

4798 Golfing with the Stars

Writers, actors and actresses, sport stars, and some famous geeks have donated their time to support the ACM “*Golfing with the Stars*” global charity event. Each star promised to play as many rounds of golf as needed so that each donor to the charity can play one, and only one, round of golf with one star from her/his nominated set of favorite stars. This problem is about a volunteer role for you to support this event.

Your task is to write a program that reads a listing of the names of the stars donating their time to an event, a listing of the donors along with their favorite stars, and then assigns stars to one or more donors, for a round of golf, in a way that minimizes the maximum number of golf rounds any star has to play.

Input

Input begins with an integer G on a line by itself, $1 \leq G \leq 20$, that represents the number of scenarios where each scenario describes a charity event.

Each event description begins with two integers N and M , separated by a single space, on a line by themselves. The integer N represents the number of stars and M represents the number of donors. Each of the next N lines contains the name of a star. Each of the following M lines, one line per donor, starts with the name of a donor followed by the names of her/his favourite stars, if any. Names are separated by a single space, and the name of a star cannot appear more than once in each line.

Each name (star or donor) consists of a single word; that is, a string with no white spaces. The names of stars and donors are all distinct from each other. $0 < N \leq 50$ and $0 < M \leq 2000$.

Output

For each charity event, print the event number (starting with 1, and using the format in the sample) followed by a single space and then an integer describing the maximum number of golf rounds any star has to play.

Sample Input

```
2
3 7
PrincessLeia
DarthVader
R2D2
grumpy DarthVader
sneezy PrincessLeia R2D2
dopey DarthVader PrincessLeia R2D2
doc DarthVader R2D2
sleepy DarthVader
bashful
happy PrincessLeia
3 6
CaptainKirk
MrSpock
Xindi
```

grumpy MrSpock
sneezy MrSpock
dopey MrSpock
doc MrSpock
sleepy MrSpock
happy CaptainKirk

Sample Output

Event 1: 2
Event 2: 5