

Codevensiva Academy

Master Python Training Program (8 Weeks)

Week 1: Python Fundamentals

Topics

- Introduction, Python Installation & Setup
- IDE Configuration (VS Code / PyCharm)
- Python Syntax
- Comments
- Input & Output Functions
- Variables & Data Types
- Type Casting

Practical Tasks

- Simple Calculator
- Student Information Program
- Temperature Converter

Mini Project

- Personal Information Management System
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Week 2: Operators, Conditions & Loops

Topics

- Arithmetic Operators
- Relational Operators
- Logical Operators
- Membership & Identity Operators
- if, else, elif Statements
- Nested Conditions
- for Loop

- while Loop
- break, continue, pass

Practical Tasks

- Number Guessing Game
- Multiplication Tables
- Even/Odd Checker

Mini Project

- ATM Simulation Program
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Week 3: Strings & Collection Data Types

Topics

- String Indexing & Slicing
- String Methods
- Lists
- List Methods
- Tuples
- Sets & Frozen sets
- Dictionaries
- Nested Dictionaries

Practical Tasks

- Contact Book
- Student Marks Management
- Inventory List Management

Mini Project

- Employee Record System
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Week 4: Functions, Modules & File Handling

Topics

- User Defined Functions
- Function Arguments
- Return Statements
- Lambda Functions
- Recursion
- Modules & Packages
- Creating Custom Modules
- File Handling
- CSV File Operations

Practical Tasks

- Library Management
- CSV Data Reader
- File Organizer

Mini Project

- Student Result Management System
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Week 5: Exception Handling & OOP

Topics

- try, except, finally
- raise Statement
- Custom Exceptions
- Classes & Objects
- Constructors
- Inheritance
- Polymorphism
- Encapsulation

Practical Tasks

- Bank Account Simulation
- Employee Management System

Mini Project

- Hospital Management System
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Week 6: Advanced Python Concepts

Topics

- Advanced OOP
- Class Methods
- Static Methods
- Dunder Methods
- MRO
- Decorators
- Generators
- Iterators
- Comprehensions

Practical Tasks

- Custom Iterator Creation
- Decorator-based Logging System

Mini Project

- Smart Task Automation Tool
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Week 7: Data Processing & Concurrency

Topics

- Regular Expressions
- JSON Handling

- Multithreading
- Multiprocessing
- Memory Management
- Garbage Collection
- Reference Counting

Practical Tasks

- Log File Analyzer
- Multi-threaded Downloader
- JSON Data Processor

Mini Project

- Concurrent File Processing System
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Week 8: Database, Testing & Web Development

Topics

- SQLite Database
- MySQL Connectivity
- CRUD Operations
- Virtual Environments
- pip & requirements.txt
- Unit Testing (unit test)
- pytest
- Mock Testing
- Flask/Django Basics
- REST API Introduction

Practical Tasks

- CRUD Application
- REST API Development

- Unit Testing Exercises

Final Capstone Project

Choose Any One:

1. Student Management System
2. Inventory Management System
3. Employee Management System
4. Library Management System
5. Django-Based Web Application
6. REST API with Database Integration