



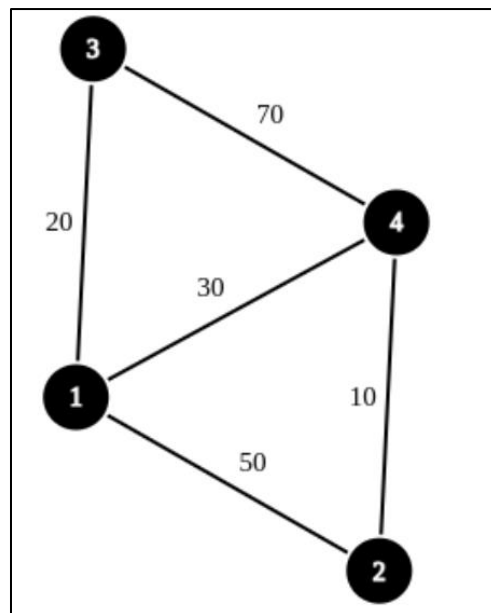
Problem A: DUT Cloud System

Time limit: 2s; Memory limit: 512 MB

Last week, we helped HCMUS to calculate their data transfer rate among their N servers. Their system works so well and become a model for other universities to follow. The Danang University of Technology (DUT) wants to build the same system.

DUT already have N servers, they want to connect them using bi-directional cables. Each pair of servers is connected by at most 1 cable (possibly 0).

The cable connecting server u and server v has the transmission capacity of $C_{u,v}$ megabits per nanosecond. Let us define $F_{u,v}$ as the data transfer rate between server u and server v . To transfer data from server u to server v , data can be split into multi parts and transferred via multiple routes.



For example, to transfer data from server 1 to server 4, data can be split into 3 parts and transferred via 3 routes as follows:

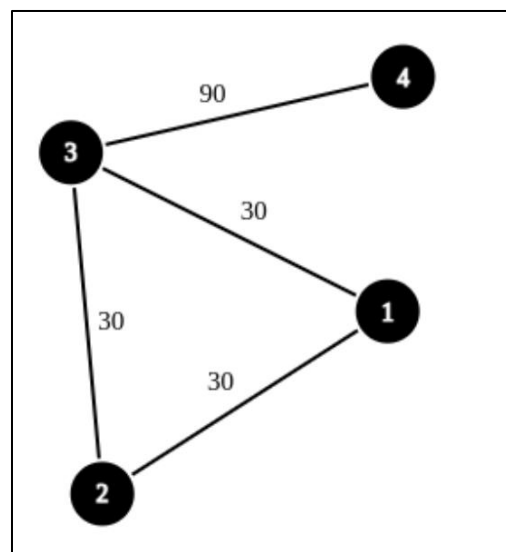
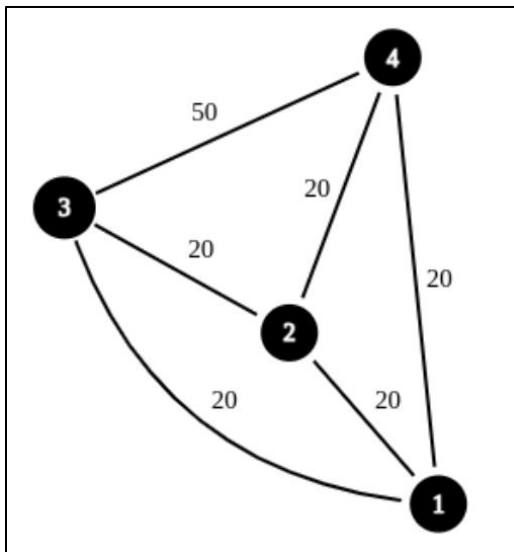
- 1 - 4 (30 Mb per nanosecond)
- 1 - 3 - 4 (20 Mb per nanosecond)
- 1 - 2 - 4 (10 Mb per nanosecond)

so the transfer rate from 1 to 4 is 60 Mb per nanosecond or $F_{1,4} = 60$. In this example, the full data transfer rate F is followed:



F	1	2	3	4
1	0	60	60	60
2	60	0	60	60
3	60	60	0	90
4	60	60	90	0

DUT has their expected data transfer rate F , your task is to help them select the cables and how to connect the N servers to achieve that expected transfer rate F . There might be multiple configurations to achieve that, for example:



Input

The first line is T the number of test cases. Then T test cases follow.

- Each test case starts with an integer N ($N \leq 200$).
- In the next N lines, each contains N integers to describe 2D array F .
- It is guarantee that $F_{u,v} = F_{v,u}$, $F_{u,u} = 0$, $0 \leq F_{u,v} \leq 1000000$.
- The sum of N in all test cases does not exceed 1000.

Output

Each test case should start with a line containing: “Case #: YES” or “Case #: NO” if it is possible/impossible to achieve the expected data transfer rate F . If it is possible, the next N lines should describe your configuration. The v^{th} number of the u^{th} row should represent $C_{u,v}$. You have to make sure that $C_{u,v} = C_{v,u}$, $C_{u,u} = 0$ and $0 \leq C_{u,v} \leq 1000000$.



Sample

Input	Output
2	Case #1: NO
3	Case #2: YES
0 1 2	0 30 30 0
1 0 4	30 0 30 0
2 4 0	30 30 0 90
4	0 0 90 0
0 60 60 60	
60 0 60 60	
60 60 0 90	
60 60 90 0	