Class Picture

It’s time to take a class picture. As you know, this means all of the students will have to line up in a row and smile for the camera. Of course, like any class, there are pairs of people who don’t like each other. These people will refuse to stand beside each other for the picture. If possible, you must figure out an order in which to arrange the class so that nobody is standing beside a classmate they don’t like.

Input

Input will contain descriptions for a number of classes, one after another. Class descriptions will end with the end of file. The description of each class will begin with a number, n, giving the number of people in the class. This will be followed by the list of names for the n class members. This will be followed by an integer, m giving the number of pairs of people who don’t like each other. Finally, there will be a sequence of m pairs of class members, each a pair of different people that refuse to stand next to each other.

Each name will be a sequence of upper- and lower-case letters with no spaces. Each class will contain at least one person and at most 30.

Output

For each class, your program will print out a line giving a sequence of names that could serve as an order people could stand for the class picture. If no order exists, you should simply print out “You all need therapy.” If there is more than one solution, your program should print out the lexicographically earliest solution.

Sample Input

5
Ron
George
Bill
Fred
Jenny
3
Fred Jenny
Bill Ron
George Jenny
2
Alice
Bob
1
Alice Bob

Sample Output

Bill Fred George Ron Jenny
You all need therapy.