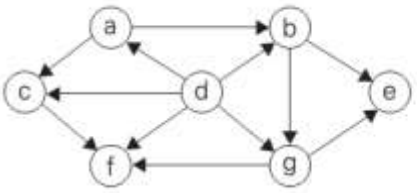
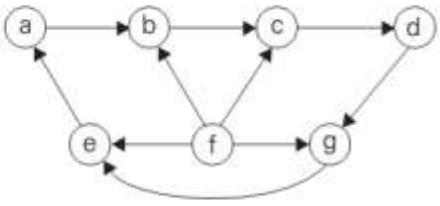
Selected Problems 3

Chapter4.2 Problem 5

Apply the source-removal algorithm to the digraphs



(a)



(b)

Chapter 5.1 Problem 1

a. Write pseudocode for a divide-and-conquer algorithm for finding the position of the largest element in an array of n numbers.

b. What will be your algorithm's output for arrays with several elements of the largest value?

c. Set up and solve a recurrence relation for the number of key comparisons made by your algorithm.

d. How does this algorithm compare with the brute-force algorithm for this problem?

Chapter 6.1 Problem 2

Let $A = \{a_1, \ldots, a_n\}$ and $B = \{b_1, \ldots, b_m\}$ be two sets of numbers. Consider the problem of finding their intersection, i.e., the set C of all the numbers that are in both A and B.

a. Design a brute-force algorithm for solving this problem and determine its efficiency class.

b. Design a presorting-based algorithm for solving this problem and determine its efficiency class.