Assignment 3 - Circle CS1400 Summer 2011

Description:

Create a project called **A3_*YourName*** with two java files called **Circle.java** and **CircleTest.java**
On top of each source code file include a comment with your name, course number, and assignment number.

In Circle.java:

- create a public class called **Circle**.
- Include one private field of type double; its name is **radius**.
  double is a primitive type in Java. A variable of type double can hold floating point numbers.
- Include a public constructor that takes one parameter. The purpose of the constructor is to initialize the new Circle object. Inside the constructor you assign the argument value to the private field. You have seen this before in the set method. The difference is, that constructors are only used when object s are created.
  I give you the code for the constructor. Just copy it in your Circle class after the field declaration.

```
public Circle (double r)
{
   radius = r;
}
```

  Notice that the name of the constructor has the exact same spelling as the class and that there is no return type specified. (Constructor declarations don't have a return type)

- Include four public methods: getRadius, diameter, area, and circumference
  - **getRadius** .. the get method has the purpose of exposing the private field radius. It makes its value accessible outside of the class.
    Reminder: in order to return a value you need to use the keyword `return`
    getRadius takes no parameter and returns a double
  - **diameter**.. calculates and returns the value of the circle's diameter;
    diameter takes no parameter and returns a double
  - **area** .. calculates and returns the area of the circle.
    In order to calculate the area of a circle you need the constant pi. Java provided this constant for you in the Math class. You can access the value of pi by calling `Math.PI` (notice that PI is spelled in uppercase letters. That is because pi is a constant and it is a naming convention in Java to spell constants with uppercase letters)
    area takes no parameter and returns a double
  - **circumference**.. calculates and returns the circumference of the circle.
    It takes no parameter and returns a double

In CircleTest.java
Write code to test the Circle class:

- Create a Scanner object. (Remember to import Scanner on top of your file)

- Read in the value for radius and assign it to a local variable of type double. Make sure you have prompted the user with an appropriate message so s/he knows what to enter.
  TIP: the class Scanner provides a method called `nextDouble()` to read in a floating point number
- Create an object of type Circle by using the constructor I provided. Pass the values that you just read in as an argument to the constructor.
- Print out radius, diameter, area ,and circumference of the circle
  Important: do not print the value of the local variable that you used to read in user input but of the value of the field radius
  TIP 1: the format specifier to print out floating point number is `%f`. You can choose how many digits of the fractional part are displayed by addint a `.` (dot) and a number between the `%` sign and the letter `f`.
  e.g. `%.1f` display one digit after the decimal point; `%.2f` displays 2 digits after the decimal point
  TIP 2: if a method returns a value (return type is not void) you can print out that value directly by calling the method as an argument of print, println, or printf
  e.g. `System.out.printf("this works: %.1f", myCircle.area();`

Sample output:

```
Radius: 5

radius = 5.0
diameter = 10.0
area = 78.5
circumference = 31.4
```

Turning in:

Zip up your project (the directory containing the source code and the project files) and name the file **A3_*YourName*.zip** , where you substitute your first name and last name for *YourName* . Turn it in via Virtual Campus.

Maximum Points: **30 pts**