Line Academy

Engineering Your Success Story

PYTHON DJANGO TRAINING

Jal Vinayak Marg, Na Tole, Pulchowk, Lalitpur

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Sunney Sharma

Trainer

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ABOUT THE TRAINER

The lead trainer for the course will be Sunney Sharma. Mr. Sunney Sharma specializes in teaching and guiding individuals or groups on how to develop web applications using the Django framework. Mr. Sunney Sharma possess a deep understanding of Python programming, Django's architecture, and its various components. He has strong proficiency in Python programming and the Django framework.

PROJECT MANAGEMENT

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BENEFITS OF PYTHON DJANGO

- **Rapid Development:** Django's built-in components and batteries-included approach significantly reduce development time, allowing you to create web applications quickly.

- **Scalability:** Django is designed to handle high traffic and large-scale applications, making it suitable for growing businesses and projects.

- **Security:** Django incorporates robust security features, such as protection against common vulnerabilities like SQL injection, cross-site scripting (XSS), and clickjacking.

- **Versatility:** Django can be used to build a wide range of web applications, including content management systems (CMS), e-commerce platforms, social networking sites, and more.

- **Large Community:** Django has a vast and active community of developers, providing extensive documentation, tutorials, and support resources.

- **SEO Friendliness:** Django's architecture is designed to be SEO-friendly, making it easier for your website to rank higher in search engine results.

- **Cost-Effective:** Django's efficiency and rapid development capabilities can help reduce development costs and time-to-market.

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BENEFITS OF PYTHON DJANGO TRAINING AT LINE ACADEMY

- **Learn from Industry Experts:** Gain insights from highly experienced and certified instructors who bring real-world expertise to Primavera training.
- **State-of-the-Art Facilities:** Benefit from well-equipped labs designed to provide a hands-on, practical learning experience in Primavera.
- **Engaging Learning Environment:** Enjoy a friendly and interactive atmosphere that fosters collaboration and active participation.
- **Financial Support for Students:** Take advantage of scholarships available for students who demonstrate need and meet eligibility criteria.
- **Flexible Learning Options:** Opt for online training if you're unable to attend in person, ensuring accessibility and convenience.
- **Real-World Project Experience:** Work on projects under the supervision of instructors and industry experts, gaining practical experience and building your portfolio.

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COURSE OUTLINE

- PART 1: Introduction to Programming and Python Basics
- Part 2: Functions, Modules, and File Handling
- Part 3: Data Structures in Python
- Part 4: Object-Oriented Programming (OOP) in Python
- Part 5: Introduction to SQL and Database Management
- Part 6: Integrating Python with SQL
- Part 7: Introduction to Web Development with Django
- Part 8: Django Models and Database Migrations
- Part 9: Django Views, Templates, and Forms
- Part 10: Django Advanced Concepts
- Part 11: Introduction to JavaScript
- Part 12: Full-Stack Project Development

PART 1: INTRODUCTION TO PROGRAMMING AND PYTHON BASICS

Course Introduction

- Overview of the syllabus, learning objectives, assessment and projects.
- Introduction to programming concepts.
- Installation of Python, IDE setup (VSCode/PyCharm), Ipython(Jupyter Notebook), Google colab, virtual environments

Python Basics

- Understanding Variables, Basic data types, Type Conversion, input/output operations
- Basic operators and expressions

Control Structures

- Conditional statements (if, elif, else), Nested Conditionals
- Loops (for, while), Loop Control Statments.

Practical Applications

Mini-Project: Simple Calculator

- Implementing a basic calculator using conditionals and loops.
- Features: Add, subtract, multiply, divide two numbers based on user input.

Part 2: Functions, Modules, and File Handling

Functions

- Function definition
- Function Arguments and Parameters
- Return values
- Scope and lifetime of variables

Modules and Packages

- Understanding the difference between module, package and library
- __init__.py file
- Importing modules, creating custom modules, Assigning Properties
- creating packages, import module from packages
- Exploring the Python Standard Libraries.

File Handling

- Why file handling? File Operations
- Reading from a File, Writing to a File
- File Context Management
- Mini-Project: Log Analyzer
- Task: Create a Python script that reads a log file, analyzes it (e.g., counts occurrences of specific words), and writes a summary to a new file.

