

Homework #4 Problem #2

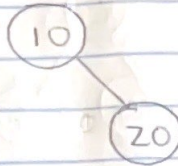
Vincenzo D'Arcia
4/20/22

AVL Tree

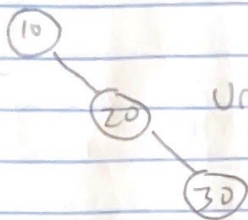
1)



2)

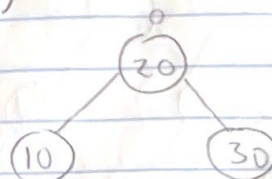


3)



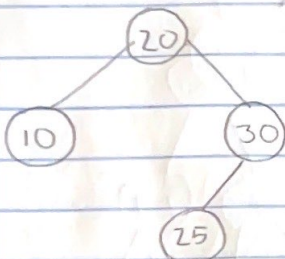
Unbalanced

4)

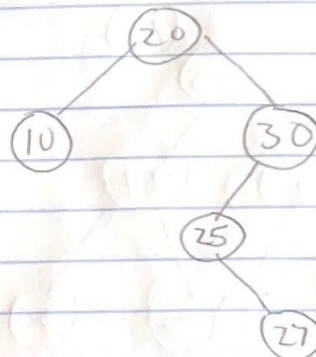


Rotated!

5)

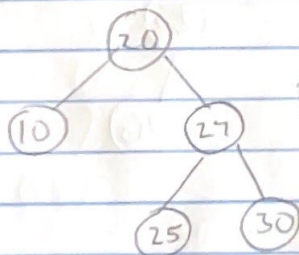


6)



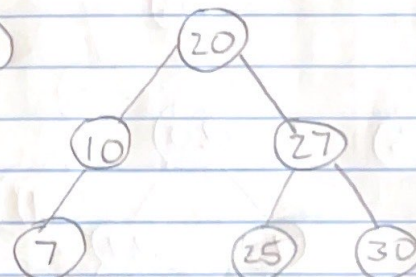
Unbalanced!

7)

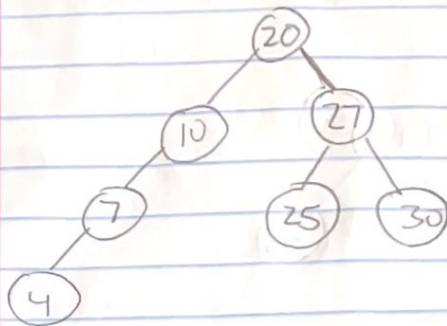


Rotated!

8)

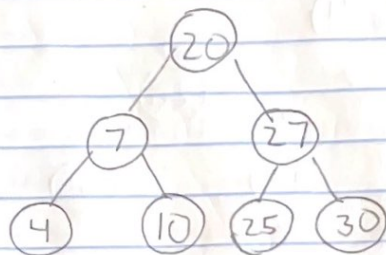


9)



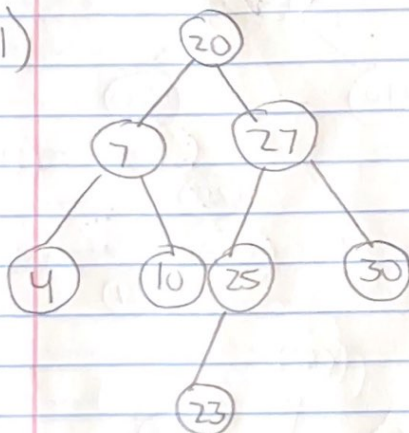
Unbalanced

10)

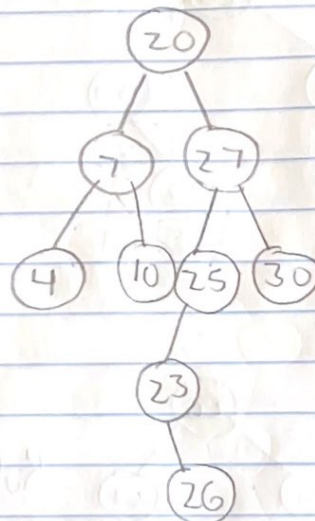


Rotated!

