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# F - Sums of Sliding Window Maximum

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Time Limit: 2 sec / Memory Limit: 1024 MB

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:

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$$N$$

$$A_1 \ A_2 \ \dots \ A_N$$

## Output

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

### Sample Input 1

Copy

```
4
5 3 4 2
```

Copy

### Sample Output 1

Copy

```
14
13
9
5
```

Copy

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.

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## Sample Input 2

Copy

```
8
2 0 2 5 0 5 2 4
```

Copy

## Sample Output 2

Copy

```
20
28
27
25
20
15
10
5
```

Copy

## Sample Input 3

Copy

```
11
9203973 9141294 9444773 9292472 5507634 9599162 497764 430010 4152216 3574307 430010
```

Copy

## Sample Output 3

Copy

```
61273615
68960818
69588453
65590626
61592799
57594972
47995810
38396648
28797486
19198324
9599162
```

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### Language

Python (CPython 3.11.4) ▼

### Source Code

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\* at most 512 KiB

\* Your source code will be saved as `Main.extension`.



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