

## Lab Program 4

classmate

Date \_\_\_\_\_  
Page \_\_\_\_\_

9/12/22

Program 4: Develop a Java Program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printArea() that prints the area of the given shape.

```
import java.util.Scanner;
```

```
abstract class Shape
```

```
{
```

```
    int a, b;
```

```
    abstract void printArea();
```

```
}
```

```
class Rectangle extends Shape
```

```
{
```

```
    double area;
```

```
    void printArea()
```

```
{
```

```
        area = (double) a * b;
```

```
        System.out.println("The area of the rectangle is :"  
                             + area);
```

```
}
```

```
}
```

```
class Triangle extends Shape
```

```
{
```

```
    double area;
```

```
void printArea()  
{  
    area = (double) 0.5 * a * b;  
    System.out.println("The area of the  
    + triangle is : " + area);  
}
```

```
class Circle extends Shape
```

```
{  
    double area;  
    void printArea()  
    {  
        area = (double) 3.14 * a * a;  
        System.out.println("The area of the circle is:  
        + area);  
    }  
}
```

```
class Main +
```

```
{  
    public static void main(String args[])
```

```
{  
        Rectangle r = new Rectangle();  
        Triangle t = new Triangle();  
        Circle c = new Circle();  
        Scanner ss = new Scanner(System.in);
```

```
while(true)
```

```
{  
    System.out.println("Choose the shape whose  
    area is to be calculated : ");
```

```

system.out.println("1. Rectangle | 2. Triangle | 3. Circle | 4. Exit");
int op = ss.nextInt();

```

```

switch (op)
{

```

```

    case 1: system.out.println("Enter length and breadth of rectangle");
             r.a = ss.nextInt();
             r.b = ss.nextInt();
             r.printArea();
             break;

```

```

    case 2: system.out.println("Enter base and height of triangle");
             t.a = ss.nextInt();
             t.b = ss.nextInt();
             t.printArea();
             break;

```

```

    case 3: system.out.println("Enter the radius of circle");
             c.a = ss.nextInt();
             c.printArea();
             break;

```

```

    case 4: System.exit(0);

```

```

    default: system.out.println("Wrong choice!!");

```

```

}
}
}

```



Output:- Choose the shape whose area is to be calculated.

1. Rectangle
2. Triangle
3. Circle
4. Exit

1

Enter length and breadth of rectangle

10 20

The area of the rectangle is : 200.00

Choose the shape whose area is to be calculated:

1. Rectangle
2. Triangle
3. Circle
4. Exit

2

Enter base and height of triangle

20 10

The area of the rectangle + triangle is : 100.0

Choose the shape whose area is to be calculated:

1. Rectangle
2. Triangle
3. Circle
4. Exit

3

Enter the radius of circle

5

The area of the circle is : 78.5

## OUTPUT:

```
Command Prompt

C:\Users\SHANM\Downloads>set path="C:\Program Files\Java\jdk-19\bin"

C:\Users\SHANM\Downloads>javac progg4.java

C:\Users\SHANM\Downloads>java Main4
Choose the shape whose area is to be calculated:
1.Rectangle
2.Triangle
3.Circle
4.Exit
1
Enter length and breadth of rectangle
10 20
The area of the rectangle is :200.0
Choose the shape whose area is to be calculated:
1.Rectangle
2.Triangle
3.Circle
4.Exit
2
Enter base and height of triangle
20 10
The area of the Triangle is :100.0
Choose the shape whose area is to be calculated:
1.Rectangle
2.Triangle
3.Circle
4.Exit
3
Enter radius of circle
5
The area of the Circle is :78.5
Choose the shape whose area is to be calculated:
1.Rectangle
2.Triangle
3.Circle
4.Exit
4

C:\Users\SHANM\Downloads>
```