QUIZ: 1

DSA QUIZ

1. What is the time complexity of a linear search algorithm in the worst case?

   a) O(1)

   b) O(log n)

   c) O(n)

   d) O(n^2)

2. Which data structure uses the LIFO (Last In, First Out) principle?

   a) Queue

   b) Stack

   c) Linked List

   d) Heap

3. In a binary search tree (BST), which traversal would result in sorted output?

   a) Preorder

   b) Postorder

   c) Inorder

   d) Level order

4. What is the worst-case time complexity of quicksort?

   a) O(n)

   b) O(n log n)

   c) O(n^2)

   d) O(log n)

5. Which sorting algorithm has a best-case time complexity of O(n) and is highly efficient for nearly sorted data?

a) Merge Sort

b) Bubble Sort

c) Quick Sort

d) Insertion Sort

6. What is the purpose of dynamic programming in algorithm design?

a) To optimize recursive algorithms

b) To solve problems by breaking them into smaller overlapping subproblems

c) To design algorithms that are easy to implement

d) To create algorithms with the least memory usage

7. Which data structure is typically used to implement a priority queue?

a) Array

b) Linked List

c) Stack

d) Binary Heap

8. What is the space complexity of an algorithm?

a) The amount of time it takes to execute

b) The number of comparisons made during execution

c) The amount of memory used by the algorithm

d) The number of operations performed by the algorithm

9. Which search algorithm is guaranteed to find the shortest path in a weighted, directed graph with non-negative edge weights?

a) Breadth-First Search (BFS)

b) Depth-First Search (DFS)

c) Dijkstra's Algorithm

d) A* Search

10. In which data structure are elements accessed based on their position, and insertions and deletions can be performed at both ends efficiently?

a) Stack

b) Queue

c) Linked List

d) Deque (Double-ended Queue)

ANSWERS

1. c) O(n)

2. b) Stack

3. c) Inorder

4. c) O(n^2)

5. d) Insertion Sort

6. b) To solve problems by breaking them into smaller overlapping subproblems

7. d) Binary Heap

8. c) The amount of memory used by the algorithm

9. c) Dijkstra's Algorithm

10. d) Deque (Double-ended Queue)