# Array Data Structure

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32. [Interchange elements of first and last rows in matrix](https://www.geeksforgeeks.org/interchange-elements-of-first-and-last-rows-in-matrix/)
33. [Print matrix in zag-zag fashion](https://www.geeksforgeeks.org/print-matrix-zag-zag-fashion/)
34. [Row wise sorting in 2D array](https://www.geeksforgeeks.org/row-wise-sorting-2d-array/)
35. [Program for Markov matrix](https://www.geeksforgeeks.org/markov-matrix/)
36. [Program to check diagonal matrix and scalar matrix](https://www.geeksforgeeks.org/program-check-diagonal-matrix-scalar-matrix/)
37. [Sort the matrix row-wise and column-wise](https://www.geeksforgeeks.org/sort-matrix-row-wise-column-wise/)
38. [Find the number of islands](https://www.geeksforgeeks.org/find-number-of-islands/)
39. [Magic Square | Even Order](https://www.geeksforgeeks.org/magic-square-even-order/)
40. [Magic Square](https://www.geeksforgeeks.org/magic-square/)
41. [Check given matrix is magic square or not](https://www.geeksforgeeks.org/check-given-matrix-is-magic-square-or-not/)
42. [Check given matrix is magic square or not](https://www.geeksforgeeks.org/check-given-matrix-is-magic-square-or-not/)
43. [Kronecker Product of two matrices](https://www.geeksforgeeks.org/kronecker-product-two-matrices/)
44. [Count sub-matrices having sum divisible ‘k’](https://www.geeksforgeeks.org/count-sub-matrices-sum-divisible-k/)
45. [Diagonally Dominant Matrix](https://www.geeksforgeeks.org/diagonally-dominant-matrix/)
46. [Minimum operations required to make each row and column of matrix equals](https://www.geeksforgeeks.org/minimum-operations-required-make-row-column-matrix-equals/)
47. [Count frequency of k in a matrix of size n where matrix(i, j) = i+j](https://www.geeksforgeeks.org/count-frequency-k-matrix-size-n-matrixi-j-ij/)
48. [Given 1’s, 2’s, 3’s ……k’s print them in zig zag way.](https://www.geeksforgeeks.org/given-1s-2s-3s-ks-print-zig-zag-way/)
49. [Number of cells a queen can move with obstacles on the chessborad](https://www.geeksforgeeks.org/number-cells-queen-can-move-obstacles-chessborad/)
50. [Maximum product of 4 adjacent elements in matrix](https://www.geeksforgeeks.org/maximum-product-of-4-adjacent-elements-in-matrix/)
51. [Minimum flip required to make Binary Matrix symmetric](https://www.geeksforgeeks.org/minimum-flip-required-make-binary-matrix-symmetric/)
52. [Program to check if matrix is lower triangular](https://www.geeksforgeeks.org/program-check-matrix-lower-triangular/)
53. [Program to check if matrix is upper triangular](https://www.geeksforgeeks.org/program-check-matrix-upper-triangular/)
54. [Frequencies of even and odd numbers in a matrix](https://www.geeksforgeeks.org/find-frequency-even-odd-numbers-matrix/)
55. [Center element of matrix equals sums of half diagonals](https://www.geeksforgeeks.org/center-element-of-matrix-equals-sums-of-half-diagonals/)
56. [Program for Identity Matrix](https://www.geeksforgeeks.org/program-print-identity-matrix/)
57. [Program to swap upper diagonal elements with lower diagonal elements of matrix.](https://www.geeksforgeeks.org/program-swap-upper-diagonal-elements-lower-diagonal-elements-matrix/)
58. [Sparse Matrix Representations](https://www.geeksforgeeks.org/sparse-matrix-representations-set-3-csr/)
59. [Ways of filling matrix such that product of all rows and all columns are equal to unity](https://www.geeksforgeeks.org/ways-filling-matrix-product-rows-columns-equal-unity/)
60. [Mirror of matrix across diagonal](https://www.geeksforgeeks.org/mirror-matrix-across-diagonal/)
61. [Find if there is a rectangle in binary matrix with corners as 1](https://www.geeksforgeeks.org/find-rectangle-binary-matrix-corners-1/)
