Python
Intro & Install

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What is Python?

“An interpreted high-level programming language”

Overall

- 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!

```python
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]))
```

Installation

Check out Python.org for the latest version (currently 3.13)

- Linux: Mostly already pre-installed!
- Windows: Download Python installer (x64 version)
- MAC OS: Type in terminal `brew install python3`

Packages

Installing packages We recommend using pip:

- `pip3 install [package]`

If you encounter permission problem, try:

- `pip3 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
```

Virtual Environment

1. Allow user to install packages at a isolated environment
2. Guarantee reproducibility
3. Ensures consistency (Not polluted by other projects)

Now reate one with anaconda or venv ...!

Install anaconda

- Download anaconda or miniconda following the instruction on this url
- Export the binary folder in conda to PATH
- Command commands
  - conda create -n <name> python=3.<version>
  - conda activate <name>
  - conda deactivate

Appendix: Edit Python in Vscode

Python 搭配 VS Code 快速入門指南

編輯

Python 擴充功能使 Visual Studio Code 成為絕佳的 Python 編輯器，可在任何作業系統上運作，並可搭配各種 Python 解譯器使用。

開始使用，請安裝

- VS Code
- Python 解譯器 (任何受積極支援的 Python 版本)
- VS Code Marketplace 中的 Python 擴充功能