

Lab 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.

```
Soln. import java.util.*;
import java.lang.Math.*;
```

```
abstract class Shape {
    public int a;
    public int b;
    abstract public void printArea();
    Scanner s = new Scanner(System.in);
}
```

```
class Rectangle extends Shape {
    public void printArea() {
        System.out.print("Please enter length
                           and breadth of
                           rectangle: ");
        float a = s.nextFloat();
        float b = s.nextFloat();
        float area = a * b;
        System.out.println("Area = " + area + " Sq.
                           units");
    }
}
```


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```
class triangle extends shape {  
    public void printArea() {  
        System.out.print("Please enter three  
sides of triangle:");  
        float a = S.nextFloat();  
        float b = S.nextFloat();  
        float c = S.nextFloat();  
        float d = (a+b+c)/2;  
        double area = Math.sqrt(d*(d-a)*(d-  
                                * d-b)*(d-c));  
        System.out.println("Area = " + area + "  
sq. units");  
    }  
}
```

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```
class circle extends shape {  
    public void printArea() {  
        System.out.print("Please enter  
radius of  
circle: ");  
        float a = S.nextFloat();  
        float area = 22/7 * a * a;  
        System.out.println("Area = " + area + "  
sq. units");  
    }  
}
```

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```
class Shapedemo {  
    public static void main (String args[]) {  
        Shape r = new rectangle();  
        Shape t = new triangle();  
        Shape c = new circle();  
        for (int i=0; i<100; i++) {  
            System.out.println ("1) Triangle  
                                2) Rectangle  
                                3) Circle");  
            System.out.println ("Enter your  
                                choice");  
            Scanner S = new Scanner (System.in);  
            int ch = S.nextInt();  
            switch (ch) {  
                case 1: t.printArea();  
                        break;  
                case 2: r.printArea();  
                        break;  
                case 3: c.printArea();  
                        break;  
                default:  
                    System.out.println ("Invalid choice");  
            }  
        }  
    }  
}
```