Easy Diameter Problem

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2.5 seconds
Memory limit:	1024 megabytes

Randias is given a tree with n vertices. He does the following operation until the tree contains 0 vertices:

- choose a vertex which is an endpoint of any **diameter**, and then remove it.

He asks you to find the number of removal orders modulo $10^9 + 7$.

Note that two orders are considered different if and only if there exists i $(1 \le i \le n)$, where the i-th vertex being removed in one order is different from the i-th vertex being removed in the other order.

Recall that a vertex u is an endpoint of some diameter if there exists a vertex v such that $\texttt{dis}(u, v) \ge \texttt{dis}(i, j)$ for any pair of vertices i and j, where $\texttt{dis}(x, y)$ represents the number of edges in the shortest path from x to y.

Input

The first line contains one integer n $(1 \le n \le 300)$, denoting the number of vertices of the tree.

The following $n - 1$ lines, each line contains two integers u and v $(1 \le u, v \le n,\ u \ne v)$, denoting an edge connecting u and v.

It is guaranteed that the edges form a tree.

Output

Print a single integer, denoting the number of removal orders modulo $10^9 + 7$.

Examples

standard input	standard output
3 1 2 3 2	4
5 4 1 4 5 1 2 1 3	28
7 5 7 2 5 2 1 1 6 3 6 4 1	116

Note

For the first example, [1, 2, 3], [1, 3, 2], [3, 1, 2], [3, 2, 1] are possible removal orders.