

# OOP with C++

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## Lab work - 10

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Name - Rishabh

Regno. - 201800631

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GitHub - <https://github.com/rishabh-live/oop-w-cpp-4-sem/tree/main/Labs>

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1) C++ program to illustrate function overriding concept in inheritance.

### Source Code

```
#include <bits/stdc++.h>

using namespace std;
class aclass {
private:
    int roll;
public:
    void getroll(int a) {
        roll = a;
    }
    void show(void) {
        cout << "\nRoll Number(In Base class) = " << roll << "\n";
    }
};

class astudent: public aclass {
    int sub1, sub2;
public:
    void getmarks(int a, int b) {
        sub1 = a;
        sub2 = b;
    }
    void show(void) {
        int total = sub1 + sub2;
        cout << "In derived class\n";
        cout << "Marks in sub1 = " << sub1 << "\n";
        cout << "Marks in sub2 = " << sub2 << "\n";
        cout << "Total Marks = " << total << "\n";
    }
};

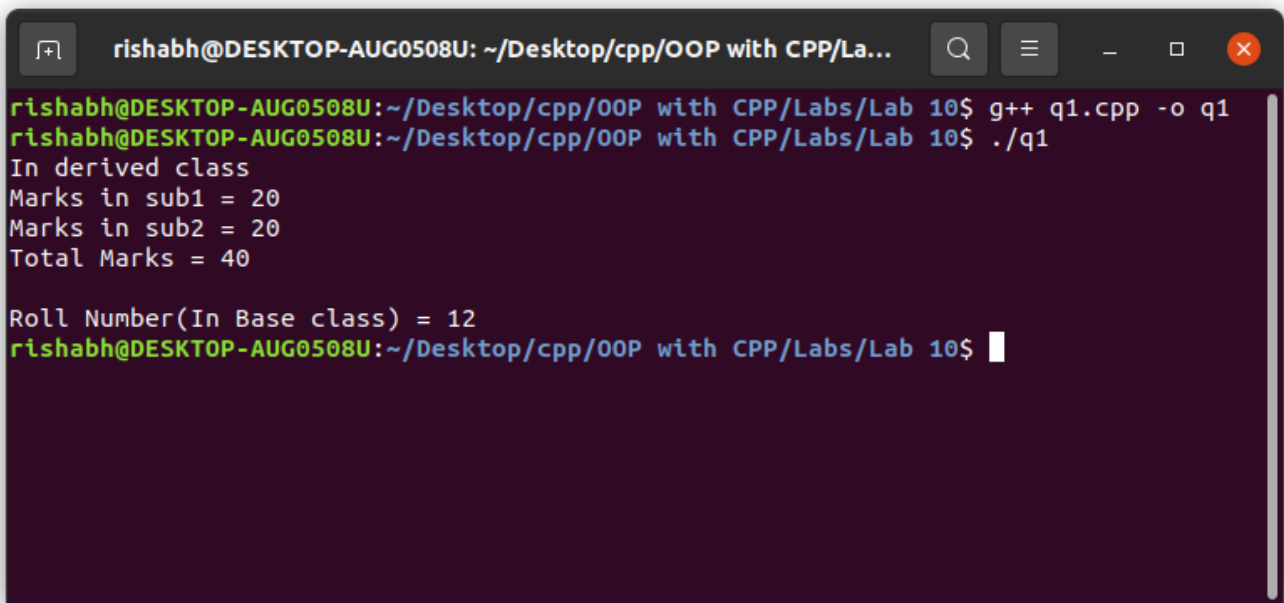
int main() {
```

```

    astudent obj;
    obj.getroll(12);
    obj.getmarks(20, 20);
    obj.show(); // here the show in der class overrides the base class show
    fun.
    obj.aclass::show(); // here using :: operator we can invoke the base
    class show fun.
    return 0;
}

```

### Output



```

rishabh@DESKTOP-AUG0508U: ~/Desktop/cpp/OOP with CPP/Lab...
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 10$ g++ q1.cpp -o q1
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 10$ ./q1
In derived class
Marks in sub1 = 20
Marks in sub2 = 20
Total Marks = 40

Roll Number(In Base class) = 12
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 10$

```

2) C++ program to illustrate the ambiguity resolution using virtual inheritance.

