Python Resource Document

Any text in red is strongly recommended information to read/watch before working on any projects

General Python

Please pick based on how much time you have available:

- Learn Python in 59.001 seconds : Slightly faster than the rest
- Python in 100 Seconds : (Must Watch) Great overview of python
- Learn PYTHON in 5 MINUTES : Little bit more in depth overview of the basics
- Learn Python in one hour! : Longer than the rest
- Harvard CS50's Introduction to Programming with Python – Full University Course :
    - Learn Python in 16 hours!
- Learn Python: General Tutorials
- Python Tutorial: w3Schools is a great resource for tutorials or reference
- Learn Python Tutorials: Kaggle offers lots of python tutorials, complete with jupiter notebook support
- The Python Tutorial: Python documentation official tutorial
- Real Python: Very good tutorials on general python as well as specifics.
- Python Tutorial | Learn Python Programming: GeeksforGeek is a very great resources for lots of python tutorials, as well as other languages.
- How to Use Jupyter Notebook in 2020: A Beginner's Tutorial: Jupyter notebook is useful for learning how to program

Chat-GPT

Large Language Models are extremely useful for learning new languages. I encourage everyone to use Chat-GPT to learn how to code. While it can solve essentially any introductory problem, it's best to use it socratically to learn. When Chat-GPT gives you an answer, feel free

to ask it any follow up questions, as it remembers everything about the conversation you having with it. Chat OpenAI (Must Use)

Pythonic Code and Styling

Please learn this, writing readable, easy to understand code is crucial.

- PEP 8 – Style Guide for Python Code:(Must Read) Styling Guide
- Code Style — The Hitchhiker's Guide to Python: Look at examples on how to write code
- 5 Ways to Write More Pythonic Code: Good Read
- PEP 20 – The Zen of Python:(Must Read) Type “import this” as your first line of code
- 10 must-know patterns for writing clean code with Python🐍 - DEV Community: (Must Read) Very nice way to write clean code
- Writing Comments in Python (Guide): (Must Read) Good practices on how to write comments
- Python Comments: 5 Best Practices for Writing Them - Kinsta®: More nice examples
- GitHub - psf/black: The uncompromising Python code formatter: Library which does code formatting for you

IDEs

- Get Started Tutorial for Python in Visual Studio Code: VSCode is very useful for a lot of applications, and comes with lots of helpful extensions.
- Thonny: Easy to use IDE, works best with programming in micropython.

Reading Documentation

- Python Documentation - How to Read and Browse the Python Docs : Narrator discussing how python documentation works

Reading documentation is a very hard skill to learn. It requires a lot of patience and understanding of the python language. Regardless you should practice trying to understand how new functions and objects work inside of python and new libraries. Try to learn how to use a

library from the documentation first, and then move onto tutorials when you get stuck. A great place to practice is with PyMOTW (Python Module of the Week).

Virtual Environments

Virtual environments help manage python dependency horror. Whenever you are working on a new project, please create a virtual environment for all of your libraries.

- venv — Creation of virtual environments — Python 3.11.4 documentation: Official Python Docs for creating virtual environments (Must Read)
- Python Virtual Environments: A Primer: In depth tutorial about virtual environments

Testing and Debugging

- Understanding Debugging & Testing Code In Python - LEARNCSDESIGN: General debugging and testing libraries
- Debugging in Python: (Must Read) General tutorial that covers debugging, testing, and logging
- Logging HOWTO — Python 3.11.4 documentation: Python documentation on logging
- Logging in Python – Real Python: (Must Read) Tutorial on Python logging

Numpy and Pandas

- Practical Tutorial on Data Manipulation with Numpy and Pandas in Python Tutorials & Notes | Machine Learning | HackerEarth
- Chapter 3 Numpy and Pandas | Machine learning in python: Everything in this chapter seems useful
- Learn Pandas Tutorials: Kaggle Pandas tutorial with jupyter notebook

Matplotlib and Plotting

- Matplotlib Tutorial: w3schools has a python matplotlib section I'd recommend going through.
- Matplotlib Tutorial - GeeksforGeek: GeeksforGeek also has their own matplotlib section

Multithreading and Multiprocessing

Parallel processing is a very complicated process. There are a lot of issues that can arise (race conditions, zombie processes). You will need to do a lot of research in order to understand what is going on in the background and why your code may or may not work. The resources below will not be nearly enough but will be a good starting point.

- Multithreading Code - Computerphile : Great video that discusses the concepts rather than the code
- multithreading - Multiprocessing vs Threading Python - Stack Overflow: (Must Read) Details the difference vs the two approaches to parallel programming
- What are the differences between the threading and multiprocessing modules? - Stack Overflow: A little more in depth analysis of what's going on in the (python) background in parallel processing
- Difference Between Multithreading vs Multiprocessing in Python - GeeksforGeeks: Examples of the differences between the two
- An Intro to Threading in Python: Great tutorial on multithreading
- multiprocessing — Process-based parallelism — Python 3.11.4 documentation: Official python documentation on multiprocessing, search up any tutorial if more info is needed

Pyqt and GUI's

- PyQt6 Documentation: Reference guide and official documentation for pyqt6
- PyQt6 Tutorial 2023, Create Python GUIs with Qt: In depth tutorial for -pyqt6
- Create your first PyQt6 app in Qt Creator: Same tutorial but using Qt Creator, a Gui to make GUIs. Recommended as it is easier to create with