# G. Hamilton

Bobo has an $n \times n$ symmetric matrix $C$ consisting of zeros and ones. For a **permutation** $p_1, \dots, p_n$ of $1, \dots, n$, 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 $c_i \ne c_{i+1}$ is **at most one**.

Find an *almost monochromatic* permutation $p_1, \dots, p_n$ 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 $C_{i,1}, \dots, C_{i,n}$.

- $3 \le n \le 2000$
- $C_{i,j} \in \{0, 1\}$ 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 $p_1, \dots, p_n$ which denote the permutation. Otherwise, output `-1`.

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

## Sample Input

```
3
001
000
100
4
0000
0000
0000
0000
```

## Sample Output

```
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 $i = 1$, $c_i \ne c_{i+1}$. Therefore, the permutation $3, 1, 2$ is an almost monochromatic permutation.