# Graph Reconstruction

| | |
|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 2 seconds |
| Memory limit: | 1024 megabytes |

VegiCat has an $n \times n$ integer matrix $A = (a_{ij})$. For each $1 \le i, j \le n$:

- If $i = j$, $i = 1$, or $j = 1$, then $a_{ij} = -1$.
- Otherwise, $a_{ij}$ is a nonnegative integer.

Help VegiCat construct an undirected simple graph $G$ with $n$ vertices, numbered from 1 to $n$.

For every pair of distinct vertices $i, j$ with $i > 1$ and $j > 1$, the graph must satisfy the following condition: after deleting vertices $i$ and $j$, together with all edges that have an endpoint at either vertex, exactly $a_{ij}$ edges must remain.

Each pair of vertices $i, j$ is considered separately. That is, for each pair, start with $G$ before any vertices or edges have been deleted.

It is guaranteed that at least one such graph exists. If there are multiple solutions, output any of them.

## Input

The first line contains an integer $T$ ($1 \le T \le 6 \cdot 10^4$), the number of test cases. The description of the test cases follows.

For each test case, the first line contains an integer $n$ ($4 \le n \le 10^3$), denoting the number of vertices in the graph.

Then each of the next $n$ lines contains $n$ space-separated integers $a_{ij}$ ($-1 \le a_{ij} \le \frac{(n-3)(n-2)}{2}$), representing the matrix $A$ described in the statement.

It is guaranteed that the total sum of $n^2$ over all test cases does not exceed $1.2 \cdot 10^6$, and that at least one graph corresponding to matrix $A$ exists.

## Output

For each test case, output the adjacency matrix of the graph you construct. Output $n$ lines, each containing $n$ space-separated integers. Each integer must be either 0 or 1. The entry in the $i$-th row and $j$-th column is 1 if there is an edge between vertices $i$ and $j$, and 0 otherwise. If there are multiple solutions, output any of them.

## Example

| standard input | standard output |
| --- | --- |
| 2<br>5<br>-1 -1 -1 -1 -1<br>-1 -1 3 1 2<br>-1 3 -1 2 2<br>-1 1 2 -1 1<br>-1 2 2 1 -1<br>7<br>-1 -1 -1 -1 -1 -1 -1<br>-1 -1 4 5 3 6 5<br>-1 4 -1 5 4 5 5<br>-1 5 5 -1 5 7 5<br>-1 3 4 5 -1 4 4<br>-1 6 5 7 4 -1 5<br>-1 5 5 5 4 5 -1 | 0 1 0 1 1<br>1 0 0 0 0<br>0 0 0 1 0<br>1 0 1 0 1<br>1 0 0 1 0<br>0 1 1 0 1 0 0<br>1 0 0 0 0 1 1<br>1 0 0 0 1 0 1<br>0 0 0 0 1 1 0<br>1 0 1 1 0 0 1<br>0 1 0 1 0 0 0<br>0 1 1 0 1 0 0 |

## Note

The actual input matrix will only have a single space between two integers. The extra spaces in the sample are designed to enhance the readability of the layout.