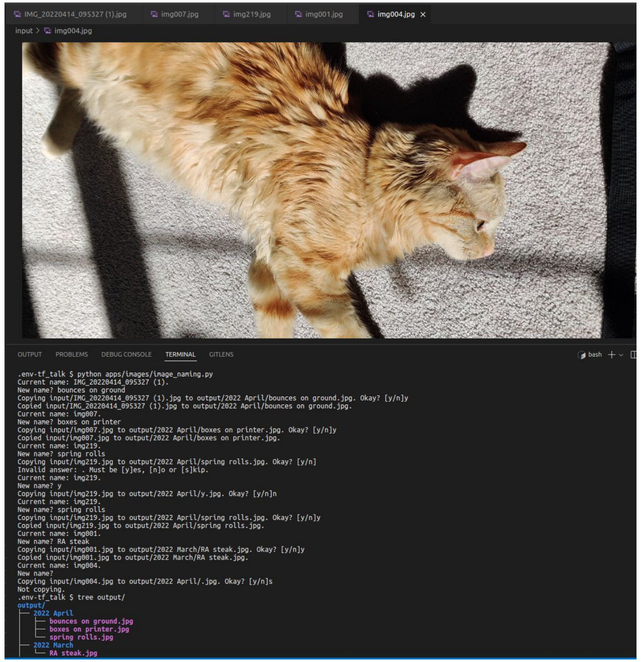
Images (Demo)



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

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

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

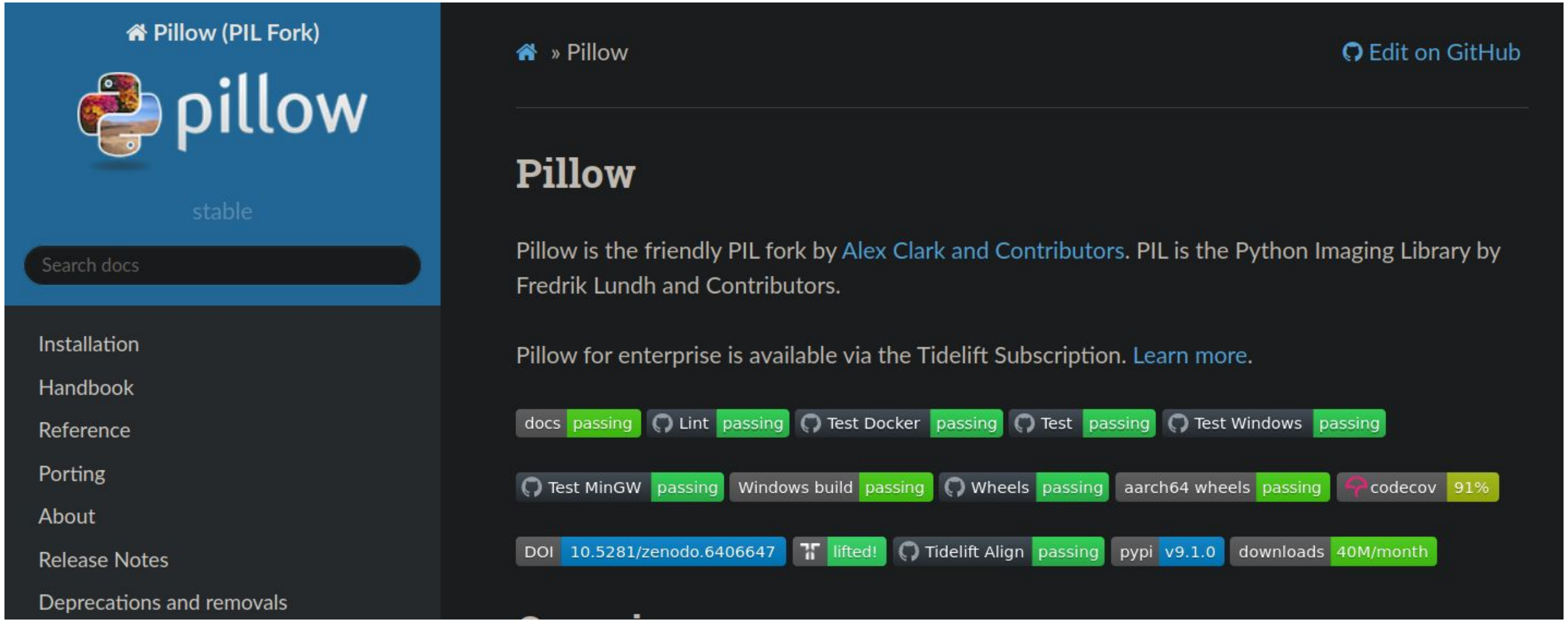
Images Goals

- 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


Pillow (PIL Fork)

pillow

stable

Search docs

- Installation
- Handbook
- Reference
- Porting
- About
- Release Notes
- Deprecations and removals

» Pillow

Edit on GitHub

Pillow

Pillow is the friendly PIL fork by Alex Clark and Contributors. PIL is the Python Imaging Library by Fredrik Lundh and Contributors.

Pillow for enterprise is available via the Tidelift Subscription. Learn more.

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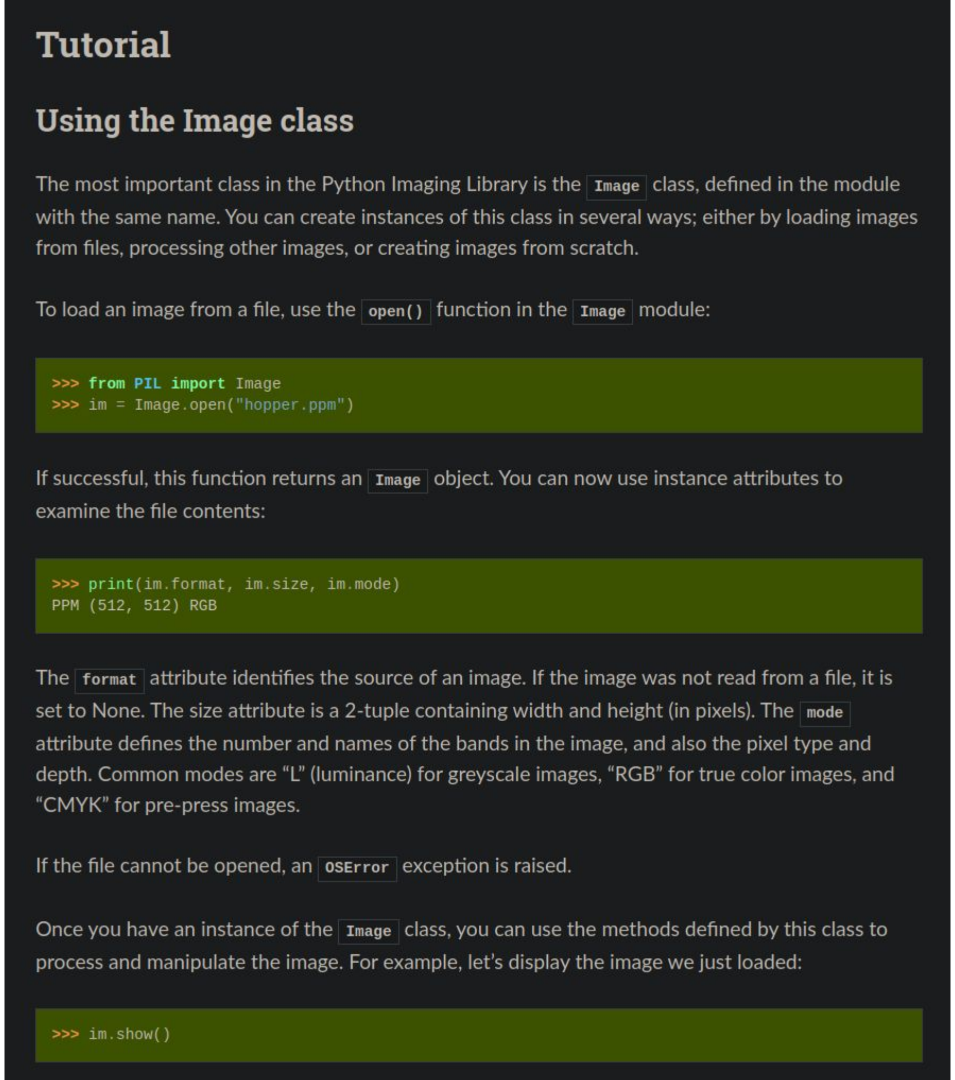
DOI 10.5281/zenodo.6406647 | lifted! | Tidelift Align passing | pypi v9.1.0 | downloads 40M/month

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.

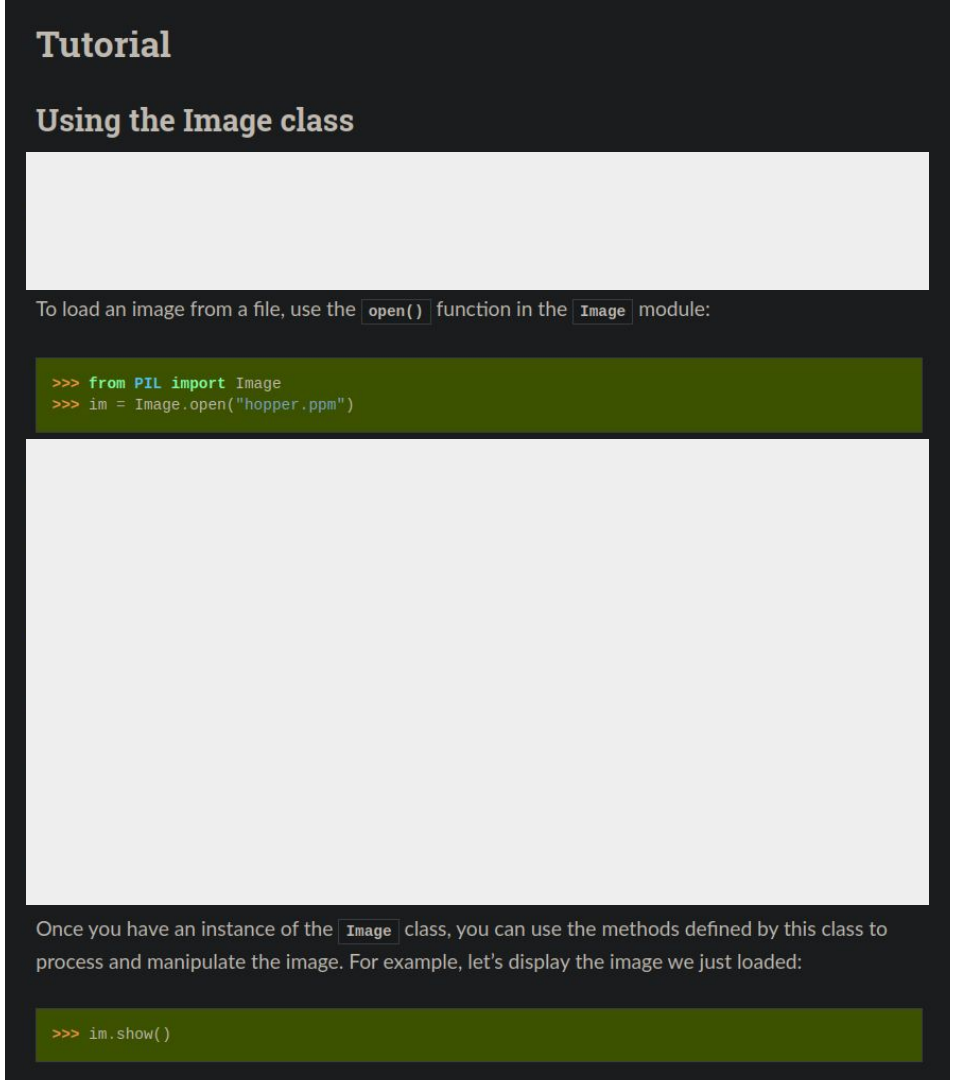
If the file cannot be opened, an `OSError` exception is raised.

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

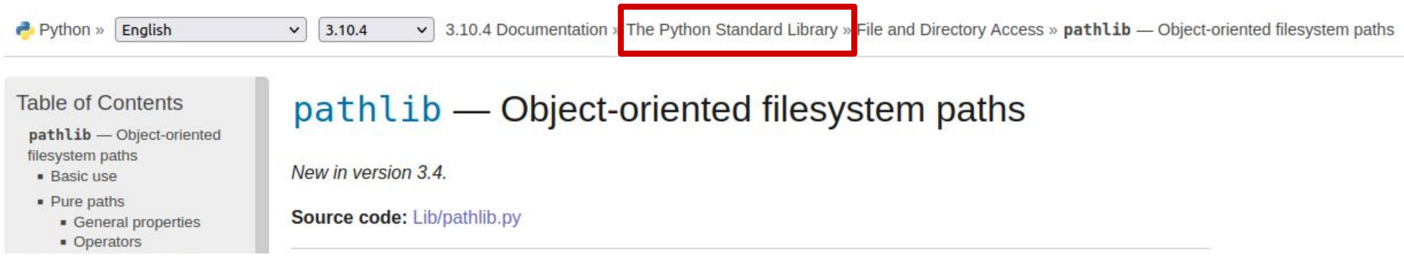
```python
# images.py
from pathlib import Path
import shutil
from PIL import Image

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

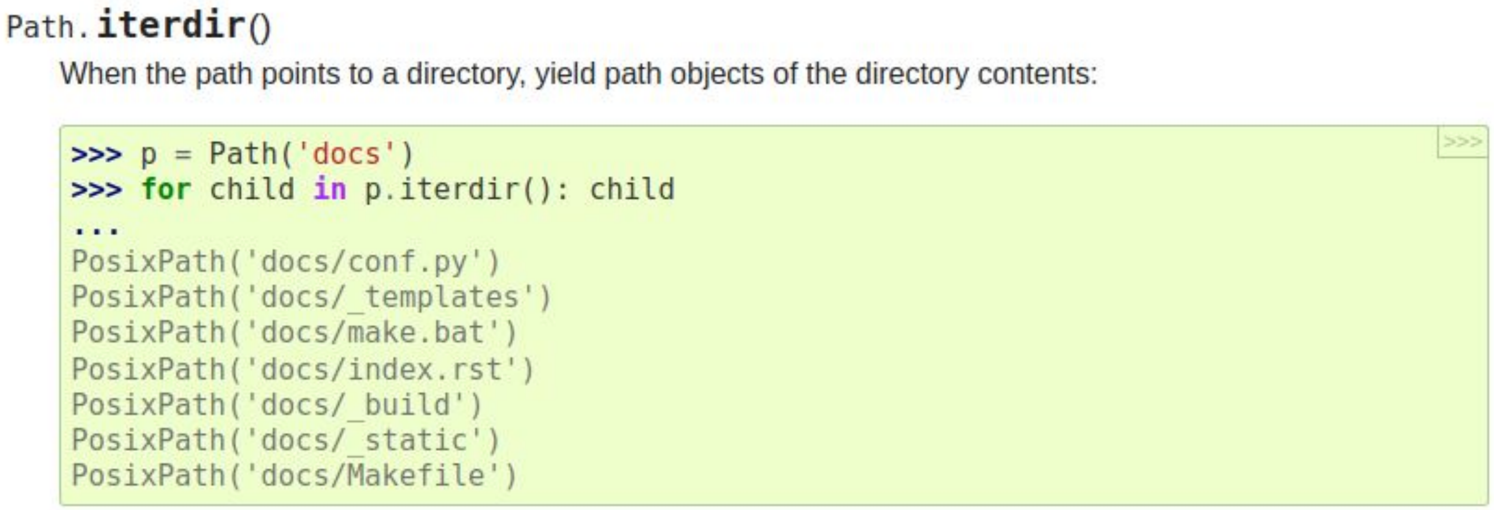
Table of Contents

- **pathlib** — Object-oriented filesystem paths
  - Basic use
  - Pure paths
    - General properties
    - Operators

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:

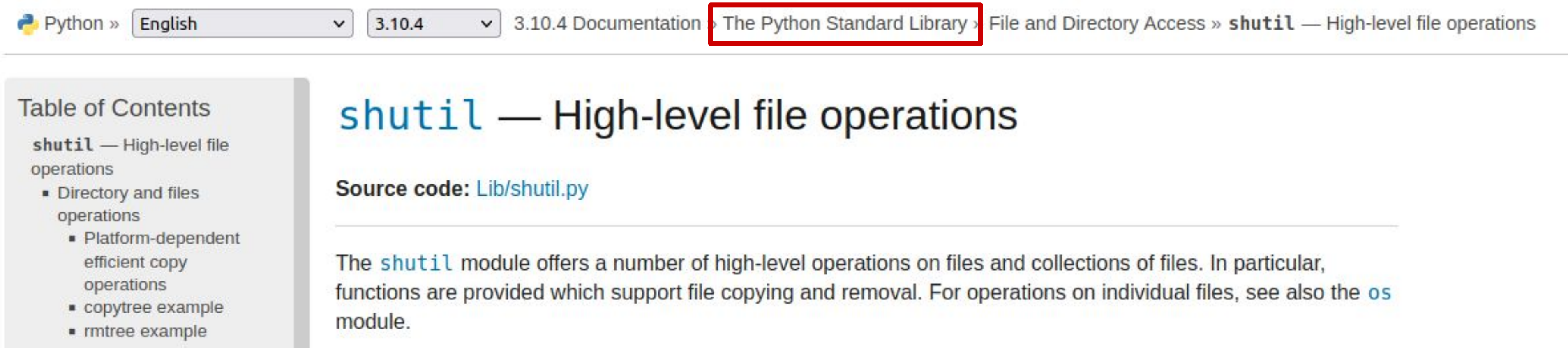
```
>>> p = Path('docs')
>>> for child in p.iterdir(): child
...
PosixPath('docs/conf.py')
PosixPath('docs/_templates')
PosixPath('docs/make.bat')
PosixPath('docs/index.rst')
PosixPath('docs/_build')
PosixPath('docs/_static')
PosixPath('docs/Makefile')
```

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



Python » English 3.10.4 3.10.4 Documentation » The Python Standard Library » File and Directory Access » **shutil** — High-level file operations

Table of Contents

- **shutil** — High-level file operations
  - Directory and files operations
    - Platform-dependent efficient copy operations
    - copytree example
    - rmtree example

`shutil` — High-level file operations

Source code: Lib/shutil.py

The `shutil` module offers a number of high-level operations on files and collections of files. In particular, functions are provided which support file copying and removal. For operations on individual files, see also the `os` module.

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
...
   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

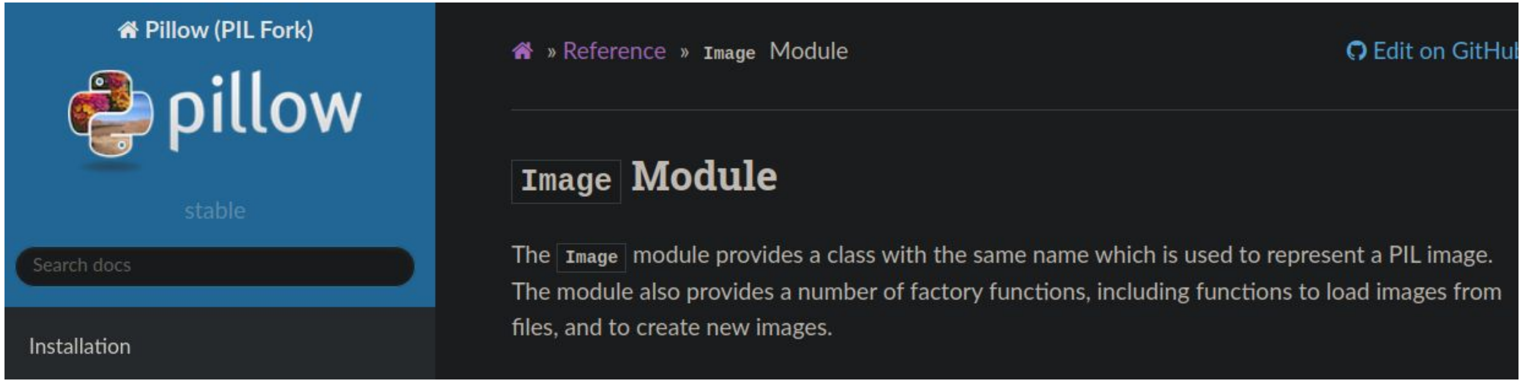
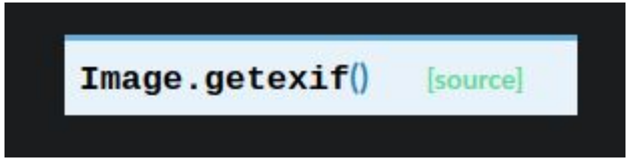


Image Module

The Image module provides a class with the same name which is used to represent a PIL image. The module also provides a number of factory functions, including functions to load images from files, and to create new images.

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



