

A. Table

time limit per test

1 second

memory limit per test

256 megabytes

input

standard input

output

standard output

Simon has a rectangular table consisting of n rows and m columns. Simon numbered the rows of the table from top to bottom starting from one and the columns — from left to right starting from one. We'll represent the cell on the x -th row and the y -th column as a pair of numbers (x, y) . The table corners are cells: $(1, 1)$, $(n, 1)$, $(1, m)$, (n, m) .

Simon thinks that some cells in this table are *good*. Besides, it's known that no good cell is the corner of the table.

Initially, all cells of the table are colorless. Simon wants to color all cells of his table. In one move, he can choose any good cell of table (x_1, y_1) , an arbitrary corner of the table (x_2, y_2) and color all cells of the table (p, q) , which meet both inequations: $\min(x_1, x_2) \leq p \leq \max(x_1, x_2)$, $\min(y_1, y_2) \leq q \leq \max(y_1, y_2)$.

Help Simon! Find the minimum number of operations needed to color all cells of the table.

Note that you can color one cell multiple times.

Input

The first line contains exactly two integers n, m ($3 \leq n, m \leq 50$).

Next n lines contain the description of the table cells. Specifically, the i -th line contains m space-separated integers $a_{i1}, a_{i2}, \dots, a_{im}$. If a_{ij} equals zero, then cell (i, j) isn't good. Otherwise a_{ij} equals one. It is guaranteed that at least one cell is good. It is guaranteed that no good cell is a corner.

Output

Print a single number — the minimum number of operations Simon needs to carry out his idea.

Examples

input

Copy

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

output

Copy

```
4
```

input

Copy

```
4 3
```

0	0	0
0	0	1
1	0	0
0	0	0

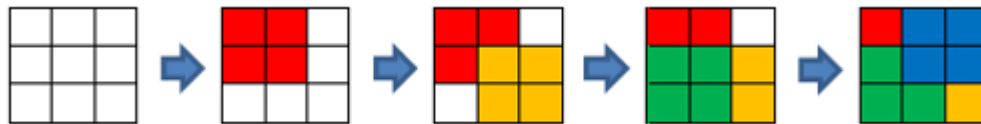
output

Copy

2

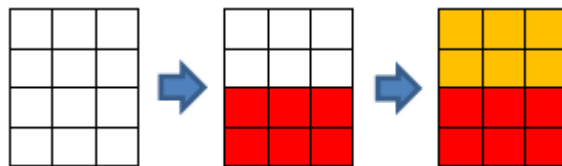
Note

In the first sample, the sequence of operations can be like this:



- For the first time you need to choose cell (2, 2) and corner (1, 1).
- For the second time you need to choose cell (2, 2) and corner (3, 3).
- For the third time you need to choose cell (2, 2) and corner (3, 1).
- For the fourth time you need to choose cell (2, 2) and corner (1, 3).

In the second sample the sequence of operations can be like this:



- For the first time you need to choose cell (3, 1) and corner (4, 3).
- For the second time you need to choose cell (2, 3) and corner (1, 1).