Python Concepts Covered

Introduction to Python

- What is Python?

- Why Python?

- Basic Syntax

Core Data Types & Mutability

- Integers

- Floats

- Strings

- Booleans

- Lists

- Tuples

- Dictionaries

- Mutability vs. Immutability

Control Flow & Loops

- Conditional Statements (if/elif/else)

- For Loops

- While Loops

Functions & Error Handling

- Defining Functions

- Function Arguments

- Try-Except Blocks

Object-Oriented Programming (OOP) Basics

- Classes and Objects

- Attributes and Methods

Advanced Data Structures & Comprehensions

- List Comprehensions

- Dictionary Comprehensions

- Set Comprehensions

Functional Programming Concepts

- Lambda Functions

- Map

- Filter

Decorators

- Understanding Decorators

- Practical Examples

Recursion

- Recursive Functions

- Base Cases

File I/O

- Reading and Writing Text Files

- Handling CSV Files

- Handling JSON Files

Advanced OOP: Inheritance & Special Methods

- Inheritance

- `__repr__` method

Advanced OOP: Class & Static Methods, Properties

- `@classmethod`

- `@staticmethod`

- `@property`

Modules and Packaging

- Organizing Code with Modules

- Basic Packaging Concepts

Version Control with Git

- Git Basics: Init, Add, Commit

- Branching and Merging

- Pushing to GitHub

Conclusion & Q&A

- Recap of Key Concepts

- Further Learning Resources

- Questions and Answers