CL-118
Programming
Fundamentals Lab # 14

Objectives:

- Practice and understanding on basic c++ programs
- File Handling
- One-dimensional Array

Note: Carefully read the following instructions (*Each instruction contains a weightage*)

1. Use proper **font family (Calibri or Times New Roman)** and **font size** of the **title (16 points), heading (14 points), subheading (12 points),** and **normal text (10 points)**.
2. First think about the problem statement and then write/draw your logic on paper.
3. **Microsoft Visual Studio** should be used to make c++ programs. Programs made with any other software would not be accepted.
4. For each task in the manual create a new C++ program with the naming convention as follows:
   TASK-NO
5. **Mention what is happening in each line of code using comments**.
6. Write all codes one by one with proper numbering and also paste screen shot of each problem using the **snipping tool** (default screen capture software in windows) on **Microsoft word file.**
7. Please submit your file with this naming convention **ROLLNO_SECTION_GROUPNO_LABNO**.
8. Do not copy from any source otherwise, you will be penalized with zero marks.
9. Submit your lab on **Google Classroom**.

Problem: 1 | Guess-the-Number Game

Write a program that plays the game of "guess the number" as follows: Your program chooses the number to be guessed by selecting an integer at random in the range 1 to 1000. The program then displays the following:

I have a number between 1 and 1000.
Can you guess my number?
Please type your first guess.

The player then types the first guess. The program responds with one of the following:

1. Excellent! You guessed the number! Would you like to play again (y or n)?
2. Too low. Try again.
3. Too high. Try again.

If the player's guess is incorrect, your program should loop until the player finally gets the right number. Your program should keep telling the player **Too high** or **Too low** to help the player on the correct answer.

Problem: 2 | Shifting Array

Write a program that will be given as input an array and an integer p. The program will then cyclically shift the array p positions to the right: each element is moved p positions to the right, while the last p elements are moved to the beginning of the array. For example: if we have the array [1 2 3 4 5 6], shifting 2 positions to the right should give the array [5 6 1 2 3 4]. Your function should work correctly for negative values of p.

Problem: 3 | Searching Array

Write a program that takes two inputs from the user: an array of integers of size 10, an integer to search (old value) and an integer to replace the old value. The program should search and update all the occurrences of an old value in the array. If the value does not exist or the array is empty, output an appropriate message.

Problem: 4 | Duplicate Number

Use a one-dimensional array to solve the following problem. Read 20 numbers, each of which is between 25 and 75 by using the rand ( ) function. As each number is read, validate it and store it in the array only if it is a duplicate of a number already read. After reading all the values and store the duplicates in the array. Display that array having the duplicate values.

Problem: 5 | Sorting Array

Given an unsorted array whose elements are all 0 (zeros) or 1 (ones), write code to sort the array so that all the 0's appear first, followed by all the 1's.

Best of luck ☺

You are done with your exercise, submit on slate at given time.