

**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**

<b>Lab Number:</b>	<b>6</b>
<b>Student Name:</b>	<b>OMKAR BIDWAI</b>
<b>Roll No :</b>	<b>19</b>

**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 is inherited 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 permanentEmployee 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:**

<b>ECL304.2</b>	Comprehend building blocks of OOPs language, inheritance, package and interfaces
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**Theory:**

- Explain in details about inheritance, its types, syntaxes and block diagrams.

<b>Algorithm :</b>	
<b>Program:</b>	<ul style="list-style-type: none"><li>• Students will be able to perform multiple inheritance using C++.</li></ul>
<b>Input</b>	<b>#include &lt;iostream&gt;</b>

**Faculty: Ms. Deepali Kayande**

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<b>given:</b>	<pre>#include &lt;stdio.h&gt; using namespace std;  class basicInfo { protected:     char  name[30]; int  empId;  char gender;  public:     void getBasicInfo(void)     {         cout &lt;&lt; "Enter Name: "; cin.getline(name,30);        cout &lt;&lt; "Enter Emp. Id: ";        cin &gt;&gt; empId;         cout &lt;&lt; "Enter Gender: "; cin &gt;&gt; gender;     } };  class deptInfo { protected:     char  deptName[30]; char  assignedWork[30];</pre>
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```
int time2complete;

public:
    void getDeptInfo(void)
    {
        cout << "Enter Department Name: ";
cin.ignore(1);
        cin.getline(deptName,30);
cout << "Enter assigned work: ";
fflush(stdin);
        cin.getline(assignedWork,30);
        cout << "Enter time in hours to complete work: ";
cin >> time2complete;
    }
};

class employee:private basicInfo, private deptInfo
{
public:
    void getEmployeeInfo(void){
        cout << "Enter employee's basic info: " << endl;

        getBasicInfo();
        cout << "Enter employee's department info: " <<
endl;

        getDeptInfo();
    }
    void printEmployeeInfo(void)
```

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```
        cout << "Employee's Information is: " << endl;
    cout << "Basic Information...:" << endl;        cout
    << "Name: " << name << endl;        cout <<
    "Employee ID: " << empId << endl;        cout <<
    "Gender: " << gender << endl << endl;

        cout << "Department Information..." << endl;
        cout << "Department Name: " << deptName << endl;
    cout << "Assigned Work: " << assignedWork << endl;
    cout << "Time to complete work: " << time2complete << endl;
    }
};

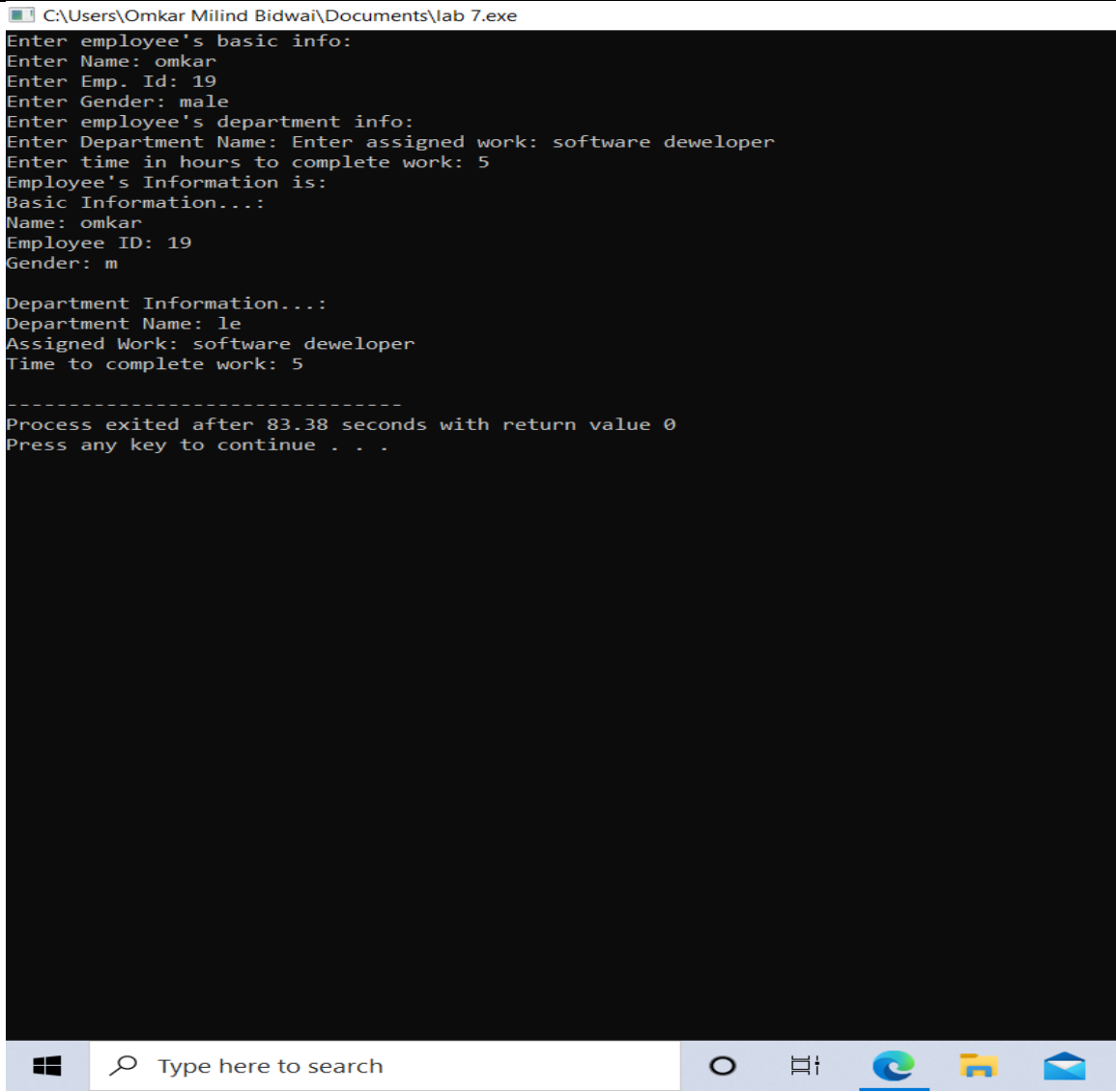
int main()
{

    employee emp;

    emp.getEmployeeInfo();
    emp.printEmployeeInfo();

    return 0;
}
```

