Electrical Power Line (`powerline`)

Luca needs a lot of electricity to run its homelab, composed of lots of very powerful servers. For this reason, some years ago he built a very complex *overhead power line* composed of N towers. The N towers are connected in a line and the i-th tower is H_i meters high.

Figure 1: Some of the towers in Luca's power line.

In order to increase their efficiency, a new law mandates that every tower in a power line must be at least as high as the following one. Luca needs to change the height of some towers, in order to meet the new requirements. Every day, starting from the first tower, Luca will increase the height of every tower to the same height of the next one. Of course, if one tower is already taller than the following one it will not be modified. How many days does Luca need to finish the job?

☞ Among the attachments of this task you may find a template file `powerline.*` with a sample incomplete implementation.

Input

The first line contains the only integer N, the number of towers in the power line. The second line contains N integers H_i, the height of the i-th tower, in the same order as they are connected.

Output

You need to write a single line with an integer: how many days Luca needs to fix the power line.

Constraints

- $1 \leq N \leq 100\,000$.
- $1 \leq H_i \leq 10^9$ for each $i = 0 \ldots N-1$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points)   Examples.

– **Subtask 2** (10 points) $H_i \leq H_{i+1}$ for each $i = 0 \ldots N-2$.

– **Subtask 3** (30 points) $N \leq 5\,000$.

– **Subtask 4** (60 points)   No additional limitations.

Examples

input	output
5 4 1 2 3 1	2
5 5 5 3 2 1	0

Explanation

In the **first sample case**, Luca needs two days to fix the powerline. After the first day, the towers' heights are 4, 2, 3, 3 and 1. After the second day, the towers' heights are 4, 3, 3, 3 and 1 and Luca has finished its job.

In the **second sample case**, the power line is already compliant with the new law, so Luca doesn't need to do anything.