Become a Python Developer

(Website: www.aiquest.org, Cell: +8801704265972)

বিশেষ দ্রষ্টব্য: এই লাইভ কোর্সটি থেকে আপনি পাইথনের **শূন্য থেকে এডভান্স** একদম সলিড নলেজ পাবেন, যা ব্যবহার করে আপনি Software Engineer, Data Analyst, Data Scientist, Machine Learning Engineer, AI Engineer, Prompt Engineer and DevOps Engineer হিসেবে নিজের ক্যারিয়ার তৈরি করতে পারবেন! [WATCH COURSE PLAN]

Course Instructor:

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বিশেষ নোট: কোর্স শেষে, ইন্সট্রাক্টর এর গাইডলাইন ফলো করে ১.৫ মাসে তিনটি প্রজেক্ট করতে হবে! প্রজেক্ট কমপ্লিট করতে কোর্স ইন্সট্রাক্টর আপনাকে সুপারভাইজ করবেন! কুইজ স্কোর, অ্যাসাইনমেন্ট এর উপর ভিত্তি করে কোর্স কমপ্লিটের সার্টিফিকেট পাবেন এবং তিনটি প্রজেক্ট এর উপর ভিত্তি করে আপনাকে ইন্টার্নশিপ সার্টিফিকেট প্রদান করা হবে!

Module 1: Python Foundations (Duration: 3 hours)

- Introduction to the course and its objectives
- Overview of Python and its applications
- Setting up the development environment (VS Code, pip, Jupyter)
- Writing your first Python program
- Variables, data types, and type casting
- Input/output and basic operators
- Class Condition: Submit a simple CLI calculator

Module 2: Control Structures (Duration: 3 hours)

- Conditional statements (if, elif, else)
- Loops (for, while)
- Loop control statements (break, continue, pass)
- Boolean logic and truth tables
- Problem-Solving Session: Practice loop/condition problems
- Q&A Session: Logic building techniques
- Assignment: Prime checker and star pattern printer
- Quiz Test (MCQ)

Module 3: Data Structures (Duration: 5 hours)

- Lists and list methods
- List comprehensions and slicing
- Tuples and tuple methods
- Sets, Frozen sets, and set operations
- Dictionaries and dict methods
- String operations and formatting
- Problem-Solving Session: Complex nested structure exercises
- Q&A Session: Real-world data structure scenarios
- Assignment: Build a text analyzer and leaderboard system
- Quiz Test (MCQ)

Module 4: Functions, Scopes & Decorators (Duration: 3 hours)

- Defining and calling functions
- Function arguments (*args, **kwargs)
- Return types and recursion basics
- Variable scope and closures
- Introduction to decorators
- Built-in decorators (@property, @staticmethod, etc.)
- Problem-Solving Session: Reusable function design
- Q&A Session
- Assignment: Logging and timer decorators
- Quiz Test (MCQ)

Module 5: File Handling & Exceptions (Duration: 3 hours)

- File reading and writing (.txt, .csv, .json)
- with open() and context managers
- Error types and exception handling
- Logging basics and structured error handling
- Problem-Solving Session: File parsers
- Q&A Session
- Assignment: TODO manager and CSV parser
- Quiz Test (MCQ)

Module 6: Object-Oriented Programming (Duration: 5 hours)

- Class and object creation
- Inheritance, abstraction, and polymorphism
- Encapsulation and private/protected attributes
- Magic methods and custom objects
- Class Condition: Build a class-based banking system
- Problem-Solving Session
- Q&A Session
- Assignment: Banking system with transactions
- Quiz Test (MCQ)

Module 7: Data Structures & Algorithms (Duration: 6 hours)

- Time and space complexity
- Arrays and linked lists
- Stacks and queues (using lists/collections)

- Sorting algorithms: bubble, merge, insertion
- Problem-Solving Session: LeetCode-style challenges
- Q&A Session
- Assignment: Implement custom stack/queue and sort visualizer
- Quiz Test (MCQ)

Module 8: Git, GitHub and Collaboration (Duration: 3 hours)

