

# Data Structure and Algorithm Problems - Animeshn99

Click on the program for redirection to the answer

## Array

Find pair with given sum in the array  
Check if subarray with 0 sum is exists or not  
Print all sub-arrays with 0 sum  
Sort binary array in linear time  
Find a duplicate element in a limited range array  
Find largest sub-array formed by consecutive integers  
Find maximum length sub-array having given sum  
Find maximum length sub-array having equal number of 0's and 1's  
Sort an array containing 0's, 1's and 2's (Dutch national flag problem)  
Inplace merge two sorted arrays  
Merge two arrays by satisfying given constraints  
Find index of 0 to replace to get maximum length sequence of continuous ones  
Find maximum product of two integers in an array  
Shuffle a given array of elements (Fisher–Yates shuffle)  
Rearrange the array with alternate high and low elements  
Find equilibrium index of an array  
Find majority element in an array (Boyer–Moore majority vote algorithm)  
Move all zeros present in the array to the end  
Replace each element of array with product of every other element without using / operator  
Find Longest Bitonic Subarray in an array  
Find maximum difference between two elements in the array by satisfying given constraints  
Maximum subarray problem (Kadane's algorithm)  
Print continuous subarray with maximum sum  
Maximum Sum Circular Subarray  
Find all distinct combinations of given length  
Find all distinct combinations of given length with repetition allowed  
Find maximum sequence of continuous 1's formed by replacing at-most k zeroes by ones  
Find minimum sum subarray of given size k  
Find subarray having given sum in given array of integers  
Find the length of smallest subarray whose sum of elements is greater than the given number  
Find largest number possible from set of given numbers  
Find the smallest window in array sorting which will make the entire array sorted  
Find maximum sum path involving elements of given arrays  
Maximum profit earned by buying and selling shares any number of times  
Trapping Rain Water within given set of bars

Longest Increasing Subsequence

Longest Decreasing Subsequence Problem

Find maximum product subarray in a given array

Find maximum sum of subsequence with no adjacent elements

Find minimum platforms needed in the station so to avoid any delay in arrival of any train

Decode the array constructed from another array

Sort an array using one swap

Find Triplet with given sum in an array

Length of longest continuous sequence with same sum in given binary arrays

Rearrange array such that  $A[A[i]]$  is set to  $i$  for every element  $A[i]$

Reverse every consecutive  $m$  elements of the given subarray

Maximum Product Subset Problem

Find pairs with given difference  $k$  in the array

Find pairs with given difference  $k$  in the array | Constant space solution

4 sum problem | Quadruplets with given sum

Print all quadruplets with given sum | 4-sum problem extended

Find odd occurring element in an array in single traversal

Find two odd occurring element in an array without using any extra space

Quickselect Algorithm

Print all Triplets that forms Arithmetic Progression

Print all triplets that forms Geometric Progression

Print all combination of numbers from 1 to  $n$  having sum  $n$

Replace each element of the array by its corresponding rank in the array

Print all Triplets in an array with sum less than or equal to given number

Group elements of an array based on their first occurrence

Find minimum difference between index of two given elements present in the array

Find maximum absolute difference between sum of two non-overlapping sub-arrays

Find all Symmetric Pairs in an Array of Pairs

Partition an array into two sub-arrays with the same sum

Find count of distinct elements in every sub-array of size  $k$

Find two numbers with maximum sum formed by array digits

Print all sub-arrays of an array having distinct elements

Find a Triplet having Maximum Product in an Array

Find ways to calculate a target from elements of specified array

Find Minimum Index of Repeating Element in an Array

Generate Random Input from an Array according to given Probabilities

Find pair in an array having minimum absolute sum

Find Index of Maximum Occurring Element with Equal Probability

Check if an Array is Formed by Consecutive Integers

Find two non-overlapping pairs having same sum in an array

Find Minimum Product among all Combinations of Triplets in an Array  
Replace every element of an array with the least greater element on its right  
Find all odd occurring elements in an array having limited range of elements  
Add elements of two arrays into a new array  
Count the distinct absolute values in the sorted array  
Print all combinations of positive integers in increasing order that sum to a given number  
Find all distinct combinations of given length - Part 2  
Find subarrays with given sum in an array  
Find the surpasser count for each element of an array  
Find maximum length sequence of continuous ones (Using Sliding Window)  
Find maximum length sequence of continuous ones  
Calculate frequency of all elements present in an array of specified range in linear time and using constant space  
Rearrange the array such that it contains positive and negative numbers at alternate positions

