Download Roadmap

1. Getting Started

- What is Python and why use it?
- Installing Python & Setting up IDE (VS Code, PyCharm)
- Running Python Scripts
- Understanding .py files and interactive shell

2. Python Basics

- Variables & Data Types
- Operators
- Conditional Statements
- Loops (for, while)
- Input & Output
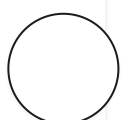- String Manipulation

3. Data Structures

- Lists & List Comprehension
- Tuples
- Dictionaries
- Sets
- Stacks & Queues (using collections)

4. Functions & Modules

- Defining and Calling Functions
- Arguments & Return Values
- Lambda Functions
- Modules & Packages
- Using Built-in Functions
- Creating Custom Modules

Object-Oriented Programming (C

- Classes & Objects
- Constructor (**init**)

- Instance and Class Variables
- Inheritance & Polymorphism
- Encapsulation
- Magic Methods

6. File Handling

- Reading & Writing Files
- Working with Context Managers (`with`)
- CSV & JSON File Parsing

7. Error Handling

- try, except, finally
- Custom Exceptions
- Logging Errors

Python Standard Library & Useful Modules

- os, sys, math, random
- datetime, time
- re (Regular Expressions)
- collections, itertools

Virtual Environments & Package Management

- Using pip
- requirements.txt
- Creating Virtual Environments (venv, virtualenv)
- pipenv / poetry (optional)

10. Next Steps

- Web Development (Django, Flask, FastAPI)
- Data Science & Machine Learning
- Scripting & Automation
- Game Development (pygame)
- APIs and Microservices