

# Python

## Introduction to Script

- What is Script
- What is a program?
- Types of Scripts
- Difference between Script & Programming Languages
- Features of Scripting
- Limitation of Scripting
- Types of programming Language Paradigms

## Introduction to Python

- What is Python?
- Why Python?
- Who Uses Python?
- Characteristics of Python
- History of Python
- What is PSF?
- Python Versions
- How to Download Python
- How to Install Python
- Install Python with Diff IDEs
- Features of Python
- Limitations of Python
- Python Applications
- Creating Your First Python Program
- Printing to the Screen
- Reading Keyboard Input
- Using Command Prompt and GUI or IDE
- Python Distributions

## Different Modes in PYTHON

- Execute the Script
- Interactive Mode
- Script Mode



- Python File Extensions
- SETTING PATH IN Windows
- Clear screen inside python
- Learn Python Main Function
- Python Comments
- Quit the Python Shell
- Shell as a Simple Calculator
- Order of operations
- Multiline Statements
- Quotations in Python
- Python Path Testing
- Joining two lines
- Python Implementation Alternatives
- Python Sub Packages
- Uses of Python in Data Science
- USES OF PYTHON IN IOT
- Working with Python in Unix/Linux/Windows/Mac/Android..!!

**PYTHON NEW IDEs**

- PyCharm IDE
- How to Work on PyCharm
- PyCharm Components
- Debugging process in PyCharm
- PYTHON Install Anaconda
- What is Anaconda?
- Coding Environments
- Spyder Components
- General Spyder Features
- Spyder Shortcut Keys
- Jupyter Notebook
- What is Conda?
- Conda List?
- Jupyter and Kernels
- What is PIP?



**Variables in Python**

- What is Variable?
- Variables in Python
- Constants in Python
- Variable and Value
- Variable names
- Mnemonic Variable Names
- Values and Types
- What Does "Type" Mean?
- Multiple Assignment
- Python different numerical types
- Standard Data Types
- Operators and Operands
- Order of Operations
- Swap variables
- Python Mathematics
- Type Conversion
- Mutable Versus Immutable Objects

**String Handling**

- What is string?
- String operations
- String indices
- Basic String Operations
- String Functions, Methods
- Delete a string
- String Multiplication and concatenation
- Python Keywords
- Python Identifiers
- Python Literals
- String Formatting Operator
- Structuring with indentation in Python
- Built-in String Methods
- Define Data Structure?



- Data Structures in PYTHON

**Python Operators and Operands**

- Arithmetic Operators
- Relational Operators
- Comparison Operators
- Python Assignment Operators
- Short hand Assignment Operators
- Logical Operators or Bitwise Operators
- Membership Operators
- Identity Operators
- Operator precedence
- Evaluating Expressions

**Python Conditional Statements:**

- How to use "if condition" in conditional structures
- if statement (One-Way Decisions)
- if .. else statement (Two-way Decisions)
- How to use "else condition"
- if .. elif .. else statement (Multi-way)
- When "else condition" does not work
- How to use "elif" condition
- How to execute conditional statement with minimal code
- Nested IF Statement

**Python LOOPS**

- How to use "While Loop"
- How to use "For Loop"
- How to use For Loop for set of other things besides numbers
- Break statements in For Loop
- Continue statement in For Loop
- Enumerate function for For Loop
- Practical Example
- How to use for loop to repeat the same statement over and again
- Break, continue statements



**Learning Python Strings**

- Accessing Values in Strings
- Various String Operators
- Some more examples
- Python String replace() Method
- Changing upper and lower case strings
- Using "join" function for the string
- Reversing String
- Split Strings

**Sequence or Collections in PYTHON**

- Strings
- Unicode Strings
- Lists
- Tuples
- buffers
- xrange

**Python Lists**

- Lists are mutable
- Getting to Lists
- List indices
- Traversing a list
- List operations
- List slices
- List methods
- Map, filter and reduce
- Deleting elements
- Lists and strings

**Python TUPLE**

- Advantages of Tuple over List
- Packing and Unpacking
- Comparing tuples
- Creating nested tuple



- Using tuples as keys in dictionaries
- Deleting Tuples
- Slicing of Tuple
- Tuple Membership Test
- Built-in functions with Tuple
- Dotted Charts

**Python Sets**

- How to create a set?
- Iteration Over Sets
- Python Set Methods
- Python Set Operations
- Union of sets
- Built-in Functions with Set
- Python Frozenset

**Python Dictionary**

- How to create a dictionary?
- PYTHON HASHING?
- Python Dictionary Methods
- Copying dictionary
- Updating Dictionary
- Delete Keys from the dictionary
- Dictionary items() Method
- Sorting the Dictionary
- Python Dictionary in-built Functions
- Dictionary len() Method
- Variable Types
- Python List cmp() Method
- Dictionary Str(dict)

**Python Functions**

- What is a function?
- How to define and call a function in Python
- Types of Functions



- Significance of Indentation (Space) in Python
- How Function Return Value?
- Types of Arguments in Functions
- Default Arguments
- Non-Default Arguments
- Keyword Arguments
- Non-keyword Arguments
- Arbitrary Arguments
- Rules to define a function in Python
- Various Forms of Function Arguments
- Scope and Lifetime of variables
- Nested Functions
- Call By Value, Call by Reference
- Anonymous Functions/Lambda functions
- Passing functions to function
- map(), filter(), reduce() functions
- What is a Docstring?

