College of San Mateo

Data Abstraction and Algorithms

Assignment #3-A: Binary Trees and AVL Trees

Due Date: Saturday, April 13, 2019 (by midnight)

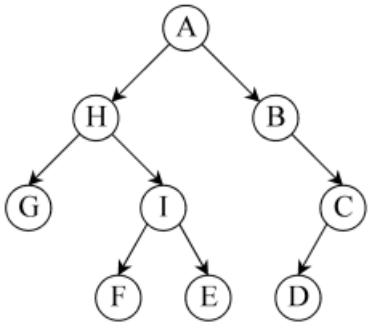
Weight: 7 points (7% of course grade)

Assignment: This is not a programming assignment: Do all of the following three exercises. To draw diagrams, you may use MS Word, Power Point, Visio, or any other document maker; however, please convert to PDF and submit your work only in PDF form.

Please do not submit scanned handwritten papers with hand-drawn diagrams! Hand-drawn diagrams scanned as pdf documents will NOT be graded, such submissions will receive a ZERO score.

Exercise 1:

List the elements of the following binary tree in *pre-order*, *in-order* and *post-order* traversals:



Exercise 2:

Consider insertion of the following sequence of integers into an empty AVL Tree:

1 2 3 4 5 6 7 9 8

(Notice that 9 precede 8 in the input sequence!)

Draw the corresponding AVL Tree after the completion of each insertion that requires a rotation. If an insertion requires double-rotation, then draw the tree after the first rotation as well as after the second rotation.

Exercise 3:

Draw the AVL tree that would result after *deleting V and then deleting F* from the following AVL tree.