

CSE 310 Recitation 7

Objectives:

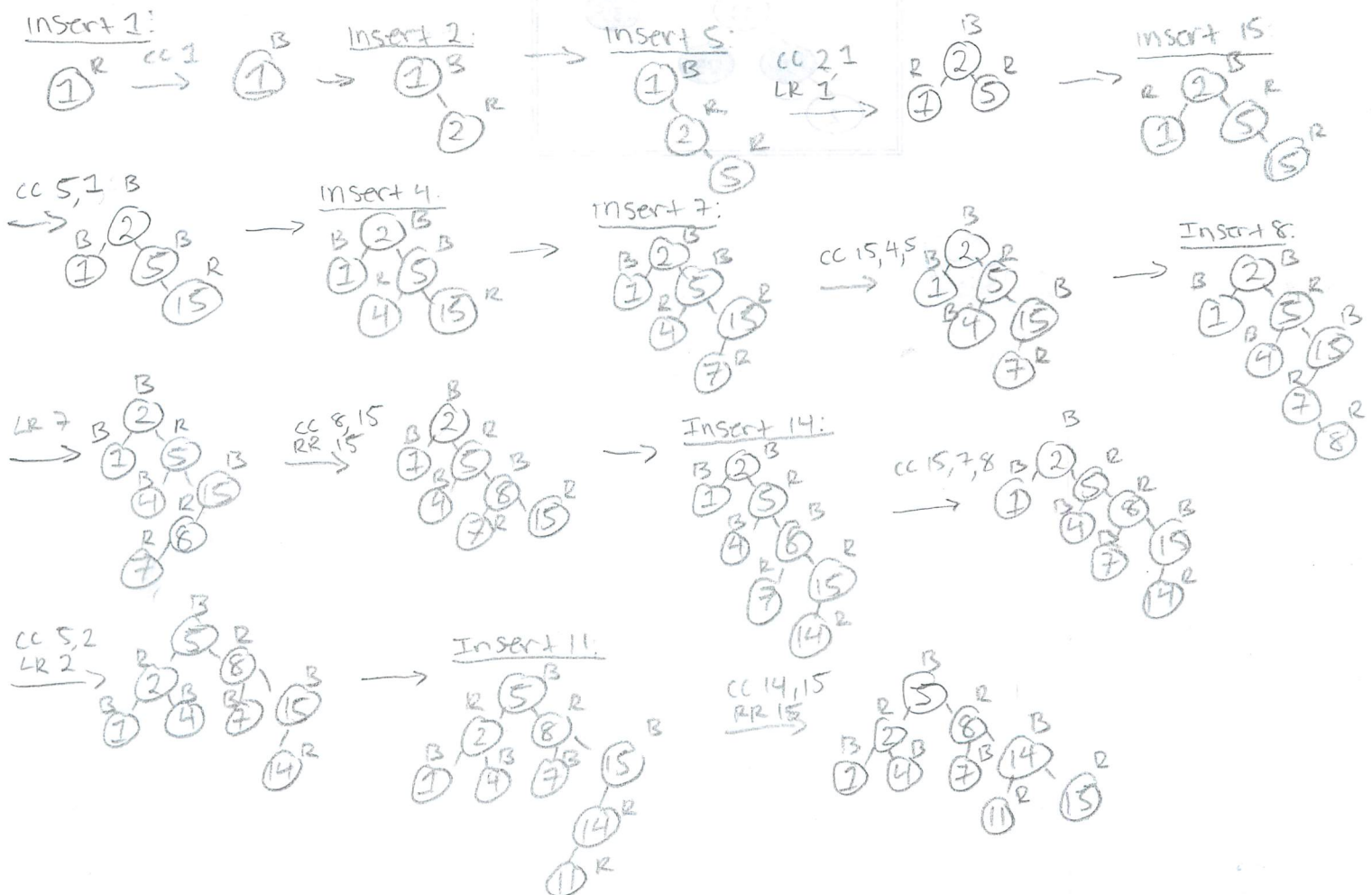
1. Binary Search Tree (BST)
2. Red-Black Tree insertion & deletion

Instruction

1. For all recitation: the solution should be clearly typed or written and must be saved in .pdf or .jpg format. Note: unreadable answer receives no credits!
2. All recitation must be submitted through the link posted on Blackboard, we do NOT accept any hand-in submissions or submissions sent through emails!

Question

1. [6 pts] Show the red-black tree that result after successively inserting the keys 1, 2, 5, 15, 4, 7, 8, 14, 11 into an initially empty red-black tree. Show each step whenever you change a node's color or make a rotation, mark your operations clearly.



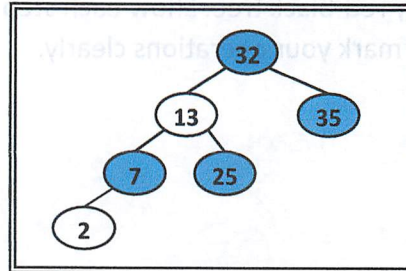
Objectives:

1. Binary Search Trees (BST)
2. Red-Black Tree insertion & deletion

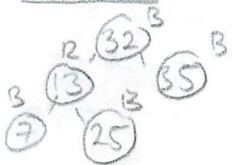
Instruction

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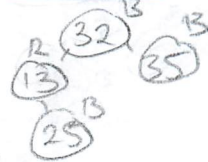
2. [4 pts] Given the following red-black tree, show the red-black trees that result from the successive deletion of the keys in order of 2, 7, 13, 25, 32 and 35. Show each step whenever you change a node's color or make a rotation, mark your operations clearly. (Note: shaded nodes are **black**)



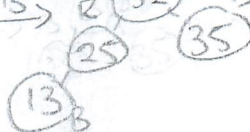
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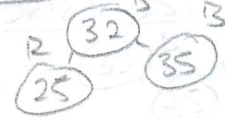
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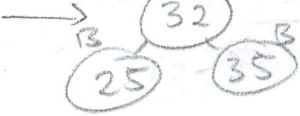
cc 25, 13
LR 13



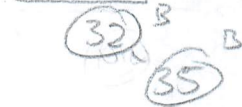
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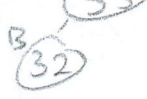
cc 25



Delete 25:



LR 32



Delete 32:



Delete 35:

