



Python Full Stack

Python Course Contents – Module I

Python Programming - Essentials	
Starting Python programming	
Section 1	Introduction to Python
	Why Python as a first programming language?
	Types of Python applications
	What is source code?
	How Python compiles and runs source code
	Disk storage and main memory working together
Section 2	How to use IDLE to develop programs
	How to use the interactive shell
	How to work with source files
	How to compile and run a program
	How to fix syntax and runtime errors
How to write your first programs	
Section 3	Introduction to Python coding
	Coding statements
	Coding comments
	Using functions
	Working with data types and variables
	Assigning values to variables
	Naming variables
	Working with numeric data
	Coding arithmetic expressions
	Using arithmetic expressions in assignment statements
	Using the interactive shell for testing numeric operations
Section 4	Working with string data
	Assigning strings to variables
	Joining strings
	Including special characters in strings
	Using the interactive shell for testing string operations
	Five basic Python functions
	Using the print(), input(), int(), float(), round() functions
	Chaining functions
Control statements	
Section 5	Boolean expressions
	Relational operators
	Logical operators
	Comparing strings
Section 6	Selection structure
	if statements
	Nested if statements

Section 7 & 8	Iteration structure
	while statements
	for statements
	break and continue statements
How to define and use functions and modules	
Section 9	Defining and using functions
	Define and call a function
	Define and call a main() function
Section 10	More skills for defining and using functions
	Default values for arguments
	Named arguments
	Local and global variables
Section 11	Creating and using modules
	Create a module
	Document a module
	Import a module
	Standard modules
	The random module
	Plan the functions of a program
Using a hierarchy chart	
Test and debug a program	
Section 12 & 13	Testing and debugging
	The three types of errors that can occur
	Common Python errors
	Four techniques for testing and debugging
	Planning the test runs
	A simple way to trace code execution
	Using top-down coding and testing to simplify debugging
	Using the IDLE shell to test functions
	Use the IDLE debugger
	Set and remove breakpoints
	Step through the code
How to view the stack	
The lists and tuples	
Section 13, 14 & 15	Basic of lists
	Create a list
	Get and set list items
	Add and remove list items
	Process the items in a list
	Pass lists to functions
	The list of lists
	Create a list of lists
	Process the items in a list of lists
	More about lists

	Count, reverse, and sort the items in a list
	Using other functions with lists
	Copy, slice, and concatenate lists
	The tuples
	Create a tuple
	Get items from a tuple
Working with file I/O	
Section 16 & 17	Intro to file I/O
	How file I/O works
	Open and close a file
	Using text files
	Write a text file
	Read a text file
	Work with a list in a text file
	Using CSV files
	Write a CSV file
	Read a CSV file
	Modify the CSV format
	Using binary files
	Working with a binary file
Handling exceptions	
Section 18 & 19	Handle a single exception
	How exceptions work
	Using a try statement to handle one type of exception
	Expanded contents
	Handle multiple exceptions
	Using a try statement to handle multiple exceptions
	Get the information from an exception object
	Two more skills
	Using a finally clause
Raise an exception	
Advanced Topics	
Working with numbers	
Section 20 & 21	Basics of working with numbers
	How floating-point numbers work
	Using the math module
	Format numbers
	Using the format() method of a string
	Using the locale module
	Fixing rounding errors
	Working with decimal numbers
Using the decimal module	

Working with strings	
Section 22	Basics for working with strings
	Unicode, indexes, slicing, duplicating, and multiline strings
	Search a string
	Looping through the characters in a string
	Using basic string methods
	Find and replace parts of a string
	Split and join strings
	Split a string into a list of strings
Joining strings	
Working with dates and times	
Section 23 & 24	Getting started with dates and times
	Create date, time, and datetime objects
	Create datetime objects by parsing strings
	Format dates and times
	Working with spans of time
	More about working with dates and times
	Getting date and time parts
	Compare date/time objects
Dictionaries	
Section 25	Getting started with dictionaries
	Create a dictionary
	Get, set, and add items
	Delete items
	Looping through keys and values
	Convert between dictionaries and lists
	More about dictionaries
	Using dictionaries with complex objects as values
Object-oriented programming	
Define and use classes	
Section 26 & 27	Intro to classes and objects
	Create and use objects
	Define a class
	Code a constructor and attributes
	Code methods
	Working with object composition
	How object composition works
	Working with encapsulation
	How object encapsulation works
	How to hide attributes
	How to access hidden attributes with methods
	How to access hidden attributes with properties

