

## C. Weird Vendors

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

After a year of anticipation, the first CPL match is set to begin today. Priya is very excited to go to the stadium to watch the game that she even forgot to eat. She felt hungry in the middle of the game at the stadium. The vendors over there were little strange where they offered eatables for solving a problem given by them rather than for money.



**Money**

**Solve  
problem**

They give a sequence of  $n$  integers  $a_1, a_2, a_3, \dots, a_n$ . Your task is to do a certain number of operations to convert the given sequence into a popcorn sequence.

Here, a sequence  $b$  is a popcorn sequence if, for each element  $x$  in  $b$ , the value  $x$  occurs exactly  $x$  times in  $b$ .

In one operation, you can do either of the following:

- you can add an element to the sequence which already exists. formally, if you are adding element  $x$ , then  $x$  must be present in the sequence before addition.
- you can replace that particular element with an element already present in the sequence.

The vendors want you to find the **minimum** number of operations required to make it a popcorn sequence (possibly 0). If it is impossible to make it a popcorn sequence, then output -1. Can you help Priya in solving this problem?

### Input

The first line contains a single integer  $t$  ( $1 \leq t \leq 100$ ) — the number of test cases. The description of test cases follows.

The first line of each test case contains a single integer  $n$  ( $1 \leq n \leq 100$ ) — the length of the array.

The second line of each test case contains  $n$  integers  $a_1, a_2, \dots, a_n$  ( $1 \leq a_i \leq 100$ ) — the elements of the array.

### Output

For each test case, Print the minimum number of operations required to turn a given sequence into a popcorn sequence (possibly 0). If it's impossible to turn the given sequence into a popcorn sequence, then print -1

### Example

### **Shaastra Programming Contest Prelims**

**Contest is running**

00:38:57

Contestant



→ **Submit?**

Language: Java 17 64bit ▼

Choose file: Choose file No file chosen

Submit

**input**

Copy

```
4
3
1 2 3
4
1 1 3 1
4
2 2 2 2
7
20 85 100 41 76 49 36
```

**output**

Copy

```
1
2
-1
19
```

**Note**

1. In the first test case, you can replace 3 with 2, and the sequence becomes  $[1, 2, 2]$ , which is a popcorn sequence.
2. In the second test case, you can replace the first two 1s with 3, and the sequence becomes  $[3, 3, 3, 1]$ , which is a popcorn sequence.
3. In the third test case, replacing 2 with 2 doesn't cause any change, and the addition of 2 to the sequence increases the count of 2s in the sequence, so it's impossible to turn the given sequence  $[2, 2, 2, 2]$  into a popcorn sequence.

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