Nithin S
221IT085

IT150 Lab Assignment 1

1. Develop programs that implements class and use it with objects illustrating their declarations, definition, and accessing members. Write a C++ program to create a class called Person that has private member variables for name, age and address etc,.

CODE

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

class Person {
private:
    string name;
    int age;
    string address;

public:

    Person() : name("Unknown"), age(0), address("Unknown") {}


    void setInfo(const string& newName, int newAge, const string& newAddress) {
        name = newName;
        age = newAge;
        address = newAddress;
    }


    void getInfoFromUser() {
        cout << "Enter name: ";
        getline(cin, name);

        cout << "Enter age: ";
        cin >> age;
        cin.ignore();

        cout << "Enter address: ";
        getline(cin, address);
    }


    void displayInfo() const {
        cout << "Name: " << name << "\nAge: " << age << "\nAddress: " << address << endl;
    }
};

int main() {

    Person person;


    cout << "Enter information for the person:\n";
    person.getInfoFromUser();


    cout << "\nPerson Information:\n";
    person.displayInfo();

    return 0;
}
```

OUTPUT

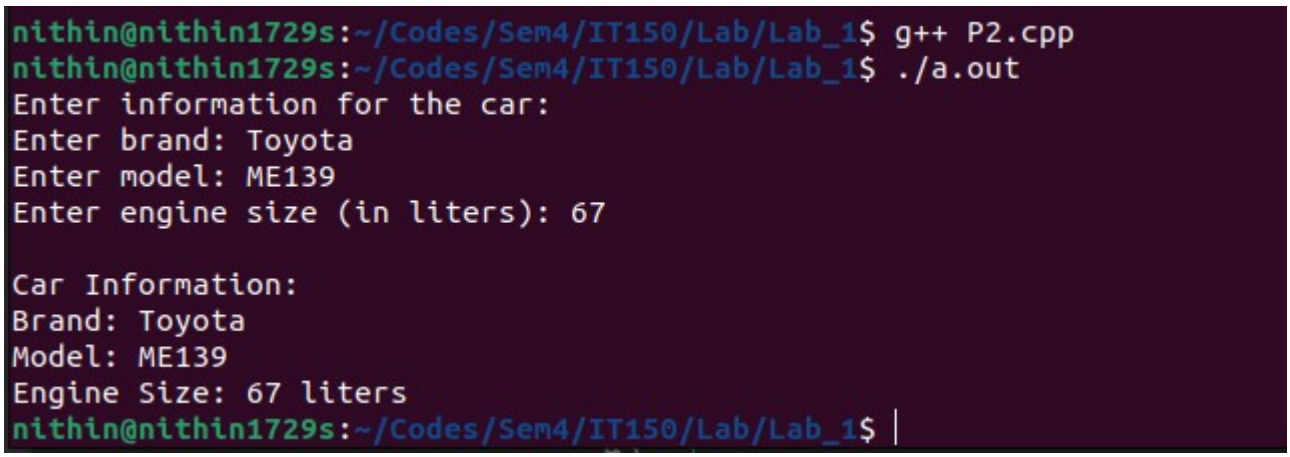
```
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$ g++ P1.cpp
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$ ./a.out
Enter information for the person:
Enter name: Nithin
Enter age: 19
Enter address: Nitk

Person Information:
Name: Nithin
Age: 19
Address: Nitk
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$
```

2. Write a C++ program to create a class called Car that has private member variables for brand, model, engine etc.

CODE

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

class Car {
private:
    string brand;
    string model;
    float engine;

public:

    Car() : brand("Unknown"), model("Unknown"), engine(0.0) {}


    void setInfo(const string& newBrand, const string& newModel, float newEngine) {
        brand = newBrand;
        model = newModel;
        engine = newEngine;
    }


    void getInfoFromUser() {
        cout << "Enter brand: ";
        getline(cin, brand);

        cout << "Enter model: ";
        getline(cin, model);

        cout << "Enter engine size (in liters): ";
        cin >> engine;
        cin.ignore();
    }


    void displayInfo() const {
        cout << "Brand: " << brand << "\nModel: " << model << "\nEngine Size: " << engine << " liters" << endl;
    }
};

int main() {

    Car car;


    cout << "Enter information for the car:\n";
    car.getInfoFromUser();


    cout << "\nCar Information:\n";
    car.displayInfo();

    return 0;
}
```

OUTPUT


nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$ g++ P2.cpp
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$ ./a.out
Enter information for the car:
Enter brand: Toyota
Enter model: ME139
Enter engine size (in liters): 67
Car Information:
Brand: Toyota
Model: ME139
Engine Size: 67 liters
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$

3. Write a program to illustrate the working of public and private in C++ Class.

CODE

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

class MyClass {
private:

    int privateVar;

public:

    int publicVar;


    MyClass() : privateVar(0), publicVar(0) {}


    void setPrivateVar(int value) {
        privateVar = value;
    }


    void displayInfo() {
        cout << "Private Variable: " << privateVar << endl;
        cout << "Public Variable: " << publicVar << endl;
    }
};

int main() {
    // Creating an object of the MyClass class
    MyClass obj;

    // Accessing public member directly
    obj.publicVar = 42;

    // Accessing private member using a public member function
    obj.setPrivateVar(21);

    // Displaying information using a public member function
    obj.displayInfo();

    // Attempting to access private member directly (will result in a compilation error)
    // obj.privateVar = 10;

    return 0;
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$ g++ P3.cpp
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$ ./a.out
Private Variable: 21
Public Variable: 42
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$
```

After Uncommenting obj.privateVar =10 line the compilation of the code throws an error, which is not the case in public variables

```
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$ g++ P3.cpp
P3.cpp: In function ‘int main()’:
P3.cpp:42:9: error: ‘int MyClass::privateVar’ is private within this context
   42 |     obj.privateVar = 10;
      |         ^~~~~~~~~~
P3.cpp:7:9: note: declared private here
    7 |     int privateVar;
      |         ^~~~~~~~~~
nithin@nithin1729s:~/Codes/Sem4/IT150/Lab/Lab_1$
```