

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

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

abstract class Shape extends InputScanner
{
    int a;
    int b;
    abstract void displayArea();
}
```



```
class Rectangle extends Shape
{
    Rectangle (int length, int width)
    {
        a = length;
        b = width;
    }
    // Override displayArea method
    for Rectangle
    @Override
    void displayArea()
    {
        double area = a * b;
        System.out.println("Area of
                               Rectangle: " + area);
    }
}
```

```
class Triangle extends Shape
{
    Triangle (int base, int height)
    {
        a = base;
        b = height;
    }
    // Override displayArea method
    for Triangle
    @Override
    void displayArea()
    {
        double area = 0.5 * a * b;
        System.out.println("Area of Triangle: "
                               + area);
    }
}
```



```

}
class Circle extends Shape
{
    public Circle(int radius)
    {
        a = radius;
    }
    @Override
    void displayArea()
    {
        double area = Math.PI * a * a;
        System.out.println("Area of Circle:"
                             + area);
    }
}

public class mainclass
{
    // Creating objects of Rectangle,
    // Triangle, and Circle
    Scanner ss = new Scanner(System.in);
    System.out.println("Enter the
        dimensions of the rectangle
        (length and breadth):");
    int le = ss.nextInt();
    int br = ss.nextInt();
    Rectangle rectangle = new
        Rectangle(le, br);
    System.out.println("Enter the
        dimensions of the triangle
        (base and height):");
}
    
```



```

int ba = ss.nextInt();
int he = ss.nextInt();
Triangle triangle = new Triangle(ba, he);
System.out.println("Enter the
dimension of the circle (radius):");
int r = ss.nextInt();
Circle circle = new Circle(r);

```

// Calling displayArea for each shape

```

rectangle.displayArea();
triangle.displayArea();
circle.displayArea();
}
}
}

```

Output:

Enter the dimensions of the rectangle (length and breadth):

2 3

Enter the dimensions of the triangle (base and height):

2 4

Enter the dimension of the circle (radius):

3

Area of Rectangle : 6.0

Area of Triangle : 4.0

Area of Circle : 28.274333882308138