Hierarchical Tree of Prompts for Learning Python Programming

1. Introduction to Python

- What is Python and why is it popular?
- How to install Python and set up your development environment.
- Writing your first Python program: "Hello, World!"

2. Basic Syntax and Data Types

- Understanding Python syntax and indentation.
- What are variables and how to use them?
- Different data types in Python: integers, floats, strings, and booleans.
- How to perform basic arithmetic operations in Python.

3. Control Structures

- What are conditional statements (if, elif, else) and how to use them?
- How to write loops in Python: for and while loops.
- Using break and continue statements in loops.

4. Functions

- What are functions and why are they important?
- How to define and call a function in Python.
- Understanding function arguments and return values.
- Scope and lifetime of variables in functions.

5. Data Structures

- Introduction to lists and how to use them.
- Understanding tuples and their immutability.
- Working with dictionaries: key-value pairs.
- How to use sets and their unique properties.

6. Modules and Packages

- What are modules and how to import them?
- Understanding the Python Standard Library.

• How to install and use external packages with pip.

7. File Handling

• How to read from and write to files in Python.

• Understanding file modes and file operations.

• Working with CSV files using the csv module.

8. Error Handling

• What are exceptions and how to handle them?

• Using try, except, else, and finally blocks.

• Raising exceptions and creating custom exceptions.

9. Object-Oriented Programming (OOP)

• Understanding classes and objects.

• How to define and use methods in a class.

• Concepts of inheritance and polymorphism.

• Working with class attributes and instance attributes.

10. Advanced Topics (Optional)

• Introduction to list comprehensions and generator expressions.

• Understanding decorators and their use cases.

• Basics of working with databases using SQLite.

• Introduction to web development with Flask or Django.