
Remote Relatives

X70643_en

In reference to a (possibly large) list of people, we receive from an adequate company information about pairs of names who are certainly remote relatives, on the basis of biological analyses. Of course, if a person is a certain relative of two others, these are in turn certain relatives among them. Which further links can we ascertain from the given pairs?

Input

Input has two parts. In the first part, a sequence of lines brings two names in each line, meaning that they are certain relatives. Names are strings having a single uppercase letter, namely, the capital initial. Then a line with the word "QUESTIONS" (and nothing else) comes, and then a sequence of questions which again consist of lines with two names on each. This second part might include names that did not appear in the first part.

Output

One line per question, repeating the two names in the question and followed by the words "Certain relatives" or "Uncertain", according to whether the data in the first part of the input implies that they are.

Sample input

```
Finley Skyler
Lennon Azariah
Sidney Finley
Denver Campbell
Sidney Campbell
Finley Denver
Kylar Hollis
Azariah Hollis
Brighton Finley
QUESTIONS
Denver Sidney
Lennon Azariah
Hollis Sidney
Lennon Kylar
Jaidyn Brighton
Skyler Campbell
Denver Brighton
```

Sample output

```
Denver Sidney Certain relatives
Lennon Azariah Certain relatives
Hollis Sidney Uncertain
Lennon Kylar Certain relatives
Jaidyn Brighton Uncertain
Skyler Campbell Certain relatives
Denver Brighton Certain relatives
```

Observation

You must employ a disjoint-sets Union-Find data structure.

Problem information

Author : José Luis Balcázar

Generation : 2024-04-19 19:31:15

© Jutge.org, 2006–2024.

<https://jutge.org>