Python Foundations and GitHub Copilot

Duration: 08 hours

Course Overview

This workshop provides a complete foundation in Python programming, data handling using Pandas, and hands-on experience with GitHub Copilot

Lab Environment Setup

Participants should have the following tools and libraries installed before the workshop to ensure a smooth experience:

- Python 3.10 or later (https://www.python.org/downloads/)
- VS Code (https://code.visualstudio.com/)
- GitHub account (required for Copilot access)
- GitHub Copilot extension installed in VS Code
- Required Python libraries: pandas, numpy, matplotlib, jupyterlab

Please verify installation by running in cmd:

- python --version
- pip install pandas numpy matplotlib jupyterlab

Course Contents

Module 1 — Python Setup & Environment

- Understanding interpreter, scripts, and notebooks
- Writing the first Python program — Hello World
- Understanding indentation, comments, and basic syntax

Module 2: Core Python — Data Types, Structures & Control Flow

- Data Types & Variables: int, float, str, bool; type conversion; operators
- Data Structures: Lists, Tuples, Sets, Dicts; access, update, slice, iterate
- Control Flow: if/elif/else, for/while loops, break/continue/range
- Lab 1: Python Basics

Module 3: Functions, OOP & File Handling

- Functions: define/call, parameters, return, default/variable args, modularity
- OOP: classes, objects, attributes, methods, constructors (init)
- File Handling: read/write text & CSV, with open() for safe access
- Lab 2: Advance Python

Module 4: Data Handling with Pandas

- Pandas Basics: Series, DataFrame, read/write CSV
- Data Analysis: inspect, aggregate, handle missing data
- Exporting: save to CSV/Excel
- Lab 3: Analyze Sales Data using Pandas

Module 5: GitHub Copilot for Python Developers

- Setup & Usage: install in VS Code, prompt writing, Copilot Labs tools
- AI Coding Ethics: responsible use, explain/test/refactor with Copilot
- Lab 4: Deep Research & Code Generation

→ Write docstring, generate code, optimize/refactor with Copilot