PW SKILLS

Multidimensional Arrays

Assignment Questions

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Q1. Write a program to store 10 at every index of a 2D matrix with 5 rows and 5 columns.

Q2. Write a program to add two matrices and save the result in one of the given matrices.

Input 1:

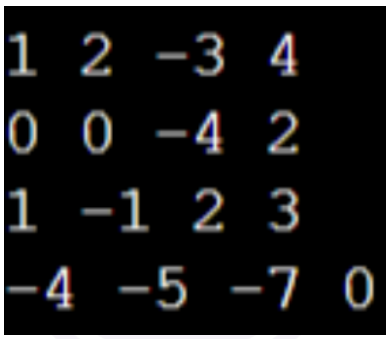
```
1  2  3
4  5  6
7  8  9

4  5  8
0  0  8
1  2  0
```

Output 1:

```
5  7  11
4  5  14
8  10  9
```

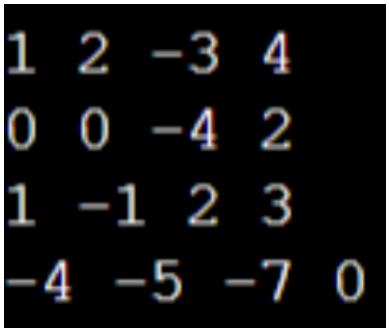
Q3. Given a matrix 'A' of dimension n x m and 2 coordinates (l1, r1) and (l2, r2). Return the sum of the rectangle from (l1,r1) to (l2, r2).

Input 1: l1 = 1, r1 = 2 , l2 = 3 , r2 = 3



Output 1: -4

Input 2: l1 = 1, r1 = 0 , l2 = 0 , r2 = 3



Output 1: 2

Q4. Write a program to find the largest element of a given 2D array of integers.

Input 1: 1 3 4 6
2 4 5 7
3 5 6 8
4 6 7 9

Output 1: 9

Q5. Write a program to print the row number having the maximum sum in a given matrix.

Input 1: 1 3 5 7
3 4 7 8
1 4 12 3

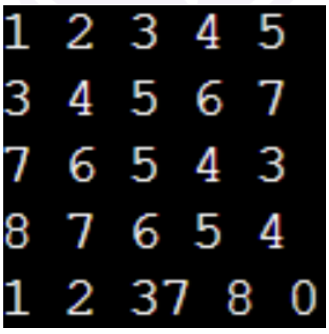
Output 1: 2

Explanation : The 2nd row has the maximum sum i.e.1+4+12+3 = 20

Q6. Write a function which accepts a 2D array of integers and its size as arguments and displays the elements of middle row and the elements of middle column.

[Assuming the 2D Array to be a square matrix with odd dimensions i.e. 3x3, 5x5, 7x7 etc...]

Input 1:



Output 1:

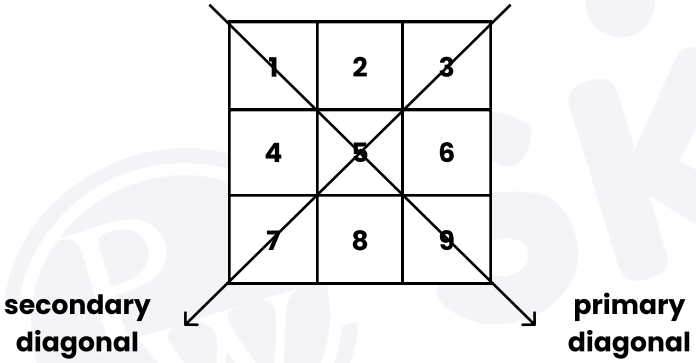
3
5
7 6 5 4 3
6
37

Q7. **Predict the output**

```
public class Main {
    public static void main(String[] args) {
        int[][] matrix = {{1, 1, 2, 2}, {1, 2, 2, 4}, {1, 2,
3, 4}, {1, 4, 1, 2}};
        int sum = 0;
        int col = matrix[0].length;

        for (int row = 0; row < 4; row++) {
            sum = sum + matrix[row][col];
        }

        System.out.println(sum);
    }
}
```

