# 01 Matrix

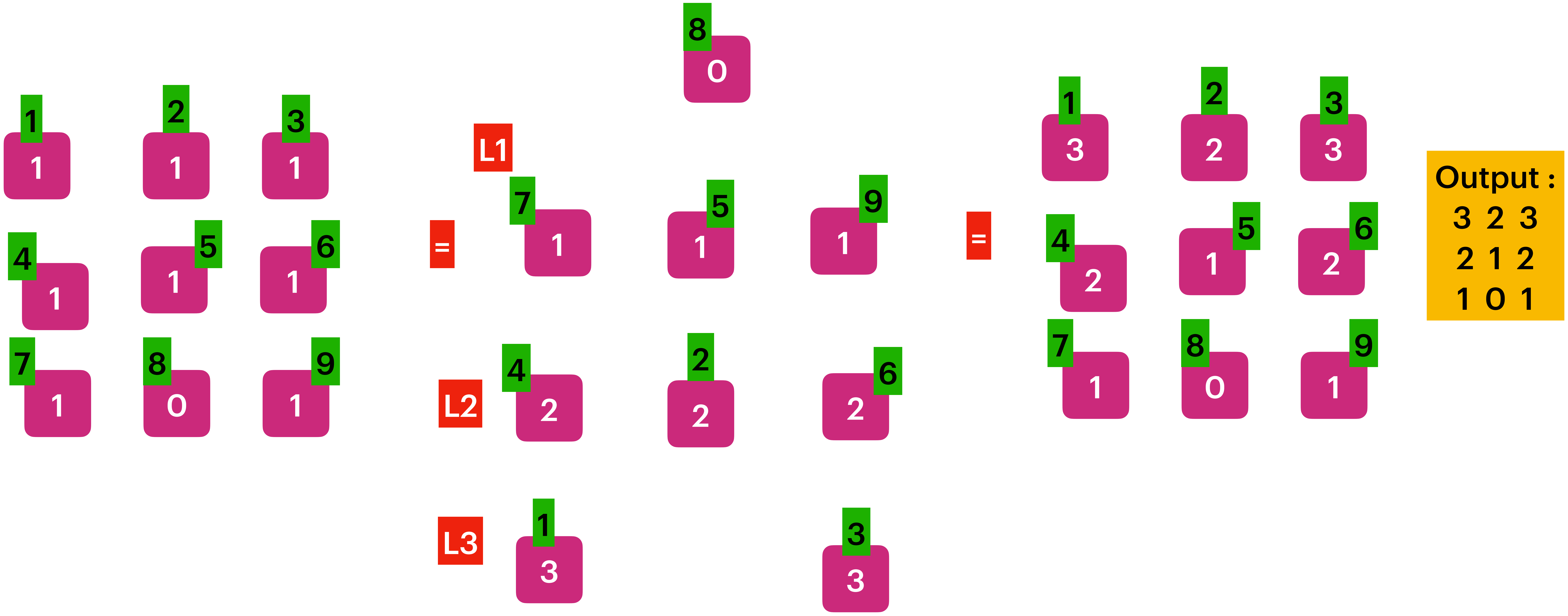
Given an m x n binary matrix mat, return the distance of the nearest 0 for each cell.
The distance between two adjacent cells is 1.

