

Swapnil's Solar System

Time limit : 2 sec

Memory Limit : 256 MB

Problem Statement

Swapnil is the sun of many girls lives. As a greedy, selfish person he wants to keep them all for as long as he can but his capacity is very limited. To choose, a tournament was proposed. You are to solve the following problem for Swapnil's many girlfriends sake.

The problem is as follows : You are given a tree with N nodes. Each edge in this tree has a number associated with it. A path in this tree is a happy path if all adjacent edges in the path have different numbers. Also, a node is happy if every simple path with that node as one of its endpoints is a happy path. Let X be the number of happy nodes in the tree. You need to print X^{X^X} modulo $10^9 + 7$.

Input

The first line of input contains a single integer N ($1 \leq N \leq 10^5$).

Each of the next N - 1 lines contains 3 integers a_i, b_i, c_i indicating that there is an edge from a_i to b_i with number c_i on it.

It is guaranteed that the given edges form a tree.

Output

Output a single number : X^{X^X} modulo $10^9 + 7$ where X is the number of happy nodes.

Sample Input 1

```
8
1 3 1
2 3 1
3 4 3
4 5 4
5 6 3
6 7 2
6 8 2
```

Sample output 1

```
418385479
```

Sample Input 2

```
8
1 2 2
1 3 1
2 4 3
2 7 1
3 5 2
5 6 2
7 8 1
```

Sample output 2

0

Sample Input 2

9
1 2 2
1 3 1
1 4 5
1 5 5
2 6 3
3 7 3
4 8 1
5 9 2

Sample output 2

60594596

Explanation

For Sample 1 : Number of Happy Nodes = 4
For Sample 2 : Number of Happy Nodes = 0
For Sample 3 : Number of Happy Nodes = 5