# 048. Rotate Image

# **048 Rotate Image**

- array
- Onion-rotate

## **Description**

You are given an n x n 2D matrix representing an image.

Rotate the image by 90 degrees (clockwise).

#### Note:

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:

```
Given input matrix =
[
   [1,2,3],
   [4,5,6],
   [7,8,9]
],

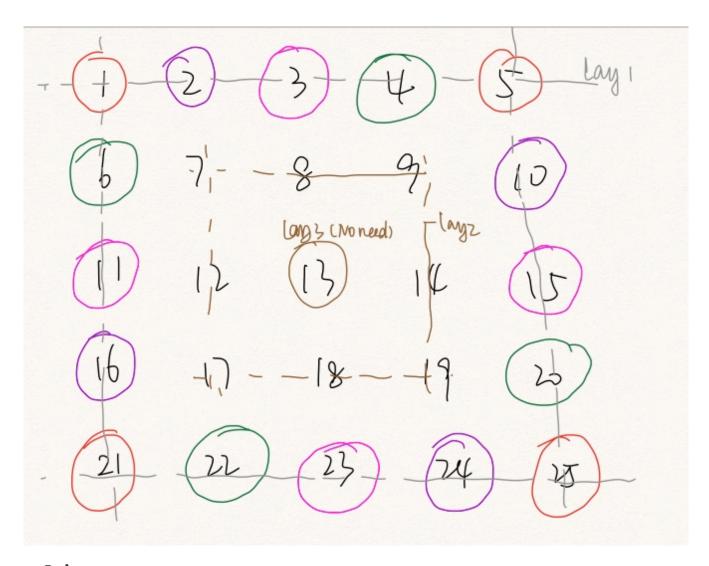
rotate the input matrix in-place such that it becomes:
[
   [7,4,1],
   [8,5,2],
   [9,6,3]
]
```

#### Example 2:

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

rotate the input matrix in-place such that it becomes:
[
    [15,13, 2, 5],
    [14, 3, 4, 1],
    [12, 6, 8, 9],
    [16, 7,10,11]
]
```

### 1. Thought line



#### 2. Onion-rotate