Muffin Queen

Lea is passionate about baking muffins. She has a group of friends who bake together with her and sometimes they even participate in baking competitions. The next contest is the famous "World Muffin Championship" scheduled for tomorrow and Lea's team is working on its list of recipes. All winners will be awarded the title "Muffin Queen" respectively "Muffin King" for the following year. For each type of muffins they know which team member bakes it best and only that person should bake it. Since all of them have a similar baking level, it happened that each team member appears exactly two times on this list. Each member of the group may bring at most one of his or her two types of muffins to the competition, so they have to decide for each baker which one of the two recipes to include.

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

Lea's team wants to make all judges happy for obvious reasons. Therefore, their plan is to bring muffins in a way that each judge sees at least one of the recipes 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 bakers, numbered from 1 to m, and n, the number of judges. n lines follow describing the judges. The i-th line contains the space-separated list of recipes judge i likes most. Each of these lines contains several integers, where a positive integer a means the first recipe of baker a and a negative integer $-b$ means the second recipe of baker 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 recipes such that each judge can try at least on type of muffin from his list or "no" otherwise. Each line of the output should end with a line break.

Constraints

- $1 \leq t \leq 20$
- $1 \leq m \leq 20$
- $1 \leq n \leq 100$
- 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

```
7
2 4
1 2 0
-2 0
-2 0
2 0

5 4
2 -3 0
-2 3 4 5 0
1 3 -4 0
-1 2 -3 -4 0

2 6
-1 0
-2 0
-2 0
-1 -2 0
1 2 0
-1 -2 0

7 1
-2 3 5 -7 0

3 4
-1 -3 0
1 -3 0
-2 3 0
2 3 0

7 3
1 -2 3 -4 5 0
1 2 6 0
-2 5 0

5 1
1 -3 4 -5 0
```

Sample Output 2

```
Case #1: no
Case #2: yes
Case #3: no
Case #4: yes
Case #5: no
Case #6: yes
Case #7: yes
```