

"Python Programming with GitHub Copilot: A Comprehensive Introduction"

Course Introduction:

Welcome to "Python Programming with GitHub Copilot + Introduction to Programming Using Python." This course is designed to equip you with foundational programming skills in Python while introducing you to the powerful tool of GitHub Copilot for code assistance. By the end of this course, you will be proficient in writing Python scripts, understand core programming concepts, and effectively utilize GitHub Copilot to enhance your coding efficiency.

Module 1: Introduction to Python Programming

- Overview of Python Programming Language

Gain insights into Python's history, its significance in the programming world, and its application across various domains.

- Setting Up Python Environment

Learn how to install Python and set up a working environment using popular IDEs for seamless development.

- Basic Syntax and Data Types

Understand Python syntax, variables, and data types to write and execute simple Python programs.

Module 2: Control Structures and Functions

- Conditional Statements and Loops

Explore the use of if-else statements, for and while loops to control the flow of your programs.

- Writing and Using Functions

Learn how to define functions, pass arguments, and return values to write modular and reusable code.

- Error Handling and Debugging

Discover techniques for handling exceptions and debugging your Python code effectively.

Module 3: Data Structures in Python

- Lists, Tuples, and Dictionaries

Understand the use of lists, tuples, and dictionaries to store and manipulate collections of data.

- Sets and Their Operations

Learn about sets and how to perform operations such as union, intersection, and difference.

- Advanced Data Structures: Introduction to Collections Module

Explore advanced data structures provided by the collections module to solve complex problems.

Module 4: Object-Oriented Programming in Python

- Introduction to Object-Oriented Programming (OOP)

Get acquainted with the principles of OOP and its benefits in structuring Python programs.

- Classes and Objects

Learn how to define classes and create objects to model real-world entities in your programs.

- Inheritance and Polymorphism

Explore the concepts of inheritance and polymorphism to enhance code reusability and flexibility.

Module 5: Working with Files and Data

- Reading and Writing Files

Understand how to handle file input and output operations to read from and write to files.

- Working with CSV and JSON Data

Learn techniques to work with CSV and JSON data formats, commonly used for data interchange.

- Introduction to Data Analysis with Pandas

Get introduced to the Pandas library for data manipulation and analysis in Python.

Module 6: Introduction to GitHub Copilot

- Overview of GitHub Copilot

Discover the capabilities of GitHub Copilot and how it leverages AI to assist in coding.

- Setting Up GitHub Copilot

Learn how to configure GitHub Copilot within your development environment.

- Using GitHub Copilot for Code Suggestions

Explore how to use GitHub Copilot to generate code suggestions and write code more efficiently.

Module 7: Advanced Python Concepts

- Decorators and Generators

Delve into decorators and generators to write more efficient and expressive Python code.

- Context Managers and the With Statement

Understand the use of context managers to manage resources effectively.

- Multithreading and Multiprocessing

Explore techniques for concurrent programming to improve the performance of Python applications.

Module 8: Final Project and Course Wrap-Up

- Capstone Project: Building a Python Application

Apply the knowledge acquired throughout the course to build a comprehensive Python application.

- Best Practices in Python Programming

Review best practices and coding standards to write clean, maintainable, and efficient Python code.

- Course Summary and Next Steps

Recap the key learnings and explore further learning opportunities to advance your Python programming skills.

End of Course.