Problem A. Unrooted Trie

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Recall the definition of a trie:

- A trie of size n is a rooted tree with n vertices and $(n-1)$ edges, where each edge is marked with a character;
- Each vertex in a trie represents a string. Let $s(x)$ be the string vertex x represents;
- The root of the trie represents an empty string. Let vertex u be the parent of vertex v, and let c be the character marked on the edge connecting vertex u and v, we have $s(v) = s(u) + c$. Here $+$ indicates string concatenation, not the normal addition operation.

We say a trie is valid, if the string each vertex represents is distinct.

Given an unrooted tree with n vertices and $(n-1)$ edges, where each edge is marked with a character, how many different vertices can be selected as the root of the tree so that the tree becomes a valid trie?

Input

There are multiple test cases. The first line of the input contains an integer T, indicating the number of test cases. For each test case:

The first line contains an integer n ($1 \le n \le 10^5$), indicating the size of the tree.

For the following $(n-1)$ lines, the i-th line contains two integers u_i, v_i ($1 \le u_i, v_i \le n$) and a character c_i separated by a space, indicating that there is an edge marked with a character c_i connecting vertex u_i and v_i. It's guaranteed that c_i will only be lower-case English letters.

It's guaranteed that the given graph is a tree, and the sum of n of all test cases will not exceed 10^6.

Output

For each test case output one line containing one integer, indicating the number of different vertices that can be selected as the root of the tree to make it a valid trie.

Example

standard input	standard output
2 6 3 1 a 3 2 a 3 4 b 4 5 c 4 6 d 6 3 1 a 3 2 a 3 4 b 5 4 c 6 4 c	2 0

Note

For the first sample test case, we can only select vertex 1 or vertex 2 as the root, otherwise $s(1)$ and $s(2)$ will be the same.

For the second sample test case, no matter which vertex we select as the root, $s(1)$ and $s(2)$, or $s(5)$ and $s(6)$ will be the same.