

Print row wise with condition

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int row = scn.nextInt();
    int col = scn.nextInt();
    int[][] arr = new int[row][col];
    for (int i = 0; i < row; i++) {
        for (int j = 0; j < col; j++) {
            arr[i][j] = scn.nextInt();
        }
    }
    rowWise(arr, row, col);
}

public static void rowWise(int[][] arr, int row, int col) {
    for (int i = 0; i < row; i++) {
        if (i % 2 == 0) {
            for (int j = 0; j < col; j++) {
                System.out.print(arr[i][j] + " ");
            }
        } else {
            for (int j = col - 1; j >= 0; j--) {
                System.out.print(arr[i][j] + " ");
            }
        }
        System.out.println();
    }
}
```

logic

traverse from left to right
for even idx

&

traverse from right to left
for odd idx

Convert 1-D Array to 2-D Array

$n = 9$

arr

1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8

row = 3

col = 3

ans

	0	1	2
0			
1			
2			

idx in 1d \rightarrow idx in 2D

0 \rightarrow (0, 0)

1 \rightarrow (0, 1)

2 \rightarrow (0, 2)

3 \rightarrow (1, 0)

4 \rightarrow (1, 1)

5 \rightarrow (1, 2)

6 \rightarrow (2, 0)

7 \rightarrow (2, 1)

8 \rightarrow (2, 2)

row = idx / col
col = $\text{idx} \% \text{col}$

$$n = 9$$

arr

1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8

$$\text{row} = 3$$

$$\text{col} = 3$$

ans

	0	1	2
0	1	2	3
1	4	5	6
2	7	8	9

$$\begin{aligned} r &= i / \text{col} \\ c &= i \% \text{col} \end{aligned}$$

1D idx \rightarrow 2D

$$0 \rightarrow \begin{aligned} \text{row} &= 0/3 = 0 \\ \text{col} &= 0\%3 = 0 \end{aligned}$$

$$1 \rightarrow \begin{aligned} \text{row} &= 1/3 = 0 \\ \text{col} &= 1\%3 = 1 \end{aligned}$$

$$2 \rightarrow \begin{aligned} \text{row} &= 2/3 = 0 \\ \text{col} &= 2\%3 = 2 \end{aligned}$$

$$3 \rightarrow \begin{aligned} \text{row} &= 3/3 = 1 \\ \text{col} &= 3\%3 = 0 \end{aligned}$$

$$4 \rightarrow \begin{aligned} \text{row} &= 4/3 = 1 \\ \text{col} &= 4\%3 = 1 \end{aligned}$$

$$5 \rightarrow \begin{aligned} \text{row} &= 5/3 = 1 \\ \text{col} &= 5\%3 = 2 \end{aligned}$$

$$6 \rightarrow \begin{aligned} \text{row} &= 6/3 = 2 \\ \text{col} &= 6\%3 = 0 \end{aligned}$$

$$7 \rightarrow \begin{aligned} \text{row} &= 7/3 = 2 \\ \text{col} &= 7\%3 = 1 \end{aligned}$$

$$8 \rightarrow \begin{aligned} \text{row} &= 8/3 = 2 \\ \text{col} &= 8\%3 = 2 \end{aligned}$$

code

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();
    int[] arr = new int[n];
    for (int i = 0; i < n; i++) {
        arr[i] = scn.nextInt();
    }
    int row = scn.nextInt();
    int col = scn.nextInt();

    int[][] ans = onedToTwod(arr, n, row, col);
    for (int i = 0; i < row; i++) {
        for (int j = 0; j < col; j++) {
            System.out.print(ans[i][j] + " ");
        }
        System.out.println();
    }
}
```

```
public static int[][] onedToTwod(int[] arr, int n, int row, int col) {
    int[][] ans = new int[row][col];
    → for (int i = 0; i < n; i++) {
        [ int r = i / col; ←
          int c = i % col; ←
          ans[r][c] = arr[i];
        }
    return ans;
}
```

$$i=0, \quad r = 0/3 = 0 \\ c = 0\%3 = 0$$

$$\underline{\underline{ans[0][0] = arr[0]}}$$

ex

$n = 9$

1	2	3	4	5	6	7	8
0	1	2	3	4	5	6	7

row = 2

col = 4

	0	1	2	3
0	1	2	3	4
1	5	6	7	8

$$0 \rightarrow 0/4 = 0 \\ 0\%4 = 0$$

$$1 \rightarrow 1/4 = 0 \\ 1\%4 = 1$$

$$2 \rightarrow 2/4 = 0 \\ 2\%4 = 2$$

$$3 \rightarrow 3/4 = 0 \\ 3\%4 = 3$$

$$4 \rightarrow 4/4 = 1 \\ 4\%4 = 0$$

$$5 \rightarrow 5/4 = 1 \\ 5\%4 = 1$$

$$6 \rightarrow 6/4 = 1 \\ 6\%4 = 2$$

$$7 \rightarrow 7/4 = 1 \\ 7\%4 = 3$$

What will
be the
for 2D to
1D

4

	0	1	2	3
0	1	2	3	4
1	5	6	7	8

$n = 9$

1	2	3	4	5	6	7	8
0	1	2	3	4	5	6	7

row = 2

col = 4

$$\begin{aligned}
 (0,0) &\rightarrow 0 \rightarrow 0 \times 4 + 0 = 0 \\
 (0,1) &\rightarrow 1 \rightarrow 0 \times 4 + 1 = 1 \\
 (0,2) &\rightarrow 2 \rightarrow 0 \times 4 + 2 = 2 \\
 (0,3) &\rightarrow 3 \rightarrow 0 \times 4 + 3 = 3 \\
 (1,0) &\rightarrow 4 \rightarrow 1 \times 4 + 0 = 4 \\
 \boxed{(1,1) \rightarrow 5} &\rightarrow 1 \times 4 + 1 = 5 \\
 (1,2) &\rightarrow 6 \rightarrow 1 \times 4 + 2 = 6 \\
 (1,3) &\rightarrow 7 \rightarrow 1 \times 4 + 3 = 7
 \end{aligned}$$

