City Roads

On her tour of Absurdistan, Lea visited Ancientia, an old city with many narrow roads. Some of its roads are one-way roads and can only be passed in one direction, while others are two-way roads and can be passed in two directions.

During the last "Tour d'Absurdistan", many racers went through this city and its roads. However, due to the narrow roads, many racers often blocked each other in the two-way roads, and due to the complex road network, they happened to cycle around needlessly, both of which which lead to traffic congestions and delays. To solve this problem, the city council of Ancientia wants to make the road network acyclic by turning all two-way roads into one-way roads.

Currently, the city council is still unsure if this is even possible to achieve. As Lea's problem solving skills are known throughout Absurdistan, they ask her to help. Given a road network with one-way (directed) and two-way (undirected) roads, they ask for an assignment of directions to the undirected roads such that the resulting road network (consisting only of directed roads) is acyclic. Can you tell Lea how to find such an assignment, if there exists one?

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 consists of a line containing three integers $n\ m\ l$. n is the number of intersections (indexed from from 1 to n). m is the number of one-way (directed) roads. l is the number of two-way (undirected) roads. m lines follow. The j-th line contains two integers $a_j\ b_j$, meaning there is a one-way (directed) road from intersection a_j to intersection b_j. l lines follow. The j-th line contains two integers $a_j\ b_j$, meaning there is a two-way (undirected) road between intersections a_j and b_j. Two intersections are connected by at most one road.

Output

For each test case, if there is no way to turn the road network into an acyclic graph by assigning directions to the two-way roads, print a line "Case #i: no". Otherwise, print a line "Case #i: yes", followed by l more lines, describing an assignment. The j-th line should contain two integers $a_j\ b_j$ if the previous two-way road between a_j and b_j (or b_j and a_j) is now a one-way road from a_j to b_j. If there are multiple valid assignments, any one of them is accepted.

Constraints

- $1 \leq t \leq 20$
- $1 \leq n \leq 1000$
- $0 \leq m + l \leq 10000$
- $1 \leq a_j, b_j \leq n$ for all $1 \leq j \leq m + l$
- $a_j \neq b_j$ for all $1 \leq j \leq m + l$
- There is at most one entry $a_j\ b_j$ or $b_j\ a_j$ for any $1 \leq a_j, b_j \leq n$.

Sample Input 1

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

4 4 1
1 2
4 3
3 1
2 4
2 3

8 5 6
2 1
3 2
2 6
4 5
5 8
1 4
2 5
3 7
4 8
6 7
6 8
```

Sample Output 1

```
Case #1: yes
1 3
4 2
2 3
Case #2: no
Case #3: yes
4 1
2 5
3 7
4 8
7 6
6 8
```

Sample Input 2

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

8 4 2
1 6
6 4
3 1
4 3
7 6
1 2

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

Sample Output 2

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