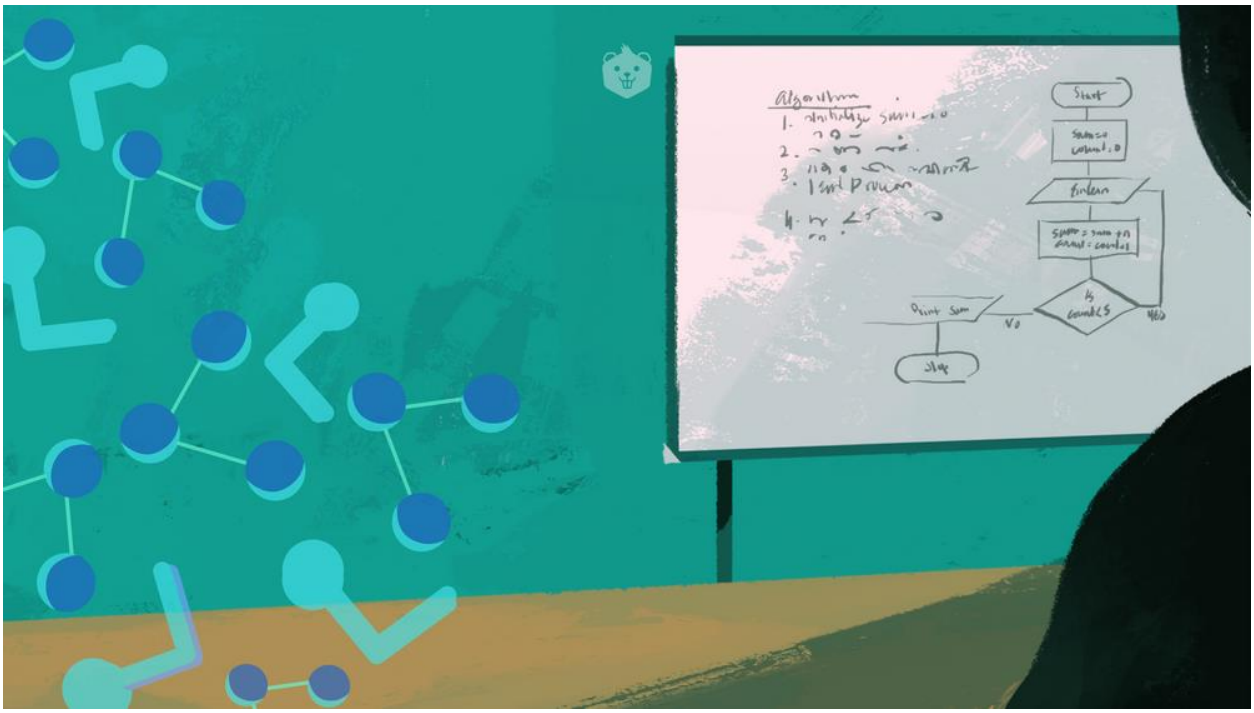
DATA STRUCTURE & ALGORITHMS



TEACHER: CERTIFIED TRAINER	DURATION: 16 CLASSES(x2 LEVELS) (1 HOUR PER CLASS)	MODE: ONLINE AND OFFLINE

DSA stands for Data Structures and Algorithms, a fundamental concept in computer science. It focuses on organizing data efficiently and designing algorithms to solve computational problems effectively. Mastering DSA is crucial for software developers, especially in fields like competitive programming, software development interviews, and algorithm design.

COURSE CURRICULUM

DSA Level-1:

- **Arrays**: Learn basic operations, memory representation, and multi-dimensional arrays.
- **Sorting Algorithms**: Explore Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Counting Sort, Radix Sort, and Merge Sort.
- **Searching Algorithms**: Learn Linear and Binary Search techniques.
- **Linked Lists**: Understand singly, doubly, and circular linked lists along with basic

operations.

- **Stacks & Queues**: Learn LIFO (stacks) and FIFO (queues) principles, including circular queues.
- **Trees**: Explore binary trees, tree traversals (pre-order, in-order, post-order), binary search trees, and AVL trees.
- **Graphs**: Learn graph structures, adjacency lists/matrices, BFS, DFS, and cycle detection.

DSA Level-2:

- **Hash Tables**: Learn key-value storage and collision handling.
- **Shortest Path Algorithms**: Understand Dijkstra's, Bellman-Ford, and their real-world applications.
- **Minimum Spanning Trees**: Learn Prim's and Kruskal's algorithms for optimizing connections.
- **Maximum Flow Algorithms**: Explore flow networks, Ford-Fulkerson, and Edmonds-Karp.
- **Time Complexity Analysis**: Study Big O notation and analyze time complexity for sorting and searching algorithms.
- **Advanced Algorithms**: Learn dynamic programming, memoization, greedy algorithms, and problem-solving techniques (Euclidean algorithm, Huffman coding, Traveling Salesman, and 0/1 Knapsack).