leetcode.com /problems/set-matrix-zeroes/description/

Unknown Title

73. Set Matrix Zeroes

Medium

Topics
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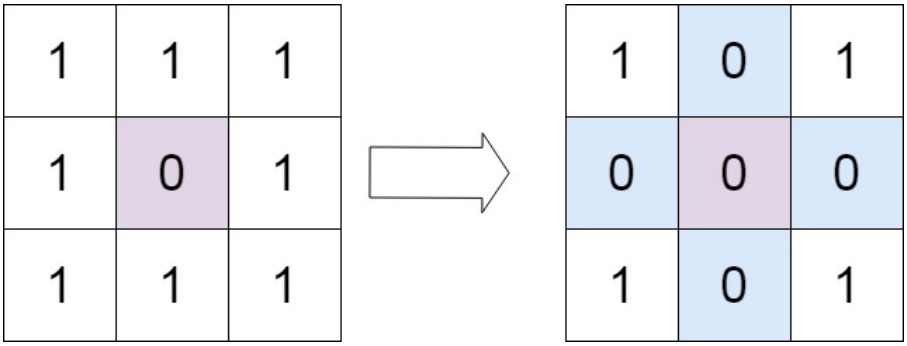
Hint

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

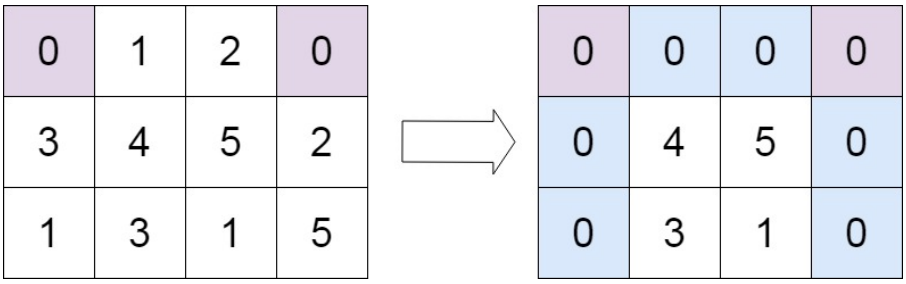
You must do it in place.

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:



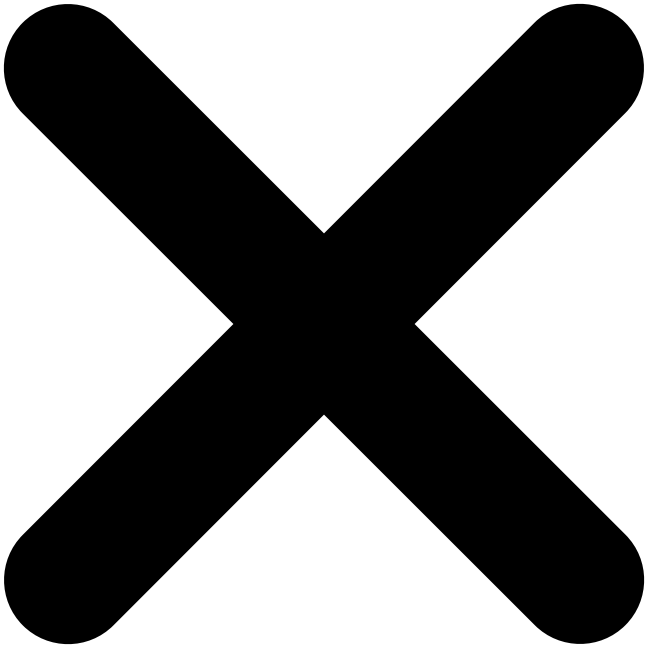
Input: `matrix = [[0,1,2,0],[3,4,5,2],[1,3,1,5]]`
Output: `[[0,0,0,0],[0,4,5,0],[0,3,1,0]]`

Constraints:

- `m == matrix.length`
- `n == matrix[0].length`
- `1 <= m, n <= 200`
- -2^{31} `<= matrix[i][j] <=` 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?



Seen this question in a real interview before?

1/5

Yes

No

Accepted

2,396,304/3.9M

Acceptance Rate

62.1%

Companies

Hint 1

If any cell of the matrix has a zero we can record its row and column number using additional memory. But if you don't want to use extra memory then you can manipulate the array instead. i.e. simulating exactly what the question says.

Hint 2

Setting cell values to zero on the fly while iterating might lead to discrepancies. What if you use some other integer value as your marker? There is still a better approach for this problem with O(1) space.

