Python for Economists

Discovering basic Python functionalities

Emilien Valat

September 15, 2022

University of Bristol, School of Economics

Table of contents

1. Workshop Overview
2. Python Environment
3. Python Language

Workshop Overview

Aims of each session

- Discovering the Python environment and language (Python)

Aims of each session

- Discovering the Python environment and language (Python)
- Writing your first web-scraping script (Python/HTML)

Aims of each session

- Discovering the Python environment and language (Python)
- Writing your first web-scraping script (Python/HTML)
- Building a SQL dataset and querying it (Python/HTML/SQL)

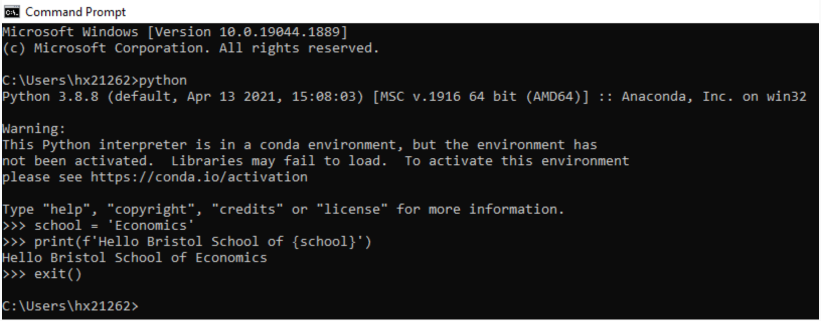
Aims of each session

- Discovering the Python environment and language (Python)
- Writing your first web-scraping script (Python/HTML)
- Building a SQL dataset and querying it (Python/HTML/SQL)
- Linear Regression on large datasets (Python/SQL/PyTorch)

Python Environment

Python turns text to machine instructions

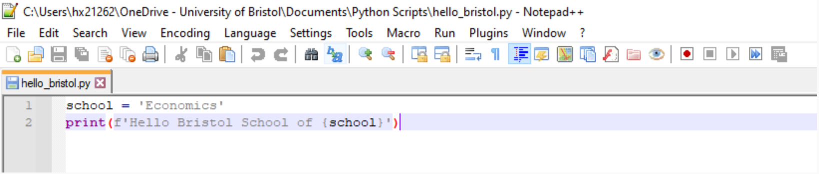
Python is a general programming language, aimed at being easily extended, simple and “fun” to use. As all programming languages, it translates textual information to machine-code.



```
Microsoft Windows [Version 10.0.19044.1889]
(c) Microsoft Corporation. All rights reserved.

C:\Users\hx21262>python
Python 3.8.8 (default, Apr 13 2021, 15:08:03) [MSC v.1916 64 bit (AMD64)] :: Anaconda, Inc. on win32

Warning:
This Python interpreter is in a conda environment, but the environment has
not been activated.  Libraries may fail to load.  To activate this environment
please see https://conda.io/activation

Type "help", "copyright", "credits" or "license" for more information.
>>> school = 'Economics'
>>> print(f'Hello Bristol School of {school}')
Hello Bristol School of Economics
>>> exit()

C:\Users\hx21262>
```

Python can read from any text file

Even though it can be used from the command promt, longuer programs require to be written on textual files. Then, there is a need of a text-editor (that can even be Notepad++) to write your code.

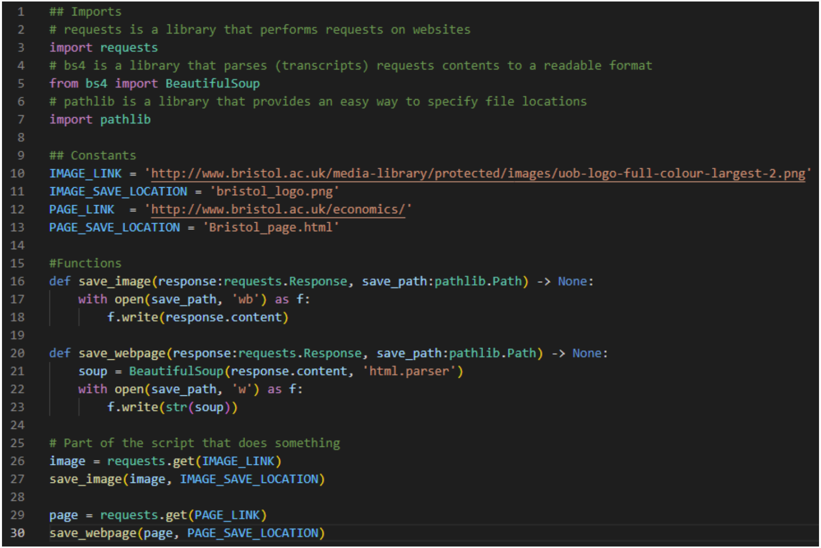


C:\Users\hx21262\OneDrive - University of Bristol\Documents\Python Scripts\hello_bristol.py - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
hello_bristol.py

```
school = 'Economics'
print(f'Hello Bristol School of {school}')
```

But some editors better than others

Many exist, and I recommend using Visual Studio Code, because (but not limited) it has more colours



```python
## Imports
# requests is a library that performs requests on websites
import requests
# bs4 is a library that parses (transcripts) requests contents to a readable format
from bs4 import BeautifulSoup
# pathlib is a library that provides an easy way to specify file locations
import pathlib

## Constants
IMAGE_LINK = 'http://www.bristol.ac.uk/media-library/protected/images/uob-logo-full-colour-largest-2.png'
IMAGE_SAVE_LOCATION = 'bristol_logo.png'
PAGE_LINK  = 'http://www.bristol.ac.uk/economics/'
PAGE_SAVE_LOCATION = 'Bristol_page.html'

#Functions
def save_image(response:requests.Response, save_path:pathlib.Path) -> None:
    with open(save_path, 'wb') as f:
        f.write(response.content)

def save_webpage(response:requests.Response, save_path:pathlib.Path) -> None:
    soup = BeautifulSoup(response.content, 'html.parser')
    with open(save_path, 'w') as f:
        f.write(str(soup))

# Part of the script that does something
image = requests.get(IMAGE_LINK)
save_image(image, IMAGE_SAVE_LOCATION)

page = requests.get(PAGE_LINK)
save_webpage(page, PAGE_SAVE_LOCATION)
```

A good work environment can be managed using Anaconda

Anaconda offers a way to manage your Python projects using different environments. An environment is a specific collection of packages that a code needs to run. This is helpful when:

- Ensuring compatibility between two versions of a package.
- Two libraries are not compatible.
- Sharing code.

Have a look at the anaconda cheat-sheet for helpful commands.

Jupyter Notebooks

In this session, we will use Jupyter Notebooks, a software that allows to run code in an interactive fashion

→ I do not recommend to use it to run complicated scripts, as it is slower than running code from a textual file with no interactions.

Python Language

Python syntax and semantics

As all programming languges, Python comes with syntax and semantics. It has

- Keywords: `import`, `if`, `while`, `try`... They are reserved words that cannot be overwritten.

Python syntax and semantics

As all programming languges, Python comes with syntax and semantics. It has

- Keywords: `import`, `if`, `while`, `try`... They are reserved words that cannot be overwritten.
- Functions: `print`, `len`, `range`...

Python syntax and semantics

As all programming languges, Python comes with syntax and semantics. It has

- Keywords: `import`, `if`, `while`, `try`... They are reserved words that cannot be overwritten.
- Functions: `print`, `len`, `range`...
- Types: `str`, `int`, `float`, `list`...