CST8132 Object Oriented Programming
Lab 1: Printing Patterns

Due: Start of Lab Sessions in Week 2

Problem Statement:

Using the Eclipse IDE, write a single class Java program named **PrintingPatterns** that displays the following patterns separately, one below the other, on the computer screen. See the Sample Output below.

Use **for loops** to generate the four patterns.

After your program is capable of printing the patterns with a width of 10 characters (as in the sample output)

1. Change your program so that a single numerical value in your code controls the width of the patterns. That is, changing a single "10" to "20" in ONE place in your code causes the patterns to be printed properly with a width of 20 characters (which means you should use a variable to denote the maximum width).
2. Change your program so that a single character value in your code controls the character in the pattern. That is, changing a single "#" to "*" in ONE place in your code causes the patterns to be printed properly with another character.

Other requirements:

*   All characters must be printed individually by a single statement (inside a loop) of the form `System.out.print("#");`
*   A statement of the form `System.out.println();` can be used to move to the next line.
*   A statement of the form `System.out.print(" ");` can be used to display a single space for the last two patterns.
*   There should be no other output statements in the program, and no extra line breaks before or after patterns.

Sample Output

```
#
##
###
####
#####
######
#######
########
#########
##########

##########
#########
########
#######
######
#####
####
###
##
#

##########
 #########
  ########
   #######
    ######
     #####
      ####
       ###
        ##
         #

         #
        ##
       ###
      ####
     #####
    ######
   #######
  ########
 #########
##########
```

Submission Requirements

1. **Demonstrate** your finished program to your lab professor.
2. Create a new assignment folder and name it:

    CST8132_<SectionNo>_<LastName>_<FirstName>_Lab1.

3. Place a copy of your **PrintingPatterns.java** file in the assignment folder.
4. Create an **ZIP** file of the assignment, and name it:
    CST8132_<SectionNo>_<LastName>_<FirstName>_Lab1.zip.
5. Upload the **ZIP** file to Blackboard.

Grading Scheme:

- 5 marks: Correctness
  - Patterns are correct
  - Can change size in ONE place
  - Can change character in ONE place
  - For loops are used
  - Spacing is correct
- 5 marks: Code Conventions and Submission
  - Proper naming (use of Java naming conventions and following requirements)
  - Use of comments in code
  - Consistent and proper indentation and code alignment
  - Good use of both vertical and horizontal whitespace for readability
  - Submission correct
- -5 marks: Code does not compile