Potato Starch Power Accumulator

Type	Input file	Output file	Time limit	Memory limit
Batch	stdin	stdout	1 second	128 MB

Statement

Opal, an expert scientist, is analysing the power output of her newest power generator, the PSPA (Potato Starch Power Accumulator). The generator runs off of potato starch, and its insides can be modelled as a weighted, connected and undirected graph with N nodes and M edges, where each edge has a positive edge weight. Unfortunately, she has forgotten the structure of the graph, as well as the value of M.

Luckily, from her latest experiments with the device, Opal has measured the minimum energy resonance delay between every pair of generator nodes, which is equivalent to the length of a shortest path between the pair of nodes. Opal also recalls that her power generator plans were incredibly efficient and have no redundancy, so the value of M should be made as small as possible. Given this information, can you recover the graph for her?

Input

The first line contains the integer N. The following lines contain an N by N matrix of integers, where the j-th element of the i-th row contains $w_{i,j}$ the length of the shortest path between nodes i and j. In particular, if $i = j$, then $w_{i,j}$ is 0. You are guaranteed that a valid output exists for any input given.

Output

Output an N by N matrix of integers, where the j-th element of the i-th row contains $e_{i,j}$ the weight of the edge between nodes i and j if it exists, and 0 if an edge does not exist between nodes i and j.

Sample Input

```
4
0 1 1 2
1 0 2 3
1 2 0 2
2 3 2 0
```

Sample Output

```
0 1 1 2
1 0 0 0
1 0 0 2
2 0 2 0
```

Explanation

Only 4 edges are required to produce the distances shown in the input.

Constraints

- $2 \leq N \leq 300$

- $1 \leq w_{i,j} \leq 10^6$ for all i

Subtasks

Number	Points	Additional Constraints
1	30	$N \leq 8$ and $w_{i,j} \leq 20$
3	70	No additional constraints