

## 2 Cars

It is 2025 and Microhard, the Johnny come lately of all technological inventions (famous for its Lame music player, Scarface tablet computer, Boing search engine, ...), has woken up to the fact that its arch-rival Moogole Inc has taken the lead in developing self-driving cars. Convinced that some of its customers, locked in since 1985 due to support for legacy software, will force their employees to use their cars, Microhard has decided to enter the market for self driving cars. Happy Singh, the former developer of Boing, has now been put in charge of managing the test-tracks for selfdriving cars.

Happy Singh has a list giving the order in which the cars can enter the test tracks. He also knows the maximum permissible speed of each car. There are two long linear test tracks and he can assign each car to one of the two tracks. The cars assigned to a track enter it in the order in which they appeared in the original list.

During the test, each car tries to travel as fast as possible but no overtaking is permitted. So each car travels at a speed that is given by the minimum of its maximum permissible speed and the speed of the car in front of it. A car is happy if it travels at its maximum permissible speed.

Happy Singh is a car lover and would like as many as possible of his cars to be happy. His aim is to assign the cars to the two tracks in such a way that his happiness is maximized.

Consider the case where there are 6 cars and their maximum speeds are 4, 6, 2, 7, 1, 3 (where the left most car with speed 4 is at the head of the list and the car with speed 3 is at the tail.) If we assign cars with speeds 7, 1, 3 to one track and cars with speeds 4, 6, 2 to the other then clearly four cars (those with speeds 4, 2, 1 and 3) will be happy. On the other hand, if we assign cars 4, 2, 7, 1 to one track and 6, 3 to the other then the cars with speeds 4, 2, 1, 6 and 3 are happy. Thus, Happy Singh would prefer the latter choice. You can try to verify that Happy Singh cannot arrange for the happiness of more than 5 cars in this case.

Happy would like to determine the maximum number of cars that can be happy. Working for Microhard has rusted his brains and so he needs your help in solving this problem.

### Input format

- First line consists of a single integer  $N$  giving the number of cars.
- The next  $N$  lines each describe the maximum permissible speed of the the cars  $1 \dots N$  in that order.

### Output format

Output a single integer giving the maximum possible number of cars that can be happy.

## Test Data

Each car has a maximum speed in the range  $1 \dots 10^9$ . It is guaranteed that all cars have distinct maximum speeds.

- Subtask 1 (15 marks) :  $1 \leq N \leq 20$
- Subtask 2 (30 marks) :  $1 \leq N \leq 200$
- Subtask 3 (55 marks) :  $1 \leq N \leq 5000$

## Sample Input

6  
4  
6  
2  
7  
1  
3

## Sample Output

5

## Limits

- *Time limit:* 3 seconds
- *Memory limit:* 128 MB