CS 160 L – Intermediate Computer Programming Lab

Lab 1 – Integrated development environment and Debugging Techniques

The primary goal of this lab is help students set up a Java JDK Environment and install the IntelliJ IDE. The secondary goal of this lab is to introduce students to debugging techniques in Java and the debugger tool in the IntelliJ IDE.

Your tasks:

1) Install the IntelliJ IDE **(25 points)**
    - Instructions to install the IDE are provided to you in separate files for both MAC and Windows users.
        - Mac users – IDEInstallation(Mac).pdf
        - Windows users - IDEInstallation(Windows).pdf

2) Load the program - CS160Lab1 - given to you and debug the code to produce the correct output **(50 points)**
    - Watch the lecture video for week 1 to learn how to use the debugger tool.
    - You need not rewrite the code. The code given to you has simple errors which you will fix to get the right output.
    - The expected (correct) output of the code is provided in this document for your reference.

3) Meet up with the instructor to explain your work and answer questions based on the lab (your work) **(25 points)**
    - You will have a 5 to 10 minute time slot given to you to meet with the instructor over zoom and explain your work.

Submissions:

- Complete the provided CS160Lab1 code and turn it in to GradeScope.

CS160Lab1 code:

The code given to you has three integer arrays (evens, sequence, and threes) on which several operations are applied. The different methods and their functionality are tabulated below.

Method	Functionality	Example Array = 1,2,3,4,5,6,7,8,9
subArray	find the subArray between two index values (start,end)	Start = 0 and end = 3 would return 1,2,3,4
reverse	Reverse the given array	Returns 9,8,7,6,5,4,3,2,1
RotateLeft	Rotate all elements beyond the index left	Index=5 would return 1,2,3,4,5,7,8,9,6
RotateRight	Rotate all elements beyond the index right	Index=5 would return 1,2,3,4,5,9,6,7,8
findMin	Find the minimum value of the array	Returns 1
findMinIndex	Find the minimum value index of the array	Returns 0
findMax	Find the maximum value of the array	Returns 9
findMaxIndex	Find the maximum value index of the array	Returns 8
shiftLeft	Shift all elements in the array to the left by index positions	Index=2 would return 3,4,5,6,7,8,9,0,0
shiftRight	Shift all elements in the array to the right by index positions	Index=2 would return 0,0,1,2,3,4,5,6,7

Fix the above-mentioned methods to perform the expected functionality. Once the code is fixed, you should be able to see the output shown below.

```
Array with even numbers
Initial Array: 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Reversed Array: 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2
Rotated Right Array: 40 38 36 34 32 30 28 26 24 22 2 20 18 16 14 12 10 8 6 4
Minimum number is 2
Minimum index = 10

Array with integer sequence
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Sub Array: 6 7 8 9 10 11
Shifted Left Array: 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 0 0 0 0 0
Maximum number is 20
Maximum index = 14

Array with multiples of thress
3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60
Rotated Left Array: 3 6 9 12 15 18 21 24 27 30 36 39 42 45 48 51 54 57 60 33
minimum number is 3
minimum index = 0
Shifted Right Array: 0 0 0 0 3 6 9 12 15 18 21 24 27 30 36 39 42 45 48 51
```