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PYTHON

Introduction to Python

- History of Python
- Why to learn python
- How is Python Different?
- Installing Python

Python Interpreter

- Using the interpreter
- Integrated Development Environments (IDE) How to run Python programs?

Basics of Python

- Variable
- Keywords
- Statements & Comments
- Indentation
- Data types
- Static Typing vs Dynamic Typing
- Input and output
- Operators Arithmetic operator Relational Operator Assignment Operator
- Logical operator Bitwise operator Membership Operator
- Identity Operator

Control Flow

- If statement
- If - else
- If – elif -else
- Nested if - else
- while loop
- for – in loop
- Nested for loop
- Nester while loop
- Loop with else
- Pass statement
- Break and continue

Functions

- Basics Defining function
- function call Return statement
- Function with parameter and without parameter
- Function parameters Call by value or call by reference
- local and global variable
- Recursion, Anonymous (lambda) function
- User define functions
- Examples

Modules

- Defining module
- How to create module
- Importing module
- Dir()
- Module search path
- Reloading a module
- Sys module
- Os module
- namespace

Package

- Defining package
- How to create package
- Importing package
- Installing third party packages

Numeric types

- Numeric type basics
- Hexadecimal, Octal and Binary Notation
- Complex Numbers
- Type casting Numeric Functions
- Random number generation(Using Random Modules)

String

- Defining a string
- Different ways to create string Accessing elements of string Escape sequence
- Raw string String methods
- String formatting Expressions

List

- Defining a list
- Creating list
- Accessing list elements of list
- Deleting list
- List methods
- Functions used with list
- List comprehension
- Implementation of stack and queue using list
- Use of Zip ()
- Matrix operations using list

Tuple

- Defining a tuple
- Creating a tuple
- Accessing elements of tuple
- What is Immutability
- List vs tuples
- Tuple Methods Functions used with tuple
- Advantage of Tuple

Dictionary

- Defining a dictionary
- Creating a dictionary
- Accessing elements of dictionary
- Deleting a dictionary
- Dictionary methods
- Dictionary Comprehension

Set

- Defining a set
- Creating set
- Set operations
- Set methods
- Set comprehension

Files

- Defining a file
- Types of fileFile operations
- Opening a File
- Closing file
- File modes
- File attributes
- Writing to file
- Reading from file
- Appending to file
- File positions
- Binary file
- Pickle module

Exception Handling

- Defining an exception?
- Default exception handler
- **Exception handling techniques**
    a. Detecting Exception (try)
    b. Catching exceptions (catch)
    c. Catching multiple exceptions
    d. Raising exception (raise) Finally block
- User defined exceptions

Object Oriented Programming

- OOPS conceptsDefining
- Class Creating object
- Method vs function Calling methods
- Instance attribute vs class attribute
- Instance method vs class method
- Private attribute and method Static Method
- Method Overloading Constructor
- Method Overriding Constructor
- List of objects Inheritance
- Eamples

Multi Threading

- Process based multi tasking
- Thread based multi tasking
- Creating a Thread without using class
- Creating thread using class
- Sleep() method
- Join() method Getting and setting name of Thread
- Logging module
- Synchronization
- Lock concept
- Inter thread communication
- Is_Alive() method
- Active_count() method
- Enumerate() method
- Current_thread() method
- Daemon Thread

GUI Programming with Tkinter

- Introduction to tkinter
- Creating a window Tkinter widgets Label
- Button Entry Messagebox List
- Radio Button CheckButton Creating Frame
- Creating Menu Assignments on tkinter
- Examples

Event handling

- Defining an event
- Bind() method
- Mousse events
- Keyboard events
- Examples

Data Base Programming

- Introduction to mysql.connector module, Connecting to database by using mysql, Creating table by mysql
- Performing sql operations, Introduction to mysql, Installing mysql, Creating database using mysql
- Connecting mysql database from python, Creating table, Performing sql operations
- Eamples

Networking

- Introduction to Network programming, Ip address, Port NumberSocket module, Server socket, Client socket, Socket methods, TCP socket, UDP socket
- Create server-client examples

Conversion of Python script to executable file

- Defining an executable file ,Deploying the application

Additional Concepts

- **Introductions of all modules**
  I. Numpy
  II. Scipy
  III. Pandas
  IV. Matplotlib
  V. Django

Live Project

- Create GUI and store data in Database.(5-days session)
- Create server-client program.(using TCP)