# Problem M. You be The Judge, Again

| | |
|---|---|
| Input file: | *standard input* |
| Output file: | *standard output* |
| Time limit: | 2 seconds |
| Memory limit: | 1024 mebibytes |

You are a judge, again! The contest you're judging includes the following problem:

> "You have one L-shaped triomino of each of $\frac{4^n-1}{3}$ different colors. Tile a $2^n$ by $2^n$ grid using each of these triominos such that there is exactly one blank square and all other squares are covered by exactly one square of such a triomino. All triominos must be used."

Your team is to write a checker for this problem. Validation of the input values and format has already taken place. You will be given a purported tiling of a $2^n$ by $2^n$ grid, where each square in the grid is either 0 or a positive integer from 1 to $\frac{4^n-1}{3}$ representing one of the colors. Determine if it is, indeed, a covering of the grid with $\frac{4^n-1}{3}$ unique triominos and a single empty space.

L-shaped triominos look like this:

## Input

The first line of input contains a single integer $n$ ($1 \le n \le 10$), which is the $n$ of the description.

Each of the next $2^n$ lines contains $2^n$ integers $x$ ($0 \le x \le \frac{4^n-1}{3}$), where 0 represents an empty space, and any positive number is a unique identifier of a triomino.

## Output

Output a single integer, which is 1 if the given grid is covered with $\frac{4^n-1}{3}$ unique triominos and a single empty space. Otherwise, output 0.

## Examples

| standard input | standard output |
|---|---|
| 2<br>1 1 2 2<br>1 3 3 2<br>4 4 3 5<br>4 0 5 5 | 1 |
| 1<br>1 1<br>1 1 | 0 |