

## A Tantrum with Consequences (raid)

President *Trample* just had one of his tantrums! Thus, he ordered an air raid of  $P$  airplanes against his favourite enemy, the *United Nations of Antarctica* (UNA).



Figure 1: Trample's airplanes ready to strike.

The UNA consists of a single line of  $N$  houses, each with a certain height  $H_i$ . The  $P$  airplanes will follow this line one at a time, dropping bombs from house  $i = 0$  to  $N - 1$ . Airplanes are not very precise, so they will only be able to hit the highest houses. More precisely, they only hit houses  $i$  whose height is strictly larger than that of both houses at its sides:  $H_i > H_{i-1}$  and  $H_i > H_{i+1}$ .<sup>1</sup> When a house is hit, however, it will be burned to the ground, and  $H_i$  will become zero from that moment on, possibly enabling the **following planes** to hit more houses (not the current plane).

Giorgio, the newly elected emperor of the UNA, is rushing to calculate which houses will be hit, in order to help his fellow citizens to move to the safe houses.<sup>2</sup> How many houses will be burned to the ground after all  $P$  airplanes have passed?

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

### Input

The first line contains the two integers  $N$  and  $P$ . The second line contains  $N$  integers  $H_i$ .

### Output

You need to write a single line with an integer: the number of houses that will be burned to the ground.

<sup>1</sup>The first and last house only need to be taller than their single neighbouring house.

<sup>2</sup>Waiting in open air it is not very comfortable in the UNA, as you may imagine.

Constraints

- $2 \leq N \leq 100\,000$ .
- $1 \leq P, H_i \leq 10^6$  for each  $i = 0 \dots N - 1$ .

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.

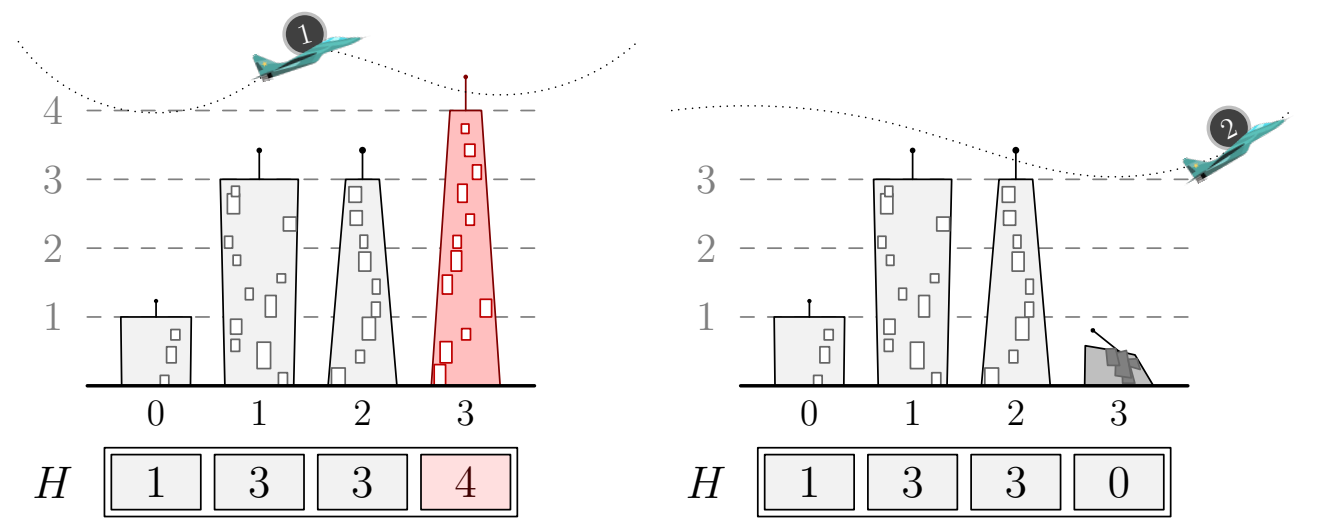
- Subtask 1 (0 points)      Examples.
- Subtask 2 (10 points)       $H_i = i + 1$ .
- Subtask 3 (15 points)       $N, P \leq 10$ .
- Subtask 4 (20 points)       $N, P \leq 1000$ .
- Subtask 5 (15 points)       $N \leq 1000$ .
- Subtask 6 (40 points)      No additional limitations.