$r = 1$

$c = 1$

idx = 5

$$\underline{\underline{\text{idx} = r \times \text{col} + c}}$$

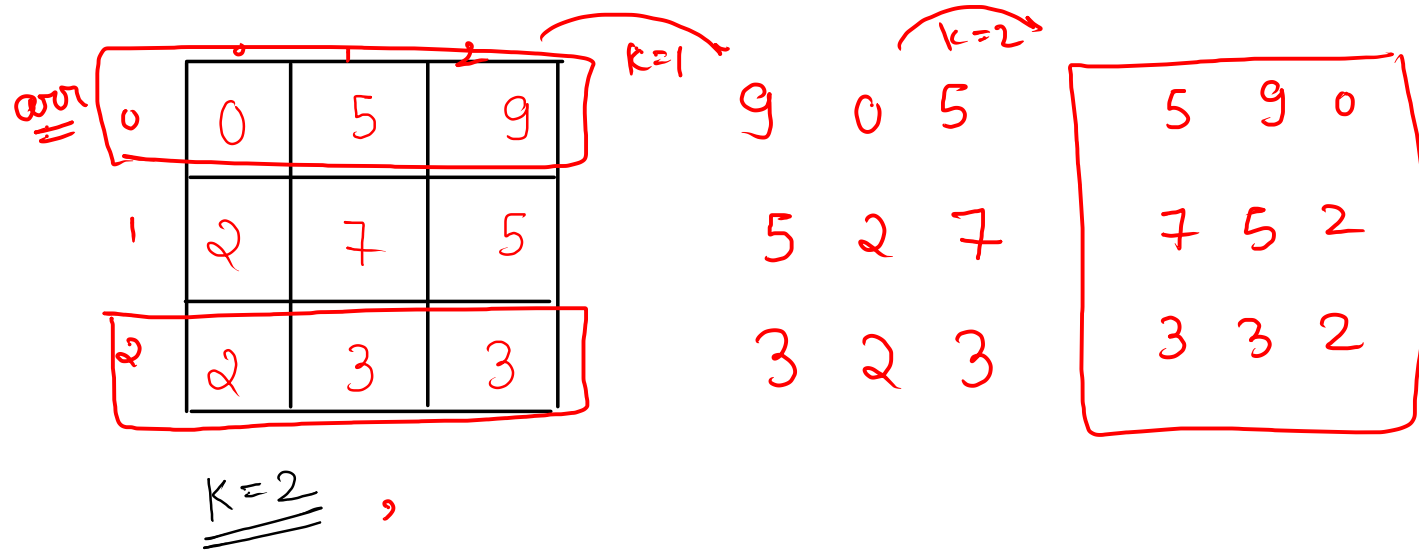
Shift Matrix Row-Wise

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();
    int[][] arr = new int[n][n];
    for (int i = 0; i < n; i++) {
        for (int j = 0; j < n; j++) {
            arr[i][j] = scn.nextInt();
        }
    }
    int k = scn.nextInt();
    k = n - k;
    rotateRowWise(arr, n, k);
}
```

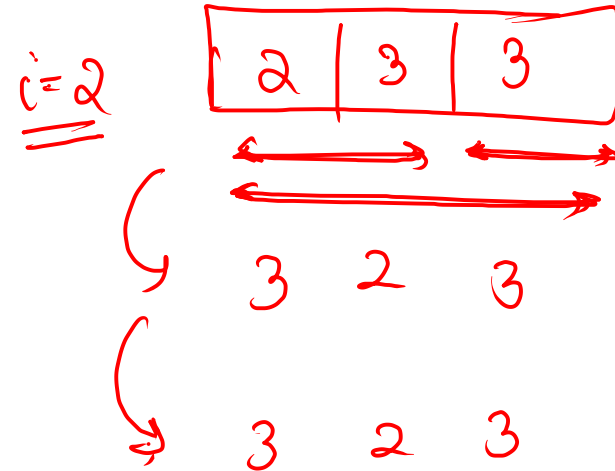
```
public static void rotateRowWise(int[][] arr, int n, int k) {
    for (int i = 0; i < n; i++) {
        reverse(arr[i], n - k, n - 1);
        reverse(arr[i], 0, n - k - 1);
        reverse(arr[i], 0, n - 1);
    }
}
```

```
for (int i = 0; i < n; i++) {
    for (int j = 0; j < n; j++) {
        System.out.print(arr[i][j] + " ");
    }
    System.out.println();
}
```

```
public static void reverse(int[] arr, int si, int ei) {
    while (si < ei) {
        swap(arr, si, ei);
        si++;
        ei--;
    }
}
```



arr[0]
arr[1]
arr[2]



Modify The Matrix

$M =$

3


$C =$

4

1 0 0 1

0 0 1 0

0 0 0 0



1	1	1	1
1	1	1	1
1	0	1	1

Ques

1	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	1	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	1

$$T.C = O(N^2)$$

$$S.C < \underline{\underline{O(N^2)}}$$

ans

1	1	1	1	1	1	1
1	0	1	0	0	0	1
1	1	1	1	1	1	1
1	0	1	0	0	0	1
1	1	1	1	1	1	1