

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

```
→ import java.util.Scanner;
class InputScanner
{
    Scanner sc = new Scanner(System.in);
}
abstract class shape extends InputScanner
{
    double dim1, dim2;
    abstract double printArea();
}
class Rectangle extends shape
{
    Rectangle()
    {
        System.out.println("Enter the dimensions of rectangle:");
        super.dim1 = sc.nextInt();
        super.dim2 = sc.nextInt();
    }
    double printArea()
    {
        System.out.println("Area of rectangle = ");
        return (dim1 * dim2);
    }
}
class Triangle extends shape
{
    Triangle()
    {
        System.out.println("Enter the dimensions of triangle:");
        super.dim1 = sc.nextInt();
        super.dim2 = sc.nextInt();
    }
    double printArea()
    {
        System.out.println("Area of triangle = ");
        return 0.5 * dim1 * dim2;
    }
}
```

class circle extends shape

```
{
    circle()
    {System.out.println("Enter the dimension (radius) of circle:");
    super.dim1 = sc.nextInt();
    }
    double printArea()
    {
        System.out.println("Area of circle:");
        return 3.14 * dim1 * dim1;
    }
}
```

class AbstractDemo

```
{
    public static void main(String[] args)
    {
        Rectangle r = new Rectangle();
        Triangle t = new Triangle();
        Circle c = new Circle();
        shape figref;
        figref = r;
        System.out.println("Area is: " + figref.printArea() + "\n");
        figref = t;
        System.out.println("Area is: " + figref.printArea() + "\n");
        figref = c;
        System.out.println("Area is: " + figref.printArea() + "\n");
    }
}
```

Output:

Enter the dimensions of rectangle:

10 20

Enter the dimensions of triangle:

6 4

Enter the dimension (radius) of circle:

1

Area of rectangle:

Area is: 200

Area of triangle:

Area is: 12

Area of circle:

Area is: 3.14

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