PA 6 Part 1: BST Worksheet

DSC 30 Winter 2021 - Marina Langlois

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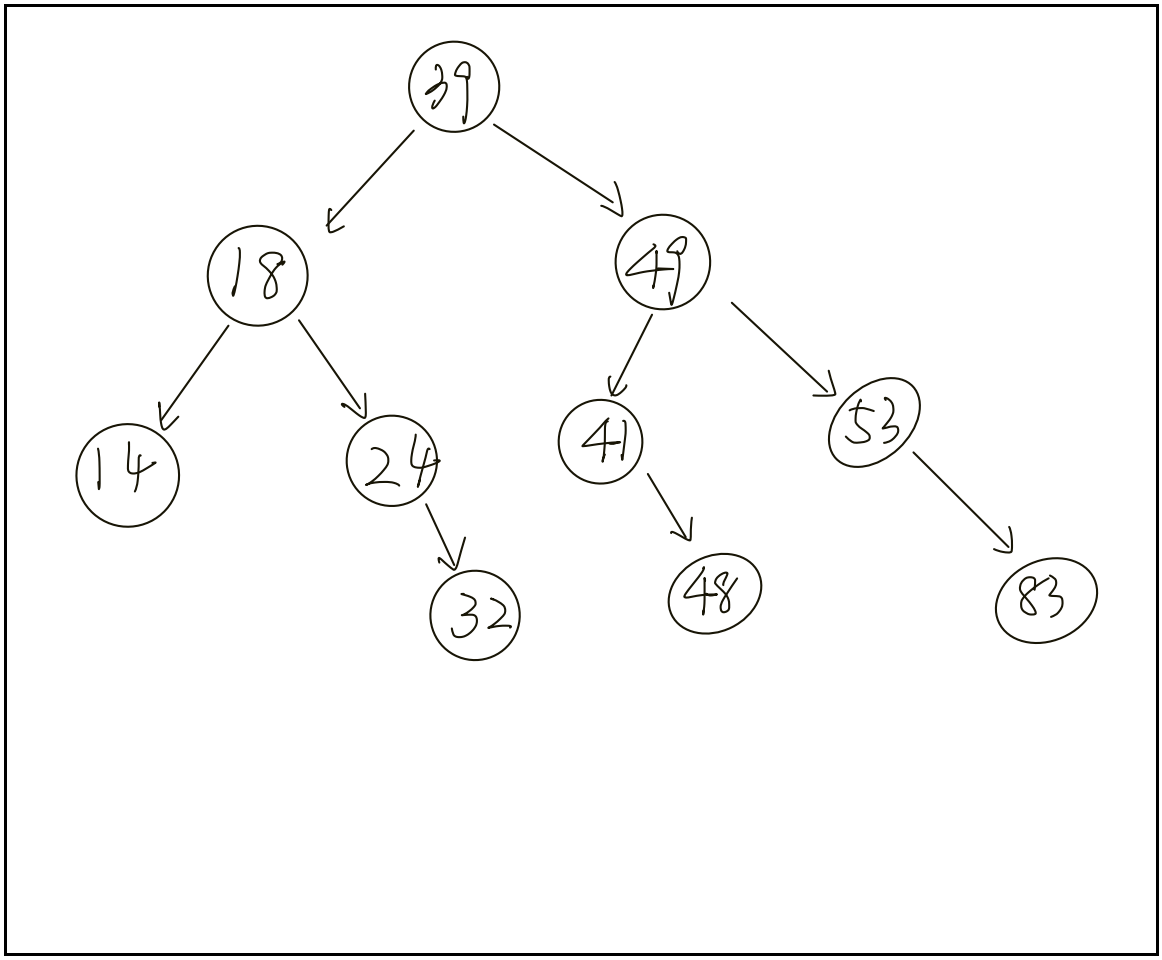
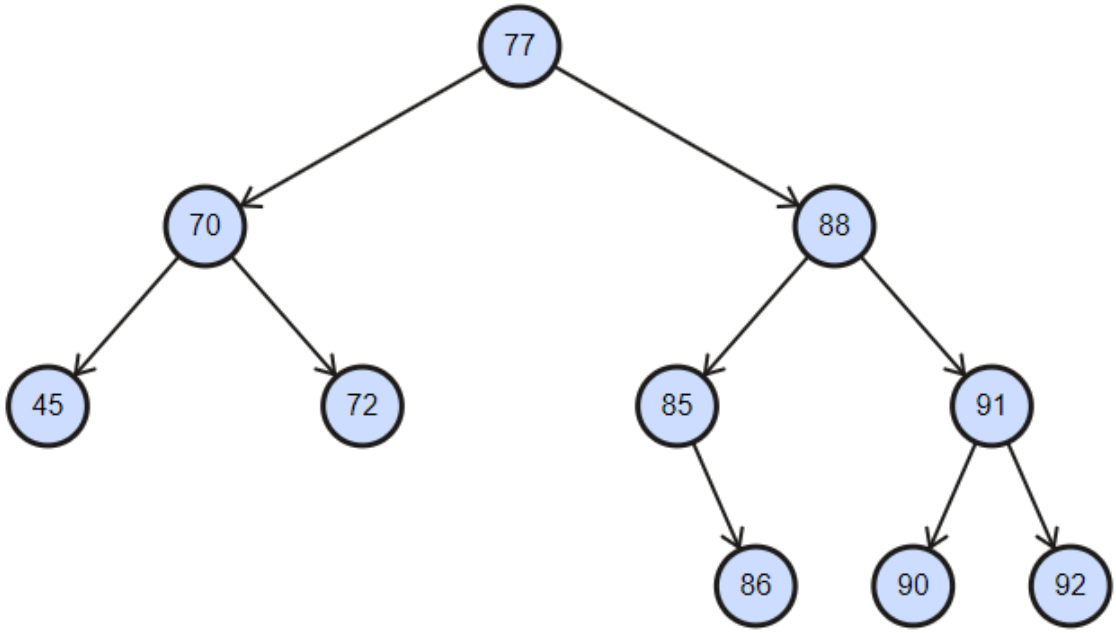
1. Insert the following integers in the order presented to an empty BST and draw the BST after these insertions in the box below. You don't need to show each step.