```
Image.getexif()   [source]
```

Images

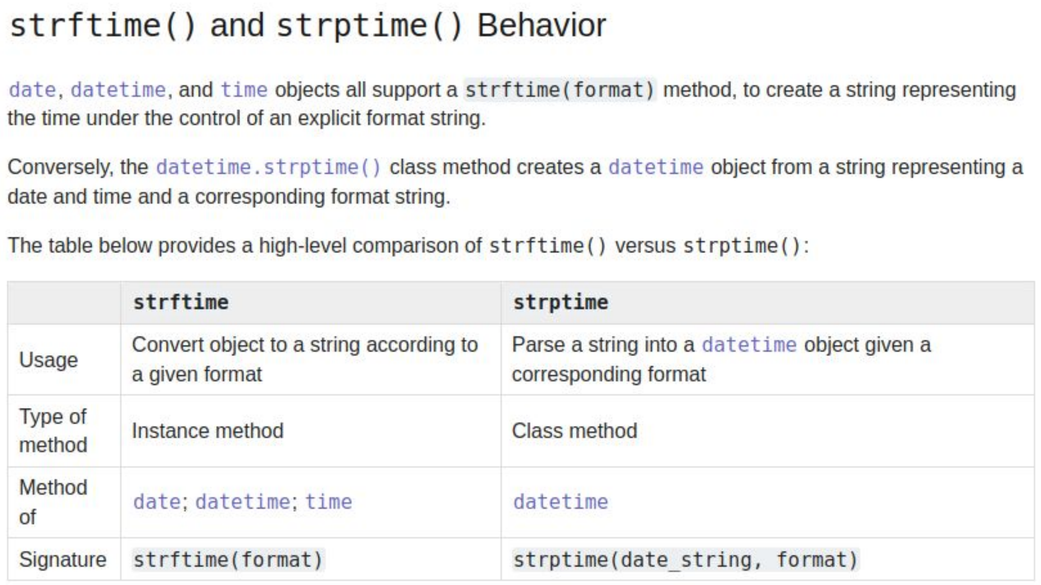
```
>>> Image.open(path).getexif()
# {296: 2, 282: 72.0, 256: 4000, 257: 1824, 34853: 788, 34665: 240,
271: 'OnePlus', 272: 'GM1917', 305: 'Picasa', 274: 1, 306: '2022:04:14
09:53:28', 530: (2, 2), 531: 1, 283: 72.0}
```

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.

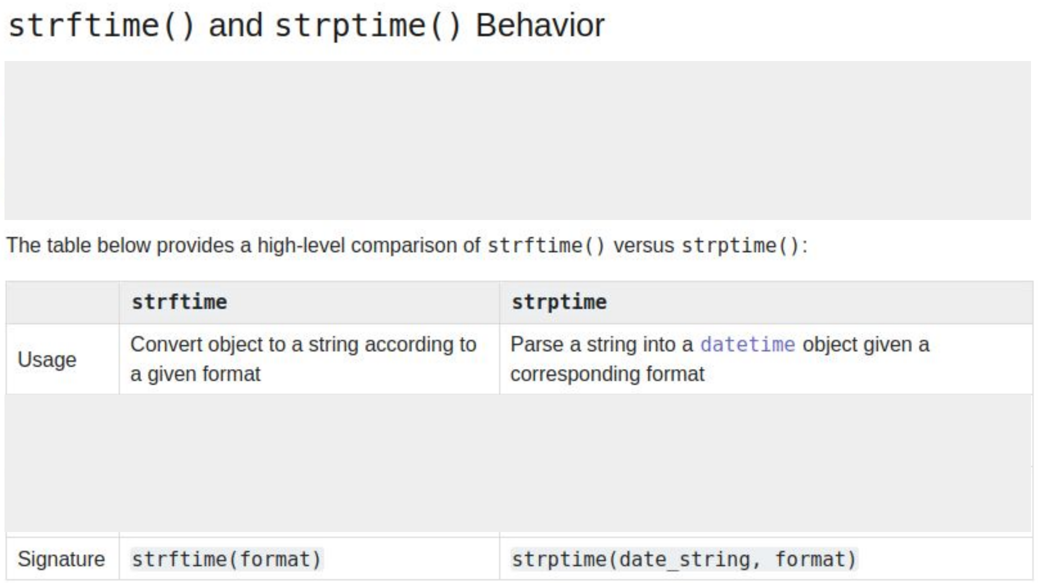
Conversely, the `datetime.strptime()` class method creates a `datetime` object from a string representing a date and time and a corresponding format string.

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

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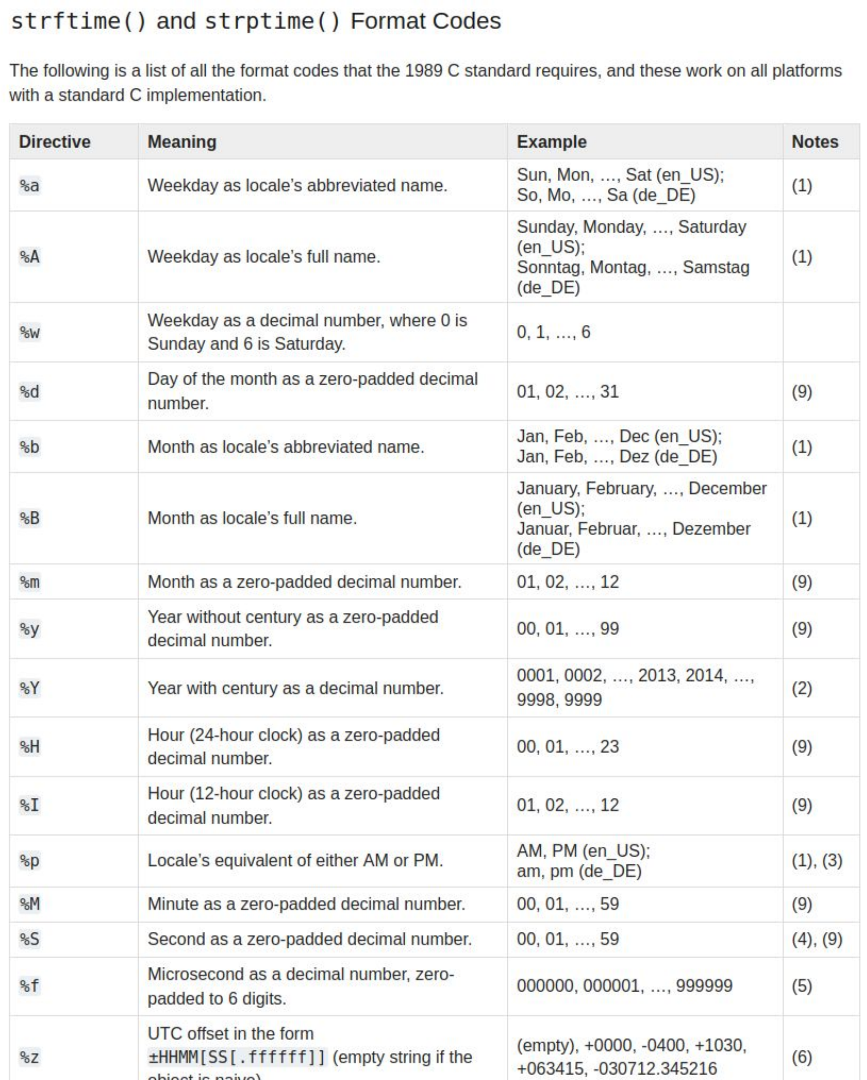
strftime / strptime

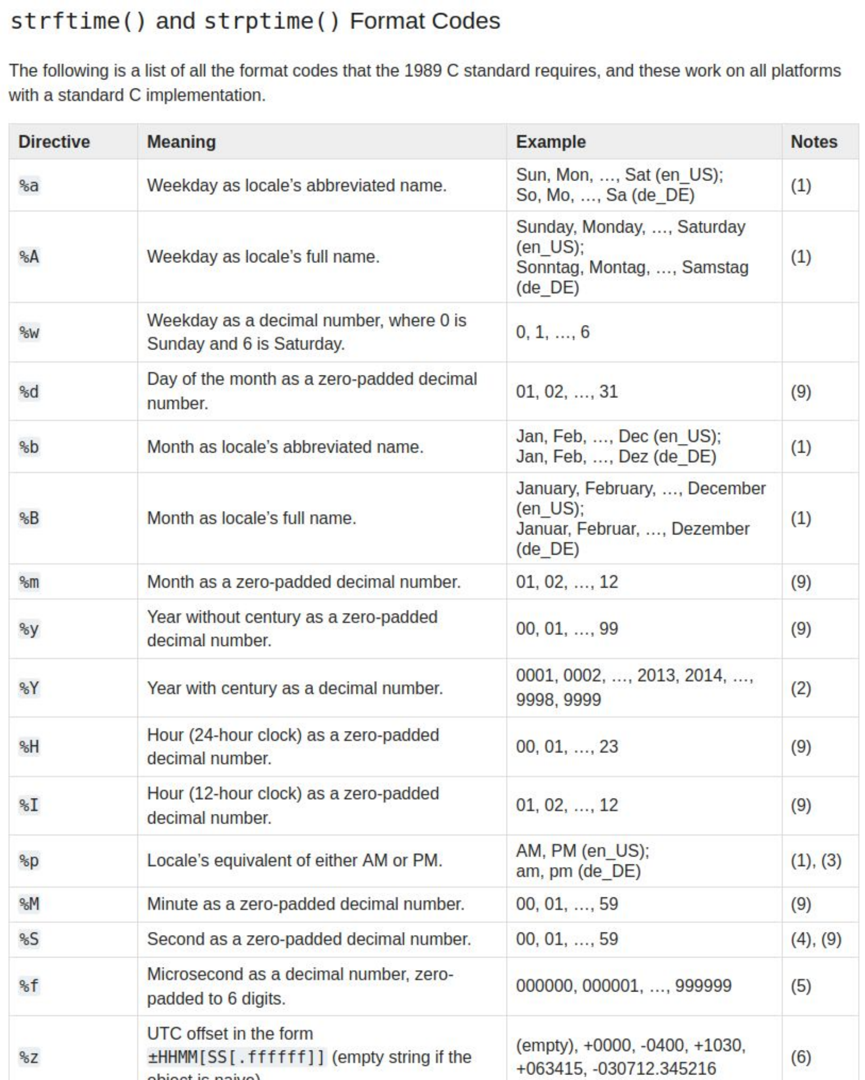
https://docs.python.org/3/library/datetime.html#strftime-and-strptime-format-codes



`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 object is naive).	(empty), +0000, -0400, +1030, +063415, -030712.345216	(6)



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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.

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`%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)
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`%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)
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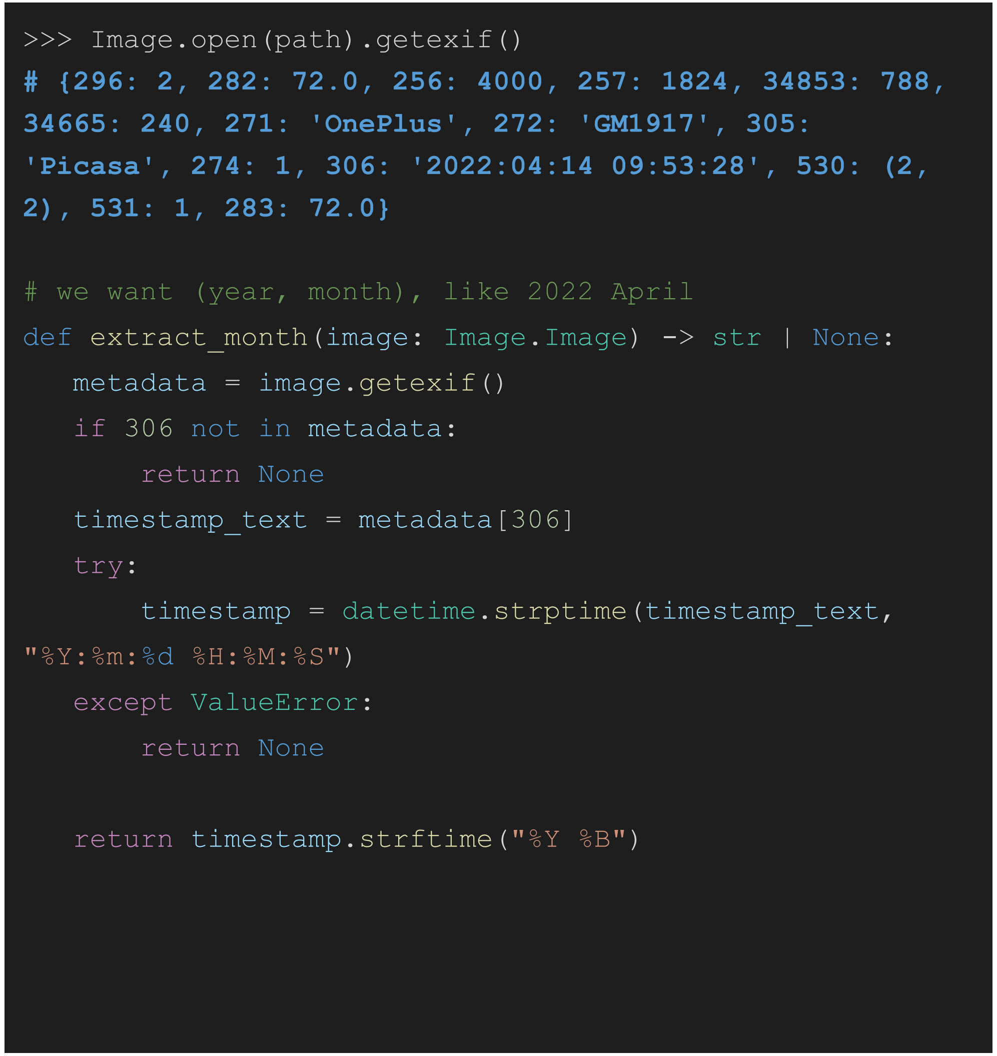
`%p`	Locale's equivalent of either AM or PM.	AM, PM (en_US); am, pm (de_DE)	(1), (3)
`%M`	Minute as a zero-padded decimal number.	00, 01, …, 59	(9)
`%S`	Second as a zero-padded decimal number.	00, 01, …, 59	(4), (9)
`%f`	Microsecond as a decimal number, zero-padded to 6 digits.	000000, 000001, …, 999999	(5)
`%z`	UTC offset in the form `±HHMM[SS[.ffffff]]` (empty string if the object is naive)	(empty), +0000, -0400, +1030, +063415, -030712.345216	(6)



