***Assignment 16***

***Traditional OOPS Part 1***

***Research work***

**Q1: How does object-oriented programming differ from procedural programming?**

**Ans: Object-oriented programming** focuses on using **objects and classes** to model real-world entities and encourages **encapsulation, inheritance, and reusability.** It is more effective in data organization. **Procedural programming** follows a **step-by-step approach** using functions and procedures, focusing more on the sequence of actions than on data organization.

**Q2: What is a constructor in Python? What happens if it is not defined explicitly?**

**Ans:** A **Constructor** in python is a special method that is called called automatically when an object is created.  It’s used to initialize the object’s attributes. In python \_\_init\_\_ is commonly used as a constructor. If \_\_init\_\_ is not used python provides default constructor and does nothing.

**Q3: Explain the concept of class vs instance variables with example.**

**Ans:** **Class Variables(Attributes)** are directly defined into the class body and these variables are shared by all instances in the class.

**EXAMPLE:**

class Animal:

sound = “Animal Sound”

def \_\_init\_\_(self):

pass

**Instance Variables(Attributes)** are defined in the constructor or any method and they are specific for each instance in the class.

**EXAMPLE:**

class Animal:

def \_\_init\_\_(self, sound):

self.sound = sound

**Q4: What is the purpose of \_str() and how is it different from \_\_repr\_()?**

**Ans:** The purpose of **\_\_str\_\_()** is to return a **readable and user-friendly string** representation of an object.  
In contrast, **\_\_repr\_\_()** returns a **technical and unambiguous string** meant for **debugging and developers**.

**Q5: Why is it beneficial to use object-oriented programming in larger projects?**

**Ans: Object-oriented programming** is very beneficial in larger projects because it deals with the programming that includes classes and objects and it contain both data(properties) and methods(functions). So it is very useful in data organization as compared to procedural programming which can cause complexities in large projects.