Alexandria University
Faculty of Engineering
Computer and Systems Engineering Department

CS121: Computer Programming 1
Assigned: Saturday, November 14th, 2024
Due: Saturday, December 21th, 2024

Lab 7
Pointers - Dynamic memory allocation

Lab Objectives

1. Getting Familiar with C programming language.
2. Practice Pointers - Dynamic memory allocation.

Problem Set

1. Write a program in C to add two numbers using pointers.
2. Write a program in C to store n elements in an array and print the elements using a pointer.
3. Write two programs to find the sum of n numbers one program using “malloc” and the other using “calloc”.
4. ***Max Row at the Top***
   Write a C function that, given a two-dimensional array, reorders the rows such that the row with the highest row sum is the first row. The program should read N and M which are the number of rows and columns respectively. You can assume that 1 ≤ n, m, ≤ 20. Then it will read in NxM integers that form the array. It should search for the row with the maximum sum and swap it with the first row.

   Your function should returns the array (using pointers and dynamic memory allocation)

   If the program will be called with the following array
   ```
   1 3 5 1
   2 50 9 9
   2 2 3 4
   ```
   The output should be
   ```
   2 50 9 9
   1 3 5 1
   2 2 3 4
   ```

NOTES

1. You are encouraged to ask any questions on MS teams, or in person.
2. Cheating will be severely penalized (for both parties). So, it is better to deliver nothing than deliver a copy!.
3. You are not allowed to use any AI Tool.
4. Submission details will be announced on MS Teams.

Good Luck