

(2/1/2024)

Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea().

Provide three classes Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea() that prints the area of the given shape.

~~Steps~~

1st

```
import java.util.*;  
class InputScanner {  
    Scanner sc;  
    public InputScanner() {  
        sc = new Scanner(System.in);  
    }  
}
```

```
abstract class Shape extends InputScanner {  
    double a, b;  
    abstract void getInput();  
    abstract void displayArea();  
}
```

```
class Rectangle extends Shape {
```

```
    void getInput() {
```

```
        System.out.println("Enter length and breadth of Rectangle:");
```

```
        a = sc.nextDouble();
```

```
        b = sc.nextDouble();  
    }
```

5

```
void displayarea() {
```

```
    System.out.println("Area of Rectangle is:");
```

```
    System.out.format("%0.2f\n", a*b);
```

```
}
```

```
class Triangle extends Shape {
```

```
    void getinput() {
```

```
        System.out.println("Enter height and base of triangle:");
```

```
        a = sc.nextDouble();
```

```
        b = sc.nextDouble();
```

```
    }
```

```
    void displayarea() {
```

```
        System.out.println("Area of triangle is:");
```

```
        System.out.format("%0.2f\n", 0.5*a*b);
```

```
    }
```

```
}
```

```
class Circle extends Shape {
```

```
    void getinput() {
```

```
        System.out.println("Enter radius of circle:");
```

```
        a = sc.nextDouble();
```

```
    }
```

```
    void displayarea() {
```

```
        System.out.println("Area of circle is:");
```

```
        System.out.format("%0.2f\n", 3.14*a*a);
```

```
    }
```

```
}
```

```
public class Area {  
    public static void main (String args[]) {  
        Shape ref;  
        ref = new Rectangle();  
        ref.getInput();  
        ref.displayArea();  
  
        ref = new Triangle();  
        ref.getInput();  
        ref.displayArea();  
  
        ref = new Circle();  
        ref.getInput();  
        ref.displayArea();  
    }  
}
```

Output:

Enter the length and breadth of Rectangle:

4

3

Area of Rectangle is:

12.00

Enter the height and base of Triangle:

4

6

Area of Triangle is:

~~12.00~~

Enter the radius of Circle:

3

Area of Circle is:

~~28.26~~