

Money Exchange

Problem Code	hw06c_exchange
Running Time Limit	5 sec
Memory Limit	32 mb

Objective

- Be able to compute all pairs shortest path

Introduction

A general money exchanger is a place that one could bring in money in some currency and exchange it to another currency. For N different currencies, an exchanger provides a table R such that $R[A][B]$ indicates the amount of currency B that the exchanger will give for one unit of currency A . Be noted that $R[A][B]$ might not be the same as $R[B][A]$.

Sometime, the exchanger made a mistake in calculation, allowing a customer with an amount of currency X to convert the whole amount to currency Y and then to convert again to another currency Z and proceed repeatedly. Finally, the customer converts the money back to currency X and the he ends up with more money than he originally has.

For example, let us assume that $R[1][2] = 0.7$ (indicating that for one unit of currency 1, the exchanger will give 0.7 unit of currency 2), $R[2][3] = 2$ and $R[3][1] = 0.75$. If we start with 1 unit of currency 1 and convert to 2 and to 3 and then back to 1, we will end up with 1.05 unit of currency 1. This situation is what you will detect.

Task

Your task is to write a program that read several exchange rate tables (tables R) and compute for each table whether that table allows us to make profit from exchange some sequence of currency.

Input

The first line contains a number K ($1 < K \leq 20$) indicating the number of exchange rate tables, for each table, the first line of input give the number N ($1 \leq N \leq 500$) indicating the number of currencies in this table. This is followed by N lines of N real number with not more than 6 decimal that give the exchange rate table. For each table, the i -th numbers in j -th line gives the value of $R[i][j]$.

Output

The output must have exactly K lines; each line must contain either the word "YES" or "NO" indicating whether we can make profit from the corresponding table in the input.

Example

Ex1

Input	Output
2 // there are 2 tables	YES
3 // the first table has 3 currencies	NO
1 0.7 1.2 // R[0][0] R[1][0] R[2][0]	
1.1 1 2 // R[0][1] R[1][1] R[2][1]	
0.75 0.7 1 // R[0][2] R[1][2] R[2][2]	
2 // the second table has 2 currencies	
1 0.7 // R[0][0] R[1][0]	
1.2 1 // R[0][1] R[1][1]	

Ex2

Input	Output
2	NO
2	YES
1 1	
1 1	
3	
1 1 1	
1 1 0.2	
1 6 1	