

Your geography teacher has given you homework to find the neighbours of a city. The teacher explained that a neighbour to a city can be directly or indirectly connected to the city via road or train but not by air. The teacher is quite helpful and has provided her students with the road/train connectivity. Write a simple program to output all the neighbours (direct or indirect) of a given city using this information.

Note: If any two cities are connected by air as well as road or train then the cities are considered to be neighbours. Cities are considered to not be neighbours only in the case where they are solely connected by air.

Input

Your program needs to read in data in the following format:

```

Number of cities
X
Y
Z
...
City X connected to City Y by [train/road/air]
....

```

Note: Your program should be able to handle duplicate records. For example:

```
City X connected to City Y by [train/road/air]
City Y connected to City X by [train/road/air]
```

Example 1

```

3
X
Y
Z
City X is connected to City Y by train
City Y is connected to City Z by air
City Z is connected to City X by road

```

Example 2

7	
X	
Y	
Z	
A	
B	
C	
D	
City X is connected to City Z by train	
City X is connected to City Y by air	
City A is connected to City C by air	
City Y is connected to City Z by road	
City Z is connected to City B by train	
City B is connected to City Y by road	
City C is connected to City D by road	
City D is connected to City C by train	

Output

The order in which neighbours are displayed should be in the order the cities were described. This means: City Z is neighbour to Cities X,Y is accepted but not City Z is neighbour to Cities Y,X

Example 1 Output

```
City X is neighbour to Cities Y,Z
City Y is neighbour to Cities X,Z
City Z is neighbour to Cities X,Y
```

Example 2 Output

```
City X is neighbour to Cities Y,Z,B
City Y is neighbour to Cities X,Z,B
City Z is neighbour to Cities X,Y,B
City A is remote and has no neighbours!
City B is neighbour to Cities X,Y,Z
City C is neighbour to Cities D
City D is neighbour to Cities C
```