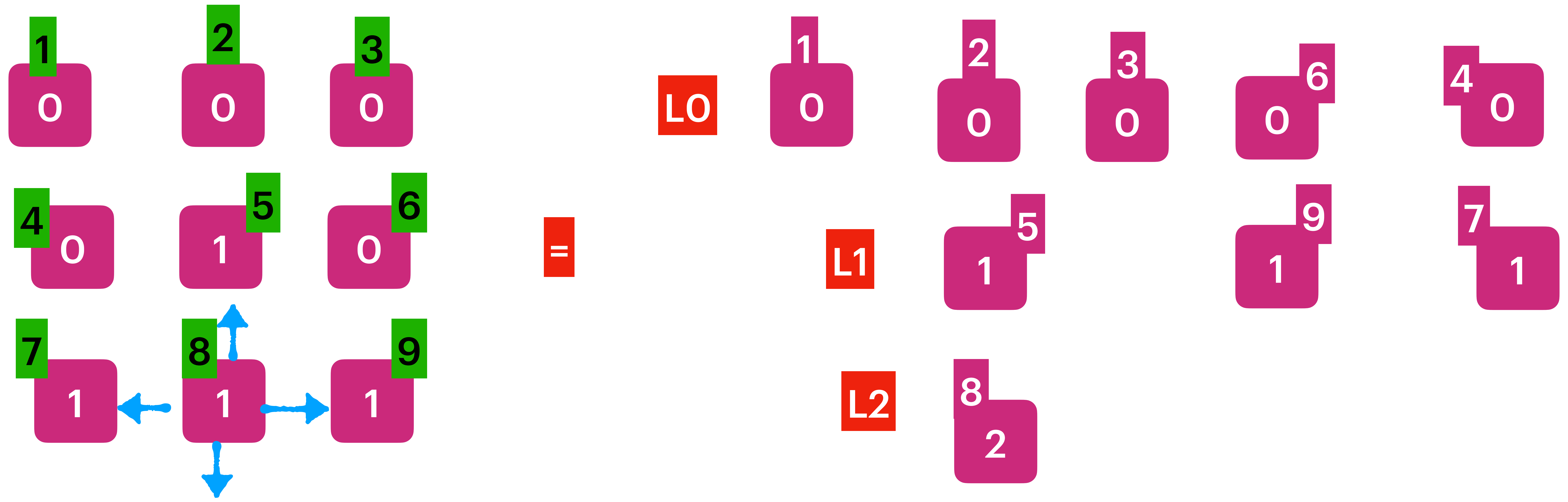
Input: mat = [
[0,0,0],
[0,1,0],
[0,0,0]
]
Output: [
[0,0,0],
[0,1,0],
[0,0,0]
]

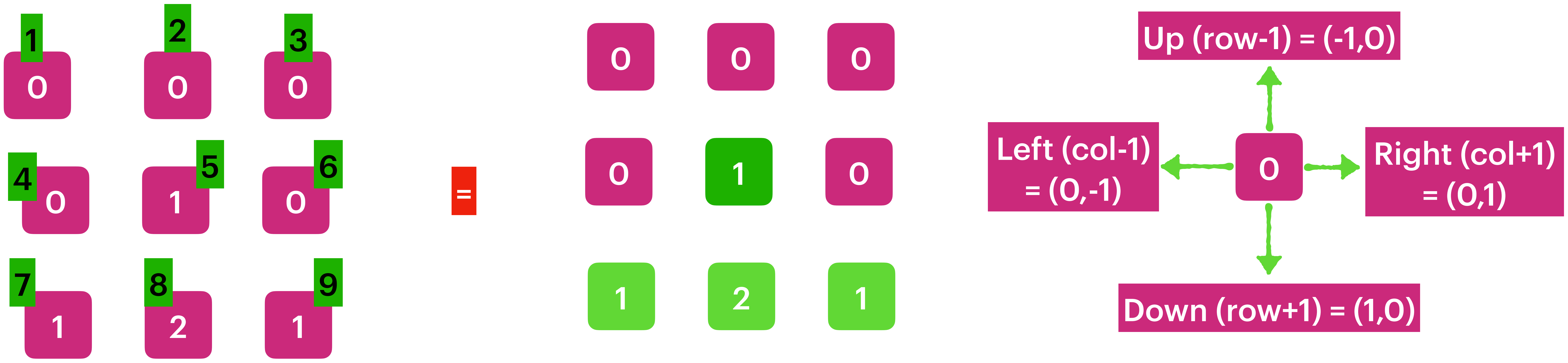
Input: mat = [
[0,0,0],
[0,1,0],
[1,1,1]
]
Output: [
[0,0,0],
[0,1,0],
[1,2,1]
]

Constraints:

m == mat.length
n == mat[i].length
1 <= m, n <= 104
1 <= m * n <= 104
mat[i][j] is either 0 or 1.
There is at least one 0 in mat.


=
L1
L2
L3
=
Output :
3 2 3
2 1 2
1 0 1


L0
L1
L2


Up (row-1) = (-1,0)
Left (col-1) = (0,-1)
Right (col+1) = (0,1)
Down (row+1) = (1,0)

# Rotting Oranges

You are given an m x n grid where each cell can have one of three values:

0 representing an empty cell,
1 representing a fresh orange, or
2 representing a rotten orange.
Every minute, any fresh orange that is 4-directionally adjacent to a rotten orange becomes rotten.

