Problem D. Merge

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 mebibytes

Snuke wants to create an array R by merging two arrays P and Q. Formally, the array R is obtained in the following way:

- Initially, the array R is empty.

- While at least one of P and Q is non-empty, choose a non-empty array (P or Q), pop its leftmost element, and attach it to the right end of R.

You are given P and Q, they are permutations of $1, \ldots, N$. Compute the number of possible distinct arrays Snuke can create, and print the answer modulo $10^9 + 7$.

Input

First line of the input contains one integer N ($1 \le N \le 2000$). Second line contains N integers P_i ($1 \le P_i \le N$, $P_i \ne P_j$ if $i \ne j$). Third line contains N integers Q_i ($1 \le Q_i \le N$, $Q_i \ne Q_j$ if $i \ne j$).

Output

Print the answer in a single line.

Examples

standard input	standard output
4 3 1 2 4 3 1 2 4	14
10 5 7 3 1 6 4 2 10 9 8 2 8 9 1 5 6 10 4 3 7	127224