```python
>>> 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)
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        new_path = month_path / f"{new_name}{path.suffix}"
...
```
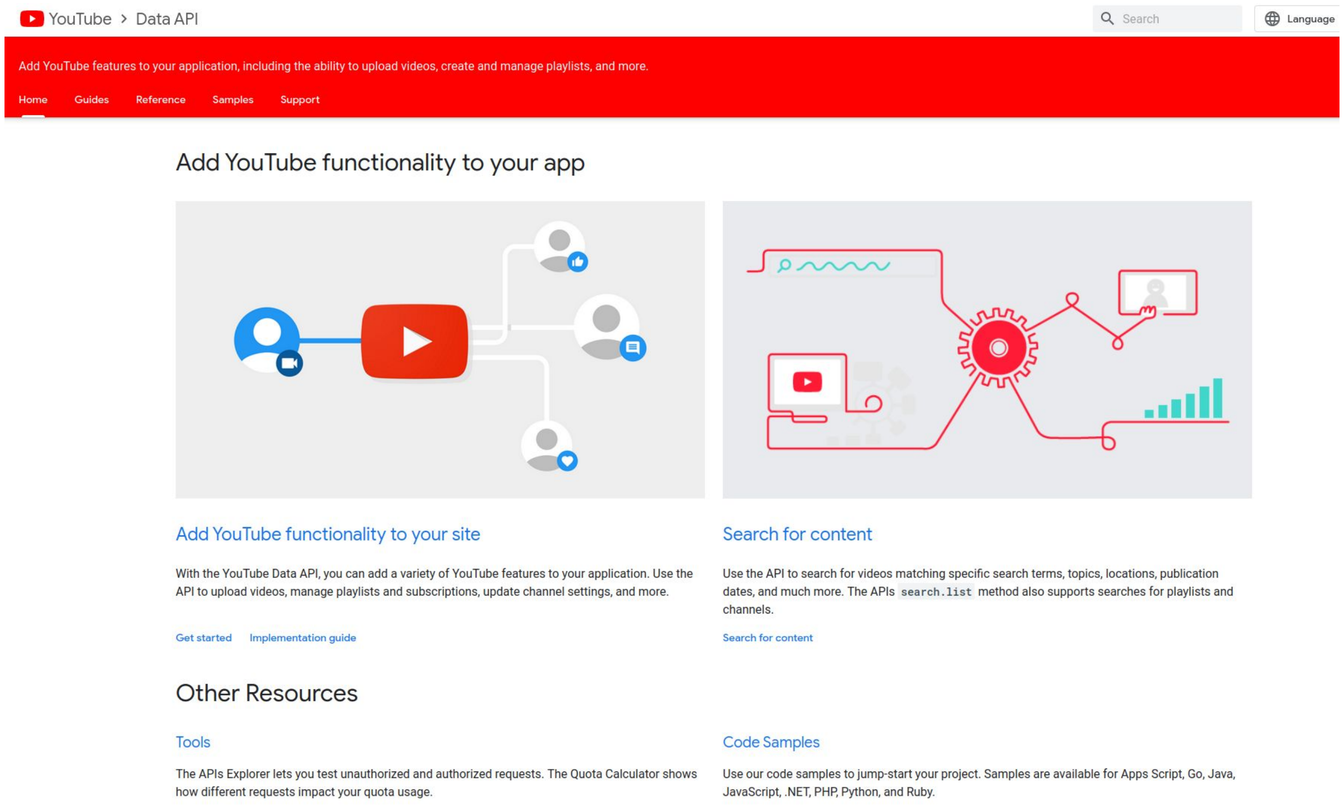

APIs (Jisho)

Other APIs



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

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

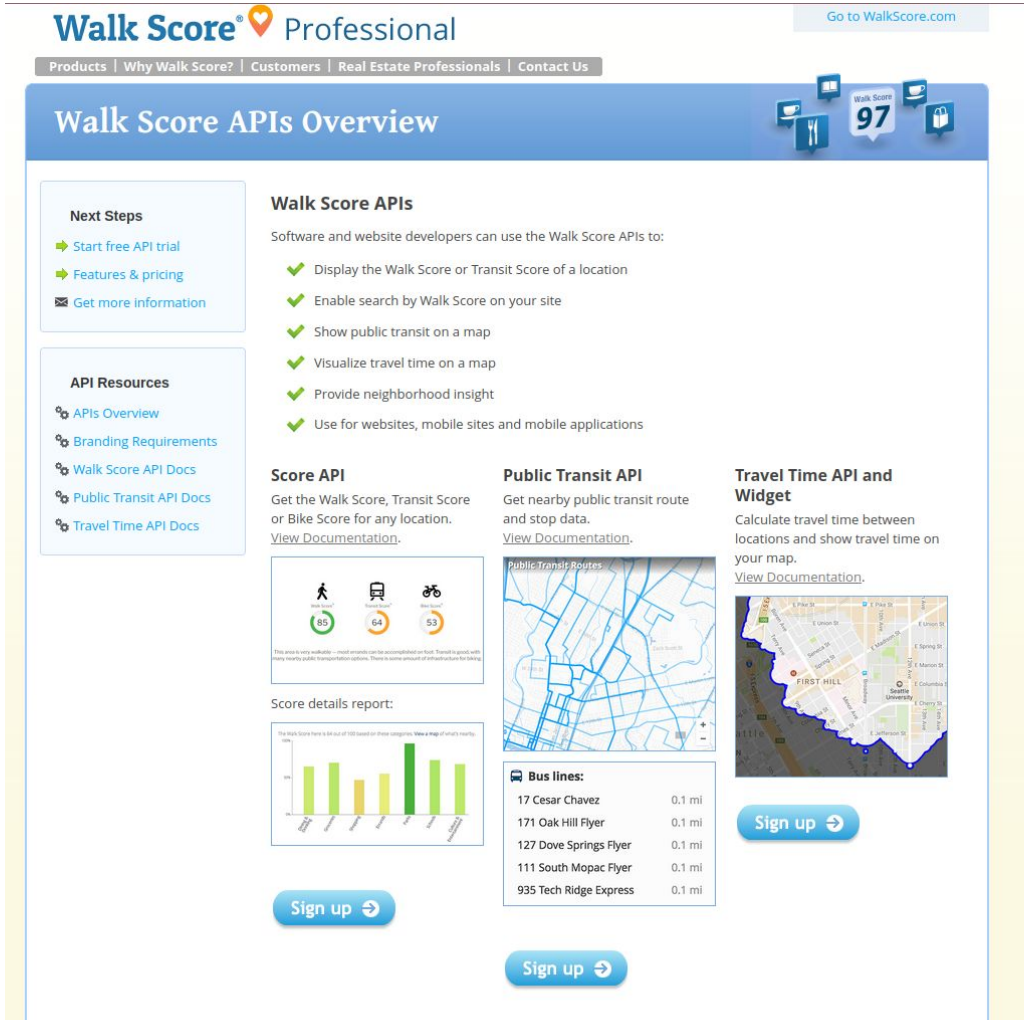
Tools

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:

Public Transit API

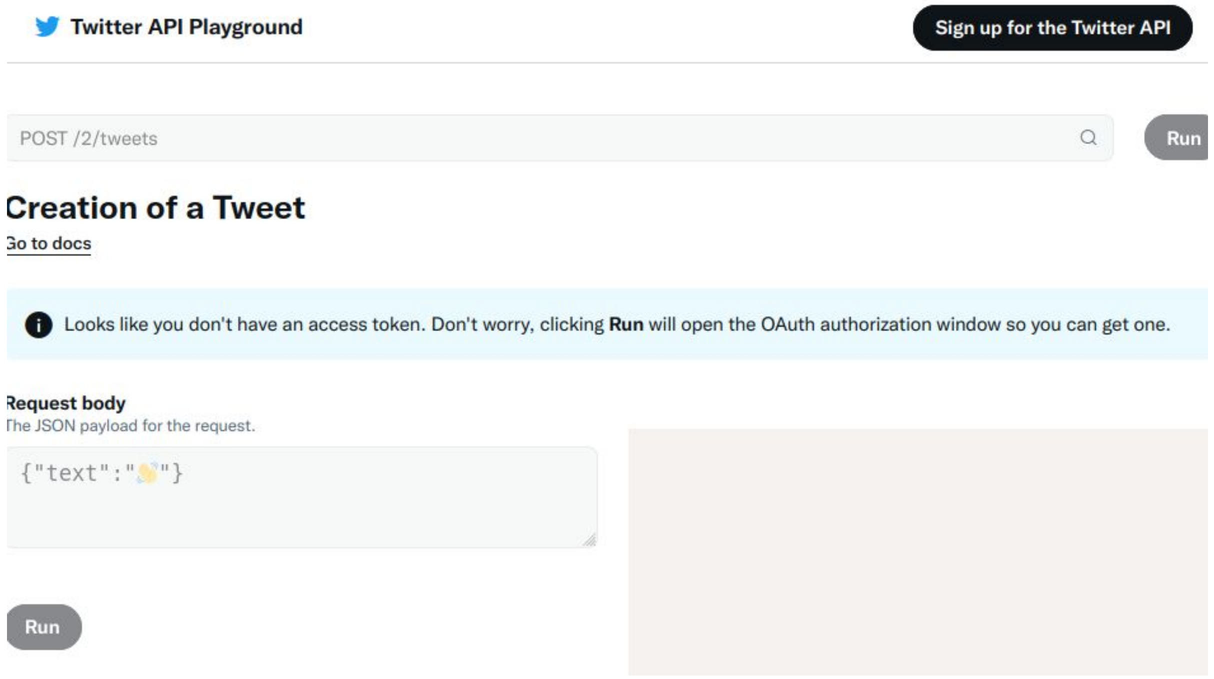
Get nearby public transit route and stop data. View Documentation.

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

Travel Time API and Widget

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

Other APIs



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.

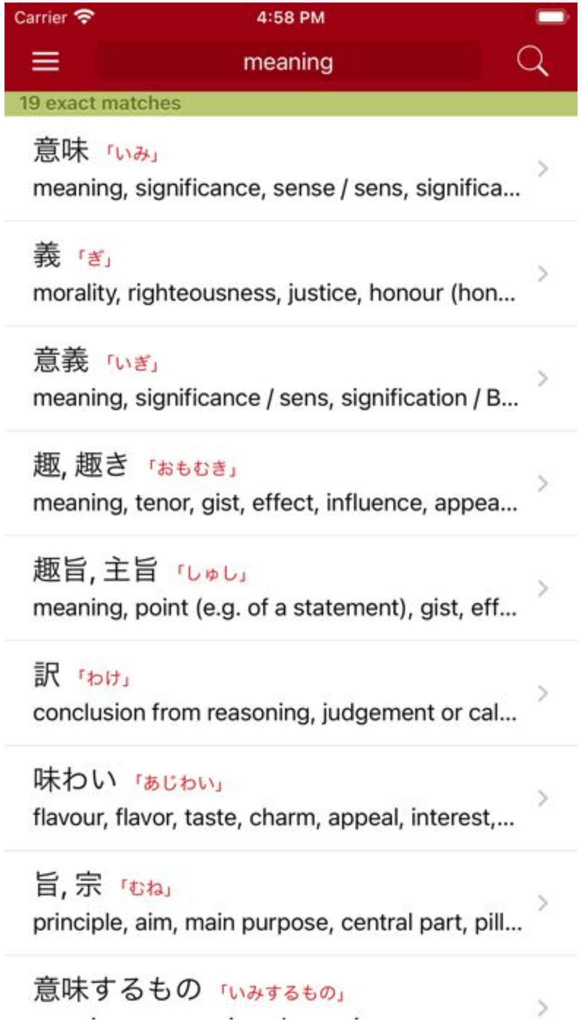
Request body

The JSON payload for the request.

