Problem D. Do The Good Assignment

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	1024 mebibytes

There is a tree with N nodes numbered from 1 to N. For each $i = 1, \ldots, N-1$, the i-th edge connects nodes u_i and v_i.

You are going to paint all nodes in N distinct colors. Colors are represented by integers from 1 to N.

The assignment of colors is called *good* if it is possible to complete the following operation $N-1$ times repeatedly:

- Select a pair of colors (A, B) such that $|A - B| = 1$ and there exists an edge which connects a node painted in color A and a node painted in color B.
- Change the color of all nodes currently painted in color A to color B.

Your task is to count the number of good assignments of colors modulo 998 244 353.

Input

The first line contains a single integer N, the number of nodes ($2 \le N \le 2000$).

Each of the next $N-1$ lines consists of two integers, u_i and v_i, describing an edge of the tree ($1 \le u_i, v_i \le N$).

The given graph is guaranteed to be a tree.

Output

Output in a line the number of good assignments of colors modulo 998 244 353.

Examples

standard input	*standard output*
4 1 2 2 3 3 4	16
4 1 2 1 3 1 4	24