CS 2050 Fall 2016

HW 4

Part 1 – In Textbook

Page 416- 418, Chapter 3.2

Exercises: 1 will be a separate image

Following is 5 and 15

5.

The keys need to be inserted in decreasing order of likely frequency of access. This is because of the recursion. Before the recursive calls as happening on the way down the tree, it compares the given key against the key at each node and moves right or left accordingly. Then, after the recursive calls as happening on the way up the tree. The tree tends to grow out, rather than just down too. Moreover, only the keys on the path from the root to the sought or inserted key are examined, sos the number of keys examined becomes smaller and smaller fraction of the number of keys in the tree as the tree size increases.

“No keys to the left are larger, and no keys to the right are smaller.”

15.

a. Floor(“Q”) – E, Q

b. select(5) - E, Q

c. ceiling(“Q”) – E, Q

d. rank(“J”) – E, Q, J

e. size(“D”, “T”) – E, D, Q, M, J, T, S

f. keys(“D”, “T”) – D, E, M, J, Q, S, T