```
{"text":"👋"}
```

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


Carrier 4:58 PM

meaning

19 exact matches

意味 「いみ」
meaning, significance, sense / sens, significa...

義 「ぎ」
morality, righteousness, justice, honour (hon...

意義 「いぎ」
meaning, significance / sens, signification / B...

趣, 趣き 「おもむき」
meaning, tenor, gist, effect, influence, appea...

趣旨, 主旨 「しゅし」
meaning, point (e.g. of a statement), gist, eff...

訳 「わけ」
conclusion from reasoning, judgement or cal...

味わい 「あじわい」
flavour, flavor, taste, charm, appeal, interest,...

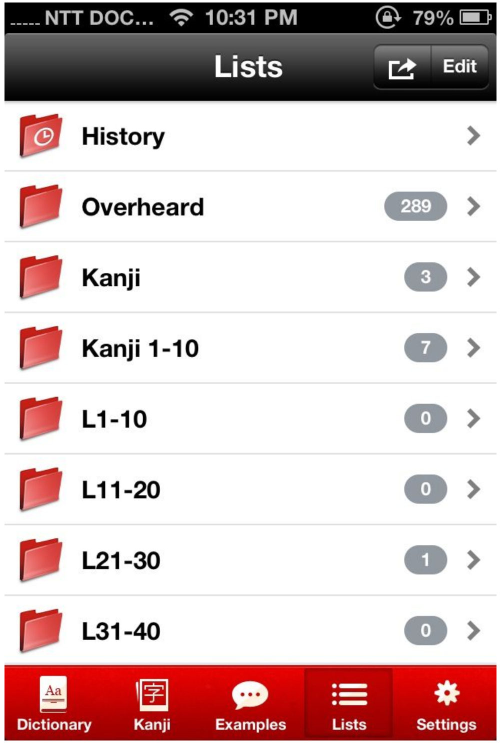
旨, 宗 「むね」
principle, aim, main purpose, central part, pill...

意味するもの 「いみするもの」

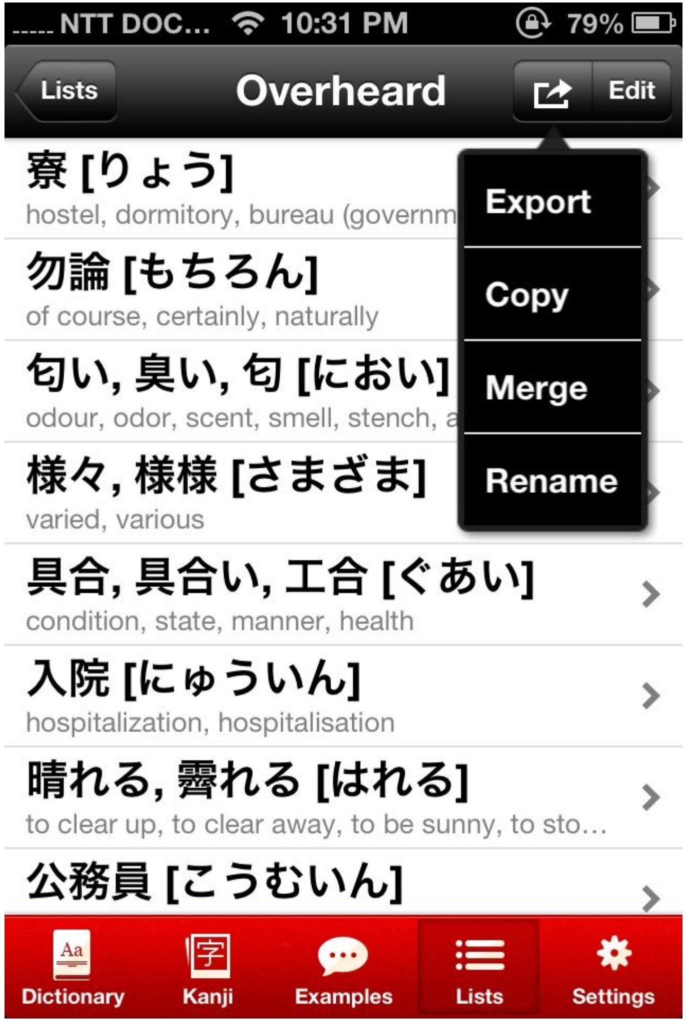
Jisho Origins: imiwa

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



History	
Overheard	289
Kanji	3
Kanji 1-10	7
L1-10	0
L11-20	0
L21-30	1
L31-40	0



寮 [りょう]
hostel, dormitory, bureau (governm

勿論 [もちろん]
of course, certainly, naturally

匂い, 臭い, 匂 [におい]
odour, odor, scent, smell, stench, a

様々, 様様 [さまざま]
varied, various

具合, 具合い, 工合 [ぐあい]
condition, state, manner, health

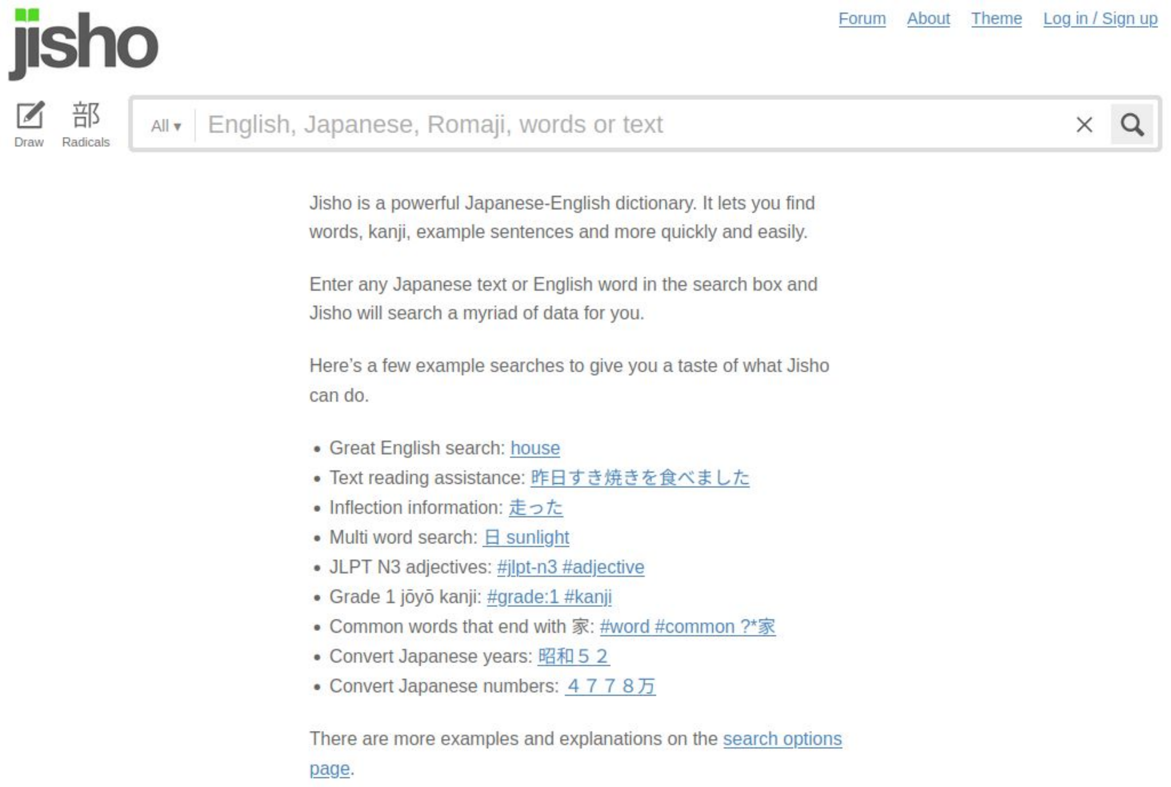
入院 [にゅういん]
hospitalization, hospitalisation

晴れる, 霽れる [はれる]
to clear up, to clear away, to be sunny, to sto…

公務員 [こうむいん]

Jisho

https://jisho.org/



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.

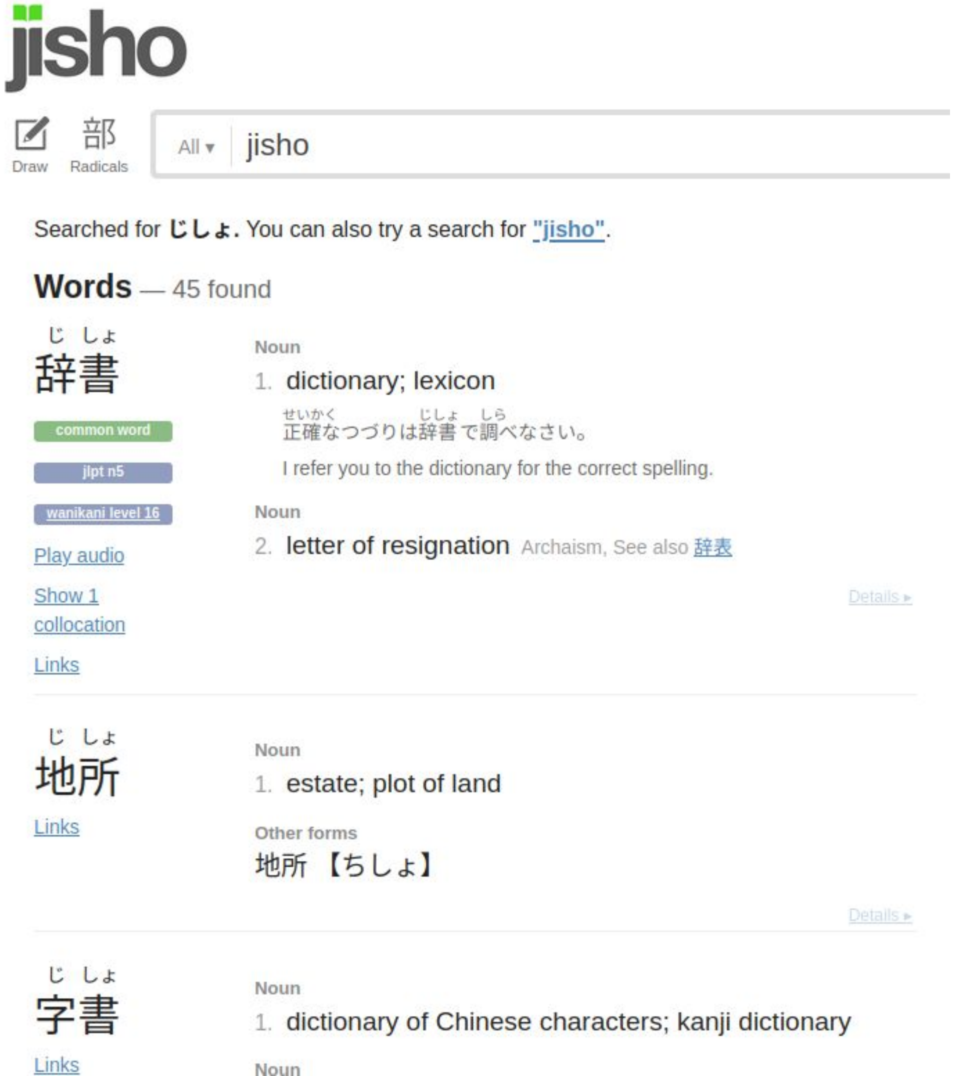
Here's a few example searches to give you a taste of what Jisho can do.

- 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 Radicals

All ▾ jisho

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

Words — 45 found

じしょ
辞書

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 ▸

じしょ
地所

Links

Noun

1. estate; plot of land

Other forms

地所 【ちしょ】

Details ▸

じしょ
字書

Links

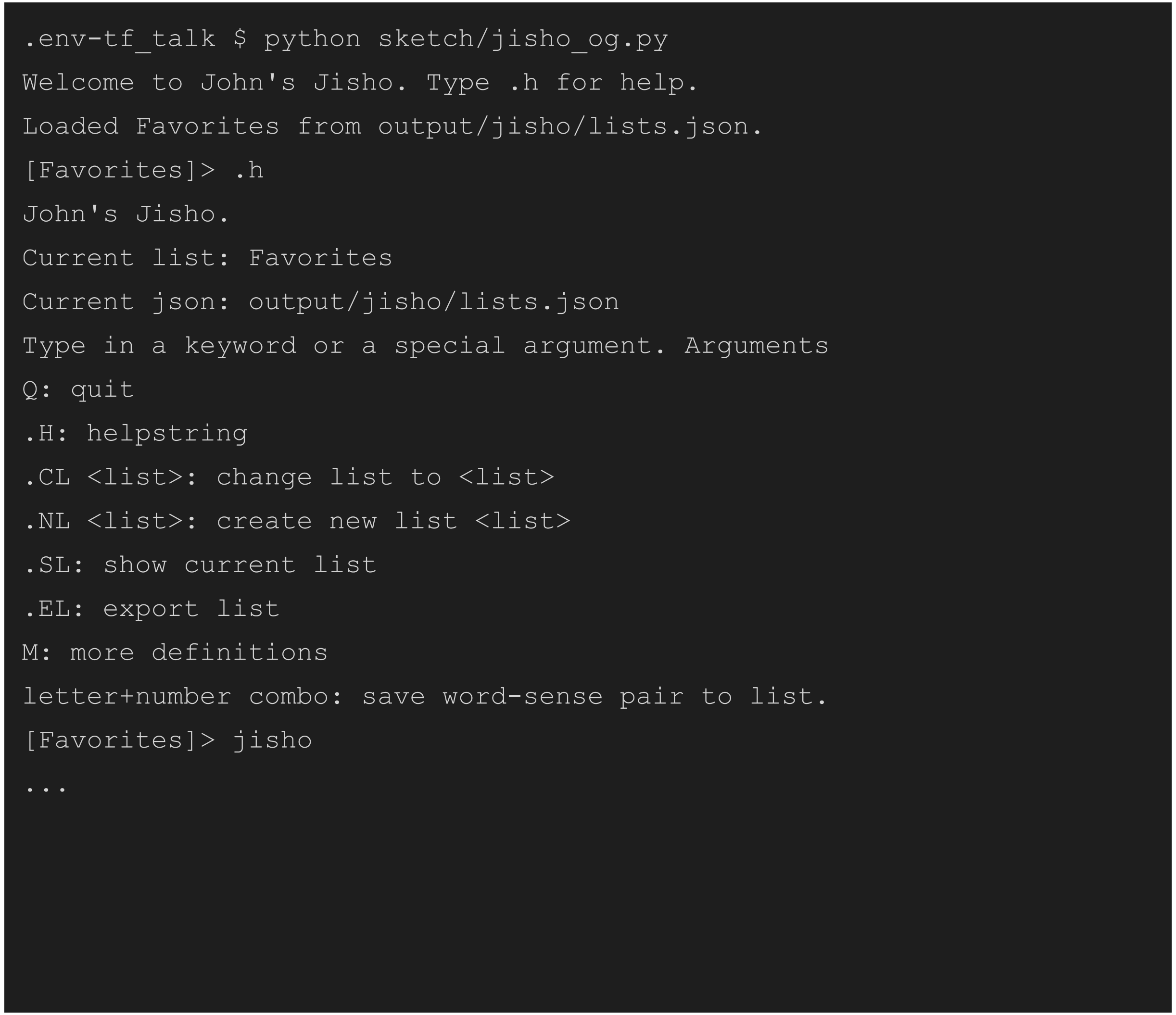
Noun

1. dictionary of Chinese characters; kanji dictionary

Noun

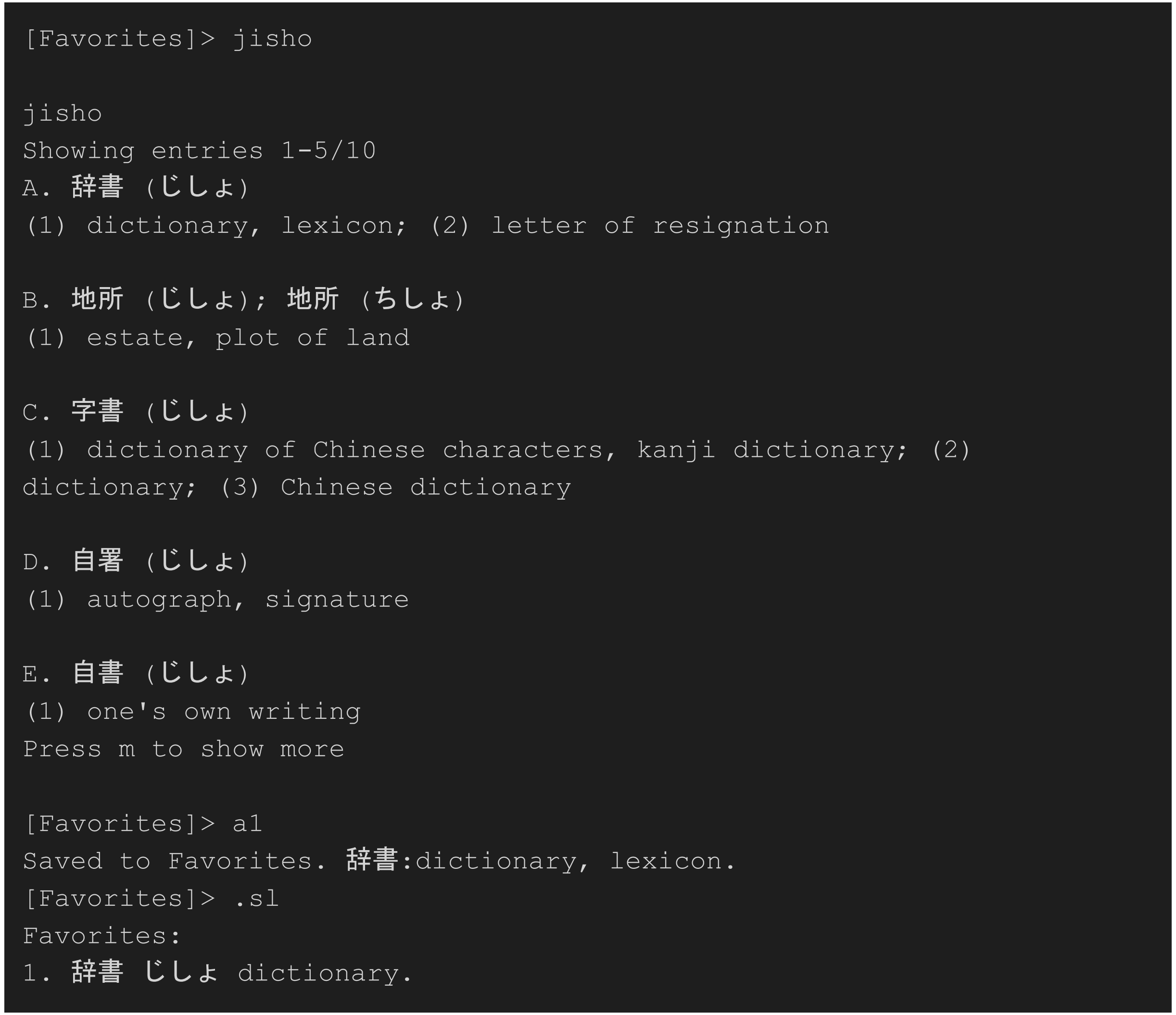
Jisho: Demo

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
...
```

