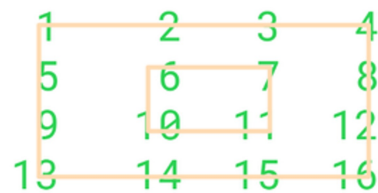


Rotate matrix by 90 degree

Monday, November 1, 2021 8:28 AM

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



Original array

From <<https://www.geeksforgeeks.org/rotate-matrix-90-degree-without-using-extra-space-set-2/>>

total $n/2-1$ boundaries

From <<https://www.geeksforgeeks.org/rotate-matrix-90-degree-without-using-extra-space-set-2/>>



for outermost boundary

From <<https://www.geeksforgeeks.org/rotate-matrix-90-degree-without-using-extra-space-set-2/>>

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

for next inner boundary

From <<https://www.geeksforgeeks.org/rotate-matrix-90-degree-without-using-extra-space-set-2/>>

```
// JAVA Code for left Rotation of a matrix
// by 90 degree without using any extra space
import java.util.*;
```

```
class GFG {
```

```
    // Function to rotate matrix anticlockwise by 90
```

```

// degrees.
static void rotateby90(int arr[][])
{
    int n = arr.length;
    int a = 0, b = 0, c = 0, d = 0;

    // iterate over all the boundaries of the matrix
    for (int i = 0; i <= n / 2 - 1; i++) {

        // for each boundary, keep on taking 4 elements
        // (one each along the 4 edges) and swap them in
        // anticlockwise manner
        for (int j = 0; j <= n - 2 * i - 2; j++) {
            a = arr[i + j][i];
            b = arr[n - 1 - i][i + j];
            c = arr[n - 1 - i - j][n - 1 - i];
            d = arr[i][n - 1 - i - j];

            arr[i + j][i] = d;
            arr[n - 1 - i][i + j] = a;
            arr[n - 1 - i - j][n - 1 - i] = b;
            arr[i][n - 1 - i - j] = c;
        }
    }
}

// Function for print matrix
static void printMatrix(int arr[][])
{
    for (int i = 0; i < arr.length; i++) {
        for (int j = 0; j < arr[0].length; j++)
            System.out.print(arr[i][j] + " ");
        System.out.println("");
    }
}

/* Driver program to test above function */
public static void main(String[] args)
{
    int arr[][] = { { 1, 2, 3, 4 },
                    { 5, 6, 7, 8 },
                    { 9, 10, 11, 12 },
                    { 13, 14, 15, 16 } };

    rotateby90(arr);
    printMatrix(arr);
}

```

From <<https://www.geeksforgeeks.org/rotate-matrix-90-degree-without-using-extra-space-set-2/>>