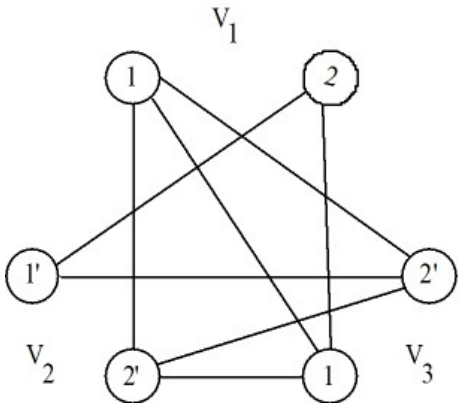
J Magic Graphs

INPUT	**STANDARD INPUT**
OUTPUT	**STANDARD OUTPUT**

A *k-partite graph* is a graph whose vertices can be partitioned into **K** disjoint sets so that no two vertices within the same set are adjacent. In this problem we consider a special version of a k-partite graph in which each disjoint set contains exactly two vertices. Let us call this graph magic graph. In what follows we characterize such magic graphs.

Let **P** be a set of positive labels {1, 2, 3, 4, ...} and **N** be a set of negative labels {1', 2', 3', 4',...}. Also let **L** = **P** ∪ **N**. A magic graph is a k-partite graph G = (V, E), where **V** is a set of vertices and E is a set of edges. We define $V = V_1 \cup V_2 \cup V_3 \cup \ldots \cup V_k$, where each $\mathbf{V_i} \subset L$ and $|V_i| = 2$. There is an edge $\{l_1, l_2\}$ in G if and only if l_1 and l_2 are in different vertex sets and l_1 and l_2 are not positive and negative labels of the same number. For instance, the following graph is a magic graph.



This graph is a tripartite magic graph. V_1 is {1, 2}. V_2 is {1', 2'}. V_3 is {1, 2'}. Be noted that multiple nodes may have the same label. For example, the node labeled 1 in V_1 is a not the same node as the node labeled 1 in V_3. The edges follow the rule above. For example, there are edges {1, 1} and {1, 2'} because the labels are in different vertex sets and they are not positive and negative labels of the same number. Observe that edge {1, 1'} does not exist because the two labels are positive and negative labels of the same number.

Given a k-partite magic graph G, your job is to find whether there exists a k-clique in G.

INPUT

First line of input is a number of test cases **T** ≤ 10.

The format of each test case is as follow.

- The first line contains the integer **K** (2 ≤ **K** ≤ 24 000).
- The following **K** lines describe set V_i, one per line. For each line, there are two labels separated by a blank space. A positive label is represented by a positive number and a negative label by a minus sign and a positive number.

OUTPUT

The output file contains **only** one line of strings of length **T** in {Y, N}*. That is, for each test case, if a given magic graph G has a k-clique, print **Y**, otherwise, print **N**.

EXAMPLE

Input	Output
2 3 1 2 -1 -2 1 -2 4 1 -2 1 2 -1 2 -1 -2	YN