Data Analytics Using Python

GETTING STARTED

• History & need of Python • Application of Python • Advantages of Python • Disadvantages of Python • Installing Python • Program structure • Interactive Shell • Executable or script files. • User Interface or IDE

PYTHON FUNDAMENTALS

• Working with Interactive mode • Working with Script mode • Python Character Set • Python Tokens, Keywords, Identifiers, Literals, Operators • Variables and Assignments • Input and Output in Python

OPERATORS

• Arithmetic Operators • Relational Operators • Logical Operators • Membership Operators • Identity Operators • Bitwise Operators • Assignment Operators • Operators Precedence • Evaluating Expression • Type Casting

DATA HANDLING

• Data Types Numbers ¬ Strings ¬ Lists ¬ Tuples ¬ Dictionary ¬ Set ¬ Frozenset ¬ Bool ¬ Mutable and Immutable

STRING MANIPULATION

• Introduction to Python String • Accessing Individual Elements • String Operators • String Slices • String Functions and Methods

LIST MANIPULATION

• Introduction to Python List • Creating List • Accessing List • Joining List • Replicating List • List Slicing

TUPLES

• Introduction to Tuple • Creating Tuples • Accessing Tuples • Joining Tuples • Replicating Tuples • Tuple Slicing

DICTIONARIES

• Introduction to Dictionary • Accessing values in dictionaries • Working with dictionaries • Properties

SET AND FROZENSET • Introduction to Set and Frozenset • Creating Set and Frozenset • Accessing and Joining • Replicating and Slicing

PROGRAM CONTROL FLOW

• **Conditional Statements** ¬ The if Statement ¬ The if-else Statement ¬ The if-elif Statement ¬ Nested if Statements ¬ Python Indentation

Looping and Iteration ¬ The For Loop ¬ The While Loop ¬ Loop else Statement ¬ Nested Loops ¬ Break and Continue

• **The Range Function** ¬ Introduction to range() ¬ Types of range() function ¬ Use of range() function

INTRODUCTION TO FUNCTIONS

• Built-In Functions ¬ Introduction to Functions ¬ Using a Functions ¬ Python Function Types ¬ Structure of Python Functions ¬ E.g. - map, zip, reduce, filter, any, chr, ord, sorted, globals, locals, all, etc

User Defined Functions ¬ Structure of a Python Program w.r.t. UDF ¬ Types of Functions ¬ Invoking UDF ¬ Flow of Execution ¬ Arguments and Parameters ¬ Default Arguments, Named Arguments ¬ Scope of Variables ¬ Lambda function • Recursion Function ¬ Use of recursion function

MODULES AND PACKAGES

• Built-in Modules ¬ Importing Modules in Python Programs ¬ Working with Random Modules ¬ E.g. - builtins, os, time, datetime, calendar, sys, etc. • User Defined Functions ¬ Structure of Python Modules

FILE OPERATIONS

• Text and Bytes files ¬ Opening a file ¬ Reading and Writing Files ¬ Other File tools

MS Excel files and Other¬ Introduction to MS Excel files,CSV,JSONfiles.

INTRODUCTION TO DATA ANALYTICS

• Why Analytics? • Traditional Data Management • Analytical tools • Types of Analytics • Hind sight, ore sight and insight • Dimensions and measures • Why learn Python for data analysis? • Using the IPython notebook

LIBRARIES FOR DATA ANALYTICS

• Numpy • Pandas • Matplotlib

NUMPY

• Creating NumPy arrays • Indexing and slicing in NumPy • Downloading and parsing data • Creating multidimensional arrays • NumPy Data types • Array tributes • Indexing and Slicing • Creating array views copies • Manipulating array shapes I/O

PANDAS

• Using multilevel series • Series and Data Frames • Grouping, aggregating • Merge DataFrames • Generate summary tables • Group data into logical pieces • Manipulate dates • Creating metrics for analysis • Data wrangling • Merging and joining • Analytics Vidhya dataset- Loan Prediction Problem • Data Mugging using Pandas • Building a Predictive Model

MATPLOTLIB

• Scatter plot • Bar charts, histogram • Stack charts • Legend title Style • Figures and subplots • Plotting function in pandas • Labelling and arranging figures • Save plots

➔ **Note :- More than 200 programs will be practiced during the course.**

Popular IDE/Editor for 'Python' language

- IDLE(BY DEFAULT)
- PyCharm
- VS Code
- Sublime Text3
- Atom
- Jupyter etc.