Merging Overlapping Intervals

Activity Selection Problem

Job Sequencing Problem with Deadlines

Introduction to Priority Queues using Binary Heaps

Min Heap and Max Heap Implementation in C++

Min Heap and Max Heap Implementation in Java

Heap Sort (Out-of-place and In-place implementation in C++ and C)

Check if given array represents min heap or not

Convert Max Heap to Min Heap in linear time

Find K'th largest element in an array

Sort a K-Sorted Array

Merge M sorted lists of variable length

Find K'th smallest element in an array

Find smallest range with at-least one element from each of the given lists

Merge M sorted lists each containing N elements

Insertion sort | Iterative & Recursive

Selection sort | Iterative & Recursive

Bubble sort | Iterative & Recursive

Merge Sort

Quicksort

Iterative Implementation of Quicksort

Hybrid QuickSort

Quicksort using Dutch National Flag Algorithm

Quick Sort using Hoare's Partitioning scheme

External merge sort

Custom Sort | Sort elements by their frequency and Index  
Custom Sort | Sort elements of the array by order of elements defined by the second array  
Inversion Count of an array  
Segregate positive and negative integers in linear time  
Binary Search  
Ternary Search vs Binary search  
Interpolation search  
Exponential search  
Find number of rotations in a circularly sorted array  
Search an element in a circular sorted array  
Find first or last occurrence of a given number in a sorted array  
Count occurrences of a number in a sorted array with duplicates  
Find smallest missing element from a sorted array  
Find Floor and Ceil of a number in a sorted array  
Search in a nearly sorted array in  $O(\log n)$  time  
Find number of 1's in a sorted binary array  
Find the peak element in an array  
Maximum Sum Subarray using Divide & Conquer  
Find Minimum and Maximum element in an array using minimum comparisons  
Matrix Chain Multiplication  
0-1 Knapsack problem  
Maximize value of the expression  
Partition problem  
Subset sum problem  
Minimum Sum Partition problem  
Rod Cutting  
Coin change-making problem (unlimited supply of coins)  
Coin Change Problem (Total number of ways to get the denomination of coins)  
Longest alternating subsequence  
Combinations of words formed by replacing given numbers with corresponding alphabets  
Decode the given sequence to construct minimum number without repeated digits  
All combinations of elements satisfying given constraints  
Find Missing Term in a Sequence in  $\log(n)$  time  
Print all distinct Subsets of a given Set  
Find Floor and Ceil of a number in a sorted array (Recursive solution)  
Set both elements of a binary array to 0 in single line  
K-Partition Problem | Printing all Partitions  
3 Partition Problem  
3-partition problem extended | Print all partitions  
Iterative Merge Sort Algorithm (Bottom-up Merge Sort)

Find two duplicate elements in an limited range array (using XOR)  
Find missing number and duplicate elements in an array  
Find Minimum and Maximum element in an array by doing minimum comparisons  
Find Frequency of each element in a sorted array containing duplicates  
Difference between Subarray, Subsequence and Subset

## Backtracking

Print all possible solutions to N Queens problem  
Print all Possible Knight's Tours in a chessboard  
Find Shortest Path in Maze  
Find Longest Possible Route in a Matrix  
Find path from source to destination in a matrix that satisfies given constraints  
Find total number of unique paths in a maze from source to destination  
Print All Hamiltonian Path present in a graph  
Print all k-colorable configurations of the graph (Vertex coloring of graph)  
Find all Permutations of a given string  
All combinations of elements satisfying given constraints  
Find all binary strings that can be formed from given wildcard pattern  
K-Partition Problem | Printing all Partitions  
Magnet Puzzle  
Find ways to calculate a target from elements of specified array  
Find minimum number possible by doing at-most K swaps  
Determine if a pattern matches with a string or not

## Bit Manipulation

Bit Hacks – Part 1 (Basic)  
Bit Hacks – Part 2 (Playing with k'th bit)  
Bit Hacks – Part 3 (Playing with rightmost set bit of a number)  
Bit Hacks – Part 4 (Playing with letters of English alphabet)  
Bit Hacks – Part 5 (Find absolute value of an integer without branching)  
Bit Hacks – Part 6 (Random Problems)  
Brian Kernighan's Algorithm to count set bits in an integer  
Compute parity of a number using lookup table  
Count set bits using lookup table  
Find the minimum or maximum of two integers without using branching  
Multiply 16-bit integers using 8-bit multiplier  
Round up to the next highest power of 2

