



Problem G

Trip Verification

A travel agency that specializes in the sale of theme trips is currently planning a few theme trips for the coming holiday season. The agency wants to use regional airlines for traveling, to take advantage of their cheap prices, without affecting the following important features of their trips:

1. The order of cities in a trip cannot be altered.
2. Each city in a planned trip can be visited once and only once.

For example, a theme trip of “Recent Democracies” that consists of the following sequence of cities: Cairo, Kabul, Baghdad, and Benghazi may be altered to Cairo, Damascus, Nairobi, Kabul, Baghdad, Damascus and Benghazi. The altered trip may contain multiple visits to other cities in transit (Damascus in the above example) to take advantage of cheap flights without violating the above two important features.

Your task is to write a program to verify that the agency’s trips can be planned using the available cheap regional airlines.

Input

The input consists of a series of trips whose plan is to be verified. The first line in each trip consists of a positive integer, M , $2 \leq M \leq 50$, which is the number of cities in the planned trips. The next line contains M strings that represent the unique names of cities to be visited in the given order. Each pair of city names is separated by a single blank space, and names of cities do not contain white spaces. The next line consists of a single positive integer P , $1 \leq P \leq 300$, which is the number of available flight segments followed by P lines each describing a flight segment. Each flight segment is a one-way flight whose description has the following form: $\langle \text{CityA} \rangle \langle \text{CityB} \rangle$. The pair of city names is separated by a single blank space, and names of cities do not contain white spaces.

A tour with M equals zero (0) terminates the input data, and should not be processed.

Output

Output consists of one line for each tour. It will be in one of the following two formats:

The tour can be planned.

The tour cannot be planned with the given flight segments.

Sample Input	Output for the Sample Input
4 Cairo Kabul Baghdad Benghazi 6 Cairo Damascus Cairo Benghazi Kabul Baghdad Baghdad Damascus Kabul Moscow Kabul Damascus 0	The tour cannot be planned with the given flight segments.