Exam Questions Report

Exam: Algorithms (ID: 34)

1) Which of the following sorting algorithms has the worst-case time complexity of $O(n^2)$?

A. Merge Sort

B. Quick Sort (with poor pivot selection)

C. Heap Sort

D. Counting Sort

2) Which data structure is used in the implementation of a breadth-first search (BFS)?

A. Stack

B. Queue

C. Priority Queue

D. Linked List

3) Which of the following is true about Dijkstra's Algorithm?

A. It works with negative-weight edges

B. It is a greedy algorithm

C. It guarantees the longest path from the source

D. It always runs in O(n) time

4) What is the main idea behind the divide-and-conquer paradigm?

A. Solve subproblems separately and combine the results

B. Iterate through the data linearly

C. Use a single-step greedy approach

D. Use backtracking to find solutions

5) Which of the following problems is solved using dynamic programming?

A. Tower of Hanoi

B. 0/1 Knapsack Problem

C. Prim's Algorithm

D. Depth-First Search

6) Binary search can be applied to an unsorted array.

A. True

B. False

7) The time complexity of the best-case scenario for Quick Sort is O(n log n).

A. True

B. False

8) A depth-first search (DFS) uses a queue data structure.

A. True

B. False

9) Dynamic programming is used to solve optimization problems by solving smaller subproblems first.

A. True

B. False

10) Merge Sort is an in-place sorting algorithm.

A. True

B. False