11)

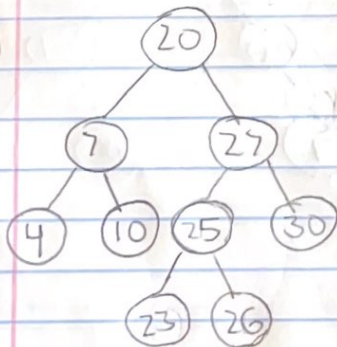


12)

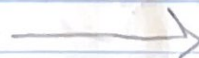


Unbalanced

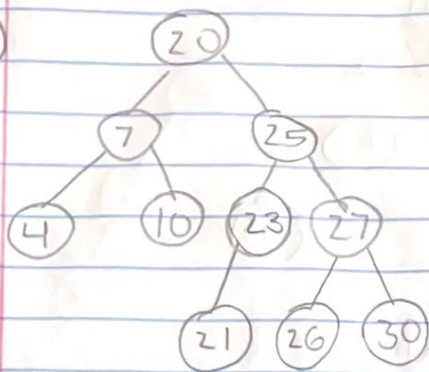
13)



Rotated!

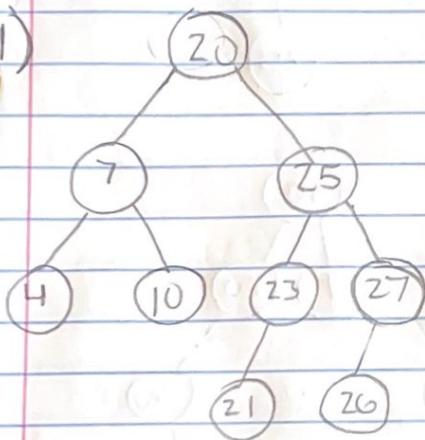


14)

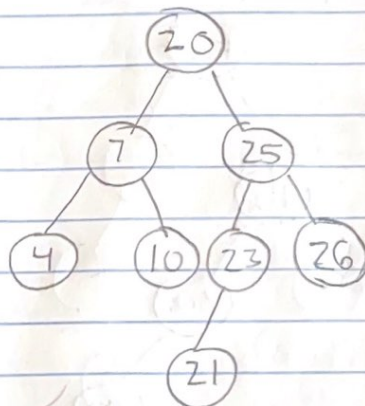


Deletions:

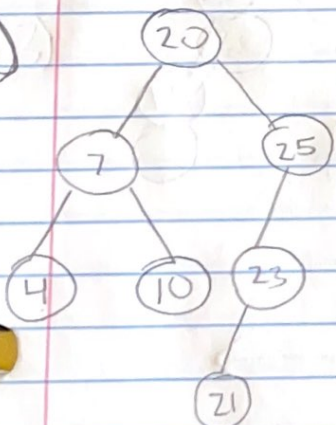
1)



2)

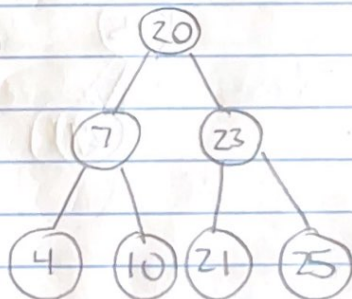


3)



Unbalanced

4)



Rotated!

Resulting tree

Binary Tree With Ordering Property:

1) (10)

2) (10)
 (20)