Round up to the previous power of 2  
Swap individual bits at given position in an integer  
Check if given number is power of 4 or not  
Reverse Bits of a given Integer  
Find odd occurring element in an array in single traversal  
Find two odd occurring element in an array without using any extra space  
Swap two bits at given position in an integer  
Add binary representation of two integers  
Swap Adjacent Bits of a Number  
Print all distinct Subsets of a given Set  
Perform Division of two numbers without using division operator (/)  
Check if adjacent bits are set in binary representation of a given number  
Conditionally negate a value without branching  
Find two duplicate elements in a limited range array (using XOR)  
Find missing number and duplicate elements in an array  
Check if given number is power of 8 or not  
Circular shift on binary representation of an integer by k positions  
Solve given set of problems without using multiplication or division operators  
Reverse Bits of an integer using lookup table

Generate binary numbers between 1 to N  
Efficiently implement power function | Recursive and Iterative  
Find square of a number without using multiplication and division operator | 3 methods  
Generate power set of a given set  
Huffman Coding  
Find all odd occurring elements in an array having limited range of elements

## Binary Tree

Check if two given binary trees are identical or not | Iterative & Recursive  
Calculate height of a binary tree | Iterative & Recursive  
Delete given Binary Tree | Iterative & Recursive  
Inorder Tree Traversal | Iterative & Recursive  
Preorder Tree Traversal | Iterative & Recursive  
Postorder Tree Traversal | Iterative & Recursive  
Level Order Traversal of Binary Tree  
Spiral Order Traversal of Binary Tree  
Reverse Level Order Traversal of Binary Tree  
Print all nodes of a given binary tree in specific order  
Print left view of binary tree

Print Bottom View of Binary Tree

Print Top View of Binary Tree

Find next node in same level for given node in a binary tree

Check if given binary tree is complete binary tree or not

Determine if given two nodes are cousins of each other

Print cousins of given node in a binary tree

In-place convert given binary tree to its sum tree

Check if given binary tree is a sum tree or not

Combinations of words formed by replacing given numbers with corresponding alphabets

Determine if given binary tree is a subtree of another binary tree or not

Find diameter of a binary tree

Check if given binary Tree has symmetric structure or not

Convert binary tree to its mirror

Check if binary tree can be converted to another by doing any no. of swaps of left & right child

Find Lowest Common Ancestor (LCA) of two nodes in a binary tree

Print all paths from root to leaf nodes in given binary tree

Find ancestors of given node in a Binary Tree

Find the distance between given pairs of nodes in a binary tree

Find Vertical Sum in a given Binary Tree

Print nodes in vertical order of a given Binary Tree (Vertical Traversal)

Find the diagonal sum of given binary tree

Print Diagonal Traversal of Binary Tree

Print corner nodes of every level in binary tree

In-place convert given Binary Tree to Doubly Linked List

Sink nodes containing zero to the bottom of the binary tree

Convert given binary tree to full tree by removing half nodes

Truncate given binary tree to remove nodes which lie on a path having sum less than K

Find maximum sum root-to-leaf path in a binary tree

Check if given binary tree is height balanced or not

Convert normal binary tree to Left-child right-sibling binary tree

Determine if given Binary Tree is a BST or not

Convert a Binary Tree to BST by maintaining its original structure

Invert given Binary Tree | Recursive and Iterative solution

Print Right View of a Binary Tree

Print leaf to root path for every leaf node in a binary tree

Find maximum width of given binary tree

Build Binary Tree from given Parent array

C++ Program to Print Binary Tree Structure

Find all nodes at given distance from leaf nodes in a binary tree

Count all subtrees having same value of nodes in a binary tree

Find Maximum Difference Between a Node and its Descendants in a Binary Tree  
Construct a Binary Tree from Ancestor Matrix  
Calculate height of a binary tree with leaf nodes forming a circular doubly linked list  
Find maximum sum path between two leaves in a binary tree  
Fix a binary tree that is only one swap away from becoming a BST

## Binary Search Tree (BST)

Insertion in BST  
Search given key in BST  
Deletion from BST  
Construct balanced BST from given keys  
Determine if given Binary Tree is a BST or not  
Check if given keys represents same BSTs or not without building the BST  
Find inorder predecessor for given key in a BST  
Find Lowest Common Ancestor (LCA) of two nodes in a Binary Search Tree  
Find K'th smallest and K'th largest element in BST  
Floor and Ceil in a Binary Search Tree  
Find optimal cost to construct binary search tree  
Convert a Binary Tree to BST by maintaining its original structure  
Remove nodes from BST that have keys outside the valid range  
Find a pair with given sum in a BST  
Find inorder successor for given key in a BST  
Replace every element of an array with the least greater element on its right  
Fix a binary tree that is only one swap away from becoming a BST  
Update every key in BST to contain sum of all greater keys

