i-Nate Education
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DATA STRUCTURES

Course Duration: 45 hrs

ANALYSIS OF ALGORITHMS :- Algorithm, Pseudo code for expressing algorithms, time complexity and space complexity, O-notation, Omega notation and theta notation.

INTRODUCTION TO DATA STRUCTURES:- Primitive and Composite, Arrays, Matrices, Sparse Matrices, String representation and manipulation.

LINEAR LISTS:- Linked List as Data Structure, Linked Lists algorithms Create List ,Insert Node (empty list, beginning, Middle, end) , Delete node(First, general case), Search list, Retrieve Node, add node, Remove node, Print List , Append Linked List, array of Linked Lists , Complex Linked Circularly-Linked List, Doubly Linked List (Insertion, Deletion),Multilinked Lists (Insertion, Deletion)

STACK:- Concepts, Operations and representation , using array and linked list, Application to evaluation of postfix expression, Conversion from infix to postfix representation.

QUEUE:- Sequential representation, operations, priority queues and array implementation. Deq ueue, Circularly Queue, , using array and linked list

INTRODUCTION TO TREES:- Binary Trees, Travesals (Infix, Prefix, Postfix), Threaded Binary tree, Balanced tree , Heaps Structure, Basic algorithms – ReheapUp, ReheapDown, Build heap, Insert, Delete ,Multiway Trees M-way search trees, B-Trees,Insertion (Inseet node, Search node, Split node, Insert entry) ,Deletion (Node delete, Delete entry, Delete mid, ReFlow, Balance, Combine) ,Traverse B-Tree ,B-Tree Search

SORTING AND SEARCHING TECHNIQUES :- Bubble, Selection, Insertion, Shell sorts and Sequential, Binary, Indexed Sequential Searches, Interpolation, Binary Search Tree Sort, Heap sort, Radix sort

GRAPHS :- Operations (Add vertex, Delete Vertex, Add Edge, Delete Edge, Find Vertex) , Traverse Graph (Depth-First, Breadth-First) ,Graph Storage Structures (Adjacency Matrix, Adjacency List) , Networks Minimum Spanning Tree ,Shortest Path Algorithm (Dijkstra's algorithm, Kruskal's algorithm, Prim's algorithm, Warshall's algorithm)