Python

Duration: 6 Months

Introduction To Python

- Why Python
- Application areas of python
- Python implementations
- Python versionsInstalling python
- Python interpreter architecture
- Python byte code compiler
- Python virtual machine(pvm)

Writing and Executing First Python Program

- Using interactive mode
- Using script mode
- General text editor and command window
- Idle editor and idle shell
- Understanding print() function
- How to compile python program explicitly

Python Language Fundamentals

- Character set
- Keywords
- Comments
- Variables
- Literals
- Operators
- Reading input from console
- Parsing string to int, float

Python Conditional Statements

- If statement
- If else statement
- If elif statement
- If elif else statement
- Nested if statement

Looping Statements

- While loop
- For loop
- Nested loops
- Pass, break and continue keywords

Standard Data Types

- Int, float, complex
- Str, list, tuple

- Dict, set

Python Functions

- Defining a function
- Calling a function
- Types of functions
- Function arguments
- Positional arguments, keyword arguments
- Default arguments, non-default arguments
- Arbitrary arguments, keyword arbitrary arguments
- Function return statement
- Nested function
- Function as argument
- Function as return statement
- Decorator function
- Closure
- Map(), filter(), reduce(), any() functions
- Anonymous or lambda function

Modules & Packages

- Why modules
- Script v/s module
- Importing module
- Standard v/s third party modules
- Why packages
- Understanding pip utility

SQL

Introduction to Database

- Database Concepts
- What is Database Package?
- Understanding Data StorageRelational Database (RDBMS) Concept

SQL (Structured Query Language)

- SQL basics
- DML, DDL & DQL
- DDL: create, alter, drop
- SQL constraints:
- Not null, unique,
- Primary & foreign key, composite key
- Check, default
- DML: insert, update, delete and merge
- DQL : select
- Select distinct
- SQL where
- SQL operators
- SQL like
- SQL order by
- SQL aliases
- SQL views
- SQL joins
- Inner join
- Left (outer) join

- Right (outer) join
- Full (outer) join
- Mysql functions

String functions

Char_length

- Concat
- Lower
- Reverse

- Upper

Numeric functions

- Max, min, sum
- Avg, count, abs

Date functions

- Curdate
- Curtime
- Now

Statistics, Probability & Analytics:

Introduction to Statistics

- Sample or population
- Measures of central tendency
- Arithmetic mean
- Harmonic mean
- Geometric mean
- Mode
- Quartile
- First quartile
- Second quartile(median)
- Third quartile
- Standard deviation

Probability Distributions

- Introduction to probability
- Conditional probability
- Normal distribution
- Uniform distribution
- Exponential distribution
- Right & left skewed distribution
- Random distribution
- Central limit theorem

Hypothesis Testing

- Normality test
- Mean test
- T-test
- Z-test
- ANOVA test
- Chi square test
- Correlation and covariance

Numpy. Package

- Difference between list and numpy array
- Vector and matrix operations
- Array indexing and slicing

Pandas Package

Introduction to pandas

- Labelled and structured data
- Series and dataframe objects

How to load datasets

- From excel
- From csv

- From html table

Accessing data from Data Frame

- at & iat
- loc & iloc
- head() & tail()

Exploratory Data Analysis (EDA)

- describe()
- groupby()
- crosstab()
- boolean slicing / query()

Data Manipulation & Cleaning

- Map(), apply()
- Combining data frames
- Adding/removing rows & columns
- Sorting data
- Handling missing values
- Handling duplicates
- Handling data error

Handling Date and Time

Data Visualization using matplotlib and seaborn packages

- Scatter plot, line plot, bar plot
- Histogram, pie chart,
- Jointplot, pairplot, heatmap
- Outlier detection using boxplot

Advanced Excel

Advanced Excel Course - Overview of the Basics of Excel

- Customising common options in Excel
- Absolute and relative cells
- Protecting and unprotecting worksheets and cells

Advanced Excel Course - Working with FunctionsWriting conditional expressions (using IF)

