January 2023 CSE 208
Online: All Pair Shortest Path

Time: 30 minutes

Subsections: A2

Arbitrage is the use of discrepancies in currency exchange rates to transform one 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 French francs, and 1 French franc buys 0.21 US dollars. Then, by converting currencies, a clever trader can start with 1 US dollar and buy 0.5 * 10.0 * 0.21 = 1.05 US dollars, making a profit of 5 percent.

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/Output Format

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.

For an input set, print whether arbitrage is possible or not in the format "Yes or No."

Input:	Output:
3 USDollar BritishPound FrenchFranc 3 USDollar 0.5 BritishPound BritishPound 10.0 FrenchFranc FrenchFranc 0.21 USDollar	Yes