Return the minimum number of minutes that must elapse until no cell has a fresh orange.
If this is impossible, return -1.

Input: grid = [[2,1,1],[1,1,0],[0,1,1]]
Output: 4

Input: grid = [[2,1,1],[0,1,1],[1,0,1]]
Output: -1
Explanation: The orange in the bottom left corner (row 2, column 0) is never rotten, because rotting only happens 4-directionally.

Input: grid = [[1]]
Output: -1
Explanation: Since the orange can never rotate.

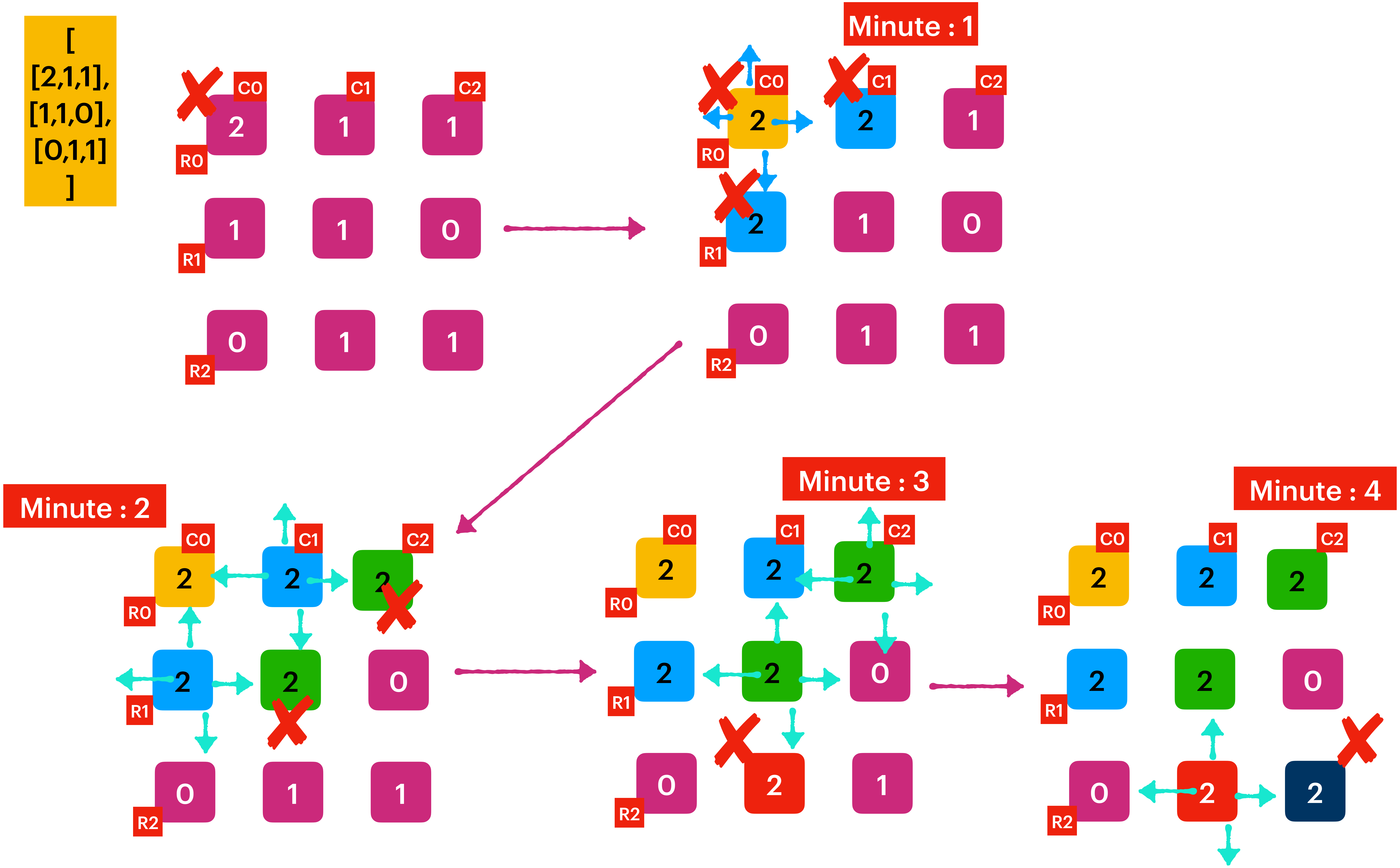
Input: grid = [[0,0,0,0,0]]
Output: 0
Explanation: Since there are no oranges to rotate.