62. [Find all rectangles filled with 0](https://www.geeksforgeeks.org/find-rectangles-filled-0/)
63. [Shortest distance between two cells in a matrix or grid](https://www.geeksforgeeks.org/shortest-distance-two-cells-matrix-grid/)
64. [Counting sets of 1s and 0s in a binary matrix](https://www.geeksforgeeks.org/counting-sets-of-1s-and-0s-in-a-binary-matrix/)
65. [Search in a row wise and column wise sorted matrix](https://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/)
66. [Create a matrix with alternating rectangles of O and X](https://www.geeksforgeeks.org/create-a-matrix-with-alternating-rectangles-of-0-and-x/)
67. [Zigzag (or diagonal) traversal of Matrix](https://www.geeksforgeeks.org/zigzag-or-diagonal-traversal-of-matrix/)
68. [Inplace (Fixed space) M x N size matrix transpose | Updated](https://www.geeksforgeeks.org/inplace-m-x-n-size-matrix-transpose/)
69. [Minimum cost to sort a matrix of numbers from 0 to n^2 – 1](https://www.geeksforgeeks.org/minimum-cost-sort-matrix-numbers-0-n2-1/)
70. [Unique cells in a binary matrix](https://www.geeksforgeeks.org/unique-cells-binary-matrix/)
71. [Count entries equal to x in a special matrix](https://www.geeksforgeeks.org/count-entries-equal-to-x-in-a-special-matrix/)
72. [Check if a given matrix is sparse or not](https://www.geeksforgeeks.org/check-given-matrix-sparse-not/)
73. [Row-wise common elements in two diagonals of a square matrix](https://www.geeksforgeeks.org/row-wise-common-elements-two-diagonals-square-matrix/)
74. [Check if sums of i-th row and i-th column are same in matrix](https://www.geeksforgeeks.org/check-sums-th-row-th-column-matrix/)
75. [Find row number of a binary matrix having maximum number of 1s](https://www.geeksforgeeks.org/find-row-number-binary-matrix-maximum-number-1s/)
76. [Program to check if a matrix is symmetric](https://www.geeksforgeeks.org/program-to-check-if-a-matrix-is-symmetric/)
77. [Find if a 2-D array is completely traversed or not by following the cell values](https://www.geeksforgeeks.org/find-2-d-array-completely-traversed-not-following-cell-values/)
78. [Program to Print Matrix in Z form](https://www.geeksforgeeks.org/program-print-matrix-z-form/)
79. [Print all palindromic paths from top left to bottom right in a matrix](https://www.geeksforgeeks.org/print-palindromic-paths-top-left-bottom-right-matrix/)
80. [Possible moves of knight](https://www.geeksforgeeks.org/possible-moves-knight/)
81. [Efficiently compute sums of diagonals of a matrix](https://www.geeksforgeeks.org/efficiently-compute-sums-of-diagonals-of-a-matrix/)
82. [Boundary elements of a Matrix](https://www.geeksforgeeks.org/boundary-elements-matrix/)
83. [Print a matrix in a spiral form starting from a point](https://www.geeksforgeeks.org/print-matrix-spiral-form-starting-point/)
84. [Print matrix in snake pattern](https://www.geeksforgeeks.org/print-matrix-snake-pattern/)
85. [Program to Interchange Diagonals of Matrix](https://www.geeksforgeeks.org/program-to-interchange-diagonals-of-matrix/)
86. [Find difference between sums of two diagonals](https://www.geeksforgeeks.org/find-difference-between-sums-of-two-diagonals/)
87. [Construct Ancestor Matrix from a Given Binary Tree](https://www.geeksforgeeks.org/construct-ancestor-matrix-from-a-given-binary-tree/)
88. [Construct tree from ancestor matrix](https://www.geeksforgeeks.org/construct-tree-from-ancestor-matrix/)
89. [Circular Matrix (Construct a matrix with numbers 1 to m\*n in spiral way)](https://www.geeksforgeeks.org/circular-matrix-construct-a-matrix-with-numbers-1-to-mn-in-spiral-way/)
90. [Program for Sudoku Generator](https://www.geeksforgeeks.org/program-sudoku-generator/)