## Divide & Conquer

Binary Search  
Find number of rotations in a circularly sorted array  
Search an element in a circular sorted array  
Find first or last occurrence of a given number in a sorted array  
Count occurrences of a number in a sorted array with duplicates  
Find smallest missing element from a sorted array  
Find Floor and Ceil of a number in a sorted array  
Search in a nearly sorted array in  $O(\log n)$  time  
Find number of 1's in a sorted binary array  
Find the peak element in an array



Maximum Sum Subarray using Divide & Conquer  
Find Minimum and Maximum element in an array using minimum comparisons  
Efficiently implement power function | Recursive and Iterative  
Find Missing Term in a Sequence in  $\log(n)$  time  
Division of Two Numbers using Binary Search Algorithm  
Find Floor and Ceil of a number in a sorted array (Recursive solution)  
Find Minimum and Maximum element in an array by doing minimum comparisons  
Find Frequency of each element in a sorted array containing duplicates  
Ternary Search vs Binary search  
Exponential search  
Interpolation search

Merge Sort Algorithm  
Iterative Merge Sort Algorithm (Bottom-up Merge Sort)  
Merge Sort Algorithm for Singly Linked List  
Inversion Count of an array  
Quicksort Algorithm  
Iterative Implementation of Quicksort  
Hybrid QuickSort  
Quicksort using Dutch National Flag Algorithm  
Quick Sort using Hoare's Partitioning scheme

## Dynamic Programming

Introduction to Dynamic Programming  
Longest Common Subsequence | Introduction & LCS Length  
Longest Common Subsequence | Space optimized version  
Longest Common Subsequence of K-sequences  
Longest Common Subsequence | Finding all LCS  
Longest Common Substring problem  
Longest Palindromic Subsequence using Dynamic Programming  
Longest Repeated Subsequence problem  
Implement Diff Utility  
Shortest Common Supersequence | Introduction & SCS Length  
Shortest Common Supersequence | Finding all SCS  
Shortest Common Supersequence | Using LCS  
Longest Increasing Subsequence using Dynamic Programming  
Longest Bitonic Subsequence  
Increasing Subsequence with Maximum Sum  
The Levenshtein distance (Edit distance) problem

Find size of largest square sub-matrix of 1's present in given binary matrix

Matrix Chain Multiplication

Find the minimum cost to reach last cell of the matrix from its first cell

Find longest sequence formed by adjacent numbers in the matrix

Count number of paths in a matrix with given cost to reach destination cell

0-1 Knapsack problem

Maximize value of the expression

Partition problem

Subset sum problem

Minimum Sum Partition problem

Find all N-digit binary strings without any consecutive 1's

Rod Cutting

Maximum Product Rod Cutting

Coin change-making problem (unlimited supply of coins)

Coin Change Problem – Find total number of ways to get the denomination of coins

Total possible solutions to linear equation of k variables

Longest alternating subsequence

Count number of times a pattern appears in given string as a subsequence

Collect maximum points in a matrix by satisfying given constraints

Count total possible combinations of N-digit numbers in a mobile keypad

Find optimal cost to construct binary search tree

Word Break Problem

Word Break Problem | Using Trie Data Structure

Determine Minimal Adjustment Cost of an Array

Check if a string is K-Palindrome or not

Find total ways to achieve given sum with n throws of dice having k faces

Wildcard Pattern Matching

Find probability that a person is alive after taking N steps on the island

Calculate sum of all elements in a sub-matrix in constant time

Find maximum sum K x K sub-matrix in a given M x N matrix

Find maximum sum submatrix present in a given matrix

Find maximum sum of subsequence with no adjacent elements

Maximum subarray problem (Kadane's algorithm)

