

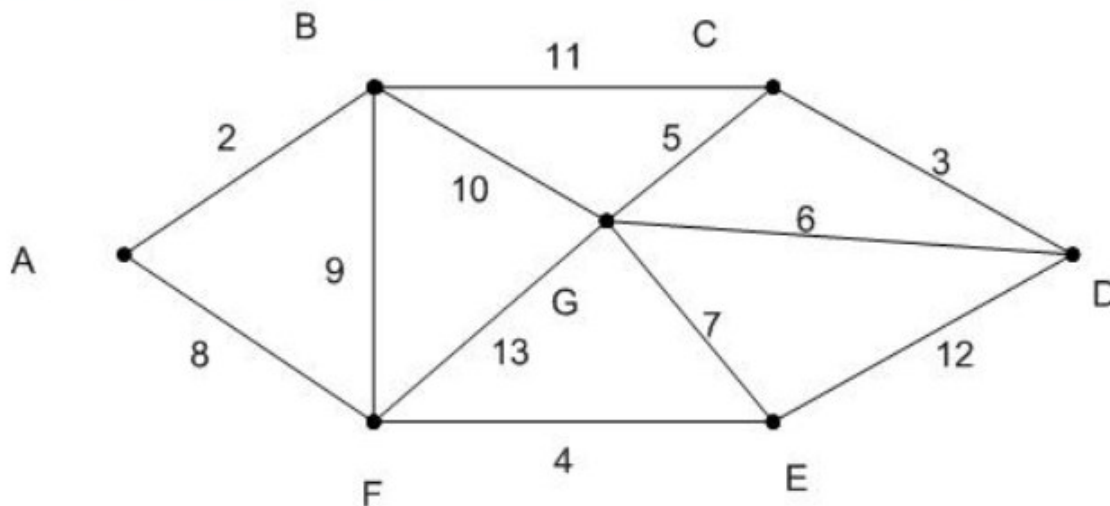
Name _____

CSC-477/677: Algorithm Analysis
Fall 2014
Homework #6
Due on: November 25, 2014

Q1. Starting with the array UNSORTED, show the array after every exchange of heapsort. The final array will be DENORSTU.

Answer:

Q2. Use Kruskal's algorithm to find a minimal spanning tree for this weighted graph, showing steps. You must walk through the algorithm by hand, rather than writing a computer program.



Name _____

Answer:

Q3. Use Huffman's algorithm to find an optimal prefix code for the weighted alphabet below, again showing steps. You must walk through the algorithm by hand, rather than writing a computer program.

A 10
B 6
C 2
D 7
E 11
F 1
G 1
H 2
I 3

Name _____

Answer:

Q4. A traveler must walk from A to his home at B, along a road of length m miles. There are n inns on the road. The i^{th} inn is d_i miles from A and costs c_i to stay at. The traveler can walk at most w miles per day. Given the variables n , m , and arrays c and d as inputs, design a dynamic programming algorithm that computes how can he get home at minimum cost, if he must stay at an inn every night until he gets to B. The algorithm can be written in pseudocode, C++ or Java. Do not write a complete program, just the algorithm itself.

Answer:

Name _____

Q5. Extra question for graduate students: For the problem described previously (as Q4), walk through the algorithm, showing all work, for the example given below:

B is 100 miles from A. The traveler can walk at most 20 miles each day.

Inn #	d[i]	c[i]
1	10	2
2	13	5
3	19	7
4	22	3
5	38	8
6	42	6
7	51	9
8	65	5
9	70	6
10	88	9
11	100	0 (home)

Answer: