Task: AUT
Automorphisms

UFAM Workshop, contest #6. Source file `aut.*` Available memory: 128 MB.

Tree is an undirected graph in which every two vertices are connected by exactly one straight path, i.e. a path without repeating vertices.

Consider a tree with n vertices numbered 1 through n. Let p be any permutation of the set of vertices in this tree (that is, a function $p : \{1, 2, \ldots, n\} \to \{1, 2, \ldots, n\}$). Permutation p is called *automorphism* if for any two vertices u, v of the tree, the vertices $p(u)$ and $p(v)$ are connected by an edge if and only if the vertices u and v are connected by an edge.

In this problem we are interested in the number of automorphisms of a given tree, more precisely, the remainder of dividing that number by 1 000 000 007.

Input

The first line of the input contains one integer n ($1 \leq n \leq 500\,000$), specifying the number of vertices in the tree. Each of the following $n - 1$ lines contains two integers u_i and v_i ($1 \leq u_i < v_i \leq n$), representing an edge joining the vertices u_i and v_i.

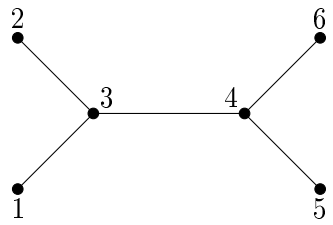
Output

On the first and only line of output, your program should output one integer: the remainder of dividing the number of automorphisms in the tree by 1 000 000 007.

Example

For the input data:

```
6
1 3
2 3
3 4
4 5
4 6
```



the correct result is:

```
8
```

Explanation of the example: The tree depicted has 8 automorphisms. Three examples are:

- $p(i) = i$ for $i = 1, 2, 3, 4, 5, 6$,
- $q(i) = i$ for $i = 1, 2, 3, 4$, $q(5) = 6$, $q(6) = 5$,
- $r(1) = 6$, $r(2) = 5$, $r(3) = 4$, $r(4) = 3$, $r(5) = 1$, $r(6) = 2$.