

Contest Duration: 2025-05-24(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250524T2100&p1=248>) - 2025-05-24(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250524T2240&p1=248>) (local time) (100 minutes)

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F - Sums of Sliding Window Maximum

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 550 points

Problem Statement

You are given a sequence of non-negative integers $A = (A_1, \dots, A_N)$ of length N .

For each $k = 1, \dots, N$, solve the following problem:

- A has $N - k + 1$ (contiguous) subarrays of length k . Take the maximum of each of them, and output the sum of these maxima.

Constraints

- $1 \leq N \leq 2 \times 10^5$
- $0 \leq A_i \leq 10^7$ ($1 \leq i \leq N$)
- All input values are integers.

Input

The input is given from Standard Input in the following format:

N

$A_1 \ A_2 \ \dots \ A_N$

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Output

Output N lines. The i -th line ($1 \leq i \leq N$) should contain the answer for $k = i$.

Sample Input 1

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```
4  
5 3 4 2
```

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Sample Output 1

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```
14  
13  
9  
5
```

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For $k = 1$, there are four subarrays of length $k = 1$:

- (5) , whose maximum is 5;
- (3) , whose maximum is 3;
- (4) , whose maximum is 4;
- (2) , whose maximum is 2.

The sum is $5 + 3 + 4 + 2 = 14$.

For $k = 2$, there are three subarrays of length $k = 2$:

- $(5, 3)$, whose maximum is 5;
- $(3, 4)$, whose maximum is 4;
- $(4, 2)$, whose maximum is 4.

The sum is $5 + 4 + 4 = 13$.

For $k = 3$, there are two subarrays of length $k = 3$:

- $(5, 3, 4)$, whose maximum is 5;
- $(3, 4, 2)$, whose maximum is 4.

The sum is $5 + 4 = 9$.

For $k = 4$, there is one subarray of length $k = 4$:

- $(5, 3, 4, 2)$, whose maximum is 5.

The sum is 5.

Sample Input 2

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8

2 0 2 5 0 5 2 4

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Sample Output 2

Copy

20

28

27

25

20

15

10

5

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Sample Input 3

Copy

11

9203973 9141294 9444773 9292472 5507634 9599162 497764 430010 4152216 3574307 430010



Sample Output 3

Copy

61273615

68960818

69588453

65590626

61592799

57594972

47995810

38396648

28797486

19198324

9599162

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