Begin: 2021-10-10 12:30 CST

NCPC Simulation Day2

End: 2021-10-10 17:30 CST

Elapsed: 05:05:47 Running **Remaining:** -1:54:12

Time limit

1000 ms

Memory limit

1572864 kB

Code length Limit

50000 B

OS

Linux

Language limit

All except: ASM64

C - Arbitrage

Arbitrage is the use of discrepancies in currency exchange rates to transform o unit of a currency into more than one unit of the same currency. For example, suppose that 1 US Dollar buys 0.5 British pounds, 1 British pound buys 10.0 Frei francs, and 1 French franc buys 0.21 US dollars. Then, by converting currencies clever trader can start with 1 US dollar and buy 0.5 * 10.0 * 0.21 = 1.05 US dollar making a profit of 5 percent.

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Your job is to write a program that takes a list of currency exchange rates as input and then determines whether arbitrage is possible or not.

Input

The input file will contain one or more test cases. On the first line of each test case there is an integer n ($1<=n<=30$), representing the number of different currencies. The next n lines each contain the name of one currency. Within a name no spaces will appear. The next line contains one integer m, representing the length of the table to follow. The last m lines each contain the name c_i of a source currency, a real number r_{ij} which represents the exchange rate from c_i to c_j and a name c_j of the destination currency. Note that c_i and c_j may be the same currency. Exchanges which do not appear in the table are impossible.
Test cases are separated from each other by a blank line. Input is terminated by a value of zero (0) for n.

Output

For each test case, print one line telling whether arbitrage is possible or not in the format "Case *case*: Yes", respectively "Case *case*: No".

Example

Input:

```
3
USDollar
BritishPound
FrenchFranc
3
USDollar 0.5 BritishPound
BritishPound 10.0 FrenchFranc
FrenchFranc 0.21 USDollar

3
USDollar
BritishPound
FrenchFranc
6
USDollar 0.5 BritishPound
USDollar 4.9 FrenchFranc
```

```
BritishPound 10.0 FrenchFranc
BritishPound 1.99 USDollar
FrenchFranc 0.09 BritishPound
FrenchFranc 0.19 USDollar

0
```

Output:

```
Case 1: Yes
Case 2: No
```

Server Time: 2021-10-10 17:35:47 CST