91. [Program for Conway’s Game Of Life](https://www.geeksforgeeks.org/program-for-conways-game-of-life/)
92. [Maximum sum of hour glass in matrix](https://www.geeksforgeeks.org/maximum-sum-hour-glass-matrix/)
93. [Maximum and Minimum in a square matrix.](https://www.geeksforgeeks.org/maximum-and-minimum-in-a-square-matrix/)
94. [Print matrix in antispiral form](https://www.geeksforgeeks.org/print-matrix-antispiral-form/)
95. [Program to find Normal and Trace of a matrix](https://www.geeksforgeeks.org/program-find-normal-trace-matrix/)
96. [Sort a Matrix in all way increasing order](https://www.geeksforgeeks.org/sort-matrix-way-increasing-order/)
97. [Minimum operations required to set all elements of binary matrix](https://www.geeksforgeeks.org/minimum-operations-required-set-elements-binary-matrix/)
98. [Print a given matrix in reverse spiral form](https://www.geeksforgeeks.org/print-given-matrix-reverse-spiral-form/)
99. [C Program To Check whether Matrix is Skew Symmetric or not](https://www.geeksforgeeks.org/c-program-check-whether-matrix-skew-symmetric-not/)
100. [Sum of matrix element where each elements is integer division of row and column](https://www.geeksforgeeks.org/sum-matrix-element-element-integer-division-row-column/)
101. [Sparse Matrix and its representations](https://www.geeksforgeeks.org/sparse-matrix-representations-using-list-lists-dictionary-keys/)
102. [Find number of transformation to make two Matrix Equal](https://www.geeksforgeeks.org/find-number-transformation-make-two-matrix-equal/)
103. [Form coils in a matrix](https://www.geeksforgeeks.org/form-coils-matrix/)
104. [Sum of matrix in which each element is absolute difference of its row and column numbers](https://www.geeksforgeeks.org/sum-matrix-element-absolute-difference-row-column-numbers/)
105. [Check horizontal and vertical symmetry in binary matrix](https://www.geeksforgeeks.org/check-horizontal-vertical-symmetry-binary-matrix/)
106. [Maximum determinant of a matrix with every values either 0 or n](https://www.geeksforgeeks.org/maximum-determinant-matrix-every-values-either-0-n/)
107. [Sum of both diagonals of a spiral odd-order square matrix](https://www.geeksforgeeks.org/sum-diagonals-spiral-odd-order-square-matrix/)
108. [Find pair of rows in a binary matrix that has maximum bit difference](https://www.geeksforgeeks.org/find-pair-rows-binary-matrix-maximum-bit-difference/)
109. [Find all permuted rows of a given row in a matrix](https://www.geeksforgeeks.org/find-permuted-rows-given-row-matrix/)
110. [Find perimeter of shapes formed with 1s in binary matrix](https://www.geeksforgeeks.org/find-perimeter-shapes-formed-1s-binary-matrix/)
111. [Print cells with same rectangular sums in a matrix](https://www.geeksforgeeks.org/print-cells-rectangular-sum-matrix/)
112. [Print matrix in diagonal pattern](https://www.geeksforgeeks.org/print-matrix-diagonal-pattern/)
113. [Maximum difference of sum of elements in two rows in a matrix](https://www.geeksforgeeks.org/maximum-difference-sum-elements-two-rows-matrix/)
114. [Find pairs with given sum such that elements of pair are in different rows](https://www.geeksforgeeks.org/find-pairs-given-sum-elements-pair-different-rows/)
115. [Total coverage of all zeros in a binary matrix](https://www.geeksforgeeks.org/total-coverage-zeros-binary-matrix/)
116. [Replace every matrix element with maximum of GCD of row or column](https://www.geeksforgeeks.org/replace-matrix-element-maximum-gcd-row-column/)
117. [Count all sorted rows in a matrix](https://www.geeksforgeeks.org/count-sorted-rows-matrix/)
118. [Queries in a Matrix](https://www.geeksforgeeks.org/queries-in-a-matrix/)
