

IOITC 2020 Practice Test 3

Sequence

You are given a sequence of integers a_1, a_2, \dots, a_n . In a single step, you can choose two consecutive indices i and $i + 1$, and replace the elements a_i and a_{i+1} by a single element $\max(a_i, a_{i+1})$. The cost of this operation is $\max(a_i, a_{i+1})$. You want to repeatedly apply this operation to the sequence to reduce it to a single element. What is the minimum possible sum of costs of the operations performed?

Input

- The first line contains n , the number of elements in the sequence.
- i^{th} of the next n lines contains a single integer, a_i .

Output

Print a single line containing the minimum possible cost of reducing the given sequence to a single element.

Test Data

In all inputs, $0 \leq a_i \leq 10^9$.

Subtask 1 (30 Points): $1 \leq n \leq 500$

Subtask 2 (20 Points): $1 \leq n \leq 20000$

Subtask 3 (50 Points): $1 \leq n \leq 10^6$

Sample Input

```
3
1
2
3
```

Sample Output

```
5
```

We perform the following operations:

1. $\{1, 2, 3\} \rightarrow \{2, 3\}$, with cost 2.
2. $\{2, 3\} \rightarrow \{3\}$, with cost 3.

The total cost is 5, which is the minimum possible. Another possible way is $\{1, 2, 3\} \rightarrow \{1, 3\} \rightarrow \{3\}$ with a total cost of $3 + 3 = 6$.

Limits

Time: 1 second

Memory: 512 MB