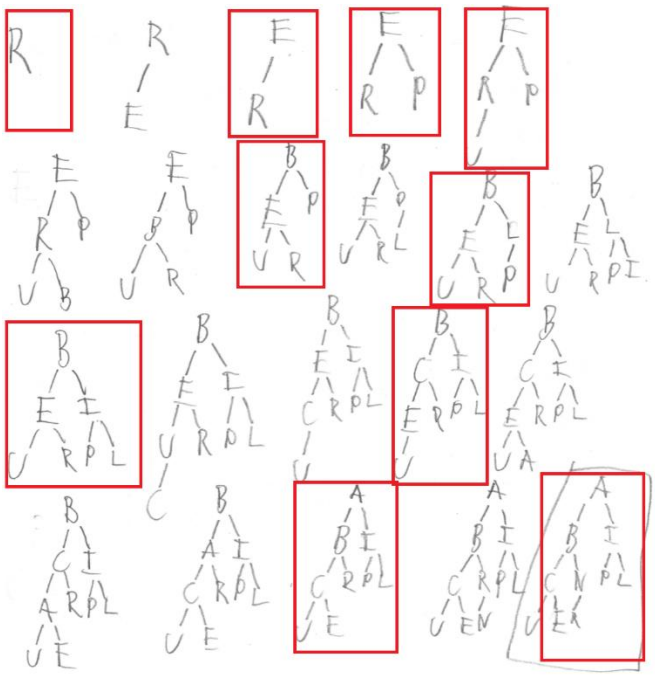
Chapter 6 and 9HW

1.

a) Algorithm/animation listed at slide 108

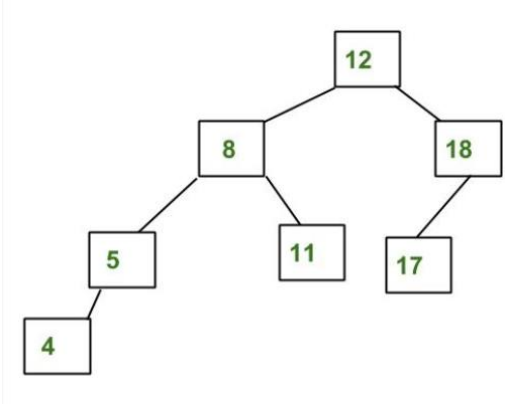
In the exam, you will need to draw at least the steps that are marked as red, to get full points.



b) Algorithm/animation listed at slide 113

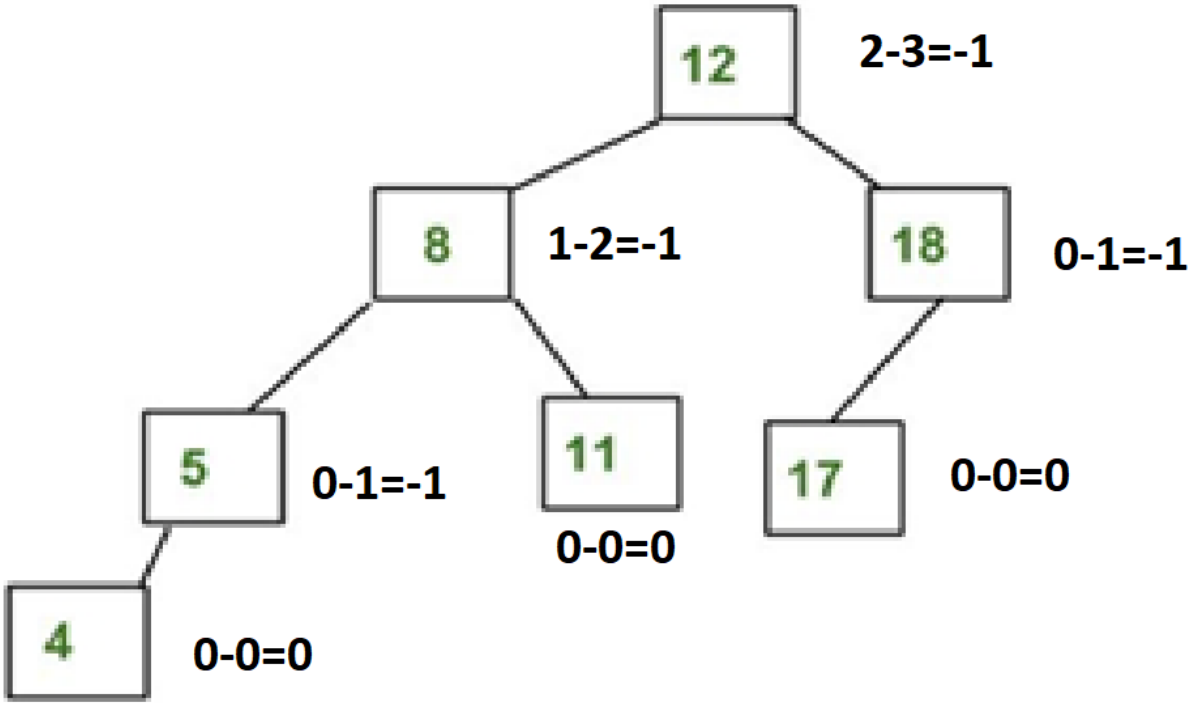
In the exam, you only need to show the final result, but it is always good to have middle steps to get partial points, in case you make mistake.

2. Given the following tree structure, with root node12:



a) Mark the balance value of every tree nodes

Refer to slide 19, balance = height of right subtree – height of left subtree



b) How to make this tree more balanced? (which operation)

Refer to slide 16 “If the balance gets out of the range -1 to +1, the tree is rotated to bring it back into balance”, every node on this tree has the balance between -1 to 1 so no rotation needs to be done!

3. Draw the 2-3 tree (step-by-step) when you insert the following keys in that order into an initially empty tree.

R E P U B L I C A N

Thanks to Julian's solution!