PA 6 Part 1: BST Worksheet

DSC 30 Spring 2021 - Marina Langlois

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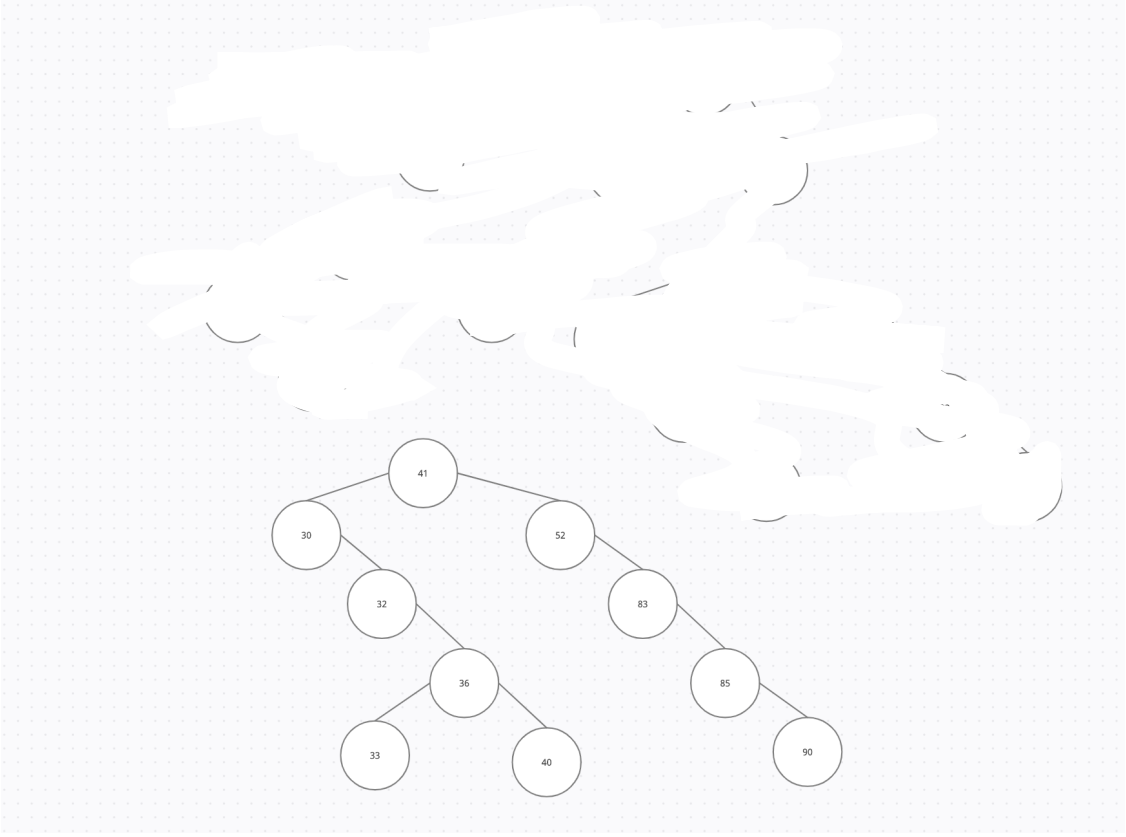
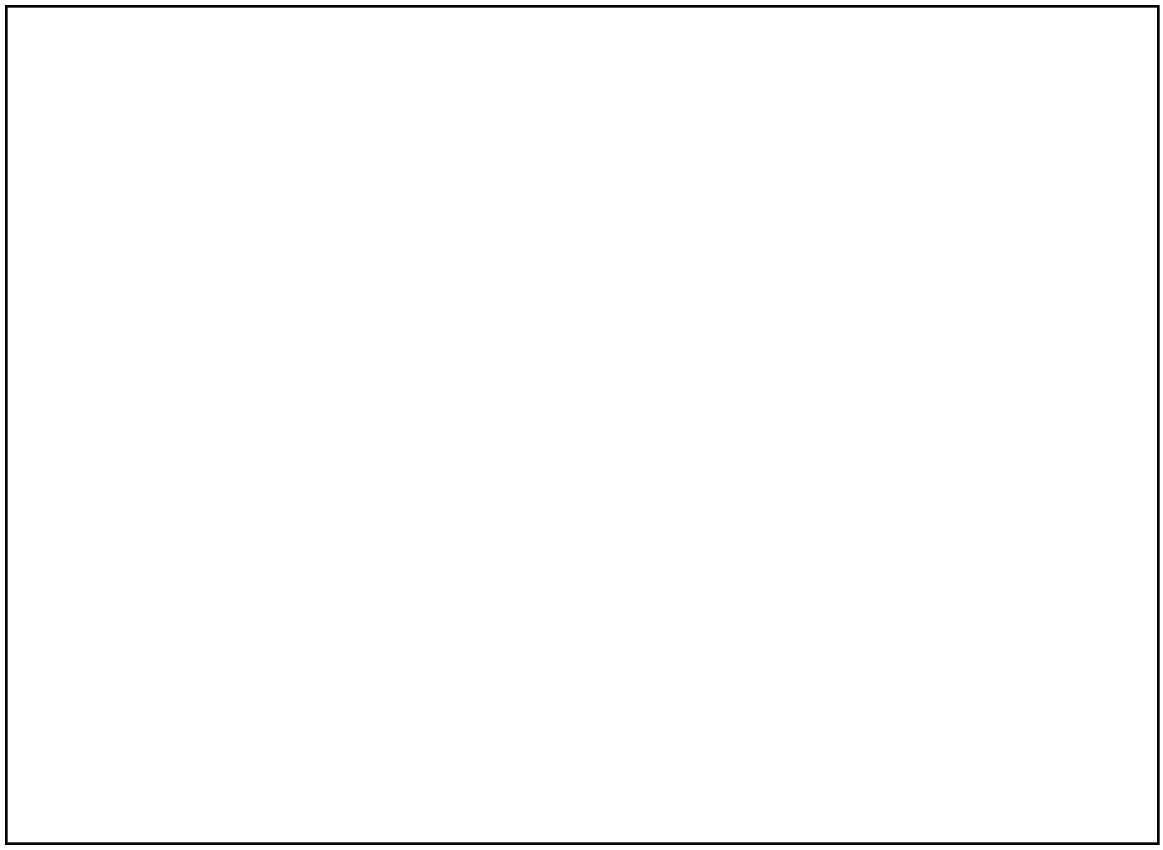
PID	[redacted]