Hint 3

We could have used 2 sets to keep a record of rows/columns which need to be set to zero. But for an O(1) space solution, you can use one of the rows and and one of the columns to keep track of this information.

Hint 4

We can use the first cell of every row and column as a flag. This flag would determine whether a row or column has been set to zero.

Discussion (307)

@

💡 Discussion Rules

×

1. Please don't post **any solutions** in this discussion.

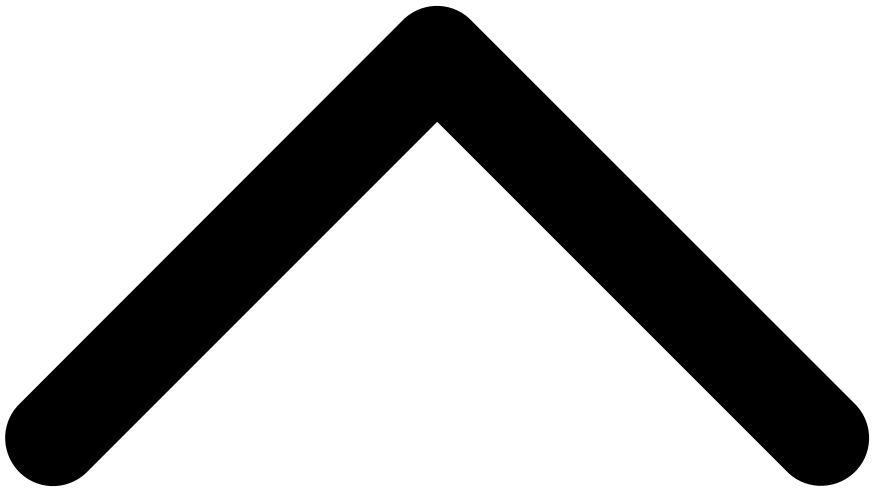
2. The problem discussion is for asking questions about the problem or for sharing tips - anything except for solutions.

3. If you'd like to share your solution for feedback and ideas, please head to the solutions tab and post it there.

Abhi

Feb 22, 2024

This is my 100th problem



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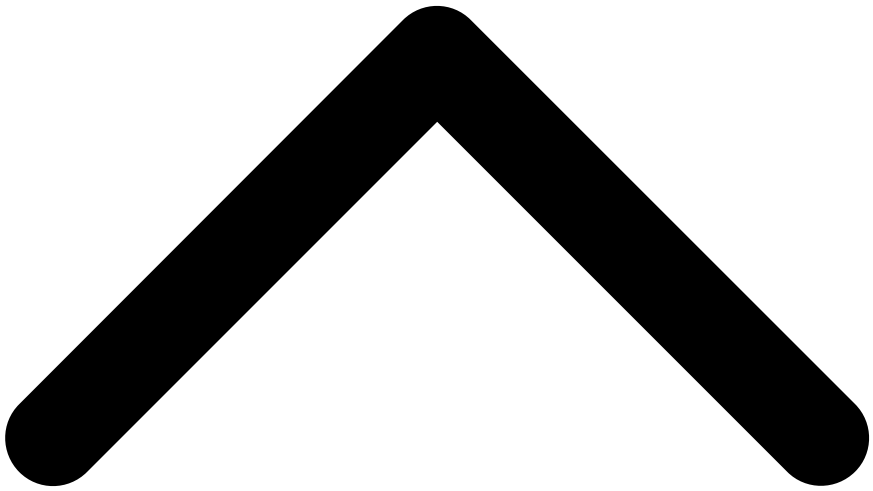
zarahan

Feb 03, 2014

Why the expected output for [[0],[1]] is [[0],[1]]. I think the output should be [[0],[0]] because the first element '0' makes items in first column are set to be 0.



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Gary

Aug 19, 2020

in description, it says:
-10^9 <= matrix[i][j] <= 10^9

And I am thinking to use Interger.MAX_VALUE to achieve Space O(1)
Since Interger.MAX_VALUE = 2^31 -1 > 10^9

However it return a bad test case which contain

Input : [[2147483647],[2],[3]]
Output : [[0],[2],[3]]
Expected : [[2147483647],[2],[3]]

Leetcode, make sure you modify the constrains in the description if you want to use test case outside the bound! :(

