Problem C
Completely Independent Spanning Trees

Input File: *testdata.in*
Time Limit: 2 seconds

Problem Description

Let G be a graph with vertex set $V(G)$ and edge set $E(G)$. A *tree* is a connected and acyclic graph. A *leaf* of a tree is a node with degree 1. A *spanning tree* of a graph G is a subgraph of G that forms a tree of $n-1$ edges.

Two paths P_1 and P_2 between vertices x and y are called *openly disjoint* if no vertex appears in both paths except their end vertices. Let T_1, T_2,..., T_k be spanning trees of G. If, for any two vertices x, y of G, the paths from x to y in T_1, T_2,..., T_k are pairwise openly disjoint, then T_1, T_2,..., T_k are called *completely independent spanning trees* (abbreviated as CISTs) in G. Spanning trees $T_1, T_2, \ldots, T_k$ are CISTs in a graph G if and only if no edge appears in different spanning trees and, for any $v \in V(G)$, there is at most one T_i in which v is a nonleaf vertex. Given a set of spanning trees of G, you are asked to determine if they are CISTs.

Technical Specifications

1. The number of test cases is smaller than or equal to 10.
2. The number of edges of a spanning tree is smaller than or equal to 20.

Input Format

The first line contains an integer ($\leqslant 10$) indicating the number of test cases. In each test case, the first line contains an integer $2 \leqslant k \leqslant 10$ indicating the number of spanning trees. In the following k lines, each line contains the descripton of a spanning tree. An edge between vertices x and y are denoted by x-y and there is a blank between two edges.

Output Format

For each test case, output YES in a line if $T_1, T_2, \ldots, T_k$ are CISTs in a graph G, and NO otherwise.

Sample Input

```
4
4
1-2 1-3 1-4 1-5 5-6 5-7 5-8
2-3 2-4 2-5 2-6 6-1 6-7 6-8
3-4 3-7 3-5 3-6 7-8 7-1 7-2
4-8 4-5 4-6 4-7 8-1 8-2 8-3
2
1-5 2-3 2-4 4-5 4-6
1-3 1-4 1-6 2-6 3-5
2
1-5 2-3 2-4 4-5 4-6
1-3 1-6 4-6 2-6 3-5
2
1-5 2-3 2-4 4-5 4-6
2-5 1-3 2-6 4-1 3-6
```

Sample Output

```
YES
YES
NO
NO
```