## Lab 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.

```
Darles a Toro program to create on abstract class named
Shope that contains two littingues & an entity mitted numed
printered ). Provide Work classes named Tellarge Tribings &
   and ruch that each one of the claves extends the as clave shape. Each one of the claves contain only the monthsod
     print Area () - that prints the area of the get in whape
     inport java will . Scanner;
      abitiod class shape f int clins;
                  Shape () &
                       this dims =0;
                        this dim = 0;
                shop ( and ( int dim = , ut dim ) }
                             thu dims = dims;
                             this dim 2 = dims;
                      abtract void print Area ();
                class Retained vitings Shape ?
potangs (but singth, but width)?
                                     super ( ungth , wieth);
                              void punt Assa () {
                                     int ana = dima & dim 8;
                                      System all printle (" Area 9 Rectarde: "+ ana);
        class Triangle extends Grape (
Triangle (out base, but hight)?
                                                                                                                  System and problem ("Endo to nadelie 9 lieur ");
Tot nadelie = 50. met 2010;
liede a3 = new liede (madelie);
a3. problems.();
                          rupor (box, hight);
                  veid print Area () (
                         daible ana = 0.5 * dims * dims;
Sytem act, printler l' hier of Triangle: " +0.110);
                                                                                                                                  Out put
                                                                                                                         Eron The length & width of rectange:
            clair Circle willed Shape ?
                                                                                                                            Area of Rutard : 3
                          supa (nadius, o);
                                                                                                                           Enter the bose & height of Triangle:
                            double are = Neath PI & dins & dire 1;
Sylim ail printle (" Are 9 arch!" + area);
                                                                                                                              prece of Tricongle; 4
                                                                                                                            erter the radius of anch:
               public class Scapes & public states void main (strings) angl f Sanna sc = new Scanna (System in);
Septem-out println ("Enter Lingth & weeth of Recomp.");
                              ind lingth = 50 met 3rd ();
ind clidth = 50 met 3rd ();
rectory 01 = mis Rectarge (larger, culietts );
OL print Area ();
                                  Sytem act , prinkle ("Enten bow 4 hight for Trienge: ")
                                 int bou = B(. mult aut ();
int huight = Sc. nut Int ();
                                  Triangle as = new Triangle (bace, height);
ar pait broad);
```

```
Code:
```

```
import java.util.Scanner;
abstract class Shape {
  int dim1;
  int dim2;
  Shape(int dim1, int dim2) {
    this.dim1 = dim1;
    this.dim2 = dim2;
  }
  abstract void printArea();
}
class Rectangle extends Shape {
  Rectangle(int length, int width) {
    super(length, width);
  }
  @Override
  void printArea() {
    int area = dim1 * dim2;
    System.out.println("Area of Rectangle: " + area);
  }
```

```
class Triangle extends Shape {
  Triangle(int base, int height) {
     super(base, height);
  }
  @Override
  void printArea() {
     double area = 0.5 * dim1 * dim2;
     System.out.println("Area of Triangle: " + area);
  }
}
class Circle extends Shape {
  Circle(int radius) {
     super(radius, 0);
  }
  @Override
  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 sc = new Scanner(System.in);
```

```
System.out.println("Enter length and width for Rectangle:");
int length = sc.nextInt();
int width = sc.nextInt();
Rectangle a1 = new Rectangle(length, width);
a1.printArea();
System.out.println("Enter base and height for Triangle:");
int base = sc.nextInt();
int height = sc.nextInt();
Triangle a2 = new Triangle(base, height);
a2.printArea();
System.out.println("Enter radius for Circle:");
int radius = sc.nextInt();
Circle a3 = new Circle(radius);
a3.printArea();
```

}

## **Output:**

```
D:\Java_Lab_Programs>javac Shapes.java

D:\Java_Lab_Programs>java Shapes
Enter length and width for Rectangle:
4
2
Area of Rectangle: 8
Enter base and height for Triangle:
2
4
Area of Triangle: 4.0
Enter radius for Circle:
3
Area of Circle: 28.274333882308138

D:\Java_Lab_Programs>
```