Part 3: Data Structures in Python

- **Lists and Tuples**
- Operations on lists, list comprehension, using conditions in list comprehension
- Tuple, Basic Operations on Tuples, Concept of hashing.
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- **Dictionaries and Sets**
- Key-value pairs, dictionary methods, set, set operations
- Hashing in Dictionaries and Sets
- Immutability and Hashing

Advanced Data Structures

- Lists of Lists, Dictionaries of Lists/Tuples, Tuples as Dictionary Keys, Frozenset

Command-line To-Do List

- Implementing basic CRUD operations using lists and dictionaries

Part 4: Object-Oriented Programming (OOP) in Python

Introduction to OOP

- Classes and objects
- attribute: Instance Attributes vs. Class Attributes
- Methods in Detail: Instance Methods, Static Methods and Class Methods

Inheritance and Polymorphism

- Inheritance: Concept, Syntax and Method Overriding
- Polymorphism: Concept, Syntax
- Understand the difference between Polymorphism and Inheritance

Encapsulation and Abstraction

- encapsulation: Concept, Private, Public and Protected Members
- Abstraction: Concept, Abstract class and Abstract Method

Project: Simple Inventory Management System

- Applying OOP principles to manage products, quantities, and sales

Part 5: Introduction to SQL and Database Management

Introduction to Databases and SQL

- Introduction to Databases and SQL
- Understand DDL, DML, DCL, DQL and TCL
- Understanind database keys: Primary Key, Foreign Key, Super Key, Composite Key

Working with tables

- Creating, modifying, and deleting tables
- CORE SQL Commands like: SELECT, INSERT, DELETE, UPDATE

Advanced SQL Queries

- Joins, subqueries, aggregations (GROUP BY, HAVING)
- Understand the hierarchy of SQL Commands
- Understand Indexing and Partitioning

Student Database Management System

- Creating a database, managing student records using SQL

Part 6: Integrating Python with SQL

Python Database Connectivity (SQLite/MySQL/Postgresql)

- Connecting to a database, executing SQL queries using Python

ORM Introduction with SQLAlchemy

- Basics of ORM, creating models,
- querying data, Basic CRUD operations

Project 4: Library Management System

- Building a simple system integrating Python with SQL for managing library books and members

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Part 7: Introduction to Web Development with Django

Introduction to Web Development

- Overvire of Basics of web technologies (HTML, CSS)
- Introduction to Django, Setting Up the Django Environment

Django Project Structure

- Understanding Django's MVT architecture and differentiate with MVC architecture.
- Core Components of a Django Project
- Creating your first Django project and app

Django Admin Interface

- Setting up and customizing the Django admin panel: creating superuser, customizing admin panel etc.

Part 8: Django Models and Database Migrations

Django Models

- Introduction to Django Models, Creating Models, Establishing Relationships
- Understanding Migrations, Creating and Applying Migrations,

Django ORM

- Introduction to Django ORM, Basic Queries, Querysert and working with Shell.

Blog Application

- Building a simple blog with CRUD operations on posts

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Part 9: Django Views, Templates, and Forms

Django Views and Templates

- Introduction to Django Views, Rendering Templates,
- Django Templates, Template Inheritance,

Django Forms

- Creating Forms in Django, Rendering forms in templates,
- Form Validation, Handling form validation errors

Project: User Registration and Authentication

- Setting Up Django's Built-In Authentication, Writing the view to handle user sign-up, Creating the registration template
- Setting up views for login and logout using Django's built-in authentication views
- Creating a user profile page that displays user information
- Building the profile template

Part 10: Django Advanced Concepts

Django Middleware

- Understanding Django Middleware: Introduction, Create Custom Middleware,
- Integrate with settings
- Practical examples of custom middleware, such as restricting access by IP, modifying request/response headers, etc

Django Context Processors

- Introduction to Context Processors
- Creating and Using Custom Context Processors

Django REST Framework (DRF) Introduction

- Understand Restful Architecture and Stateless and Stateful communication
- Setting Up DRF in a Django Project, Understand Serializers
- Understand Class Based Views and Function Based Views
- Creating a Simple API with DRF

Project 7: RESTful API for a To-Do Application

- Creating a RESTful API to manage to-do tasks.

Part 11: Introduction to JavaScript

JavaScript Basics

- Variables, data types, operators, and expressions
- Control Structures and Functions
- Loops, functions

JavaScript and the DOM

- Introduction to the DOM (Document Object Model)
- Manipulating the DOM
- Event Handling in JavaScript

Project 8: Interactive To-Do List

- Enhancing the Django To-Do application with JavaScript for interactivity

Part 12: Full-Stack Project Development

Capstone Project: E-commerce Platform

- Bringing it all together: Django backend, SQL database, and JavaScript frontend
- Features: User authentication, product catalog, shopping cart, order management
- Deployment basics: Deploying the Django application on a cloud platform (Heroku/AWS

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