Module 8: Advance Python Programming

Introduction to the print() function in Python.

Printf function is used in python to print on the output screen. It can be invoked as follows:
Printf(“hello world”)

Formatting outputs using f-strings and format().

f-strings let you insert variables directly inside a string using {} brackets, while format() inserts values into placeholders using {}.

Using the input() function to read user input from the keyboard.

We can use the input function to get input from the user along with a message:
Age = input(“Enter your age: ”)

Converting user input into different data types (e.g., int, float, etc.).

You can easily convert input by wrapping it with the type you want, like int(input()) or float(input()).

Opening files in different modes ('r', 'w', 'a', 'r+', 'w+').

Python allows you to open files in different model like
R – read, w – write, a – append, r+ - read and write, etc.

Using the open() function to create and access files.

You use open() to create or access a file by giving the file name and mode, like "r" for read or "w" for write. It returns a file object that you can read from or write to.

Closing files using close().

You can close the file after the operation is done using close function. This ensures that file does not get corrupted.

Reading from a file using read(), readline(), readlines().

read() returns the whole file as one string, readline() gives one line at a time, and readlines() returns all lines as a list.

Writing to a file using write() and writelines().

write() adds a single string to the file, while writelines() writes a list of strings one after another.

Introduction to exceptions and how to handle them using try, except, and finally.

Exceptions are errors that stop the program, and we handle them using try block to write the code, except for what to do if exception arises, and finally for code that should run no matter what.

Understanding multiple exceptions and custom exceptions.

You can catch different errors by using multiple except blocks, and you can create your own custom exceptions by making a new class that extends Exception.

Understanding the concepts of classes, objects, attributes, and methods in Python.

Classes are collection of objects also known as blueprints. Objects are instances of class, in python everything is an object. Attributes and methods are variables and functions of a class.

Difference between local and global variables.

Variable declared inside a scope like a function or loop is known as local variable where as a variable declared at the outermost scope is known as global variable.

Single, Multilevel, Multiple, Hierarchical, and Hybrid inheritance in Python. Using the super() function to access properties of the parent class.

Single inheritance has one parent one child class, multilevel has one grandparent one parent and one child class, multiple has one or more parent and one child class, hierarchical has one parent with many children, and hybrid is a mix of types. super() lets a child class access its parent’s methods or attributes.

Method overloading: defining multiple methods with the same name but different parameters.

Python doesn’t support true method overloading; you can define one method and use default or variable arguments to handle different parameters.

Method overriding: redefining a parent class method in the child class.

Method overriding is when a child class creates its own method that already exists in the parent class.

Introduction to SQLite3 and PyMySQL for database connectivity.

SQLite3 is a lightweight, file-based database. We use PyMySQL to connect Python to MySQL servers for storing and managing data.

Creating and executing SQL queries from Python using these connectors.

You use the connector to create a cursor, then run SQL commands with execute() and fetch results with methods like fetchall().

Using re.search() and re.match() functions in Python’s re module for pattern matching.

re.match() checks for a pattern only at the start of a string, while re.search() looks for the pattern anywhere in the string.

Difference between search and match.

match() checks only at the beginning of the string whereas, search() checks the whole string for the pattern.