1. print alt col. wise.

$\left\{ \begin{array}{l} j \rightarrow \text{col} \rightarrow j+2 \\ i \rightarrow \text{row} \end{array} \right\}$ col. major

$\left. \begin{array}{l} i \rightarrow \text{rows.} \\ j \rightarrow \text{cols} \end{array} \right\}$ row major.

eg.

$$\begin{array}{ccc} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{array} \Rightarrow \begin{array}{ccc} 1 & 4 & 7 \\ 3 & 6 & 9 \end{array}$$

2. Print upper Δ matrix

Logic.

Yellow → 0

Blue → A[i][j]

$$\begin{array}{ccc} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{array} \quad 3 \times 3 \Rightarrow$$

$i \leq j$

0,0	0,1 ✓	0,2 ✓
1,0	1,1 ✓	1,2 ✓
2,0	2,1	2,2 ✓

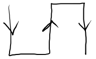
$i > j$

$$\left\{ \begin{array}{l} i \leq j \rightarrow A[i][j] \\ i > j \rightarrow 0 \end{array} \right.$$

3. Print col wise with given cond^n.

0,0	0,1	0,2
1,0	1,1	1,2 ⇐
2,0	2,1	2,2

$$\begin{array}{ccc} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{array}$$



$$\Rightarrow \begin{array}{ccc} 1 & 4 & 7 \\ 8 & 5 & 2 \\ 3 & 6 & 9 \end{array}$$

j=0 < 0, 1, 2

j=1 < 2, 1, 0

j=2 < 0, 1, 2

even j → t 2B

odd j → b 2 T

4. Compare 2 Mat.

$$\begin{array}{ccc} 1 & 2 & 3 \\ 4 & 5 & 6 \end{array} \quad n \times m \qquad \begin{array}{cc} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{array} \quad p \times q$$

n==p && m==q

⇓

false if ⇒ n!=p || m!=q ⇒ false.

n==p   m==q

$$\begin{array}{ccc} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{array} \rightarrow \text{Same.}$$

Interchange the Row

Interchange elements of the **first** and **last** row of a matrix.

Output Format

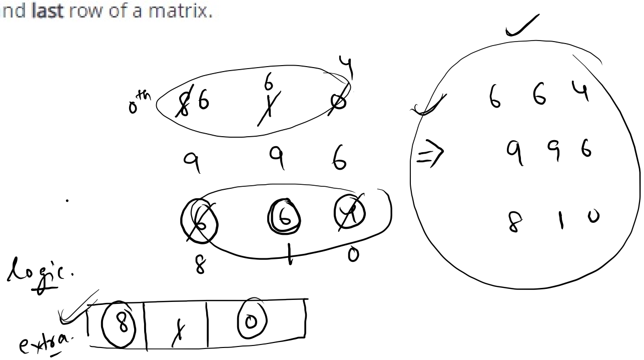
Print the matrix after interchanging the row

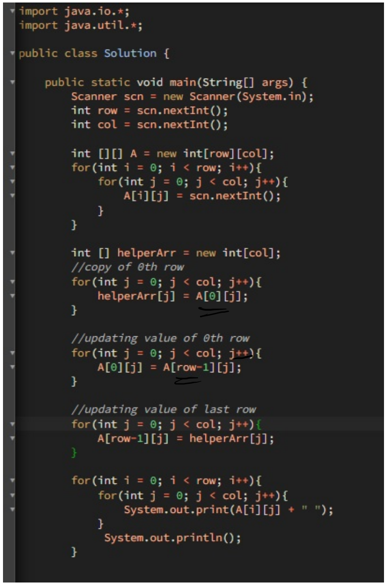
Sample Input 0

```
3
3
8 1 0
9 9 6
6 6 4
```

