Consider the problem called FUN COLORING below.

FUN COLORING PROBLEM
INSTANCE: A finite set U and sets $S_1, S_2, S_3, \ldots, S_m \subseteq U$ and $|S_i| \leq 3$.
PROBLEM: Is there a function $f : U \rightarrow \{RED, BLUE\}$ such that at least one member of each S_i is assigned a different color from the other members?

Given an instance of FUN COLORING PROBLEM, your job is to find out whether such function f exists for the given instance.

Input

In this problem $U = \{x_1, x_2, x_3, \ldots, x_n\}$. There are k instances of the problem. The first line of the input file contains a single integer k and the following lines describe k instances, each instance separated by a blank line. In each instance the first line contains two integers n and m with a blank in between. The second line contains some integers i's representing x_i's *in* S_1, each i separated by a blank. The third line contains some integers i's representing x_i's *in* S_2 and so on. The line $m + 2$ contains some integers i's representing x_i's *in* S_m. Following a blank line, the second instance of the problem is described in the same manner and so on until the k-th instance is described. In all test cases, $1 \leq k \leq 13$, $4 \leq n \leq 22$, and $3 \leq m \leq 111$.

Output

For each instance of the problem, if f exists, print a '`Y`'. Otherwise, print '`N`'. Your solution will contain one line of k '`Y`'s (or '`N`'s) without a blank in between. The first '`Y`' (or '`N`') is the solution for instance 1. The second '`Y`' (or '`N`') is the solution for instance 2, and so on. The last '`Y`' (or '`N`') is the solution for instance k.

Sample Input

```
2
5 3
1 2 3
2 3 4
1 3 5

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

Sample Output

```
YN
```