**COA LAB 14-08-2023 Monday**

**Assignment Number :** 3 **Problem Number :** 1

**Group Number :** 9 **Semester :** AUTUMN 2023

**Group Members :**

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**Algorithm :**

* The algorithm used in the C++ code is Kadane’s algorithm.
* It is a dynamic programming algorithm used to find the maximum subarray sum in an array.
* The algorithm works by iterating over the array and keeping track of the maximum sum seen so far and the maximum sum ending at the current position.
* The maximum sum ending at the current position is either the current element or the sum of the current element and the maximum sum ending at the previous position.
* The maximum sum seen so far is updated whenever a new maximum sum ending at a position is found.
* The algorithm also works for circular arrays by finding the minimum subarray sum and subtracting it from the total sum of the array.
* The algorithm can be used for tracking minimum and maximum subarray sum in linear array.
* After minimum and maximum subarray sums are calculated, our answer would be maximum of the two.
* As, our maximum sum circular subarray can be a subarray of actual linear array in that case, the maximum subarray sum which we calculated earlier is the answer.
* The other case is if the maximum sum circular subarray is not a subarray of actual linear array but the linear array with a sub-array removed from it. Now since we calculated the sum of that removed part of array i.e., minimum subarray sum in actual linear array, our answer would be total sum – minimum subarray sum.