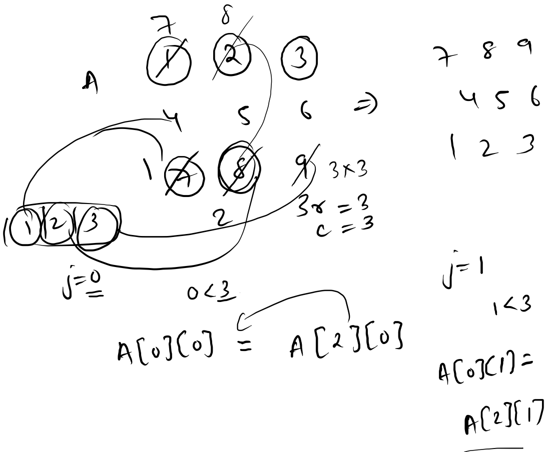
Sample Output 0

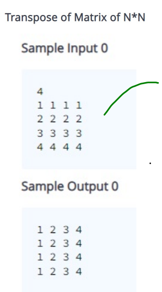
```
6 6 4
9 9 6
8 1 0
```





```
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int row = scn.nextInt();
        int col = scn.nextInt();

        int [][] A = new int[row][col];
        for(int i = 0; i < row; i++){
            for(int j = 0; j < col; j++){
                A[i][j] = scn.nextInt();
            }
        }

        int [] helperArr = new int[col];
        //copy of 0th row
        for(int j = 0; j < col; j++){
            helperArr[j] = A[0][j];
        }

        //updating value of 0th row
        for(int j = 0; j < col; j++){
            A[0][j] = A[row-1][j];
        }

        //updating value of last row
        for(int j = 0; j < col; j++){
            A[row-1][j] = helperArr[j];
        }

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





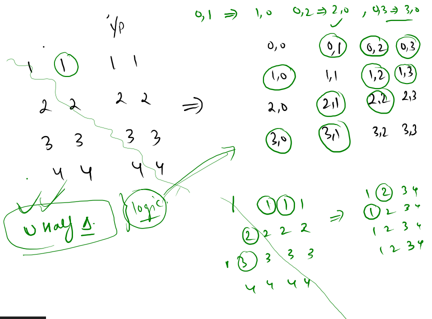
Transpose of Matrix of N*N

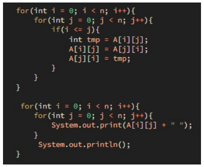
Sample Input 0

```
4
1 1 1 1
2 2 2 2
3 3 3 3
4 4 4 4
```

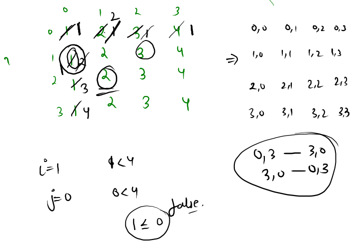
Sample Output 0

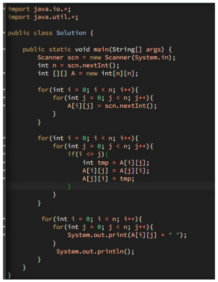
```
1 2 3 4
1 2 3 4
1 2 3 4
1 2 3 4
```



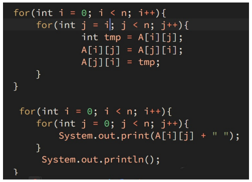


```
for(int i = 0; i < n; i++){
    for(int j = 0; j < n; j++){
        if(i <= j){
            int tmp = A[i][j];
            A[i][j] = A[j][i];
            A[j][i] = tmp;
        }
    }
}

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

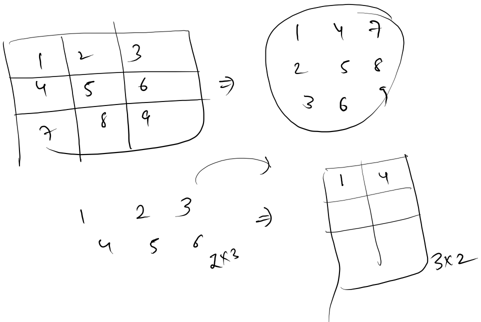




```
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();
        int [][] A = new int[n][n];

        for(int i = 0; i < n; i++){
            for(int j = 0; j < n; j++){
                A[i][j] = scn.nextInt();
            }
        }

        for(int i = 0; i < n; i++){
            for(int j = 0; j < n; j++){
                if(i <= j){
                    int tmp = A[i][j];
                    A[i][j] = A[j][i];
                    A[j][i] = tmp;
                }
            }
        }

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



