Sequence

We are given a sequence $a_1, ..., a_n$. We can manipulate this sequence using the operation $reduce(i)$, which replaces elements a_i and a_{i+1} with a single element $max(a_i, a_{i+1})$, resulting in a new shorter sequence. The cost of this operation is $max(a_i, a_{i+1})$. After $n - 1$ operations $reduce$, we obtain a sequence of length 1. Our task is to compute the cost of the optimal reducing scheme, i.e. the sequence of $reduce$ operations with minimal cost leading to a sequence of length 1.

Input

The input is read from a text file named `sequence.in`. The first line contains n ($1 \leq n \leq 1{,}000{,}000$), the length of the sequence. The following n lines contain one integer a_i, the elements of the sequence ($0 \leq a_i \leq 1{,}000{,}000{,}000$).

Output

The output is written into a text file named `sequence.out`. In the first and only line of the output print the minimal cost of reducing the sequence to a single element.

Example

sequence.in	sequence.out
3 1 2 3	5

Grading

In 30% of the test cases $n \leq 500$ holds.
In 50% of the test cases $n \leq 20{,}000$ holds.