Object Oriented Programming Lab

Assignment 4

Submitted by:

Navdeep Singh

19th August 2025

Roll No: 24124073
Group: 3
Branch: Information Technology
Year: 2nd Year

Practice Question to parctice class and scope of static varible declared as member function or declared as globally !!

Code

```
#include<bits/stdc++.h>
using namespace std;

class Student{
    int id;
    int marks;
    static int count;  // Static member inside class

public:
    void display(){
        cout <<"id "<< id << endl;
        cout <<"marks : " << marks << endl;
        count++;
        cout << "Count: " << count << endl;
    }

    void setValues(int a , int m ){
        id = a ;
        marks =  m ;
    }
};

// Definition of static member
int Student::count = 0;

int main(){
    Student s1;
    s1.setValues(1 , 98) ;
    s1.display();
    s1.display();
    s1.display();
    return 0;
}
```

Sample Output

```
id 1
marks : 98
Count: 1
id 1
marks : 98
Count: 2
id 1
marks : 98
Count: 3
```

Q1. Write a C++ program to define a class named BankAccount that performs the following operations : i. Declare a static data member named totalAccounts to keep track of the total number of bank accounts created. ii. Declare a non-static data member named accountNumber to store the account number of each individual account. iii. Define a public member function named setAccountNumber() that: a. Accepts an account number as a parameter. b. Sets the accountNumber for the object. c. Increments the totalAccounts counter each time it is called. iv. Define a member function named showTotalAccounts() that: a. Displays the total number of accounts created by accessing the static variable.

Code

```cpp
static int totalAccounts; // declartion of global static variable

class BankAccount{
    int accountNo;

    public :
        void setAccountNumber(int no){
            accountNo = no;
            totalAccounts++;
        }

        void showTotalAccounts(){
            cout<< "Total Account Number : " <<totalAccounts;
        }
};


int main1(){
    BankAccount b1;
    b1.setAccountNumber(94);
    b1.setAccountNumber(95);
    b1.setAccountNumber(96);
    b1.setAccountNumber(97);
    b1.showTotalAccounts();
}
```

Sample Output

```
Total Account Number : 4
```

Q2. Write a C++ program that defines a class User to simulate user registration in a system, with the following requirements: i. Define a static data member nextID to keep track of the next available unique user ID (starting from 1000). ii. Define a non-static data member userID to store the ID of each registered user. iii. Create a member function registerUser() that: a. Assigns the current nextID value to the userID of the object. b. Increments nextID so the next user gets a new ID. iv. Create a member function showUser() to display the userID of the object. v. Create another member function showNextID() that: a. Displays the next user ID to be assigned (by accessing the static data member).

Code

```cpp
class User{
    public:
        static int nextId; // static varible declared as data member but its value should be declared outside the function

        int userId;
        int temp = nextId;
        User(){
            userId = nextId;
            nextId++;
        }

        void registerUser(){
            userId = nextId;
            nextId++;
            cout<<"User Registered with ID : " <<userId <<endl;
        }

        void showUser(){
            cout<<"User id of the current user : "<<userId <<endl;
        }

        void showNextId(){
            cout<<"Next User id to be assigned to the user is : " << nextId <<endl;
        }
};


int User :: nextId = 1000; // value initilzed of static data member

int main2(){
    User s1;
    s1.showUser();
    s1.registerUser();
    s1.registerUser();
    s1.registerUser();
    s1.showUser();
    s1.showNextId();
}
```

Sample Output

```
User id of the current user : 1000
User Registered with ID : 1001
User Registered with ID : 1002
User Registered with ID : 1003
User id of the current user : 1003
Next User id to be assigned to the user is : 1004
```