Don Bosco Institute of Technology, Kurla(W)
Department of Electronics and Tele-Communication Engineering
ECL304 - Skill Lab: C++ and Java Programming
Sem III
2021-22

Lab Number:	**6**
Student Name:	**Aniket shrimant pawar**
Roll No :	**04**

Title:

1. To perform Multiple Inheritance in C++. Create a student class representing student roll number, name and branch and an exam class (derived class of student) representing the scores of the student in various subjects (maths, physics and chemistry) and sports class representing the score in sports. The sports and exam class isinherited by a result class which adds the exam marks and sports score to generate the final result.
2. To perform Hierarchical Inheritance in C++. Create an Employee class with attributes EmpID and EmpSalary. Also create necessary methods/constructors to accept these values from the user. Create classes permenantEmployee and TemporaryEmployee which will be derived classes of Employee. Mention hike attribute in these derived classes and calculate the total salary using generate_salary() method for respective types of employees. Objects of the derived classes should be created and salaries for the permanent and temporary employees should be calculated and displayed on the screen.

Learning Objective:

- Students will be able to perform multiple inheritance using C++.

Learning Outcome:

- Understanding the inheritance concept and reusability of the code.

Course Outcome:

ECL304.2	Comprehend building blocks of OOPs language, inheritance, package and interfaces

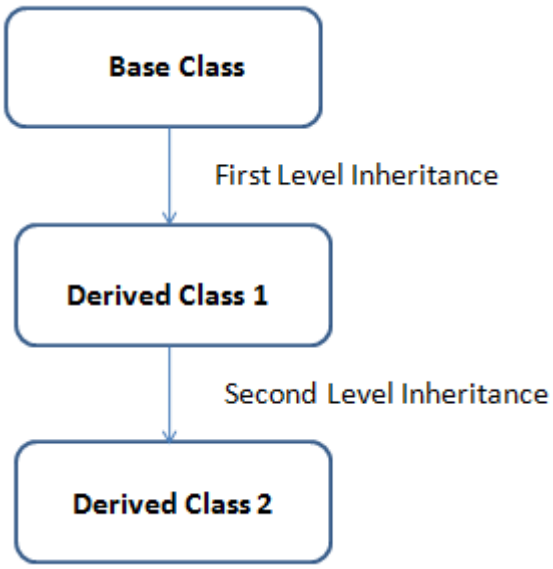
Theory:

- **Explain in details about inheritance, its types, syntaxes and block diagrams.**
  In C++, inheritance is a process in which one object acquires all the properties and behaviors of its parent object automatically. In such way, you can reuse, extend or modify the attributes and behaviors which are defined in other class. The derived class is the specialized class for the base class.

  Type of inheritance

- 1) Single Inheritance.
- 2) Multiple Inheritance.
- 3) Multilevel Inheritance.
- 4) Hybrid Inheritance.

- 5) Hierarchical Inheritance.



Algorithm :	1)start 2)creat student class 3)put data like roo no. ,branch,name. 4)create exam class derived from student class 5)put marks of subjects 6)create sports class derived from exam class and give sports marks 7)create result class 8)in which total = maths +physics+chemistry+sports 9)print total
Program:	#include <iostream> #include <string> using namespace std; class Student{ public: int rollno;

```
        string name ,branch;
        void getdata(){
            cout<<"roll no :04"<<endl;
            cout<<"name:aniket"<<endl;
            cout<<"branch :EXTC"<<endl;
        }
};
    class Exam:public Student{
            public:
                int maths=19,physics=17,chemistry=16;
                void putdata(){
                    int maths=19,physics=17,chemistry=16;
                    cout<<"marks in maths :"<<maths<<endl;
                    cout<<"marks in physics
:"<<physics<<endl;
                    cout<<"marks in chemistry
:"<<chemistry<<endl;
                }
        };
        class Sports:public Exam{
            public:
                    int sport=20;
            void play(){

            cout<<"marks in sports"<<sport<<endl;
            }
        };
        class Result:public Sports{
        public:
```

	void total(){
	cout<<"Total marks :"<<maths+physics+sport+chemistry;
	}
	};
	int main(){
	Result R1;
	R1.getdata();
	R1.putdata();
	R1.play();
	R1.total();
	}

Input given:	Roll no.:04 Name :Aniket Branch : EXTC Maths:19 Physics:17 Chemistry:16 Sports:20

