Problem E. Express Rotations

Time limit: 3 seconds
Memory limit: 1024 megabytes

You are given a sequence of n numbers $a_1, a_2, \ldots, a_n$. Your task is to remove all elements in order from largest to smallest, and minimize the total cost of doing so. Equal elements can be removed in any order. You may perform three types of operations:

- Move the first element to the end of the sequence.
- Move the last element to the beginning of the sequence.
- Remove the first element, with the condition that there is no larger element in the sequence.

The cost of a move is equal to the value of the element being moved. Removal has no cost. Find the minimum possible total cost to obtain an empty sequence.

Input

The first line contains an integer n ($1 \le n \le 500\,000$).

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^6$).

Output

Print a single integer – the minimum total cost.

Example

standard input	standard output
6 6 10 6 5 4 5	16

Note

The optimal sequence of operations is:

- $(6, 10, 6, 5, 4, 5)$, move the first element to the end. Cost 6.
- $(10, 6, 5, 4, 5, 6)$, remove the first element.
- $(6, 5, 4, 5, 6)$, remove the first element.
- $(5, 4, 5, 6)$, move the last element to the beginning. Cost 6.
- $(6, 5, 4, 5)$, remove the first element.
- $(5, 4, 5)$, remove the first element.
- $(4, 5)$, move the first element to the end. Cost 4.
- $(5, 4)$, remove the first element.
- (4), remove the first element.
- $()$, the sequence is empty.

The total cost is $6 + 6 + 4 = 16$.