



Tara's Beautiful Permutations

Problem

Submissions

Leaderboard

Discussions

Tara has an array, A , consisting of n integers where each integer occurs *at most* 2 times in the array.

Let's define P to be a permutation of A where p_i is the i^{th} element of permutation P . Tara thinks a permutation is *beautiful* if there is no index i such that $p_i - p_{i+1} = 0$ where $i \in [0, n - 1)$.

You are given q queries where each query consists of some array A . For each A , help Tara count the number of possible beautiful permutations of the n integers in A and print the count, modulo $10^9 + 7$, on a new line.

Note: Two permutations, P and Q , are considered to be *different* if and only if there exists an index i such that $p_i \neq q_i$ and $i \in [0, n)$.

Input Format

The first line contains a single integer, q , denoting the number of queries. The $2 \cdot q$ subsequent lines describe each query in the following form:

1. The first line contains an integer, n , denoting the number of elements in array A .
2. The second line contains n space-separated integers describing the respective values of a_0, a_1, \dots, a_{n-1} in array A .

Constraints

- $1 \leq a_i \leq 10^9$
- Each integer in A can occur at most 2 times.

For **40%** of the maximum score:

- $1 \leq q \leq 100$
- $1 \leq n \leq 1000$
- The sum of n over all queries does not exceed 10^4 .

For **100%** of the maximum score:

- $1 \leq q \leq 100$
- $1 \leq n \leq 2000$

Output Format

For each query, print the the number of possible beautiful permutations, modulo $10^9 + 7$, on a new line.

Sample Input 0

```
3
3
1 1 2
2
1 2
4
1 2 2 1
```

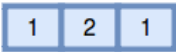
Sample Output 0

1
2
2

Explanation 0

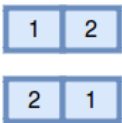
We perform the following $q = 3$ queries:

1. Array $A = [1, 2, 1]$ and there is only one good permutation:



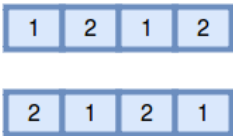
Thus, we print the result of $1 \bmod (10^9 + 7) = 1$ on a new line.

2. Array $A = [1, 2]$ and there are two good permutations:

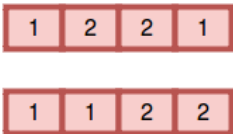


Thus, we print the result of $2 \bmod (10^9 + 7) = 2$ on a new line.

3. Array $A = [1, 2, 2, 1]$ and there are two good permutations:



For demonstration purposes, the following two permutations are invalid (i.e., not good):



Because we only want the number of good permutations, we print the result of $2 \bmod (10^9 + 7) = 2$ on a new line.

[f](#) [t](#) [in](#)

Contest ends in 9 hours

Submissions: 44
Max Score: 60
Difficulty: Hard

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Current Buffer (saved locally, editable) ⓘ ↻

C++14

```
1 #include <bits/stdc++.h>
2
3 using namespace std;
4
5 vector<string> split_string(string);
6
7 /*
8  * Complete the beautifulPermutations function below.
9  */
10 int beautifulPermutations(vector<int> arr) {
11     /*
12      * Write your code here.
13      */
14 }
15
16
17 int main()
18 {
19     vector<string> split_string(string input_string) {}
20 }
```

 [Upload Code as File](#) ☐ Test against custom input

Run Code

Submit Code