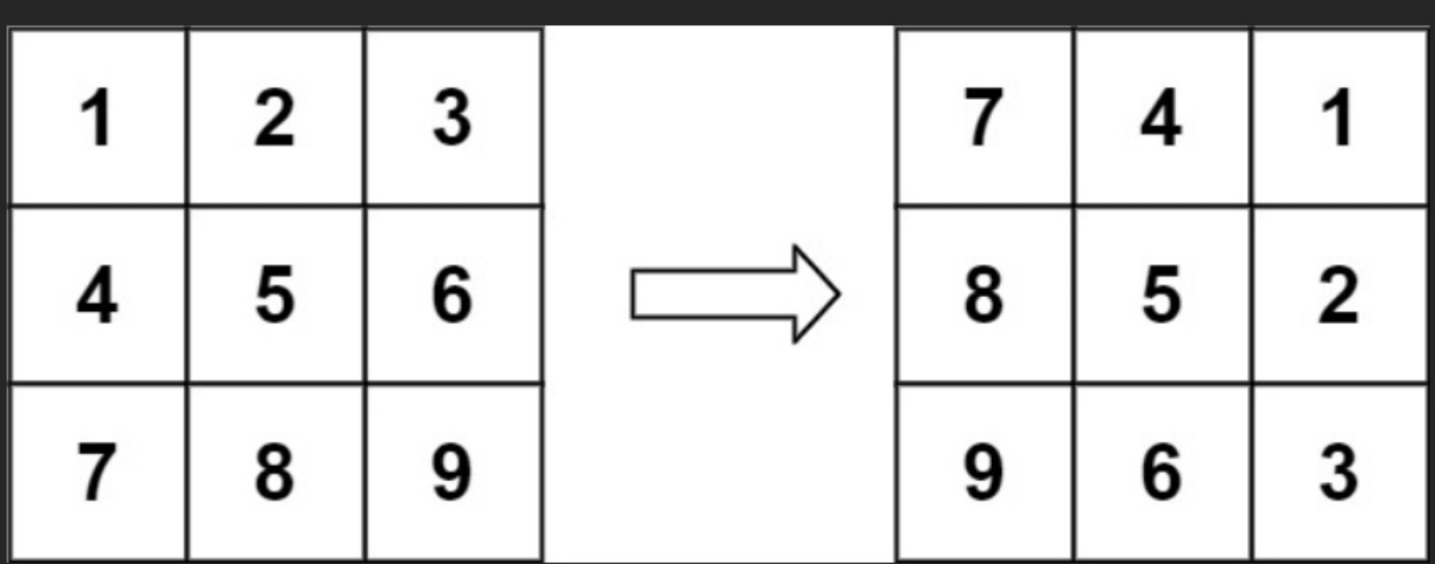
48. Rotate Image

Medium | Topics | Companies

You are given an `n x n` 2D `matrix` representing an image, rotate the image by **90** degrees (clockwise).

