

Unwired Learning

Python Programming Masterclass (Course Curriculum)



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Course Introduction

- Course Introduction
- Welcome - Let's Get Started!
- Resources [Important]

Python Programming - Is Python A Bubble?

- Introduction to Python as a programming language

Python Setup & Installing

- Python 3.x Installation
- Installing Python on Linux/Mac
- Different Methods To Execute Python Codes

Writing Our First Python Program

- Variables and Python Memory Management

Datatypes in Python

- Datatypes in Python
- Sequences in Python
- Sets, Dictionary
- Literals and Identifiers
- Reserve Words - You Can't Use Them!

Operators in Python

- Operators: Arithmetic, Assignment
- Operators: Unary Minus, Relational, Logical, Boolean
- Understanding Escape Characters

Input and Output

- Introduction to Input and Output Statements
- Output Statements
- Input Statements
- Python Built-in Functions and Built-in Module

IDE (Integrated Development Environment)

- Working With Code Editor

Python Control Statements

- Conditionals: If, If ... Else and Indentation
- Indentation
- Conditionals: If ... Else Statements With Operators
- Conditionals: if... elif ... else Statements + Nested if Statements

Loops In Python

- While Loop
- For Loops - Part 1
- For Loops - Part 2
- Break and Continue Statements

Strings and Characters

- Comments and Doc Strings
- Diving Deep With "Strings"

Lists, Tuples, and Dictionaries

- Diving Deep - List
- Diving Deep - Tuples
- Diving Deep - Dictionaries
- Indexing, Slicing, Negative Indexing

Functions

- What are Functions?
- Parameters, Arguments, Return
- Formal and Actual Arguments (arg, *arg, **karg)
- Local and Global Variables

Object-Oriented Programming (OOP)

- Introduction to Object Oriented Programming (OOP)
- Classes and Objects in Python (OOP)
- Understanding init() Method and 'self' Parameter
- Theory: Understanding init() Method and 'self' Parameter
- Solving Task: OOPS
- Defining Multiple Constructors in Python?

- Encapsulation
- Public And Private Methods
- Inheritance
- Getter and Setter
- Creating And Importing Module
- Creating User-Defined Module
- Multiple Inheritance
- Understanding super() Function [Part 1]
- Understanding super() Function [Part 2]
- Python Naming Convention (Classes, Variables, Functions, Methods ...)
- Composition
- Aggregation
- Abstract Classes
- Discussing Over import And from
- Operator Overloading [Part 1]
- Operator Overloading [Part 2]

Errors And Exception Handling

- Errors - Types of Errors!
- Exceptions
- Exceptions Handling Introduction
- Exceptions Handling
- Try, Except, Else, And Finally
- Raising Exception
- Creating User-Defined Exception

`name == "main"`

- if `name == "main"`

Python I/O - File Handling

- Creating Text File And Write Content
- Appending Files - Solving Example
- Reading Content From A File

Python Package Management System

- pip - PyPI for Managing Python Packages

Project 1 - Face Detection 🎉

- What is OpenCV?
- OpenCV Face Detection With Python
- Detecting Faces Of All Images In The Folder

Project 2 - Password Generator 🎉

- Random Module
- Random Password Generator
- Readable Password Generator

Project 3 - Data Analysis With Pandas 🎉

- What is Pandas?
- Starting With Pandas And iPython
- Working with Jupyter Notebooks
- Important Jupyter Notebook Commands
- Working with CSV, Excel, TXT, and JSON Files
- Working with API Response
- Indexing and Slicing Dataframe Tables
- Deleting Columns and Rows
- Adding and Updating New Columns and Rows

Project 4 - Get Data with CoinMarketCap API 🎉

- What is API?
- What are API and Request Methods?
- Working with CoinMarketCap API
- API Format
- Fetching API Data
- Extracting API and Coin Data
- Creating Coin List & Understanding Portfolio
- Creating Portfolio Dictionary
- Calculating Profit and Loss
- Project - Source Code

Project 5.1 - Building GUI Portfolio App With Tkinter 🎉

- GUI Introduction - Graphical User Interface
- Understanding 3 Steps Tkinter Working
- Tkinter Main Window and Labels

- Application Formatting - Adding Header
- Application Formatting - Adding More Data
- Application Formatting - Improving User Interface
- Color Indication For Profit and Loss
- Adding Update Button
- Creating Executable App (.exe file)

Project 5.2 - Understanding Database Basics (SQLite3) 🎉

- Databases - SQL vs SQLite3
- Introduction to SQLite3 and its Workings
- Creating Table | Working with DB Browser
- Insert Values - Databases
- Update Values - Databases
- Fetching Data From Database
- Delete Data - Database
- Creating Functions For Operation - Database

Project 5.3 - Tkinter GUI Application with SQLite3 Database 🎉

- Connecting With Database
- Fetching Data From Database
- Modifying Current Application
- Adding "Add Coin" Button
- Adding "Update Coin" - "Delete Coin" Button
- Solving Multiple Layer Issues
- Adding Notification System - Popup Box
- Adding Navigation System - Menu Bar
- Project - Source Code