Examples

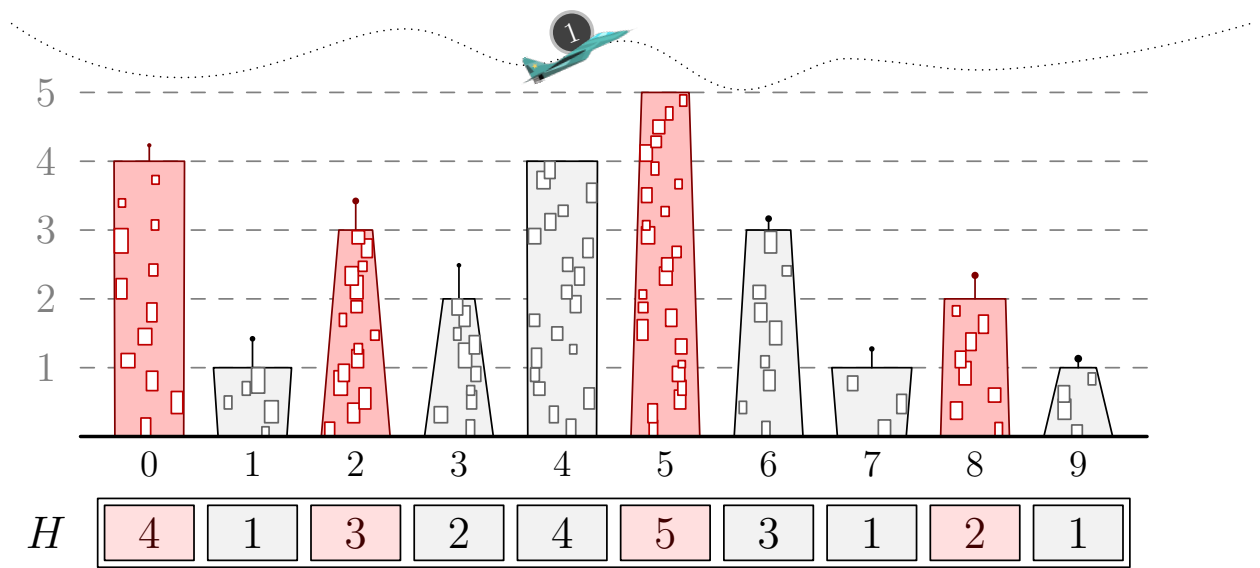
input	output
4 10 1 3 3 4	1
10 2 4 1 3 2 4 5 3 1 2 1	8

Explanation

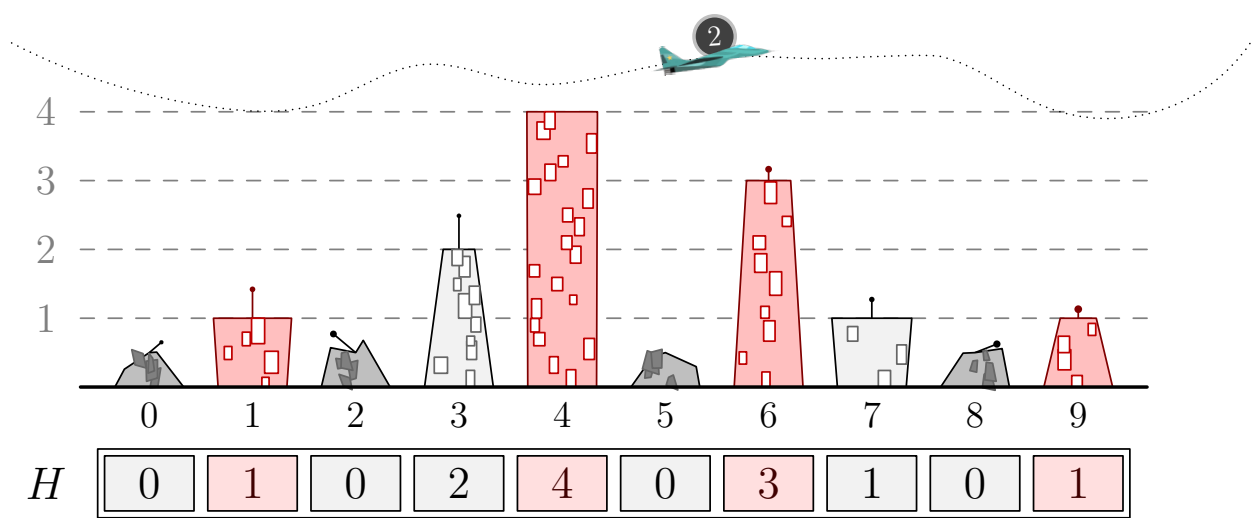
In the **first sample case**, the first plane destroys house 4, then the following planes cannot do anything.



In the **second sample case**, the first plane can destroy 4 different houses.



Then, the second plane destroys 4 additional houses.



There are no other planes, so two houses will still stand.