#### Advanced Python

##### Python Modules

- What is a Module?
- Types of Modules
- The import Statement
- The from...import Statement
- ..import \* Statement
- Underscores in Python
- The dir() Function
- Creating User defined Modules
- Command line Arguments
- Python Module Search Path

##### Packages in Python

- What is a Package?
- Introduction to Packages?
- py file



- **Importing module from a package**
- **Creating a Package**
- **Creating Sub Package**
- **Importing from Sub-Packages**
- **Popular Python Packages**

#### **Python Date and Time**

- **How to Use Date & DateTime Class**
- **How to Format Time Output**
- **How to use Timedelta Objects**
- **Calendar in Python**
- **datetime classes in Python**
- **How to Format Time Output?**
- **The Time Module**
- **Python Calendar Module**
- **Python Text Calendar**
- **Python HTML Calendar Class**
- **Unix Date and Time Commands**

#### **File Handling**

- **What is a data, Information File?**
- **File Objects**
- **File Different Modes**
- **file Object Attributes**
- **How to create a Text File**
- **How to Append Data to a File**
- **How to Read a File**
- **Closing a file**
- **Read, read line ,read lines, write, write lines...!!**
- **Renaming and Deleting Files**
- **Directories in Python**
- **Working with CSV files**
- **Working with CSV Module**
- **Handling IO Exceptions**





**Python OS Module**

- Shell Script Commands
- Various OS operations in Python
- Python File System Shell Methods

**Python Exception Handling**

- Python Errors
- Common RunTime Errors in PYTHON
- Abnormal termination
- Chain of importance Of Exception
- Exception Handling
- Try ... Except
- Try .. Except .. else
- Try ... finally
- Argument of an Exception
- Python Custom Exceptions
- Ignore Errors
- Assertions
- UsingAssertionsEffectively

**More Advanced PYTHON**

- Python Iterators
- Python Generators
- Python Closures
- Python Decorators
- Python @property

**Python Class and Objects**

- Introduction to OOPs Programming
- Object Oriented Programming System
- OOPS Principles
- Define Classes
- Creating Objects
- Class variables and Instance Variables Constructors
- Basic concept of Object and Classes



- Access Modifiers
- How to define Python classes
- Python Namespace
- Self-variable in python
- Garbage Collection
- What is Inheritance? Types of Inheritance?
- How Inheritance works?
- Python Multiple Inheritance
- Overloading and Over Riding
- Polymorphism
- Abstraction
- Encapsulation
- Built-In Class Attributes

#### Python Regular Expressions

- What is Regular Expression?
- Regular Expression Syntax
- Understanding Regular Expressions
- Regular Expression Patterns
- Literal characters
- Repetition Cases
- Example of w+ and ^ Expression
- Example of \s expression in re.split function
- Using regular expression methods
- Using re.match()
- Finding Pattern in Text (re.search())
- Using re.findall for text
- Python Flags
- Methods of Regular Expressions

#### Python XML Parser

- What is XML?
- Difference between XML and HTML
- Difference between XML and JSON and Gson
- How to Parse XML



- How to Create XML Node
- Python vs JAVA
- XML and HTML

#### Python-Data Base Communication

- What is Database? Types of Databases?
- What is DBMS?
- What is RDBMS?
- What is Big Data? Types of data?
- Oracle
- MySQL
- SQL server
- DB2
- Postgre SQL
- Executing the Queries
- Bind Variables
- Installing of Oracle Python Modules
- Executing DML Operations..!!

#### Multi-Threading

- What is Multi-Threading
- Threading Module
- Defining a Thread
- Thread Synchronization

#### Web Scrapping

- The components of a web page
- BeautifulSoup
- Urllib2
- HTML,CSS,JS,jQuery
- Dataframes
- PIP
- Installing External Modules Using PIP

#### Unit Testing with PyUnit



- What is Testing?
- Types of Testings and Methods?
- What is Unit Testing?
- What is PyUnit?
- Test scenarios, Test Cases, Test suites

**Introduction to Python Web Frameworks**

- Django - Design
- Advantages of Django
- MVC and MVT
- Installing Django
- Designing Web Pages
- HTML5, CSS3, AngularJS
- PYTHON Flask
- PYTHON Bottle
- PYTHON Pyramid
- PYTHON Falcon

**GUI Programming-Tkinter**

- Introduction
- Components and Events
- Adding Controls
- Entry Widget, Text Widget, Radio Button, Check Button
- List Boxes, Menus, ComboBox

**Data Analytics**

- Introduction to data Big Data?
- Introduction to NumPY and SciPY
- Introduction to Pandas and MatPlotLib

