CSC205AB

Assignment 5

You are to write a class called Assignment5Recursion. In the class, you will write 3 public methods (described below).

**The squares puzzle problem: “How many one-by-one squares will be generated by an algorithm that starts with a single square and, on each iteration, adds squares all around the outside.”**

n=0 n=1 n=2 etc.

The answer to this puzzle can be described three different ways. You are to write three static methods that implement the following public methods:

1. A static method called puzzleFormula(int n), which returns an integer that is the number of squares. You should use the following formula to calculate it: 2n2 + 2n + 1
2. A static method called puzzleLoop(int n), which returns an integer that is the number of squares. You should use a loop to implement the following formula: (2*n* + 1) + 
3. A static method called puzzleRecurse(int n), which returns an integer that is the number of squares. You should implement it recursively using the following formula: S(0) = 1

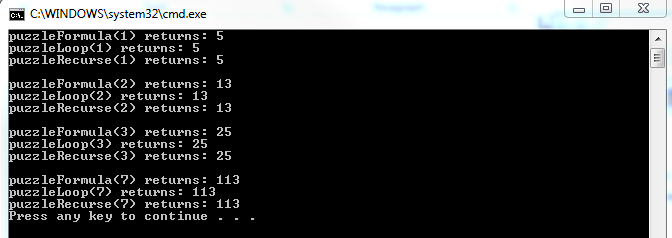
S(n) = S(n-1) + 4n for n>=1

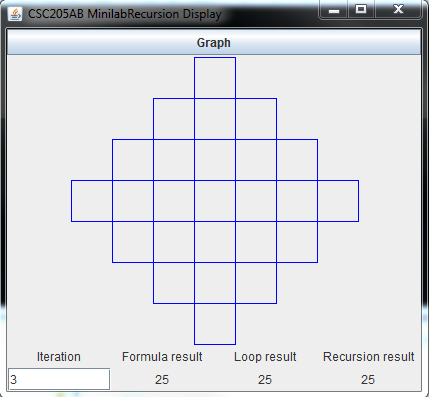
**Testing your program:** you can use either the “console” driver program or the “graphical” driver program for testing. Obviously, you should come out with the same answers on every method. It is also possible to create your own main method inside of Assignment5Recursion.java and use it for testing.

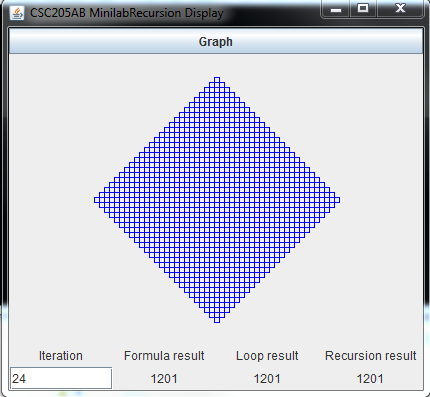
**Comments and formatting:** Please use the Java conventions for variable names, indenting, and formatting. Each class should have an opening comment which briefly describes the class and includes your name and class on a separate line. Each method should have a short opening comment which describes it. “Sections” of code or parts that are tricky should have comments. See programs from the book for examples (although I prefer that opening and closing “squigglies” be indented the same).

**Please submit:** your Assignment5Recursion.java file.

**Sample Screenshots:**

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