Python and Django Course Syllabus

Course Brochure

Course Duration – 60hrs

Overview

- Why do we need Python?
- Program structure

Environment Setup

- Python Installation
- Execution Types
- What is an interpreter?
- Interpreters vs Compilers
- Using the Python Interpreter
- Interactive Mode
- Running python files
- Working with Python shell
- Integrated Development Environments (IDES)
- Interactive Mode Programming
- Script Mode Programming

Basic Operators in Python

- Types of Operator
- Python Arithmetic Operators
- Python Comparison Operators
- Python Assignment Operators
- Python Bitwise Operators
- Python Logical Operators
- Python Membership Operators (in, not in)
- Python Identity Operators (is, is not)
- Python Operators Precedence

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Basic Concepts

- **Data Types**
- Variables
- Assigning Values to Variables
- Multiple Assignment
- Python Numbers
- Python Strings
- Accessing Values in Strings
- String Special Operators
- String Formatting Operator
- Triple Quotes
- Built-in String Operations
- **Python Lists**
- Accessing Values in Lists
- Updating Lists
- Delete List Elements
- Basic List Operations
- Indexing, Slicing, and Matrixes
- Built-in List Functions & Methods
- **Python Tuples**
- Accessing Values in Tuples
- Updating Tuples
- Delete Tuple Elements
- Basic Tuples Operations
- Indexing, Slicing, and Matrixes
- No Enclosing Delimiters
- Built-in Tuple Functions
- **Python Dictionary**
- Accessing Values in Dictionary
- Updating Dictionary

- Delete Dictionary Elements
- Properties of Dictionary Keys
- Built-in Dictionary Functions & Methods

Loops and Decision Making

- if statements
- ..else statements
- nested if statements
- while loop
- for loop
- nested loops
- Loop Control Statements
- 1) break statement
- 2) continue statement
- 3) pass statement

Functions

- Defining a Function
- Syntax
- Calling a Function
- Pass by reference vs value
- Function Arguments
- Required arguments
- Keyword arguments
- Default arguments
- Variable-length arguments
- The return Statement
- Scope of Variables

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Global vs. Local variables

Built-in module and functions

Os module
mkdir()
chdir()
getcwd()
rmdir()
listdir()

Math module and functions

Constants
Trigonometry
Logarithmic
Representation

Random module and functions

random()
randint()
randrange()
choice ()
shuffle ()

Python Modules and Packages

- Framework vs Packages
- Folium Introduction
- Why are modules used?
- Creating modules
- The import Statement
- The from...import Statement
- The from...import * Statement
- Locating Modules
- The PYTHONPATH Variable

- Namespaces and Scoping
- The dir( ) Function
- The globals() and locals() Functions
- The reload() Function
- Packages in Python
- Constructing user defined packages
- Importing user defined packages

Basic OOPs Concept

- Creating class in Python
- Private Identifier
- Constructor
- Inheritance
- Polymorphism

Decorator, Iterator and Generator

Anonymous Function

- Lambda
- Map
- Filter
- Reduce

File Manipulation

- Opening Text File
- Working with a File on Python
- The open function

- File modes
- The file object attributes
- close() method
- write() method
- read() method
- Files: Input
- Files: Output
- Reading files
- Renaming & deleting files
- Writing into a file
- remove() method

Python GUI

- Basic Operations using Tkinter
- Buttons and Textbox
- Menu Bar
- Message Box and Radio Button
- Checkbox and Event Creating
- Creating Application in GUI

SQL and Python

- Overview of SQLite
- Integrating Python with SQLite

Project Demonstration Tkinter

- **Project Demonstration Tkinter**

Other Concepts

- Errors and Exception Handling
- Standard exceptions

- Assertions in Python
- The assert Statement
- What is Exception?
- Handling an exception
- Syntax
- The except Clause with No Exceptions
- The except Clause with Multiple Exceptions
- The try-finally Clause
- Argument of an Exception
- Example with Tkinter Application
- Regular Expression

