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PAINLESS

## MaxSliceSum

START

Find a maximum sum of a compact subsequence of array elements.

Programming language: C++ ▼

Human language: English ▼

A non-empty zero-indexed array  $A$  consisting of  $N$  integers is given. A pair of integers  $(P, Q)$ , such that  $0 \leq P \leq Q < N$ , is called a *slice* of array  $A$ . The *sum* of a slice  $(P, Q)$  is the total of  $A[P] + A[P+1] + \dots + A[Q]$ .

Write a function:

```
int solution(vector<int> &A);
```

that, given an array  $A$  consisting of  $N$  integers, returns the maximum sum of any slice of  $A$ .

For example, given array  $A$  such that:

```
A[0] = 3  A[1] = 2  A[2] = -6  
A[3] = 4  A[4] = 0
```

the function should return 5 because:

- $(3, 4)$  is a slice of  $A$  that has sum 4,
- $(2, 2)$  is a slice of  $A$  that has sum  $-6$ ,
- $(0, 1)$  is a slice of  $A$  that has sum 5,
- no other slice of  $A$  has sum greater than  $(0, 1)$ .

Assume that:

- $N$  is an integer within the range  $[1..1,000,000]$ ;
- each element of array  $A$  is an integer within the range  $[-1,000,000..1,000,000]$ ;
- the result will be an integer within the range  $[-2,147,483,648..2,147,483,647]$ .

Complexity:

- expected worst-case time complexity is  $O(N)$ ;
- expected worst-case space complexity is  $O(N)$ ,

Sieve of  
Eratosthenes

*Lesson 12*

Euclidean  
algorithm

*Lesson 13*

Fibonacci  
numbers

*Lesson 14*

Binary search  
algorithm

*Lesson 15*

Caterpillar  
method

*Lesson 16*

Greedy  
algorithms

*Lesson 17*

Dynamic  
programming

*Lesson 90*

Tasks from  
Indeed Prime  
2016 challenge

*Lesson 99*

Future training

beyond input storage (not counting the storage  
required for input arguments).

Elements of input arrays can be modified.

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