CSCI 1250 – Lab 8
Classes & Objects / UML

Introduction
This lab will reinforce topics covered in the Classes & Objects lecture.

> **NOTE: All of your programs must abide by the documentation standards discussed in the Coding Standards document on D2L. Make sure you are commenting <u>all</u> files, classes, and methods.**

Instructions
Part 1: The *Circle* Class (50 points)
Create a new Java class called *Circle* based on the provided UML diagram (Circle_UML.png). Make sure the names of your class, fields, methods, and parameters all match the UML as well as any data types / return types.

The methods in the UML should function as described below.
- There will be a single constructor that takes a single argument, *radius*, and sets the value of the *_radius* field to match the parameter value
- *getRadius* is an accessor (getter) method that returns the value of the *_radius* field
- *setRadius* is a mutator (setter) method that changes the value of the *_radius* field to be equal to the parameter variable's value
- *getDiameter* will return the diameter of the circle object based on the value of the *_radius* field
- *getCircumference* will return the circumference of the circle object based on the value of the *_radius* field
- *getArea* will return the area of the circle object based on the value of the *_radius* field

> **Hint:** Use the *Math.PI* property in any mathematical operations that require the value of pi (circumference and area of a circle require pi)

Part 2: Using the *Circle* Class (50 points)
Create a new Java program called *CircleTest*. This program should function as described below.
- Write a *public static* method called *displayCircleInformation*
  - This method does not return any values
  - This method has a single parameter, a *double* named *radius*
  - Create a new *Circle* object and assign its address to a reference variable
    - Pass the value of the *radius* parameter into the constructor method
  - Use the *getDiameter*, *getCircumference*, and *getArea* methods of the *Circle* object to display the circle's diameter, circumference, and area.

- In your *main* method
  - Create a new *Scanner* object and assign its address to a reference variable
  - Ask the user to enter a radius and assign their input to a *double* variable
  - Pass the radius the user entered to the *displayCircleInformation* method

Submission
Submit your code to the Lab8 repository on GitHub Classroom using the Lab 8 GitHub Classroom link on D2L. Then, submit a text file containing the URL of your Lab8 repository to the drop box on D2L by the specified due date.