Object Oriented Programming-1 (PROG100082)
Assignment 6
Due: 1:00 PM, Apr 18, 2018 (Wednesday)

INSTRUCTIONS

- This Assignment must be completed independently without any outside collaboration. All work must be your own. Copying or reproducing the work done by others (in part or in full) or letting others to copy or reproduce your own, and/or unauthorized collaboration will be treated as academic dishonesty under the College's Academic Dishonesty Policy.
- This is an out of class Assignment and you are required to complete this Assignment on your own time.
- Your application must compile and run upon download to receive any mark.
- In all program you develop, you must demonstrate correct Java naming convention, and other code writing industry standards (e.g., comments, indentation, spacing, etc.).
- You must hand in the Assignment by the deadline. Late submission will **NOT** be accepted for this assignment.
- To submit the Assignments, please follow the Submission Guideline provided at the end of this Assignment.
- You **MUST** demonstrate your work and simulation during the class session on the submission date. Demonstration is important and missing it may cost significant part (at least 40%) of this Assignment marks.
- You must include following information as comments at the beginning of your main class file.
    - Assignment No.: 6
    - Your Name:
    - Your Id:
    - Submission date:
    - Instructor's name: Syed Tanbeer
- Total mark = 20 (weight = 4% of the final grade).

Exercise 1 [marks 8]: Count occurrence of numbers

Write a Java program that reads integers between 1 and 100 and counts the occurrences of each. Your program must demonstrate the use of array to store the integers, and use one method to read inputs from the user and another method to display output to the user. Assume the input ends with a 0. [Hint: You can initialize a reasonably large size array, e.g., 100 elements to hold the integers, assuming user will enter at most 100 integers.]

Here is a sample run of the program:

Sample run:

```
Enter the integers between 1 and 100: 2 5 6 5 4 3 23 43 2 0
2 occurs 2 times
3 occurs 1 time
4 occurs 1 time
5 occurs 2 times
6 occurs 1 time
23 occurs 1 time
43 occurs 1 time
```

Exercise 2: Locker Puzzle [marks 12]

A school has 50 lockers and 50 students. All lockers are closed on the first day of school. As the students enter, the first student, denoted S1, opens every locker. Then the second student, S2, begins with the second locker, denoted L2, and closes every other locker. Student S3 begins with the third locker, denoted L3, and changes every third locker (closes it, if it was open, and opens it, if it was closed). Student S4 begins with locker L4 and changes every fourth locker (i.e., closes it, if it was open, and opens it, if it was closed). Student S5 starts with L5 and changes every fifth locker, and so on, until student S50 changes L50.

After all the students have passed through the building and changed the lockers accordingly, which lockers are open? Write a Java program to find your answer. You **must** demonstrate the use of an array of 50 boolean elements, each of which indicates whether a locker is open (true) or closed (false). Initially, all lockers are closed.

The program should display the answer like this:

Output format:

```
Locker L1 is open
Locker L2 is open
…
Locker L50 is open
```

Hand-in:

Hand-in the source code files of all exercises to the Assignment 6 dropbox at Slate.

[Note: Your program will not be marked, if any required file is missing, corrupted, or it fails to open. Also no marks will be awarded to codes that are broken and/or fails to execute.]

---: End of Assignment 6 :--