HOME   TOP   CATALOG   CONTESTS   GYM   PROBLEMSET   GROUPS   RATING   EDU   API   CALENDAR   HELP

PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   ROOM   STANDINGS   CUSTOM INVOCATION

## C. Basil's Garden

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

There are $n$ flowers in a row, the $i$-th of them initially has a positive height of $h_i$ meters.

Every second, the wind will blow from the left, causing the height of some flowers to decrease.

Specifically, every second, for each $i$ from $1$ to $n$, in this order, the following happens:

- If $i = n$ or $h_i > h_{i+1}$, the value of $h_i$ changes to $\max(0, h_i - 1)$.

How many seconds will pass before $h_i = 0$ for all $1 \le i \le n$ for the first time?

### Input

Each test contains multiple test cases. The first line of input contains a single integer $t$ ( $1 \le t \le 10^4$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains a single integer $n$ ($1 \le n \le 10^5$) — the number of flowers.

The second line of each test case contains $n$ integers $h_1, h_2, \ldots, h_n$ ($1 \le h_i \le 10^9$) — the heights of the flowers.

It is guaranteed that the sum of $n$ over all test cases does not exceed $10^5$.

### Output

For each test case, output a single integer — the number of seconds that will pass before $h_i = 0$ for all $1 \le i \le n$.

### Example

| input |
|---|
| 4 |
| 3 |
| 1 1 2 |
| 2 |
| 3 1 |
| 1 |
| 9 |
| 5 |
| 7 4 4 3 2 |

| output |
|---|
| 4 |
| 3 |
| 9 |
| 7 |

### Note

In the first test case, the flower heights change as follows:
$[1, 1, 2] \rightarrow [1, 1, 1] \rightarrow [1, 1, 0] \rightarrow [1, 0, 0] \rightarrow [0, 0, 0]$.

In the second test case, the flower heights change as follows:
$[3, 1] \rightarrow [2, 0] \rightarrow [1, 0] \rightarrow [0, 0]$.

### EPIC Institute of Technology Round Summer 2024 (Div. 1 + Div. 2)

**Finished**

Practice

→ **Virtual participation**

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ **Clone Contest to Mashup**

You can clone this contest to a mashup.

Clone Contest

→ **Submit?**

Language:   GNU G++20 13.2 (64 bit, wi ✔)
Choose file:   Choose File   No file chosen
Submit

→ **Problem tags**

dp   greedy

No tag edit access

→ **Contest materials**

- Announcement (en)  ✕
- Video Tutorial (en)  ✕
- Tutorial #2 (en)  ✕