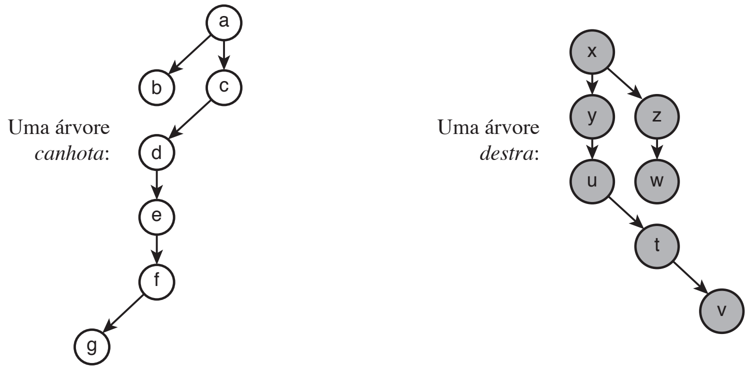
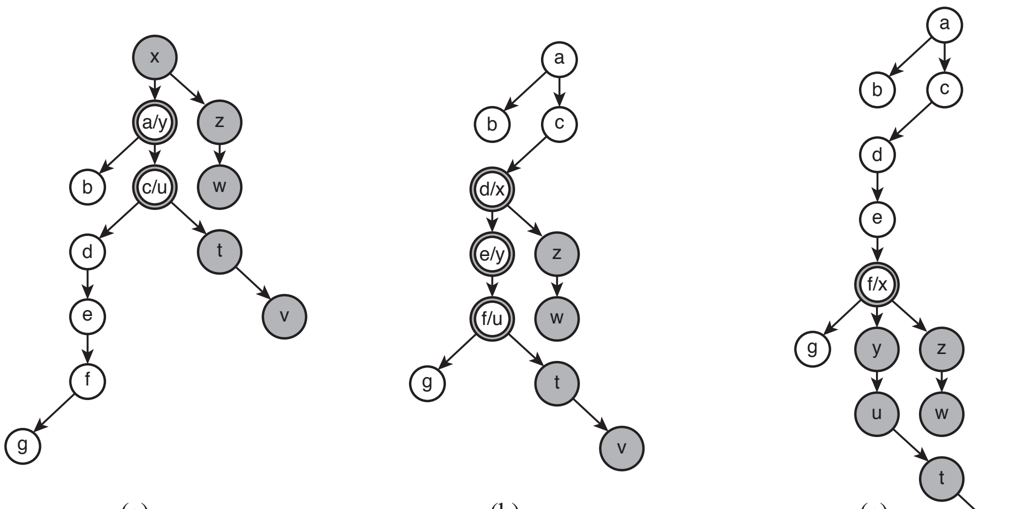
Problem F
Fusing trees

In computer theory, trees are strange objects: the root is at the top and leaves are on the bottom! A tree is a data structure composed of N vertices connected by $N-1$ edtes so that it is possible to get from one vertex to any other vertex following the edges. In a *rooted* tree, every edge connects a *parent* vertex and a *child* vertex. An unique vertex with no parent is named *root*. Thus, from the root it is possible to reach any other tree vertex following the edges in the direction of parent to child.

In a *ternary* tree each vertex can have up to tree child vertex, names *left*, *central*, and *right*. A *left-handed* ternary tree is a rooted ternary tree in which none vertex has a right child. A *right-handed* ternary tree is a rooted ternary tree in which none vertex has a left child. The root of a ternary tree is always a *central* vertex. The following figure shows examples of a left ternary tree and a right ternary tree.



An *overlap* S of a left-handed tree C and a right-handed tree D is a rooted ternary tree where the root is either the root of C, the root of D, or both roots of C and D overlaped, and it contains the structure of both trees overlaped. The figure below shows some trees formed by the overlap of the left-handed and the right-handed trees from the figure above.



(a) (b) (c)

Note that on Figure (a) the root is a vertex x (of right-handed tree) and the pairs of vertices (a, y) and (c, u) are overlaped. On figure (b) the root is the vertex a (of left-handed tree) and the pairs of vertices (d, x), (e, y) and (f, u) are overlaped. On figure (c) the root is also the vertex a (of left-handed tree) and the pair of vertices (f, x) are overlaped.

Given a left-handed tree and a right-handed tree, your tasks is to determine the minimum number required of vertices to build a ternary tree that is an overlap of the given trees.

Input

The first line of a test case contains an integer N represengint the number of vertices for the left-handed tree ($1 \leq N \leq 10^4$). Vetices on this tree are identified with the numbers from 1 to N, and the root is the vertex with number 1. Each of the next N lines contains three integer numbers I, L, and K, representing the identifier of vertex I, the identifier for the left child L of I and the identifier for the central child K of I ($0 \leq I, L, K \leq N$). The next line contains an integer M representing the number of vertices of the right-handed tree ($1 \leq M \leq 10^4$). Vertices on this tree are identified with the numbers from 1 to M, and the root is the vertex with number 1. Each of the next M lines contains three integer numbers P, Q, and R, representing the identifier for vertex P, the identifier for the central child Q of P and the identier for the right child R of P. ($0 \leq P, Q, R \leq N$). A value of zero represent an unexistant vertex (used when a vertex does not have one of its children).

Output

Print the minimum number of vertices of a tree that is an overlap of the two trees given in the input.

Examples

Input	Output
7 1 2 3 2 0 0 3 4 0 4 0 5 5 0 6 6 7 0 7 0 0 7 1 2 3 2 4 0 3 5 0 4 0 6 5 0 0 6 0 7 7 0 0 5 1 2 3 2 4 5 3 0 0 4 0 0 5 0 0 3 1 2 3 2 0 0 3 0 0 3 3 0 2 2 0 0 1 0 3 2 2 0 0 1 2 0	11 6 3