- Git basics: init, commit, branch, merge
- GitHub repositories, PRs, forks
- Working with branches and collaboration workflows
- GitHub Actions basics
- .gitignore, writing good READMEs
- Q&A Session on GitHub & Git basics
- Assignment: Create and manage a GitHub repo for a mini-project
- Quiz Test (MCQ)

Module 9: Python Automation (Duration: 4 hours)

- Automating files and folders using os, shutil
- Email automation using smtplib
- PDF, Excel, and screenshot automation with pyautogui, openpyxl
- Problem-Solving Session: Mini automation tools
- Q&A Session
- Assignment: Email automation and file organizer tool
- Quiz Test (MCQ)

Module 10: Web Scraping with Python (Duration: 10 hours)

- Introduction to web scraping and ethics
- requests, BeautifulSoup, lxml
- Regular expressions (RegEx)
- JavaScript rendering with Selenium
- Full-site scraping with Scrapy
- Web scraping mini-projects
- Q&A Session
- Assignment: Job board scraper and ecommerce price tracker
- Quiz Test (MCQ)

Module 11: API Development with FastAPI (Duration: 4 hours)

- REST API principles
- Consuming APIs with requests and httpx
- Creating APIs with FastAPI
- OpenAPI documentation
- Q&A Session
- Assignment: Build and test an API
- Quiz Test (MCQ)

Module 12: Flask Web App Development (Duration: 4 hours)

- Introduction to Flask
- Routes, templates, and forms (Jinja2)
- SQLite integration (CRUD)
- User authentication basics

- Small project: Portfolio or blog site
- Q&A Session
- Assignment: Build and deploy a Flask-based portfolio
- Quiz Test (MCQ)

Module 13: Async Programming in Python (Duration: 2 hours)

- Introduction to async and await
- asyncio, aiohttp, httpx
- Async file and API operations
- Q&A Session
- Assignment: Build async API fetcher
- Quiz Test (MCQ)

Module 14: Debugging and Unit Testing (Duration: 2 hours)

- Introduction to debugging tools
- Writing testable code
- unittest and pytest
- Mocking and patching functions
- Problem-Solving Session: Write tests for existing code
- Q&A Session
- Assignment: Write unit tests for your banking/API module
- Quiz Test (MCQ)

Module 15: Deployment & DevOps Basics (Duration: 3 hours)

- Introduction to Heroku, Render, AWS

- Deploying Flask apps to the cloud
- Introduction to Docker and Docker Compose
- CI/CD pipelines using GitHub Actions
- Project: Deploy Flask/FastAPI app using Docker
- Q&A Session
- Assignment: Dockerize and deploy a web app
- Quiz Test (MCQ)

Module 16: SQLite & Database (Duration: 2 hours)

- Using sqlite3 in Python
- Creating and querying databases
- Performing CRUD operations
- Integrating DB with Flask or CLI app
- Assignment: Build a student database and query report
- Quiz Test (MCQ)

Module 17: n8n and Workflow Automation (Duration: 2 hours)

- Introduction to n8n and local setup
- Building a flow using webhook triggers
- Connecting APIs (Python script to Google Sheets, etc.)
- Export and reuse automation workflows
- Assignment: Build and demonstrate a data collection pipeline using n8n
- Quiz Test (MCQ)

Module 18: Data Analysis & Streamlit Visualization (Duration: 2 hours)

- Introduction to pandas and numpy
- Data cleaning, grouping, and filtering

- Visualizing data with matplotlib
- Introduction to Streamlit
- Assignment: Build a data dashboard using Streamlit
- Quiz Test (MCQ)

Final Capstone Project

- Project proposal and design
- Individual or team-based final project
- Integration of APIs, DB, OOP, and deployment
- Final presentation and peer review

*****Bonus Module: Problem-Solving Guidance-Leetcode (Duration: 6 hours)**
- Introduction to **Leetcode**
- Problem Solving Strategies
- Additional **DSA for problem-solving**
- **Dynamic Programming, Greedy algorithms and backtracking**
- Blind 75 discussion

Q&A and Problem-Solving Sessions (Throughout the Course):
- Open Q&A and problem-solving sessions.
- Doubts, review previous concepts, and solve coding challenges.
- Internship Guidelines.
- What's Next?

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