Assignment 2

Submission Date- 11/10/2024

Title- Working of objects and class in C++ Programming

Objective- To illustrate the working of objects and class in C++ Programming

Problem Statement-

1. Write a C++ Program to calculate Area and Volume of room using class and object.
2. Write a C++ Program to print your roll number and Name using class and object.
3. Write a C++ Program to Store and Display Employee Information

Software & Hardware requirements- any Text editor and Terminal in Linux/ Turbo C++ Compiler installed on PC.

Theory-

C++ Class

In C++, class is a group of similar objects. It is a template from which objects are created. It can have fields, methods, constructors etc.

A class is defined in C++ using the keyword c**lass** followed by the name of the class.

Syntax-

```
class ClassName
{
    access_specifier:
    // Body of the class
};
```

C++ Object

In C++, Object is a real world entity, for example, chair, car, pen, mobile, laptop etc. In other words, object is an entity that has state and behavior. Object is a runtime entity, it is created at runtime. Object is an instance of a class. All the members of the class can be accessed through object. When a class is defined, only the specification for the object is defined; no memory or storage is allocated. To use the data and access functions defined in the class, you need to create objects.

Syntax to Create an Object

We can create an object of the given class in the same way we declare the variables of any other inbuilt data type.

ClassName ObjectName;

Code

1. Write a C++ Program to calculate Area and Volume of room using class and object.

```
#include <iostream>
using namespace std;

// create a class
class Room {

  public:
   double length;
   double breadth;
   double height;
```

```
    double calculate_area() {
        return length * breadth;
    }

    double calculate_volume() {
        return length * breadth * height;
    }
};

int main() {

    // create object of Room class
    Room room1;

    // assign values to data members
    room1.length = 42.5;
    room1.breadth = 30.8;
    room1.height = 19.2;

    // calculate and display the area and volume of the room
    cout << "Area of Room =  " << room1.calculate_area() << endl;
    cout << "Volume of Room =  " << room1.calculate_volume() << endl;

    return 0;
}
```

O/P-

Area of Room = 1309

Volume of Room = 25132.8

2. **Write a C++ Program to print your roll number and Name using class and object.**

```
#include <iostream>
using namespace std;
class Student {
  public:
    int id;//data member (also instance variable)
    string name;//data member(also instance variable)
};
int main() {
   Student s1; //creating an object of Student
   s1.id = 201;
   s1.name = "Sonoo Jaiswal";
   cout<<s1.id<<endl;
   cout<<s1.name<<endl;
   return 0;
}
```

3. **Write a C++ Program to Store and Display Employee Information**

```
#include <iostream>
```

```
using namespace std;
class Employee
{
  public:
     int id;//data member (also instance variable)
     string name;//data member(also instance variable)
     float salary;
     void insert(int i, string n, float s)
      {
         id = i;
         name = n;
         salary = s;
      }
     void display()
      {
         cout<<id<<"  "<<name<<"  "<<salary<<endl;
      }
};
int main(void) {
   Employee e1; //creating an object of Employee
   Employee e2; //creating an object of Employee
   e1.insert(201, "Sonoo",990000);
   e2.insert(202, "Nakul", 29000);
   e1.display();
   e2.display();
   return 0;
}
```

O/P-

201 Sonoo 990000

202 Nakul 29000

Conclusion-

Classes are used to create objects with their own properties and methods and can be interacted with independently of other objects. Understanding the difference between classes and objects and how object-oriented programming works and how to use it effectively in programming.