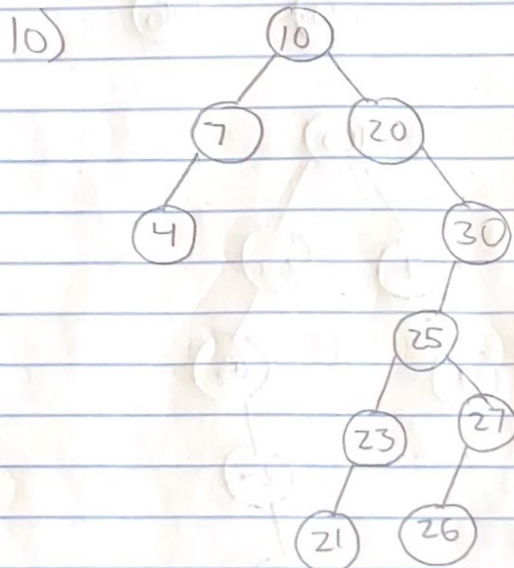
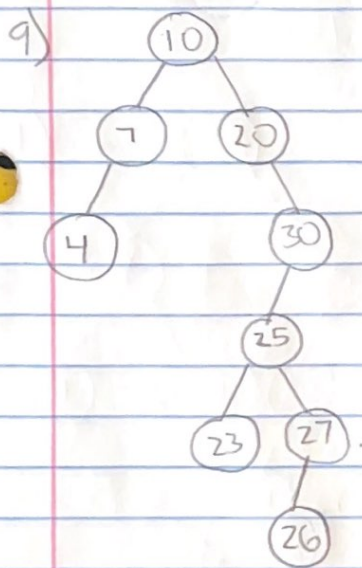
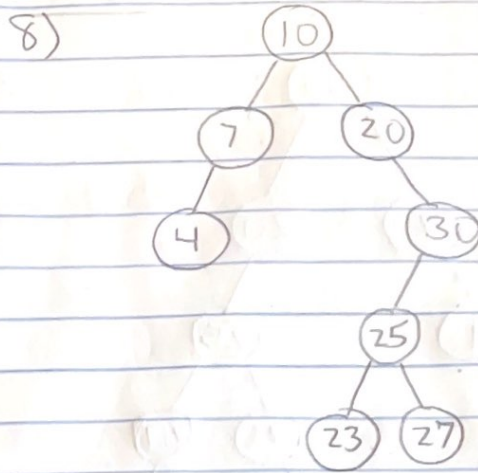
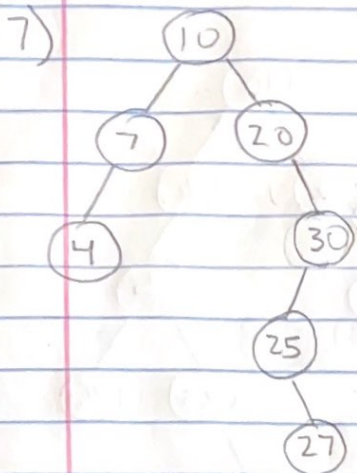
3) (10)
 (20)
 (30)

4) (10)
 (20)
 (30)
 (25)

5) (10)
 (20)
 (30)
 (25)
 (27)

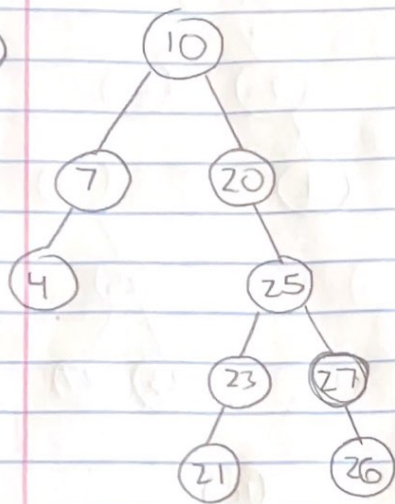
6) (10)
 (7) (20)
 (30)
 (25)
 (27)



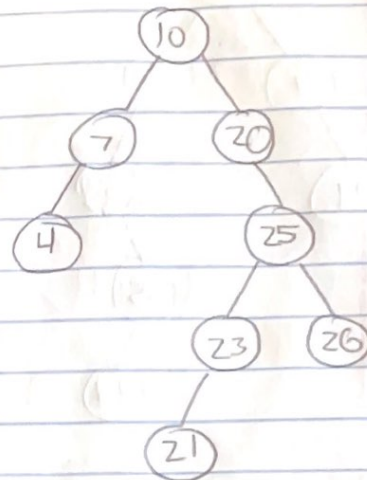


Deletions:

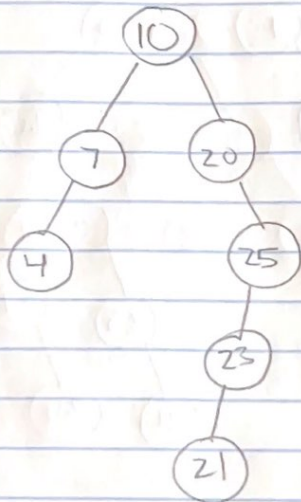
1)



2)



3)



Resulting Tree

From the above results, it can be seen that the AVL represents a full binary tree; each node is either a leaf or possesses exactly two children. On the other hand, the binary tree with an ordering property is not a full tree after all the operations made on it.