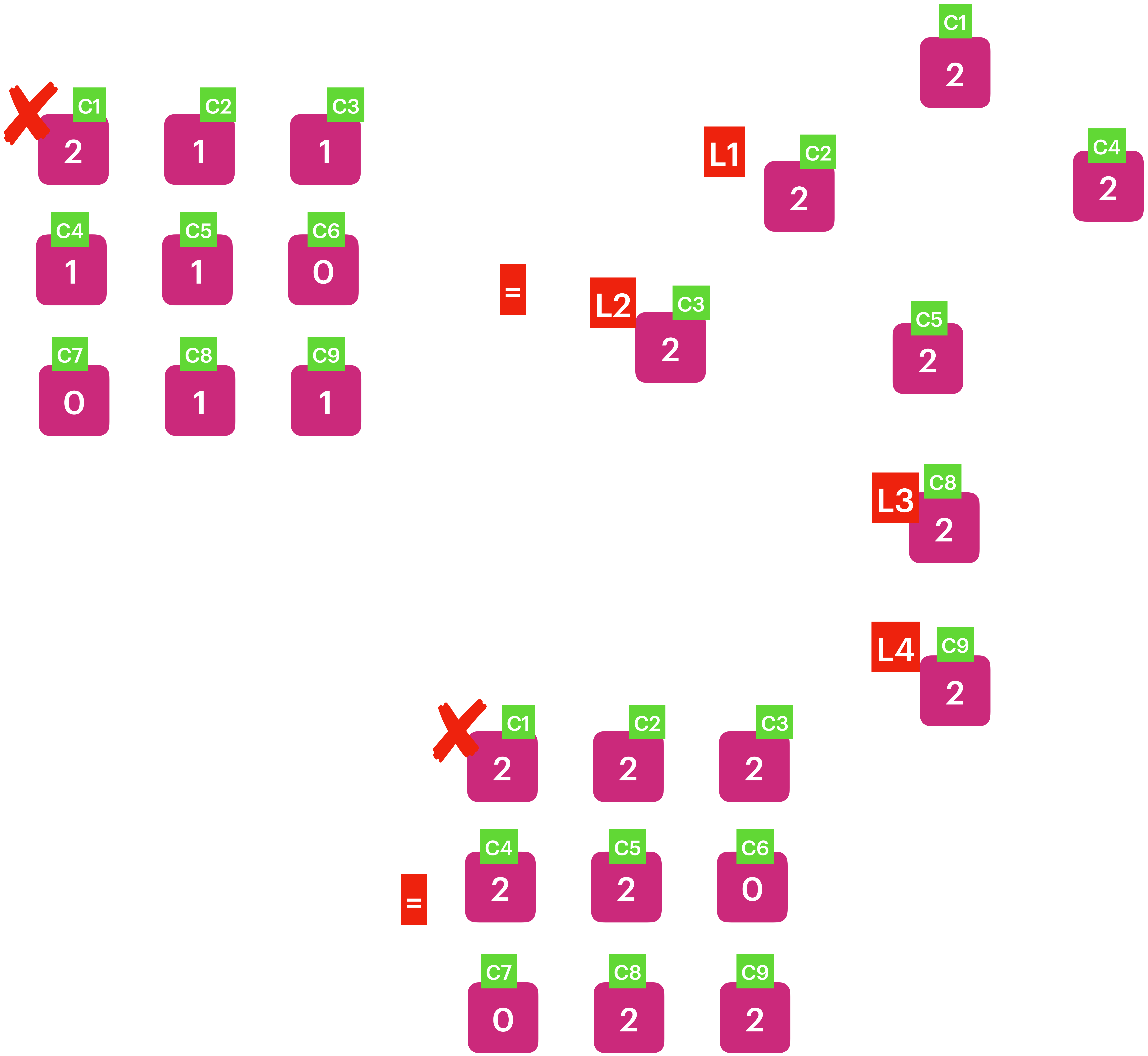
Input: grid = [[0]]
Output: 0
Explanation: Since there are already no fresh oranges at minute 0, the answer is just 0.

Input: grid = [[0,2]]
Output: 0
Explanation: Since there are already no fresh oranges at minute 0, the answer is just 0.