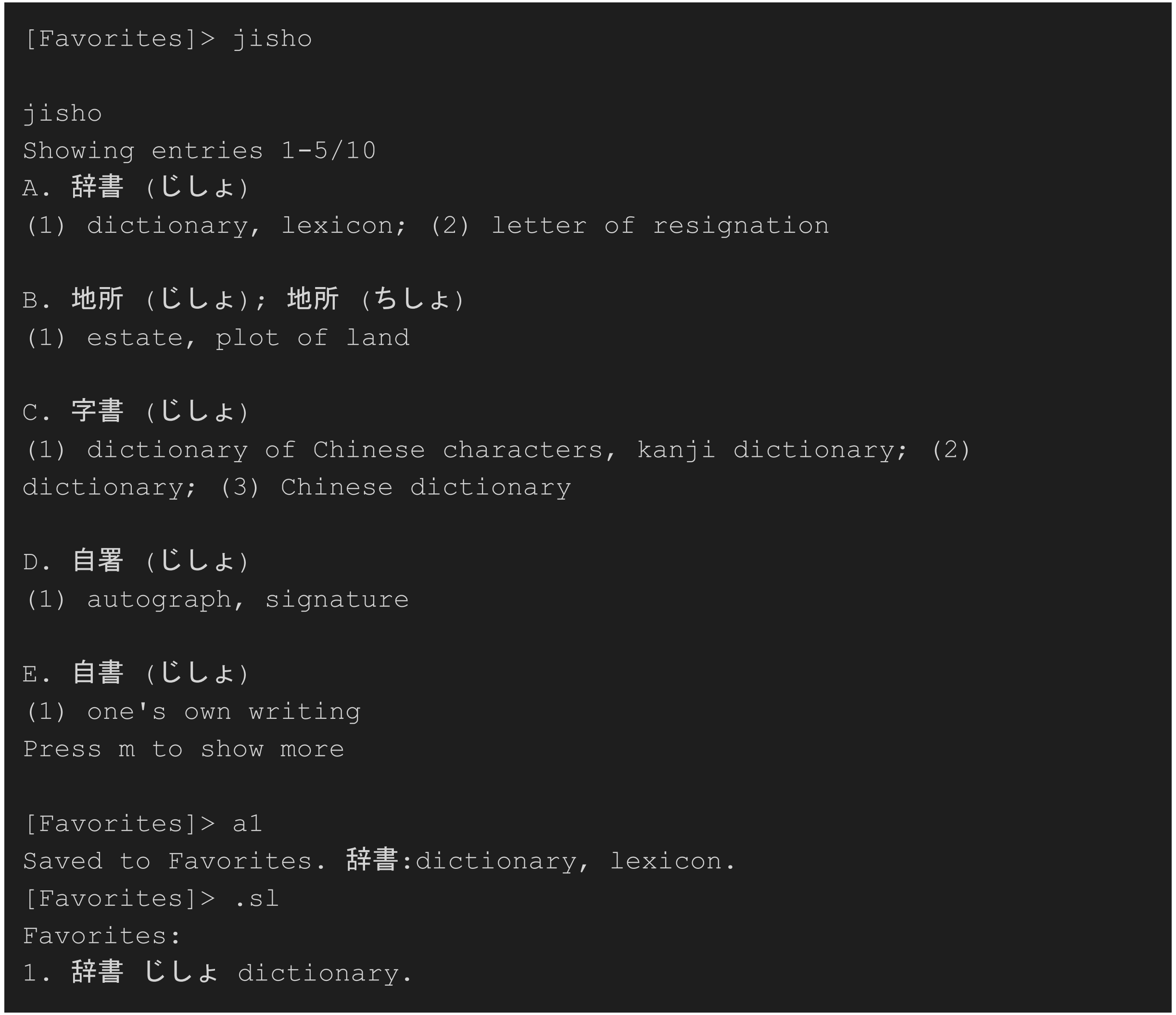
Jisho (Demo)



```
[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)
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C. 字書 (じしょ)
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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.
```
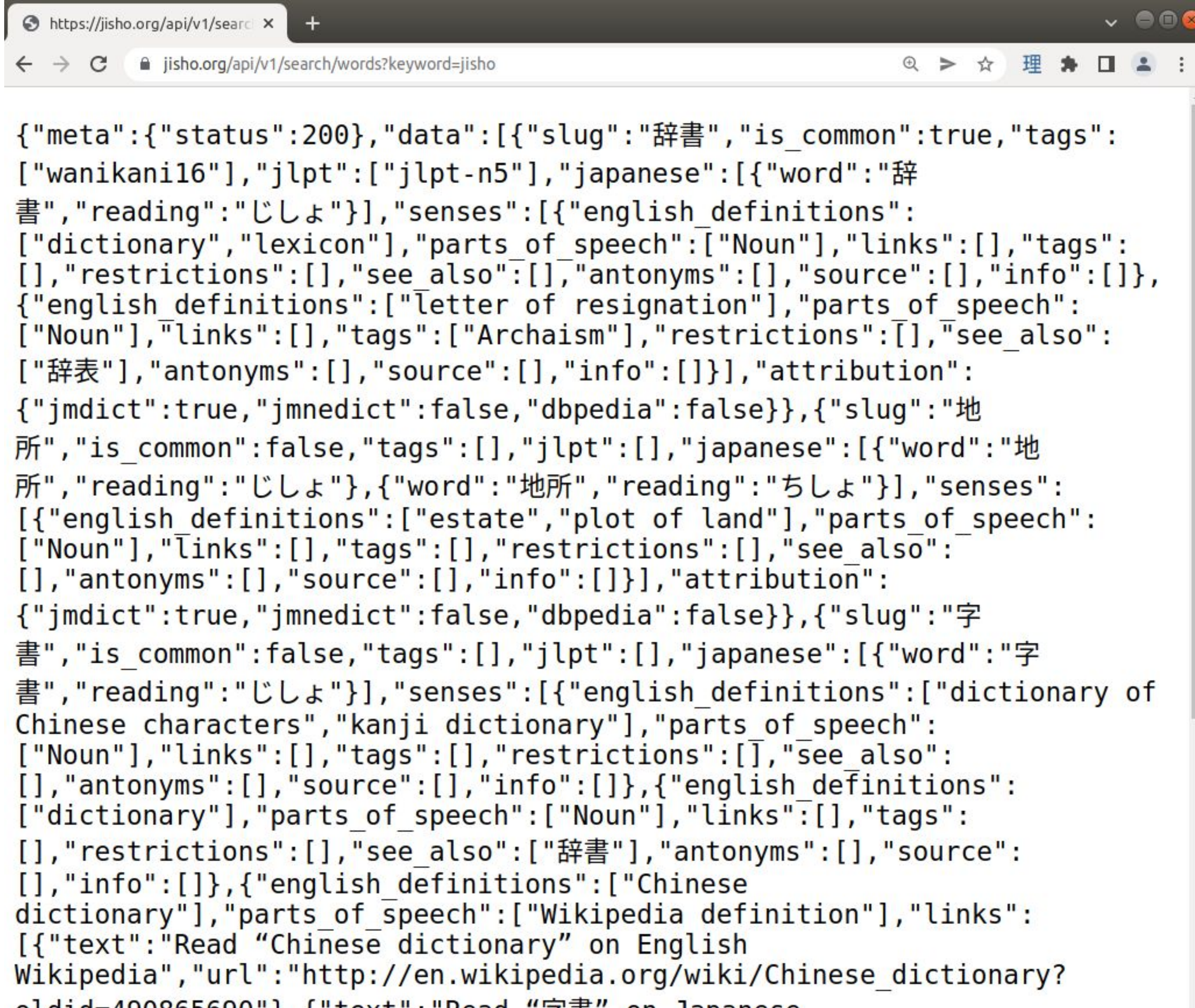

Jisho: API

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



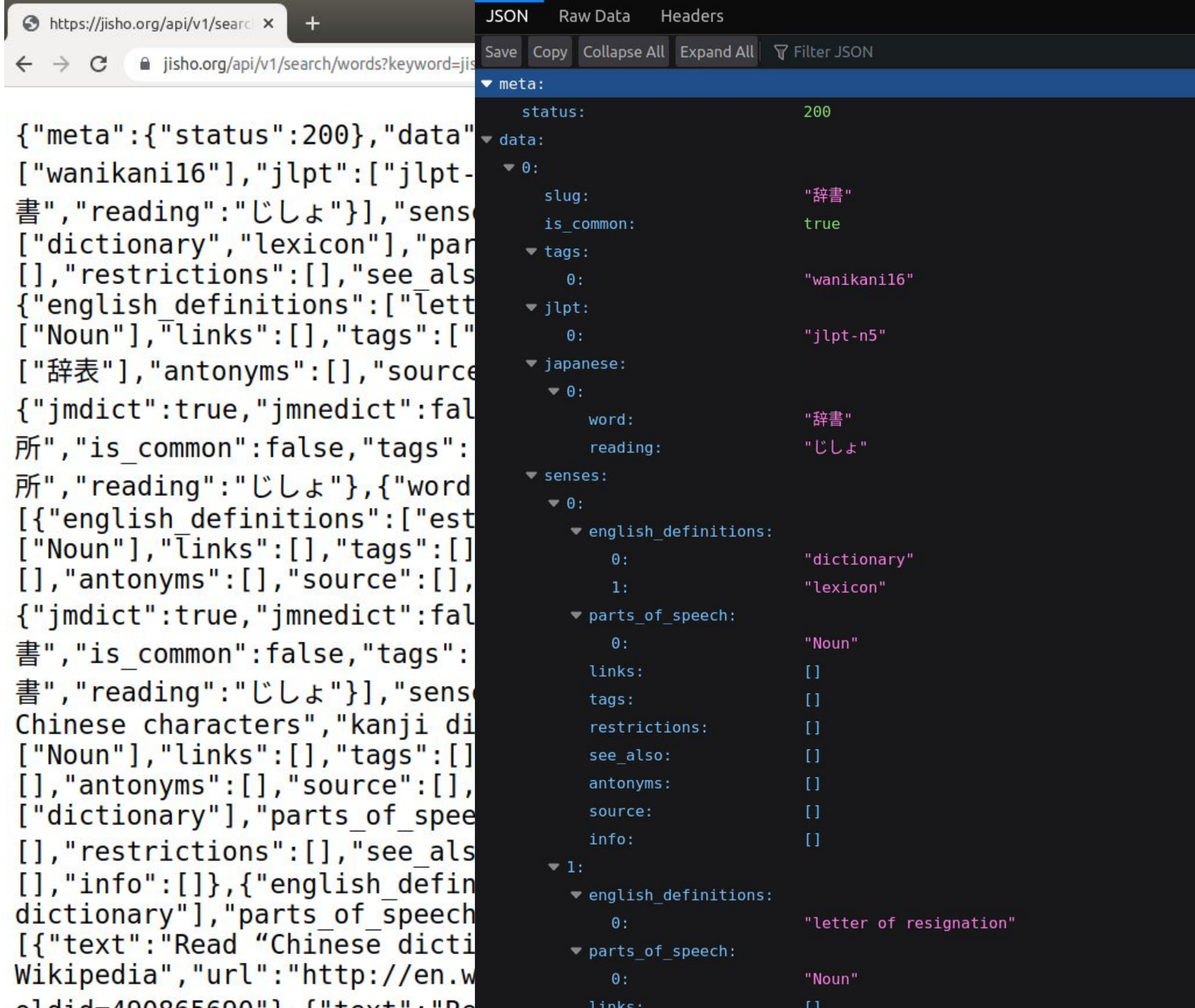
https://jisho.org/api/v1/searc

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?oldid=490865690"},{"text":"Read “字書” on Japanese

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
JSON
Raw Data
Headers
Save
Copy
Collapse All
Expand All
Filter JSON

```
{"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
```

```
▼ 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

```
# 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': ...
```

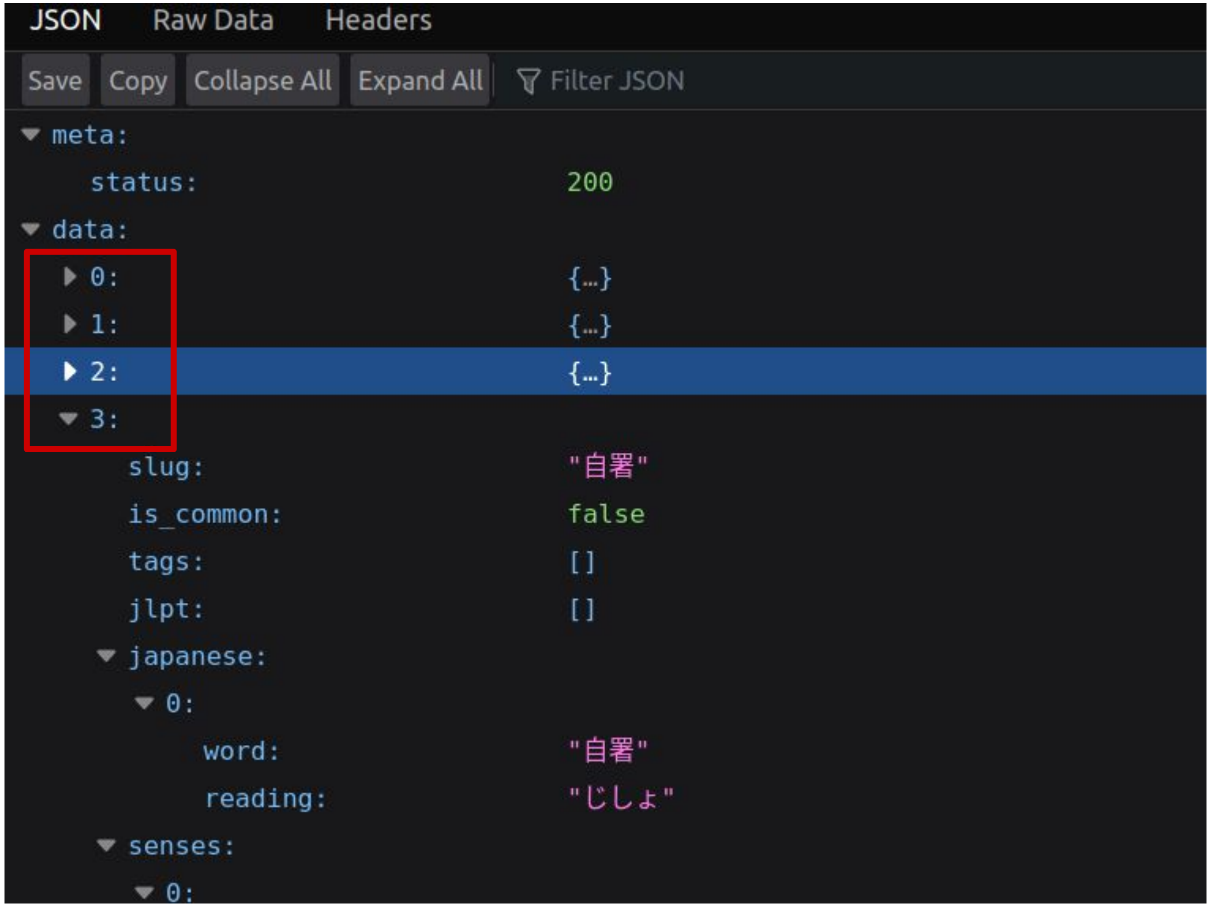
Jisho

```
# 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

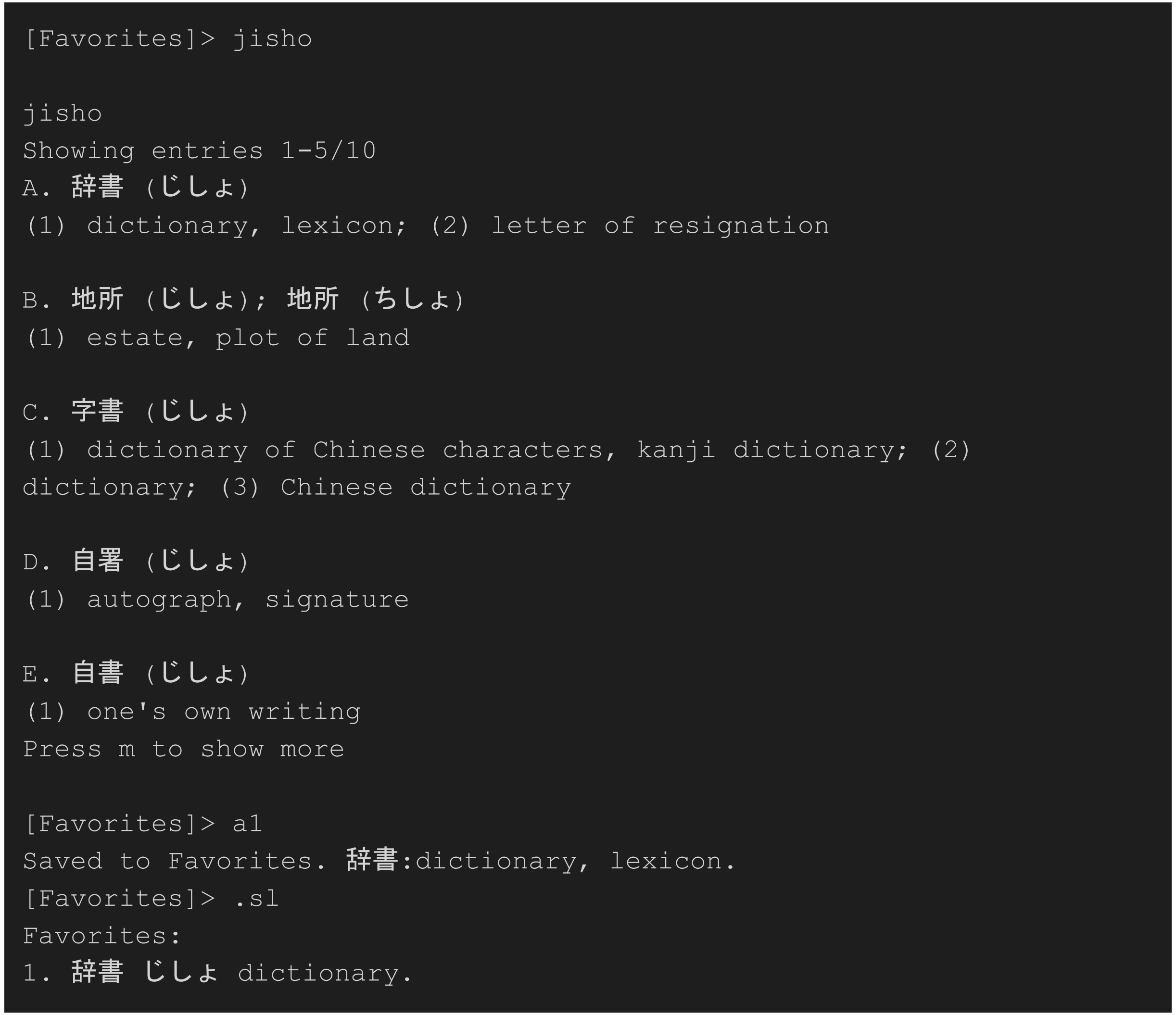
```python
# jisho.py
...
def call_api(keyword: str) -> JsonT:
    response = requests.get(f"{BASE_URL}/words?keyword={keyword}")
    response.raise_for_status()
    return response.json()


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

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

Jisho