Inheritance	
Section 28 & 29	Working with inheritance
	How inheritance works
	Define a subclass
	How polymorphism works
	Check an object's type
	Overriding object methods
	Define a string representation for an object
	Define an iterator for an object
	More about Inheritance
	Working with custom exceptions
Using inheritance	
Database and GUI programming	
Databases	
Section 30 & 31	Using Python to work with a database
	Connect to a SQL database
	Execute SELECT statements
	Getting the rows in a result set
	Execute INSERT, UPDATE, and DELETE statements
	Test the database code
	Handle database exceptions
Building GUI program	
Section 32 & 33	How to create a GUI that handles an event
	How to display a root window
	How to work with frames and buttons
	How to handle a button click event
	More skills for working with components
	How to work with labels and text entry fields
	How to lay out components in a grid
	How to code a class that defines a frame

Django – Module II

Topic 1: Introduction

What is Django

Scaffolding a Django Project and App

Model View Template

Models

Views

Templates

Introduction to HTTP

Processing a Request
Django Project
A Directory & Django Development Server
Django Apps
View Details
URL Mapping Detail
GET, POST, and QueryDict Objects
Django Settings & Using Settings in the Code
Finding HTML Templates in App Directories
The render Function for rendering a Template
Rendering Variables in Templates
Debugging and Handling Errors

Topic 2: Models and Migrations

Intro

Databases

Relational & Non-Relational
Database Operations
Data Types

SQL CRUD Operations

Create Operations
Read Operations
Update Operations
Delete Operations
Django ORM
Database Configuration and Creating Django Applications

Django Apps
Django Migration
Creating Django Models and Migrations
Field Types
Field Options
Primary Keys

Relationships: Many to One

Many to Many

One-to-One Relationships
Adding the Review Model
Model Methods
Migrating the Reviews App

Django's Database CRUD Operations

Creating an Object with a Foreign Key
The add() Method
The create() and set() Methods for Many-to-Many Relationships
Read Operations
Returning an Object Using the get() Method

Retrieving Objects by Filtering
Filtering by Field Lookups
Using Pattern Matching for Filtering Operations
Retrieving Objects by Excluding
Retrieving Objects Using the `order_by()` Method
Querying: Across Relationships, Using Foreign Keys, Using Model Name, and Across Foreign Key Relationships Using the Object Instance
Populating the Bookr Project's Database

Topic 3: URL Mapping, Views, and Templates

Introduction

Function-Based Views

Class-Based Views

URL Configuration

Templates

Django Template Language: Template Variables, Template Tags, Comments, and Filters
Template Inheritance, and Template Styling with Bootstrap

Topic 4: Introduction to Django Admin

Introduction

Creating a Superuser Account

CRUD Operations Using the Django Admin App: Create, Retrieve, Update, Delete, and Users and Groups

Registering the Reviews Model

Change Lists

The Publisher Change Page

The Book Change Page

Customizing the Admin Interface

Site-Wide Django Admin Customizations

Examining the AdminSite object from the Python Shell

Customizing the ModelAdmin Classes

The Search Bar

Excluding and Grouping Fields

Topic 5: Serving Static Files

Introduction

Static File Serving

Introduction to Static File Finders

Static File Finders: Use During a Request

AppDirectoriesFinder

Static File Namespacing

Generating Static URLs with the static Template Tag

FileSystemFinder
Static File Finders: Use During collectstatic
STATICFILES_DIRS Prefixed Mode
The findstatic Command
Serving the Latest Files (for Cache Invalidation)
Custom Storage Engines

Topic 6: Forms

Introduction

What Is a Form?

The <form> Element
Types of Inputs
Form Security with Cross-Site Request Forgery Protection
Accessing Data in the View
Choosing between GET and POST
Why Use GET When We Can Put Parameters in the URL?

