PA 6 Part 1: BST Worksheet

DSC 30 Fall 2022

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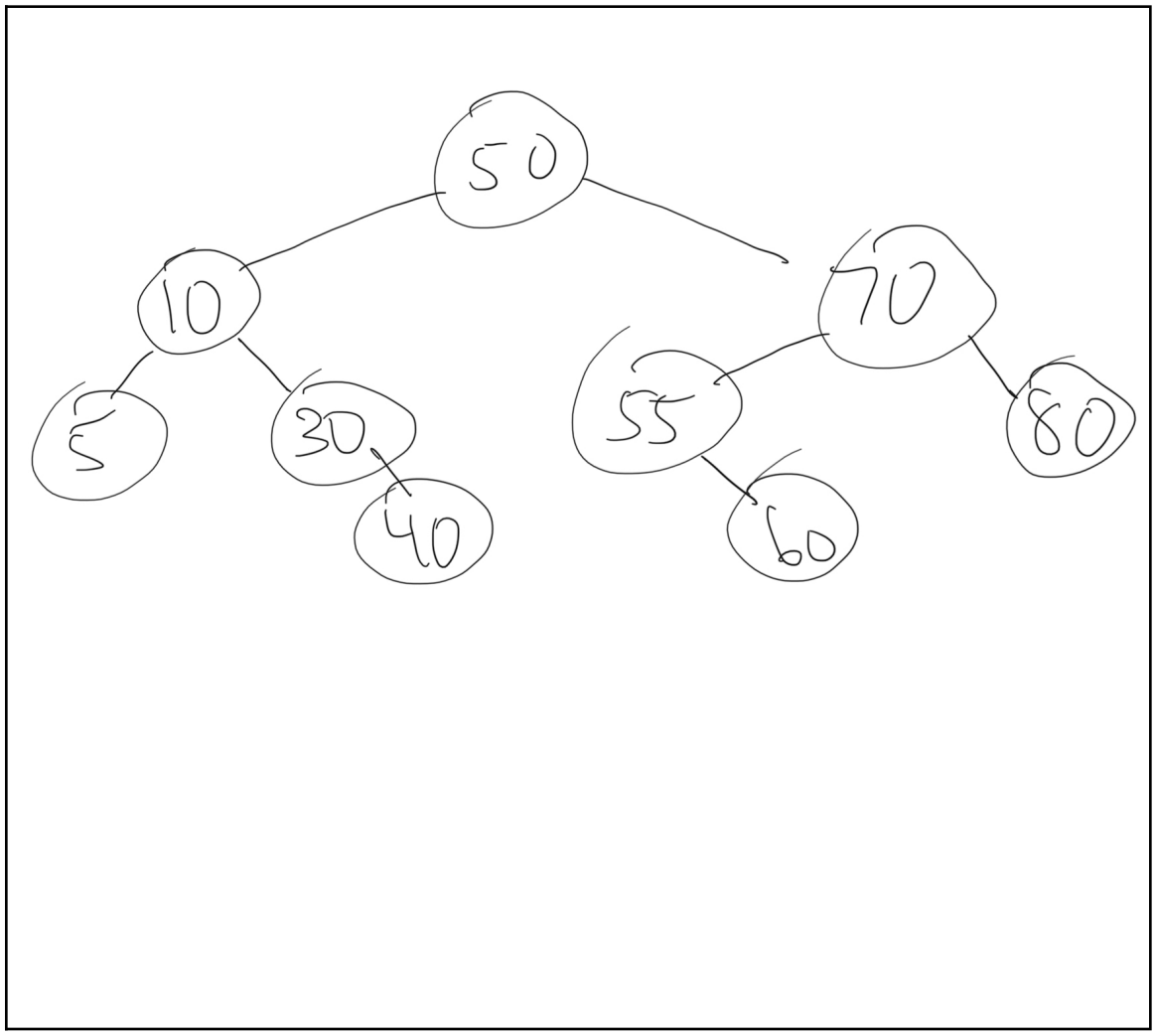
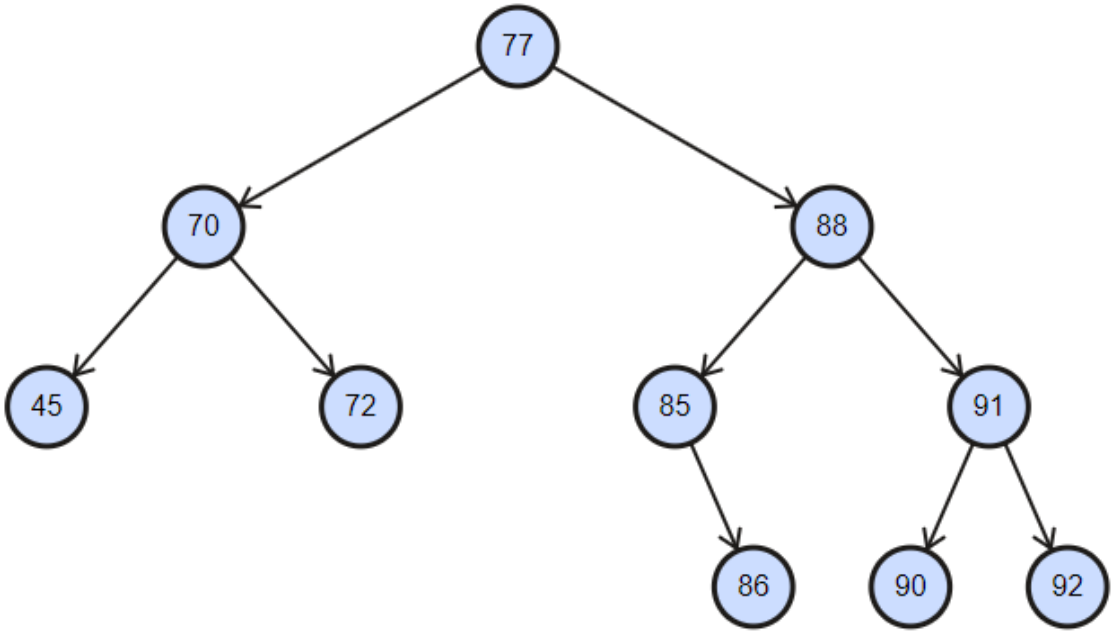
1. Insert the following integers in the order presented to an empty BST and draw the BST after these insertions in the box below. You don't need to show each step.

