Greedy Algorithms

Question 1

Which of the following standard algorithms is not a Greedy algorithm?

A Dijkstra's shortest path algorithm

B Prim's algorithm

C Kruskal algorithm

D Huffman Coding

E Bellmen Ford Shortest path algorithm

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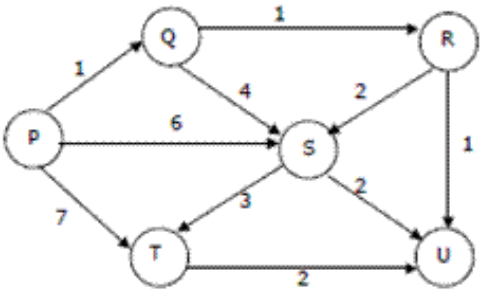
Discuss it

Question 2

Suppose we run Dijkstra’s single source shortest-path algorithm on the following edge weighted directed graph with vertex P as the source. In what order do the nodes get included into the set of vertices for which the shortest path distances are finalized? (GATE CS 2004)



A P, Q, R, S, T, U

B P, Q, R, U, S, T

C P, Q, R, U, T, S

D P, Q, T, R, U, S

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Question 3

A networking company uses a compression technique to encode the message before transmitting over the network. Suppose the message contains the following characters with their frequency:

character	Frequency
a	5
b	9
c	12
d	13
e	16
f	45

Run on IDE

If the compression technique used is Huffman Coding, how many bits will be saved in the message?

A 224

B 800

C 576

D 324

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Question 4

What is the time complexity of Huffman Coding?

A O(N)

B O(NlogN)

C O(N(logN)^2)

D O(N^2)

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Question 5

In question #2, which of the following represents the word *"dead"*?

A 1011111100101

B 0100000011010

C Both A and B

D None of these

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Question 6

Which of the following is true about Kruskal and Prim MST algorithms? Assume that Prim is implemented for adjacency list representation using Binary Heap and Kruskal is implemented using union by rank.

A Worst case time complexity of both algorithms is same.

B Worst case time complexity of Kruskal is better than Prim

C Worst case time complexity of Prim is better than Kruskal

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Question 7

Which of the following is true about Huffman Coding.

A Huffman coding may become lossy in some cases

B Huffman Codes may not be optimal lossless codes in some cases

C In Huffman coding, no code is prefix of any other code.

D All of the above

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Question 8

Suppose the letters a, b, c, d, e, f have probabilities 1/2, 1/4, 1/8, 1/16, 1/32, 1/32 respectively. Which of the following is the Huffman code for the letter a, b, c, d, e, f?

A 0, 10, 110, 1110, 11110, 11111

B 11, 10, 011, 010, 001, 000

C 11, 10, 01, 001, 0001, 0000

D 110, 100, 010, 000, 001, 111

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Discuss it

Question 9

Suppose the letters a, b, c, d, e, f have probabilities 1/2, 1/4, 1/8, 1/16, 1/32, 1/32 respectively. What is the average length of Huffman codes?

A 3

B 2.1875

C 2.25

D 1.9375

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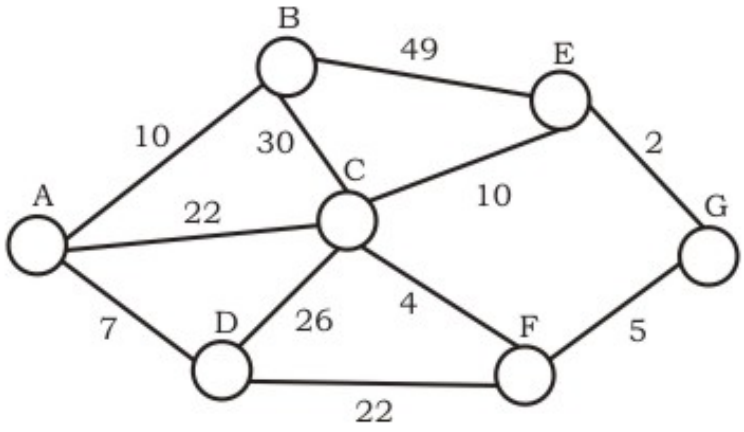
Question 10

Consider the undirected graph below:



Using Prim's algorithm to construct a minimum spanning tree starting with node A, which one of the following sequences of edges represents a possible order in which the edges would be added to construct the minimum spanning tree?

A (E, G), (C, F), (F, G), (A, D), (A, B), (A, C)

B (A, D), (A, B), (A, C), (C, F), (G, E), (F, G)

C (A, B), (A, D), (D, F), (F, G), (G, E), (F, C)

D (A, D), (A, B), (D, F), (F, C), (F, G), (G, E)

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There are 10 questions to complete.
See GATE Corner for all information about GATE CS and Quiz Corner for all Quizzes on GeeksQuiz.

19 days 10 hours 13 minutes 33 seconds