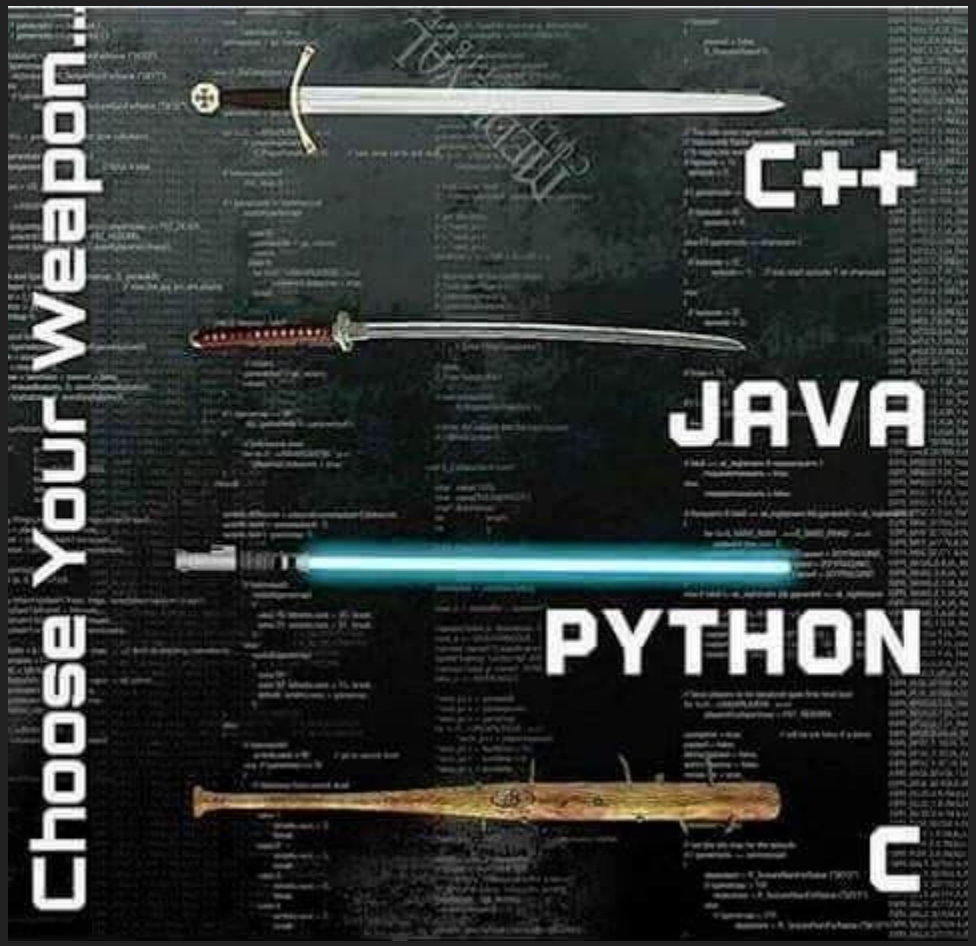
Python
Intro & Install

TA: 吳致緯
2018.09.19

What is Python?



An interpreted high-level programming language

Intro

- Emphasizes code readability # Indentation counts!
- Dynamic type system # Lazy coding!
- Automatic memory management # No more segmentation fault!
- Abundant library packages # No need to reinvent the wheel!

```
def quicksort(arr):
    if len(arr) <= 1:
        return arr
    pivot = arr[len(arr) // 2]
    left = [x for x in arr if x < pivot]
    middle = [x for x in arr if x == pivot]
    right = [x for x in arr if x > pivot]
    return quicksort(left) + middle + quicksort(right)

print(quicksort([3,6,8,10,1,2,1]))
```

Version

There are two major versions of Python:

- Python 2.X: legacy
- Python 3.X: latest version with future support

We will use Python 3.5 or newer thoughout this course!

You can check you python version in terminal/cmd:

```
python --version
```

Install

Check out Python.org for the latest version (currently 3.7)

- Linux: Mostly already pre-installed!
- Windows: Download Python installer
- MAC OS: Type in terminal `brew install python3`

Installing packages

We recommend using pip:

- `pip install [package]`

If you encounter permission problem, try:

- `pip install [package] --user`

If you have multiple Python versions, we suggest:

- `python3.X -m pip install [package]`

For this tutorial, please install numpy, pillow, opencv-python

`pip install numpy pillow opencv-python`

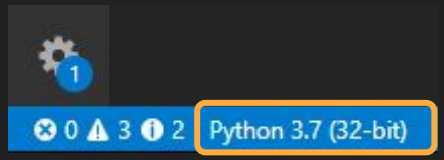
Using Python

1. Use your favorite text editor to create XXX.py
2. Run the file by typing in the terminal/cmd:

```
python3 XXX.py
```

Install VS Code (Optional)

1. Download installer: https://code.visualstudio.com/
2. Install the Python extension for VS Code
3. Install a version of Python 3
   # On Windows, make sure the location of your Python interpreter is included in your PATH environment variable.
4. Start VS Code in a project folder
   - Navigate to your project folder and type `code .` in terminal/cmd
5. Select Python as interpreter
   - Open **Command Palette** in VS Code (Ctrl+Shift+P), search for Python: Select Interpreter
   - You can check the interpreter at **Status Bar**