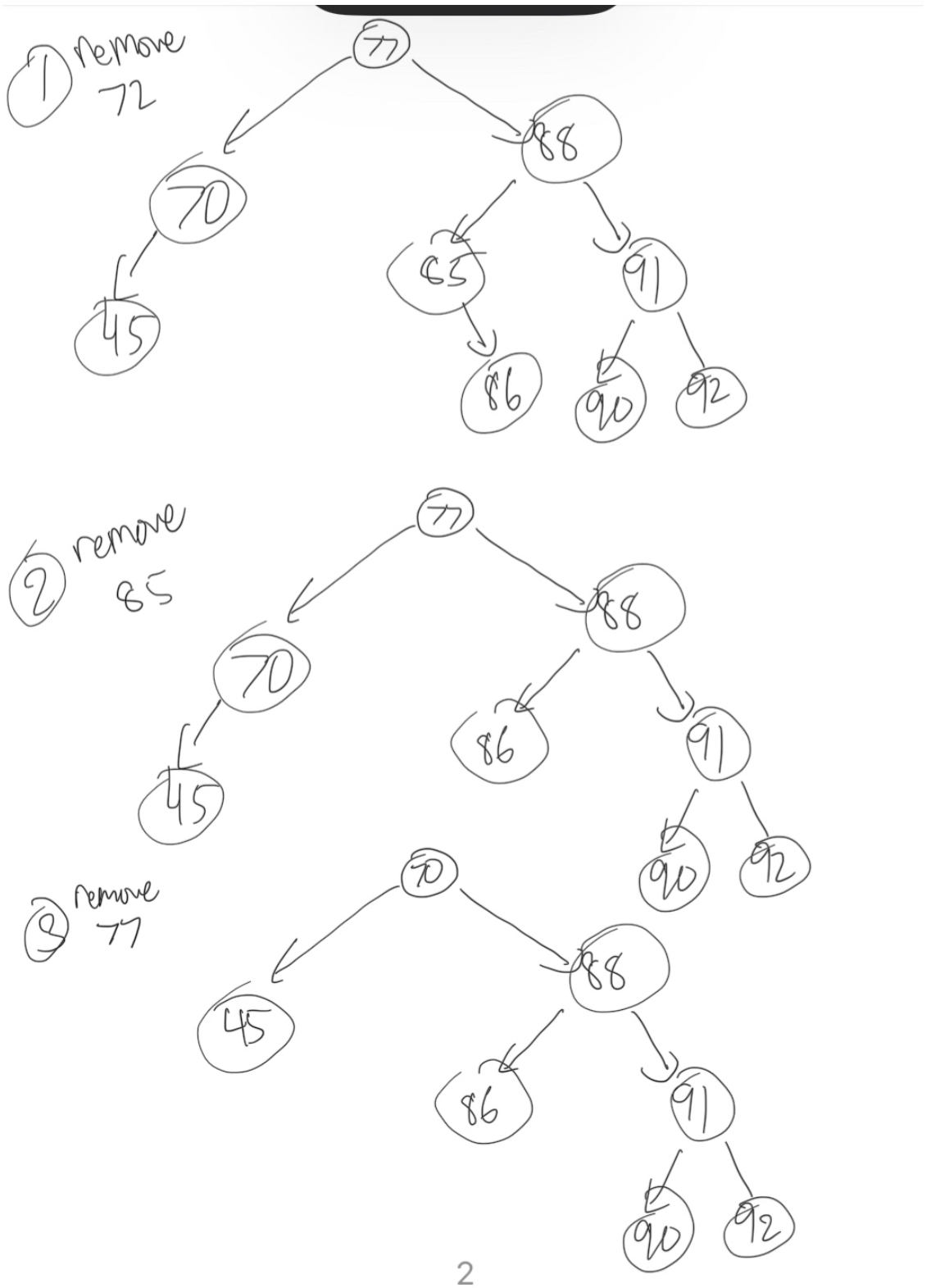
   [50,10, 70, 30, 5, 80, 55, 60, 40]