Single-Source Shortest Paths – Bellman Ford Algorithm

All-Pairs Shortest Paths – Floyd Warshall Algorithm

Longest Decreasing Subsequence Problem

Pots of Gold Game using Dynamic Programming

Find minimum cuts needed for palindromic partition of a string

Maximum Length Snake Sequence

3 Partition Problem

Calculate size of the largest plus of 1's in binary matrix

Check if given string is interleaving of two other given strings

Longest Increasing Subsequence using LCS

Determine negative-weight cycle in a graph

## Graphs

Terminology and Representations of Graphs

Graph Implementation using STL

Graph Implementation in C++ without using STL

Graph Implementation in C

Graph Implementation in Java using Collections

Breadth First Search (BFS) | Iterative & Recursive Implementation

Depth First Search (DFS) | Iterative & Recursive Implementation

Arrival and Departure Time of Vertices in DFS

Types of edges involved in DFS and relation between them

Bipartite Graph

Determine if a given graph is Bipartite Graph using DFS

Minimum number of throws required to win Snake and Ladder game

Topological Sorting in a DAG

Kahn's Topological Sort Algorithm

Transitive Closure of a Graph

Check if an undirected graph contains cycle or not

Total paths in given digraph from given source to destination having exactly m edges

Determine if an undirected graph is a Tree (Acyclic Connected Graph)

2-Edge Connectivity in the graph

2-Vertex Connectivity in the graph

Check if given digraph is a DAG (Directed Acyclic Graph) or not

Disjoint-Set Data Structure (Union-Find Algorithm)

Chess Knight Problem – Find Shortest path from source to destination

Check if given Graph is Strongly Connected or not

Check if given Graph is Strongly Connected or not using one DFS Traversal

Union-Find Algorithm for Cycle Detection in undirected graph

Kruskal's Algorithm for finding Minimum Spanning Tree

Single-Source Shortest Paths – Dijkstra's Algorithm

Single-Source Shortest Paths – Bellman Ford Algorithm

All-Pairs Shortest Paths – Floyd Warshall Algorithm

Find Cost of Shortest Path in DAG using one pass of Bellman-Ford

Least Cost Path in Weighted Digraph using BFS

Find maximum cost path in graph from given source to destination

Determine negative-weight cycle in a graph

Least cost path in given digraph from given source to destination having exactly m edges

Print all k-colorable configurations of the graph (Vertex coloring of graph)

Print All Hamiltonian Path present in a graph

Greedy coloring of graph

## Heap

Introduction to Priority Queues using Binary Heaps

Min Heap and Max Heap Implementation in C++

Min Heap and Max Heap Implementation in Java

Heap Sort Algorithm

Check if given array represents min heap or not

Convert Max Heap to Min Heap in linear time

Find K'th largest element in an array

Sort a K-Sorted Array

Merge M sorted lists of variable length

Find K'th smallest element in an array

Find smallest range with at-least one element from each of the given lists

Merge M sorted lists each containing N elements

External merge sort

Huffman Coding

Find first k maximum occurring words in given set of strings

Find first k non-repeating characters in a string in single traversal

## Linked List

Introduction to Linked Lists

Linked List Implementation | Part 1

Linked List Implementation | Part 2

Static Linked List in C

Clone given Linked List

Delete Linked List

Pop operation in linked list

Insert given node into the correct sorted position in the given sorted linked list

Given a linked list, change it to be in sorted order  
Split the nodes of the given linked list into front and back halves  
Remove duplicates from a sorted linked list  
Move front node of the given list to the front of the another list  
Move even nodes to the end of the list in reverse order  
Split given linked list into two lists where each list containing alternating elements from it  
Construct a linked list by merging alternate nodes of two given lists  
Merge given sorted linked lists into one  
Merge Sort Algorithm for Singly Linked List  
Intersection of two given sorted linked lists  
Reverse linked list | Part 1 (Iterative Solution)  
Reverse linked list | Part 2 (Recursive Solution)  
Reverse every group of k nodes in given linked list  
Find K'th node from the end in a linked list  
Merge alternate nodes of two linked lists into the first list  
Merge two sorted linked lists from their end  
Delete every N nodes in a linked list after skipping M nodes  
Rearrange linked list in specific manner in linear time  
Check if linked list is palindrome or not  
Move last node to front in a given Linked List  
Rearrange the linked list in specific manner  
Detect Cycle in a linked list (Floyd's Cycle Detection Algorithm)  
Sort linked list containing 0's, 1's and 2's  
Stack Implementation using Linked List  
Queue Implementation using Linked List  
Remove duplicates from a linked list  
Rearrange the linked list so that it has alternating high, low values  
Rearrange a Linked List by Separating Odd Nodes from the Even Ones  
Calculate height of a binary tree with leaf nodes forming a circular doubly linked list  
XOR Linked List: Overview and Implementation  
Convert a multilevel linked list to a singly linked list

