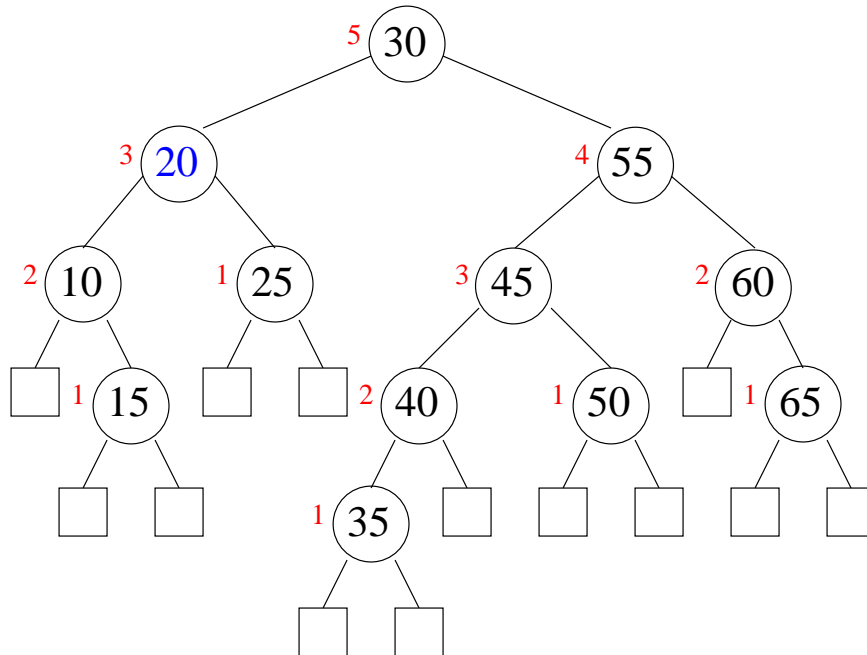


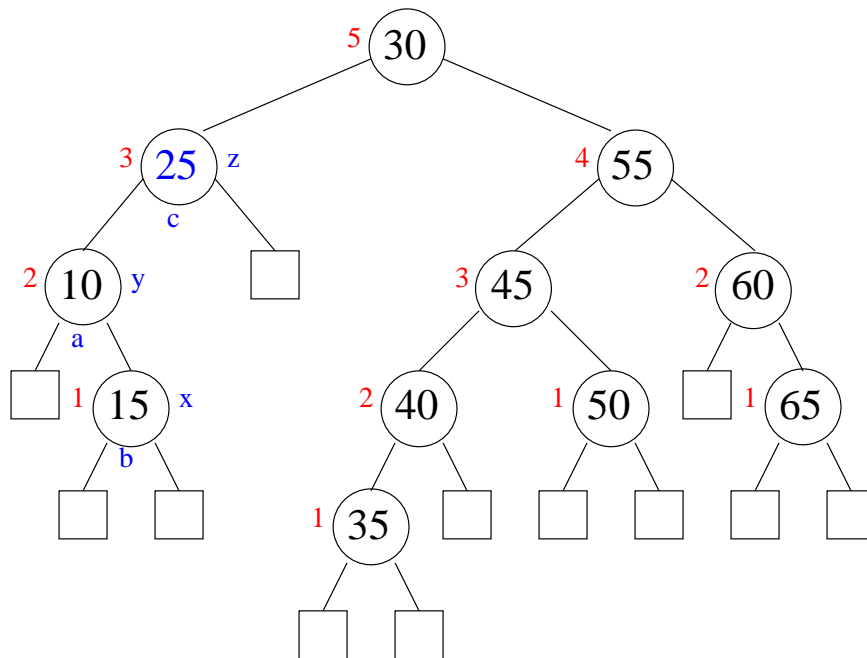
Complex AVL Tree Deletion Example

- Original AVL tree:



- External nodes have height 0; internal nodes have height labelled in red to their left
- Original AVL tree is indeed balanced
- Say we had the above tree, and want to delete key 20
- To delete key 20:
 - Move key 25 up to where key 20 is
 - Delete the node that used to contain 25

Next Step



- Now the tree is unbalanced at the node containing 25
 - Left subtree has height 2
 - Right subtree (just one external node) has height 0
- Must restructure

