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 and the adjacency lists are also alphabetical order.

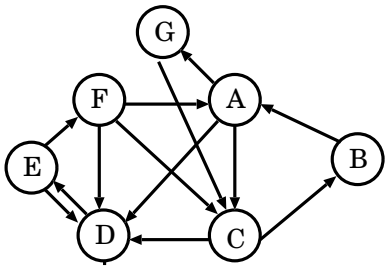

Figure 1: Directed Graph for Question 7

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?

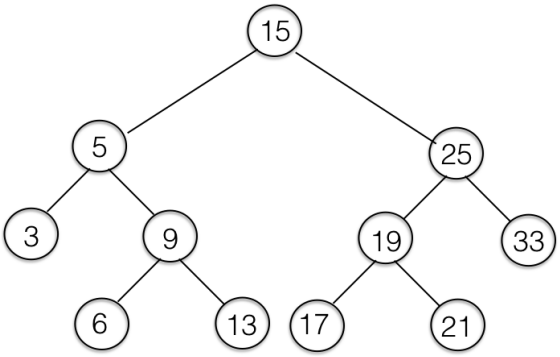

Figure 2: AVL Tree for Question 10