Fynd Academy

Python Development Essentials

CURRICULUM

COURSE OVERVIEW

Discover what you will
learn in the 14 weeks!

WEEK 1

Introduction to Python

OBJECTIVE

Introduce Python and its fundamental concepts to set a strong foundation for programming.

Class 1: Introduction to Programming

- What is programming?
- Overview of popular programming languages
- Why learn Python?
- Setting Up the Environment
- Installing Python (Anaconda, Python.org)
- Introduction to IDEs (Jupyter Notebook, PyCharm, VS Code)

Class 2: Running Python code in different environments

- Python Basics
- Python syntax and semantics
- Variables and data types
- Basic operations and expressions

WEEK 2

Getting Started with Python

OBJECTIVE

Familiarize with Python and understand about its basic functions.

Class 3: First Python Program

- Writing and running your first Python script
- Understanding the print() function
- Commenting code
- Control Flow
- Conditional statements (if, elif, else)
- Loops (for, while)

Class 4: Statement and Functions

- Python Basics
- Python syntax and semantics
- Variables and data types
- Basic operations and expressions

WEEK 3

Core Python Concepts

OBJECTIVE

Participants will explore fundamental Python data structures, learning to create and manipulate lists, tuples, sets, and dictionaries.

Class 5: Data Structures

- Lists: creation, indexing, slicing, and methods
- Tuples: properties and usage

Class 6: Sets

- Sets: unique elements and set operations
- Dictionaries: key-value pairs, accessing, and modifying

WEEK 4

Advanced Data Structures and File Handling

OBJECTIVE

Participants will delve into advanced data structures, mastering nested lists, comprehensions, and complex dictionaries. They will also learn essential file handling techniques.

Class 7: Advanced Data Structures

- Nested lists and comprehensions
- Dictionaries with lists and nested dictionaries

Class 8: File Handling

- Reading from files
- Writing to files
- Working with different file types (CSV, JSON)

WEEK 5

Error Handling and Modules

OBJECTIVE

Learn to handle errors using try, except, and finally blocks, and create custom exceptions. Explore importing standard libraries, creating custom modules, and an overview of the Python Standard Library.

Class 9: Error Handling

- Understanding exceptions
- Try, except, finally blocks
- Raising exceptions and custom exceptions

Class 10: Modules and Packages

- Importing modules (math, datetime, random)
- Creating and using custom modules
- Overview of the Python Standard Library

WEEK 6

Using Git for Version Control

OBJECTIVE

Get started with Git installation, setup, and basic commands like init, clone, add, commit, status, and log. Learn advanced Git concepts including branching, merging, conflict resolution, and using GitHub for remote repositories.

Class 11: Introduction to Git

- Installing and setting up Git
- Basic Git commands (init, clone, add, commit, status, log)

Class 12: Advanced Git Concepts

- Branching and merging
- Resolving conflicts
- Using GitHub for remote repositories

WEEK 7

Basics of OOP

OBJECTIVE

Get an introduction to Object-Oriented Programming (OOP) by understanding classes and objects, defining classes, and creating objects. Explore advanced OOP concepts such as inheritance, polymorphism, etc.

Class 13: Introduction to OOP

- Understanding classes and objects
- Defining a class and creating objects
- Attributes and methods

Class 14: Advanced OOP Concepts

- Inheritance and polymorphism
- Encapsulation and abstraction
- Magic methods and operator overloading

WEEK 8

Real-World OOP Applications

OBJECTIVE

Learn to build a simple application by planning and designing a class structure, implementing classes and methods, and testing and debugging.

Class 15: Building a Simple Application

- Planning and designing a class structure
- Implementing classes and methods
- Testing and debugging

Class 16: Project: Library Management System

- Creating classes for books, members, and library operations
- Implementing borrowing and returning books
- Maintaining records and generating reports

WEEK 9

Introduction to Data Science Libraries

OBJECTIVE

Explore data science libraries with NumPy for numerical computations, covering arrays, basic operations, and advanced manipulations. Learn Pandas for data manipulation, including DataFrames, reading/writing data, and data cleaning.

Class 17: NumPy for Numerical Computations

- Understanding arrays
- Basic operations with NumPy arrays
- Advanced array manipulations

Class 18: Pandas for Data Manipulation

- Introduction to Pandas DataFrames
- Reading and writing data with Pandas
- Data cleaning and preprocessing

WEEK 10

Data Visualization

OBJECTIVE

Learn to visualize data using Matplotlib for basic plots and customizations, and Seaborn for advanced statistical plots and aesthetic enhancements.

Class 19: Matplotlib for Basic Plotting

- Creating basic plots (line, bar, scatter)
- Customizing plots (titles, labels, legends)
- Saving and exporting plots

Class 20: Seaborn for Advanced Visualization

- Statistical plots (box plot, violin plot)
- Plot aesthetics and customization
- Pair plots and heatmaps

WEEK 11

Introduction to Web Development

OBJECTIVE

Explore the fundamentals of web development, including HTTP, HTML, CSS, and JavaScript, and get started with Flask for building web applications by setting up routes, templates, and handling user input.

Class 21: Basics of Web Development

- Understanding HTTP and web servers
- Introduction to HTML, CSS, and JavaScript basics

Class 22: Flask Framework

- Setting up Flask
- Creating routes and templates
- Handling forms and user input

WEEK 12

Developing a Flask Application

OBJECTIVE

Build a basic web application with user authentication, connect it to a database, and learn deployment options, including deploying to cloud platforms like Heroku and AWS.

Class 23: Creating a Simple Web Application

- Creating a simple web application
- Implementing user authentication

Class 24: Deploying Flask Applications

- Connecting to a database
- Understanding deployment options
- Deploying to cloud platforms (Heroku, AWS)

WEEK 13

Advanced Web Development Concepts

OBJECTIVE

Explore advanced web development topics, including routing, templates, and the MVC architecture. Learn to interact with databases using Python and libraries like SQLAlchemy.

Class 25: Routing, Templates, Models, and Views

- Understanding how routing works in web applications
- Utilizing templates for dynamic web content
- Introduction to models and views in MVC architecture

Class 26: Interacting with Databases

- Learn how to interact with databases using Python
- Get familiar with libraries like SQLAlchemy for working with databases

WEEK 14

Advanced Topics

OBJECTIVE

Dive into RESTful APIs and learn how to consume them using Python request library.

Class 27: Introduction to APIs

- Understanding RESTful APIs
- Consuming APIs with Python (requests library)

CAPSTONE PROJECT

- You will be required to create a project based on all your learnings.This project often requires planning, designing, coding, testing, and presenting the final product.

Get in Touch

For any queries that may have

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