Spanning Tree

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

We generate a spanning tree of n nodes according to the following random process:

Initially, there are no edges connecting the n nodes.

Then process the following $n-1$ operations:

- For the i-th operation, two integers a_i and b_i will be input, and it's guaranteed that the two nodes are not connected before.
- Select a node u_i from the connected block where a_i is located with uniform probability, then select a node v_i from the connected block where b_i is located with uniform probability, and then add an edge to connect u_i and v_i .

It can be proved that no matter which two nodes are selected in each operation, after all operations are processed, a spanning tree of n nodes will be formed.

Now given a spanning tree of n nodes. What is the probability that the spanning tree formed by the random process is exactly this spanning tree?

You only need to output the value of the probability modulo 998244353 .

Please note that the probability could be 0, which means that you can never generate this spanning tree.

Input

The first line contains a single integer n $(1 \le n \le 10^6)$, representing the number of nodes.

For the following $n-1$ lines, each line contains two integers a_i, b_i $(1 \le a_i, b_i \le n, a_i \ne b_i)$, representing the i-th operation, and it's guaranteed that the two nodes are not connected before.

For the following $n-1$ lines, each line contains two integers c_i, d_i $(1 \le c_i, d_i \le n, c_i \ne d_i)$, representing an edge of the given spanning tree, and it's guaranteed that the given edges forms a spanning tree.

Output

One line containing one integer, representing the value of the probability modulo 998244353 .

Example

standard input	standard output
3 1 2 1 3 1 2 1 3	499122177