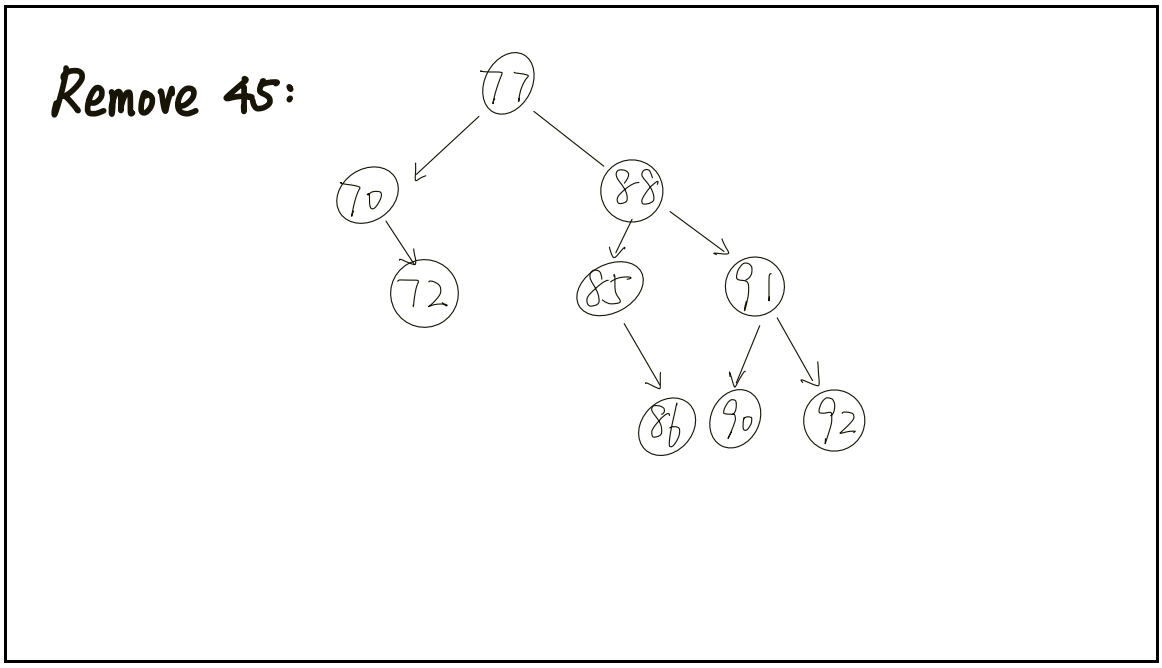
   [39, 49, 18, 53, 83, 24, 14, 41, 32, 48]



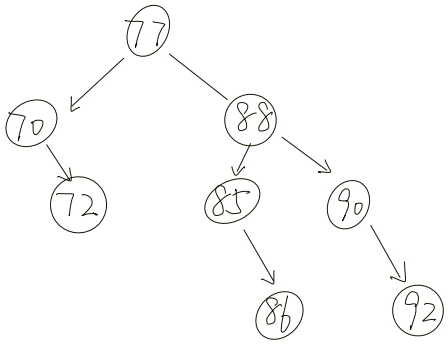
2. Remove the following integers in the order presented from the given BST and show each step of removal by drawing the BSTs after each step of removal in the box below (i.e. 5 trees in total). When removing a node with 2 children, you must replace it with its **in-order predecessor** to get credits.



