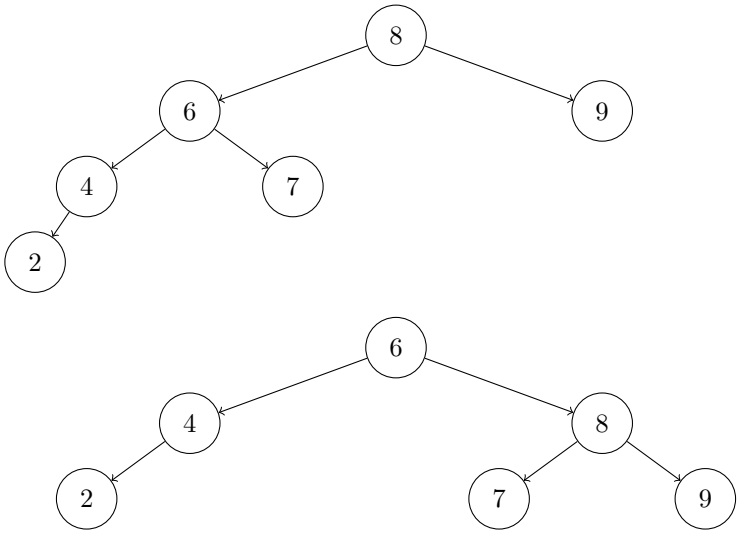
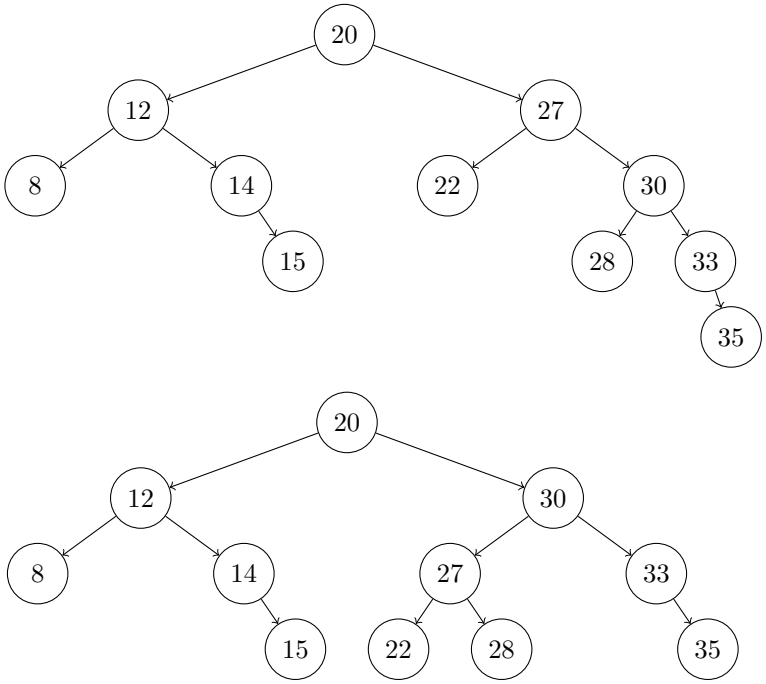
1 AVL Trees

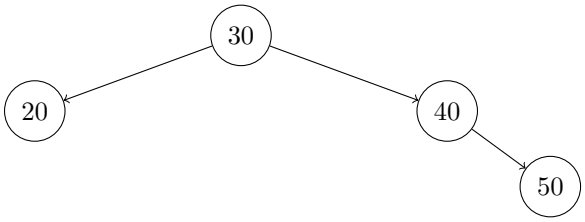
Problem 1. Perform a right rotation on the root of the following tree. Be sure to specify the subtrees used in the rotation.



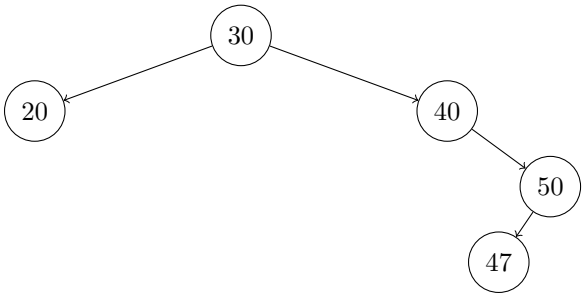
Problem 2. Show the left rotation of the subtree rooted at 27. Be sure to specify the subtrees used in the rotation.



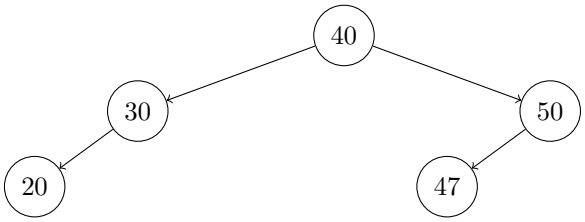
Problem 3. Using the appropriate AVL tree algorithm, insert the value 47 into the following tree. Show the tree before and after rebalancing.



After inserting 47 (but before rebalancing), the tree will look like this:

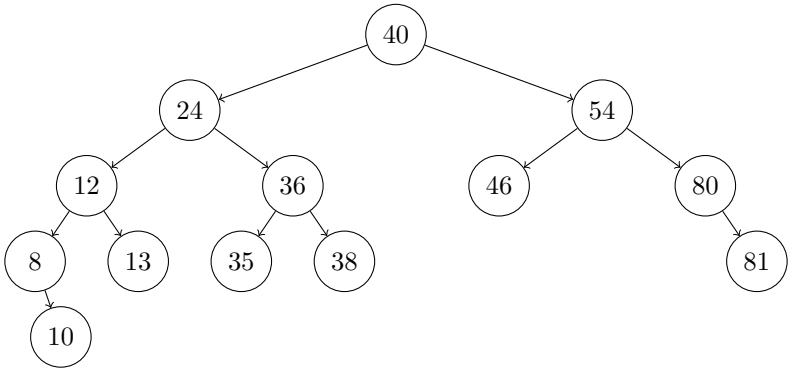


At this point, the tree is out of balance at node 30 so we rotate 40. The resulting tree looks like this:

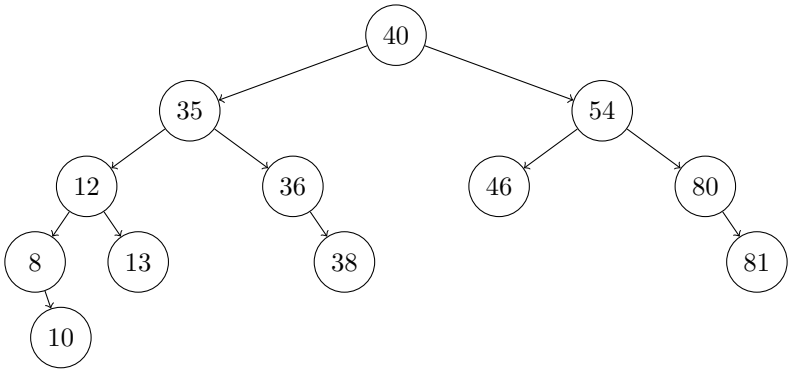


Is the tree now balanced? If not, perform the next rotation here. Repeat until the tree is balanced.

Problem 4. Using the appropriate AVL tree algorithm, remove the value 24 from the following tree. Show the tree before and after *each* rebalancing.



We remove 24 as indicated in the instructions. I used the min of the right tree as the new root. The resulting tree looks like this.



At this point, the tree is in balance.