CS 1400 - Lab 4

Maximum Points: 10 pts.

Lab Topics

- Getting familiar with loops
- Getting familiar with static methods

Use the following Coding Guidelines:

1) Download the template file Lab4.java from Blackboard and fill-in-the-blanks to create your Java program.
2) Give identifiers semantic meaning and make them easy to read (examples numStudents, grossPay, etc).
3) Keep identifiers to a reasonably short length.
4) Use uppercase for constants. Use upper camel case for classes. Use lower camel case for all other identifiers (variables, methods, objects).
5) Use tabs or spaces to indent code within blocks (code surrounded by braces). This includes classes, methods, and code associated with ifs, switches, and loops. Be consistent with the number of spaces or tabs that you use to indent.
6) Use white space to make your program more readable.
7) Use comments to explain how the parts of your program work.

Lab Problem: Designing Patterns by Loops

Please design a program that can produce different patterns according to the user input. You have to implement at least two patterns from the following list (please check the sample output for the shapes of these patterns):

- A row of symbols
- A pyramid
- An inverted diamond (**challenge**)

Moreover, instead of placing everything inside the main function, you have to design several *static helper methods* beside the main function. You need to define at least the following methods:

- buildRow(char sideSymb, int sideWidth, char midSymb, int midWidth)
- buildPyramid(char sideSymb, char midSymb, int ptnHeight)

You may copy the predefined variables & methods & main function in the template .java file to save your time. You can also declare any other variables & methods you need.

Note: If you are using the template, you may go to “buildRow” and “buildPyramid” directly and put in your code.

Grading Rubrics

- +1 Can print a row of symbols like the sample output
- +2 Can print a pyramid like the sample output
- +1 Can define buildRow and buildPyramid besides the main function
- +1 Can read and understand how methods are invoked by Java

Sample Output

Below is an example of what your output should roughly look like when this lab is completed. Text in RED represents user input.

```
Please choose one pattern from the list:
r) Row
p) Pyramid
d) Shallow diamond
q) Quit
r
Width of the sides?
2
Width of the middle?
4

--******--

Please choose one pattern from the list:
r) Row
p) Pyramid
d) Shallow diamond
q) Quit
r
Width of the sides?
4
Width of the middle?
2

----**----

Please choose one pattern from the list:
r) Row
p) Pyramid
d) Shallow diamond
q) Quit
p
Number of symbols on the lowest layer?
```

```
5

--*--
-***-
*****


Please choose one pattern from the list:
r) Row
p) Pyramid
d) Shallow diamond
q) Quit
p
Number of symbols on the lowest layer?
7

---*---
--***--
-*****-
*******


Please choose one pattern from the list:
r) Row
p) Pyramid
d) Shallow diamond
q) Quit
p
Number of symbols on the lowest layer?
10

The input is not an odd number. Use the closest odd number below 10
----*----
---***---
--*****--
-*******-
*********
```

```
Please choose one pattern from the list:
r) Row
p) Pyramid
d) Shallow diamond
q) Quit
d
Number of symbols on the middle layer?
11

***** *****
****   ****
***     ***
**       **
*         *

*         *
**       **
***     ***
****   ****
***** *****


Please choose one pattern from the list:
r) Row
p) Pyramid
d) Shallow diamond
q) Quit
q
Bye
```