# E. Desk Disorder

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

A new set of desks just arrived, and it's about time! Things were getting quite cramped in the office. You've been put in charge of creating a new seating chart for the engineers. The desks are numbered, and you sent out a survey to the engineering team asking each engineer the number of the desk they currently sit at, and the number of the desk they would like to sit at (which may be the same as their current desk). Each engineer must either remain where they sit, or move to the desired seat they indicated in the survey. No two engineers currently sit at the same desk, nor may any two engineers sit at the same desk in the new seating arrangement.

How many seating arrangements can you create that meet the specified requirements? The answer may be very large, so compute it modulo $1000000007 = 10^9 + 7$.

## Input

Input will begin with a line containing $N$ ($1 \leq N \leq 100000$), the number of engineers.

$N$ lines follow, each containing exactly two integers. The $i$-th line contains the number of the current desk of the $i$-th engineer and the number of the desk the $i$-th engineer wants to move to. Desks are numbered from $1$ to $2 \cdot N$. It is guaranteed that no two engineers sit at the same desk.

## Output

Print the number of possible assignments, modulo $1000000007 = 10^9 + 7$.

### Examples

| input |
| --- |
| 4<br>1 5<br>5 2<br>3 7<br>7 3 |
| **output** |
| 6 |

| input |
| --- |
| 5<br>1 10<br>2 10<br>3 10<br>4 10<br>5 5 |
| **output** |
| 5 |

## Note

These are the possible assignments for the first example:

- 1 5 3 7
- 1 2 3 7
- 5 2 3 7
- 1 5 7 3
- 1 2 7 3