

Data Structures and Algorithms (DSA)

1. Data Structures and Algorithms (DSA) form the core of computer science problem-solving.
2. Data Structures organize and store data efficiently for easy access and modification.
3. Algorithms are step-by-step instructions to perform a specific task or solve a problem.
4. Arrays are fixed-size structures for storing elements of the same type.
5. Linked Lists store elements in nodes connected via pointers.
6. Stacks follow the Last-In-First-Out (LIFO) principle.
7. Queues follow the First-In-First-Out (FIFO) principle.
8. Hash Tables store key-value pairs for fast lookup.
9. Trees are hierarchical data structures, e.g., Binary Trees.
10. Graphs consist of vertices connected by edges for modeling networks.
11. Searching algorithms include Linear Search and Binary Search.
12. Sorting algorithms include Bubble Sort, Merge Sort, and Quick Sort.
13. Time Complexity measures the speed of an algorithm.
14. Space Complexity measures the memory usage of an algorithm.
15. Big-O notation expresses the upper bound of algorithm performance.
16. Recursion is a technique where a function calls itself.
17. Dynamic Programming optimizes problems by storing intermediate results.
18. Greedy Algorithms make locally optimal choices aiming for global optimum.
19. Understanding DSA improves coding interview performance.
20. Mastery of DSA enables efficient, scalable, and reliable software development.