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<b>Output Screenshots:</b>	 <pre> C:\Users\Omkar Milind Bidwai\Documents\lab 7.exe Enter employee's basic info: Enter Name: omkar Enter Emp. Id: 19 Enter Gender: male Enter employee's department info: Enter Department Name: Enter assigned work: software deweloper Enter time in hours to complete work: 5 Employee's Information is: Basic Information...: Name: omkar Employee ID: 19 Gender: m  Department Information...: Department Name: le Assigned Work: software deweloper Time to complete work: 5  ----- Process exited after 83.38 seconds with return value 0 Press any key to continue . . . </pre>
<b>Algorithm :</b>	
<b>Program:</b>	<ul style="list-style-type: none"> <li>• Students will be able to perform hierarchical inheritance using C++.</li> <li>•</li> </ul>

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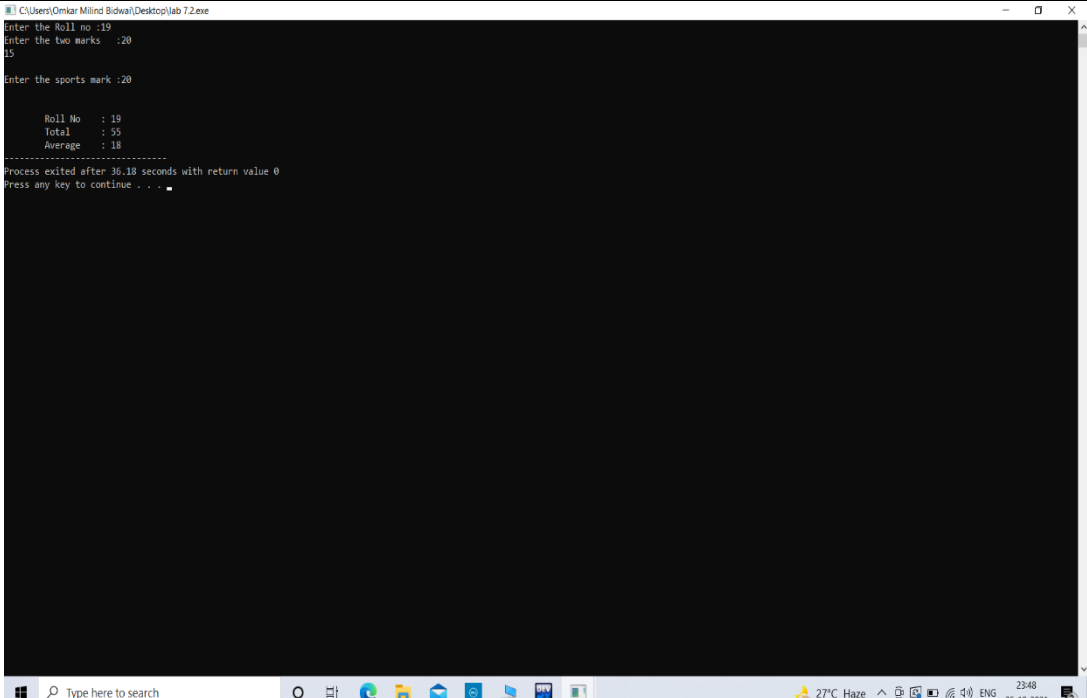
<b>Input given:</b>	<pre>#include&lt;iostream&gt; using namespace std;  #include&lt;conio.h&gt;  class student {</pre>
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	<pre>protected:      int rno, m1, m2; public:      void get() {      cout &lt;&lt; "Enter the Roll no .:";      cin&gt;&gt;rno;      cout &lt;&lt; "Enter the two marks .:";      cin &gt;&gt; m1&gt;&gt;m2;     } };  class sports { protected:      int sm; // sm = Sports mark public:      void getsn() {      cout &lt;&lt; "\nEnter the sports mark .:";      cin&gt;&gt;sm;      } };  class statement : public student, public sports {    int tot, avg; public:</pre>
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	<pre>void display() {    tot =  (m1 + m2 + sm);      avg = tot / 3;    cout &lt;&lt; "\n\n\tRoll No  : " &lt;&lt; rno &lt;&lt;  "\n\tTotal    : " &lt;&lt; tot;    cout &lt;&lt; "\n\tAverage  : " &lt;&lt; avg;      } };  main() {    system("cls");  statement obj;  obj.get();    obj.getsm();  obj.display();    getch();  }</pre>
<b>Output Screens hot:</b>	 <pre>C:\Users\Omkar Milind Bidwai\Desktop\lab 7.2.exe Enter the Roll no :19 Enter the two marks :20 15 Enter the sports mark :20  Roll No    : 19 Total      : 55 Average    : 18 ----- Process exited after 36.18 seconds with return value 0 Press any key to continue . . .</pre>

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