Who Knows Whom?

Program Name: who.java Input File: who.in

In police work, it is often useful to have a list of known associates for a criminal. Having this information for multiple criminals helps officers understand social networks in the areas where they work. For instance, if person A is a known associate of person B, and person B is a known associate of person C, there is an indirect connection between persons A and C.

Write a program that can determine whether or not given pairs of people have a connection (whether direct or indirect) based on a list of known associations.

Input

The first line of the input file will contain two integers, *m* and *n*, in the range 1 to 20.
The next *m* lines will each contain one pair of names with length in the range of 1 to 20 characters. These are people who are known to be associates.
The next *n* lines will each contain one pair of names with length in the range of 1 to 20 characters. These are people for which the program must determine if a known association exists.

Output

For each of the name pairs in the second list, output a single line. If the pair has a connection print, "name1 is connected to name2." Otherwise print, "name1 has no known connection to name2."

Example Input File

```
6 4
Carol Mike
James FashionVictim
Hershey Buddy
Tim James
Candice Mike
Tim Hershey
Mike Carol
Carol Candice
Mike FashionVictim
Buddy James
```

Example Output To Screen

```
Mike is connected to Carol
Carol is connected to Candice
Mike has no known connection to FashionVictim
Buddy is connected to James
```