The Detective in Gotham

locked

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You are a detective in Gotham city and when a crime happens, you will get details about a place where you can find clues to resolve the crime.

This place (Hotel, Apartment, etc.), consist of N rooms & their doors can be opened only with a specific type of key. In every room there can be some clue and keys to open other rooms.

With the help of a secret informant when you are entering the place, you will have at least one key to unlock room(s) and list of rooms with following details about each room.

- Type of key need to open the door
- Types of keys which can be found in side.

With this information you need to figure out how to open all the doors and find all the clues.

For example, let's say there are 4 rooms in the place and you will start with exactly one key of type 1 & following details.

Room number	Key type to open the door	Key types inside
1	1	None
2	1	1,3
3	2	None
4	3	2

You can open all the rooms if you open the room in following order. 2, 1, 4, 3. But if you open room number 1, for first time, you will not have any key to open other rooms.

Keep in mind that,an used key cannot be used again.

Input Format

First line of input gives the number of cases you have to solve, T. T test cases follow.

Each test case begins with a single line containing two positive integers K and N. K is the number of keys you have at the begining & N is the number of rooms in the place.
This is followed by a line containing K integers, representing the types of the keys that you start with.
After that, there will be N lines, each representing a single room.
Each line will begin with integers Ti and Ki, indicating the key type needed to open the chest and the number of keys inside the chest. These two integers will be followed by Ki more integers, indicating the types of the keys contained within the chest.

Constraints

$1 \leq T \leq 50$
$1 \leq K$
$1 \leq N \leq 200$

Output Format

For each test case, output one line containing "Case #x: C1 C2 ... CN", where x is the case number (starting from 1), and where Ci represents the index (starting from 1) of the i th room that you should open.

If there are multiple ways of opening all the rooms, choose the "lexicographically smallest" way. i.e. make Ri small as possible. In above example, both **2, 1, 4, 3** and **2, 4, 3, 1** are will help to open all the doors. But print **2, 1, 4, 3** as the answer.

Sample Input 0

```
3
1 4
1
1 0
1 2 1 3
2 0
3 1 2
3 3
1 1 1
1 0
1 0
1 0
1 1
2
1 1 1
```

Sample Output 0

```
Case #1: 2 1 4 3
Case #2: 1 2 3
Case #3: IMPOSSIBLE
```

Explanation 0

please refer problem description

Difficulty: Medium

Rate This Challenge:

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C++

```cpp
#include <cmath>
#include <cstdio>
#include <vector>
#include <iostream>
#include <algorithm>
using namespace std;


int main() {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
    return 0;
}

```

Line: 1 Col: 1

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