Problem D
Deathstar

Problem ID: deathstar
CPU Time limit: 1 second
Memory limit: 1024 MB

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Young jedi Ivan has infiltrated in The Death Star and his task is to destroy it. In order to destroy The Death Star, he needs an array of non-negative integers a_i of length N that represents the code for initiating the self-destruction of The Death Star. Ivan doesn't have the array, but he has a piece of paper with requirements for that array, given to him by his good old friend Darth Vader.

On the paper, a square matrix of the size N is written down. In that matrix m in the i-th row and j-th column there is a number that is equal to bitwise and between numbers a_i and a_j. Unfortunately, a lightsaber has destroyed all the fields on the matrix's main diagonal and Ivan cannot read what is on these fields. Help Ivan to reconstruct an array for the self-destruction of The Death Star that meets the requirements of the matrix.

The solution doesn't need to be unique, but will always exist.

Input

The first line of input contains the integer N ($1 \leq N \leq 1\,000$), size of the matrix. Each of the following N lines contains N numbers m_{ij} ($0 \leq m_{ij} \leq 10^9$), the elements of the matrix.

Output

The first and only line of output must contain any array of N non-negative integers at most 10^9 that meet the requirements from the task.

Sample Input 1

```
3
0 1 1
1 0 1
1 1 0
```

Sample Output 1

```
1 1 1
```

Sample Input 2

```
5
0 0 1 1 1
0 0 2 0 2
1 2 0 1 3
1 0 1 0 1
1 2 3 1 0
```

Sample Output 2

```
1 2 3 1 11
```

Sample Input 3

```
5
0 1 1 0 1
1 0 1 0 3
1 1 0 0 1
0 0 0 0 0
1 3 1 0 0
```

Sample Output 3

```
1 7 1 8 3
```