Lab Program 4:

Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area(). Provide three classes named rectangle, triangle. circle such that each one of the classes extends the class shape. Each one of the classes contain only the method print Area() that prints the area of the given shape.

```java
import java.util. Scanner;

abstract class Shape{
        int dim1;
        int dim2;
}
        public shape (){
                this. dim1 = 0;
                this. dim2 = 0;
        }


        public abstract void printArea ();
}
```

```java
class Rectangle extends Shape{
    public Rectangle (int length, int width){
        dim1 = length;
        dim2 = width;
    }

    public void printArea(){
        int area = dim1 + dim2;
        System.out.println("Area of Rectangle: " + area);
    }
}

class Triangle extends Shape {
    public Triangle (int base, int height){
        dim1 = base;
        dim2 = height;
    }
}
```

```java
public void printArea (){
    double area = 0.5 * dim1 + dim2;
    System.out.println ("Area of Triangle: " + area);
}
}


class Circle extends Shape {
    public Circle (int radius) {
        dim1 = radius;
        dim2 = 0;
    }


    public void printArea (){
        double area = Math.PI * dim1 * dim1;
        System.out.println ("Area of Circle: " + area);
    }
}


public class shapes {
    public static void main (String[] args) {
        Scanner in = new Scanner (System.in);
        System.out.println ("Enter length and width of
        rectangle: ");
        int length = in.nextInt();
```

```java
int width = in.nextInt();
Shape rectangle = new Rectangle(length, width);
rectangle.printArea();

System.out.println("Enter Base and Height of Triangle: ");
int base = in.nextInt();
int height = in.nextInt();
Shape triangle = new Triangle(base, height);
triangle.printArea();

System.out.println("Enter Radius of Circle: ");
int radius = in.nextInt();
Shape circle = new Circle(radius);
circle.printArea();

in.close();
}
}
```

Output

Enter length and width for Rectangle:

12

6

Area of Rectangle: 72

Enter base and height for Triangle:

8

44

Area of Triangle: 176

7

Enter radius for Circle:

16

Area of Circle: 804.2477

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