

CSDS 233 Spring Session 8

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2/23/2023

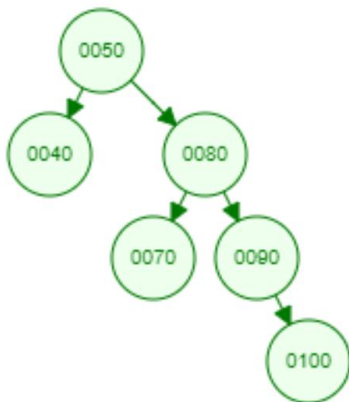
Disclosure: This is a supplement to class, not a replacement. This should not be your only study activity for exams, it should aid you in studying. I do not have the actual exam so questions here will differ from those on the exam.

Session Objectives:

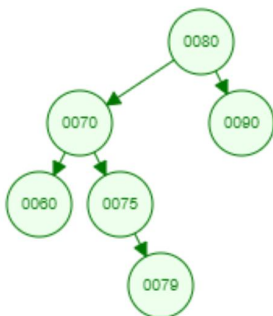
- 1) Understand how to balance a node (figure out which rotations to do to balance)
- 2) Master rotations (if you can do rotations chances are the rest of trees will be easy for you)
- 3) Be able to delete a node in an AVL tree (and figure out what needs to be done to rebalance)

Questions

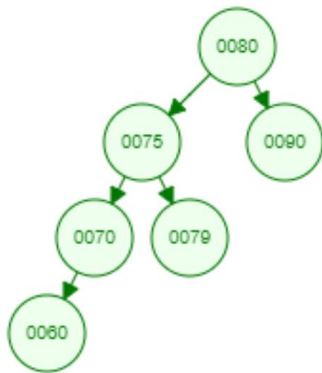
- 1) Rotate the 50 left



- 2) Rotate 70 left

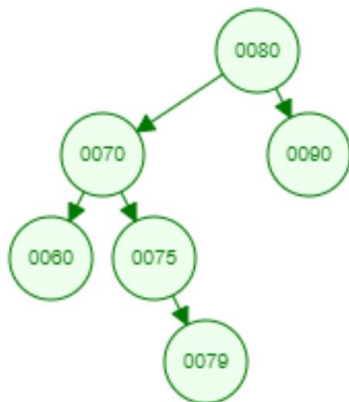


3) Rotate 80 to the right

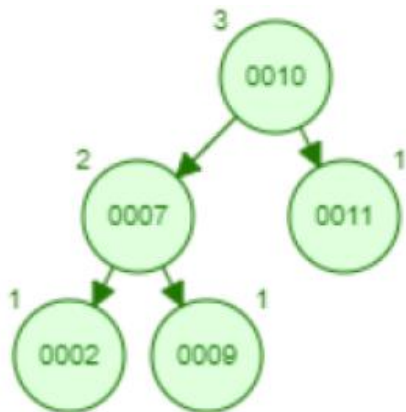


Break to go over answers

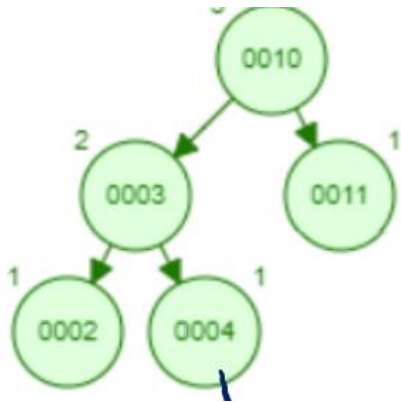
4) Balance the following



5) Add 1



6) Add 5 (this is an AVL tree to after you add check balance)

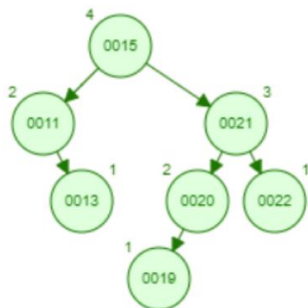


7) When deleting in an AVL tree where do you need to recheck balance?

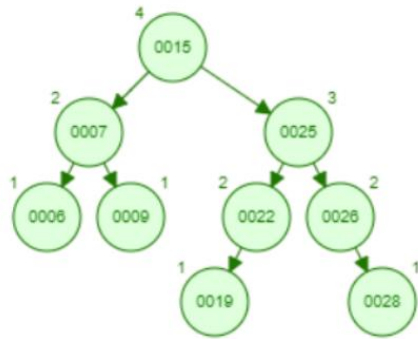
8) Find the big O of the following

- a. Search in an AVL tree
- b. Search in a Binary Search Tree
- c. Insertion in an AVL tree
- d. Insertion in a Binary Search Tree

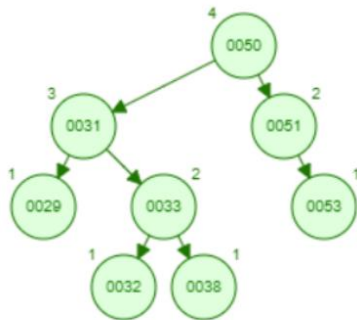
9) Delete 13 (this is an AVL tree)



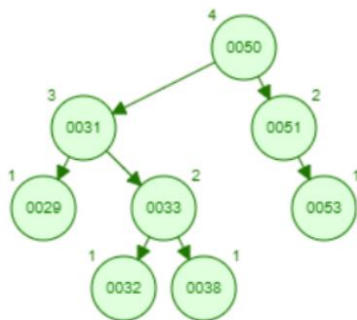
10) Delete 6 (this is an AVL tree)



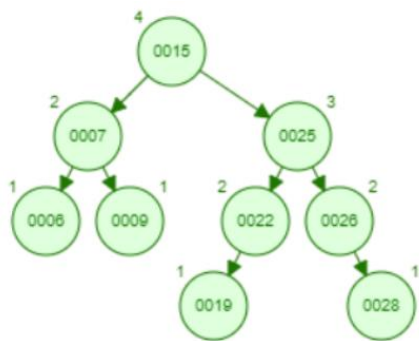
11) Delete 53 (this is an AVL tree)



12) Delete 50 :) (replace with smallest on right) (also AVL tree)



13) Delete 15 (AVL tree)



Next session is 2/28 covering B-trees and on 2/2 there will be a midterm review session!!