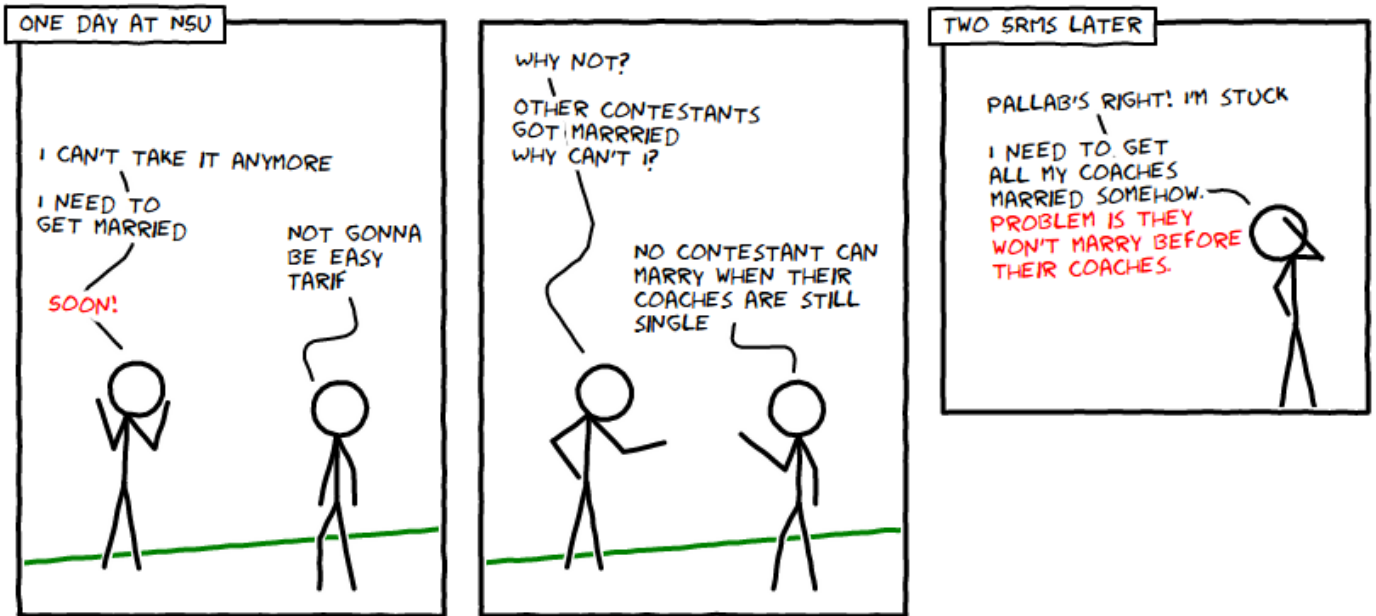


Tarif's Troubles

Tarif wants to get married. That's probably not news to you.



Fortunately all is not lost. As it turns out, a programmer may have more than one mentor/coach. For someone as desperate as Tarif, not all their coaches have to get married before them - if any one of their coaches is married, that coder can marry.

You are given a list of programmers and their coaches. One of them is Tarif. You need to find out the minimum number of people that have to get married before its Tarif's turn. Remember, helping Tarif also clears the path for you ;).

Note:

A contestant can have more than one coach, and a coach can have more than one student. But for this problem we guarantee that the input will not contain any circular dependencies (after all, we don't want Tarif to be single all his life).

Input format:

The first line contains the number T - the number of test cases ($T \leq 12$). Each test case starts with the number N which is the number of contestants ($2 \leq N \leq 50$). Then follow N lines, each containing the first name of a contestant (names are made up of the letters a-z and A-Z, with no spaces). After that, there is a line with the integer Y ($0 \leq Y \leq N$) followed by Y lines each having

the name of a married contestant (obviously Tarif is never married). This is followed by the integer M ($1 \leq M \leq 100$). The following M lines each contain two contestant names separated by a space. The first contestant is the coach of the second.

There will be exactly one contestant named Tarif.

Output format:

For each case, print a single line of the form "Case X: Y", where X is the case number and Y is the minimum number of people that need to get married before Tarif.

Sample Input:

```
2
7
Tarif
Samee
Fahim
Sunny
Satej
Pallab
Rasel
1
Rasel
10
Sunny Tarif
Samee Tarif
Samee Pallab
Satej Rasel
Satej Samee
Satej Fahim
Fahim Tarif
Fahim Pallab
Sunny Pallab
Rasel Samee
5
A
B
Tarif
C
D
1
```

A
4
A B
B C
C D
D Tarif

Sample Output:

Case 1: 1
Case 2: 3