

OOP with C++

Lab work - 11

Lab Date - 15th April 2021

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Regno. - 201800631

Semester - 4th

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

1) When local variable's name is same as member's name

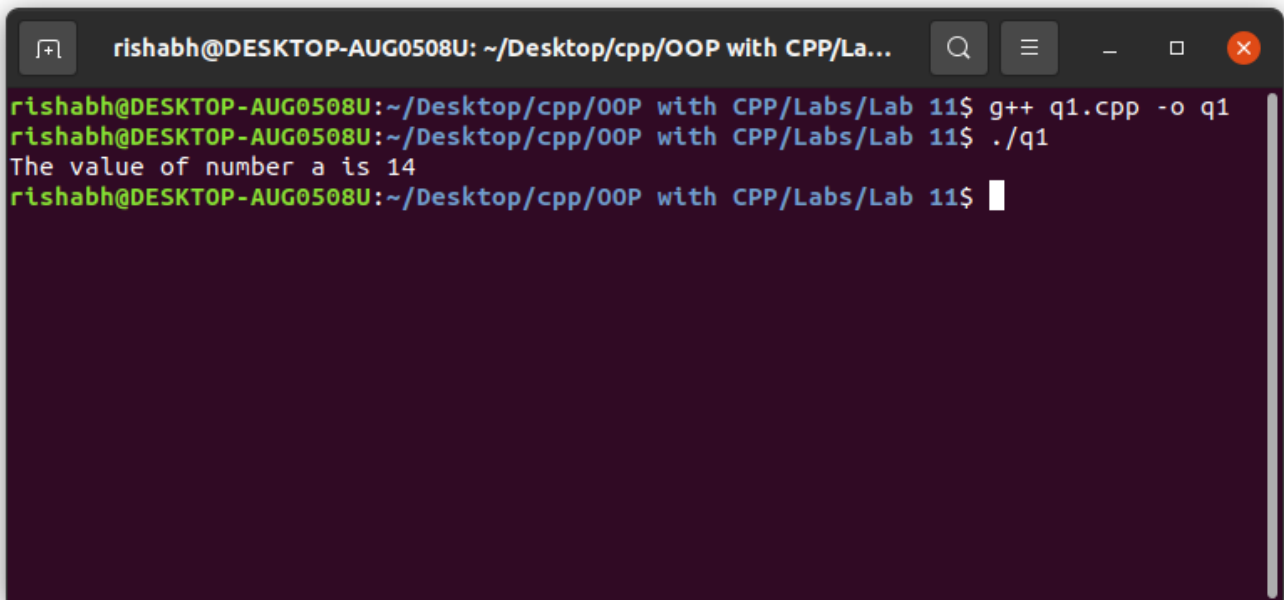
Source Code

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

using namespace std;
class myclass {
    int a;
public:
    myclass(int a) // same local variable
    {
        this -> a = a;    // using this pointer assign local to member
    }
    void display(void) {
        cout << "The value of number a is " << a << "\n";
    }
};

int main() {
    myclass obj(14);
    obj.display();
    return 0;
}
```

Output

A terminal window with a dark purple background. The title bar shows the user 'rishabh@DESKTOP-AUG0508U' and the path '~/Desktop/cpp/OOP with CPP/Labs/Lab...'. The terminal contains the following text:

```
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$ g++ q1.cpp -o q1
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$ ./q1
The value of number a is 14
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$
```

2) To return reference to the calling object

Source Code

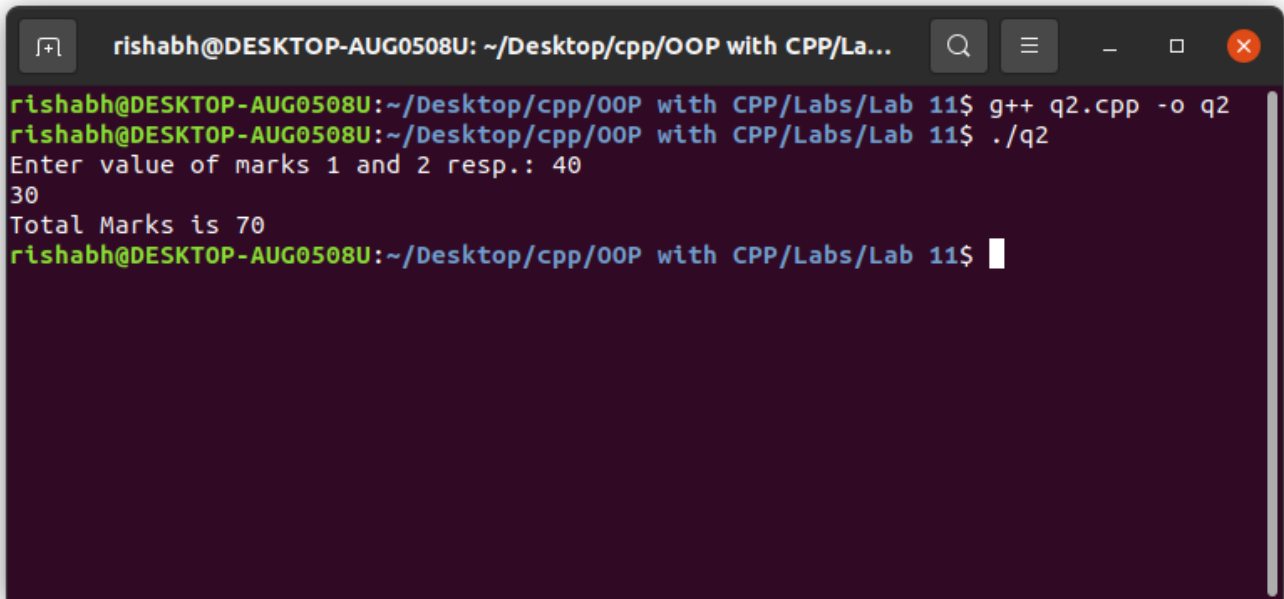
```
// return reference to calling object
#include <bits/stdc++.h>

using namespace std;
class myclass {
    int m1, total;
public:
    void getdata(int a) {
        m1 = a;
    }
    myclass & totalmarks(myclass & o) {
        o.total = this -> m1 + o.m1;
        return (o);
    }
    void display(void) {
        cout << "Total Marks is " << total << "\n";
    }
};

int main() {
    int a, b;
    cout << "Enter value of marks 1 and 2 resp.: ";
    cin >> a >> b;
    myclass obj1, obj2, obj3;
    obj1.getdata(a);
    obj2.getdata(b);
    obj3 = obj1.totalmarks(obj2);
    obj3.display();
}
```

```
    return 0;
}
```

Output



```
rishabh@DESKTOP-AUG0508U: ~/Desktop/cpp/OOP with CPP/Labs/Lab 11$ g++ q2.cpp -o q2
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$ ./q2
Enter value of marks 1 and 2 resp.: 40
30
Total Marks is 70
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$
```

3) 9.1 of E-Balagurusamy Book, through Run-Time Polymorphism.

Source Code

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

using namespace std;
// program : 9.1 Through Run-Time Poly.
// Using Virtual Function
class shape {
protected:
    double d1, d2;
public:
    void getdata(int a, int b) {
        d1 = a;
        d2 = b;
    }
    virtual double display_area(void) = 0;
};
class triangle: public shape {
public: double display_area(void) {
    double area;
    area = 0.5 * d1 * d2;
    return (area);
}
};
class rectangle: public shape {
```