Q8. **Write a program to print the elements of both the diagonals in a square matrix.**

Input 1:



Output 1:

```
1   3
  5
7   9
```

Q9. **Write a program to rotate the matrix by 90 degrees anti-clockwise.**

Input 1:

```
1  2  3

4  5  6

7  8  9
```

Output 1:

```
3  6  9

2  5  8

1  4  7
```

Q10. **Write a program to print the matrix in wave form.**

Input 1:

1	2	3
4	5	6
7	8	9

Output 1: 7 4 1 2 5 8 9 6 3

Q11. **Given a positive integer n, generate a n x n matrix filled with elements from 1 to n2 in spiral order.**

Input 1: n = 3
Output 1: [[1,2,3],[8,9,4],[7,6,5]]

Input 2: n = 1
Output 2: [[1]]

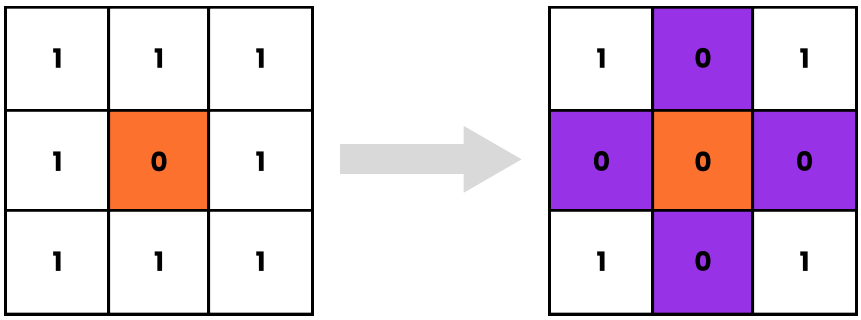
Q12. **Predict the output**

```
public class Main {
    public static void main(String[] args) {
        int[][] a = {{1, 2}, {3, 4}};
        for (int i = 0; i < 2; i++)
            for (int j = 0; j < 2; j++)
                System.out.print(a[i][j]);
    }
}
```

Q13. **Given an m x n integer matrix matrix, if an element is 0, set its entire row and column to 0's.**

You must do it in place.

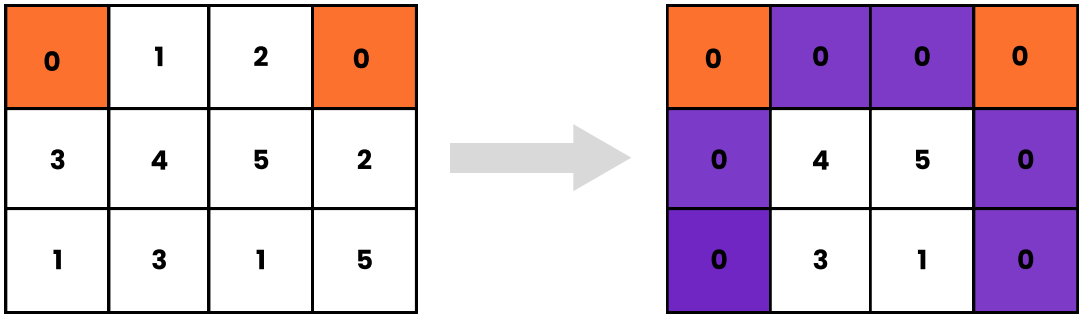
Example 1:



Input : matrix = [[1,1,1],[1,0,1],[1,1,1]]

Output : [[1,0,1],[0,0,0],[1,0,1]]

Example 2:



Input : matrix = [[0,1,2,0],[3,4,5,2],[1,3,1,5]]

Output : [[0,0,0,0],[0,4,5,0],[0,3,1,0]]

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THANK YOU !