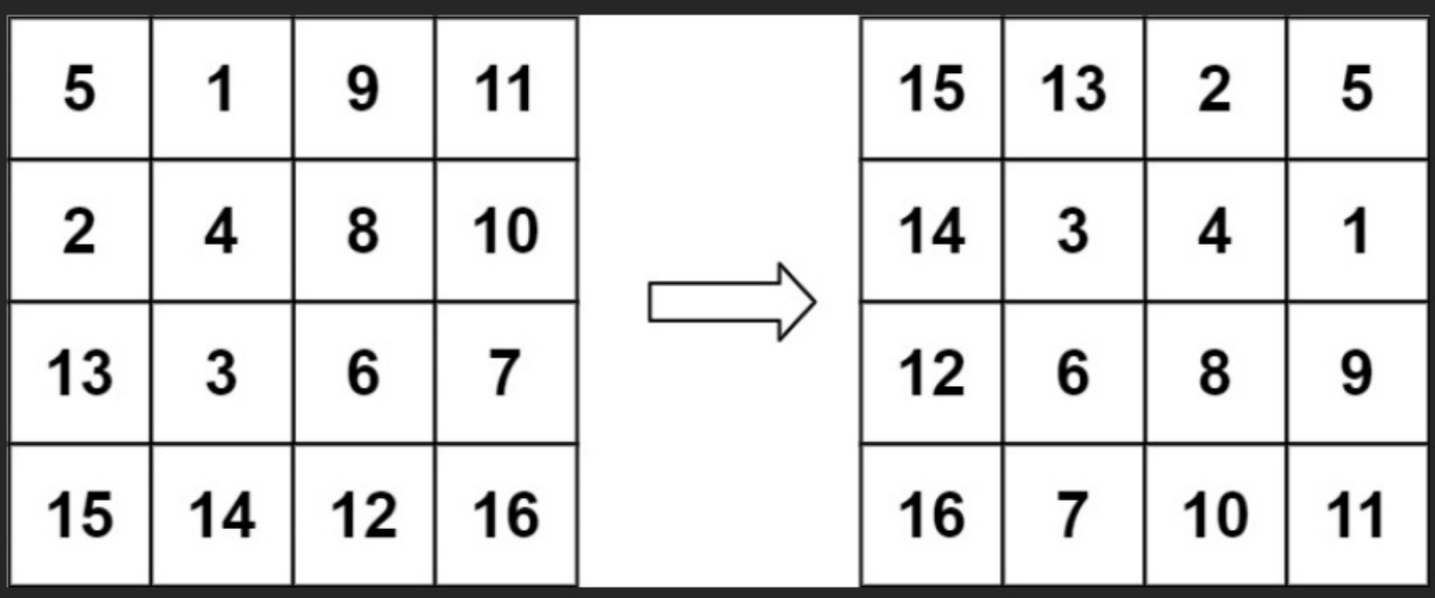
You have to rotate the image **in-place**, which means you have to modify the input 2D matrix directly. **DO NOT** allocate another 2D matrix and do the rotation.

Example 1:




```
Input: matrix = [[1,2,3],[4,5,6],[7,8,9]]
Output: [[7,4,1],[8,5,2],[9,6,3]]
```

Example 2:



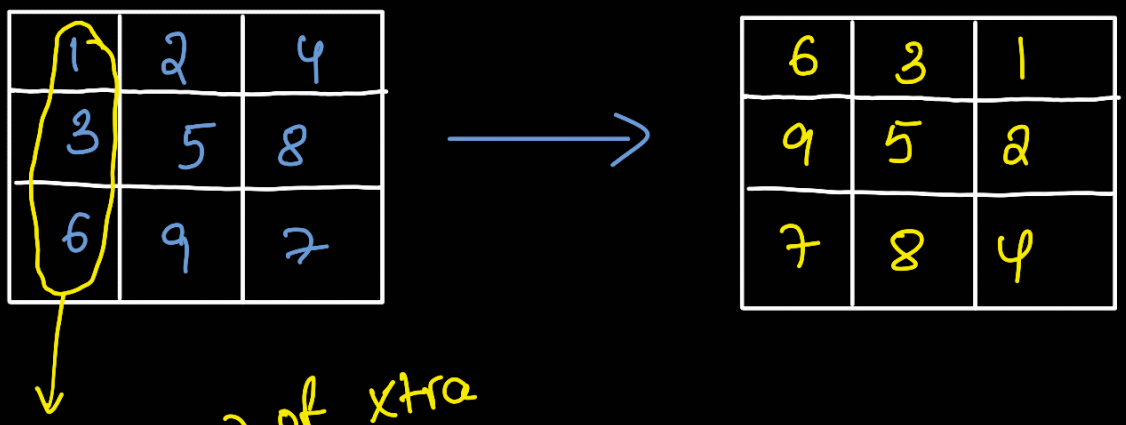

```
Input: matrix = [[5,1,9,11],[2,4,8,10],[13,3,6,7],[15,14,12,16]]
Output: [[15,13,2,5],[14,3,4,1],[12,6,8,9],[16,7,10,11]]
```

