

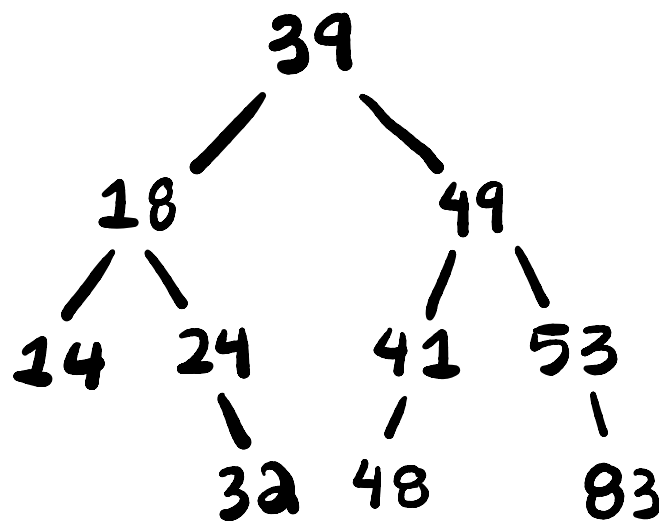
PA 6 Part 1: BST Worksheet

DSC 30 Winter 2021 - Marina Langlois

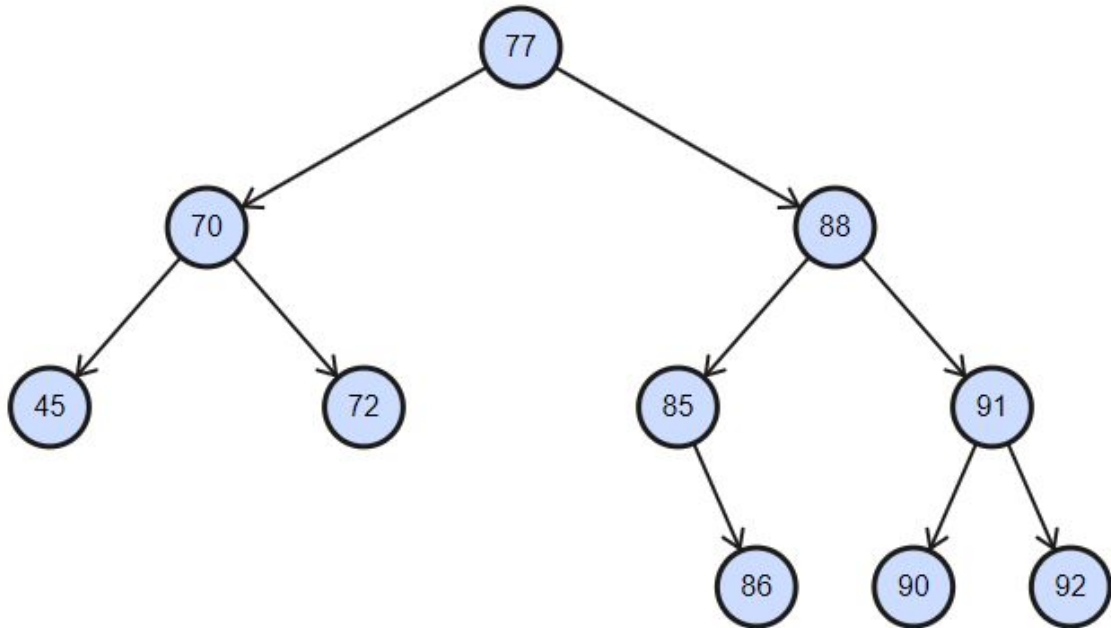
Name	Tonia Le
PID	A15662706

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]
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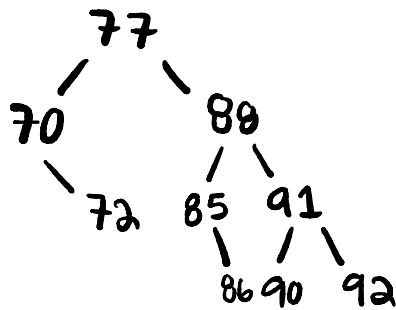


2. Remove the following integers in the order presented from the given BST and show each step of removal by drawing the BSTs after each step of removal in the box below (i.e. 5 trees in total). When removing a node with 2 children, you must replace it with its **in-order predecessor** to get credits.