- Using logical functions (AND, OR, NOT)
- Using lookup and reference functions (VLOOKUP, HLOOKUP, MATCH, INDEX)
- VlookUP with Exact Match, Approximate Match
- Nested VlookUP with Exact Match
- VlookUP with Tables, Dynamic Ranges
- Nested VlookUP with Exact Match
- Using VLookUP to consolidate Data from Multiple Sheets

Advanced Excel Course - Data Validations

- Specifying a valid range of values for a cell
- Specifying a list of valid values for a cell
- Specifying custom validations based on formula for a cell

Advanced Excel Course - Working with Templates

- Designing the structure of a template
- Using templates for standardization of worksheets

Advanced Excel Course - Sorting and Filtering Data

- Sorting tables
- Using multiple-level sorting
- Using custom sorting
- Filtering data for selected view (AutoFilter)
- Using advanced filter options

Advanced Excel Course - Working with Reports

- Creating subtotals
- Multiple-level subtotals
- Creating Pivot tables
- Formatting and customizing Pivot tables
- Using advanced options of Pivot tables
- Pivot charts
- Consolidating data from multiple sheets and files using Pivot tables
- Using external data sources
- Using data consolidation feature to consolidate data
- Show Value As (% of Row, % of Column, Running Total, Compare with Specific Field)
- Viewing Subtotal under Pivot
- Creating Slicers (Version 2010 & Above)

Advanced Excel Course - More Functions

- Date and time functions
- Text functions
- Database functions
- Power Functions (CountIf, CountIFS, SumIF, SumIfS)

Advanced Excel Course - Formatting

- Using auto formatting option for worksheets
- Using conditional formatting option for rows, columns and cells

Advanced Excel Course - Macros

- Relative & Absolute Macros
- Editing Macro 's

Advanced Excel Course - WhatIf Analysis

- Goal Seek
- Data Tables
- Scenario Manager

Advanced Excel Course - Charts

- Using Charts
- Formatting Charts
- Using 3D Graphs
- Using Bar and Line Chart togetherUsing Secondary Axis in Graphs
- Sharing Charts with PowerPoint / MS Word, Dynamically
- (Data Modified in Excel, Chart would automatically get updated)

Advanced Excel Course - New Features Of Excel

- Sparklines, Inline Charts, data Charts
- Overview of all the new features

Advanced Excel Course - Final Assignment

- The Final Assignment would test contains questions to be solved at the end of the Course

Tableau

Tableau - Home

- Tableau - overview
- Tableau - environment setup
- Tableau - get started
- Tableau - navigation
- Tableau - design flow
- Tableau - file types
- Tableau - data types
- Tableau - show me
- Tableau - data terminology

Tableau - Data Sources

- Tableau - custom data view
- Tableau - data sources
- Tableau - extracting data
- Tableau - fields operations
- Tableau - editing metadata
- Tableau - data joining
- Tableau - data blending

Tableau – Worksheet

- Tableau - add worksheets
- Tableau - rename worksheet
- Tableau - save & delete worksheet
- Tableau - reorder worksheet
- Tableau - paged workbook

Tableau – Calculation

- Tableau - operators
- Tableau - functions
- Tableau - numeric calculations
- Tableau - string calculations
- Tableau - date calculations
- Tableau - table calculations
- Tableau - lod expressions

Tableau – Sorting & Filter

- Tableau - basic sorting
- Tableau - basic filters
- Tableau - quick filters
- Tableau - context filters
- Tableau - condition filters
- Tableau - top filters
- Tableau - filter operations

Tableau - Charts

- Tableau - bar chart
- Tableau - line chart
- Tableau - pie chart

- Tableau - crosstab
- Tableau - scatter plot
- Tableau - bubble chart
- Tableau - bullet graph
- Tableau - box plot
- Tableau - tree map
- Tableau - bump chart
- Tableau - gantt chart
- Tableau - histogram
- Tableau - motion charts
- Tableau - waterfall charts
- Tableau - dashboard

Projects

- One project using python & sql
- One dashboard using tableau