



3-Month Internship Program

(12 Weeks): Python Training

Week 1: Introduction to Python Programming

- **Topics:**
 - **Basics of Python: Data types, variables, and operators.**
 - **Control flow: Conditionals and loops.**
 - **Introduction to functions and modules.**
- **Assignment: Write basic scripts for common tasks (e.g., calculator, number guessing game).**

Week 2: Working with Data Structures

- **Topics:**
 - **Lists, tuples, dictionaries, and sets in Python.**
 - **Manipulating and accessing data structures effectively.**
- **Assignment: Create a student record management system using Python dictionaries.**

Week 3: Object-Oriented Programming (OOP)

- **Topics:**
 - **Introduction to classes, objects, inheritance, and polymorphism.**
 - **Creating and managing objects and classes.**
- **Assignment: Design a simple bank account class with deposit, withdrawal, and balance check methods.**

Week 4: File Handling and Error Management

- **Topics:**
 - **Reading from and writing to files in Python.**
 - **Handling exceptions and understanding error types.**
- **Assignment: Build a basic logging system to track events in a file.**



Week 5: Python Modules and Libraries

- **Topics:**
 - Overview of Python's standard library.
 - Working with popular libraries such as NumPy and Pandas.
 - Data manipulation and analysis using Pandas.
- **Assignment: Analyze and visualize a dataset using Pandas**

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Week 6: Working with APIs

- **Topics:**
 - Introduction to REST APIs.
 - Making API requests using Python.
 - Parsing and handling JSON data.
- **Assignment: Create a Python script to fetch and display data from a public API (e.g., weather data, cryptocurrency prices).**

Week 7: Python for Automation

- **Topics:**
 - Automating repetitive tasks with Python.
 - Working with libraries like os, shutil, and glob.
 - Writing Python scripts for file management and batch processing.
- **Assignment: Create a script to automate file organization in a folder.**

Week 8: Web Scraping with Python

- **Topics:**
 - Introduction to web scraping and ethical considerations.
 - Using libraries like BeautifulSoup and Scrapy.
 - Extracting and processing web data.
- **Assignment: Scrape and save data from a website (e.g., news articles, product information).**



Week 9: Data Visualization

- **Topics:**
 - Creating visualizations with Matplotlib and Seaborn.
 - Customizing plots and adding interactivity.
- **Assignment:** Develop a dashboard displaying key insights from a dataset.

Week 10: Python Testing and Debugging

- **Topics:**
 - Writing test cases using the unittest and pytest frameworks.
 - Debugging techniques and best practices.
- **Assignment:** Test and debug a Python application to ensure functionality.

Week 11: Deployment and Version Control

- **Topics:**
 - Introduction to Git and version control.
 - Hosting Python projects on GitHub.
 - Deploying Python scripts and applications.
- **Assignment:** Deploy a Python application to a cloud platform (e.g., AWS Lambda, Google Cloud).

Week 12: Final Project

- **Topics:**
 - Applying all concepts learned to a real-world project.
 - Guidance and mentorship for project implementation.
- **Assignment:** Develop a Python application (e.g., a task manager, data analysis tool, or web scraper) and prepare a final presentation.