## Matrix

Print Matrix in Spiral Order  
Create Spiral Matrix from given array  
Shift all matrix elements by 1 in Spiral Order  
Find Shortest path from source to destination in a matrix that satisfies given constraints  
Change all elements of row i and column j in a matrix to 0 if cell (i, j) has value 0

Print diagonal elements of the matrix having positive slope  
Find all paths from first cell to last cell of a matrix  
Replace all occurrences of 0 that are not surrounded by 1 in a binary matrix  
In-place rotate the matrix by 90 degrees in clock-wise direction  
Count negative elements present in sorted matrix in linear time  
Report all occurrences of an element in row wise and column wise sorted matrix in linear time  
Calculate sum of all elements in a sub-matrix in constant time  
Find maximum sum  $K \times K$  sub-matrix in a given  $M \times N$  matrix  
Find maximum sum submatrix present in a given matrix  
Find probability that a person is alive after taking  $N$  steps on the island  
Count the number of islands  
Flood fill Algorithm  
Find shortest safe route in a field with sensors present  
Find all occurrences of given string in a character matrix  
Shortest path in a Maze | Lee algorithm  
Check if given matrix is Toeplitz matrix or not  
In-place rotate the matrix by 180 degrees  
Fill Binary Matrix with Alternating Rectangles of 0 and 1  
Find all common elements present in every row of given matrix  
Construct a Binary Tree from Ancestor Matrix  
Find common elements present in all rows of a matrix  
Find index of the row containing maximum number of 1's in a binary matrix

Travelling Salesman Problem using Branch and Bound  
Collect maximum points in a matrix by satisfying given constraints  
Count number of paths in a matrix with given cost to reach destination cell  
Find longest sequence formed by adjacent numbers in the matrix  
Find the minimum cost to reach last cell of the matrix from its first cell  
Matrix Chain Multiplication  
Find size of largest square sub-matrix of 1's present in given binary matrix  
Chess Knight Problem – Find Shortest path from source to destination  
Find Duplicate rows in a binary matrix  
Print all possible solutions to  $N$  Queens problem  
Print all Possible Knight's Tours in a chessboard  
Find Shortest Path in Maze  
Find Longest Possible Route in a Matrix  
Calculate size of the largest plus of 1's in binary matrix  
Find the maximum value of  $M[c][d] - M[a][b]$  over all choices of indexes  
Find shortest distance of every cell from landmine in a Maze  
Find shortest route in a device to construct the given string

# Queue

Queue Implementation

Queue Implementation using Linked List

Chess Knight Problem – Find Shortest path from source to destination

Shortest path in a Maze | Lee algorithm

Find shortest safe route in a field with sensors present

Flood fill Algorithm

Count the number of islands

Find Shortest path from source to destination in a matrix that satisfies given constraints

Generate binary numbers between 1 to N

Calculate height of a binary tree | Iterative & Recursive

Delete given Binary Tree | Iterative & Recursive

Level Order Traversal of Binary Tree

Spiral Order Traversal of Binary Tree

Reverse Level Order Traversal of Binary Tree

Print all nodes of a given binary tree in specific order

Print left view of binary tree

Find next node in same level for given node in a binary tree

Check if given binary tree is complete binary tree or not

Print Diagonal Traversal of Binary Tree

Print corner nodes of every level in binary tree

Invert given Binary Tree | Recursive and Iterative solution

Minimum number of throws required to win Snake and Ladder game

Find shortest distance of every cell from landmine in a Maze

Convert a multilevel linked list to a singly linked list

Breadth First Search (BFS) | Iterative & Recursive Implementation

Check if an undirected graph contains cycle or not

Find maximum cost path in graph from given source to destination

Find maximum cost path in graph from given source to destination

Total number of paths in given digraph from given source to destination having exactly m edges

Least cost path in given digraph from given source to destination having exactly m edges

# Sorting

Insertion sort | Iterative & Recursive

Selection sort | Iterative & Recursive

Bubble sort | Iterative & Recursive

Merge Sort Algorithm

Iterative Merge Sort Algorithm (Bottom-up Merge Sort)

Quicksort Algorithm

Iterative Implementation of Quicksort

Hybrid QuickSort

Quicksort using Dutch National Flag Algorithm

Quick Sort using Hoare's Partitioning scheme

External merge sort

Counting Sort Algorithm

Custom Sort | Sort elements by their frequency and Index

Custom Sort | Sort elements of the array by order of elements defined by the second array

