

Practice Questions on 2D Arrays

◆ Basic Level

1. Write a program to input and print a 2D array (matrix).
2. Find the **sum of all elements** in a matrix.
3. Find the **largest and smallest element** in a matrix.
4. Print the matrix in **row-wise order**.
5. Print the matrix in **column-wise order**.
6. Find the **sum of each row** and **sum of each column**.
7. Find the **transpose of a matrix**.
8. Count how many **even and odd numbers** are present in a matrix.
9. Replace all **negative numbers** in the matrix with 0.
10. Find the **diagonal elements** (both primary and secondary diagonal).

◆ Intermediate Level

11. Add two matrices of the same size.
12. Multiply two matrices (matrix multiplication).
13. Search for a given element in the matrix.
14. Check if the matrix is **symmetric**.

15. Check if the matrix is **upper triangular** or **lower triangular**.
16. Print **boundary elements** of a matrix.
17. Find the **sum of diagonal elements** (both diagonals).
18. Count the **frequency of each element** in a matrix.
19. Replace each element of the matrix with its **square**.
20. Print the **matrix in reverse order** (row-wise and column-wise).

◆ **Advanced Level**

21. Rotate a square matrix by **90 degrees clockwise**.
22. Rotate a square matrix by **180 degrees**.
23. Print a matrix in **spiral order**.
24. Print a matrix in **wave form** (row-wise zig-zag).
25. Find the **saddle point** of a matrix (element that is smallest in its row and largest in its column).
26. Find the **maximum sum submatrix** in a 2D array.
27. Find the **row with maximum sum**.
28. Print the **boundary traversal** in anti-clockwise order.
29. Search in a **sorted 2D matrix** (Leetcode 240).
30. Given a binary matrix (0s and 1s), find the **largest square sub-matrix of 1s**.