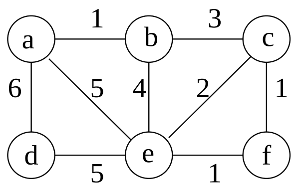
Analysis of Algorithms: Assignment 7

Due date: April 12 (Wednesday)

Problem 1 (5 points)



(a) Using Figure 24.4 in the textbook as a model, illustrate the steps of Kruskal's algorithm on the above undirected graph.

(b) Using Figure 24.5 as a model, show the steps of Prim's algorithm on the same graph, with vertex d as the source.

Problem 2 (5 points)

This problem is inherited from Exam 2; you should write a solution even if your received the full credit for solving it during the exam.

The breadth-first search algorithm presented in class is for the adjacency-list representation. Give a BFS algorithm for the adjacency matrix, and determine its running time (O-notation).

Problem 3 (bonus)

This optional problem, also from Exam 2, allows you to get 2 bonus points toward your final grade. You cannot submit it after the deadline.

Give a nonrecursive version of depth-first search; the time complexity of your algorithm should be the same as the complexity of the recursive version.