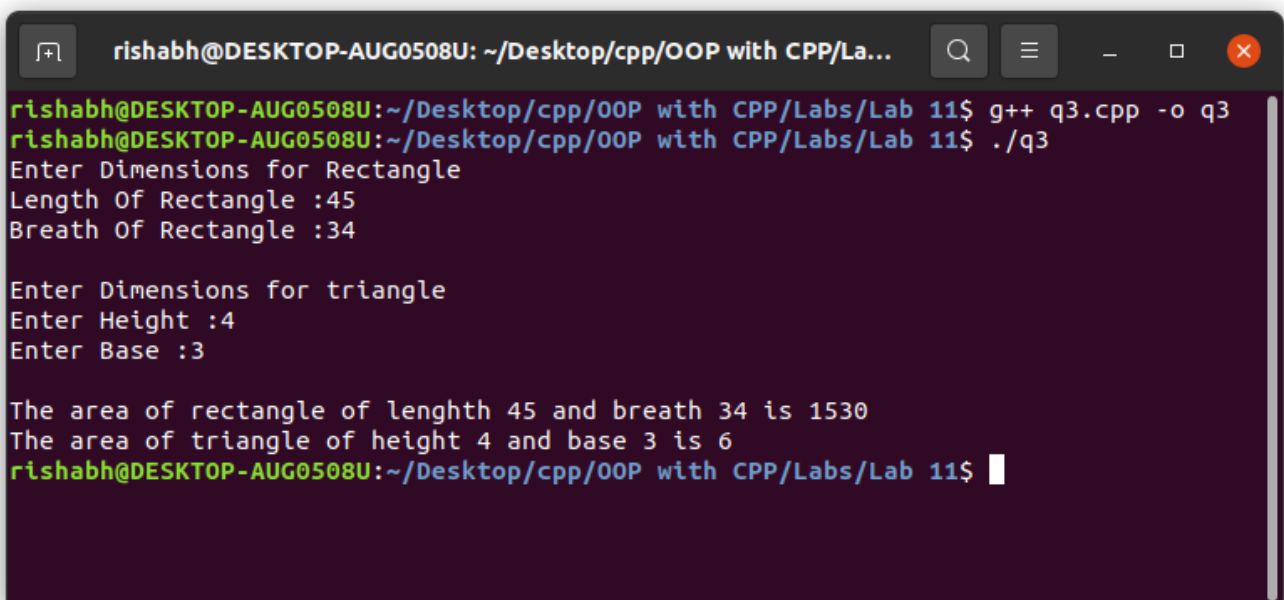
```

public: double display_area(void) {
    double area;
    area = d1 * d2;    // using pure virtual function
    return (area);
}
};

int main() {
    double len, bre, hei, base;
    cout << "Enter Dimensions for Rectangle\n";
    cout << "Length Of Rectangle :";
    cin >> len;
    cout << "Breath Of Rectangle :";
    cin >> bre;
    cout << "\nEnter Dimensions for triangle\n";
    cout << "Enter Height :";
    cin >> hei;
    cout << "Enter Base :";
    cin >> base;
    shape * s;
    rectangle r1;
    s = & r1;
    s -> getdata(len, bre);
    cout << "\nThe area of rectangle of lengthh " << len << " and breath " <<
        bre << " is " << s -> display_area() << "\n";
    triangle t1;
    s = & t1;
    s -> getdata(base, hei);
    cout << "The area of triangle of height " << hei << " and base " << base
    <<
        " is " << s -> display_area() << "\n";
    return 0;
}

```

Output



```

rishabh@DESKTOP-AUG0508U: ~/Desktop/cpp/OOP with CPP/La...
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$ g++ q3.cpp -o q3
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$ ./q3
Enter Dimensions for Rectangle
Length Of Rectangle :45
Breath Of Rectangle :34

Enter Dimensions for triangle
Enter Height :4
Enter Base :3

The area of rectangle of lengthh 45 and breath 34 is 1530
The area of triangle of height 4 and base 3 is 6
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$

```

4) 9.1 of E-Balagurusamy Book, through Compile-Time Polymorphism.

