

CS 1101 – Introduction to Computer Science

Spring 2022

Lab 9 - Arrays

Due Date: Wednesday, April 6, end of the day (11:59pm).

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

Assignment:

You are to create a program that:

- 1) Creates an integer array of n elements. Asks the user for the values of n and creates the array.
- 2) Asks the user for the elements and inserts the values in the array.
- 3) Prints the array
- 4) Prints the array in reverse (from the last element to the first).
- 5) Prints the sum of the elements of the array.
- 6) Prints the average of the elements of the array.
- 7) Prints the number of elements that are more than or equal to the average value. For example, "There are 4 elements equal or more than the average".
- 8) Prints the index of the elements that has value more than or equal to the average.
- 9) Prints the minimum value of the array and the index of the minimum value.
- 10) Prints the maximum value of the array and the index of the maximum value.
- 11) Prints out how many even numbers there are in the array, those numbers, and the index of those numbers.

Example:

```
Lab 9
How many elements would you like to enter?
3
Enter 3 numbers
1
2
3
The array is:
1, 2, 3,
The array in reverse order:
3, 2, 1,
The sum of the elements in the array: 6
The average of the elements in the array: 2.0
There are 2 elements equal or more than the average
The index of the elements with greater or equal value to average: 1, 2
The maximum value in the array is: 3 in index: 2
The minimum value in the array is: 1 in index: 0
There are : 1 even number(s) in the array
The even numbers are : 2
The index of the even numbers are : 1
```

```

Lab 9
How many elements would you like to enter?
5
Enter 5 numbers
3
4
1
0
9
The array is:
3, 4, 1, 0, 9,
The array in reverse order:
9, 0, 1, 4, 3,
The sum of the elements in the array: 17
The average of the elements in the array: 3.4
There are 2 elements equal or more than the average
The index of the elements with greater or equal value to average: 1, 4
The maximum value in the array is: 9 in index: 4
The minimum value in the array is: 0 in index: 3
There are : 2 even number(s) in the array
The even numbers are : 4, 0
The index of the even numbers are : 1, 3

```

Deliverables: You are expected to submit one file to Blackboard:

- (i) `Lab9_Lastname.java` --- the java file of your program.

Grading Criteria:

- [97 points] Java program that is similar to the algorithm.
 - [20 pts] Program compiles and runs.
 - [20 pts] The program uses **methods**, conditional statements, loops, and **array**.
 - [10 pts] Correct types for each variable, correct naming conventions, and variables should have meaningful variable names.
 - [35 pts] The program has correct logic and generates correct output. (Implementing arrays)
 - [5 pts] The program is indented properly.
 - [5 pts] The program uses meaningful variable names.
 - [2 pts] The program has proper documentation.
- [3 points] The deliverables follow the proper name Lab9_LastName
- Late submission: [-10] points for every 24 hours after the deadline.

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