Inversion Count of an array

Segregate positive and negative integers in linear time

Efficiently Sort an Array with many Duplicated Values

Find the smallest window in array sorting which will make the entire array sorted

Find largest number possible from set of given numbers

Move all zeros present in the array to the end

Sort binary array in linear time

Sort linked list containing 0's, 1's and 2's

Merge Sort Algorithm for Singly Linked List

Group anagrams together from given list of words

Activity Selection Problem

Lexicographic sorting of given set of keys

Heap Sort Algorithm

Merge M sorted lists of variable length

Merge M sorted lists each containing N elements

Find all palindromic permutations of a string

Find all lexicographically next permutations of a string sorted in ascending order

Merge two sorted linked lists from their end

Sort an array containing 0's, 1's and 2's (Dutch national flag problem)

Find pair with given sum in the array

Inplace merge two sorted arrays

Merge two arrays by satisfying given constraints

Find maximum product of two integers in an array

Find all distinct combinations of given length

Find all distinct combinations of given length with repetition allowed

Merging Overlapping Intervals

Print all quadruplets with given sum | 4-sum problem extended

4 sum problem | Quadruplets with given sum



Find two numbers with maximum sum formed by array digits  
Find a Triplet having Maximum Product in an Array  
Find Minimum Product among all Combinations of Triplets in an Array  
Find all distinct combinations of given length - Part 2  
Find the surpasser count for each element of an array

## Stack

Stack Implementation  
Stack Implementation using Linked List  
Check if given expression is balanced expression or not  
Find duplicate parenthesis in an expression  
Evaluate given postfix expression  
Decode the given sequence to construct minimum number without repeated digits  
Design a stack which returns minimum element in constant time  
Design a stack which returns minimum element without using auxiliary stack  
Reverse a string without using recursion  
Reverse a string using stack data structure

Inorder Tree Traversal | Iterative & Recursive  
Preorder Tree Traversal | Iterative & Recursive  
Postorder Tree Traversal | Iterative & Recursive  
Find ancestors of given node in a Binary Tree  
Check if two given binary trees are identical or not | Iterative & Recursive  
Reverse Level Order Traversal of Binary Tree  
Reverse given text without reversing the individual words  
Find all binary strings that can be formed from given wildcard pattern  
Iterative Implementation of Quicksort  
Depth First Search (DFS) | Iterative & Recursive Implementation  
Invert given Binary Tree | Recursive and Iterative solution  
Print leaf to root path for every leaf node in a binary tree  
Longest Increasing Subsequence

## String

Check if given string is a rotated palindrome or not  
Longest Palindromic Substring (Non-DP Space Optimized Solution)  
Check if repeated subsequence is present in the string or not  
Check if strings can be derived from each other by circularly rotating them

Check if given set of moves is circular or not  
Convert given number into corresponding excel column name  
Determine if two strings are anagram or not  
Find all binary strings that can be formed from given wildcard pattern  
Find all interleavings of given strings  
Isomorphic Strings  
Find all possible palindromic substrings in a string  
Find all possible combinations of words formed from mobile keypad  
Find all possible combinations by replacing given digits with characters of the corresponding list  
Find all words from given list that follows same order of characters as given pattern  
Find first k non-repeating characters in a string in single traversal  
Group anagrams together from given list of words  
Introduction to Pattern Matching  
Inplace remove all occurrences of 'AB' and 'C' from the string  
Longest even length palindromic sum substring  
Print string in zig-zag form in k rows  
Reverse given text without reversing the individual words  
Run Length Encoding (RLE) data compression algorithm  
Validate an IP address  
Find the longest substring of given string containing k distinct characters  
Find all palindromic permutations of a string  
Find all substrings of a string that are permutation of a given string  
Find the longest substring of given string containing all distinct characters  
Find all Permutations of a given string  
Iterative Approach to find Permutations of a String  
Generate all Permutations of a String in Java | Recursive & Iterative  
Find all lexicographically next permutations of a string sorted in ascending order  
Find Lexicographically minimal string rotation  
Find all strings of given length containing balanced parentheses  
Find all N-digit strictly increasing numbers (Bottom-Up and Top-Down Approach)  
Find all N-digit binary numbers having more 1's than 0's for any prefix  
Find all N-digit numbers with given sum of digits  
Find all N-digit binary numbers with k-bits set where k ranges from 1 to N  
Generate binary numbers between 1 to N  
Find all combinations of non-overlapping substrings of a string  
Check if given sentence is syntactically correct or not  
Calculate rank of given string among all its lexicographically sorted permutations  
Find all Lexicographic Permutations of a String  
Find all N-digit binary numbers with equal sum of bits in its two halves  
Check if given string is interleaving of two other given strings

