Assignment: Playing with Array-1D, 2D

Task 1:

Write a C program to find the sum of contiguous sub array within an array which has the smallest sum. Also print where in the array the smallest sum occurred.

For example, given the array [4, -1, 2, -3, 1, -2, 7, -5, 4], the contiguous sub-array [1, -3, -2] has the smallest sum of -4 and it occurred in [0:6].

To understand contiguous sub array, given the array [1, 2, 3] the contiguous sub arrays are [1], [2], [3], [1, 2], [2, 3], [1, 2, 3], but [1, 3] is not a contiguous sub array.

Sample Input	Sample Output		Explanation
	Smallest Sum	Index range	
[2, 1, −3, 1, −4, 2, 1, 5, 4]	-6	[2:4]	-3+1-4= -6
[2, 1, 0, 2, 5]	0	[2:2]	0
[-2, -1]	-3	[0:1]	-2-1 = -3

Task 2:

Say you have an array for which the i^{th} element is the price of a given stock on day i.

If you were only permitted to complete at most one transaction (i.e., buy one and sell one share of the stock), design an algorithm to find the maximum profit.

Input	Output
10 5 15 4 2 4 14 15 18 0 6	16
7 0 19 15 0 7 11 18	19
12 0 3 10 3 17 4 9 6 18 8 1 14	18

Task 3:

i. Take an integer number **n** as input. Then take a **n*n** matrix as input. Suppose the given matrix is **A.**

ii. Write a program to interchange diagonals of the matrix **A**. After interchanging the diagonals suppose the new matrix is **B.**

iii. Then write a program in the same main function to get transpose of the matrix **B**. Suppose the transpose matrix is **C.**

iv. Now do the following operation:

3A + 2B – C

Points:

Task	Points
1	15
2	15
3	20

Important Instructions:

1. **Only** C programming Language is allowed for this assignment.
2. Try to perform as much as you can. There is a plenty of scope for partial marking.
3. There will be a **viva evaluation** for this assignment. **Remember, your final marking of this assignment highly depends on the viva.**
4. Submit the three files which contain your solution. Before submission rename each file with the task number. Any extra files apart from them will be discarded.
5. Submission deadline: August 8, 11:59 pm
   Evaluation date & time: August 9, 2:30 pm