Online 4 : Function

**Date: 30/12/2020**

**Instruction:**

1. Avoid plagiarism. If you are found to adopt any unfair means you will get a straight 0.
2. Upload your code (only the c file) in elms.

**Task:**

1. Write a function ***int ranged\_sum(int A[ ], int si, int fi)*** that takes an array of integer numbers and two integers ***si*** and ***fi*** and returns sum of the sub-array staring from index ***si*** to index ***fi***.
2. Write another function ***int max\_subarray\_sum(int A[ ], int len)*** that takes an array of integer numbers and length of that array and returns the sum of the subarray that has the maximum sum. See the explanation below to understand how to find the subarray that has the maximum sum. This function may use ***ranged\_sum*** function to find the sum of any given subarray.
3. In you main function take an integer number **N** as input. Then take **N** integernumbers as input in an array. Then find the sum of the subarray that has the maximum sum using ***max\_subarray\_sum*** function.

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| --- | --- |
| **Sample input** | **Sample output** |
| 5  -2 4 -1 2 -2 | 5 |
| 8  -2 -3 4 -1 -2 1 5 -3 | 7 |

Explanation: (Sample input 1):

Array = [-2, 4, -1, 2, -2]

Sum of subarray starting from index 0 to index 1:

((-2) + 4) = 2 (current max = 2)

Sum of subarray starting from index 0 to index 2:

((-2) + 4 + (-1)) = 1 (current max = 2)

Sum of subarray starting from index 0 to index 3:

((-2) + 4 + (-1) + 2) = 3 (current max = 3)

Sum of subarray starting from index 0 to index 4:

((-2) + 4 + (-1) + 2 + (-2)) = 1 (current max = 3)

Sum of subarray starting from index 1 to index 2:

(4 + (-1)) = 3 (current max = 3)

Sum of subarray starting from index 1 to index 3:

(4 + (-1) + 2) = 5 (current max = 5)

Sum of subarray starting from index 1 to index 4:

(4 + (-1) + 2 + (-2)) = 3 (current max = 5)

Sum of subarray starting from index 2 to index 3:

((-1) + 2) = 1 (current max = 5)

Sum of subarray starting from index 2 to index 4:

((-1) + 2 + (-2)) = -1 (current max = 5)

Sum of subarray starting from index 3 to index 4:

( 2 + (-2)) = 0 (current max = 5)

Final answer: Sum of the subarray that has the maximum sum = 5

Similarly, (Sample input 2):

Sum of the subarray that has the maximum sum = 7

Because, sum of subarray starting from index 2 to index 6:

(4 + (-1) + (-2) + 1 + 5) = 7