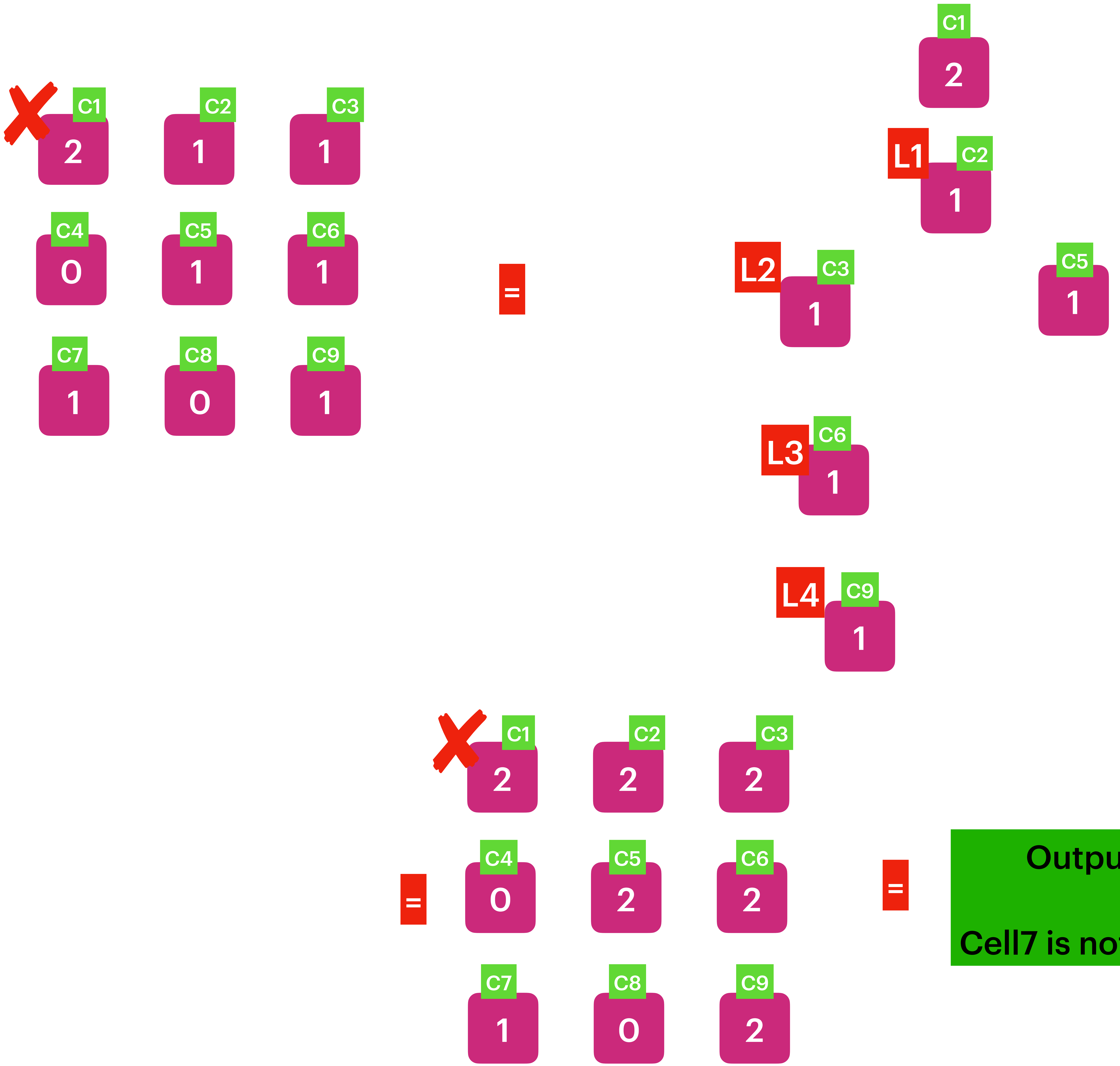
Constraints:

m == grid.length
n == grid[i].length
1 <= m, n <= 10
grid[i][j] is 0, 1, or 2.