```
for(int i = 0; i < n; i++){
    for(int j = i; j < n; j++){
        int tmp = A[i][j];
        A[i][j] = A[j][i];
        A[j][i] = tmp;
    }
}

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



Reverse Rows of Matrix

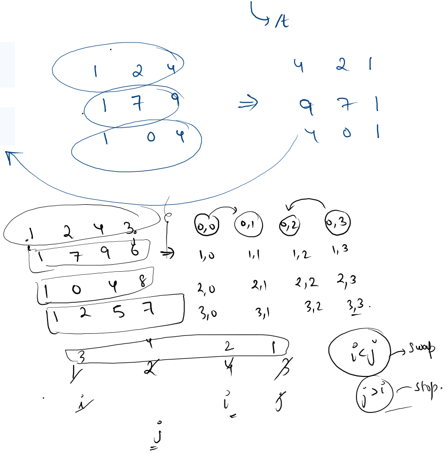
Given a n*n matrix, reverse each row of the matrix, without taking any extra space and making the changes within the matrix. Print the final matrix such that all elements of the row are tab separated and are in one line.

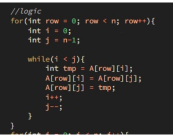
Sample Input 0

```
3
1 2 4
1 7 9
1 0 4
```

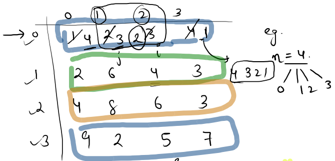
Sample Output 0

```
4	2	1
9	7	1
4	0	1
```





```
//logic
for(int row = 0; row < n; row++){
    int i = 0;
    int j = n-1;

    while(i < j){
        int tmp = A[row][i];
        A[row][i] = A[row][j];
        A[row][j] = tmp;
        i++;
        j--;
    }
}
```



row=0

$i = \cancel{0}\ \cancel{1}\ 2$

$j = \cancel{3}\ \cancel{2}\ 1$

row=1

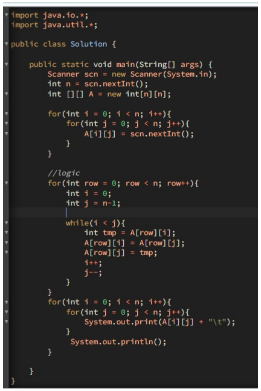
row=2

tmp = A[0][0] = 1 ?

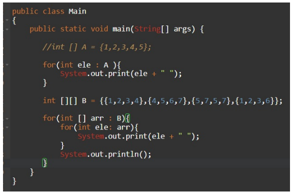
A[0][0] = A[0][3]

A[0][3]= tmp

[illegible]



```
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();
        int [][] A = new int[n][n];

        for(int i = 0; i < n; i++){
            for(int j = 0; j < n; j++){
                A[i][j] = scn.nextInt();
            }
        }

        //logic
        for(int row = 0; row < n; row++){
            int i = 0;
            int j = n-1;

            while(i < j){
                int tmp = A[row][i];
                A[row][i] = A[row][j];
                A[row][j] = tmp;
                i++;
                j--;
            }
        }
        for(int i = 0; i < n; i++){
            for(int j = 0; j < n; j++){
                System.out.print(A[i][j] + "\t");
            }
             System.out.println();
        }

    }
}
```



```
public class Main
{
    public static void main(String[] args) {

        //int [] A = {1,2,3,4,5};

        for(int ele : A ){
            System.out.print(ele + " ");
        }

        int [][] B = {{1,2,3,4},{4,5,6,7},{5,7,5,7},{1,2,3,6}};

        for(int [] arr : B){
            for(int ele: arr){
                System.out.print(ele + " ");
            }
            System.out.println();
        }
    }
}
```