Assignment 9

Due on 2020-04-01, 23:59:59

1. Which of the following is the most commonly used data structure for implementing Huffman Algorithm?
   a) Heap priority queue
   b) Stack
   c) Circular queue
   d) None of the above

2. In the following statement:
   "A DFS of a directed graph always produces the same number of nodes per level, regardless of the order in which the nodes are considered".
   a) True
   b) False

3. Which of the following is the proportion of directed path?
   a) 1
   b) 0
   c) Depends on the graph
   d) None of the above

4. What is the running time of Huffman algorithm using binary tree implementation?
   a) O(P)
   b) O(1)
   c) O(T)
   d) O(T^2)

5. How many times does the loop in the Huffman Tree Algorithm get executed?
   a) 1
   b) 2
   c) n
   d) n-1

6. Which of the following can be solved using BFS?
   a) Finding the shortest path in a weighted graph
   b) Computing a spanning tree of a graph
   c) Computing a cycle in a graph or counting the number of cycles in a graph
   d) All of the above

7. In a weighted graph, assume that the shortest path from a vertex v to a destination is correctly calculated using a shortest path algorithm. In the following statements, the one that is not true is:
   a) The shortest path is always unique
   b) The shortest path is not always unique
   c) All of the above
   d) None of the above

8. Which of the following statements are true?
   a) Dijkstra’s algorithm is a greedy algorithm that finds the shortest path in a directed, weighted graph.
   b) Prim’s algorithm is a greedy algorithm that finds the minimum spanning tree in a weighted graph.
   c) Both a) and b) are correct.
   d) Neither a) nor b) is correct.

9. The Dijkstra’s shortest path algorithm has been implemented using the queue data structure. One possible order of enrolling the node in the following graph is:
   a) [1, 4, 3, 2]
   b) [1, 4, 2, 3]
   c) [4, 1, 2, 3]
   d) [4, 1, 3, 2]

10. In DFT, if a[i] is an edge which connects two nodes such that they do not have any ancestor and a descendant relationship between them, then they are called:
    a) Tree edge
    b) Back edge
    c) Forward edge
    d) None of the above