
What Kind of Friends Are You?

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

Japari Park is a large zoo home to extant species, endangered species, extinct species, cryptids and some legendary creatures. Due to a mysterious substance known as *Sandstar*, all the animals have become anthropomorphized into girls known as *Friends*.

Kaban is a young girl who finds herself in Japari Park with no memory of who she was or where she came from. Shy yet resourceful, she travels through Japari Park along with Serval to find out her identity while encountering more *Friends* along the way, and eventually discovers that she is a human.

However, Kaban soon finds that it's also important to identify other *Friends*. Her friend, Serval, enlightens Kaban that she can use some questions whose expected answers are either "yes" or "no" to identify a kind of *Friend*.

To be more specific, there are n *Friends* need to be identified. Kaban will ask each of them q same questions and collect their answers. For each question, she also gets a full list of animals' names that will give a "yes" answer to that question (and those animals who are not in the list will give a "no" answer to that question), so it's possible to determine the name of a *Friend* by combining the answers and the lists together.

But the work is too heavy for Kaban. Can you help her to finish it?

Input

There are multiple test cases. The first line of the input is an integer T ($1 \leq T \leq 100$), indicating the number of test cases. Then T test cases follow.

The first line of each test case contains two integers n ($1 \leq n \leq 100$) and q ($1 \leq q \leq 21$), indicating the number of *Friends* need to be identified and the number of questions.

The next line contains an integer c ($1 \leq c \leq 200$) followed by c strings p_1, p_2, \dots, p_c ($1 \leq |p_i| \leq 20$), indicating all known names of *Friends*.

For the next q lines, the i -th line contains an integer m_i ($0 \leq m_i \leq c$) followed by m_i strings $s_{i,1}, s_{i,2}, \dots, s_{i,m_i}$ ($1 \leq |s_{i,j}| \leq 20$), indicating the number of *Friends* and their names, who will give a "yes" answer to the i -th question. It's guaranteed that all the names appear in the known names of *Friends*.

For the following n lines, the i -th line contains q integers $a_{i,1}, a_{i,2}, \dots, a_{i,q}$ ($0 \leq a_{i,j} \leq 1$), indicating the answer (0 means "no", and 1 means "yes") to the j -th question given by the i -th *Friend* need to be identified.

It's guaranteed that all the names in the input consist of only uppercase and lowercase English letters.

Output

For each test case output n lines. If Kaban can determine the name of the i -th *Friend* need to be identified, print the name on the i -th line. Otherwise, print "Let's go to the library!!" (without quotes) on the i -th line instead.

Example

standard input	standard output
2	Serval
3 4	Let's go to the library!!
5 Serval Raccoon Fennec Alpaca Moose	Let's go to the library!!
4 Serval Raccoon Alpaca Moose	Let's go to the library!!
1 Serval	Let's go to the library!!
1 Fennec	B
1 Serval	Let's go to the library!!
1 1 0 1	K
0 0 0 0	
1 0 0 0	
5 5	
11 A B C D E F G H I J K	
3 A B K	
4 A B D E	
5 A B K D E	
10 A B K D E F G H I J	
4 B D E K	
0 0 1 1 1	
1 0 1 0 1	
1 1 1 1 1	
0 0 1 0 1	
1 0 1 1 1	

Note

The explanation for the first sample test case is given as follows:

As Serval is the only known animal who gives a “yes” answer to the 1-st, 2-nd and 4-th question, and gives a “no” answer to the 3-rd question, we output “Serval” (without quotes) on the first line.

As no animal is known to give a “no” answer to all the questions, we output “Let's go to the library!!” (without quotes) on the second line.

Both Alpaca and Moose give a “yes” answer to the 1-st question, and a “no” answer to the 2-nd, 3-rd and 4-th question. So we can't determine the name of the third *Friend* need to be identified, and output “Let's go to the library!!” (without quotes) on the third line.