### Source Code

```

#include <bits/stdc++.h> // use of virtual classes so that no duplicate
members are inherited

using namespace std;
class student {
protected:
    int roll;
public:
    void getno(int a) {
        roll = a;
    }
    void putno(void) {
        cout << "Roll Number = " << roll << "\n";
    }
};
class test: virtual public student {

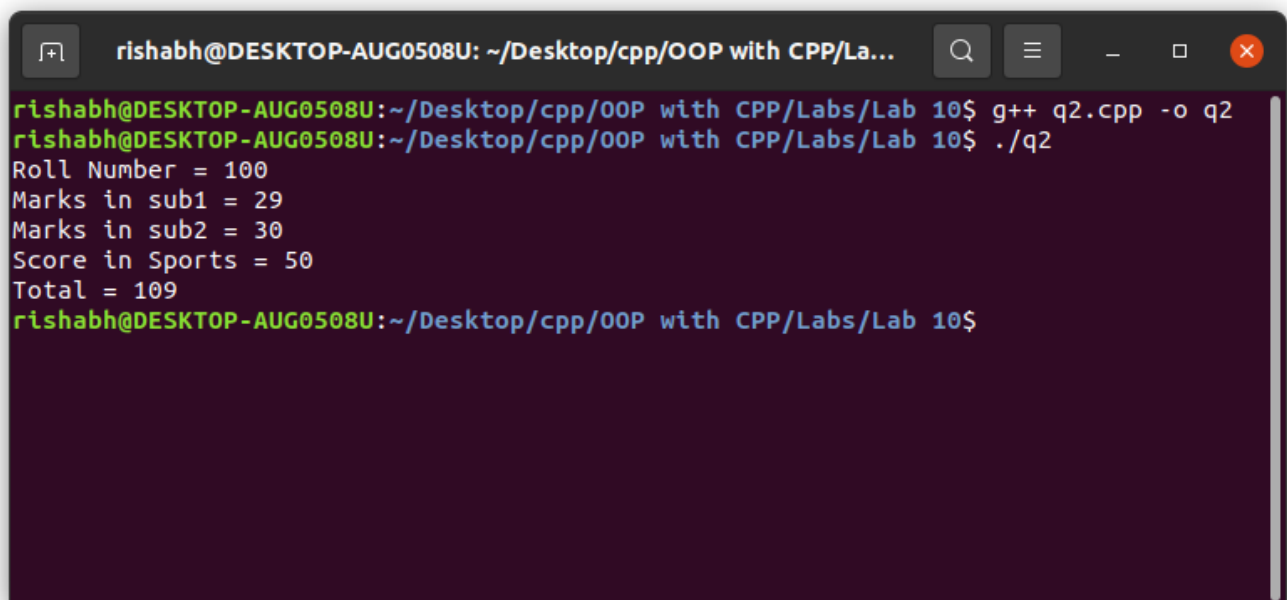
```

```

protected: float sub1,
sub2;
public: void getmarks(float f1, float f2) {
    sub1 = f1;
    sub2 = f2;
}
void putmarks(void) {
    cout << "Marks in sub1 = " << sub1 << "\n";
    cout << "Marks in sub2 = " << sub2 << "\n";
}
};
class sports: virtual public student {
protected: float score;
public: void getscore(float f) {
    score = f;
}
void putscore(void) {
    cout << "Score in Sports = " << score << "\n";
}
};
class result: public test, public sports {
float total;
public:
    void display(void) {
        total = sub1 + sub2 + score;
        putno();
        putmarks();
        putscore();
        cout << "Total = " << total << "\n";
    }
};
int main() {
    result r1;
    r1.getno(100);
    r1.getmarks(29, 30);
    r1.getscore(50);
    r1.display();
    return 0;
}

```

### Output

A terminal window with a dark purple background and light green text. The window title is "rishabh@DESKTOP-AUG0508U: ~/Desktop/cpp/OOP with CPP/Labs/Lab...". The terminal shows the compilation of a C++ program named q2.cpp into an executable named q2, followed by its execution. The program outputs the roll number (100), marks in two subjects (29 and 30), a sports score (50), and a total score (109).

```
rishabh@DESKTOP-AUG0508U: ~/Desktop/cpp/OOP with CPP/Labs/Lab 10$ g++ q2.cpp -o q2
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 10$ ./q2
Roll Number = 100
Marks in sub1 = 29
Marks in sub2 = 30
Score in Sports = 50
Total = 109
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 10$
```