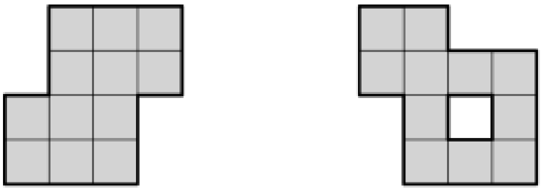
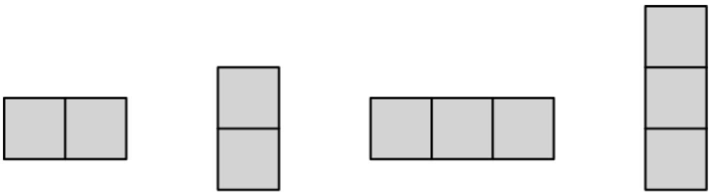
Problem K
Tiling Polyomino
Time Limit: 1.5 Seconds

A polyomino is a plane geometric figure formed by joining one or more unit squares edge to edge. The figure below shows two examples of polyominos. Each of the squares contained in a polyomino is called a cell, and two cells sharing an edge are called neighbors of each other. Note that the number of neighbors of a cell can be 0, 1, 2, 3 and 4. A polyomino P is called connected if every pair of cells (a, b) in P has a path connecting neighboring cells from a to b, and P is called simply connected if P is connected and does not contain any "hole". In the figure below, the left one is simply connected but the right one is not. We will deal with a simply connected polyomino P such that every cell contained in P has two or more neighbors.

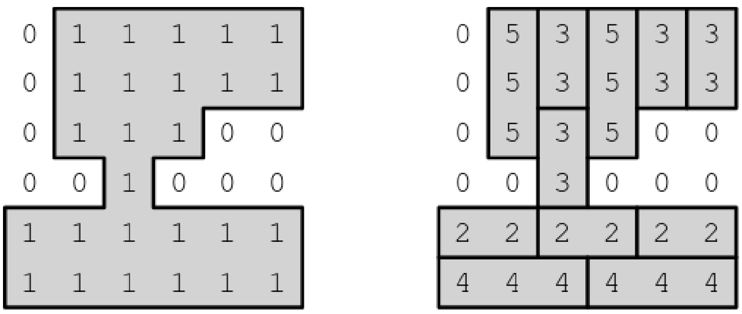


A tiling of a polyomino P is a tessellation (covering using geometric shapes with no overlaps and no gaps) of P by translated copies of D1, D2, T1, and T2, where D1 (resp. D2) is a polyomino formed by joining two unit squares horizontally (resp. vertically), and T1 (resp. T2) is a polyomino formed by joining three unit squares horizontally (resp. vertically). The figure below shows D1, D2, T1, and T2. According to the shape of P, a tiling of P may or may not exist.



D1 D2 T1 T2

To represent a polyomino P, we assume that P is contained in an $n \times n$ unit square grid. We label each unit square s in the grid as `1` if s is a cell of P, or `0` otherwise. Then, the unit square grid containing P can be represented by an $n \times n$ matrix of `0`'s and `1`'s. A tiling of P can also be represented by an $n \times n$ matrix of integers as follows. If a cell of P is covered by a copy of D1 or D2, then we label the cell as `2` or `3`, respectively. If a cell of P is covered by T1 or T2, then we label the cell as `4` or `5`, respectively. The figure below shows an example of tiling and its representation.



Given a simply connected polyomino P such that every cell contained in P has two or more neighbors represented by an $n \times n$ matrix of 0's and 1's, write a program that outputs a tiling of P, if it exists.

Input

Your program is to read from standard input. The input starts with a line containing an integer $2 \leq n \leq 1{,}000$, where n is the number of rows and columns of the unit square grid containing a polyomino P. Each of the following n lines contains n many 0's and 1's, and 1 denotes that the square is a cell of P. The polyomino P is simply connected and every cell contained in P has two or more neighbors.

Output

Your program is to write to standard output. If there is a tiling of P, print the tiling of P using n lines. Each of the n lines contains n integers from 0 to 5. A 0 represents that the square is not a cell of P. A 2 represents that the square is a cell of P, and is covered by D1. Similarly, a 3, 4, or 5 represents that the square is a cell of P, and is covered by D2, T1, or T2, respectively. If there is no possible tiling of P, then print -1.

The following shows sample input and output for two test cases.

Sample Input 1	Output for the Sample Input 1
3 011 111 111	022 322 322

Sample Input 2	Output for the Sample Input 2
6 011111 011111 011100 001000 111111 111111	053533 053533 053500 003000 222222 444444