Distance Mod 5

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Busy Beaver was playing with an undirected, connected, unweighted graph with N ($2 \leq N \leq 500$) vertices numbered from 1 to N. For every pair of vertices $1 \leq i < j \leq N$, he wrote down the length of the shortest path $A_{i,j}$ from vertex i to vertex j on a napkin. Realizing that all these numbers are taking up too much space on his napkin, Busy Beaver decided to only write down $B_{i,j}$, the values of $A_{i,j} \pmod 5$ on the napkin.

Now, Busy Beaver has misplaced his graph, and only has his napkin with the values of $B_{i,j}$ written on them. Help Busy Beaver reconstruct a possible graph, or determine that no such graph exists and that he made a mistake.

Formally, given N and $B_{i,j}$ with $0 \leq B_{i,j} < 5$, decide if there exists an undirected, connected, unweighted graph with N vertices such that the length of the shortest path between vertices i and j is congruent to $B_{i,j} \pmod 5$. If such a graph exists, output any possible graph.

Input

Each test contains multiple test cases. The first line contains a single integer t ($1 \leq t \leq 100$): the number of test cases. The description of the test cases follows.

The first line of input contains a single positive integer N.

Then, $N-1$ lines of input will follow. The i-th of these lines will contain $N-i$ spaced positive integers. The j-th integer on the i-th line represents $B_{i,j+i}$.

It is guaranteed that the sum of N across all test cases is no more than 500.

Output

For each testcase, output "`YES`" if there exists a possible graph, or "`NO`" if no such graph exists. You can output the answer in any case (upper or lower). For example, the strings "`yEs`", "`yes`", "`Yes`", and "`YES`" will be recognized as positive responses.

If your program answers "`YES`", output an additional $N-1$ lines. The i-th of these lines should contain $N-i$ positive integers. The j-th integer on the i-th line should be a 1 if there should be an edge between vertex i and vertex $i+j$, and 0 otherwise.

Scoring

You will receive 25% of the points for each subtask if the `YES/NO` responses are correct, but the provided graph is incorrect. For each testcase with a "`YES`" answer, **you must output exactly $N-1$ lines with the i-th line containing $N-i$ integers (that are 0 or 1) for partial credit.**

- (20 points): The sum of N across all test cases does not exceed 10.
- (80 points): No additional constraints.

Example

standard input	standard output
3 3 1 1 1 3 2 1 1 3 0 0 0	YES 1 1 1 YES 0 1 1 NO

Note

In the first test case, there are 3 vertices and the shortest distances between any pair of vertices is 1 (mod 5). This is achievable by constructing a graph with 3 vertices and an edge between any pair of vertices.

In the second test case, there are 3 vertices and the shortest distances between vertex 1 and 2 is 2 (mod 5), and the shortest distance between vertex 1 and 3 as well as between vertex 2 and 3 are both 1 (mod 5). This is achievable by constructing a graph with 3 vertices and an edge between vertices 1 and 3 as well as between vertices 2 and 3.

In the third test case, there are 3 vertices and the shortest distances between any pair of vertices is 0 (mod 5). It can be shown that no unweighted, undirected, connected graph can satisfy this test case.