



Kundu and Tree

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Problem

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Editorial

Kundu is true tree lover. Tree is a connected graph having N vertices and $N-1$ edges. Today when he got a tree, he colored each edge with one of either red (r) or black (b) color. He is interested in knowing how many triplets (a,b,c) of vertices are there, such that, there is atleast one edge having red color on all the three paths i.e. from vertex a to b , vertex b to c and vertex c to a . Note that (a,b,c), (b,a,c) and all such permutations will be considered as the same triplet.

If the answer is greater than $10^9 + 7$, print the answer modulo $(\%)\ 10^9 + 7$.

Input Format

The first line contains an integer N , i.e., the number of vertices in tree.

The next $N-1$ lines represent edges: 2 space separated integers denoting an edge followed by a color of the edge. A color of an edge is denoted by a small letter of English alphabet, and it can be either red (r) or black (b).

Output Format

Print a single number i.e. the number of triplets.

Constraints

$$1 \leq N \leq 10^5$$

A node is numbered between 1 to N .

Sample Input

```
5
1 2 b
2 3 r
3 4 r
4 5 b
```

Sample Output

```
4
```

Explanation

Given tree is something like this.



(2,3,4) is one such triplet because on all paths i.e 2 to 3, 3 to 4 and 2 to 4 there is atleast one edge having red color.

(2,3,5), (1,3,4) and (1,3,5) are other such triplets.

Note that (1,2,3) is NOT a triplet, because the path from 1 to 2 does not have an edge with red color.



Submissions: [1097](#)


Max Score: 80

Difficulty: Hard

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Java 7   

```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
```

Line: 1 Col: 1

 [Upload Code as File](#)☐ Test against custom input

Run Code

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