

Python Eco-System

Discovering basic Python functionalities

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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.

CA Command Prompt

```
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

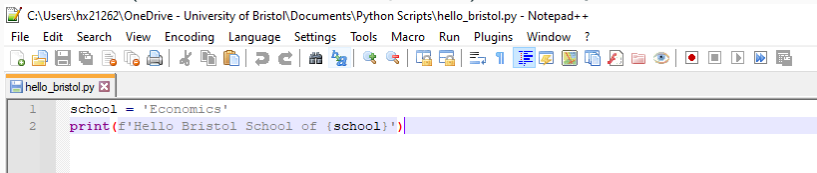
Warning:
This Python interpreter is in a conda environment, but the environment has
not been activated. Libraries may fail to load. To activate this environment
please see https://conda.io/activation

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 prompt, longer 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.

A screenshot of the Notepad++ text editor. The title bar at the top reads "C:\Users\hx21262\OneDrive - University of Bristol\Documents\Python Scripts\hello_bristol.py - Notepad++". Below the title bar is a menu bar with options: File, Edit, Search, View, Encoding, Language, Settings, Tools, Macro, Run, Plugins, Window, and ?. Under the menu bar is a toolbar with various icons for file operations and editing. The main editing area shows a file named "hello_bristol.py" with two lines of Python code. Line 1 is "school = 'Economics'" and line 2 is "print(f'Hello Bristol School of {school}')." The second line is highlighted with a light blue background. The cursor is positioned at the end of the second line.

```
1 school = 'Economics'
2 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

```
1  ## Imports
2  # requests is a library that performs requests on websites
3  import requests
4  # bs4 is a library that parses (transcripts) requests contents to a readable format
5  from bs4 import BeautifulSoup
6  # pathlib is a library that provides an easy way to specify file locations
7  import pathlib
8
9  ## Constants
10 IMAGE_LINK = 'http://www.bristol.ac.uk/media-library/protected/images/uob-logo-full-colour-largest-2.png'
11 IMAGE_SAVE_LOCATION = 'bristol_logo.png'
12 PAGE_LINK = 'http://www.bristol.ac.uk/economics/'
13 PAGE_SAVE_LOCATION = 'Bristol_page.html'
14
15 #Functions
16 def save_image(response:requests.Response, save_path:pathlib.Path) -> None:
17     with open(save_path, 'wb') as f:
18         f.write(response.content)
19
20 def save_webpage(response:requests.Response, save_path:pathlib.Path) -> None:
21     soup = BeautifulSoup(response.content, 'html.parser')
22     with open(save_path, 'w') as f:
23         f.write(str(soup))
24
25 # Part of the script that does something
26 image = requests.get(IMAGE_LINK)
27 save_image(image, IMAGE_SAVE_LOCATION)
28
29 page = requests.get(PAGE_LINK)
30 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.

Python syntax and semantics

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

- **Statements:** `import`, `if`, `while`, `try...`
- **Functions:** `print`, `len`, `range...`
- **Types:** `str`, `int`, `float`, `list...`

Python is made to be flexible: one can implement their own, as we will see now!