Data Structure(Implement Through C)

Duration - 2 Month

✧ Data Structures Basics
- Structure and Problem Solving
- Data structures
- Data structure Operations,
- Algorithm: complexity
- Time- space tradeoff

✧ Linked List
- Introduction to Linked lists
- Representation of linked lists in Memory
- Traversing a linked list
- Searching a linked list
- Memory allocation and Garbage collection
- insertion into linked list
- Deletion from a linked list
- Types of linked list

✧ Stack and Queue
- Introduction
- Array Representation of Stack
- Linked List Representation of stack
- Application of stack
- Queue
- Array Representation of Queue
- Linked List Representation of Queue

✧ Trees
- Definitions and Concepts
- Operations on Binary Trees
- Representation of binary tree
- Conversion of General Trees to Binary Trees
- Sequential and Other Representations of Trees
- Tree Traversal
- Spanning Trees

✧ Graphs
- Matrix Representation of Graphs
- List Structures
- Other Representations of Graphs
- Breadth First Search
- Depth First Search

✧ Directed Graphs
- Types of Directed Graphs
- Binary Relation As a Digraph
- Euler's Digraphs
- Matrix Representation of Digraphs

✧ Applications of Graphs
- Topological Sorting
- Shortest-Path Algorithms – Unweighted Shortest Paths – Dijkstra's Algorithm
- Minimum spanning tree- Prim's Algorithm
- Introduction to NP-Completeness

✧ Searching Techniques
- Sequential Searching
- Binary Searching

Add.: D-25, Near Oxford College, Vasant Vihar, Padav, Gwalior, MP – 474011
Mob. No.: +91-7067326661, +91-7067326663 II Direct No.:+91-751-4010424
Mail To: info@ebiztechnocrats.com , trainings@ebiztechnocrats.com
URL: www.ebiztechnologies.in

- Search Trees
- Hash- Table Methods

✧ Elementary Algorithms

- Notation for Expressing Algorithms
- Role and Notation for Comments
- Example of an Algorithm
- Problems and Instances
- Characteristics of an Algorithm
- Building Blocks of Algorithms
- Procedure and Recursion – Procedure
- Recursion; Outline of Algorithms
- Specification Methods for Algorithms

✧ Mathematical Functions and Notations

- Functions and Notations
- Modular Arithmetic / Mod Function
- Mathematical Expectation in Average Case Analysis
- Efficiency of an Algorithm
- Well Known Asymptotic Functions and Notations
- Analysis of Algorithms – Simple Examples
- Sorting Algorithms
- Insertion sort
- Bubble sort
- Selection sort
- Shell sort
- Heap sort

✧ Divide and Conquer

- Divide and Conquer Strategy
- Binary Search
- Max. And Min.
- Merge sort
- Quick sort

✧ Greedy Method

- Greedy Method Strategy
- Optimistic Storage on Tapes
- Knapsack Problem
- Job Sequencing with Deadlines
- Optimal Merge Pattern
- Single Source Shortlist Paths

✧ Dynamic Programming

- Dynamic Programming Strategy
- Multistage Graphs
- All Pair Shortest Paths
- Travelling Salesman Problems

✧ Complexity of Algorithms

- Notations for the Growth Rates of Functions
- Classification of Problems
- Reduction
- NP-Complete and NP-Hard Problems
- Establishing NP-Completeness of Problems