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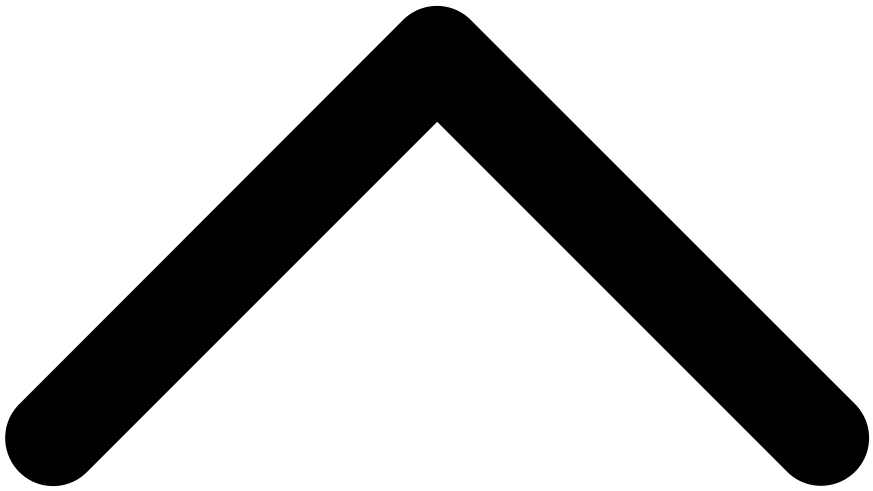
zappro1

May 15, 2024

This sucks



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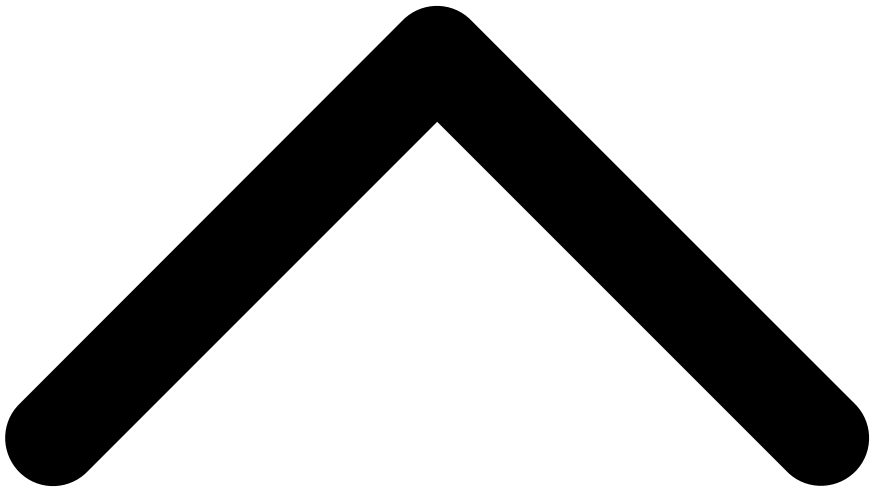
Shailendra Rajak

Dec 16, 2022

Don't Share the code here .



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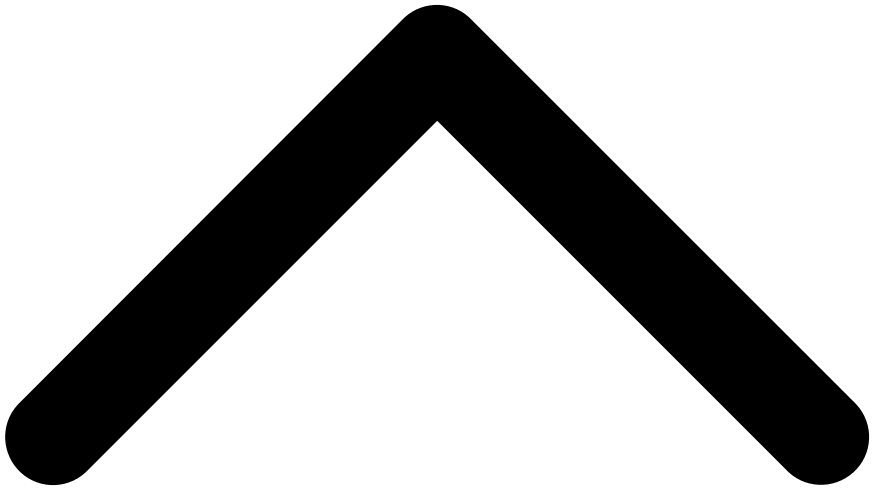
Ryan Glassman

Jan 12, 2020

Then they should have constrained the range of values allowed in the matrix. Given the (lack of) constraints of the problem as written, it is **not possible** to set an integer flag that couldn't also possibly come up as a value in the matrix. That's an hour of my life I'll never get back.



