
csce750 — Analysis of Algorithms
Fall 2019 — Homework 07

Assigned: November 20

Due: November 28

This assignment covers material from the lectures on Chapters 22–24 in preparation for Quiz 7. (Note that the due date is during the Thanksgiving break, to ensure that there is both adequate time to complete the assignment and adequate time to review the solutions before Quiz 7. I imagine that many of you may decide to finish it early.)

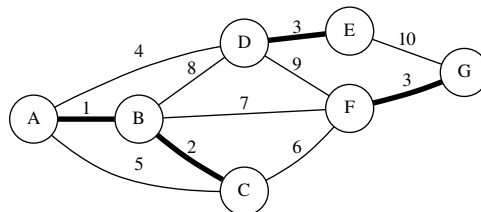
Page 592: 22.1-1, 22.1-3

Page 601: 22.2-1, 22.2-2, 22.2-7

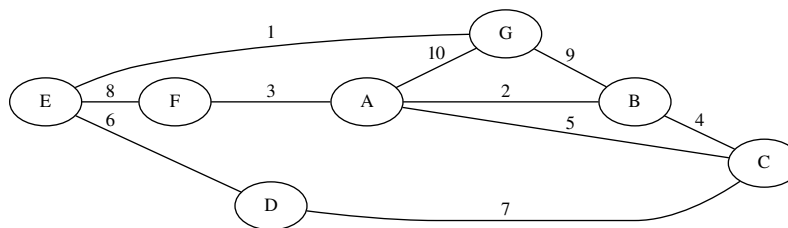
Page 610: 22.3-2

Page 614: 22.4-1

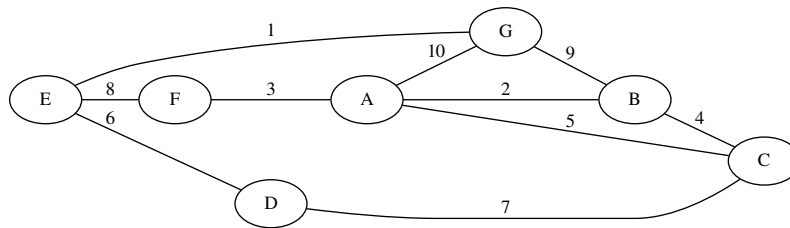
Not in book: Recall that Corollary 23.3 identifies certain edges that can safely be added to a partial minimum spanning tree. The diagram below shows a partially completed minimum spanning tree, with edges selected for the MST in bold. Which edges does this corollary guarantee are safe to add to the MST next?



Not in book: Use Kruskal's algorithm to find a minimum spanning tree of the graph below. List the edges considered by the algorithm in order, and indicate whether each one is selected or rejected by the algorithm.



Not in book: Use Prim's algorithm to find a minimum spanning tree of the graph below. Assume that all of the vertices except the root are added to the priority queue with key ∞ at the start. Use node *A* as the root. List the vertices added to the MST, in order, along with any DECREASEKEY operations performed on the queue.



Pages 662–663: Exercises 24.3-1, 24.3-4, 24.3-6