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Data Structures and Algorithms (DSA)

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1. Data Structures: Ways to organize and store data.
   - Arrays, Linked Lists, Stacks, Queues, Trees, Graphs.
2. Algorithm: Step-by-step procedure to solve a problem.
3. Characteristics of a Good Algorithm:
   - Correctness
   - Efficiency (Time & Space)
   - Clarity
   - Finiteness
4. Big-O Notation:
   - Describes time complexity in worst-case scenario.

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Important Data Structures

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1. Arrays: Fixed-size collection of elements.
2. Linked List: Dynamic collection with nodes and pointers.
3. Stack: Follows LIFO (Last In First Out).
4. Queue: Follows FIFO (First In First Out).
5. Trees: Hierarchical structure with root and child nodes.
   - Binary Tree, Binary Search Tree, AVL Tree.
6. Graphs: Collection of vertices and edges.
   - Directed, Undirected, Weighted.
7. Sorting Algorithms:
   - Bubble Sort, Merge Sort, Quick Sort, Heap Sort.