

CSDS 233 Spring Session 7

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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 Balance and why its important
- 2) Understand how to insert in AVL trees
- 3) Understand AVL tree rotation

Practice Problems:

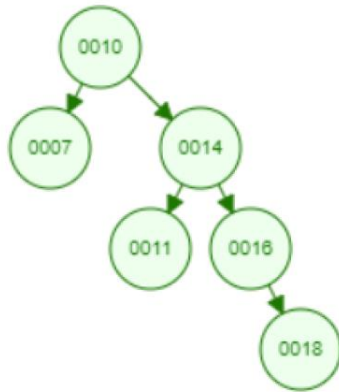
- 1) What's the difference between a Binary Tree, Binary Search Tree, and AVL tree?

- 2) Fill in the table (this will be super useful)

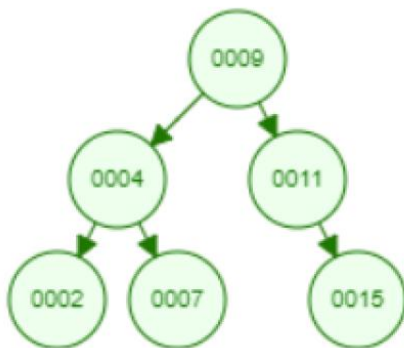
<u>Imbalance</u>	<u>Rotation</u>
Left imbalance in left subtree	
Right imbalance in right subtree	
Right subtree of left child	
Left subtree of right child	

- 3) What is the general formula for balance (don't overthink this)

4) What is the balance at every point in this tree



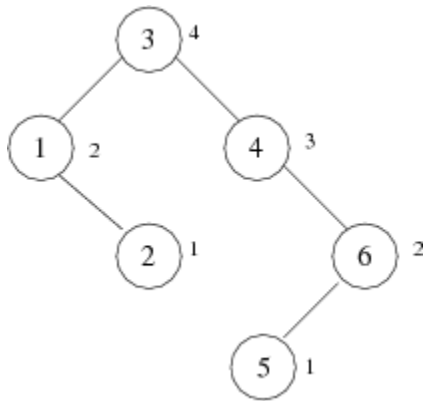
5) Draw the tree after the following



a) Rotate 9 Left

b) Right rotate 9 (starting from the tree given)

6) Draw the tree after rotating 1 then 3 left and



7) Draw the tree after the following operations (from scratch)

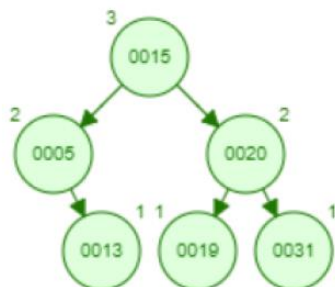
a) Add node 1, 10, 100

b) Add node 100, 10, 1

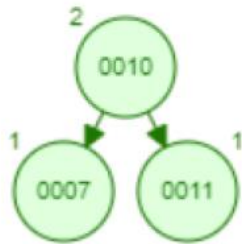
c) Add 1, 2, 3, 4, 5

8) Draw the tree after the following operations

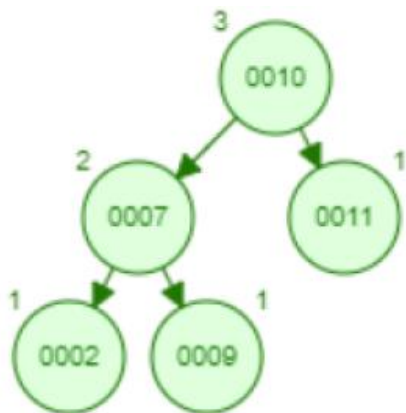
Add 14



Add 2



Add 1



Coding thing

<https://leetcode.com/problems/balanced-binary-tree/>