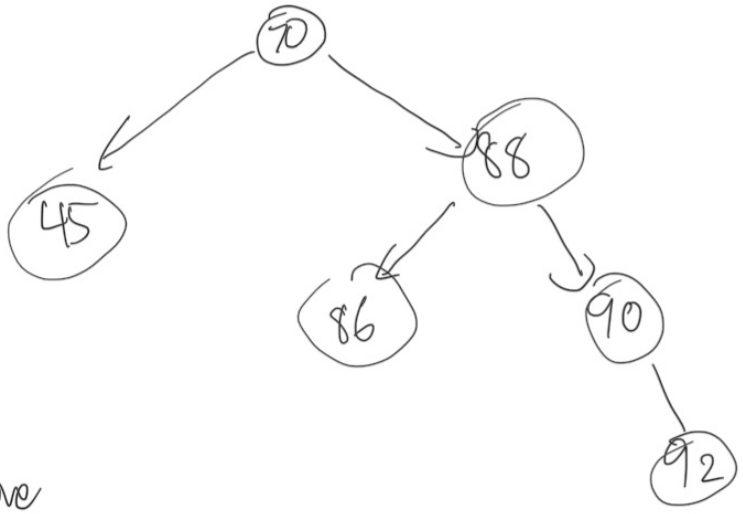
2. Remove the following integers in the order presented from the given BST and show each step of removal by drawing the BSTs after each step of removal in the box below (i.e. 5 trees in total). When removing a node with 2 children, you must replace it with its **in-order predecessor** to get credits.



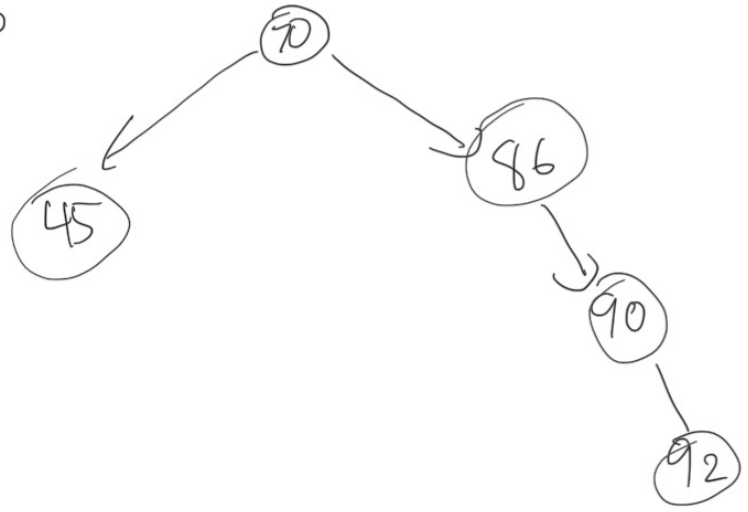
Elements to remove: [72, 85, 77, 91, 88]


1 remove 72
77
70
88
45
65
91
86
90
92
2 remove 65
77
70
88
45
86
91
90
92
3 remove 77
70
88
45
86
91
90
92

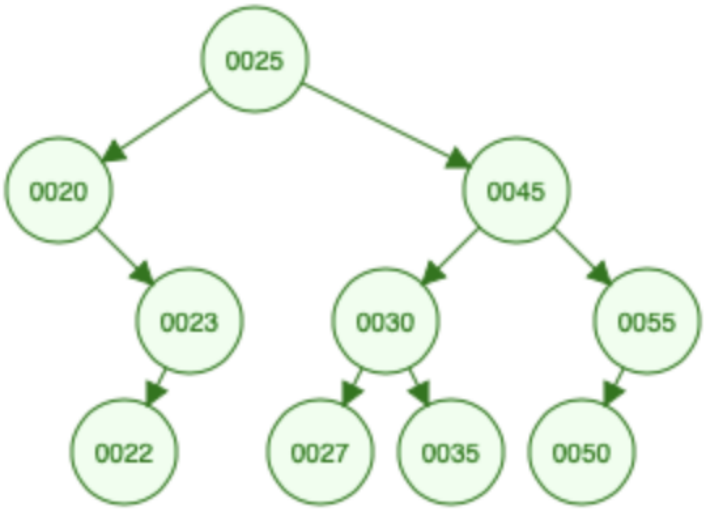
4 remove 91



5 remove 88



3. Write down the in-order, pre-order, and post-order traversal output of the following BST.



In-order	0020,0022,0023,0025,0027,0030,0035,0045,0050,0055
Pre-order	0025,0020,0023,0022,0045,0030,0027,0035,0055,0050
Post-order	0022,0023,0020,0027,0035,0030,0050,0055,0045,0025

4. (Extra Credit) Recreate the original BST using the following traversal results.

Pre-order	[55, 40, 24, 30, 50, 45, 70, 68, 77, 75, 76, 91]
Post-order	[30, 24, 45, 50, 40, 68, 76, 75, 91, 77, 70, 55]