Sai University
School of Computing and Data Science
Object-Oriented Programming

Assignment 1

Instructions:

- Answer all questions.

- Write both **theory** and **code snippets** clearly on your sheets.

- Marks will be awarded for **conceptual clarity, correctness of code, and neat presentation**.

Q1. Structures vs Classes

   (a) Explain the **differences and similarities** between a **structure** and a **class** in C++.

   (b) Write a small C++ program that demonstrates at least one similarity and one difference between a structure and a class.

Q2. Access Specifiers: Public vs Private

   (a) Explain the role of **public** and **private** data members and methods in a class.

   (b) Write a program to show how data members behave differently when declared as **private** and **public**.

Q3. Methods vs Functions

   (a) What is the difference between a **method** (in OOP) and a **function** (in general programming)?

   (b) Write a program that has:
- One simple function (not inside a class).
- One method (inside a class).

Q4. Constructors

   (a) Define a **constructor** in C++. Why is it used?

   (b) Differentiate between a **default constructor** and a **parameterized constructor** with examples.

   (c) Explain **constructor overloading** with a suitable example.

Q5. Static Variables

   (a) What is a **static variable** in C++?

   (b) Write a program that demonstrates the use of static variables inside a class.

Q6. Friend Function

    (a) What is a **friend function**? Why is it needed?

    (b) Write a program to demonstrate the working of a friend function in C++.