

Python

1. Introduction to Python

- What is Python and history of Python?
- Unique features of Python
- Python-2 and Python-3 differences
- Install Python and Environment Setup
- First Python Program
- Python Identifiers, Keywords and Indentation
- Comments and document interlude in Python
- Command line arguments
- Getting User Input
- Python Data Types
- What are variables?
- Python Core objects and Functions
- Number and Maths
- Week 1 Assignments

2. Control Statements

- if-else
- if-elif-else
- while loop
- for loop
- break
- continue
- assert
- pass
- return

3. List, Ranges & Tuples in Python

- Introduction
- Lists in Python
- More about Lists
- Understanding Iterators
- Generators, Comprehensions and Lambda Expressions
- Introduction
- Generators and Yield
- Next and Ranges
- Understanding and using Ranges
- More About Ranges
- Ordered Sets with tuples

4. Python Dictionaries and Sets

- Introduction to the section
- Python Dictionaries
- More on Dictionaries
- Sets
- Python Sets Examples

5. Input and Output in Python

- Reading and writing text files
- writing Text Files
- Appending to Files and Challenge
- Writing Binary Files Manually
- Using Pickle to Write Binary Files

6. Python built in function

- Python user defined functions
- Python packages functions
- Defining and calling Function
- The anonymous Functions
- Loops and statement in Python
- Python Modules & Package

7. Python Object Oriented

- Overview of OOP
- The self variable
- Constructor
- Types Of Variables
- Namespaces
- Creating Classes and Objects
- Types of Methods
- Instance Methods
- Static Methods
- Class Methods
- Accessing attributes
- Built-In Class Attributes
- Destroying Objects
- Abstract classes and Interfaces
- Abstract Methods and Abstract class
- Interface in Python
- Abstract classes and Interfaces

8. Exceptions

- Errors in Python
- Compile-Time Errors
- Runtime Error
- Logical Errors
- What is Exception?
- Handling an exception
- try...except...else
- try-finally clause
- Argument of an Exception
- Python Standard Exceptions
- Raising an exceptions
- User-Defined Exceptions

9. Python Regular Expressions

- What are regular expressions?
- The match Function
- The search Function
- Matching vs searching
- Search and Replace
- Extended Regular Expressions
- Wildcard

10. Python Multithreaded Programming

- What is multithreading?
- Difference between a Process and Thread
- Concurrent Programming and GIL
- Uses of Thread
- Starting a New Thread
- The Threading Module
- Thread Synchronization
- Locks

- Semaphore
- Deadlock of Threads
- Avoiding Deadlocks
- Daemon Threads

11. Using Databases in Python

- Python MySQL Database Access
- Install the MySQLdb and other Packages
- Create Database Connection
- CREATE, INSERT, READ, UPDATE and DELETE Operation
- DML and DDL Operation with Databases
- Performing Transactions
- Handling Database Errors

Web Scraping in Python

12. Advanced Data Structures in Python

- Linked Lists
- Stacks
- Queues
- Dequeues

13. Networking in Python

- Protocol
- TCP/IP Protocol
- User Datagram Protocol (UDP)
- Sockets
- Knowing IP Address
- URL
- Reading the Source Code of Web Page
- Downloading a Web Page from Internet
- DownlInternet
- A TCP/IP Server
- A TCP/IP Client

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- A UPD Server
- A UPD Client
- File Server
- File Client
- Two-way Communication between Server and Client
- Sending a simple mail

14. Data Science Using Python

Numpy:

- Introduction to numpy
- Creating arrays
- Using arrays and Scalars
- Indexing Arrays
- Array Transposition
- Universal Array Function
- Array Processing
- Array Input and Output

Pandas:

What are pandas?

Where it is used?

Series in pandas

Index objects

Reindex

Drop Entry

Selecting Entries

Data Alignment

Rank and Sort

Summary Statics

Missing Data

Index Hierarchy

Matplotlib: Data Visualization

Python for Data Visualization

Welcome to the Data Visualization Section

Introduction to Matplotlib

15. Graphical User Interface

GUI in Python

The Root Window

Fonts and Colors

Fonts and Colors

Working with containers

Canvas

Frame

Widget

Button Widget

Arrange Widget in the Frame

Label Widget

Message Widget

Text Widget

Scrollbar Widget

Check button Widget

Radio button Widget

Entry Widget

Spinbox Widget

Listbox Widget

Menu Widget

Creating Tables

16. Django Web Framework in Python

Introduction to MVC and MVT architecture in Web development

Django folder structure and flow of control

- Project Hosting with Digital Ocean and uploading an Image from