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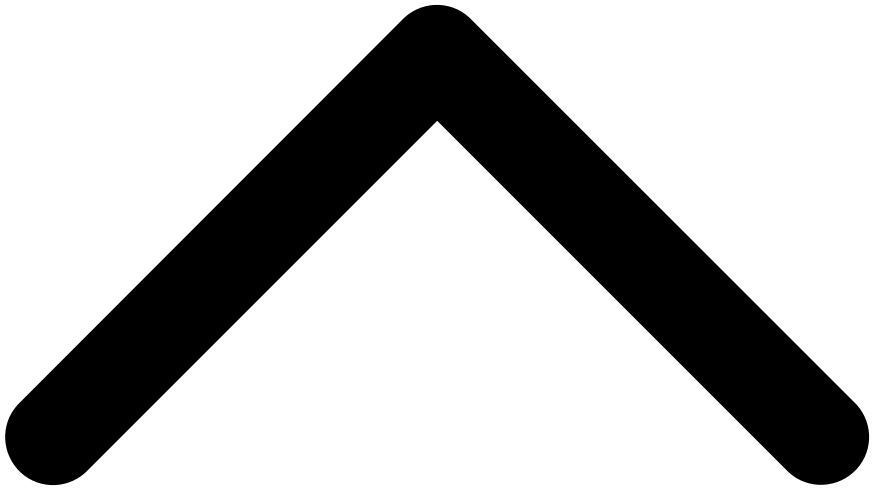
Kushagra Nigam

May 16, 2023

The O(1) space solution to this question is actually really intuitive and it can help in many similar questions with larger scopes.



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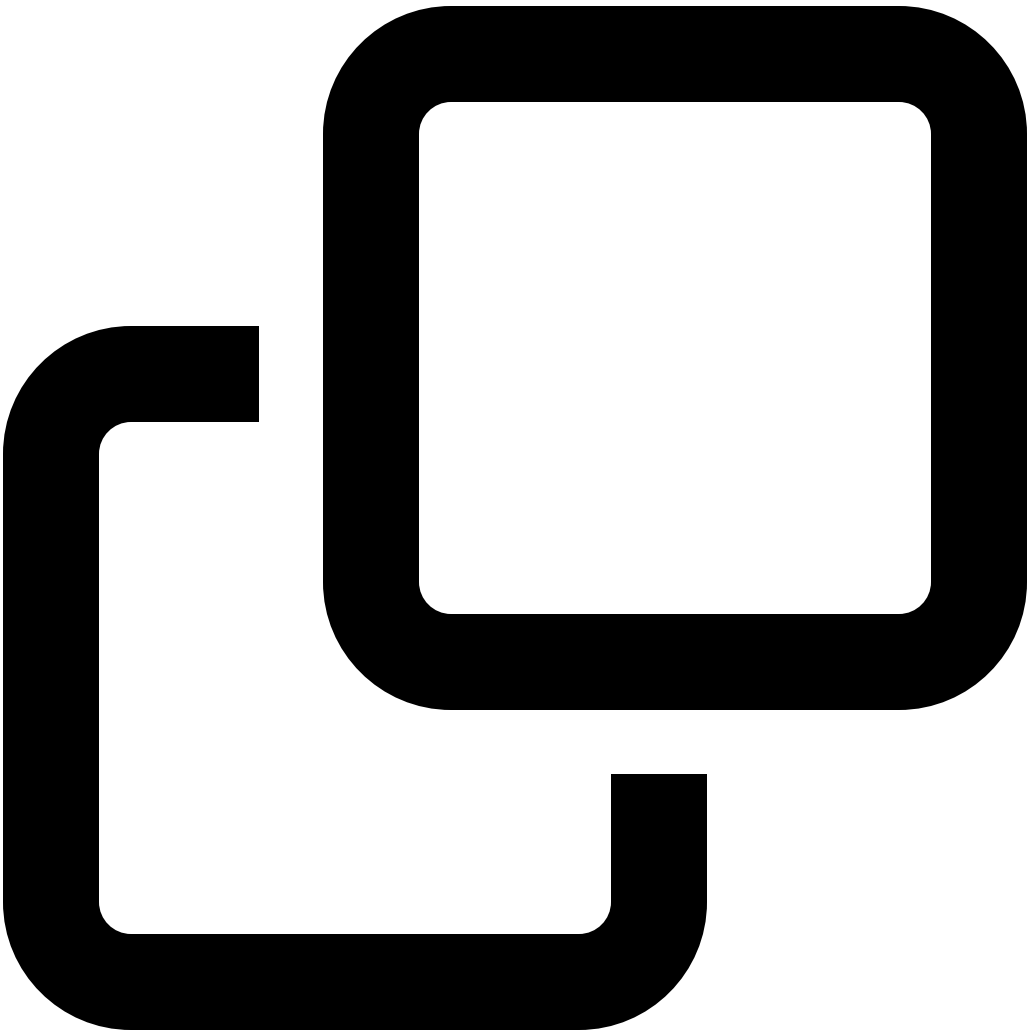
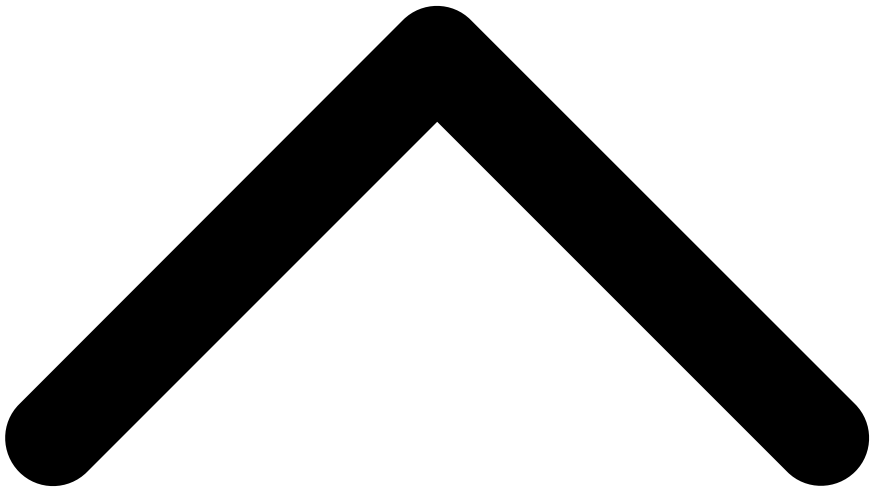
test cases

```
[[1,1,1],[1,0,1],[1,1,1]]
[[0,1,2,0],[3,4,5,2],[1,3,1,5]]
[[1],[0]]
[[0,1,1],[1,1,1],[1,0,0]]
[[-4,-2147483648,6,-7,0],[-8,6,-8,-6,0],[2147483647,2,-9,-6,-10]]
```

```
[[2147483647],[2],[3]]
[[1,2,3,4],[5,0,7,8],[0,10,11,12],[13,14,15,0]]
```





