## WEEK 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.

## Source Code:

```
abstract class Shape {
    int dim1;
    int dim2;
    abstract void printArea();
class Rectangle extends Shape {
    public Rectangle(int length, int width) {
        this.dim1 = length;
        this.dim2 = width;
    void printArea() {
        int area = dim1 * dim2;
        System.out.println("Area of Rectangle: " + area);
    }
class Triangle extends Shape {
    public Triangle(int base, int height) {
        this.dim1 = base;
        this.dim2 = height;
    void printArea() {
        double area = 0.5 * dim1 * dim2;
        System.out.println("Area of Triangle: " + area);
class Circle extends Shape {
```

```
public Circle(int radius) {
    this.dim1 = radius;
    this.dim2 = 0;
}

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

public class Main {
    public static void main(String[] args) {
        Shape rectangle = new Rectangle(8,9);
        Shape triangle = new Triangle(8, 6);
        Shape circle = new Circle(14);

        rectangle.printArea();
        triangle.printArea();
        circle.printArea();
}
```

## OUTPUT:

```
Area of Rectangle: 72
Area of Triangle: 24.0
Area of Circle: 615.7521601035994
PS C:\Users\satis\OneDrive\Documents\ooj_lab>
```

## **OBSERVATION:**

```
1 Develop a program for an abstract class shape haveng two
 vargable and an empty method prentareas. proved three
 claim name trangle roce, circle which extends shape,
  print react.
    cha Emport java. util. Scanner
    abstract class Shape
    d Port dim 1;
      Ent dem 2;
      Public Shape()
        this dims = 0;
       thes. dem 2 =0;
      Public Shape (Ent dems, Ent dems)
        this. dem 1 = dem 1;
        this. dema = dema;
     Public abstract vold prentAreal);
class Reclarge extends Shape
  Public Redangle ("int length, Int which)
     dema = length;
      dem 2 = width;
  Public vold Prontareal)
     Ent area = dlms + dlm2;
     System. out Prentin ("Area of Rectancy: "+ area);
3
```

```
Class Preangle extends Shape.
     Public Treangle (Ent base, Ent helight)
          dem 1 = bare;
         dem 2 = helafit ;
     Public vold PrintArea ()
      double area = 0.5 * dems * dems;
      System out . Asserts ( Area of sle: " +asea);
Class Beacle extends shape
   Public Circle ( Ent radius)
    d
       dems = radius.
       dem 2 = 0;
   Public vold Prent Area()
      double area = Math. PI * dems * dems ;
  Public clan Shapes
   Public states vold main (stanget) angs)
       Scanner in - new Scanners (System. En);
      System. out. preally ["Ender length & wedth for Rectangle");
      Ent length = En. next Int ();
       ent weath = en. nextInt();
       Shape rectangle . Prohthear ();
```

```
Sylun out . Prenth ("the bar & height for Treangle");
     ent bare = enonext Int();
      Put holght - Pro next Int ();
     Shape to langle = new Preangle (bow, herght);
      treangle . Prent Area () ",
     System. Out, Prenten l'Enter rodeur of Cerclei).
     Ent sadius = Enonextint();
      Shape cercle = hew Cercle (radius);
      cercle . print Arear ();
       inoclose ();
  3
OUTPUT:
   enter length & wealth for Rectangle:
     20 30
    Area of Redangle : 600
    that bou & height for Priantife:
   30 HO
    Area of Triangle: 400
    Enter radius por cercle:
   40
   Area of cercle : 5026.5482.
```