119. [Maximum XOR value in matrix](https://www.geeksforgeeks.org/maximum-xor-value-matrix/)
120. [Maximum mirrors which can transfer light from bottom to right](https://www.geeksforgeeks.org/maximum-mirrors-can-transfer-light-bottom-right/)
121. [Direction at last square block](https://www.geeksforgeeks.org/direction-last-square-block/)
122. [Print K’th element in spiral form of matrix](https://www.geeksforgeeks.org/print-kth-element-spiral-form-matrix/)
123. [Find if given matrix is Toeplitz or not](https://www.geeksforgeeks.org/find-if-given-matrix-is-toeplitz-or-not/)
124. [Count zeros in a row wise and column wise sorted matrix](https://www.geeksforgeeks.org/count-zeros-in-a-row-wise-and-column-wise-sorted-matrix/)
125. [Count Negative Numbers in a Column-Wise and Row-Wise Sorted Matrix](https://www.geeksforgeeks.org/count-negative-numbers-in-a-column-wise-row-wise-sorted-matrix/)
126. [Find size of the largest ‘+’ formed by all ones in a binary matrix](https://www.geeksforgeeks.org/find-size-of-the-largest-formed-by-all-ones-in-a-binary-matrix/)
127. [Return previous element in an expanding matrix](https://www.geeksforgeeks.org/return-previous-element-in-an-expanding-matrix/)
128. [Print n x n spiral matrix using O(1) extra space](https://www.geeksforgeeks.org/print-n-x-n-spiral-matrix-using-o1-extra-space/)
129. [Shortest path in a Binary Maze](https://www.geeksforgeeks.org/shortest-path-in-a-binary-maze/)
130. [Find orientation of a pattern in a matrix](https://www.geeksforgeeks.org/find-orientation-of-a-pattern-in-a-matrix/)
131. [Find a specific pair in Matrix](https://www.geeksforgeeks.org/find-a-specific-pair-in-matrix/)
132. [Print maximum sum square sub-matrix of given size](https://www.geeksforgeeks.org/print-maximum-sum-square-sub-matrix-of-given-size/)
133. [Common elements in all rows of a given matrix](https://www.geeksforgeeks.org/common-elements-in-all-rows-of-a-given-matrix/)
134. [In-place convert matrix in specific order](https://www.geeksforgeeks.org/in-place-convert-matrix-in-specific-order/)
135. [A Boolean Matrix Question](https://www.geeksforgeeks.org/a-boolean-matrix-question/)
136. [Given a Boolean Matrix, find k such that all elements in k’th row are 0 and k’th column are 1.](https://www.geeksforgeeks.org/find-k-such-that-all-elements-in-kth-row-are-0-and-kth-column-are-1-in-a-boolean-matrix/)
137. [Print unique rows in a given boolean matrix](https://www.geeksforgeeks.org/print-unique-rows/)
138. [Find the largest rectangle of 1’s with swapping of columns allowed](https://www.geeksforgeeks.org/find-the-largest-rectangle-of-1s-with-swapping-of-columns-allowed/)
139. [Validity of a given Tic-Tac-Toe board configuration](https://www.geeksforgeeks.org/validity-of-a-given-tic-tac-toe-board-configuration/)
140. [Submatrix Sum Queries](https://www.geeksforgeeks.org/submatrix-sum-queries/)
141. [Program for Rank of Matrix](https://www.geeksforgeeks.org/program-for-rank-of-matrix/)
142. [Maximum size rectangle binary sub-matrix with all 1s](https://www.geeksforgeeks.org/maximum-size-rectangle-binary-sub-matrix-1s/)
143. [Maximum size square sub-matrix with all 1s](https://www.geeksforgeeks.org/maximum-size-sub-matrix-with-all-1s-in-a-binary-matrix/)
144. [Find sum of all elements in a matrix except the elements in row and/or column of given cell?](https://www.geeksforgeeks.org/find-sum-of-all-elements-in-a-matrix-except-the-elements-in-given-row-andor-column-2/)
145. [Count number of islands where every island is row-wise and column-wise separated](https://www.geeksforgeeks.org/count-number-islands-every-island-separated-line/)
