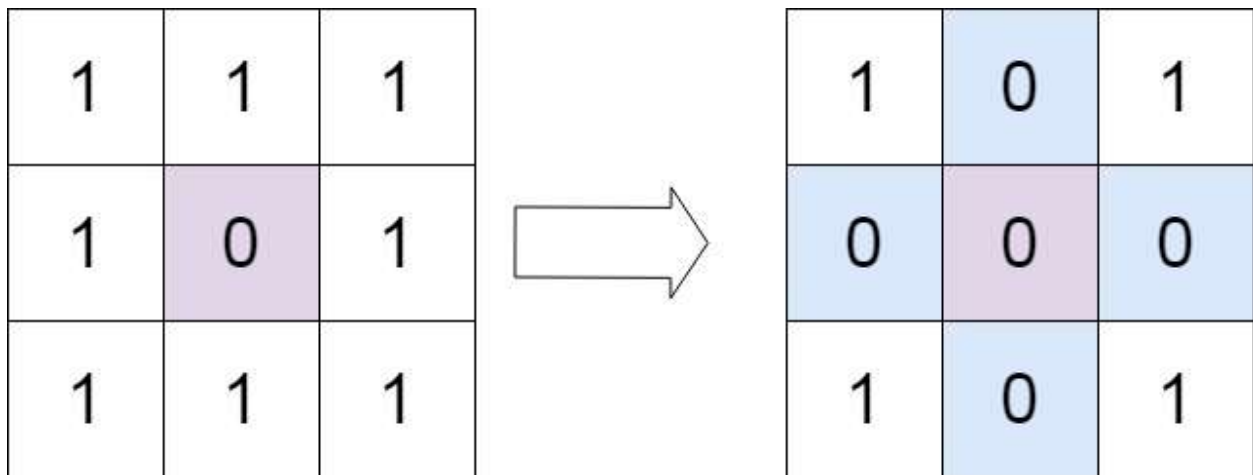


## Set Matrix Zeroes

Given an  $m \times n$  integer matrix `matrix`, if an element is 0, set its entire row and column to 0's.

You must do it [in place](#).

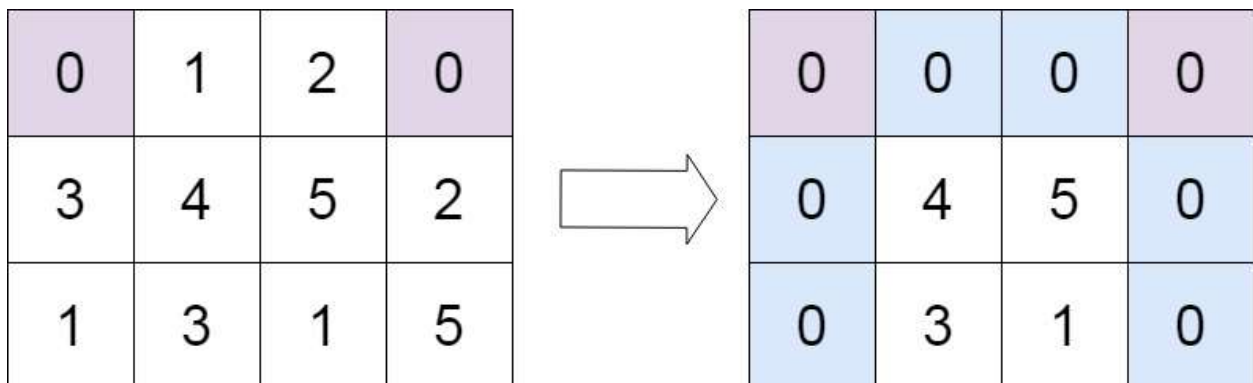
**Example 1:**



**Input:** `matrix = [[1,1,1],[1,0,1],[1,1,1]]`

**Output:** `[[1,0,1],[0,0,0],[1,0,1]]`

**Example 2:**



**Input:** `matrix = [[0,1,2,0],[3,4,5,2],[1,3,1,5]]`

**Output:** `[[0,0,0,0],[0,4,5,0],[0,3,1,0]]`

**Constraints:**

- `m == matrix.length`

- $n == \text{matrix}[0].\text{length}$
- $1 \leq m, n \leq 200$
- $-2^{31} \leq \text{matrix}[i][j] \leq 2^{31} - 1$

**Follow up:**

- A straightforward solution using  $O(mn)$  space is probably a bad idea.
- A simple improvement uses  $O(m + n)$  space, but still not the best solution.
- Could you devise a constant space solution?