Dancing Queen

Lea is a passionate dancer. She has a group of friends who dance together with her and sometimes they even participate in dancing competitions. The next contest is scheduled for tomorrow and Lea's team is working on its choreography. For each move they know which team member performs it best and only that person should dance it. Since all of them have a similar dancing level, it happened that each team member appears exactly two times on this list. Each member of the group may dance at most one of the moves during their performance, so they have to decide for each dancer which one of the two moves to include in their show.

There will also be judges at the competition. Surprisingly, the judges do not care that much about whether the dancers' moves fit together, but they want to see some special moves they really like. Each of the judges has a list with some moves he wants to see. Since the judges do not know which dancer is going to perform which move it may happen, that several or no moves assigned to one dancer appear on their lists.

Lea's team wants to make all judges happy for obvious reasons. Therefore, their plan is to perform dancing moves in a way that each judge sees at least one of the moves on his list. But is this even possible?

Input

The first line of the input contains an integer t. t test cases follow, each of them separated by a blank line.

Each test case begins with a line consisting of two integers m, the number of dancers, numbered from 1 to m and n, the number of judges. n lines follow. The i-th line contains the space-separated list of dance moves judge i likes most. Each of these lines contains several integers, where a positive integer a means the first move of dancer a and a negative integer $-b$ means the second move of dancer b. The judge's lines end with 0.

Output

For each test case, output one line containing "Case #i: x" where i is its number, starting at 1, and x is "yes" if there is an assignment of dancing moves such that each judge sees at east one move from his list or "no" otherwise. Each line of the output should end with a line break.

Constraints

- $1 \leq t \leq 20$
- $1 \leq m \leq 150$
- $1 \leq n \leq 350$
- Each judge has at most m entries on his list.

Sample Input 1

```
2
2 2
1 -2 0
1 2 0

2 3
1 0
-1 2 0
-2 -1 0
```

Sample Output 1

```
Case #1: yes
Case #2: no
```

Sample Input 2

```
6
5 2
0
-1 -4 0

4 3
0
3 0
-1 3 0

8 5
0
0
5 0
0
-4 0

9 6
1 4 -6 0
0
0
0
1 0
0

19 5
-1 -14 0
4 -15 0
9 12 0
7 10 -17 0
9 0

16 7
0
1 -12 0
0
14 0
15 0
12 0
0
```

Sample Output 2

```
Case #1: no
Case #2: no
Case #3: no
Case #4: no
Case #5: yes
Case #6: no
```