Problem J. Segment Sort

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1.5 seconds
Memory limit:	256 megabytes

You are a scientist from famous research centre Oskolkovo. You invented a quantum algorithm which could sort an array of length n using $\lceil\sqrt{n}\rceil$ quantum operations (don't ask us how it is possible). You wanted to prove the power of your invention by sorting an array of n integers, but suddenly you found out that your competitors from MIT had already published an article about a similar algorithm with the same complexity. So you decided to cheat a little bit and allowed your algorithm not only to sort the whole array, but to sort some subarrays (if it helps to reduce the total number of quantum operations). These operations are applied consequently, and the subarrays sorted during them may intersect.

Input

The first line contains one integer n ($1 \le n \le 10^5$) — the number of elements in the array.

Next line contains n integers a_i ($0 \le a_i \le 10^9$) — the elements of the array.

Output

Output one line with minimal number of quantum operations needed to sort given array by sorting its subarrays, given that cost of sorting a subarray of length l is $\lceil\sqrt{l}\rceil$.

Examples

standard input	standard output
5 5 1 2 3 1	3
5 1 2 1 3 5	2