# Data Structure with C

1. **Introduction to Data Structure**
    - Introduction and definition of Data Structure
    - Linear and non-linear data structures
    - Algorithm
    - Complexity of Algorithm
    - Static and dynamic memory allocation
    - Functions and recursion
2. **Arrays**
    - Introduction to arrays
    - 1D Array
    - 2D Array
    - Operations on Array (Traversal, insert, delete, update, search)
    - Pointers
    - Programs on arrays and pointers
    - Strings and Functions on strings
3. **Stack and Queue**
    - Introduction to Stack
    - Stack Implementation
    - Stack operation (Traversal, insert, update, delete, search).
    - Introduction to Queue
    - Queue implementation and operation (CRUD)
4. **Linked List and Trees**
    - Introduction Linked List
    - Implementation of Linked List
    - Operations on Linked List (Insert, update, delete, search, traversal)
    - Doubly Linked List and all operations
    - Application
5. **Trees**
    - Introduction to Trees
    - Tree Terminology
    - Binary Search Tree
    - Strictly Binary Tree

- Operation on Trees (Insert, Traversal, Deletion)
- Application

6. **Graphs**
    - Introduction to Graphs
    - Undirected and Directed Graphs
    - Graph Traversal Methods
    - Depth First Search (DFS)
    - Breadth First Search (BFS)

7. **Sorting and Searching**
    - Introduction to Sorting
    - Types of Sorting
    - Insertion Sort
    - Bubble Sort
    - Selection Sort
    - Merge Sort
    - Heap Sort
    - Linear Search
    - Binary Searching
    - What is Hashing, Hash Table, Hash Functions