CMPT 220 - Program 5

Program Due: Monday, March 2^{nd}, before 9:00 a.m. (submitted and printed)

Name the project **Prog5YourLastName**

Name the main class **StepsDemoYourLastName.java**

Name the Steps class **Steps.java**

The purpose of this program is to refine your knowledge about classes and methods.

Write a class named **Steps** to represent Steps. Your class will have three instance variables: `myStepWidth` (integer), `myNumSteps` (integer), and `myFillStyle` (single character).

You will need to define the following methods: **constructors**, getters and setters for each instance variable, `calcArea(), drawSteps()` and `toString().` The `calcArea()` method will calculate and return the number of fillStyle characters required for the Steps. The `drawSteps()` method will print out a "picture" of the Steps, using the character stored in `myFillStyle` to do the drawing. For example, if the step width is 3 and there are 5 steps and the fillStyle is '`*`', your picture will look like this:

```
***
******
*********
************
***************
```

NOTE: The **only** method that will print anything is **drawSteps()** !!!!!!!!

You'll also need to write a main program (**StepsDemoYourLastName.java**) that uses this class. Your program should construct a default Step, then use the following menu:

```
W : Assign the Step Width
N : Assign the Number of Steps
F : Assign the Fill Style
A : Calculate the Area
T : Text Description of the Steps
D : Draw the Steps
Q : Quit
```

Options W, N, and F will prompt the user for specific input, then call the appropriate **setter()** to update the Step.

Option A will call your **calcArea**() method, which will calculate and return a value. You'll print the value that is returned.

Option T will print out messages describing the step width, number of steps, fillStyle, and area of the Steps. You'll get the first three values from your **toString**() method and the area from your **calcArea**() method. Make sure your descriptions are nicely formatted.

Option D will call drawSteps(), which will draw out a picture of the Steps.

The Steps should have a **default** width of 2, a **default** numSteps of 5, and a **default** fillStyle of '*".
Be sure to do necessary validation checking.

Challenge (optional):

Add another option to the menu, after option D and before option Q.

```
X : Draw Thick Steps
```

Option X will call a new method for the class, drawThickSteps(), in which each step is as “thick” as the original width. This means that you’ll get the following picture for our sample:

```
***
***
***
******
******
******
*********
*********
*********
************
************
************
***************
***************
***************
```