```
▼ 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

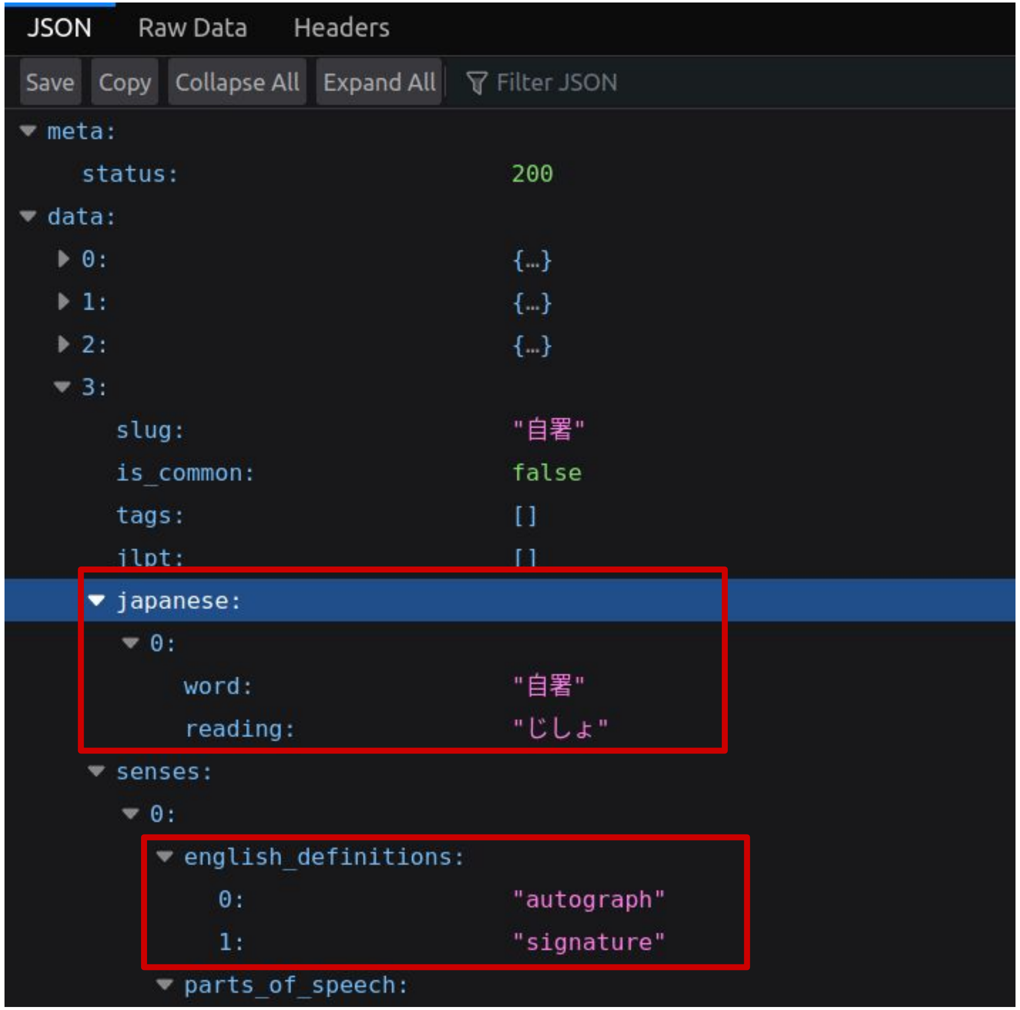


```
[Favorites]> jisho

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

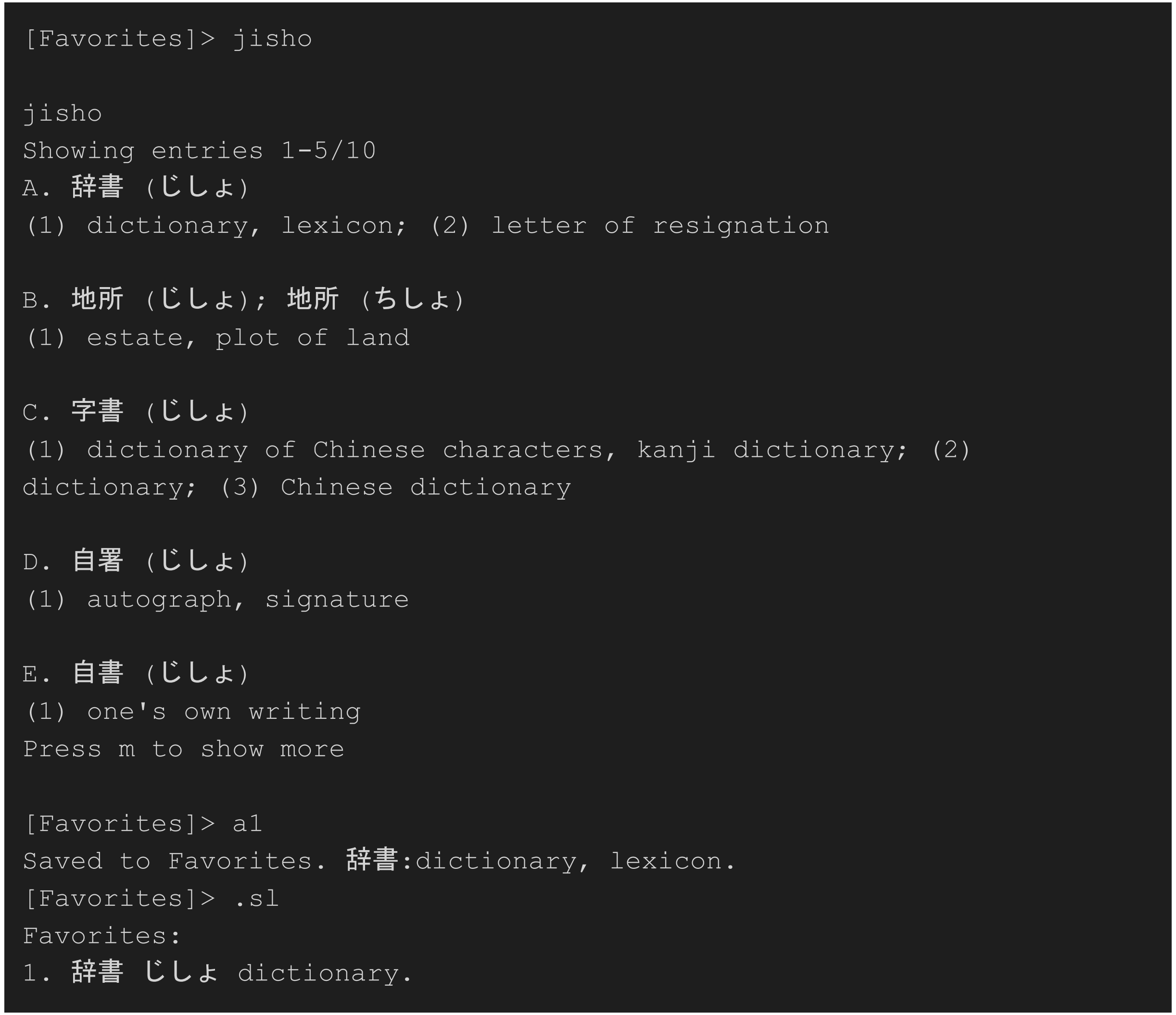
```python
# jisho.py
def parse_response(response_json: JsonT):
    data = response_json["data"]
    parsed_response = {}
    for i, entry in enumerate(data, 1):
        parsed_response[num_to_letter(i)] = parse_entry(entry)
    return parsed_response

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

Jisho



```
▼ 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)
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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

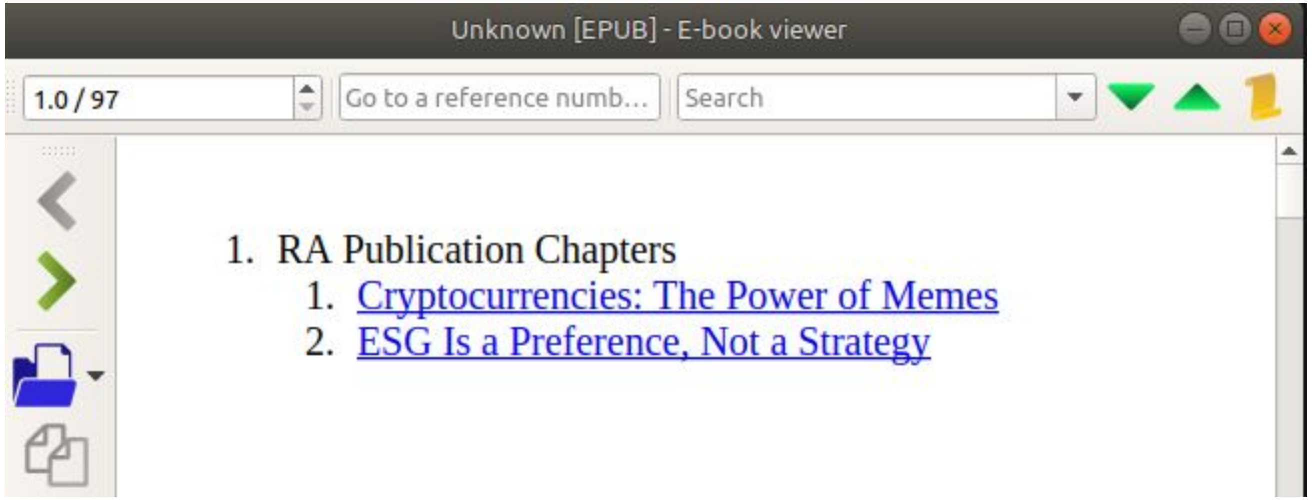
```python
# jisho.py
imports, constants

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
```

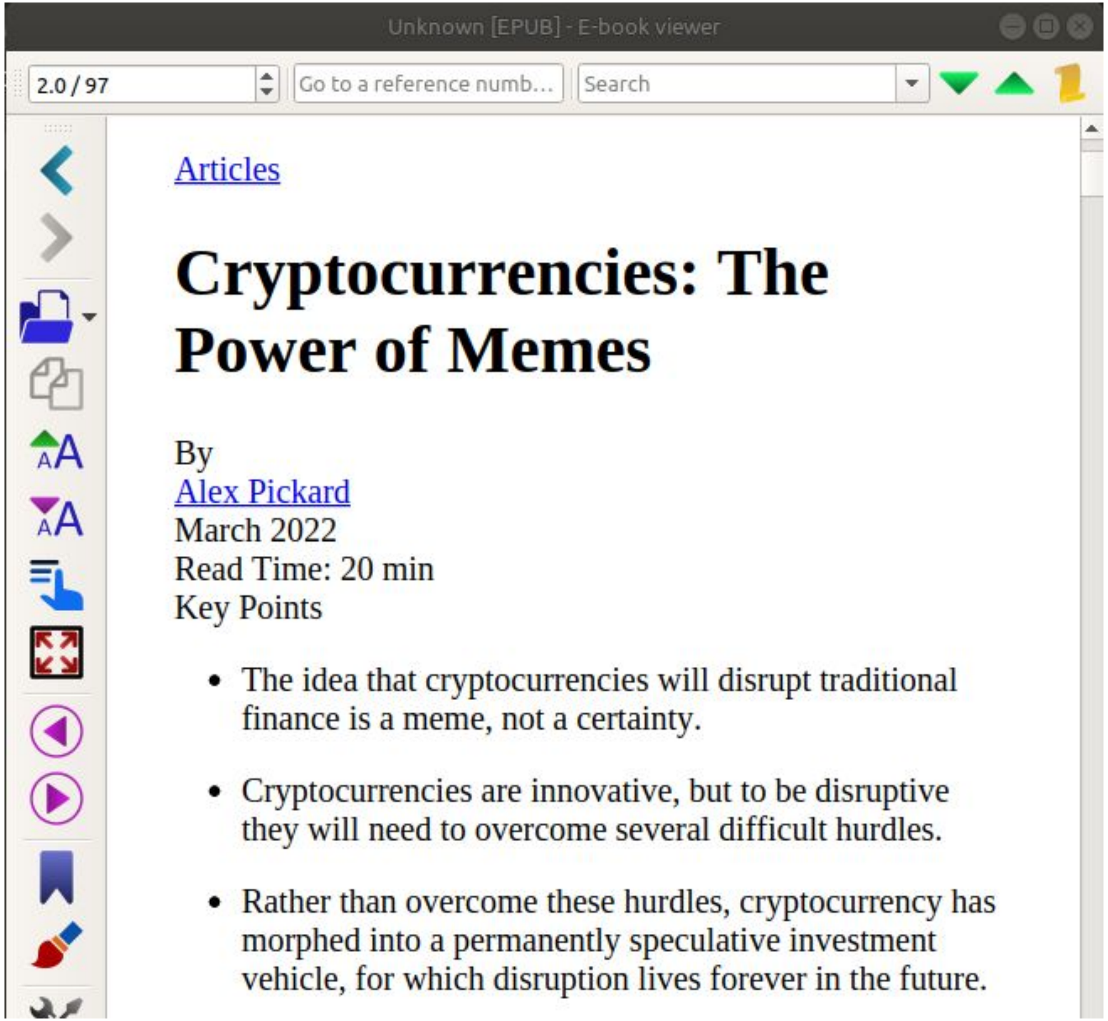
Ebook (Demo)



1. RA Publication Chapters
    1. Cryptocurrencies: The Power of Memes
    2. ESG Is a Preference, Not a Strategy

Ebook (Demo)

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



Articles

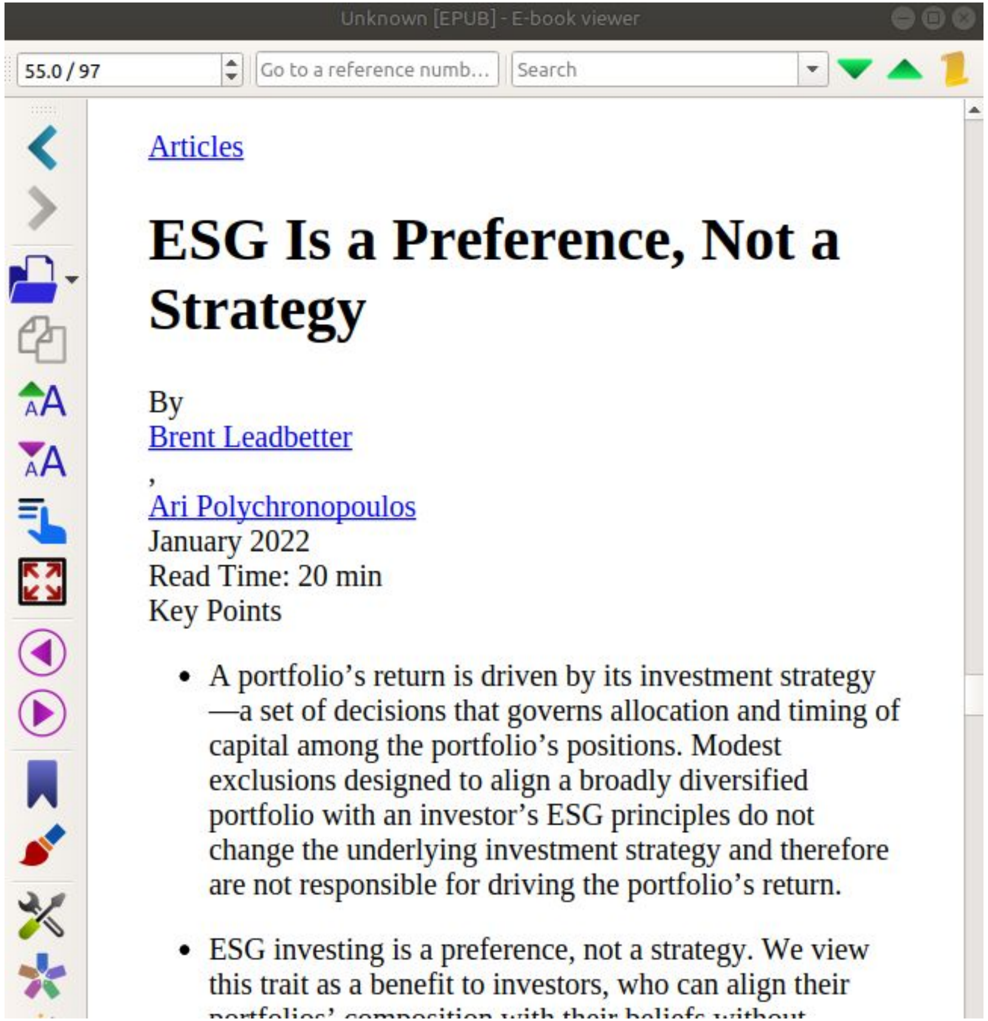
Cryptocurrencies: The Power of Memes

By
Alex Pickard
March 2022
Read Time: 20 min
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.

Ebook (Demo)

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



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55.0 / 97

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

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/