Advanced Concept – Overviews

- Basics of Pandas and Numpy
- How to use Anaconda
- How to create dashboard
- Overview of Django

Django Course Syllabus

SECTION - I

1. Introduction to Django

- What Is a Web Framework?
- The MVC Design Pattern

• Django's History

2. Installation of Django

• Installing Python
• Installing Django
• Setting Up a Database
• Starting a Project.
• The Development Server
• Django Commands Overview

3. The Basics of Dynamic Web Pages

• Your First View: Dynamic Content
• Mapping URLs to Views
• How Django Processes a Request
• URL configurations and Loose Coupling
• 404 Errors
• Your Second View: Dynamic URLs
• A Word About Pretty URLs
• Wildcard URL patterns
• Django's Pretty Error Pages

4. The Django Template System

• Template System Basics
• Using the Template System
• Creating Template Objects
• Rendering a Template
• Multiple Contexts, Same Template
• Context Variable Lookup
• Playing with Context Objects
• Basic Template Tags and Filters Tags
• Philosophies and Limitations
• Using Templates in Views
• Template Loading
• render_to_response()
• The locals() Trick
• Subdirectories in get_template()
• The include Template Tag

• Template Inheritance

5. Interacting with a Database: Models

• The "Dumb" Way to Do Database Queries in Views
• The MTV Development Pattern
• Configuring the Database
• Your First App
• Defining Models in Python
• Your First Model
• Installing the Model
• Basic Data Access
• Adding Model String Representations
• Inserting and Updating Data
• Selecting Objects
• Filtering Data
• Retrieving Single Objects
• Ordering Data
• Chaining Lookups
• Slicing Data
• Deleting Objects
• Making Changes to a Database Schema
• Adding Fields
• Removing Fields
• Removing Many to Many Fields
• Removing Models

6. The Django Administration Site

• Activating the Admin Interface
• Using the Admin Interface
• Users, Groups and Permissions
• Customizing the Admin Interface
• Customizing the Admin Interface's Look and Feel
• Customizing the Admin Index Page
• When and Why to Use the Admin Interface

SECTION - II

7. Form Processing

• Search
• The "Perfect Form"
• Creating a Feedback Form
• Processing the Submission
• Custom Validation Rules
• A Custom Look and Feel
• Creating Forms from Models

8. Advanced Views and URL configurations

• URL configuration Tricks.
• Streamlining Function Imports
• Using Multiple View Prefixes
• Special-Casing URLs in Debug Mode
• Using Named Groups
• Understanding the Matching/Grouping Algorithm
• Passing Extra Options to View Functions
• Using Default View Arguments
• Special-Casing Views
• Capturing Text in URLs
• Determining What the URL configuration Searches Against
• Including Other URL configurations
• How Captured Parameters Work with include()
• How Extra URL configurations Options Work with include()
• Section II : Django Sub Framework

9. Generic Views

• Using Generic Views
• Generic Views of Objects
• Extending Generic Views
• Making "Friendly" Template Contexts
• Adding Extra Context
• Viewing Subsets of Objects
• Complex Filtering with Wrapper Functions
• Performing Extra Work

10. Extending the Template Engine

- Template Language Review
- Request Context and Context Processors
- django.core.context_processors.auth
- django.core.context_processors.request
- Guidelines for Writing Your Own Context Processors
- Inside Template Loading
- Extending the Template System
- Creating a Template Library
- Writing Custom Template Filters
- Writing Custom Template Tags

11. Users and Registration

- Cookies
- Getting and Setting Cookies
- The Mixed Blessing of Cookies
- Setting Test Cookies
- Users and Authentication
- Enabling Authentication Support
- Using Users
- Logging In and Out
- Limiting Access to Logged-in Users
- Managing Users, Permissions and Groups
- Using Authentication Data in Templates
- Permissions
- Groups
- Messages
- Profiles

Thank You