Problem C
Fun Coloring

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 $f : U \mapsto \{\text{RED, BLUE}\}$ 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 $6 \leq m \leq 111$.

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	Sample output
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	YN