Assignment #1 (50 points)

Create an application program that will compute the area and circumference of a circle. Write a Main class with Helper methods to prompt for and input the radius of a circle (getRadius), calculate the circumference (calcCirc), and calculate the area (calcArea) of a circle. Define the radius, area, and circumference in main which will call each calc method, passing radius to each one. Assume PI = 3.14159 or use the Math.PI builtin constant. Format the output to show two decimal places in the calculated values. Then write a second version that uses the Circle class (see code template) and only one helper method (getRadius). Submit both versions. See examples in class notes.

Suggested Reading in Textbook: Chapter 1.4 – 1.5, 2.1 – 2.6, 3.6

Sample Run

Enter the radius of the circle: 10.0

The circumference of the circle is: 62.83

The area of the circle is: 314.16

Code Template

The following code template will help with this assignment:

```
===== Code to use with Version 1, main and helper functions, no Circle object =====
public class Main
{
  public static void main (String[] args)
  {
    // defines variables
    // call helper methods to input the radius
    // call helper method to calculate the circumference
    // call helper method to calculate the area
    // output the calculated values
  }
  public static _____ getRadius()
  {
    // define a local radius variable
    // read in a value for radius
```

```
    // return the value
  }
  public static _________ calcCirc(_____________)
  {
    // calculate and return value for the circumference
    // using the radius passed as an argument
  }
  public static _____________ calcArea(_____________)
  {
    // calculate and return value for the area
    // using the radius passed as an argument
  }
}
```

===== Code to use with Version 2 (two .java files) =====

----- Main.java -----

```
public class Main
{
  public static void main (String[] args)
  {
    // define Circle object
    // call helper (class) method to input the radius
    // instantiate the Circle object
    // output the circumference using instance method
    // output the area using instance method
  }
  public static _____________ getRadius()
  {
    // define a local radius variable
    // read in a value for radius
    // return the value
  }
}
```

----- Circle.java -----

```
public class Circle {
  double radius;
  public Circle(double rad)
  {
```

```
    radius = rad;
  }
  public double getRadius()
  {
    return radius;
  }
  public double getDiameter()
  {
    return 2.0*radius;
  }
  public double getCircumference()
  {
    return 2.0*Math.PI*radius;
  }
  public double getArea()
  {
    return Math.PI*radius*radius;
  }
}
```