

Codeforces Round 873 (Div. 1)

A. Counting Orders

1 second, 256 megabytes

You are given two arrays a and b each consisting of n integers. All elements of a are pairwise distinct.

Find the number of ways to reorder a such that $a_i > b_i$ for all $1 \leq i \leq n$, modulo $10^9 + 7$.

Two ways of reordering are considered different if the resulting arrays are different.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \leq t \leq 10^4$). The description of the test cases follows.

The first line of each test case contains a single integer n ($1 \leq n \leq 2 \cdot 10^5$) — the length of the array a and b .

The second line of each test case contains n distinct integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^9$) — the array a . It is guaranteed that all elements of a are pairwise distinct.

The second line of each test case contains n integers b_1, b_2, \dots, b_n ($1 \leq b_i \leq 10^9$) — the array b .

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output the number of ways to reorder array a such that $a_i > b_i$ for all $1 \leq i \leq n$, modulo $10^9 + 7$.

input

```
5
6
9 6 8 4 5 2
4 1 5 6 3 1
3
4 3 2
3 4 9
1
2
1
3
2 3 4
1 3 3
12
2 3 7 10 23 28 29 50 69 135 420 1000
1 1 2 3 5 8 13 21 34 55 89 144
```

output

```
32
0
1
0
13824
```