PYTHON

Introduction to Python

- Overview of Python and its applications
- Setting up Python environment (installation, IDEs)
- Basic syntax and data types in Python
- Control flow: if statements, loops
- Practice exercises

Data Structures and Functions

- Lists, tuples, dictionaries, and sets in Python
- Working with functions: defining, calling, and passing arguments
- Scope of variables
- Lambda functions and anonymous functions
- Practice exercises

File Handling and Modules

- Reading from and writing to files in Python
- Working with different file formats (text files, CSV, JSON)
- Introduction to modules and packages
- Importing modules and using built-in modules
- Practice exercises

Object-Oriented Programming (OOP)

- Understanding classes and objects
- Encapsulation, inheritance, and polymorphism
- Creating and using classes in Python
- Advanced OOP concepts (decorators, magic methods)
- Practice exercises

Advanced Topics and Project

- Exception handling: try-except blocks
- Working with databases using Python (SQLite or other)
- Introduction to popular libraries and frameworks (e.g., NumPy, pandas, Flask)
- Overview of web scraping and automation with Python
- Capstone project: apply learned concepts to build a small Python application or script