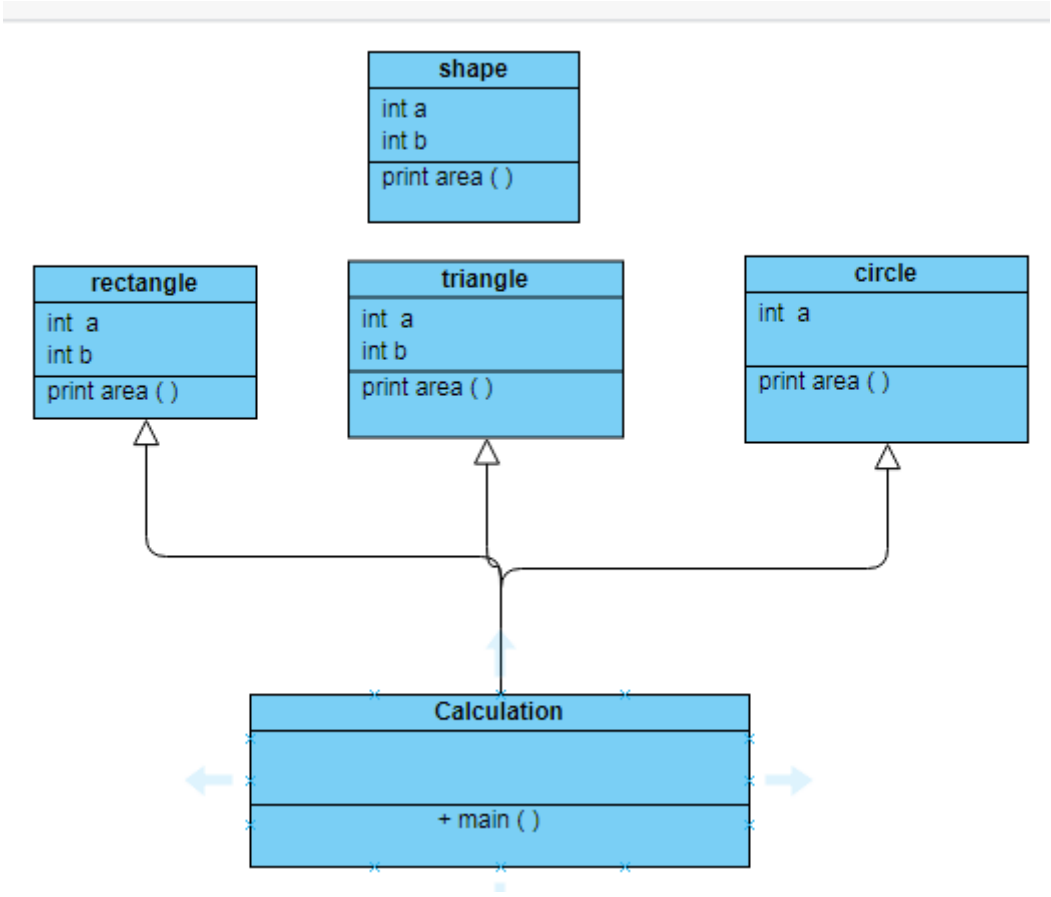
Exno:05	**Area Calculator**
Date:22-08-2019	

AIM:
To write a Java program to create a “Area Calculator” by creating abstract class named Shape with two integers for finding area of triangle, circle, rectangle.

REQUIREMENT:-
-Abstract class named Shape.
-With two integers and an empty method named printarea().
-Three classes named rectangle, triangle and circle. Where Shape is the super class and all other classes are sub classes
-Each class containing printarea() method that is used to print the area of the given shape.

ALGORITHM:-
STEP 1: start
STEP 2: create the package shapearea, super class shape and sub classes Triangle, Circle, Rectangle and Calculation
STEP 3: In the class Shape declare the attributes a, b which will be used in the sub classes for calculating area
STEP 4: each class is provided with a printarea() method where in the calculation class the respective values for calculating the area will be given
STEP 5: By execution of the program the area of the triangle, circle and rectangle is found out
STEP 6: stop

CLASS DIAGRAM:



Program:

```
/***created by G.Nikhil,EEE A
 *
 */



package Calculator;

public abstract class Shape {
    protected double area;

    public double getArea() {
        return area;
    }

    protected abstract void onAreaChange();



}
package Calculator;

public class Rectangle extends Shape {
    protected double height;
    protected double width;

    public Rectangle setHeight(double height) {
        this.height = height;
        onAreaChange();
        return this;
    }

    public Rectangle setWidth(double width) {
        this.width = width;
        onAreaChange();
        return this;
    }

    @Override
    public void onAreaChange() {
        this.area = this.height * this.width;
    }



}

package Calculator;

public class Circle extends Shape {
      protected double radius;
    protected final double PI = 3.14159265;

    public Circle setRadius(double radius) {
        this.radius = radius;
        onAreaChange();
        return this;
    }

    @Override
    public void onAreaChange() {
```

```
        this.area = this.radius * this.radius * PI;
    }

}
package Calculator;

public class Triangle extends Shape{

          protected double base;
          protected double height;

          public Triangle setBase(double base) {
              this.base = base;
              onAreaChange();
              return this;
          }

          public Triangle setHeight(double height) {
              this.height = height;
              onAreaChange();
              return this;
          }

          @Override
          public void onAreaChange() {
              this.area = 0.5 * this.base * this.height;
          }
      }
```

Output:

Enter the number which you want to compute the area
(1) Triangle (2) Rectangle (3) Circle ? 1
Base: 452
Height: 42
Area of triangle: 9492.0
Enter the number which you want to compute the area
(1) Triangle (2) Rectangle (3) Circle ? 2
Width: 5
Height: 4
Area of rectangle: 20.0
Enter the number which you want to compute the area
(1) Triangle (2) Rectangle (3) Circle ? 3
Radius: 4
Area of circle: 50.2654824
Enter the number which you want to compute the area
(1) Triangle (2) Rectangle (3) Circle ?

Result:

Thus the java application for calculating the area of the rectangle,triangle and circle is programmed and implemented successfully.