

Activities Text Editor Apr 29 14:47 Assignment10.cpp ~/11260 Save

```
1 /*
2 Assignment 10
3 Write a program to implement run time polymorphism to calculate areas of different polygons.
4 Name-Dev Sarode
5 Division-12
6 Roll no-11260
7 Date-15/04/2025
8 */
9
10 #include <iostream>
11 #include <cmath> //for M_PI and sqrt
12 using namespace std;
13
14 class Polygon{
15 public:
16     virtual void getdata() = 0;
17     virtual void calculatearea() = 0;
18 };
19
20 class Rectangle : public Polygon{
21 private:
22     float length, breadth;
23 public:
24     void getdata() override{
25         cout<<"Enter length and breadth of rectangle : "<<endl;
26         cin>>length>>breadth;
27     }
28
29     void calculatearea() override{
30         cout<<"The area of rectangle is : "<< length*breadth <<endl;
31     }
32 };
33
34 class Triangle : public Polygon{
35 private:
36     float base, height;
37 public:
```

C++ Tab Width: 8 Ln 87, Col 18 INS

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```
35 private:
36     float base, height;
37 public:
38     void getdata() override{
39         cout<<"Enter base and height of traingle : "<<endl;
40         cin>>base>>height;
41     }
42
43     void calculatearea() override{
44         cout<<"The area of triangle is : "<< 0.5 * base * height <<endl;
45     }
46 };
47
48 class Square : public Polygon{
49 private:
50     float side;
51 public:
52     void getdata() override{
53         cout<<"Enter side of square : "<<endl;
54         cin>>side;
55     }
56
57     void calculatearea() override{
58         cout<<"The area of square is : "<< side * side <<endl;
59     }
60 };
61
62 int main(){
63
64     Triangle t;
65     Rectangle r;
66     Square s;
67     int choice;
68     cout << "\nCalculate Area:\n1. Rectangle\n2. Triangle\n3. Square\n4. Exit\nEnter your choice: ";
69     cin >> choice;
70
71     switch (choice) {
```

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```
65     Rectangle r;
66     Square s;
67     int choice;
68     cout << "\nCalculate Area:\n1. Rectangle\n2. Triangle\n3. Square\n4. Exit\nEnter your choice: ";
69     cin >> choice;
70
71     switch (choice) {
72
73         case 1:
74             r.getdata();
75             r.calculatearea();
76
77             break;
78
79         case 2:
80             t.getdata();
81             t.calculatearea();
82
83             break;
84
85         case 3:
86             s.getdata();
87             s.calculatearea();
88
89             break;
90
91         case 4:
92             cout << "Exiting program.\n";
93
94             return 0;
95
96         default:
97             cout << "Invalid choice!\n";
98     }
99
100     return 0;
101 }
```

```
Enter your choice: 1
Enter length and breadth of rectangle :
6
3
The area of rectangle is : 18
fe@pict-OptiPlex-3020:~/11260$ ./a.out

Calculate Area:
1. Rectangle
2. Triangle
3. Square
4. Exit
Enter your choice: 2
Enter base and height of traingle :
5
6
The area of triangle is : 15
fe@pict-OptiPlex-3020:~/11260$ ./a.out

Calculate Area:
1. Rectangle
2. Triangle
3. Square
4. Exit
Enter your choice: 3
Enter side of square :
6
The area of square is : 36
fe@pict-OptiPlex-3020:~/11260$ ./a.out

Calculate Area:
1. Rectangle
2. Triangle
3. Square
4. Exit
Enter your choice: 4
Exiting program.
fe@pict-OptiPlex-3020:~/11260$
```