The Django Forms Library

Defining a Form
Rendering a Form in a Template
Validating Forms and Retrieving Python Values
Built-In Field Validation

Topic 7: Advanced Form Validation and Model Forms

Introduction

Custom Field Validation and Cleaning

Custom Validators
Cleaning Methods
Multi-Field Validation
Placeholders and Initial Values
Creating or Editing Django Models
The ModelForm Class

Topic 8: Media Serving and File Uploads

Introduction

Settings for Media Uploads and Serving

Serving Media Files in Development
Context Processors and Using MEDIA_URL in Templates
File Uploads Using HTML Forms
Working with Uploaded Files in a View
File Uploads with Django Forms
Image Uploads with Django Forms
Resizing an Image with Pillow

Serving Uploaded (and Other) Files Using Django

Storing Files on Model Instances

Storing Images on Model Instances

Working with FieldFile: Custom Storage Engines, Reading a Stored FieldFile, Storing Existing Files or Content in FileField, and Writing PIL Images to ImageField

Referring to Media in Templates

ModelForms and File Uploads

Topic 9: Sessions and Authentication

Introduction

Middleware

Middleware Modules

Implementing Authentication Views and Templates

Password Storage in Django

The Profile Page and the request.user Object

Authentication Decorators and Redirection

Enhancing Templates with Authentication Data

Sessions: The Session Engine, and Do You Need to Flag Cookie Content?

Pickle or JSON storage

Storing Data in Sessions

Topic 10: Advanced Django Admin and Customizations

Introduction

Customizing the Admin Site

Discovering Admin Files in Django

Django's AdminSite Class

Overriding the Default admin.site

Customizing Admin Site Text Using AdminSite Attributes

Customizing Admin Site Templates

Adding Views to the Admin Site

Creating the View Function

Accessing Common Template Variables

Mapping URLs for the Custom View

Restricting Custom Views to the Admin Site

Passing Additional Keys to the Templates Using Template Variables

Topic 11: Advanced Templating and Class-Based Views

Introduction

Template Filters

Custom Template Filters

Template Filters

Setting Up the Directory for Storing Template Filters

Setting Up the Template Library

Implementing the Custom Filter Function

Using Custom Filters inside Templates

String Filters

Template Tags

Types of Template Tags

Simple Tags

How to Create a Simple Template Tag: Setting Up the Directory, Setting Up the Template Library, Implementing a Simple Template Tag, Using Simple Tags inside Templates, and Passing the Template Context in a Custom Template Tag

Inclusion Tags: Implementing Inclusion Tags, and Using an Inclusion Tag inside a Template

Django Views

Class-Based Views

CRUD Operations with CBVs: Create View

Update View: Delete View

Read View

Topic 12: Building a REST API

Introduction

REST APIs

Django REST Framework

Installation and Configuration

Functional API Views

Serializers

Class-Based API Views and Generic Views

Model Serializers

ViewSet

Routers

Authentication

Token-Based Authentication

Topic 13: Generating CSV, PDF, and Other Binary Files

Introduction

Working with CSV Files

Working with Python's CSV Module

Reading Data from a CSV File

Writing to CSV Files Using Python

Working with Excel Files in Python

Binary File Formats for Data Exports

Working with XLSX Files Using the XlsxWriter Package: XLSX Files, The XlsxWriter Python Package, Creating a Workbook, Creating a Worksheet, Writing Data to the Worksheet, and Writing the Data to the Workbook

Working with PDF Files in Python

Converting Web Pages to PDFs

Playing with Graphs in Python

Generating Graphs with plotly: Setting Up a Figure, Generating a Plot, and Rendering a Plot on a Web Page

