

Syllabus

Data Structures and its Implementation

Introduction to Data Structures

Why you should learn data structure?

use case of data structure

Why product based companies focus on data structure

All About Arrays

Down side of using conventional arrays

Array data structure

Dynamic Arrays

Linked List

~~Singly~~ Linked List

~~Doubly~~ Linked List

~~Circular~~ Linked List

Circular Doubly Linked List

Various Problems on Linked Lists

Stack and Queue

Stack Introduction

Implementation of Stack using arrays

Implementation of Stack using Linked List

Queue Introduction

Implementation of Queue using arrays

Implementation of Queue using Linked List

Deque – Double Ended Queue

Priority Queue

Recursion and Backtracking

- Recursion Basics
- Approach to solve recursive problems
- Recursion vs iteration
- Types of recursion

Sorting

- Bubble Sort
- Modified Bubble Sort
- Selection Sort
- Insertion Sort
- Quick Sort
- Merge Sort

Searching and Hashing

- Linear Search
- Binary Search
- Hashing

Tree

- Binary Tree
- Types of Binary Tree
- Binary Search Tree
- Implementation of Binary Search Tree

Heap

- Heap Introduction
- Implementation of Heap

Heap Sort

Graph

Graph Concept

Graph Representation

BFS and DFS

Types of Algorithms

Divide and Conquer

Greedy Method

Dynamic Programming