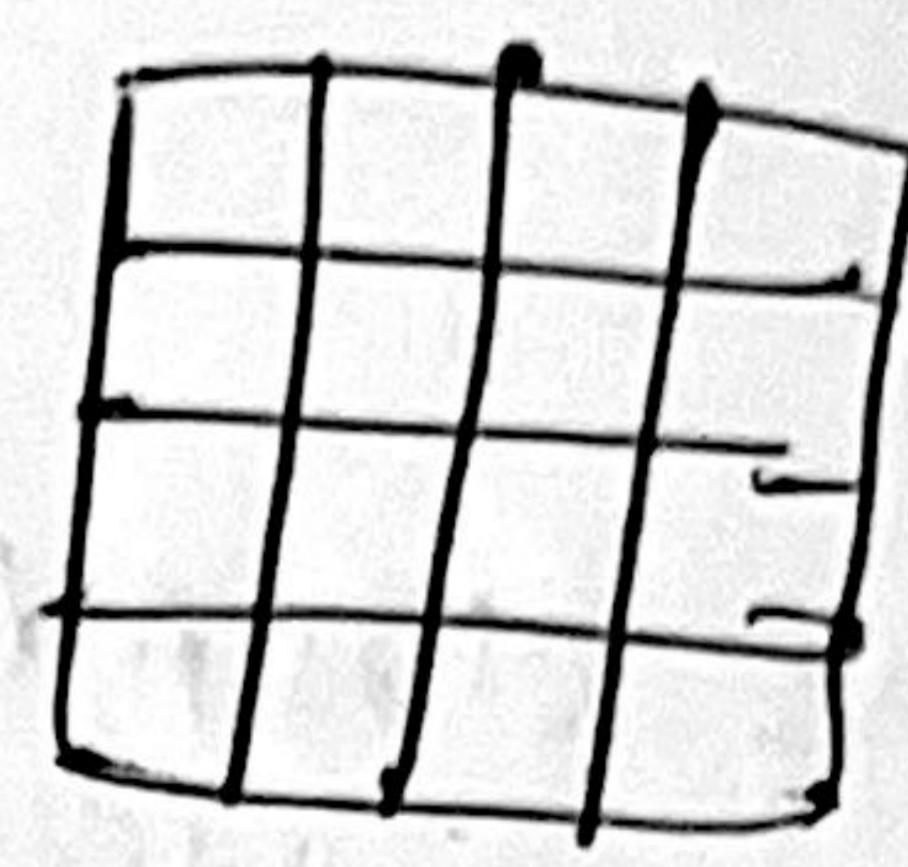


Day-13

- Q) Given a square matrix, print its
 a) Main diagonal
 b) Secondary diagonal

square matrix \Rightarrow No of rows = No of cols

	0	1	2	3
0	5	6	1	10
1	9	20	15	5
2	2	1	3	7
3	8	11	8	9



N*N

Program:

```
import java.util.Scanner;
```

```
class classA{
```

```
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();
```

y y

```
for (int i=0; i<N; i++) {
```

```
s.o.println (arr[i][i] + " ");
```

```
s.o.println ();
```

y

Second diagonal

	0	1	2	3
0	5	6	1	10
1	9	20	15	5
2	2	1	3	7
3	8	11	8	9

i=0 - j=3

i=1 j=2

i=2 j=1

i=3 j=0

i=0 j=N-1

1 Print secondary diagonal

```
for (int i=0, j=N-1; i<N; i++, j--) {
```

```
s.o.println (arr[i][j] + " ");
```

y

```
s.o.println ();
```

y

on a square matrix, interchange its diagonals
3/18

5	6	1	10
9	20	15	5
2	1	3	7
8	11	8	9



10	6	1	5
9	15	20	5
2	3	1	7
9	11	8	8

Q) Given 2 matrices, multiply them

$$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 1 & 2 \end{bmatrix}_{2 \times 3} \quad \begin{bmatrix} 4 & 1 & 3 & 2 \\ 0 & 1 & 0 & 2 \\ 5 & 0 & 3 & 1 \end{bmatrix}_{3 \times 4}$$

$$0 \begin{bmatrix} 0 & 1 & 2 & 3 \\ 19 & 3 & 12 & 7 \\ 18 & 3 & 12 & 8 \end{bmatrix}$$

Obs 1 \Rightarrow Mat1 $\Rightarrow A * B$
Mat2 $\Rightarrow B * C$
then resultant $\Rightarrow A * C$

Obs 2 \Rightarrow ans[i][j] \Rightarrow multiply the elements of ith row of
Mat 1 with r elements of jth col of Mat 2 &
add them

```
import java.util.Scanner;
class LearnYard {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int A = sc.nextInt();
        int B = sc.nextInt();
        int C = sc.nextInt();
        int m1[][] = new int[A][B];
        int m2[][] = new int[B][C];
        int ans[][] = new int[A][C];
        // take I/P for m1
        for (int i = 0; i < A; i++) {
            for (int j = 0; j < B; j++) {
                m1[i][j] = sc.nextInt();
            }
        }
        // take I/P for m2
        for (int i = 0; i < B; i++) {
            for (int j = 0; j < C; j++) {
                m2[i][j] = sc.nextInt();
            }
        }
```

```
for (int i = 0; i < A; i++) {
    for (int j = 0; j < C; j++) {
        int cur = 0;
        for (int k = 0; k < B; k++)
```

$$m^{ij} = m[i][j] + m_2(i,j)$$

$$m[i][j] = m^{ij}$$

y
for ($i=0$; $i < n$; $i++$) {
 for ($j=0$; $j < i$; $j++$)
 g.o.pn(m[i][j]);
 g.o.pn(" ");

 g.o.pn(" ");

y

Given a matrix, print it in spiral order