146. [Find a common element in all rows of a given row-wise sorted matrix](https://www.geeksforgeeks.org/find-common-element-rows-row-wise-sorted-matrix/)
147. [Given a matrix of ‘O’ and ‘X’, replace ‘O’ with ‘X’ if surrounded by ‘X’](https://www.geeksforgeeks.org/given-matrix-o-x-replace-o-x-surrounded-x/)
148. [Given a matrix of ‘O’ and ‘X’, find the largest subsquare surrounded by ‘X’](https://www.geeksforgeeks.org/given-matrix-o-x-find-largest-subsquare-surrounded-x/)
149. [Flood fill Algorithm – how to implement fill() in paint?](https://www.geeksforgeeks.org/flood-fill-algorithm-implement-fill-paint/)
150. [Print all elements in sorted order from row and column wise sorted matrix](https://www.geeksforgeeks.org/print-elements-sorted-order-row-column-wise-sorted-matrix/)
151. [Given an n x n square matrix, find sum of all sub-squares of size k x k](https://www.geeksforgeeks.org/given-n-x-n-square-matrix-find-sum-sub-squares-size-k-x-k/)
152. [Program to find transpose of a matrix](https://www.geeksforgeeks.org/program-to-find-transpose-of-a-matrix/)
153. [C program for addition of two matrices](https://www.geeksforgeeks.org/c-program-addition-two-matrices/)
154. [C program for subtraction of matrices](https://www.geeksforgeeks.org/c-program-subtraction-matices/)
155. [Collect maximum points in a grid using two traversals](https://www.geeksforgeeks.org/collect-maximum-points-in-a-grid-using-two-traversals/)
156. [Collect maximum coins before hitting a dead end](https://www.geeksforgeeks.org/collect-maximum-coins-before-hitting-a-dead-end/)
157. [Number of paths with exactly k coins](https://www.geeksforgeeks.org/number-of-paths-with-exactly-k-coins/)
158. [Find length of the longest consecutive path from a given starting character](https://www.geeksforgeeks.org/find-length-of-the-longest-consecutive-path-in-a-character-matrix/)
159. [Find the longest path in a matrix with given constraints](https://www.geeksforgeeks.org/find-the-longest-path-in-a-matrix-with-given-constraints/)
160. [Minimum Initial Points to Reach Destination](https://www.geeksforgeeks.org/minimum-positive-points-to-reach-destination/)
161. [Divide and Conquer | Set 5 (Strassen’s Matrix Multiplication)](https://www.geeksforgeeks.org/strassens-matrix-multiplication/)
162. [Dynamic Programming | Set 27 (Maximum sum rectangle in a 2D matrix)](https://www.geeksforgeeks.org/dynamic-programming-set-27-max-sum-rectangle-in-a-2d-matrix/)

**Misc :**

1. [Subarray/Substring vs Subsequence and Programs to Generate them](https://www.geeksforgeeks.org/subarraysubstring-vs-subsequence-and-programs-to-generate-them/)
2. [A Product Array Puzzle](https://www.geeksforgeeks.org/a-product-array-puzzle/)
3. [Number of subarrays with given product](https://www.geeksforgeeks.org/number-subarrays-given-product/)
4. [Linked List vs Array](https://www.geeksforgeeks.org/linked-list-vs-array/)
5. [Check if array elements are consecutive | Added Method 3](https://www.geeksforgeeks.org/check-if-array-elements-are-consecutive/)
6. [Find whether an array is subset of another array | Added Method 3](https://www.geeksforgeeks.org/find-whether-an-array-is-subset-of-another-array-set-1/)
7. [Implement two stacks in an array](https://www.geeksforgeeks.org/implement-two-stacks-in-an-array/)
8. [Find relative complement of two sorted arrays](https://www.geeksforgeeks.org/find-relative-complement-two-sorted-arrays/)
9. [Minimum increment by k operations to make all elements equal](https://www.geeksforgeeks.org/minimum-increment-k-operations-make-elements-equal/)
10. [Minimize (max(A[i], B[j], C[k]) – min(A[i], B[j], C[k])) of three different sorted arrays](https://www.geeksforgeeks.org/minimize-maxai-bj-ck-minai-bj-ck-three-different-sorted-arrays/)