

EL9343 Homework 4

(Due Nov 22, 2018)

All problem/exercise numbers are for the third edition of CLRS text book.

1. Exercise 22.1-3
2. Exercise 22.1-5
3. Exercise 22.2-6
4. Given an $O(V + E)$ -time algorithm to compute a path in a connected undirected graph $G = (V, E)$ that traverses each edge in E exactly once in each direction.
5. Exercise 22.3-12
6. Exercise 22.4-1
7. Show how the procedure Strongly-Connected-Components works on the graph in Figure 1. Show the finishing times computed in line 1 and the forest produced in line 3. Assume DFS considers vertices in alphabetical order and the adjacency lists are also alphabetical order.

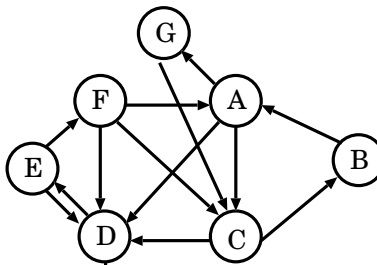


Figure 1: Directed Graph for Question 7

8. Problem 22-1
9. Problem 22-3
10. Exercise 12.2-1 in CLRS Text book
11. Exercise 12.2-5 in CLRS Text book
12. Exercise 12.3-3 in CLRS Text book
13. For the AVL Tree A in Figure 2, construct one insertion to trigger each of the four imbalance cases defined on slide 20, for each case,
 - (a) what is the key value inserted?
 - (b) how many rotations needed to restore the AVL tree property?
 - (c) what is the restored AVL tree with the inserted key?

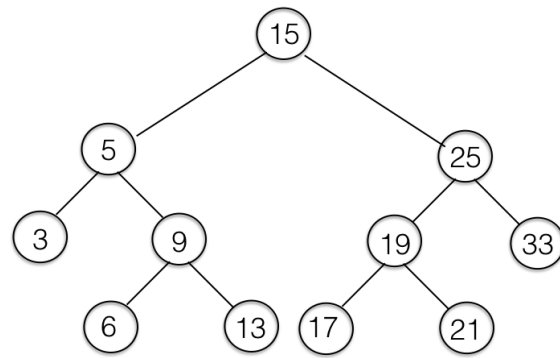


Figure 2: AVL Tree for Question 10