

# 73. Set Matrix Zeroes

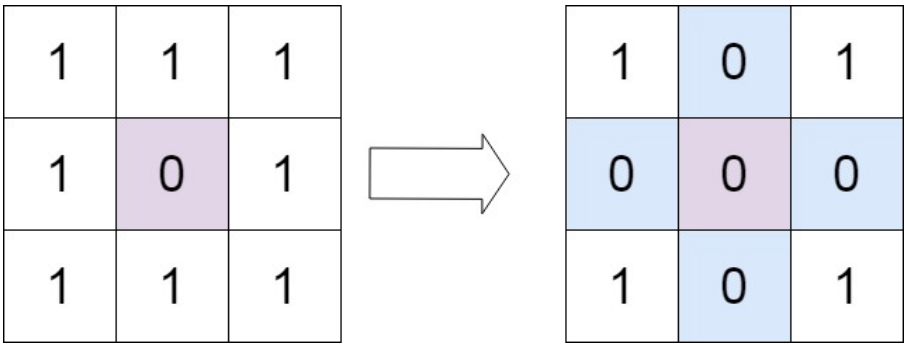
Difficulty	medium
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Finished	@July 7, 2023
Problem	array
Previously asked company	Facebook Microsoft
website	leetcode

Question:

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

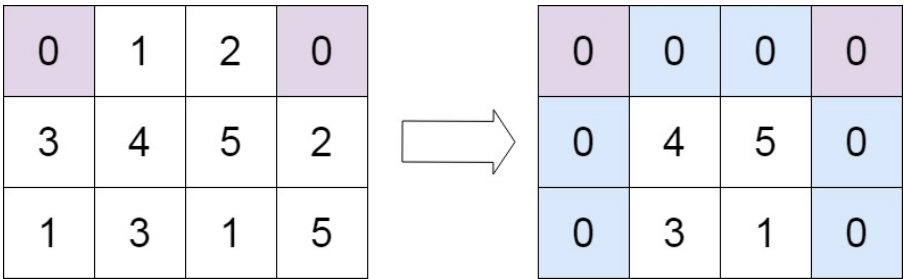
You must do it in place.

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]]`

My Solution:

Time complexity:  $O(mn)$

Space complexity:  $O(n)$  where  $n$  = no of zeros present in input array

```

class Solution(object):
    def setZeroes(self, matrix):
        temp = []
        m = len(matrix)
        n = len(matrix[0])
        for i in range(m):
            for j in range(n):
                if matrix[i][j] == 0:
                    temp.append([i,j])

        def custom(a,b):
            for i in range(m):
                for j in range(n):
                    if i == a or j == b:
                        matrix[i][j] = 0
        for i in temp:
            custom(i[0],i[1])

```

### OptimalSolution:

Time complexity:  $O(mn)$

Space complexity:  $O(1)$

```

class Solution(object):
    def setZeroes(self, matrix):
        rows, cols = len(matrix), len(matrix[0])
        rowZero = False

        for i in range(rows):
            for j in range(cols):
                if matrix[i][j] == 0:
                    matrix[0][j] = 0
                    if i > 0:
                        matrix[i][0] = 0
            else:
                rowZero = True

        for i in range(1,rows):
            for j in range(1,cols):
                if matrix[0][j] == 0 or matrix[i][0] == 0:
                    matrix[i][j] = 0

        if matrix[0][0] == 0:
            for i in range(rows):
                matrix[i][0] = 0

        if rowZero:
            for i in range(cols):
                matrix[0][i] = 0

```