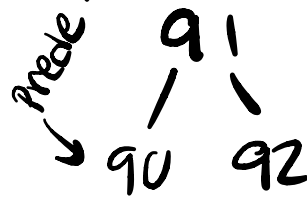
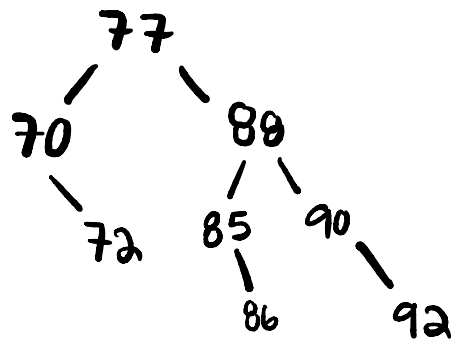


Elements to remove: [45, 91, 70, 88, 77]

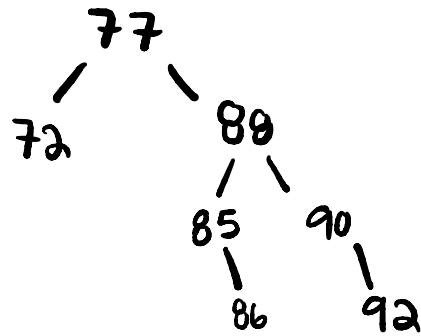
Remove 45 leaf



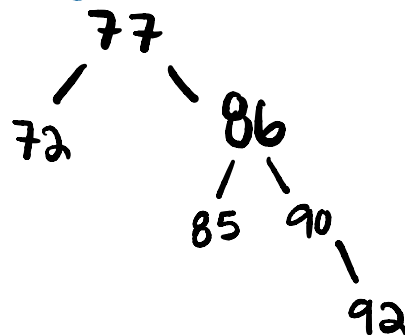
Remove 91



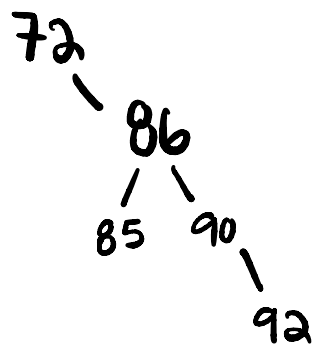
Remove 70



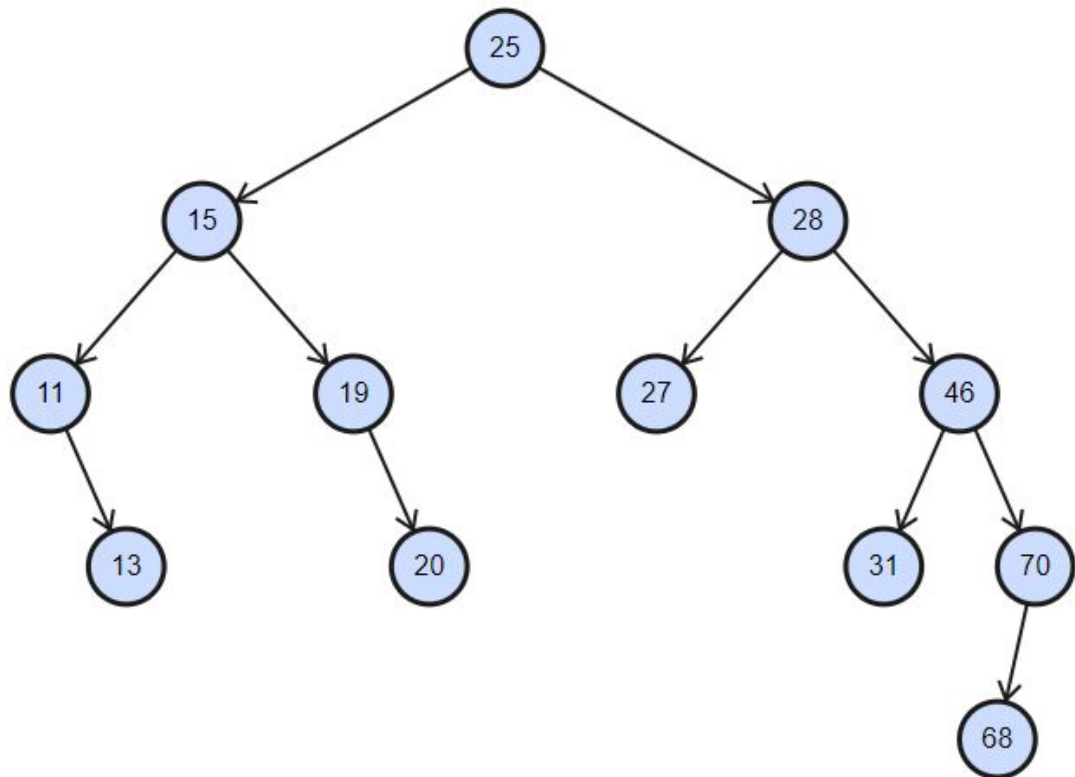
Remove 88



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

Pre: root, left, right



Post: Left, Right, Root



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 , 77 , 41 , 37 , 36 , 38 , 55, 57

Annotations:
 - A blue circle highlights '32' in the In-order list.
 - A red vertical line under '32' is labeled 'ROOT'.
 - A pink vertical line under '30' is labeled 'LEFT'.
 - A blue vertical line under '41' is labeled 'RIGHT'.
 - A blue circle highlights '41' in the Pre-order list.
 - A blue vertical line under '41' is labeled 'root'.
 - A blue vertical line under '55' is labeled 'left'.
 - A handwritten note 'sub. on right of 41' with an arrow points to the '55' in the In-order list.