```python
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

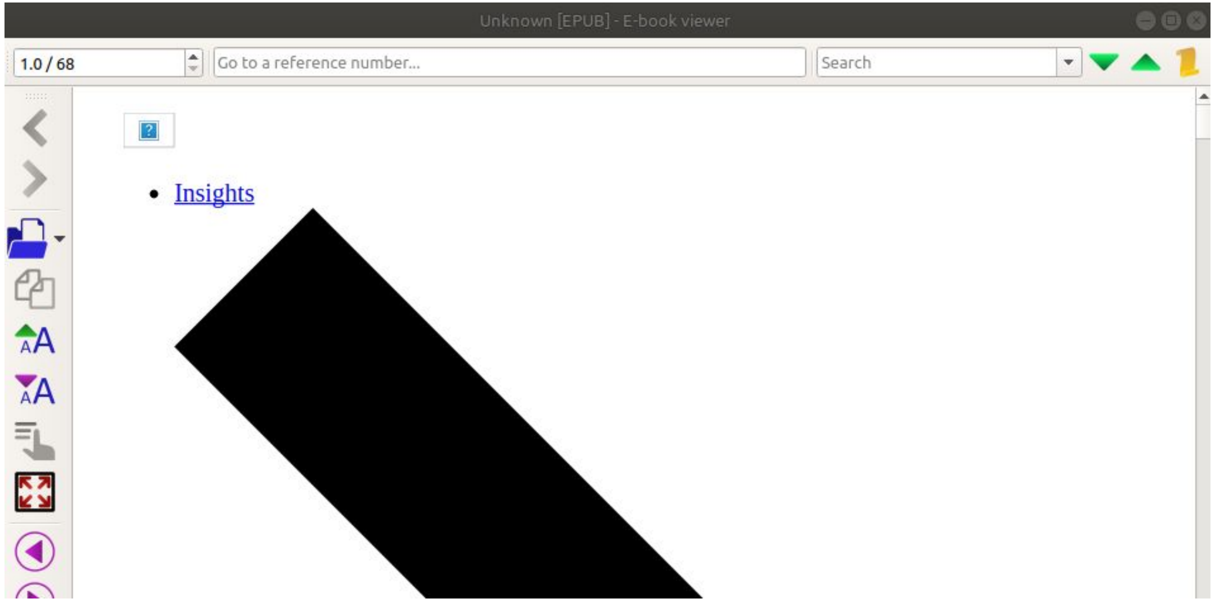
https://pypi.org/project/EbookLib/

```
# 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



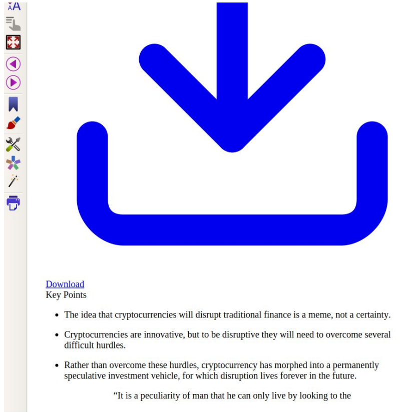
Unknown [EPUB] - E-book viewer

1.0 / 68

Go to a reference number...

Search

- Insights



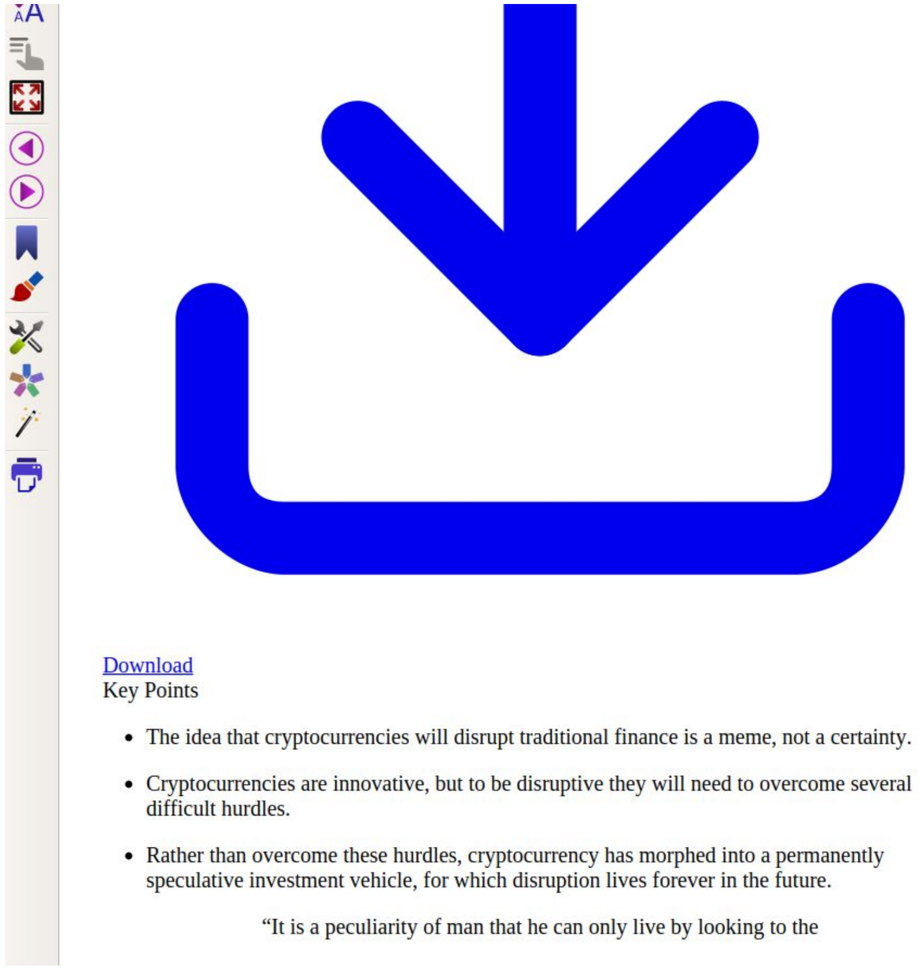
Download

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



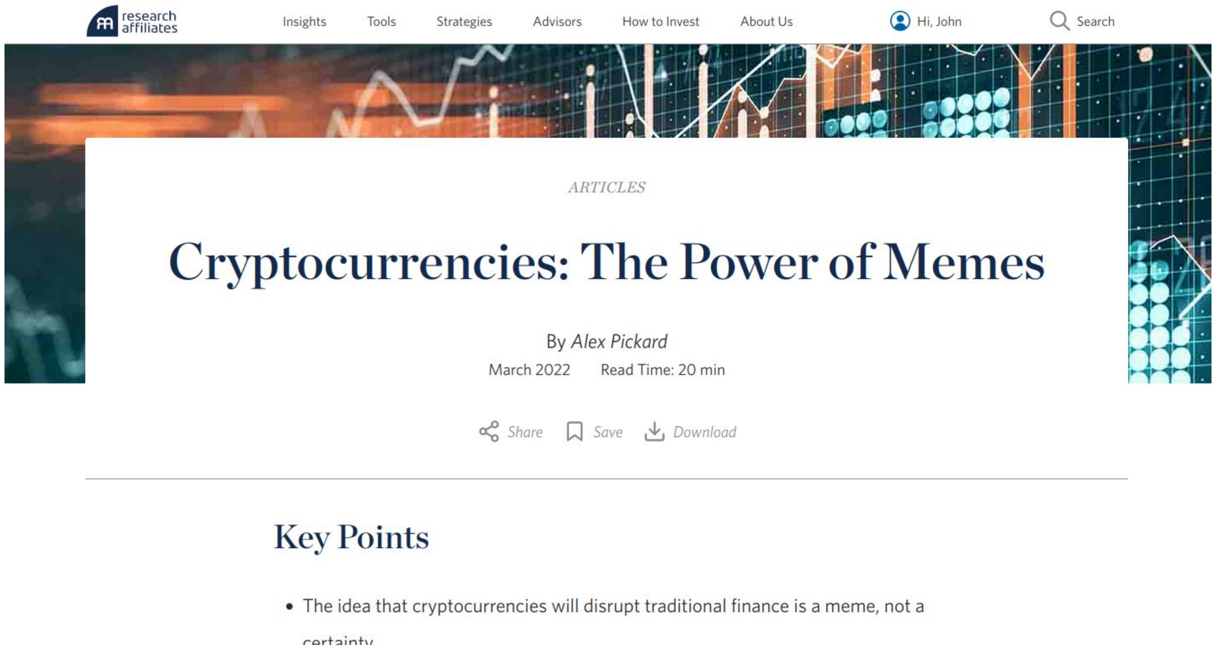
Download

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



ARTICLES

Cryptocurrencies: The Power of Memes

By *Alex Pickard*

March 2022 Read Time: 20 min

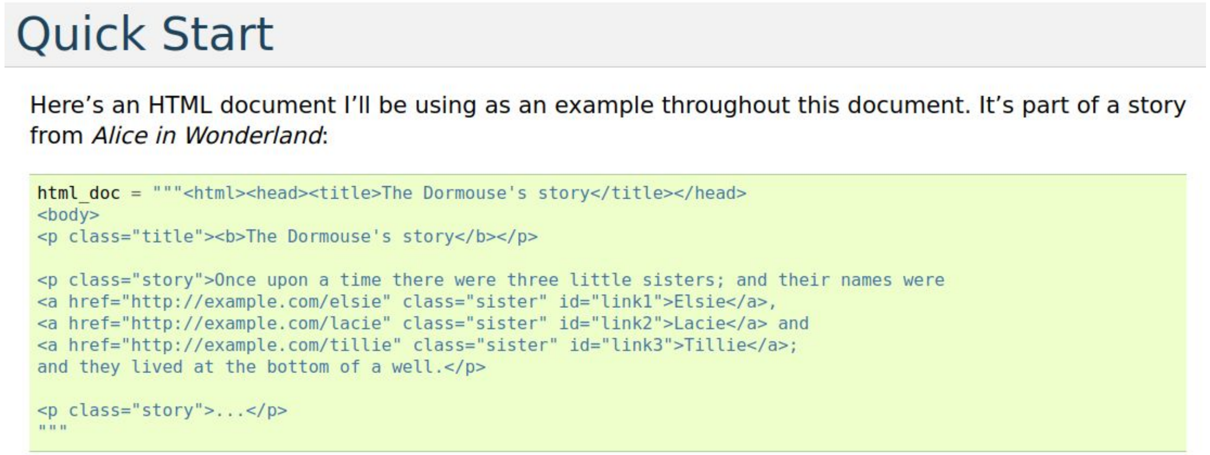
Key Points

- The idea that cryptocurrencies will disrupt traditional finance is a meme, not a certainty

Ebook

```
# 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
<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>
```

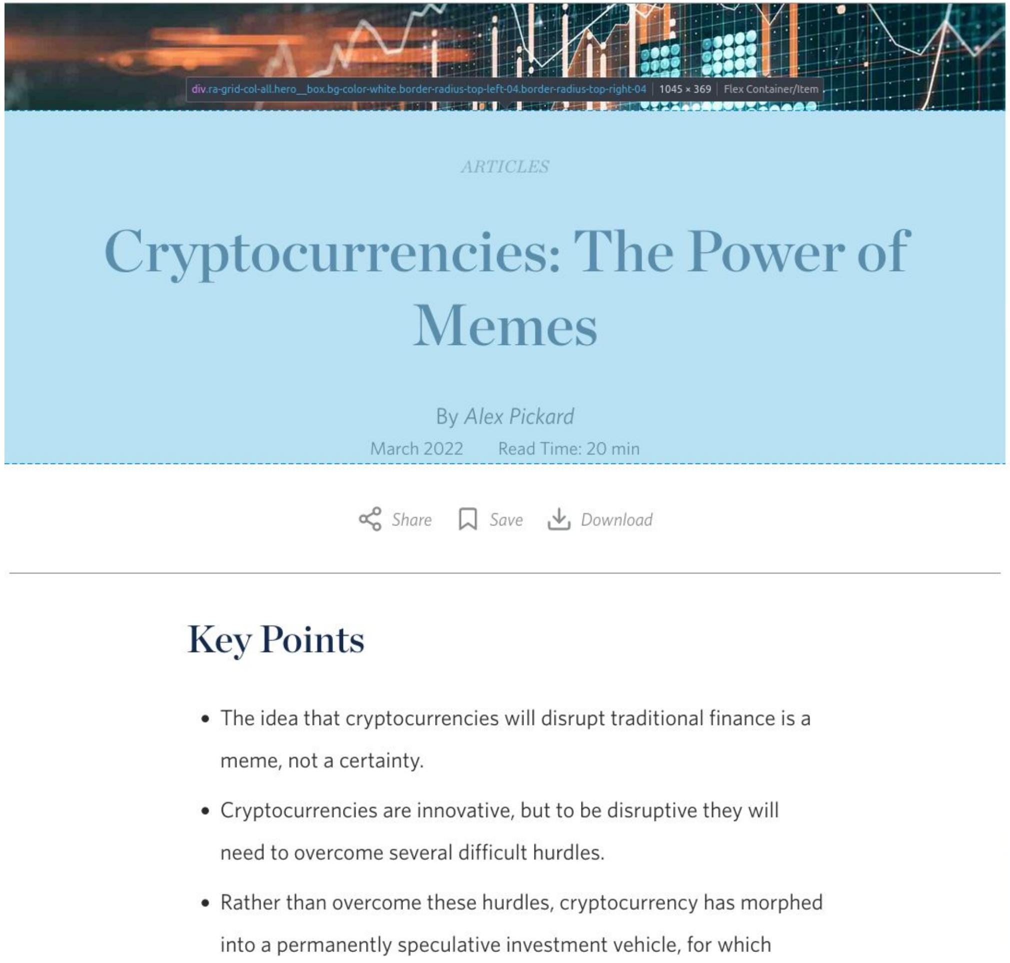
```
<html><head><title>The Dormouse's
story</title></head>
<body>
<p class="title"><b>The Dormouse's
story</b></p>

<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
```



div.ra-grid-col-all.hero__box.bg-color-white.border-radius-top-left-04.border-radius-top-right-04 | 1045 × 369 | Flex Container/Item

ARTICLES

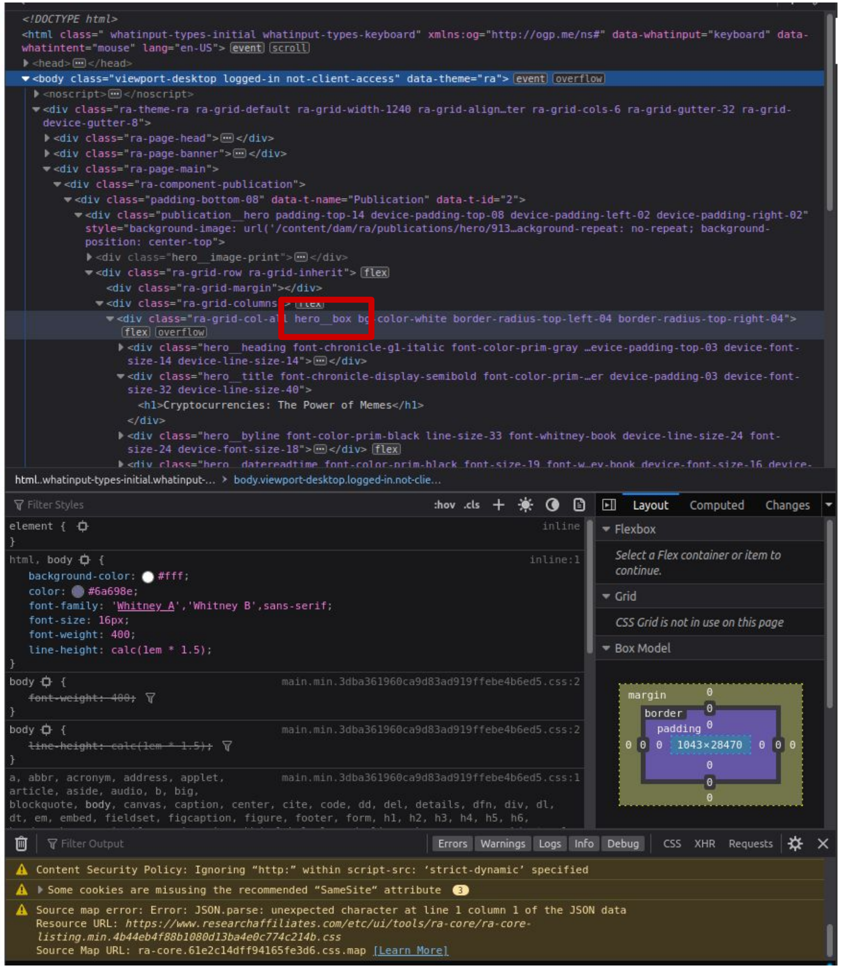
Cryptocurrencies: The Power of Memes

By *Alex Pickard*

March 2022 Read Time: 20 min

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



