

# Matrix Data Structure - GeeksforGeeks

**Source:** <https://www.geeksforgeeks.org/matrix/>

Courses Tutorials Practice Jobs DSA Tutorial Interview Questions Quizzes Must Do Advanced DSA System Design Aptitude Puzzles Interview Corner DSA Python Technical Scripter 2026 Explore DSA Fundamentals Logic Building Problems Analysis of Algorithms Data Structures Array Data Structure String in Data Structure Hashing in Data Structure Linked List Data Structure Stack Data Structure Queue Data Structure Tree Data Structure Graph Data Structure Trie Data Structure Algorithms Searching Algorithms Sorting Algorithms Introduction to Recursion Greedy Algorithms Tutorial Graph Algorithms Dynamic Programming or DP Bitwise Algorithms Advanced Segment Tree Binary Indexed Tree or Fenwick Tree Square Root (Sqrt) Decomposition Algorithm Binary Lifting Geometry Interview Preparation Interview Corner GfG160 Practice Problem GeeksforGeeks Practice - Leading Online Coding Platform Problem of The Day - Develop the Habit of Coding DSA Course 90% Refund Matrix Data Structure Last Updated : 13 Aug, 2025 Matrix Data Structure is a two-dimensional array arranged in rows and columns. It is commonly used to represent mathematical matrices and is fundamental in various fields like mathematics, computer graphics, and data processing. Matrices allow for efficient storage and manipulation of data in a structured format. Basics Representation and Basic Operations Row-wise vs column-wise traversal Basic Problems Search in a Matrix Addition , Subtraction & Multiplication Sort the given matrix Search in a sorted matrix Traverse Matrix using Recursion Transpose of a matrix Determinant of a Matrix Adjoint and Inverse of a Matrix Easy Problems Valid Sudoku Validate Tic Tac Toe The Celebrity Problem Boundary Elements Matrix Zig-Zag Rotate Matrix Elements by 1 Matrix Spiral Unique in a matrix Swap major and minor diagonals Check idempotent matrix Pascal's Triangle Toeplit Matrix Possible moves of knight Medium Problems Conway's Game Of Life Rotate a matrix by 90 Rotate a matrix by 180 Largest 'X' Bordered Submatrix Largest Square Submatrix with All 1s Os in a row and column wise sorted Queries in a Matrix Count Pairs With Sum from 2 Matrices Pairs sum from different rows Find all permuted rows of a given row No of Transformations to make two Matrix Equal Minimum flip to make Binary Matrix symmetric Magic Square Hard Problems Median in a Row-Wise Sorted A Boolean Matrix Question Matrix Chain Multiplication Max sum square sub-matrix of given size Largest rectangle sub-matrix with all 1s Construct Ancestor Matrix from a Binary Tree K'th element in spiral form of matrix Largest '+' formed by all ones in a binary matrix Shortest path in a Binary Maze Minimum Initial Points to Reach Destination Strassen's Matrix Multiplication Max sum rectangle in a 2D matrix Sudoku Generator Quick Links: 'Practice Problems' on Matrix 'Quizzes' on Matrix Learn Data Structure and Algorithms | DSA Tutorial Comment Article Tags: Article Tags: Matrix DSA