

# 2D Array Practice Questions

(Only using 2D Array, no extra data structures)

## ✓ 1. Print Matrix in Row-Major Order

Input:

```
matrix = [  
  [1, 2, 3],  
  [4, 5, 6]  
]
```

Output:

1 2 3 4 5 6

---

## ✓ 2. Print Matrix in Column-Major Order

Input:

```
matrix = [  
  [1, 2, 3],  
  [4, 5, 6]  
]
```

Output:

1 4 2 5 3 6

---

## ✓ 3. Transpose of a Matrix

Input:

```
matrix = [  
  [1, 2],  
  [3, 4]  
]
```

Output:

```
[  
  [1, 3],  
  [2, 4]  
]
```

---

#### ✓ 4. Print Diagonal Elements (Primary Diagonal)

**Input:**

```
matrix = [  
  [1, 2, 3],  
  [4, 5, 6],  
  [7, 8, 9]  
]
```

**Output:**

1 5 9

---

#### ✓ 5. Print Anti-Diagonal Elements (Secondary Diagonal)

**Input:**

```
matrix = [  
  [1, 2, 3],  
  [4, 5, 6],  
  [7, 8, 9]  
]
```

**Output:**

3 5 7

---

#### ✓ 6. Sum of Each Row

**Input:**

```
matrix = [  
  [1, 2, 3],  
  [4, 5, 6]  
]
```

**Output:**

Row 0 sum: 6  
Row 1 sum: 15

---

## ✓ 7. Sum of Each Column

**Input:**

```
matrix = [  
  [1, 2, 3],  
  [4, 5, 6]  
]
```

**Output:**

```
Column 0 sum: 5  
Column 1 sum: 7  
Column 2 sum: 9
```

---

## ✓ 8. Search in a 2D Matrix (Brute Force)

**Input:**

```
matrix = [  
  [5, 10, 15],  
  [20, 25, 30]  
]  
target = 25
```

**Output:**

```
Found at position: (1, 1)
```

---

## ✓ 9. Count Zeros in Matrix

**Input:**

```
matrix = [  
  [0, 1],  
  [1, 0]  
]
```

**Output:**

```
Number of zeros: 2
```

---

### ✓ 10. Set Matrix Zeroes (Brute-force with copy)

**Input:**

```
matrix = [  
  [1, 2, 3],  
  [4, 0, 6],  
  [7, 8, 9]  
]
```

**Output:**

```
[  
  [1, 0, 3],  
  [0, 0, 0],  
  [7, 0, 9]  
]
```

---

### ✓ 11. Spiral Matrix Print

**Input:**

```
matrix = [  
  [1, 2, 3],  
  [4, 5, 6],  
  [7, 8, 9]  
]
```

**Output:**

1 2 3 6 9 8 7 4 5

---

### ✓ 12. Diagonal Sum (Primary + Secondary without counting center twice)

**Input:**

```
matrix = [  
  [1, 2, 3],  
  [4, 5, 6],  
  [7, 8, 9]  
]
```

**Output:**

Diagonal sum:  $1 + 5 + 9 + 3 + 7 = 25$  (but 5 is in both diagonals → count once)

Final Output:  $25 - 5 = 20$

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**✓ 13. Search in a Sorted 2D Matrix (like staircase)**

**Matrix is sorted row-wise and column-wise**

**Input:**

```
matrix = [  
  [10, 20, 30],  
  [15, 25, 35],  
  [27, 29, 37]  
]  
target = 29
```

**Output:**

Found at position: (2, 1)