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Tip

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Temp-acc

Sep 10, 2024

One of the good approach to solve it in in place would be:

1. Find if any cell in first row or first column is set as 0.
2. Traverse through rest of matrix and if any cell=0 is observed, set corresponding cell in first row and first column as 0.
3. Set the rows and columns to 0 for which cell with value 0 is observed in first row and first column.
4. If there were cells with 0 value observed intially in first row or first column, set first row and column to 0 respectively.

That's all.

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Tip

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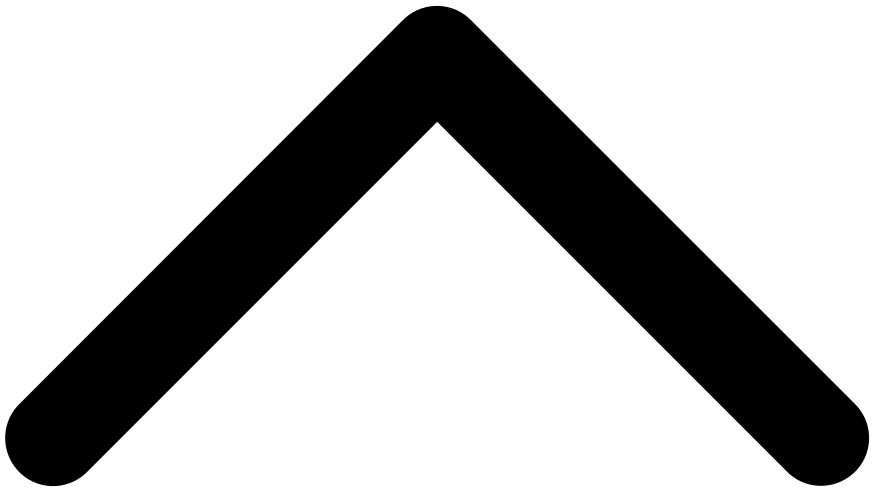
sk4142

Sep 25, 2023

For the O(1) space solution, consider how we can incorporate the extra arrays in the O(m + n) memory solution into the matrix.

- Hint: Use the first row and first column and use one extra boolean for when they overlap.



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