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3/03/24

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 contain only the method printArea() that prints the area of the given shape.

```java
import java.util.*;

class InputScanner {
    Scanner sc;
    InputScanner() {
        sc = new Scanner(System.in);
    }
}

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

class Rectangle extends Shape {
    void getInput() {
        System.out.println("Enter the length and breadth:");
        a = sc.nextDouble();
        b = sc.nextDouble();
    }

    void displayArea() {
        System.out.println("Area of rectangle is:" + (a*b));
    }
}
```

```java
class Triangle extends Shape {
    void getInput() {
        System.out.println("Enter the length and hieght:");
        a = sc.nextDouble();
        b = sc.nextDouble();
    }

    void displayArea() {
        System.out.println("Area of rectangle is:"
                + (a * b * 0.5));
    }
}

class Circle extends Shape {
    void getInput() {
        System.out.println("Enter the radius:");
        a = sc.nextDouble();
    }

    void displayArea() {
        System.out.println("Area of rectangle is:"
                + (a * a * 3.14));
    }
}

class ShapeMain {
    public static void main(String[] args) {
        Rectangle r = new Rectangle();
        Triangle t = new Triangle();
        Circle c = new Circle();
        r.getInput();
        r.displayArea();
        t.getInput();
        t.displayArea();
        c.getInput();
        c.displayArea();
    }
}
```

Output:

Enter the length and breadth:
23   12
Area of rectangle is : 276.0
Enter the length and height:
23   2
Area of rectangle is : 23.0
Enter the radius:
4
Area of rectangle is: 50.24.