LAB PROGRAM 4

QUESTION:

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.

WRITTEN CODE

Lab Program 4

(4) Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide 3 classes named: Rectangle, Circle, Triangle, such that each of them extends the 'Shape' class. Each of them contain the printArea() method to print the area of the given shape.

```
import java.util.Scanner;
abstract class Shape {
    int no_para;
    double area;
    abstract void printArea();
    // abstract void calc_perimeter();
}
class Rectangle extends Shape {
    int sides[] = new int[4];
    Rectangle() {
        System.out.println("Figure is a Rectangle");
        no_para = 4;
        Scanner ss = new Scanner(System.in)
        System.out.println("enter 2 adjacent sides:");
        for(int i=0; i<2; i++) {
            sides[i] = ss.nextInt();
            sides[i+2] = sides[i];
        }
    }
    void printArea() {
        area = sides[0] * sides[1];
        System.out.println("Area of Rectangle: " + area);
    }
}
```

```
class Triangle extends Figure {
    int sides = new int[3];
    Triangle() {
        System.out.println("Figure is a Triangle");
        no_para = 3
        Scanner ss = new Scanner(System.in);
        System.out.println("Enter the 3 sides: ");
        for (int i=0; i< no_para; i++) {
            sides[i] = BS.nextInt();
        }
    void printArea() {
        if (sides[0] + sides[1] <= sides[2] || sides[1]+sides[2]
            <= sides[0] || sides[0] + sides[2] <= sides[1])
        {
        System.out.println("Invalid Input");
        }
        else {
            area = (double) Math.sqrt(s*(s-sides[0])*(s-sides[1])
                                      *(s-sides[2]));
            System.out.println("Area of Triangle is:" + area);
        }
}
```

```
class circle extends figure {

    int radius;

    Circle() {
        System.out.println("Figure is a circle");
        no_para = 1
        Scanner ss = new Scanner(System.in);
        System.out.println("Enter the radius: ");
        radius = ss.nextInt();
    }

    void printArea() {
        area = 3.14 * radius * radius;
        System.out.println("Area of circle is " + area);
    }
}

class fmain {
    public static void main (String ss[]) {
        Rectangle rl = new Rectangle();
        Triangle tl = new Triangle();
        Circle cl = new Circle();
```

OUTPUT:

```
Figure is a Rectangle
Enter the 2 adjacent sides:
2 3
Figure is a Triangle.
Enter 3 sides
Figure is a circle
Enter the radius
5
Area of Rectangle is 6.0
Area of Triangle is 6.0
Area of Circle is 78.5
```

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OUTPUT:

```
C:\Users\anosh\OneDrive\Desktop\java practice>java fmain
Figure is a Rectangle
Enter the 2 adjacent sides:
2 3
Figure is a Triangle
Enter the 3 sides:
3 4 5
Figure is a circle
Enter the circle radius:
5
Area of Rectangle is 6.0
Perimeter of Rectangle is: 10.0
Area of Triangle is 6.0
Perimeter of Triangle is: 12.0
Area of circle is 78.5
Circumference is: 31.400000000000002
```