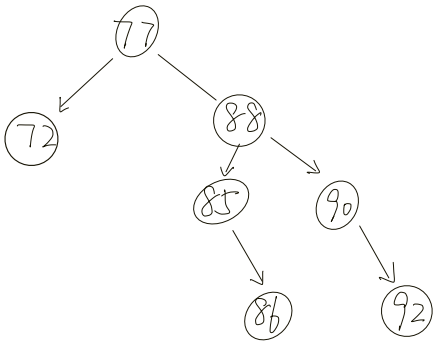
Elements to remove: [45, 91, 70, 88, 77]



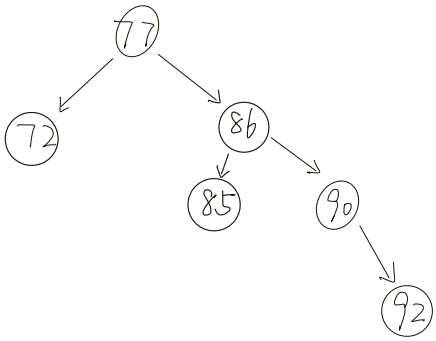
Remove 91:



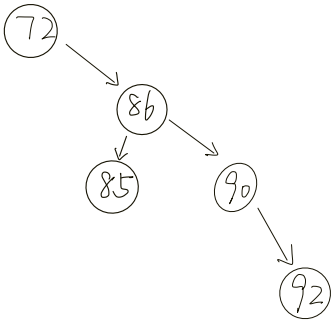
Remove 70:



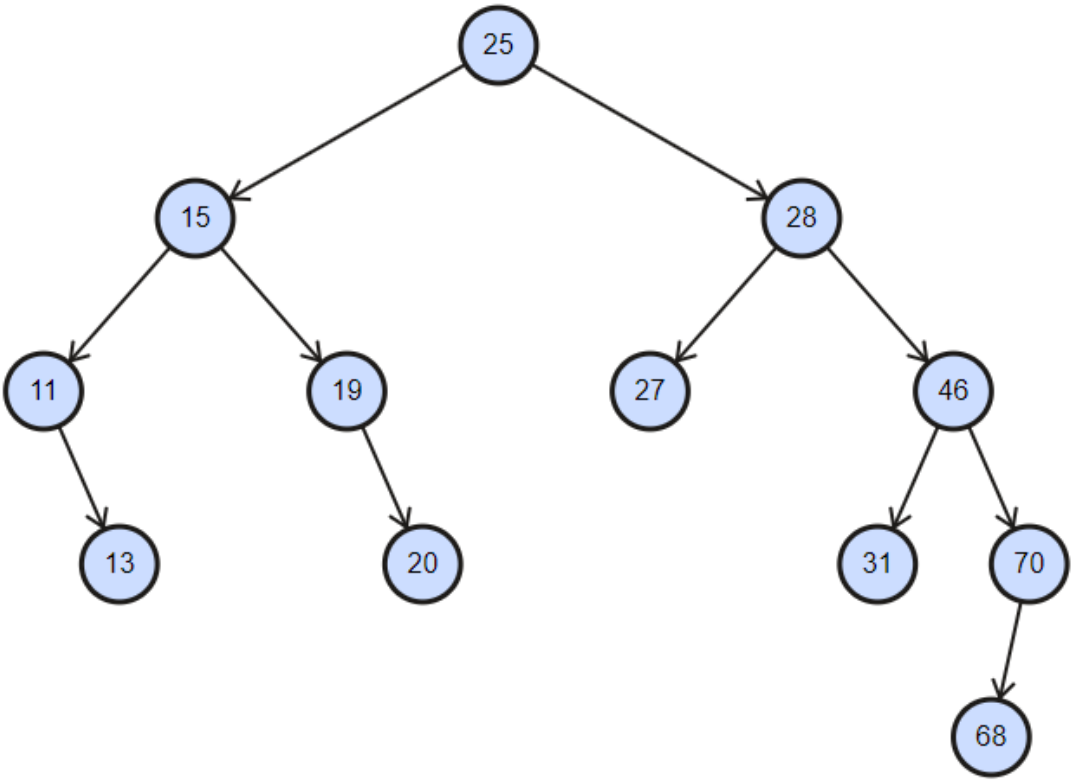
Remove 88:



Remove 77:



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



In-order	11,13,15,19,20,25,27,28,31,46,68,70
Pre-order	25,15,11,13,19,20,28,27,46,31,70,68
Post-order	13,11,20,19,15,27,31,68,70,46,28,25

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

In-order	[15, 21, 24, 27, 30, 32, 36, 37, 38, 41, 55, 57]
Pre-order	[32, 30, 15, 24, 21, 27, 41, 37, 36, 38, 55, 57]