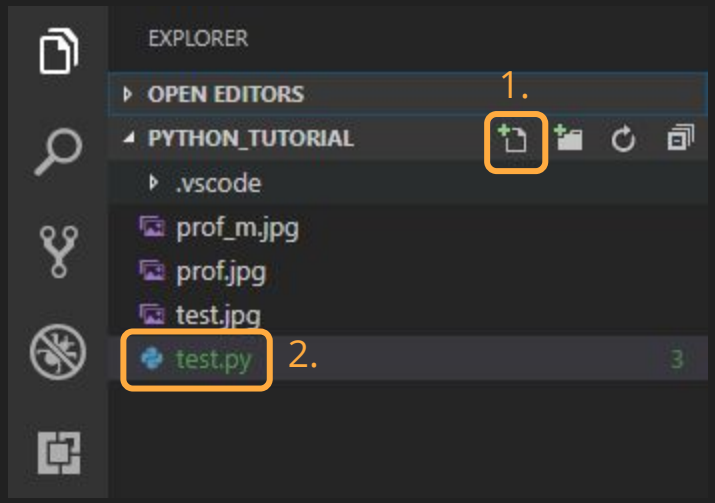


Ref: https://code.visualstudio.com/docs/python/python-tutorial

Use VS Code (Optional)

Create a Python Hello World source code file

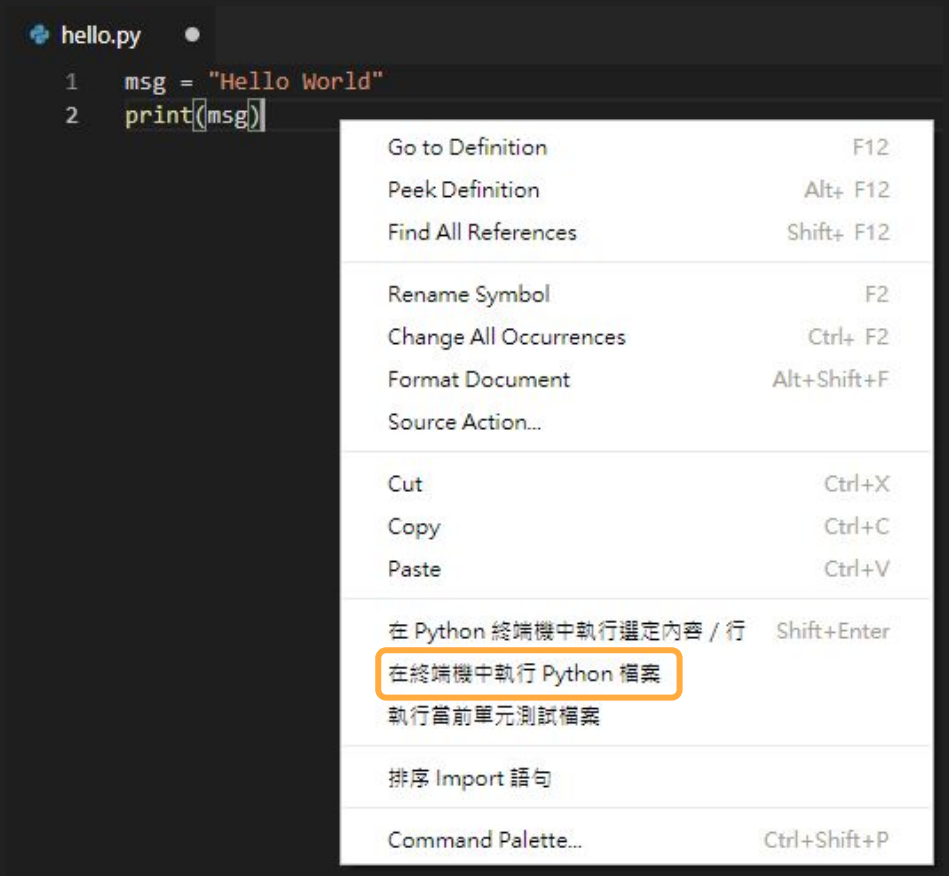
1. From **File Explorer** toolbar, press New File button on the project folder
2. Name it XXX.py



Use VS Code (Optional)

Run Hello World

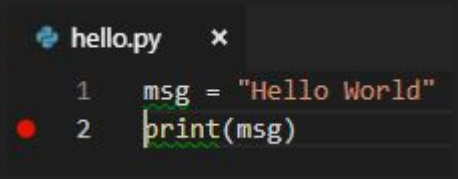
- Right-click in the editor and select Run Python File in Terminal



Use VS Code (Optional)

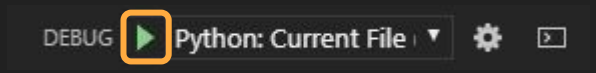
Configure and run the debugger

1. Set a breakpoint on line 2 by left clicking at the right of the line number



2. Select the **Debug View** in the sidebar

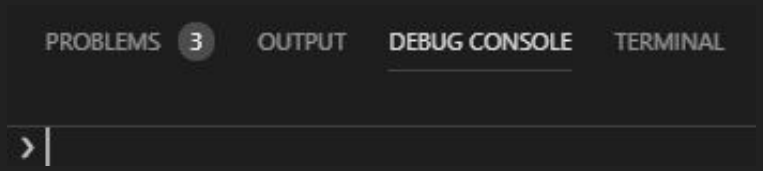
3. Run the debugger by selecting the green arrow in the Debug toolbar (F5)



Use VS Code (Optional)

4. A debug toolbar appears along the top with the following commands from left to right: continue (F5), step over (F10), step into (F11), step out (Shift+F11), restart (Ctrl+Shift+F5), and stop (Shift+F5)

5. You can also work with variables in the **Debug Console**



Ref: https://code.visualstudio.com/docs/python/python-tutorial