C. Karen and Game

time limit per test: 2 seconds
memory limit per test: 512 megabytes
input: standard input
output: standard output

On the way to school, Karen became fixated on the puzzle game on her phone!

The game is played as follows. In each level, you have a grid with n rows and m columns. Each cell originally contains the number 0.

One move consists of choosing one row or column, and adding 1 to all of the cells in that row or column.

To win the level, after all the moves, the number in the cell at the i-th row and j-th column should be equal to $g_{i,j}$.

Karen is stuck on one level, and wants to know a way to beat this level using the minimum number of moves. Please, help her with this task!

Input

The first line of input contains two integers, n and m ($1 \le n, m \le 100$), the number of rows and the number of columns in the grid, respectively.

The next n lines each contain m integers. In particular, the j-th integer in the i-th of these rows contains $g_{i,j}$ ($0 \le g_{i,j} \le 500$).

Output

If there is an error and it is actually not possible to beat the level, output a single integer `-1`.

Otherwise, on the first line, output a single integer k, the minimum number of moves necessary to beat the level.

The next k lines should each contain one of the following, describing the moves in the order they must be done:

- `row` x, ($1 \le x \le n$) describing a move of the form "choose the x-th row".
- `col` x, ($1 \le x \le m$) describing a move of the form "choose the x-th column".

If there are multiple optimal solutions, output any one of them.

Examples

input
3 5 2 2 2 3 2 0 0 0 1 0 1 1 1 2 1

output
4 row 1 row 1 col 4 row 3

input
3 3 0 0 0 0 1 0 0 0 0

output

```
-1
```

input
3 3 1 1 1 1 1 1 1 1 1

output
3 row 1 row 2 row 3

Note

In the first test case, Karen has a grid with 3 rows and 5 columns. She can perform the following 4 moves to beat the level:

In the second test case, Karen has a grid with 3 rows and 3 columns. It is clear that it is impossible to beat the level; performing any move will create three 1s on the grid, but it is required to only have one 1 in the center.

In the third test case, Karen has a grid with 3 rows and 3 columns. She can perform the following 3 moves to beat the level:

Note that this is not the only solution; another solution, among others, is `col 1`, `col 2`, `col 3`.