Java for Non Majors

CGS 3416: Fall 2015
Department of Computer Science, Florida State University

Homework 4: 100 points

Due date: 11:59 PM 10/23/2015

1 Objective

The purpose of this assignment is to exercise your familiarity with reading indefinitely from stdin, selection statements and simple methods. For this assignment, you're required to turn in 2 programs that involve methods, loops and selection statements on different levels. You can use an IDE to write these. However, you're also required to test these on a terminal before turning them in.

Please email your files `Triangle.java` and `Evaluator.java` to `jayarama@cs.fsu.edu`

Program 1

This program is called `Triangle.java`.

Write a program that accepts an integer from the user and prints out a triangle with those many lines of '*'. The first line has one '*', the second has 2 '*' and so on. Make sure your program conforms to the following requirements:

1. Accept the number of lines from the user (as an integer).
2. Check if the number of lines is positive. If it happens to be negative, print an error message and terminate the program.
3. If the number is positive, pass this number as a parameter to a method called `printTriangle()`.
4. In the `printTriangle()` method use a loop to print the triangle of '*'.

Sample Runs

There are 2 sample runs here:

```
Enter the number of lines : 5
    *
   * *
  * * *
 * * * *
* * * * *

Enter the number of lines : -4
Number of lines is negative. Exiting.
```

Program 2

This program is called `Evaluator.java`.

Write a program to evaluate a mathematical expression as it is entered by the user. Here, the user will enter alternating numbers and operators, terminating with a '.'. You are required to keep a running evaluated result for the expression and finally print the output when the user is done. Each 'type' of operation needs to have its own method. The expression will only consist of integers and you only need to account for the 5 basic integer math operations (+, -, *, / and %). Make sure your program conforms to the following requirements:

1. Write 5 methods, one for each basic arithmetic operators. They take 2 parameters each and return a result.
2. In the main method, read a number and a character alternatively until you encounter a '.'.
3. Keep a running result variable, where you store the result of the calculation so far.
4. Once the user is done entering the expression, print out the result.
5. Make sure to call the functions to do the calculations. Don't do the calculations in main().
6. You can assume that the input will be as expected. You don't need to do any error checking here.
7. You can ignore operator precedence. Just evaluate expressions as they come in.

Sample Run

There are 2 sample runs here:

```
Enter the expression:
1
+
26
*
2
%
19
/
5
.
The result is 3


Enter the expression:
12
*
9
-
37
+
-8
.
The result is 63
```

Generic Guidelines

- Please make sure youre only using the concepts already discussed in class. That is, please try and restrict yourself to loops, selection statements and methods.
- Each of the programs is worth 50 points.
- Please make sure that youre conforming to specifications (program name, print statements, expected inputs and outputs etc.).
- Please make sure your code is readable.
- Please make sure you've compiled and run your program before you turn it in. Compilation errors can be quite costly.