Singly Linked List:

1.Introduction to Linked List

2.Linked List vs Array

3.Linked List Insertion

4.Linked List Deletion (Deleting a given key)

5.Linked List Deletion (Deleting a key at given position)

6.A Programmer’s approach of looking at Array vs. Linked List

7.Find Length of a Linked List (Iterative and Recursive)

8.How to write C functions that modify head pointer of a Linked List?

9.Swap nodes in a linked list without swapping data

10.Reverse a linked list

11.Merge two sorted linked lists

12.Merge Sort for Linked Lists

13.Reverse a Linked List in groups of given size

14.Detect and Remove Loop in a Linked List

15.Add two numbers represented by linked lists | Set 1

16.Rotate a Linked List

17.Generic Linked List in C

Circular Linked List:

1.Circular Linked List Introduction and Applications,

2.Circular Linked List Traversal

3.Split a Circular Linked List into two halves

4.Sorted insert for circular linked list

Doubly Linked List:

1.Doubly Linked List Introduction and Insertion

2.Delete a node in a Doubly Linked List

3.Reverse a Doubly Linked List

4.The Great Tree-List Recursion Problem.

5.QuickSort on Doubly Linked List

6.Merge Sort for Doubly Linked List

All Articles of Linked List

Quiz on Linked List

Stack:

1.Introduction to Stack

2.Infix to Postfix Conversion using Stack

3.Evaluation of Postfix Expression

4.Reverse a String using Stack

5.Implement two stacks in an array

6.Check for balanced parentheses in an expression

7.Next Greater Element

8.Reverse a stack using recursion

9.Sort a stack using recursion

10.The Stock Span Problem

11.Design and Implement Special Stack Data Structure

12.Implement Stack using Queues

13.Design a stack with operations on middle element

14.How to efficiently implement k stacks in a single array?

15.Sort a stack using recursion

Quiz on Stack

All Articles on Stack

Queue:

1.Queue Introduction and Array Implementation

2.Linked List Implementation of Queue

3.Applications of Queue Data Structure

4.Priority Queue Introduction

5.Deque (Introduction and Applications)

6.Implement Queue using Stacks

7. Find the first circular tour that visits all petrol pumps
8. Maximum of all subarrays of size k
9. An Interesting Method to Generate Binary Numbers from 1 to n
10. How to efficiently implement k Queues in a single array?

Quiz on Queue

All Articles on Queue

Binary Tree:

1. Binary Tree Introduction
2. Handshaking Lemma and Interesting Tree Properties
3. Binary Tree Properties
4. Types of Binary Tree
5. Enumeration of Binary Tree
6. Applications of tree data structure
7. Tree Traversals
8. BFS vs DFS for Binary Tree
9. Level Order Tree Traversal
10. Diameter of a Binary Tree
11. Inorder Tree Traversal without Recursion
12. Inorder Tree Traversal without recursion and without stack!
13. Threaded Binary Tree
14. Maximum Depth or Height of a Tree
15. If you are given two traversal sequences, can you construct the binary tree?
16. Clone a Binary Tree with Random Pointers
17. Construct Tree from given Inorder and Preorder traversals
18. Maximum width of a binary tree
19. Print nodes at k distance from root
20. Print Ancestors of a given node in Binary Tree
21. Check if a binary tree is subtree of another binary tree

22. Connect nodes at same level

Quiz on Binary Tree

Quiz on Binary Tree Traversals

All articles on Binary Tree

Binary Search Tree:

1. Search and Insert in BST
2. Deletion from BST
3. Minimum value in a Binary Search Tree
4. Inorder predecessor and successor for a given key in BST
5. Check if a binary tree is BST or not
6. Lowest Common Ancestor in a Binary Search Tree.
7. Inorder Successor in Binary Search Tree
8. Find k-th smallest element in BST (Order Statistics in BST)
9. Merge two BSTs with limited extra space
10. Two nodes of a BST are swapped, correct the BST
11. Floor and Ceil from a BST
12. In-place conversion of Sorted DLL to Balanced BST
13. Find a pair with given sum in a Balanced BST
14. Total number of possible Binary Search Trees with n keys
15. Merge Two Balanced Binary Search Trees
16. Binary Tree to Binary Search Tree Conversion

Quiz on Binary Search Trees

Quiz on Balanced Binary Search Trees

All Articles on Binary Search Tree

Heap:

1. Binary Heap
2. Why is Binary Heap Preferred over BST for Priority Queue?
3. Binomial Heap
4. Fibonacci Heap

5. Heap Sort

6. K'th Largest Element in an array

7. Sort an almost sorted array/

8. Tournament Tree (Winner Tree) and Binary Heap

All Articles on Heap

Quiz on Heap

Hashing:

1. Hashing Introduction

2. Separate Chaining for Collision Handling

3. Open Addressing for Collision Handling

4. Print a Binary Tree in Vertical Order

5. Find whether an array is subset of another array

6. Union and Intersection of two Linked Lists

7. Find a pair with given sum

8. Check if a given array contains duplicate elements within k distance from each other

9. Find Itinerary from a given list of tickets

10. Find number of Employees Under every Employee

Quiz on Hashing

All Articles on Hashing

Graph:

Introduction, DFS and BFS:

1. Graph and its representations

2. Breadth First Traversal for a Graph

3. Depth First Traversal for a Graph

4. Applications of Depth First Search

5. Applications of Breadth First Traversal

6. Detect Cycle in a Directed Graph

7. Detect Cycle in a an Undirected Graph

8. Detect cycle in an undirected graph

9. Longest Path in a Directed Acyclic Graph
10. Topological Sorting
11. Check whether a given graph is Bipartite or not
12. Snake and Ladder Problem
13. Minimize Cash Flow among a given set of friends who have borrowed money from each other
14. Boggle (Find all possible words in a board of characters)
15. Assign directions to edges so that the directed graph remains acyclic

All Articles on Graph Data Structure

Quiz on Graph

Quiz on Graph Traversals

Quiz on Graph Shortest Paths

Quiz on Graph Minimum Spanning Tree

Advanced Data Structure:

Advanced Lists:

1. Memory efficient doubly linked list
2. XOR Linked List – A Memory Efficient Doubly Linked List | Set 1
3. XOR Linked List – A Memory Efficient Doubly Linked List | Set 2
4. Skip List | Set 1 (Introduction)
5. Self Organizing List | Set 1 (Introduction)

Trie:

1. Trie | (Insert and Search)
2. Trie | (Delete)
3. Longest prefix matching – A Trie based solution in Java
4. Print unique rows in a given boolean matrix
5. How to Implement Reverse DNS Look Up Cache?
6. How to Implement Forward DNS Look Up Cache?

Suffix Array and Suffix Tree:

1. Suffix Array Introduction
2. Suffix Array nLogn Algorithm

3.kasai’s Algorithm for Construction of LCP array from Suffix Array

4.Suffix Tree Introduction

5.Ukkonen’s Suffix Tree Construction – Part 1

6.Ukkonen’s Suffix Tree Construction – Part 2

7.Ukkonen’s Suffix Tree Construction – Part 3

8.Ukkonen’s Suffix Tree Construction – Part 4,

9.Ukkonen’s Suffix Tree Construction – Part 5

10.Ukkonen’s Suffix Tree Construction – Part 6

11.Generalized Suffix Tree

12.Build Linear Time Suffix Array using Suffix Tree

13.Substring Check

14.Searching All Patterns

15.Longest Repeated Substring,

16.Longest Common Substring, Longest Palindromic Substring

AVL Tree:

1.AVL Tree | Set 1 (Insertion)

2.AVL Tree | Set 2 (Deletion)

3.AVL with duplicate keys

Splay Tree:

1.Splay Tree | Set 1 (Search)

2.Splay Tree | Set 2 (Insert)

B Tree:

1.B-Tree | Set 1 (Introduction)

2.B-Tree | Set 2 (Insert)

3.B-Tree | Set 3 (Delete)

Segment Tree:

1.Segment Tree | Set 1 (Sum of given range)

2.Segment Tree | Set 2 (Range Minimum Query)

3.Lazy Propagation in Segment Tree

Red-Black Tree:

1.Red-Black Tree Introduction

2.Red Black Tree Insertion.

3.Red-Black Tree Deletion

4.Program for Red Black Tree Insertion

K Dimensional Tree:

1.KD Tree (Search and Insert)

2.K D Tree (Find Minimum)

3.K D Tree (Delete)

Others:

1.Treap (A Randomized Binary Search Tree)

2.Ternary Search Tree

3.Interval Tree

4.Implement LRU Cache

5.Sort numbers stored on different machines

6.Find the k most frequent words from a file

7.Given a sequence of words, print all anagrams together

8.Tournament Tree (Winner Tree) and Binary Heap

9.Decision Trees – Fake (Counterfeit) Coin Puzzle (12 Coin Puzzle)

10.Spaghetti Stack

11.Data Structure for Dictionary and Spell Checker?

12.Binary Indexed Tree

13.Cartesian Tree

14.Cartesian Tree Sorting

15.Sparse Set

16.Centroid Decomposition of Tree

17.Gomory-Hu Tree

Array:

1. Given an array A[] and a number x, check for pair in A[] with sum as x
2. Majority Element
3. Find the Number Occurring Odd Number of Times
4. Largest Sum Contiguous Subarray
5. Find the Missing Number
6. Search an element in a sorted and pivoted array
7. Merge an array of size n into another array of size m+n
8. Median of two sorted arrays
9. Write a program to reverse an array
10. Program for array rotation
11. Reversal algorithm for array rotation
12. Block swap algorithm for array rotation
13. Maximum sum such that no two elements are adjacent
14. Leaders in an array
15. Sort elements by frequency | Set 1
16. Count Inversions in an array

All Articles on Array

Coding Practice on Array

Quiz on Array

Matrix:

1. Search in a row wise and column wise sorted matrix
2. Print a given matrix in spiral form
3. A Boolean Matrix Question
4. Print unique rows in a given boolean matrix
5. Maximum size square sub-matrix with all 1s
6. Print unique rows in a given boolean matrix
7. Inplace M x N size matrix transpose | Updated

8. Dynamic Programming | Set 27 (Maximum sum rectangle in a 2D matrix)
9. Strassen’s Matrix Multiplication
10. Create a matrix with alternating rectangles of O and X
11. Print all elements in sorted order from row and column wise sorted matrix
12. Given an n x n square matrix, find sum of all sub-squares of size k x k
13. Count number of islands where every island is row-wise and column-wise separated
14. Find a common element in all rows of a given row-wise sorted matrix

All Articles on Matrix