Problem C
Colorful Pictures

Time limit: 8 seconds

Memory limit: 2048 megabytes

Problem Description

Carol is a prestigious painter in the PCCA kingdom. Unfortunately, she has to spend time in quarantine during the pandemic, so she comes up with the game described below.

At the beginning of the game, she paints a tree with n nodes numbered $1, 2, \ldots, n$. There are $n-1$ edges, i-th of which is (u_i, v_i). She also draws a picture with n squares numbered $1, 2, \ldots, n$. The i-th square is colored with color $a_i = i$.

Then she can perform the following operation any number of times (possibly zero): Select an existing edge (u_i, v_i) from the tree, swap the colors in the square u_i and v_i (that is, swap a_{u_i} and a_{v_i}) and remove the edge (u_i, v_i) from the tree.

How many different pictures can be painted after performing any number of operations? Two pictures are considered different if a square i is painted in different colors in the two pictures.

Input Format

The first line of the input contains an integer n. The i-th of the following $n-1$ lines contain two integers u_i, v_i.

Output Format

Print the number of different pictures can be painted after performing any number of the operations. Output the result modulo 998244353.

Technical Specification

- $1 \le n \le 1.5 \times 10^5$
- $1 \le u_i, v_i \le n$
- It is guaranteed that the $n-1$ edges form a tree.

Sample Input 1

```
4
2 1
2 3
2 4
```

Sample Output 1

```
16
```

Sample Input 2

```
2
1 2
```

Sample Output 2

```
2
```

Sample Input 3

```
23
3 13
9 14
8 20
11 4
8 22
6 10
6 2
18 8
19 8
8 9
4 8
4 5
3 8
23 8
15 12
1 14
16 8
2 12
7 6
8 21
8 6
17 8
```

Sample Output 3

```
616298673
```