Sequence

We are given a sequence $a_1, \ldots, a_n$. 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 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 in the first and only line of the output print the minimal cost of reducing the sequence to a single element.

Examples:

Input:	**Output:**
3 1 2 3	5