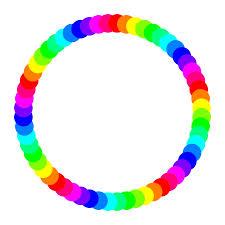
**OOP Lab02 – Circle**

The goal of this lab isto create a viable Circle class. The Circle class will model a circle, which is quite simple – it has just one field (instance variable): a double variable that stores the radius of the corresponding circle. The **state** of this variable is what describes a particular Circle (a Circle object). Class declaration:

public class Circle

{

private double radius; //PIV - private instance variable

}

A class is a blueprint for objects, and in order to make objects, your class needs a constructor! The constructor should set the value of the radius**field** equal to the value of the parameter. Example:

public Circle(double rad) //constructor

{

radius = rad; //PIV *radius* is assigned the value of *rad* parameter

}

Your Circle class should have the following methods (**these methods should not require parameters**):

* public double getDiameter() – this method should return a double, the diameter of the Circle object (**using the value of its** radius **instance variable**).
* public double getArea() – this method should return a double, the area of the Circle object (given the value of its radius instance variable).
* public double getCircumference() – this method should return a double, the circumference of the Circle object (given the value of its radius instance variable).
* public void setRadius(double r) – this method should allow you to change the radius of your circle object.

When you’ve completed your Circle class, **in a new class called CircleRunner** that contains a public static void main(String[] args) method, create 2 Circle objects, each with a different value for radius*.* Call the methods on your objects, and note how each object has all the methods of the class, but will produce different results based on the value of the object’s instance variable. Example:

public class CircleRunner

{

public static void main(String[] args)

{

Circle circleOne = new Circle(2.0);

Circle circleTwo = new Circle(3.5);

System.out.println("Diameter of circle 1 is " + circleOne.getDiameter());

circleOne.setRadius(6.0);

System.out.println("Diameter of circle 1 is " + circleOne.getDiameter());

System.out.println("Area of circle 2 is " + circleTwo.getArea());

}

}

When you run the main()method of the CircleRunner class, you should see the following output:

Diameter of circle 1 is 4.0

Diameter of circle 1 is 12.0

Area of circle 2 is 38.48451000647496