

Problem 6. Days of the week

Input file: `input.txt`
Output file: `output.txt`
Time limit: 1 second
Memory limit: 256 megabytes

The Architect has created a multiverse with M universes. In each universe, the day of the week has been set individually. The Architect also has N buttons. Each button is connected to a certain set of universes. Pressing a button shifts all of its connected universes one day forward.

The Architect is curious: is there such a configuration of weekdays in the universes which is unachievable by any sequence of pressing buttons? Help the Architect solve this problem.

All universes use the Earth week: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday. When shifting the day of the week forward: Monday changes to Tuesday, Tuesday to Wednesday, etc, and Sunday changes to Monday.

The Architect can press buttons any number of times and in any order. When a button is pressed, all its connected universes change instantly and simultaneously.

Input

The first line contains the integer T — the number of tests in the input file ($1 \leq T \leq 500$). It is followed by the tests.

Each test begins with a line containing two integers: N and M — the number of buttons and the number of universes, respectively ($1 \leq N, M \leq 500$).

The second line of the test contains the initial configuration: which day of the week has been initially set in each universe. The universes are numbered from 1 through M : days of the week in the universes in the configuration are written in the same order.

This is followed by descriptions of buttons. For each button, a separate line defines which universes it is connected to, in the following format: the first number K defines how many universes are connected, and the following K numbers denote the numbers of these universes ($0 \leq K \leq M$). It is guaranteed that the specified universe numbers are different for each button.

It is guaranteed that the total number of buttons over all tests does not exceed 500, and the total number of universes over all tests also does not exceed 500.

Output

For each test, print an answer in a separate line.

If all 7^M possible configurations of days of the week are obtainable, print the word **NO** as the answer. Otherwise print **YES**, followed by any unachievable configuration, separated by a space symbol.

Examples

input.txt	output.txt
3	NO
3 3	YES Saturday Thursday Thursday
Monday Saturday Thursday	NO
1 1	
1 2	
1 3	
3 3	
Friday Thursday Thursday	
1 3	
1 3	
1 3	
4 3	
Sunday Sunday Monday	
2 1 3	
3 1 2 3	
0	
1 3	