

DATA STRUCTURES THROUGH 'C'

Analysis of Algorithms: Why Analyze Algorithms?; What is Analysis?; What Analysis doesn't do?; What to count and consider?; Cases to Consider during Analysis; Rates of Growth; Analysis of Sequential Search Algorithm (Worst Case Analysis, Average Case Analysis).

Arrays: What are Arrays?; Array Operations; Merging of Two Arrays; Two-Dimensional Arrays (Row Major and Column Major Arrangement, Common Matrix Operations, More Matrix Operations); Array of Pointers; Multidimensional Arrays; Arrays and Polynomials; Multiplication of Polynomials.

Strings : What are Strings?; Representation of Strings; Operations on Strings; Pointers and Strings; A Two-Dimensional Array of Strings; Array of Pointers to Strings; Limitation of Array of Pointers to Strings; Pattern Matching (Brute Force Algorithm); Few More String Functions.

Linked Lists: What is a Linked List?; Operations on Linked Lists; Ascending Order Linked Lists; Reversing the Links; Merging of Linked Lists; Sorting a Linked List; Circular Linked List (Function `delcirq()`, Function `cirq_display()`); A few more Operations; Recursive Operation on Linked Lists; Doubly Linked Lists (Function `d_append()`, Function `d_addatbeg()`, function `d_addafter()`, function `d_delete()`); Linked Lists and Polynomials (Function `poly_multiply()`, Function `padd()`).

Sparse Matrices: Representation of Sparse Matrix as an Array; Common Matrix Operations; Transpose of a Sparse Matrix; Addition of Two Sparse Matrices; Multiplication of Two Sparse Matrices; Linked Representation of a Sparse Matrix; Other forms of a Sparse Matrix.

Stacks: Operations on Stack; Stack as an Array; Stack as a Linked List; Applications of Stacks; Infix to Prefix Conversion; Infix to Post-fix conversion; Postfix to prefix conversion; postfix to infix conversion; Evaluation of Postfix expression.

Queues: Representation of Queue as an Array; Representation of a Queue as a Linked List; Circular Queues; Dequeue; Priority Queue; Array Implementation of a Priority Queue.

Trees: Binary Trees; Traversal of a Binary Tree; Representation of a Binary Trees in Memory (Linked Representation of Binary Trees, Array Representation of Binary Trees, Binary Search Trees); Operations on a Binary Search Tree (Searching of a Node in a BST, Insertion of a Node in a BST, Deletion from a Binary Tree, Applications of Binary Trees (Representing Expressions In Binary Trees)).

Searching and Sorting: Searching (Linear Search, Binary Search, Comparison of Linear Search and Binary Search); Sorting (Internal Sorting, External Sorting); Internal Sorting (Bubble Sort, Selection Sort, Quick Sort, Insertion Sort); External Sorting.