Problem Statement – Wave Form Traversal

```java
public class waveForm {
    public static void main(String[] args) {
            for (int j = 0; j < m; j++) {
                arr[i][j] = sc.nextInt();
            }
        }

        for(int j=0;j<m;j++){
            if(j%2==0){
                int i =0;
                while(i<n){
                    System.out.print(arr[i][j]+" ");
                    i++;

                }

            }

            else if(j%2!=0){
                int i =n-1;
                while(i>=0){
                    System.out.print(arr[i][j]+" ");
                    i--;
                }

            }

        }
    }
}
```

```
"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaag
3
4
1
2
3
4
5
6
7
8
9
10
11
12
1 5 9 10 6 2 3 7 11 12 8 4
Process finished with exit code 0
```

Problem Statement – Transpose of a Matrix

```java
package classwork;

import java.util.Scanner;
public class transposeMatrix {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int N = sc.nextInt();
        int M = sc.nextInt();
        int arr[][]=  new int [N][M];
    for(int i=0;i<N;i++){
        for(int j=0;j<M;j++){
        arr[i][j] = sc.nextInt();
         }
             }
        for(int j=0;j<M;j++){
            for(int i=0;i<N;i++){
                System.out.print(arr[i][j]+" ");
            }
            System.out.println("");
        }

    }
}
```

```
"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C:\Pr
2
3
1
2
3
4
5
6
1 4
2 5
3 6


Process finished with exit code 0
```

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Problem Statement – Spiral Traversal of a Matrix

```java
import java.util.Scanner;
public class spiralTraversal {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int m = sc.nextInt();
        int[][] matrix = new int[n][m];
        for(int i = 0;i < n;i++) {
            for(int j = 0;j < m;j++) {
                matrix[i][j] = sc.nextInt(); }}
        int i =0;
        int k =0;
            for (int j = 0; j < m; j++) {
                System.out.print(matrix[i][j] + " ");
                k = j;}
            i++;
            int h= 0;
        while(i < n) {
            System.out.print(matrix[i][k]+" ");
            i++;
            h= i-1;}
        for(int j = m-2;j >= 0;j--) {
            System.out.print(matrix[h][j]+" ");
            k=j;}
        h--;
        while(h>0){
            System.out.print(matrix[h][k]+" ");
            h--;}
        h++;
        for(int j = k+1;j <m-1;j++) {
            System.out.print(matrix[h][j]+" ");
        }}}
```

```
"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C
3
4
1
2
3
4
5
6
7
8
9
10
11
12
1 2 3 4 8 12 11 10 9 5 6 7
Process finished with exit code 0
```

Performance

30:13   CRLF   UTF-8   ⚙   4 spaces

Problem Statement – Rotate Matrix by 90° Clockwise

```java
package classwork;

import java.util.Scanner;

public class rotateBy90 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int arr[][] = new int [n][n];
        for (int i = 0; i < n; i++) {
            for (int j = 0; j < n; j++) {
                arr[i][j] = sc.nextInt();
            }
        }
        for (int j = 0; j < n; j++) {
            for (int i = n-1; i >=0; i--) {
                System.out.print(arr[i][j] + " ");
            }
            System.out.println("");
        }
    }
}
```

```
"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C
4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
13 9 5 1
14 10 6 2
15 11 7 3
16 12 8 4

Process finished with exit code 0
```