Anyone who goes to a psychiatrist ought to have his head examined.

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Take any directed graph **D** with n vertices and m edges. You can make the Lying graph **E** of **B** in the following way. **E** will have m vertices, one for each edge of **D**. For example, if **D** has an edge **uv**, then **E** will have a vertex called **uv**. Now, whenever **D** has edges **uv** and **vw**, **E** will have an edge from vertex **uv** to vertex **vw**. There are no other edges in **E**.

You will be given a graph **E** and will have to determine whether it is possible for **E** to be the Lying graph of some directed graph **D**.

Input

The first line of input gives the number of cases, N ($N < 220$). N test cases follow. Each one starts with two lines containing m ($0 \leq m \leq 300$) and k. The next k lines will each contain a pair of vertices, **x** and **y**, meaning that there is an edge from **x** to **y** in **E**. The vertices are numbered from 0 to $m - 1$

Output

For each test case, output one line containing '`Case #`x`:`' followed by either '`Yes`' or '`No`', depending on whether **E** is a valid Lying graph or not. Note that **D** is allowed to have duplicate edges and self-edges.

Sample Input

```
4
2
1
0 1
5
0
4
3
0 1
2 1
2 3
3
9
0 1
0 2
1 2
1 0
2 0
2 1
0 0
1 1
2 2
```

Sample Output

```
Case #1: Yes
Case #2: Yes
Case #3: No
Case #4: Yes
```