PYTHON

# CORE PYTHON

## Introduction to python

* What is python
* Python use cases
* The Birth of Python
* Python Timeline
* Features of Python
* Versions of Python
* Python distributions

## Introduction to script

* What is script
* What is program
* Types of script
* Types of programming languages

## The Python Environment

* Installation of Python on windows,MAC,LINUX
* Setting path for Python
* Python Documentation
* Getting Help
* Python Command line Shell ,Editors and IDE's
* Basic Syntax
* Running Python Script on WINDOWS
* Running Python Script on LINUX
* Working with IDLE

## Getting Started

* Keywords v Data Types
* Static Data Types versus Dynamic Data Types
* Fundamental Data Types
* Collection Types
* Number systems
* Mutable objects versus Immutable Objects
* Variables
* Naming Conventions
* Print(),Type() and Id() Functions
* Input() and raw\_input() functions
* Type Conversion functions

# Operators

* Arithmetic Operators
* Relational Operators
* Logical Operators
* Assignment Operator
* Short Hand Assignment Operators
* Bitwise Operators
* Membership Operators
* Identity Operators
* Precedence of operators
* Evaluating expressions

## Flow Control

* About Flow Control
* Elements of flow control
* Block/Clause
* Conditional Statements

> Simple if

> if…else,

> if…elif…else

* Looping Statements

> while loop

> while … else

> for loop

>for …else

> using range() in for loop

> working with infinite loops and nested loops

* Break statement
* Continue statement
* Pass statement

## String Handling

* What is String?
* Single-quoted string literals
* Triple-quoted string literals
* String Indexing
* String Slicing
* Working with String Functions
* Working with String Methods
* Reversing a string
* String multiplication and concatenation

## Collections

## Data type, type conversion functions

list()

set()

tuple()

dict()

string()

## List:

* 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

**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 function with Tuple
* Dotted Charts

**Set:**

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

**Dictionary:**

* How to create a dictionary?
* Python Hashing?
* Python Dictionary Methods
* Copying DIctionary
* Updating dictionary
* Delete keys from the dictionary
* Dictionary items() Method

## Functions

* Defining a function
* Calling a function
* Function Parameters
* Types of parameters

> default parameters

> non default parameters

> key word arguments

> non key word arguments

> arbitrary arguments

* Return statement in functions
* Handling return values
* Global variables and Local variables
* Scope of global variables and local variables
* Passing collections to a function

## Lambda functions

* Lambda functions/ anonymous functions
* Filter()
* map()
* Reduce()

## Modules

* What is a module?
* Types of modules
* The import statement
* Module Aliases/renaming a module
* From … Import
* Reloading a module
* Built in properties of a module
* Dir() function
* Creating user defined modules
* Module search path
* Command line arguments
* Working with pre defined Standard modules ( Math, Random, Datetime, Os, Sys, String,….)

## Packages

* Introduction to packages
* \_\_init\_\_.py file
* Defining packages
* Importing from packages
* Defining sub packages
* Importing from sub packages
* Differences between 2.X and 3.Xpacakages

# ADVANCE PYTHON

# OOPS concepts

* Introduction to OOPS programming
* OOPS principles
* Encapsulation
* Defining Classes
* Creating objects
* Class variables
* instance variables
* Parameters
* Local variables
* Defining methods
* Differences between functions and methods
* Instance method
* Static method
* Class method
* Difference static and class methods
* Constructors
* destructors
* Inheritance
* Types of inheritances
* Polymorphism (over loading & over riding)
* Super() statement
* Built in properties of class
* Inner classes

## Exception Handling

* Syntax Errors
* Runtime Errors
* What is BUG?
* What is Exception?
* Need of Exception handling
* Predefined Exceptions
* Predefined Exceptions Hierarchy
* try, except and finally clauses
* Named except block
* Default except block
* Handling Multiple Exceptions
* Nested try, except and finally blocks
* User defined Exceptions
* Raise, assert statements

## File Handling

* What is a file?
* Opening a file
* Reading data from a file
* Writing data to a file
* Closing a file
* Working with the methods of file object
* Replacing the content of file
* Working with Directories
* Handling IO Exceptions

## Regular Expressions

* Introduction to regular expression
* Simple character matches
* Special characters
* Character classes
* Quantifiers
* Forming regular expressions
* Matching at beginning or end
* Greedy matches
* Compiling regular expressions
* Grouping
* Match Objects
* Match(), Search() and sub() functions
* Matching versus searching
* Splitting a string
* Replacing text
* Flags

## Database access

* Introduction to RDBMS
* Cursor object
* Executing SQL queries
* Executing SQL queries with bind variables
* Execution of PL/SQL procedures and functions
* Installation of mysql database
* Creating databases in mysql
* Creating users and assigning privileges to the users in mysql
* Installation of mysql python modules
* Establishing connection with mysql
* Closing mysql database connections
* Execution of insert, update ,delete and select queries
* Handling db errors

## Advanced Concepts

* Python Iterator
* Python Generator
* Python Closure
* Python Decorators
* Python Property
* PIP
* Installation of external modules using PIP
* Working with csv, xml and json files
* Debugging using IDE
* Test cases implementations