**A - 1D Matching**

Time limit : 2sec / Memory limit : 256MB

Score : 500 points

**Problem Statement**

There are *N* computers and *N* sockets in a one-dimensional world. The coordinate of the *i*-th computer is *ai*, and the coordinate of the *i*-th socket is *bi*. It is guaranteed that these 2*N* coordinates are pairwise distinct.

Snuke wants to connect each computer to a socket using a cable. Each socket can be connected to only one computer.

In how many ways can he minimize the total length of the cables? Compute the answer modulo 109+7.

**Constraints**

* 1≤*N*≤105
* 0≤*ai*,*bi*≤109
* The coordinates are integers.
* The coordinates are pairwise distinct.

**Input**

The input is given from Standard Input in the following format:

*N*

*a*1

:

*aN*

*b*1

:

*bN*

**Output**

Print the number of ways to minimize the total length of the cables, modulo 109+7.

**Sample Input 1**

Copy

2

0

10

20

30

**Sample Output 1**

Copy

2

There are two optimal connections: 0−20,10−30 and 0−30,10−20. In both connections the total length of the cables is 40.

**Sample Input 2**

Copy

3

3

10

8

7

12

5

**Sample Output 2**

Copy

1