Constraints:

- `n == matrix.length == matrix[i].length`
- `1 <= n <= 20`
- `-1000 <= matrix[i][j] <= 1000`

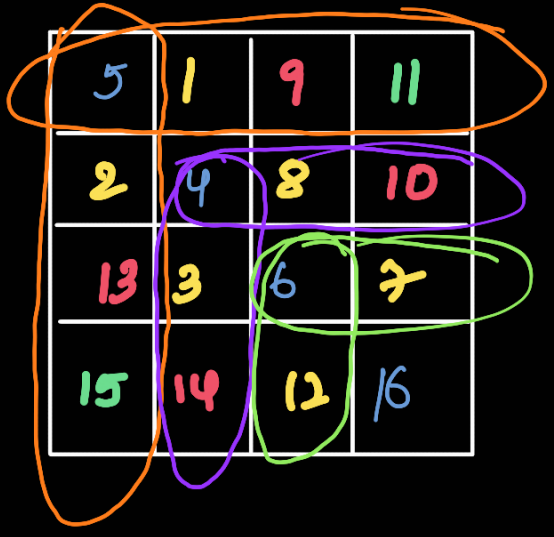
Accepted 1.4M | Submissions 2M | Acceptance Rate 72.5%

Approach 1: Using xtra matrix



fill the row of xtra matrix with these values taken from last element.
Similarly all columns

Approach 2: we can view this transformation in different ways



Take i^{th} row and i^{th} column and swap the respective elements.
After that the matrix will be

5	2	13	15
1	4	3	14
9	8	6	12
11	10	7	16

now reverse each row.

15	13	2	5
14	3	4	1
12	6	8	9
16	7	10	11

This is the final matrix after 90° rotation.

Approach 8: By rotating element wise consides each inner square

a b

5	1	9	11
2	4	8	10
13	3	6	7
15	14	12	16

c d

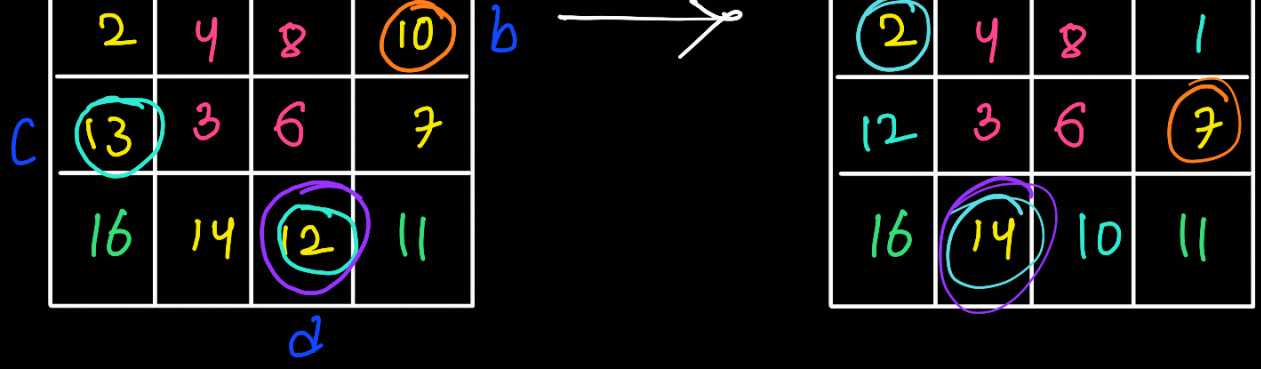
i.e. Swap 5, 11
Swap 15, 16
Swap 11, 15

i.e. each marked positions are being rotated 90°.

a

15	1	9	5

15	13	9	5



like this we do in each inner square