CS 1101 – Introduction to Computer Science
Spring 2022
Lab 6- Finding Zeros

Due Date: Monday, February 28, end of the day (11:59pm).

Objective: The goal of this assignment is to get familiar with taking input using **Scanner**, processing **variables**, **conditions,** and **loops**.

Background:
You are to create a program that will ask the user for N numbers to compute average, additions, and count instances when zero is present.
Hint: *Think how you can implement a loop for the steps described below.*

Assignment:

1. To begin, ask the user for an integer value between 1 and 10. This will be the number of times (N times) that your program will allow the user to continue entering numbers.
   Welcome to Lab 6, finding Zeros! Please enter an integer value between 1 and 10:

2. Then ask the user N times for integers (these numbers can be positive or negative)
   Enter an integer value:

   *For example: If the user enters **5** on step 1, then, your program should ask the user **5** times to enter an integer value.*

3. In your program, from the integers entered by the user, compute the following:
   a. Count how many integers are greater than 0
   b. Calculate the average of all positive integers
   c. Calculate the average of all integers entered by the user
   d. Find the greatest integer
   e. Find the smallest integer

4. As an additional step, for each integer:
   a. If the number contains 0, then count how many 0s the number has. For example:
      Number of 0s
      10 --> 1
      1002 --> 2
      -502030 --> 3
      53 -->0

5. Display the results, as in the examples below.

Sample output:

Example 1-

```
Welcome to Lab 5, finding Zeros! Please enter an integer value between 1 and 10:
2
******
Enter Integer 1:
250
// Number of Os //
250 -> 1
******
Enter Integer 2:
-203
// Number of Os //
-203 -> 1
******
The number(s) entered by the user are:
250,-203,
1 number(s) are greater than 0.
The average of all positive numbers is: 250.0
The average of all numbers is: 23.0
The greatest number is: 250
The smallest number is: -203
```

Example 2-

```
Welcome to Lab 5, finding Zeros! Please enter an integer value between 1 and 10:
1
******
Enter Integer 1:
22002
// Number of Os //
22002 -> 2
******
The number(s) entered by the user are:
22002,
1 number(s) are greater than 0.
The average of all positive numbers is: 22002.0
The average of all numbers is: 22002.0
The greatest number is: 22002
The smallest number is: 22002
```

Deliverables: You are expected to submit two files in Blackboard:

(i) Lab6_Lastname.doc--- containing the algorithm /pseudocode of your program, and
(ii) Lab6_Lastname.java --- the java file of your program.

Grading Criteria:

- [10 points] Algorithm.
  - Sequential, executable, finite, and correct.
- [87 points] Java program that is similar to the algorithm.

- [35 points] Program compiles and runs.
- [40 points] The program has correct logic and generates correct output.
- [5 points] The program is indented properly.
- [5 points] The program uses meaningful variable names.
- [2 points] The program has proper documentation.

- [3 points] The deliverables follow the proper name Lab6_LastName

- Late submission: [**-10**] points for every 24 hours after the deadline.

If you need any clarification, please ask your TA for further details.