OOPS LAB ASSIGNMENT 03 Date – 05/09/2023

Roll No - 21BCS043

Title: Exploring Object-Oriented Concepts in C++: Access Modifiers, Member Functions, Static Variables, and Const Member Functions

Answer to Problems

Problem 1:

1. Public, private and protected are access modifiers in class declaration

2. Scope of data attributes is the class in which it is declared

3. Scope of member function is also the class in which they are declared and defined

5. Yes, the member function of a class can access private member of all object of that class

Problem 2:

3. Const member function cannot change the data member of this object of the class

Notes

Access Modifiers:

- **Public Access:** Members declared as public are accessible from outside the class. This allows for external code to interact with the class and its objects.
- **Private Access:** Members declared as private are only accessible within the class. They are not directly accessible from external code, enhancing encapsulation and data hiding.
- **Protected Access:** Protected members are accessible within the class and its derived classes. This provides a middle ground between public and private access, promoting controlled access in inheritance scenarios.

Member Functions: Member functions are functions associated with a class and are invoked on class objects. My learnings regarding member functions include:

- **Object-Oriented Paradigm:** Member functions encapsulate behavior related to the class, promoting the object-oriented paradigm of bundling data and behavior within a single unit.
- **Access to Class Members:** Member functions have direct access to the class's private and protected members, allowing them to manipulate the object's state.

Static Variables:

- Static variables are shared among all instances of a class rather than belonging to a specific object. Key insights into static variables include:
- **Shared State:** Static variables are shared across all instances of a class, enabling them to maintain a common state among objects.

- **Initialization:** Static variables are initialized once, regardless of how many instances of the class are created. This makes them suitable for scenarios where shared state is required.

Const Member Functions:

- Const member functions are methods that do not modify the state of the object they are called on. Notable points about const member functions include:
- **Immutability:** Const member functions ensure that the object's state remains unchanged during their invocation. This promotes the concept of object immutability.
- **Const-Correctness:** Using const member functions allows for const-correctness, enabling the compiler to catch unintended modifications to objects declared as const.