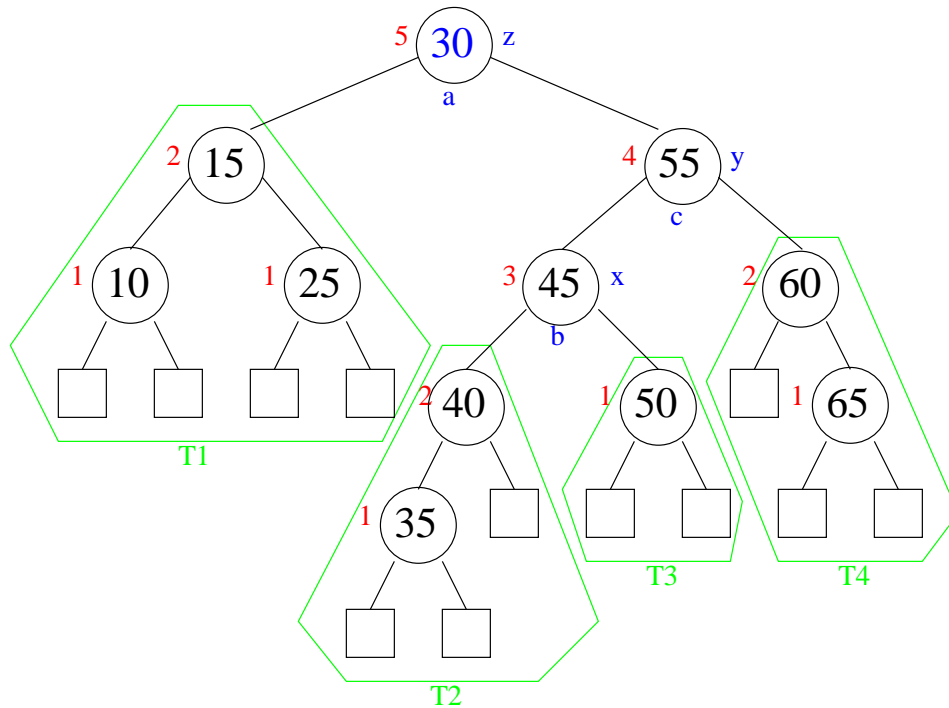
—

—

—

—

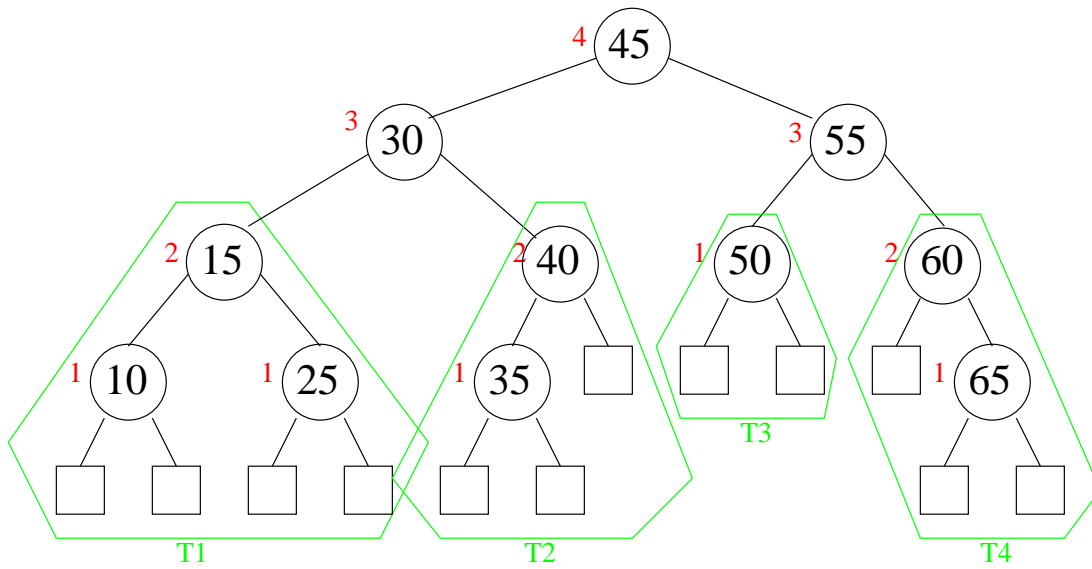
Next Step



- Now the tree is unbalanced at the root (the node containing 30)
 - Left subtree has height 2
 - Right subtree has height 4
- Must restructure again

—
—
—
—

Last Step



- Balanced