Integrating plotly with Django

Integrating Visualizations with Django

Topic 14: Testing

Introduction

The Importance of Testing

Automation Testing

Testing in Django

Implementing Test Cases

Unit Testing in Django

Utilizing Assertions: Types of Assertions

Performing Pre-Test Setup and Cleanup after Every Test Case Run

Testing Django Models

Testing Django Views

Testing Views with Authentication

Django Request Factory

Testing Class-Based Views

Test Case Classes in Django

SimpleTestCase

TransactionTestCase

LiveServerTestCase

Modularizing Test Code

Topic 15: Django Third-Party Libraries

Introduction

Environment Variables

django-configurations

manage.py changes

Configuration from Environment Variables

dj-database-url

The Django Debug Toolbar

django-crispy-forms

The crispy Filter

The crispy Template Tag

django-allauth: django-allauth Installation and Setup, GitHub Auth Setup, and Google Auth Setup

Initiating Authentication with django-allauth: Other django-allauth Features

Topic 16: Using a Frontend JavaScript Library with Django

Introduction

JavaScript Frameworks

JavaScript Introduction

React

Components

JSX

JSX Properties

JavaScript Promises

fetch: The JavaScript map Method

The verbatim Template Tag

Front-end – Module III

HTML

1. What is Markup Language
2. Basic Structure of HTML
3. Head Section and Elements
4. Meta Tags
5. External Link Tags
6. HTML Structure Tag
7. Create Table, Div and Frame Tag
8. Content and Header Tags
9. Paragraph, Span, Pre Tags
10. Anchor Links and Named Anchors
11. Object, IFrame and Image Tag
12. Implementing iFrame in Realtime
13. Working with Forms
14. Form Tag and Attributes
15. POST and GET Method
16. Text Input, TextArea, Checkbox and Radio
17. Password Field
18. Select Option, Option Group
19. File Field and Hidden Fields
20. Submit, Reset, Image Buttons
21. Relation between HTML Form and PHP
22. XHTML
23. What is XHTML
24. Difference between HTML & XHTML

25. XHTML Basics
26. Introduction to Doc Types
27. XHTML Validation
28. HTML5 (Latest Version)
29. Introduction to HTML5
30. Whats new in HTML5
31. HTML5 Apis
32. HTML5 Semanticg Tag
33. HTML5 Multimedia
34. Search, Email and Url Tel Input

Cascading Style Sheets (CSS2 & CSS3)

- 1.Introduction to Cascading Style Sheets
2. Types of Style Sheets
3. Media Type
4. Default CSS Properties
5. Types of CSS Selectors
6. Adjacent Sibling Selector
7. Other Selectors
8. CSS properties
9. Background Properties
10. Block Properties
11. Box Model Properties
12. List Properties
13. Border Properties
14. Positioning Properties
15. CSS Optimization Tips
16. CSS Compression
17. (CSS 3.0 – Latest Version)
18. Introduction to CSS 3
19. Basic CSS3 Selectors
20. Advanced CSS3 Selectors
21. New CSS3 Properties
22. CSS Rounded Corners
23. Border Image
24. Box and Text Shadow
25. Multiple Backgrounds
26. Background Origin
27. Background Resize
28. CSS Clip, Gradients, Opacity
29. Transitions & Transform


Javascript

1. Introduction to Client Side Scripting
2. Introduction to Java Script
3. Javascript Types
4. Variables in JS
5. Operators in JS
6. Conditions Statements
7. Java Script Loops
8. JS Popup Boxes
9. JS Events
10. JS Arrays
11. Working with Arrays
12. JS Objects
13. JS Functions
15. Validation of Forms
16. Related Examples


Jquery and jQuery UI

1. Introduction to jQuery
2. jQuery Features
3. Installing jQuery
4. jQuery Syntax
5. jQuery Ready Function
6. jQuery Selectors
7. jQuery Actions
8. jQuery Custom Functionality
9. jQuery Libraries
10. jQuery Validation
11. jQuery Slideshow
12. jQuery Dropdown
13. JS Functions
14. jQuery UI
15. Working with jQueryUI
16. jQuery Accordions
17. jQuery Tabs
18. jQuery Tooltips
19. jQuery Autocomplete



 3rd Floor, Surviba Towers, Plot No.247/3RT,
Near Umesh Chandra Statue, Sanjeeva Reddy Nagar,
Hyderabad, Telangana. 500038

 +91 99666 33097

 info@invictusengineers.com