Difference between Subarray, Subsequence and Subset

`std::next_permutation` | Overview & Implementation in C++

`std::prev_permutation` | Overview & Implementation in C++

Implementation of KMP Algorithm

Reverse String without using Recursion

Reverse given string using Recursion

Reverse a String in Java in 10 different ways

Determine if a given string is palindrome or not

In-place remove all adjacent duplicates from the given string

Find the minimum number of inversions needed to make the given expression balanced

Replace all non-overlapping occurrences of the pattern

Construct the longest palindrome by shuffling or deleting characters from a string

Determine if characters of a String follows a specified order or not

Print all combinations of phrases that can be formed by picking words from each of the given lists

Remove all extra spaces from a string

Break a string into all possible combinations of non-overlapping substrings

Remove adjacent duplicate characters from a string

Find first non-repeating character in a string by doing only one traversal of it

Find all N-digit numbers with equal sum of digits at even and odd index

Combinations of words formed by replacing given numbers with corresponding alphabets

Word Break Problem

Wildcard Pattern Matching

Count number of times a pattern appears in given string as a subsequence

The Levenshtein distance (Edit distance) problem

Longest Common Subsequence | Introduction & LCS Length

Longest Common Subsequence | Space optimized version

Longest Common Subsequence of K-sequences

Longest Common Subsequence | Finding all LCS

Longest Repeated Subsequence problem

Longest Palindromic Subsequence using Dynamic Programming

Longest Common Substring problem

Shortest Common Supersequence | Introduction & SCS Length

Shortest Common Supersequence | Finding all SCS

Shortest Common Supersequence | Using LCS

Implement Diff Utility

Word Break Problem | Using Trie Data Structure

Find minimum cuts needed for palindromic partition of a string

Check if a string is K-Palindrome or not

Find shortest route in a device to construct the given string

Find minimum number possible by doing at-most K swaps

Determine if a pattern matches with a string or not

## Trie

Trie Implementation | Insert, Search and Delete

Memory efficient Trie Implementation using Map | Insert, Search and Delete

C++ Implementation of Trie Data Structure

Longest Common Prefix in given set of strings (using Trie)

Lexicographic sorting of given set of keys

Find maximum occurring word in given set of strings

Find first k maximum occurring words in given set of strings

Find Duplicate rows in a binary matrix

Word Break Problem | Using Trie Data Structure

## Greedy

Activity Selection Problem

Huffman Coding

Shortest Superstring Problem

Job Sequencing Problem with Deadlines

Greedy coloring of graph

Kruskal's Algorithm for finding Minimum Spanning Tree

Single-Source Shortest Paths – Dijkstra's Algorithm

## Puzzles

Clock angle problem – Find angle between hour and minute hand

Add two numbers without using addition operator

Generate power set of a given set

Implement power function without using multiplication and division operators

Print all numbers between 1 to N without using semicolon

Swap two numbers without using third variable

Determine the if condition to print specific output

Find max and min of three numbers without using conditional statement and ternary operator

Find numbers represented as sum of two cubes for two different pairs

Print "Hello World" with empty main() function

Tower of Hanoi Problem

Print all numbers between 1 to N without using any loop

Print a semicolon without using semicolon anywhere in the program  
Multiply two numbers without using multiplication operator or loops  
Find square of a number without using multiplication and division operator  
Find if a number is even or odd without using any conditional statement  
Set both elements of a binary array to 0 in single line  
Find minimum number without using conditional statement or ternary operator  
Perform Division of two numbers without using division operator (/)  
Generate 0 and 1 with 75% and 25% Probability  
Generate Desired Random Numbers With Equal Probability  
Return 0, 1 and 2 with equal Probability using the specified function  
Generate Fair Results from a Biased Coin  
Generate numbers from 1 to 7 with equal probability using specified function  
Implement Ternary Operator Without Using Conditional Expressions  
Determine if two integers are equal without using comparison and arithmetic operators  
Return 0 and 1 with equal Probability using the specified function  
Generate Random Input from an Array according to given Probabilities  
Generate Fair Results from a Biased Coin  
Magnet Puzzle

**Thank you all being with us.**

***<https://github.com/animeshn99>***