

# OOP Assignment - 05

## Geometrical Shapes Area calculator

---

Name: Aagam Gadiya  
Division: SY - BTech-II

PRN: B24CE1118  
Batch: C

### PROBLEM STATEMENT: Geometrical Shapes Area calculator

Define the base class Shape with two data members of any numeric type that are employed to compute the area of respective shape. Add member functions to input the data members values and display the area in base class only. Derive two classes from base class namely, Triangle & Rectangle. Take the display function as virtual in base class and redefine it in the derived classes. Using above classes , write a program to accept parameters for triangle or rectangle and display the area Using Virtual Functions.

## CODE

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

class Shape {
protected:
    float dim1, dim2;
public:
    void getData() {
        cout << "Enter two dimensions: ";
        cin >> dim1 >> dim2;
    }
    virtual void display_area()=0;
};

class Triangle:public Shape{
```

```

        public:
        void display_area() override {
            float area = 0.5 * dim1 * dim2;
            cout << "Area of Triangle = " << area << endl;
        }
};

```

```

// Derived Class - Rectangle
class Rectangle : public Shape {
public:
    void display_area() override {
        float area = dim1 * dim2;
        cout << "Area of Rectangle = " << area << endl;
    }
};

```

```

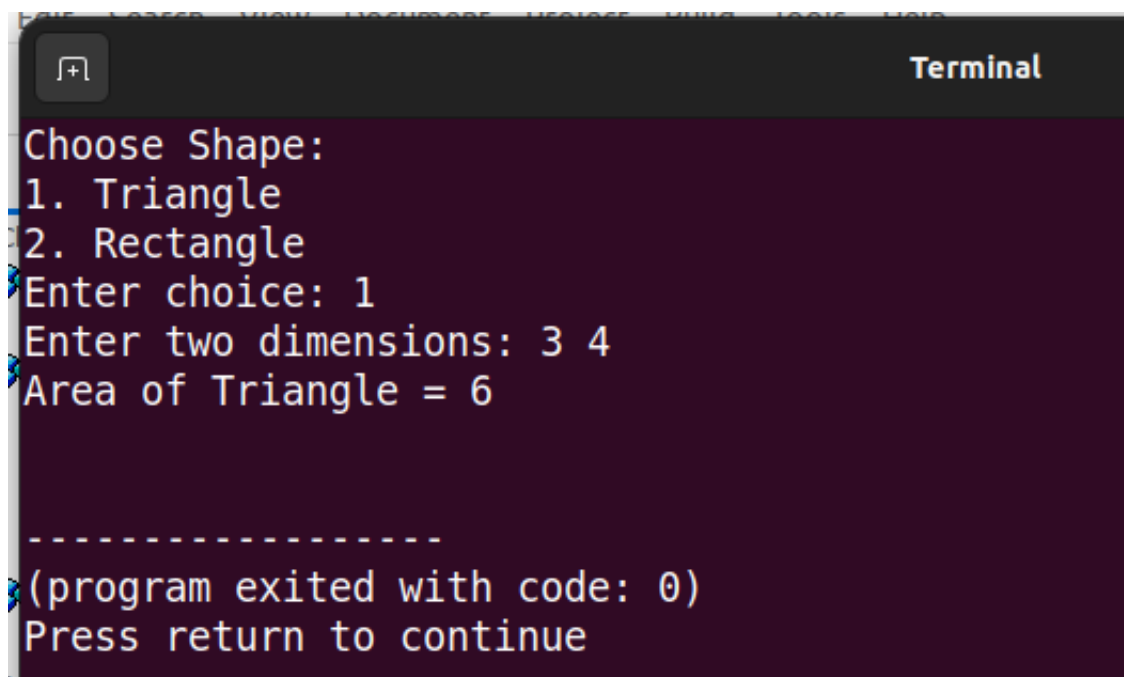
// Main Function
int main() {
    Shape *st; // base class pointer
    int choice;
    cout << "Choose Shape:\n1. Triangle\n2. Rectangle\nEnter choice: ";
    cin >> choice;

    if (choice == 1) {
        Triangle t;
        st = &t;
        st->getData();
        st->display_area(); // runtime polymorphism
    }
    else if (choice == 2) {
        Rectangle r;
        st = &r;
        st->getData();
        st->display_area(); // runtime polymorphism
    }
}

```

```
else {  
    cout << "Invalid choice!\n";  
}  
return 0;  
}
```

## OUTPUT



```
Choose Shape:  
1. Triangle  
2. Rectangle  
Enter choice: 1  
Enter two dimensions: 3 4  
Area of Triangle = 6  
  
-----  
(program exited with code: 0)  
Press return to continue
```

```
FILE 10350  MVIEW 110000005  M501055  MVIEW 10015  M010
Terminal
Choose Shape:
1. Triangle
2. Rectangle
Enter choice: 2
Enter two dimensions: 48 97
Area of Rectangle = 4656

-----
(program exited with code: 0)
Press return to continue
```