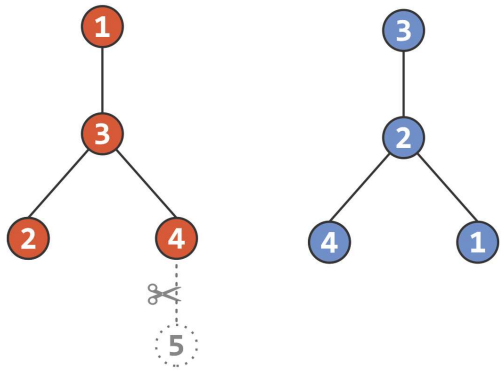
Problem F – Favorite Tree

After learning about tree isomorphism, Telio couldn't avoid but wonder in how many trees out there his favorite tree is hiding.

Given two trees, T_1 and T_2, can you help him determine if there is a subtree of T_1 isomorphic to T_2?

Two trees are isomorphic if it is possible to label their vertices in such a way that they become exactly the same tree. For instance, a tree having edges $\{(1,2),(2,3)\}$ is isomorphic to a tree having edges $\{(1,3),(3,2)\}$.

The figure below corresponds to the first sample, with tree T_1 on the left and tree T_2 on the right. The subtree of T_1 formed by all of its vertices but vertex 5 is isomorphic to T_2.



Input

There are two groups of lines, each group describing a tree. The first group describes the tree T_1, while the second group describes the tree T_2.

Within each group describing a tree, the first line contains an integer N ($1 \leq N \leq 100$) representing the number of vertices in the tree. Vertices are identified by distinct integers from 1 to N. Each of the next $N-1$ lines contains two integers U and V ($1 \leq U, V \leq N$ and $U \neq V$), indicating that the tree has the edge (U, V).

It is guaranteed that the input describes two valid trees.

Output

Output a single line with the uppercase letter "`Y`" if there is a subtree of T_1 that is isomorphic to T_2, and the uppercase letter "`N`" otherwise.

Sample input 1	**Sample output 1**
5 1 3 4 5 3 2 3 4 4 2 4 2 1 3 2	Y

Sample input 2	**Sample output 2**
4 2 3 2 1 2 4 4 1 2 2 3 3 4	N

Sample input 3	**Sample output 3**
1 1	Y