I. Inadequate Operation

Time limit: 1 second
Memory limit: 256 megabytes

You are given an array a of n nonnegative integers. In one operation, you can choose any i such that $1 \le i \le n-1$ and $\max(a_i, a_{i+1}) > 0$, and replace both a_i and a_{i+1} by $\max(a_i, a_{i+1}) - 1$.

Find the smallest number of operations required to make all elements equal to 0. It can be proven that it's always possible to make all numbers equal to 0.

Input

The first line of the input contains a single integer n ($2 \le n \le 200\,000$) — the number of integers.

The second line of the input contains n integers $a_1, a_2, \ldots, a_n$ ($0 \le a_i \le 10^9$) — the elements of the array.

Output

Output a single integer — the smallest number of operations required to make all elements equal to 0.

Examples

standard input	standard output
3 2 0 22	24
3 0 2022 0	2022
6 30 20 10 10 20 30	70

Note

In the first test case, you can apply this operation 2 times to $i = 1$, and then 22 times to $i = 2$.

In the second test case, you can apply this operation 2022 times to $i = 1$.