2661. First Completely Painted Row or Column

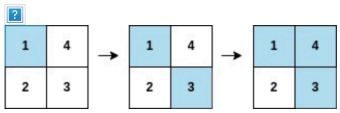
Medium | Topics | Companies | Hint

You are given a **0-indexed** integer array `arr`, and an `m x n` integer **matrix** `mat`. `arr` and `mat` both contain **all** the integers in the range `[1, m * n]`.

Go through each index `i` in `arr` starting from index `0` and paint the cell in `mat` containing the integer `arr[i]`.

Return *the smallest index* `i` *at which either a row or a column will be completely painted in* `mat`.

Example 1:




```
Input: arr = [1,3,4,2], mat = [[1,4],[2,3]]
Output: 2
Explanation: The moves are shown in order, and both the first row and second column of the
matrix become fully painted at arr[2].
```

eg. mat 3×4

arr [2. 5. 7. 9. 1. 10. 11. 12. 4. 8. 3. 6]

1	8	3	7
9	2	6	4
5	12	10	11

→ m = 3
n = 4

1 (0,0)
2 (1,1)
3 (0,2)
4 (1,3)
5 (2,0)
6 (1,2)
7 (0,3)
8 (0,1)
9 (1,0)
10 (2,2)
11 (2,3)
12 (2,1)

r = 0. 0. 0. 0. 1. 1. 1. 2. 2. 2. 2

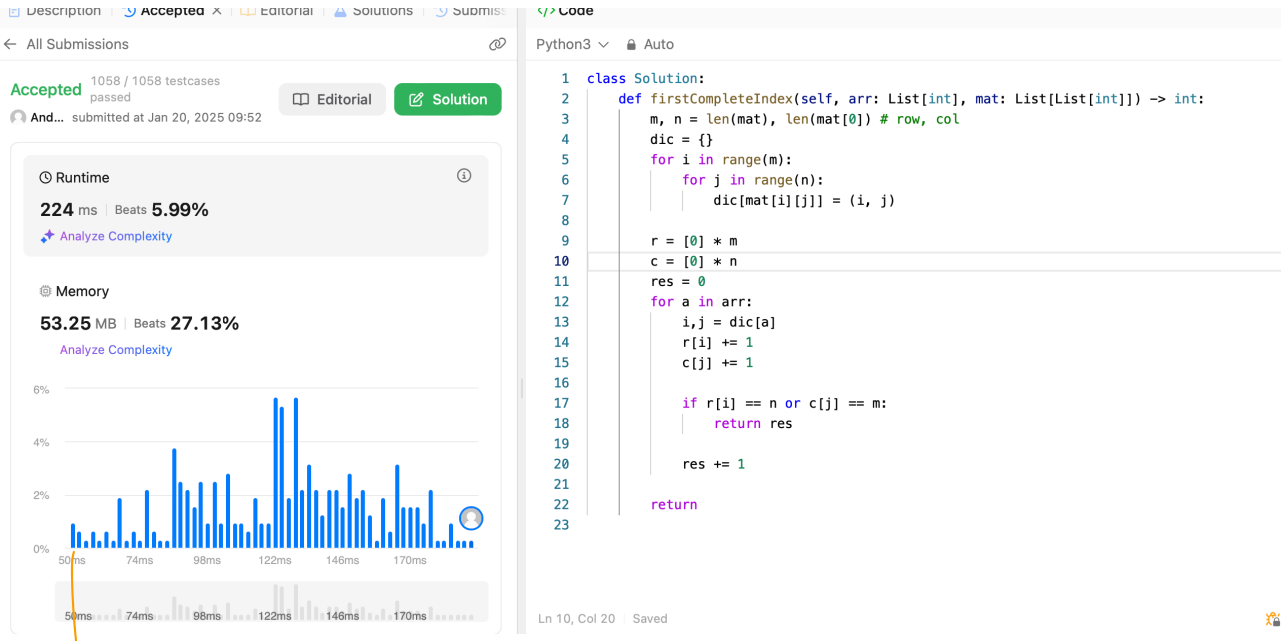
c = 0. 0. 0. 1. 1. 1. 2. 2. 2. 3. 3. 3

arr = [2. 5. 7. 9. 1. 10. 11. 12. 4. 8. 3. 6]

(1,1) (2,2) (0,3) (1,0) (0,0)

↳ col [0] full filled now

res = 4



Python

```python
class Solution:
  def firstCompleteIndex(self, arr: list[int], mat: list[list[int]]) -> int:
    m = len(mat)
    n = len(mat[0])
    # rows[i] := the number of painted grid in the i-th row
    rows = [0] * m
    # cols[j] := the number of painted grid in the j-th column
    cols = [0] * n
    # numToRow[num] := the i-th row of `num` in `mat`
    numToRow = [0] * (m * n + 1)
    # numToCol[num] := the j-th column of `num` in `mat`
    numToCol = [0] * (m * n + 1)

    for i, row in enumerate(mat):
      for j, num in enumerate(row):
        numToRow[num] = i
        numToCol[num] = j

    for i, a in enumerate(arr):
      rows[numToRow[a]] += 1
      if rows[numToRow[a]] == n:
        return i
      cols[numToCol[a]] += 1
      if cols[numToCol[a]] == m:
        return i
```

Almost the same thing.