```
<!DOCTYPE html>
<html class=" whatinput-types-initial whatinput-types-keyboard" xmlns:og="http://ogp.me/ns#" data-whatinput="keyboard" data-
whatintent="mouse" lang="en-US"> event scroll
  <head>⋯</head>
  <body class="viewport-desktop logged-in not-client-access" data-theme="ra"> event overflow
    <noscript>⋯</noscript>
    <div class="ra-theme-ra ra-grid-default ra-grid-width-1240 ra-grid-align…ter ra-grid-cols-6 ra-grid-gutter-32 ra-grid-
    device-gutter-8">
      <div class="ra-page-head">⋯</div>
      <div class="ra-page-banner">⋯</div>
      <div class="ra-page-main">
        <div class="ra-component-publication">
          <div class="padding-bottom-08" data-t-name="Publication" data-t-id="2">
            <div class="publication__hero padding-top-14 device-padding-top-08 device-padding-left-02 device-padding-right-02"
            style="background-image: url('/content/dam/ra/publications/hero/913…ackground-repeat: no-repeat; background-
            position: center-top">
              <div class="hero__image-print">⋯</div>
              <div class="ra-grid-row ra-grid-inherit"> flex
                <div class="ra-grid-margin"></div>
                <div class="ra-grid-columns"> flex
                  <div class="ra-grid-col-all hero__box bg-color-white border-radius-top-left-04 border-radius-top-right-04">
                  flex overflow
                    <div class="hero__heading font-chronicle-gl-italic font-color-prim-gray …evice-padding-top-03 device-font-
                    size-14 device-line-size-14">⋯</div>
                    <div class="hero__title font-chronicle-display-semibold font-color-prim-…er device-padding-03 device-font-
                    size-32 device-line-size-40">
                      <h1>Cryptocurrencies: The Power of Memes</h1>
                    </div>
                    <div class="hero__byline font-color-prim-black line-size-33 font-whitney-book device-line-size-24 font-
                    size-24 device-font-size-18">⋯</div> flex
                    <div class="hero__datereadtime font-color-prim-black font-size-19 font-w…ey-book device-font-size-16 device-
html..whatinput-types-initial.whatinput-… > body.viewport-desktop.logged-in.not-clie…
```

```
element {                                                    inline
}
html, body {                                                 inline:1
  background-color: #fff;
  color: #6a698e;
  font-family: 'Whitney A','Whitney B',sans-serif;
  font-size: 16px;
  font-weight: 400;
  line-height: calc(1em * 1.5);
}
body {                  main.min.3dba361960ca9d83ad919ffebe4b6ed5.css:2
  ~~font-weight: 400;~~
}
body {                  main.min.3dba361960ca9d83ad919ffebe4b6ed5.css:2
  ~~line-height: calc(1em * 1.5);~~
}
a, abbr, acronym, address, applet,   main.min.3dba361960ca9d83ad919ffebe4b6ed5.css:1
article, aside, audio, b, big,
blockquote, body, canvas, caption, center, cite, code, dd, del, details, dfn, div, dl,
dt, em, embed, fieldset, figcaption, figure, footer, form, h1, h2, h3, h4, h5, h6,
```

Flexbox

Select a Flex container or item to continue.

Grid

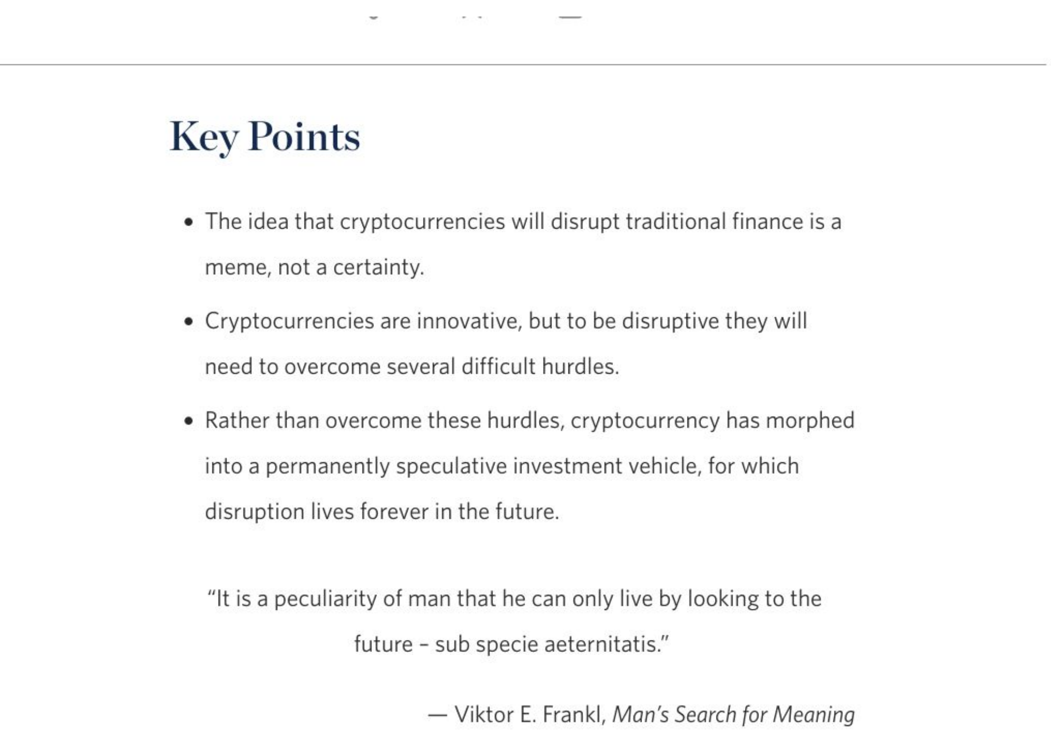
CSS Grid is not in use on this page

Box Model

```
⚠ Content Security Policy: Ignoring “http:” within script-src: ‘strict-dynamic’ specified
⚠ Some cookies are misusing the recommended “SameSite” attribute 3
⚠ Source map error: Error: JSON.parse: unexpected character at line 1 column 1 of the JSON data
  Resource URL: https://www.researchaffiliates.com/etc/ui/tools/ra-core/ra-core-
  listing.min.4b44eb4f88b1080d13ba4e0c774c214b.css
  Source Map URL: ra-core.61e2c14dff94165fe3d6.css.map [Learn More]
```

Ebook

```
# 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)
```

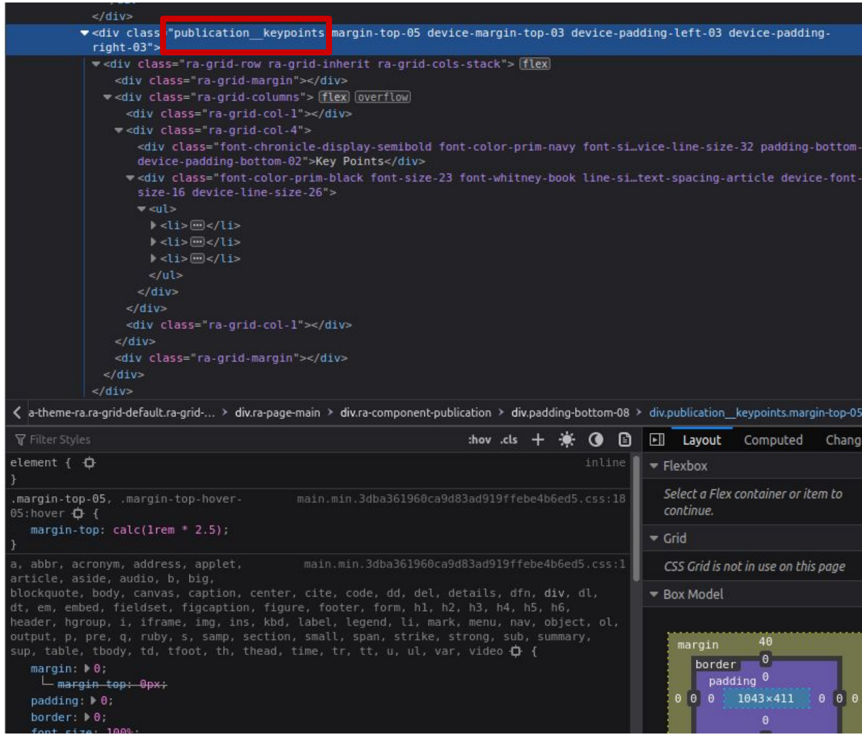


Key Points

- 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*



```
    </div>
  ▼<div class="publication__keypoints margin-top-05 device-margin-top-03 device-padding-left-03 device-padding-
    right-03">
    ▼<div class="ra-grid-row ra-grid-inherit ra-grid-cols-stack"> flex
       <div class="ra-grid-margin"></div>
      ▼<div class="ra-grid-columns"> flex overflow
         <div class="ra-grid-col-1"></div>
        ▼<div class="ra-grid-col-4">
           <div class="font-chronicle-display-semibold font-color-prim-navy font-si…vice-line-size-32 padding-bottom-
           device-padding-bottom-02">Key Points</div>
          ▼<div class="font-color-prim-black font-size-23 font-whitney-book line-si…text-spacing-article device-font-
           size-16 device-line-size-26">
            ▼<ul>
              ▶<li>…</li>
              ▶<li>…</li>
              ▶<li>…</li>
             </ul>
           </div>
         </div>
         <div class="ra-grid-col-1"></div>
       </div>
       <div class="ra-grid-margin"></div>
     </div>
   </div>
```

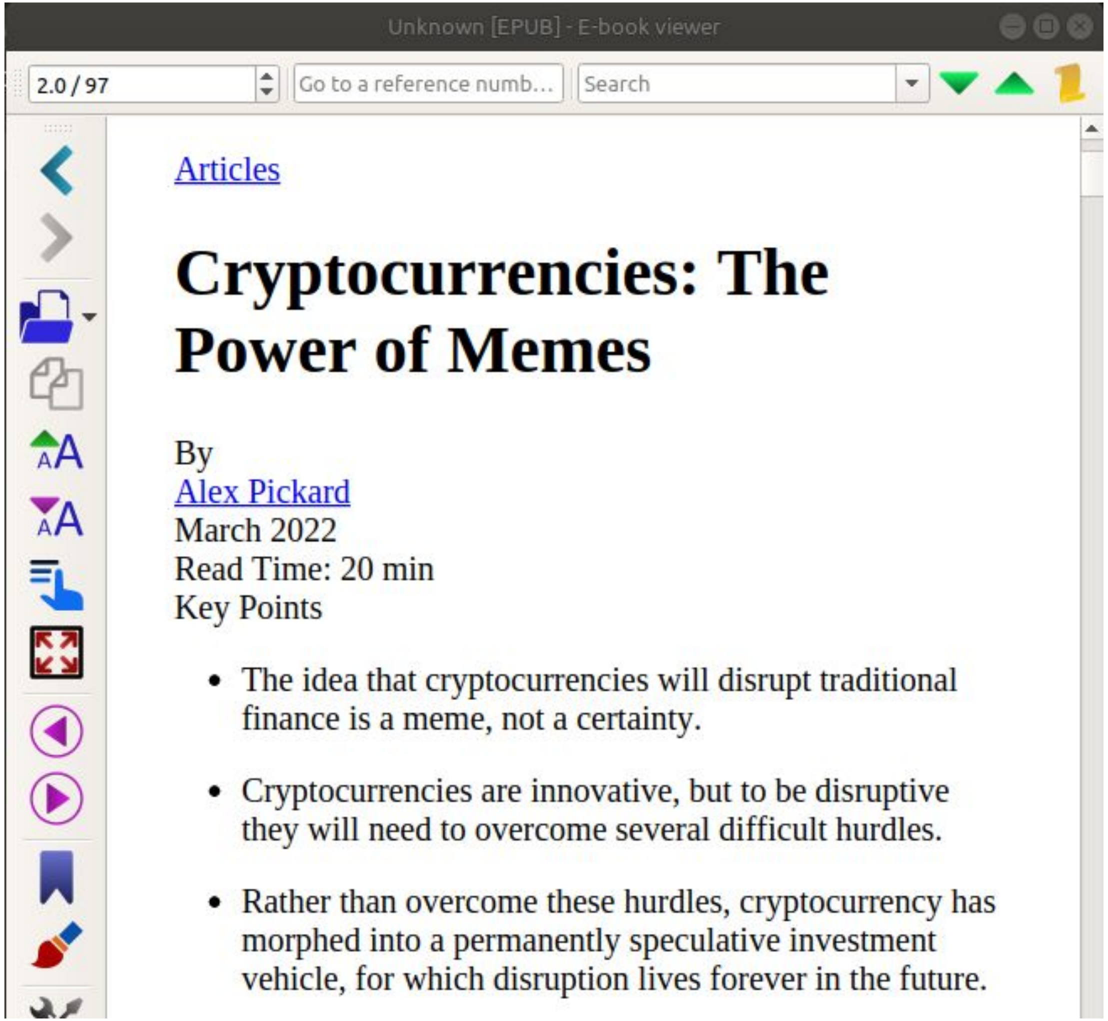
a-theme-ra.ra-grid-default.ra-grid-… › div.ra-page-main › div.ra-component-publication › div.padding-bottom-08 › div.publication__keypoints.margin-top-05

```
element {                                                    inline
}
.margin-top-05, .margin-top-hover-     main.min.3dba361960ca9d83ad919ffebe4b6ed5.css:18
05:hover {
   margin-top: calc(1rem * 2.5);
}
a, abbr, acronym, address, applet,      main.min.3dba361960ca9d83ad919ffebe4b6ed5.css:1
article, aside, audio, b, big,
blockquote, body, canvas, caption, center, cite, code, dd, del, details, dfn, div, dl,
dt, em, embed, fieldset, figcaption, figure, footer, form, h1, h2, h3, h4, h5, h6,
header, hgroup, i, iframe, img, ins, kbd, label, legend, li, mark, menu, nav, object, ol,
output, p, pre, q, ruby, s, samp, section, small, span, strike, strong, sub, summary,
sup, table, tbody, td, tfoot, th, thead, time, tr, tt, u, ul, var, video {
   margin: ▶0;
     └ ~~margin-top: 0px;~~
   padding: ▶0;
   border: ▶0;
```

Flexbox
Select a Flex container or item to continue.
Grid
CSS Grid is not in use on this page
Box Model
margin 40
border 0
padding 0
0 0 0 1043×411 0 0 0
0

Ebook

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



Articles

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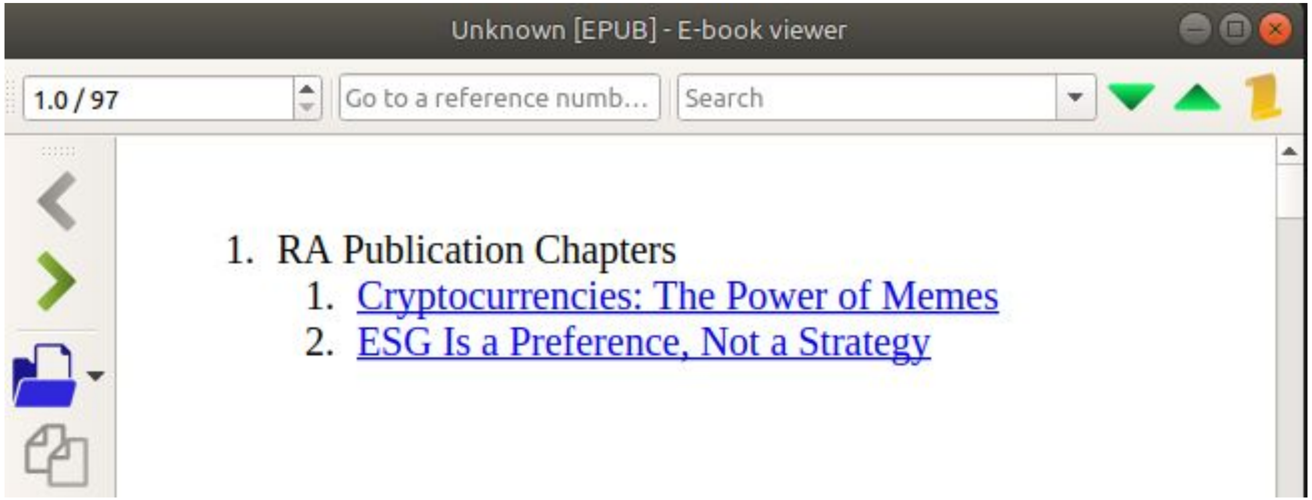
Ebook

```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



1. RA Publication Chapters
    1. Cryptocurrencies: The Power of Memes
    2. ESG Is a Preference, Not a Strategy

Python is an accessible scripting language!

- Simple adding script
- Image sorting
- API calling with Jisho
- Ebook generation
- And so much more!