Problem G. Hamilton

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 mebibytes

Bobo has an $n \times n$ symmetric matrix C consisting of zeros and ones. For a permutation $p_1, \ldots, p_n$ of $1, \ldots, n$, let

$$c_i = \begin{cases} C_{p_i, p_{i+1}} & \text{for } 1 \le i < n \\ C_{p_n, p_1} & \text{for } i = n \end{cases}.$$

The permutation p is *almost monochromatic* if and only if the number of indices i ($1 \le i < n$) where $c_i \neq c_{i+1}$ is **at most one**.

Find an almost monochromatic permutation $p_1, \ldots, p_n$ for the given matrix C.

Input

The input consists of several test cases terminated by end-of-file. For each test case,

The first line contains an integer n.

For the following n lines, the i-th line contains n integers $C_{i,1}, \ldots, C_{i,n}$.

- $3 \le n \le 2000$
- $C_{i,j} \in \{0, 1\}$ for each $1 \le i, j \le n$
- $C_{i,j} = C_{j,i}$ for each $1 \le i, j \le n$
- $C_{i,i} = 0$ for each $1 \le i \le n$
- In each input, the sum of n does not exceed 2000.

Output

For each test case, if there exists an almost monochromatic permutation, output n integers $p_1, \ldots, p_n$ which denote the permutation. Otherwise, output -1.

If there are multiple almost monochromatic permutations, any of them is considered correct.

Examples

standard input	standard output
3 001 000 100 4 0000 0000 0000 0000	3 1 2 2 4 3 1

Note

For the first test case, $c_1 = C_{3,1} = 1$, $c_2 = C_{1,2} = 0$, $c_3 = C_{2,3} = 0$. Only when $i = 1$, $c_i \neq c_{i+1}$. Therefore, the permutation $3, 1, 2$ is an almost monochromatic permutation.