Project 6 - Building Web Scraping Bot With Python 🎉

- Project Introduction - Web Scraping Bot
- Project Demo - Web Scraping Bot
- How Do We Scrape Data?
- Web Scraping - Overview
- Project Setup + Installing Libraries
- Working With BeautifulSoup
- Filtering Required Data
- Extracting Current Price

- Extracting Table Content - Part 1
- Extracting Table Content - Part 2
- Extracting All Stock Results
- Working with Static File
- Storing Stock Content in CSV File
- Sending Text Mail Through SMTPLIB
- Sending Text Mail Through Email Module
- Sending Attachment Through Email Module
- Integrating Mail System with Web Scraper
- File Name According To Today's Date
- Project - Source Code

Project 7 - Automate Weather Forecast 🎉

- Project Introduction: Automate Weather Forecast
- OpenWeatherMap API
- Working With API Data
- Working With Pillow Library
- Adding Content: Date and Time
- Adding Content: Multiple City Position
- Adding Content: Multiple City Data
- Adding Content: Multiple Country Data
- Saving Post as PNG and PDF
- Exercise: Automate For Stories
- Project - Source Code

Project [8, 9]: Assignments 🎉

- Project 8 - Python Image Optimization and Transformations
- Project 9 - Web Scraping Encyclopedia Article
- Assignment Solutions

Project 10 - Building Twitter Bot With Python and Tweepy (Optional) 🎉

- Twitter API Update [Important]
- Project Introduction: Twitter Bot
- Creating Twitter Developer Account
- Creating App and Generation Access Tokens
- Installing Tweepy
- Update Status Through Bot

- Introduction To Auto-Reply
- Working With Timeline and Mentions
- Iterate Tweets And Add Condition
- Storing Replied Tweet IDs
- Storing-Accessing Last Seen ID
- Replying Tweet
- Formatting Function and Testing Bot
- Auto Retweet and Auto Like
- Setting-up PythonAnywhere
- Deployment Done Along with Testing
- Auto Retweet To Particular Hashtag
- Implementing Error Handling And Testing Bot
- Project - Source Code

Advanced: Recursion

- What is Recursion?
- Control of a Function
- Tracing Tree
- Call Stack
- Tree Recursion
- Example: Factorial of a Number

Advanced: Map, Filter, and Reduce

- Lambda Functions
- Map
- Filter
- Reduce

Advanced: Comprehension

- List Comprehension

Advanced: Regular Expressions

- Why We Use Regular Expressions
- Different Methods With RegEx
- Writing Patterns
- Creating Pattern For Email Validation

Advanced: Decorators

- Decorators

Advanced: Logging

- Logging

Advanced: Date and Time

- Date and Time

Advanced: New Python Features

- Python 3.8: Walrus Operator, Positional-Only Argument & f-String
- Python 3.9: Union Operators
- Python 3.9: Type Hinting
- Python 3.9: New String Class Methods
- Python 3.9: Native Time Support (Zoneinfo)
- Python 3.10: Match Case, Better Errors & More
- Python 3.11: Exception Notes & Speed
- Python 3.12: Improved Error Messages

Project 11: Podcast Script Writer With OpenAI 🎉

- Project Introduction: Podcast Script Writer With OpenAI
- Introduction To OpenAI
- OpenAI Playground & Common Terms
- AI Writing Podcast Script
- Project - Source Code

Project 12: Conversational AI Chatbot 🎉

- Project Demo: Conversational AI Chatbot
- How Prompt Work For Conversations?
- Updating Prompt, Max Tokens & Chat History
- Storing Chat History To TXT File
- Hiding API Key With ENV File
- Specific Role Of AI
- Chat History Format With Timestamps
- Project - Source Code

Project 13: Text To Image Using DALL-E 🎉

- Generating Images Using OpenAI DALL-E
- Project - Source Code

Project 14: Building Video Summarizer With ChatGPT 🎉

- Project Introduction: Building Video Summarizer With ChatGPT
- Asking ChatGPT To Write Code
- ChatGPT Code Explanation
- Project - Source Code

Project 15: Web Application Using Flask 🎉

- Project Introduction: Web Application Using Flask
- Flask Introduction & Installation
- Initiating Flask App
- Routes, Folder Structure & Blueprint
- Template Rendering
- URL Parameters
- Query Parameters
- Conditional Rendering Inside Template: If Statement
- Returning JSON Response
- Error Handling: 404 Not Found
- Redirection
- Rendering Static Files
- Control Flow Inside Template: For Loop
- HTML Page Structure
- Base Template
- Improving Design With CSS
- Project - Source Code

Cheatsheet

- Cheatsheet [Attached]

Quizzes And Exercises

- Python Quiz For Beginners Concepts (10 questions)
- Python Decision-Making Quiz (10 questions)
- Python Functions (6 questions)
- Object Oriented Programming (OOP) (10 questions)

Course Completion Certificate

- Python Programming Masterclass: Basics To Advanced With 15 Projects 