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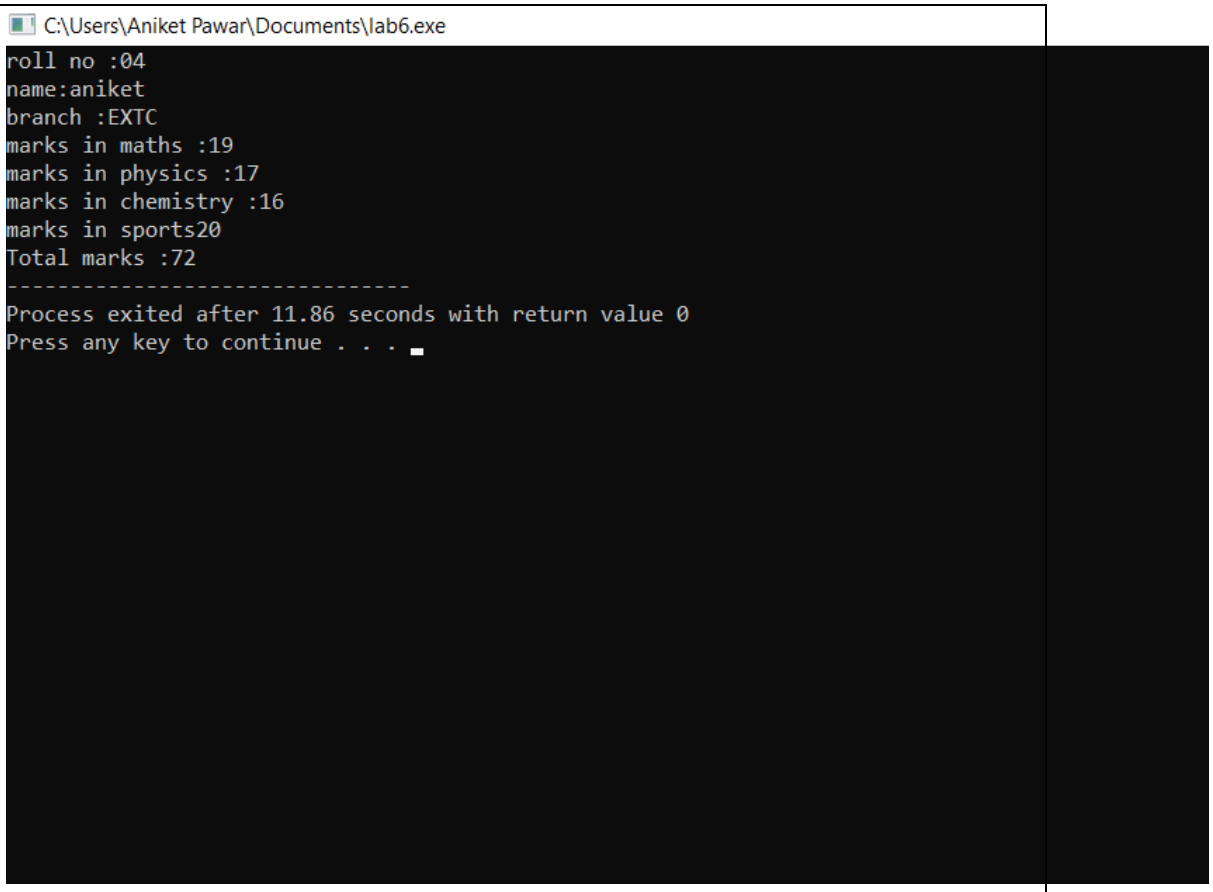
:Output Screenshot:	

Algorithm :	1)start 2)create parent class Employee 3)get data from user using GetData method 4)create PermenantEmployee class derived from class Employee 5)create hike attribute and give total salary using generate_salary method Total salary=salary+salary*hike 6)create TemporaryEmployee class derived from class Employee 7)create hike attribute and give total salary using generate_salary method Total salary=salary+salary*hike 8)create respective object for respective class

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	9)print data

Program:	#include<iostream>
	
	using namespace std;
	class Employee{
	public :
	int EmpId;
	int EmpSalary;
	
	void getData(){
	cout<<"enter EmpId :"<<endl;
	cin>>EmpId;
	cout<<"enter salary :"<<endl;
	cin>>EmpSalary;
	}
	void printData(){
	cout<<"Employee Id is"<<EmpId <<endl;
	cout<<"employee salary is"<<EmpSalary <<endl;
	
	}
	};
	class PermenantEmployee : public Employee{
	public:
	double hike=0.5;
	void generate_salary(){
	cout<<"total salary is:"<<EmpSalary+EmpSalary*hike<<endl;
	}
	};

```
class TemporaryEmployee : public Employee{
        public:
double hike=0.25;
void generate_salary(){
        cout<<"total salary is:"<<EmpSalary+EmpSalary*hike<<endl;
}
};

int main(){
        //create object for permanant class
        PermenantEmployee P1;
                cout<<"Information for permanant employee"<<endl;
                P1.getData();
                P1.printData();
                P1.generate_salary();

                        //create object for temporary class
                TemporaryEmployee T1;
                        cout<<"Information for Temporary employee"<<endl;
                        T1.getData();
                        T1.printData();
                        T1.generate_salary();
}
```

Input given:

For permenant

Employee id 24

Employee salary:25000

For temporary

	Employee id is30 Employee salary is 20000
Output Screenshot: