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D. World is Mine

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Alice and Bob are playing a game. Initially, there are n cakes, with the i -th cake having a *tastiness* value of a_i .

Alice and Bob take turns eating them, with Alice starting first:

- In her turn, Alice chooses and eats any remaining cake whose tastiness is **strictly greater** than the **maximum** tastiness of any of the cakes she's eaten before that. Note that on the first turn, she can choose any cake.
- In his turn, Bob chooses any remaining cake and eats it.

The game ends when the current player can't eat a suitable cake. Let x be the number of cakes that Alice ate. Then, Alice wants to maximize x , while Bob wants to minimize x .

Find out how many cakes Alice will eat if both players play optimally.

Input

Each test contains multiple test cases. The first line of input contains a single integer t ($1 \leq t \leq 500$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains a single integer n ($1 \leq n \leq 5000$) — the number of cakes.

The second line of each test case contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq n$) — the tastiness values of the cakes.

It is guaranteed that the sum of n over all test cases does not exceed 5000.

Output

For each test case, output a single integer — the number of cakes Alice will eat if both players play optimally.

Example

input	Copy
9	
4	
1 4 2 3	
3	
1 1 1	
5	
1 4 2 3 4	
4	
3 4 1 4	
1	
1	
8	
4 3 2 5 6 8 3 4	
7	
6 1 1 3 5 3 1	
11	
6 11 6 8 7 5 3 11 2 3 5	
17	
2 6 5 3 9 1 6 2 5 6 3 2 3 9 6 1 6	

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.

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Language: GNU G++20 13.2 (64 bit, wi)

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→ Problem tags

[dp](#) [games](#) [greedy](#)


No tag edit access

→ Contest materials

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

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 **output** Copy

2
1
3
2
1
3
2
4
4

Note

In the first test case, one possible sequence of turns is:

1. Alice eats a cake with a tastiness value of 1. The remaining cakes are $[4, 2, 3]$.
2. Bob eats a cake with a tastiness value of 2. The remaining cakes are $[4, 3]$.
3. Alice eats a cake with a tastiness of 3. The remaining cakes are $[4]$.
4. Bob eats a cake with a tastiness value of 4. The remaining cakes are $[\]$.
5. Since there are no more cakes left, the game ends.

In the second test case, one possible sequence of turns is:

1. Alice eats a cake with a tastiness value of 1. The remaining cakes are $[1, 1]$.
2. Bob eats a cake with a tastiness value of 1. The remaining cakes are $[1]$.
3. Since Alice has already eaten a cake with a tastiness value of 1, she cannot make a turn, so the game ends.

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