|

F. Help Pishabh Rant

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

At Kennai, a heated semifinal match between Celhi Dapitals (Short form CD) and Lumbai Mindians (Short form LM) is set to happen. As a result, the Celhi Dapitals team needs to travel to Kennai from Celhi.

Pishabh Rant, the captain of CD, made a tree with the towns (total n in number) between Celhi and Kennai as a node. He has given each town a unique positive integer number (1 for Celhi, 2 for Lumbai, and so on). Additionally, it is known that the majority of residents in any town can support either CD (represented by "C"), LM (represented by "L"), or none (represented by "N"). Also, it is guaranteed that at least one town supports CD and at least one town supports LM in the tree made by him. He is considering dropping one edge, which would divide the tree into two components, one of which would have no town that supports CD, while the other would contain no town that supports LM. Determine the total number of such edges in the tree.

NOTE: Here, it implies that if most residents in a town support a team, then the town itself supports the team.

Input

The first line contains a single integer $n(2 \le n \le 10^5)$ - number of towns

The next $n - 1$ line contains two integers $u(1 \le u \le 10^5)$ and $v(1 \le v \le 10^5)$ - which represents the edges.
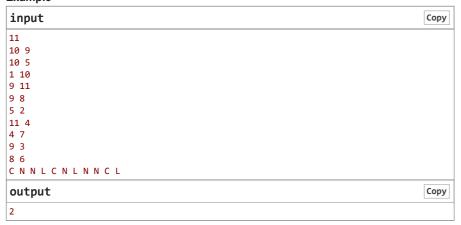
The last line contains n characters (consisting of 'C','L' or 'N'), in which the ith character corresponds to i^{th} numbered town.

It its guaranteed that the given edges form a tree.

Output

Print one integer - the total number of possible edges, whereby removing an edge splits the tree into two components such that there are no supporters of LM in one component. At the same time, there are no CD supporters in the other.
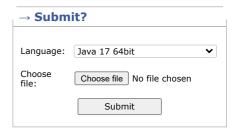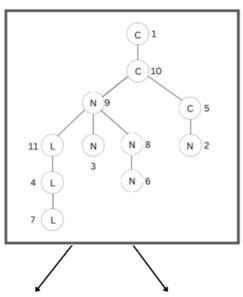
Example

input	Copy

```
11
10 9
10 5
1 10
9 11
9 8
5 2
11 4
4 7
9 3
8 6
C N N L C N L N N C L
```

output	Copy

```
2
```

Note

The above input can be represented in the tree form as shown below:

After removing the edge (11,9) from the main tree, three towns support LM in one component, and no town supports CD. Similarly, in the second component, three towns support CD, and no town support LM. Hence removing the edge (11,9) satisfies the given condition, and hence this edge can be counted for the answer.

Another option is to remove the edge (10,9), which would leave one component with three towns supporting LM, none supporting CD, and the other with three towns supporting CD and none supporting LM. This again fits the requirement, so the edge (10,9) can also be included in the answer.

There is no other edge apart from these two that satisfies the required condition. Hence the answer is 2.