Shasha City Trasnsport Company

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	64 megabytes

Lucky Fuv lives in Shasha's city. Shasha's city has N bridges. The bridges are of different length but are adjacent to each other. The length of the i^{th} bridge is l_i. Now, Shasha's city is famous for car transport. On the i^{th} bridge, there are exactly l_i cars. Lucky Fuv is the manager of the car transport system. He uses the following system for transport of cars:
On each day, he transports all the cars that are on the boundary(since it is easy to carry them). Once a bridge is empty, it is destroyed. We can say that a car is on the boundary if there is at least one side(out of top, right, left, bottom) that is empty(there is no car at that place). Please note that the bridges are parallel and adjacent to each other.

Lucky Fuv wants to go for vacation but he cannot leave until all the bridges are destroyed. You have to tell him the minimum number of days after which he can go for a vacation.

Input

The first line contains an integer $N(1 \leq N \leq 10^5)$ denoting the number of bridges.
The second line contains N space separated integers - $l_i(1 \leq l_i \leq 10^9)$ denoting the length of the bridge l_i.

Output

Output a single integer telling Fucky Luv the minimum number of days it would take to destroy all bridges.

Example

standard input	standard output
5 3 4 1 2 5	2

Note

In the sample test case, let us consider the number of cars on each bridge after day 1.
Bridge 1: 0 (since all the cars are on boundary).
Bridge 2: 1 (since the top 3 cars are on boundary).
Bridge 3: 0 (since the only car is on boundary).
Bridge 4: 1 (since the top-most car is on boundary).
Bridge 5: 0 (since all the cars on boundary).
So, bridge 1, 3 and 5 will be destroyed on day 1.
Now, all the remaining cars on day 2 will be boundary cars, so they will be transported and all the bridges will be destroyed on day 2. Thus, the answer is 2.