Day-10 - 2D Array

JAVA :-

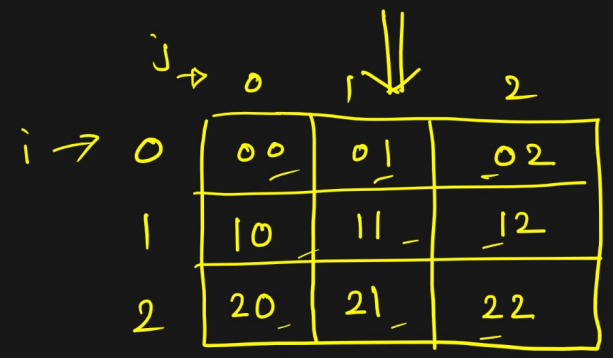
1) Declr
2) Initialize
3) Display
4) Operation

Declr :-

data type array name [ ][ ] = new data type [row][clmn]

e.g. int arr[][] = new int[row][clmn];

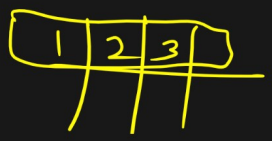
row = 3, clmn = 3



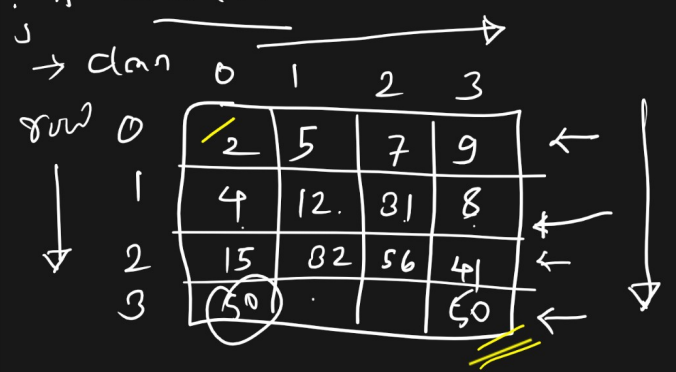

```
for (int i=0 ; i<row ; i++)
{
    for(int j=0 ; j<clmn ; j++)
    {
        arr[i][j] = sc.nextInt();
    }
}
```

Python :-

```
arr = []
row = 3
clmn = 3
for i in range (row):
    temp = []
    for j in range (clmn):
        data = int(input("_"))
        temp.append(data)
    arr.append(temp)
```



* Search :-



Key = ~~50~~ 100

```
for (int i=0; i<row; i++)
{
    for (int j=0; j<clmn; j++)
    {
        if (key == arr[i][j])
            return true;
    }
}
return false;
```

→ m

row = 0 index

→ m x n

o' o x z x

row x clmn
m x n

m x n

Time Complexity = O(m x n)

LeetCode 2643

start

✓ 1st row ⇒ CurrentCount = 0

2nd row ⇒ —U— = 0

3rd row ⇒ —U— = 0

end	max count
0	
1	1
2	2
3	3

```
int maxCount = 0;
int index = -1;
for (int i=0; i<row; i++)
{
    int currentCount = 0
    for (int j=0; j<clmn; j++)
    {
        if (arr[i][j] == 1)
        { currentCount++;
```

```
        }
        if (currentCount > maxCount)
        {
            maxCount = currentCount
            index = i;
        }
    }
    return new int [] {index, maxCount}
```

H.W.

① * Find the row index that has max^m summation result of their element.

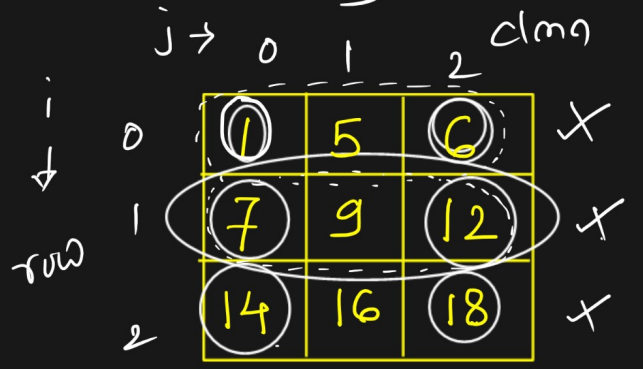
i ↓ / j →	0	1	2	3	sum of row elc
0	3	5	2	6	⇒ 16
1	4	7	9	12	⇒ 32
2	8	3	1	5	⇒ 17
3	6	4	9	5	⇒ 24

Ans ⇒ 1

② * Find the clmn index that has max^m no. of even number & max^m sum of elements.

H.W.

③ Searching an element from the sorted 2D Array.



Key = 22 ⟹ Brute Force Approach ⇓ Two For loop

Time Complexity O(n×n)

Key = 5 ⟹ chances 5 present in which row = 1st row ⟹ skip ⟹ 2nd & 3rd row 6 ele x

Key = 10 ⟹ chances of 10 present in which row = 2nd row ⟹ skip ⟹ 1st & 3rd row 6 ele x

row = 0

arr[0][0] < key && key <= arr[0][2]

1 < 5 (True) && 5 <= 6 (True)

true