Topics

1. Searching Algorithms
2. Graph Algorithms
3. Tree Algorithms
4.Bit Algorithms
5.Pattern Searching
6.Greedy Algorithms
7.Dynamic Programming
8.Divide and Conquer
9.Backtracking
10.Branch and Bound
11. Np Complete Problems
12. N choose K Problems
13. Stack
14. Queue
15. Linked List

String

- Reverse words in a given string
- Longest Palindrome of a given string
- Recursively Remove all adjacent duplicates
- Check if string is rotated by two places
- Roman number to integer
- Anagram
- Remove Duplicates
- Form a Palindrome
- Longest distinct characters in the string
- Implement Atoi
- Implement Strstr
- Longest common prefix
- Subarray with given sum
- Is unique String
- URLify
- Palindrome Permutation
- One Away
- String Compression
- Rotate Matrix
- Zero Matrix
- String rotation

Hashing

- Largest subarray with sum 0
- Swapping pairs make sum equal
- Count distinct elements in every window
- array pair sum divisibility problem
- Longest consecutive subsequence
- array subset of another array
- Find all pairs with a given sum
- Find first repeated character
- Zero Sum Subarrays
- Minimum indexed character
- Check if two arrays are equal or nor
- Uncommon characters
- Smallest window in a string containing all the characters of another string
- First element to occur k times
- Check if frequencies can be equal
- Implementation of Hash Tables
- Double Hashing
- Count the number of sub-arrays having a given XOR
- Advantages of BST over Hashtables
- Palindrome sub-string queries
- Find smallest range containing elements from k lists
- Union and intersection of two linked lists
- Symmetric pairs

Searching and Sorting

- Quick Sort
- Merge sort
- Radix Sort
- Selection Sort
- Bubble Sort
- Insertion Sort
- Counting sort
- Binary Search
- Find the element that appears once in sorted array
- Kth element of two sorted arrays
- Last index of one

Stack and Queue

- Three in one
- Stack Min
- Stack of Plates
- Queue via Stacks
- Sort Stack
- Animal Shelter
- Next larger element
- Stack with two queues
- LRU cache
- First non-repeating character in a stream
- Rotten Oranges
- Circular tour

Linked List

- Remove Duplicates
- Return kth to last
- Delete Middle Node
- Partition
- Sum Lists
- Palindrome
- Intersection
- Loop Detection
- Rotate LL
- Reverse LL
- Merge two sorted LL
- Finding middle element
- Flattening a LL
- Pairwise Swap of a LL
- Add two numbers represented by Linked List
- Check if LL is a palindrome
- Implement Queue using LL
- Implement Stack using LL
- Delete without head pointer

Trees and Heap

- Route between nodes
- Minimal Tree
- List of depths
- Check Balanced
- Validate BST
- Successor
- Build Order
- First Common Ancestor
- BST Sequences
- Check Subtree
- Random Node
- Paths with sum
- Print left view of Binary Tree
- Level order traversal
- Connect nodes at same level
- Lowest common ancestor in a BST
- Print a binary tree in vertical order
- Print Bottom view of Binary Tree
- Convert Binary tree to doubly Linked List
- Write code to determine if two trees are identical or not
- Mirror of itself
- Height of binary tree
- Maximum path sum
- Diameter of a binary tree
- Number of leaf nodes
- Balance of a binary tree
- Serialise and serialise a binary tree
- Binary heap
- Heap Sort
- Binomial Heap
- Fibonacci Heap
- Find median in a stream
- Operations on Binary min heap
- Rearrange Characters
- Kth largest element in a stream
- Merge K sorted linked lists
- Red black Tree
- B trees
- AVL Trees

Bit Algorithms

- Insertion CTCI
- Binary to String
- Flip Bit to win
- Next Number
- Debugger
- Conversion
- Pairwise swap
- Draw Line
- Find first set bit
- Rightmost different bit
- Check whether K-th bit is set or not
- Toggle bits given range
- Set Kth Bit
- Power of 2
- Bit Difference
- Rotate Bits
- Swap all odd and even bits
- Count total set of bits
- Longest consecutive 1's
- Sparse number
- Alone in a couple
- Maximum subset XOR

Recursion and Backtracking

- Number of Paths
- Combination sum
- Special Keyboard
- Water Overflow
- Josephus Problem
- Sudoku
- Rat in a maze
- Word Boggle
- Generate IP Address
- Word Break
- Warnsdrodd's Algorithm
- Remove invalid Parenthesis
- Match a pattern and string using regular ecpression
- Print Palindrome partitions string
- Tug of war
- Shortest safe route in a path with landmines
- Path of more than k length from a source
- Cryptarthmetic puzzle
- N queens in O(n) space
- Prime numbers after prime P with sum S
- n-bit Grey codes
- All possible paths from top left to bottom right
- Boggle using Trie
- Knight tour problem
- Job Assignment Problem

Dynamic Programming

- Longest Increasing Sub sequence
- Longest Common Subsequence
- 0/1 Knapsack Problem
- Minimum number of jumps
- Edit Distance
- Coin Change Problem
- Subset Sum Problem
- Rod cutting
- Path in Matrix
- Box Stacking
- Minimum sum partition
- Egg dropping puzzle
- Shortest common supersequnce
- Optimal Strategy for a game
- Count number of ways to cover a distance
- Tiling of Dominos
- Magic Index
- Power Set
- Recursive Multiplication
- Tower of Hanoi
- Permutation with Duplicates
- Permutation without duplicates
- Parenthesis Check
- Paint fill
- N Queens
- Stack of boxes
- Boolean Evaluation
- Robot in a grid

Greedy

- Knapsack Problem
- MST algorithms
- Priority Queue
- Activity Selection
- N meetings in one room
- Coin Piles
- Minimum number of Coins
- Maximize Toys
- Page Faults in LRU
- Largest number possible
- Minimise the heights
- Minimize the sum of product
- Huffman Decoding
- Max length chain
- Minimum Operations
- Shop in candy store
- Geek collects the balls
- First,best,worst fit algorithm
- Shortest job first scheduling
- LRU,FIFO

Graph

- Prim's Algorithm
- Krushkal's Algorithm
- Bellmon Ford Algorithm
- Dijastra Algorithm
- Floyd Warsal Algorithm
- DFS
- BFS
- Detect cycle in directed and un-directed graph
- Graph Coloring
- Disjoint Sets
- Topological Sort
- Hamiltonian Cycle
- m Coloring Problem
- Ford Fulkerson Algorithm
- Boogle
- Alien Dictionary
- Circle of strings
- Snake and Ladder Problem
- Minimum cost Path
- Find whether path exists
- Find the number of islands
- Minimum swaps
- Strongly connected components
- Shortest Source to Destination Path

Miscellaneous

- Convert String to integer and vice-versa
- Multiply/Sum/Divide/Add without using operators
- Trie Data Structure

Pattern Matching

- KMP algorithm
- Rabin Karp algorithm
- Wildcard Pattern matching
- Anagram Substring Search
- Pattern searching using Trie