

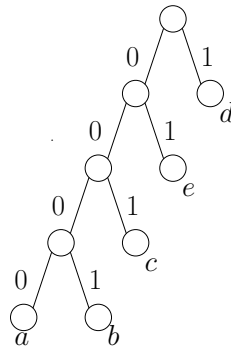
CSCI3160: Quiz 2

Name:

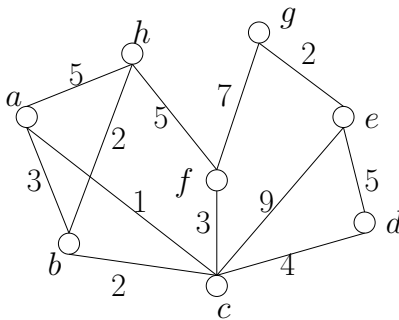
Student ID

Problem 1 (40%). Consider the alphabet Σ with letters a, b, c, d, e and whose frequencies are 5%, 12%, 17%, 35% and 23% respectively. Show the prefix code tree produced by Huffman's algorithm.

Solution.



Problem 2 (20%). Consider running Prim's algorithm to find a minimum spanning tree (MST) of the undirected weighted graph below. Recall that the algorithm grows a tree by including one vertex each time. Suppose that the set of vertices already in the tree is $\{a, c, b, h\}$. What is the next vertex to be included?



Solution. f .

Problem 3 (40%). Consider the optimal BST problem on $S = \{1, 2, 3, 4\}$ and the weight array $(25, 15, 20, 50)$. Show an optimal BST on S with the smallest average cost.

Solution. Both solutions below have average cost 215.

