



Matrix traversal or matrix based mostly asked command interview questions



Matrix traversal problems are common in coding interviews, and they test your ability to navigate and manipulate multi-dimensional arrays. Here are some frequently asked types of questions and problems related to matrix traversal:

1. Basic Matrix Traversal

- **Problem:** Print all elements of a matrix in row-major order.
- **Solution:** Iterate through each row and column and print the elements.

2. Spiral Order

- **Problem:** Print all elements of a matrix in spiral order (clockwise).
- **Solution:** Use four boundaries (top, bottom, left, right) and update them as you traverse the matrix.

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3. Diagonal Traversal

- **Problem:** Print elements of a matrix in diagonal order.
- **Solution:** Traverse each diagonal of the matrix starting from each element in the first row and first column.

4. Zigzag Level Order

- **Problem:** Traverse the matrix in a zigzag or snake-like pattern.
- **Solution:** Alternate between left-to-right and right-to-left traversal for each row or column.

5. Search in Matrix

- **Problem:** Search for a target value in a matrix where each row and column is sorted.
- **Solution:** Use binary search or start from the top-right corner and move left or down based on comparisons.

6. Rotate Matrix

- **Problem:** Rotate a square matrix 90 degrees clockwise.
- **Solution:** Transpose the matrix and then reverse each row.

7. Transpose Matrix

- **Problem:** Compute the transpose of a matrix.
- **Solution:** Swap rows and columns.

8. Find the Maximum Sum Submatrix

- **Problem:** Find the submatrix with the maximum sum.
- **Solution:** Use Kadane's algorithm in a 2D context or dynamic programming.

9. Valid Path in Matrix


- **Problem:** Check if there is a valid path from the top-left to the bottom-right corner of a matrix, navigating only through cells with certain constraints.
- **Solution:** Use DFS or BFS for pathfinding.

10. Rotate Matrix by 90 Degrees (anti-clockwise)

- **Problem:** Rotate a matrix 90 degrees counterclockwise.
- **Solution:** Transpose the matrix and then reverse each column.

For each problem, it's crucial to understand the time and space complexity, especially when dealing with large matrices. Do you want to dive into solutions for any of these specific problems?

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