DSA

QUIZ 3

KNAPSACK PROBLEM

1. In the 0/1 Knapsack Problem, what does the "0" and "1" represent?

a) 0 items are allowed, and 1 item is allowed.

b) Items can be either taken (1) or left (0).

c) The problem has 0 weight constraint and 1 value constraint.

d) The knapsack has 0 capacity and 1 capacity constraint.

2. Which type of Knapsack Problem allows for taking fractions of items to maximize value-to-weight ratio?

a) 0/1 Knapsack

b) Fractional Knapsack

c) Unbounded Knapsack

d) Discrete Knapsack

GRAPH COLORING

3. In graph theory, what is graph coloring used for?

a) Assigning colors to make the graph more visually appealing.

b) Assigning colors to vertices such that no adjacent vertices have the same color.

c) Coloring edges to differentiate between different types of connections.

d) Coloring nodes to represent their degree in the graph.

4. What is the minimum number of colors required to color a tree graph?

a) 1

b) 2

c) 3

d) It depends on the number of nodes.

BFS (Breadth-First Search)

5. Which traversal method is typically used to implement the BFS algorithm?

a) Preorder

b) Inorder

c) Postorder

d) Level order

6. What data structure is commonly used to implement BFS for traversing a graph?

a) Stack

b) Queue

c) Priority Queue

d) Linked List

DFS (Depth-First Search)

7. In DFS traversal of a graph, which data structure is used to keep track of visited vertices?

a) Stack

b) Queue

c) Heap

d) Hash Table

8. What is the main advantage of the recursive implementation of DFS over the iterative implementation?

a) Recursive DFS is faster.

b) Recursive DFS consumes less memory.

c) Recursive DFS guarantees the shortest path.

d) Recursive DFS is more suitable for directed graphs.

ANSWERS

1. In the 0/1 Knapsack Problem, what does the "0" and "1" represent?

Answer: b) Items can be either taken (1) or left (0).

2. Which type of Knapsack Problem allows for taking fractions of items to maximize value-to-weight ratio?

Answer: b) Fractional Knapsack

3. In graph theory, what is graph coloring used for?

Answer: b) Assigning colors to vertices such that no adjacent vertices have the same color.

4. What is the minimum number of colors required to color a tree graph?

Answer: a) 1

5. Which traversal method is typically used to implement the BFS algorithm?

Answer: d) Level order

6. What data structure is commonly used to implement BFS for traversing a graph?

Answer: b) Queue

7. In DFS traversal of a graph, which data structure is used to keep track of visited vertices?

Answer: a) Stack

8. What is the main advantage of the recursive implementation of DFS over the iterative implementation?

Answer: b) Recursive DFS consumes less memory.