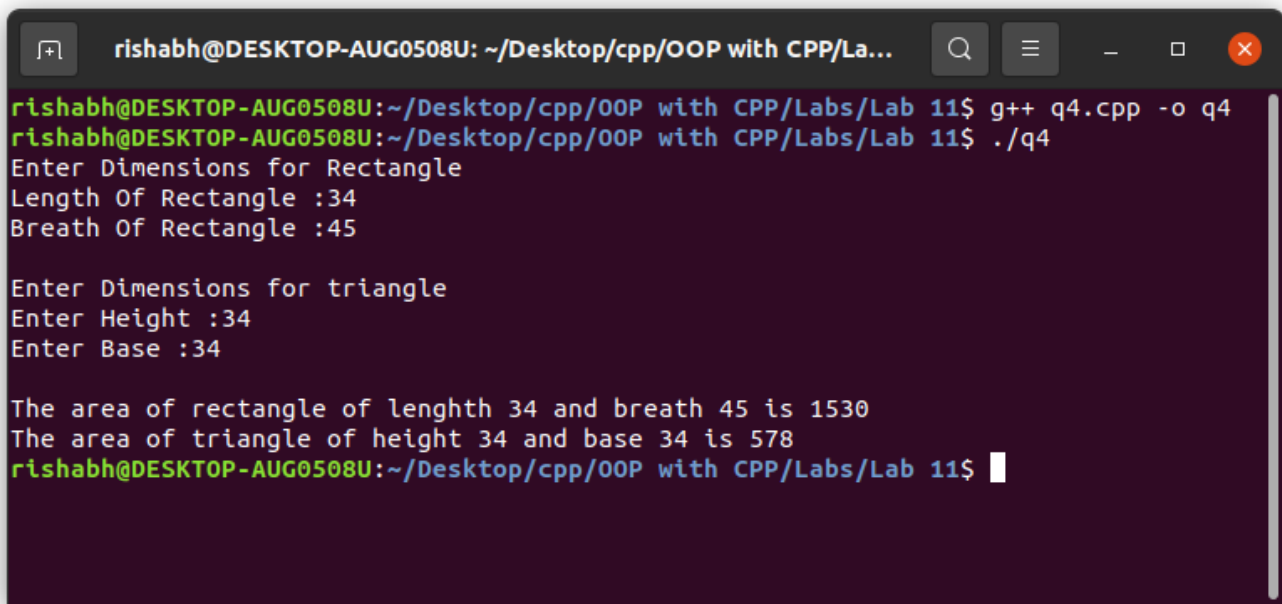
Source Code

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

using namespace std;
// program : 9.1 Through Compile-Time Poly.
// Without Using Virtual Function
class shape {
protected:
    double d1, d2;
public:
    void getdata(int a, int b) {
        d1 = a;
        d2 = b;
    }
    double display_area(void);
};
class triangle: public shape {
public: double display_area(void) {
    double area;
    area = 0.5 * d1 * d2;
    return (area);
}
};
class rectangle: public shape {
public: double display_area(void) {
    double area;
    area = d1 * d2;
    return (area);
}
};
int main() {
    double len, bre, hei, base;
    cout << "Enter Dimensions for Rectangle\n";
    cout << "Length Of Rectangle :";
    cin >> len;
    cout << "Breath Of Rectangle :";
    cin >> bre;
    cout << "\nEnter Dimensions for triangle\n";
    cout << "Enter Height :";
    cin >> hei;
    cout << "Enter Base :";
    cin >> base;
    // using the class resolution operator
    rectangle r1;
    r1.getdata(len, bre);
    cout << "\nThe area of rectangle of length " << len << " and breath " <<
        bre << " is " << r1.rectangle::display_area() << "\n";
    triangle t1;
```

```
t1.getdata(base, hei);  
cout << "The area of triangle of height " << hei << " and base " << base  
<<  
    " is " << t1.triangle::display_area() << "\n";  
return 0;  
}
```

Output



```
rishabh@DESKTOP-AUG0508U: ~/Desktop/cpp/OOP with CPP/Labs/Lab 11$ g++ q4.cpp -o q4  
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$ ./q4  
Enter Dimensions for Rectangle  
Length Of Rectangle :34  
Breath Of Rectangle :45  
  
Enter Dimensions for triangle  
Enter Height :34  
Enter Base :34  
  
The area of rectangle of lenthth 34 and breath 45 is 1530  
The area of triangle of height 34 and base 34 is 578  
rishabh@DESKTOP-AUG0508U:~/Desktop/cpp/OOP with CPP/Labs/Lab 11$
```