[
[2,1,1],
[1,1,0],
[0,1,1]
]
Minute : 1
Minute : 2
Minute : 3
Minute : 4
C0
C1
C2
R0
R1
R2

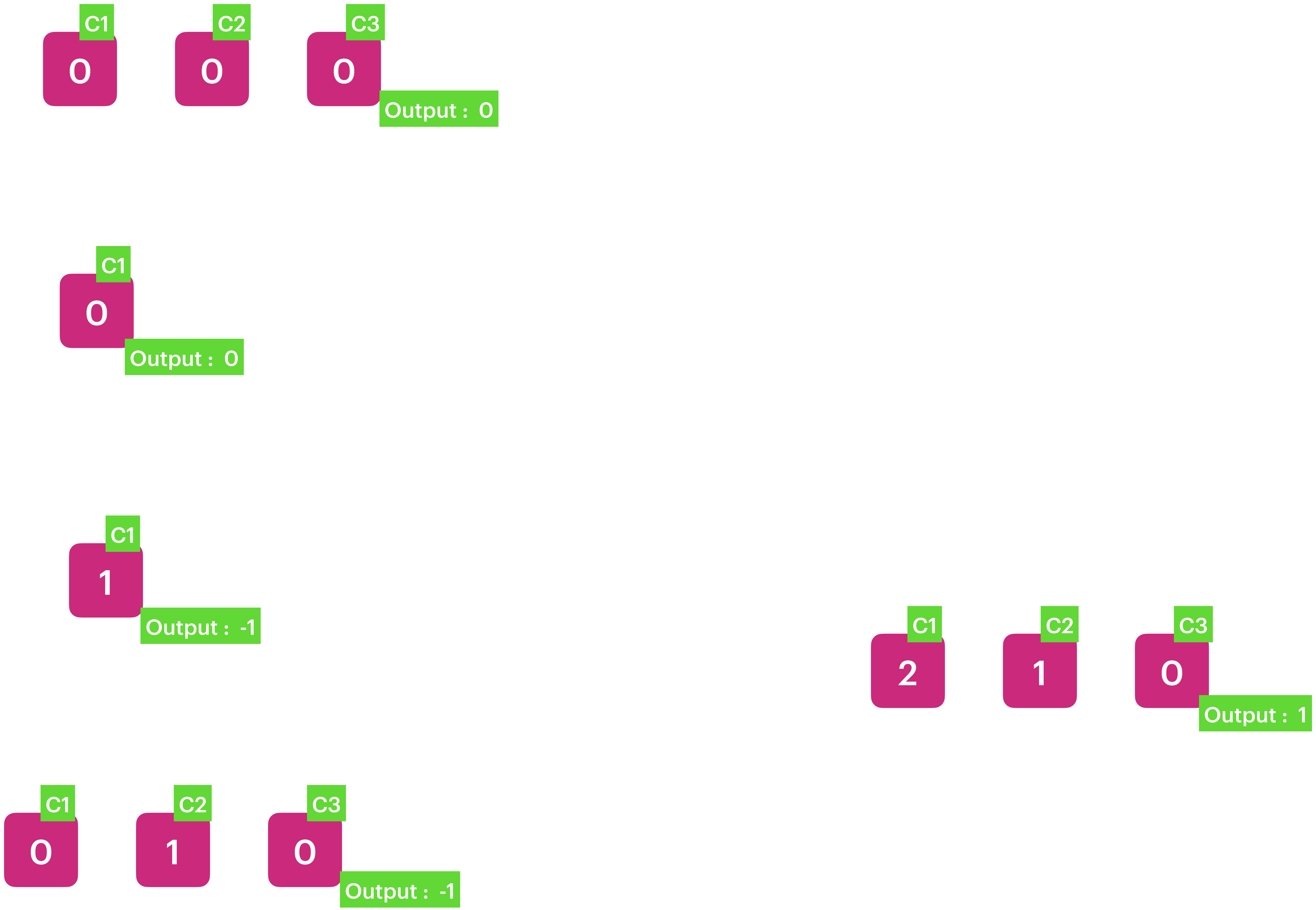


C1 2
C2 1
C3 1
C4 1
C5 1
C6 0
C7 0
C8 1
C9 1
=
L1
L2
L3
L4
C1 2
C2 2
C3 2
C4 2
C5 2
C8 2
C9 2
=
C1 2
C2 2
C3 2
C4 2
C5 2
C6 0
C7 0
C8 2
C9 2




**Output : -1**

**Cell7 is not rotated**


C1 C2 C3
0 0 0
Output : 0
C1
0
Output : 0
C1
1
Output : -1
C1 C2 C3
2 1 0
Output : 1
C1 C2 C3
0 1 0
Output : -1