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.

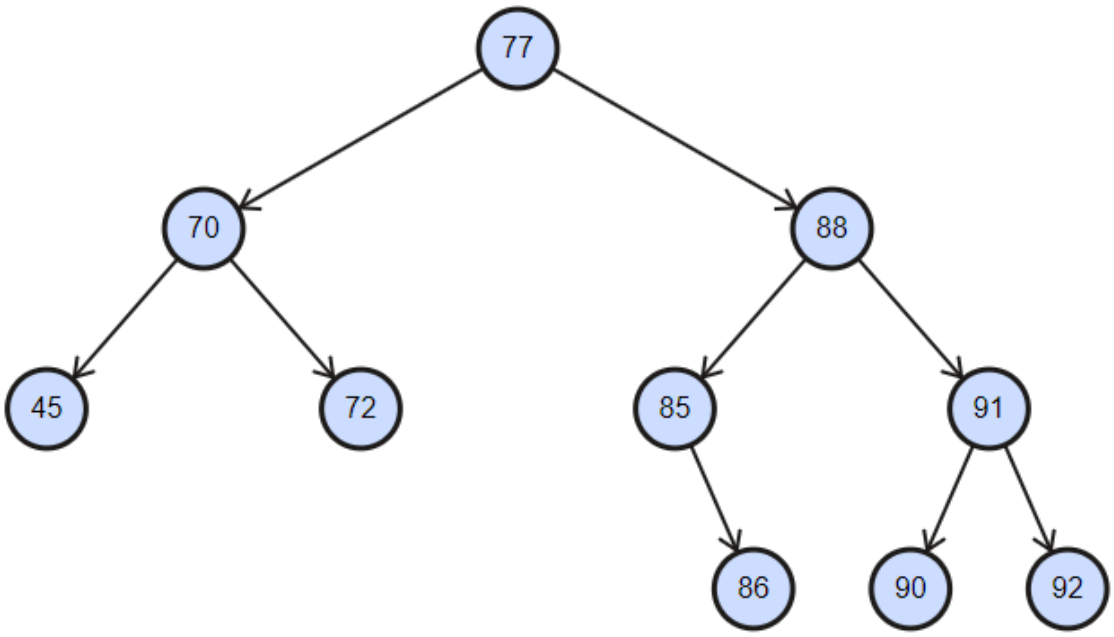
   [41, 30, 52, 32, 83, 36, 85, 90, 33, 40]

First tree is first insertion with 41, next tree is with 30, next is 52, next is 32, next is 83, 36, 85, next is 90 ,33, 40

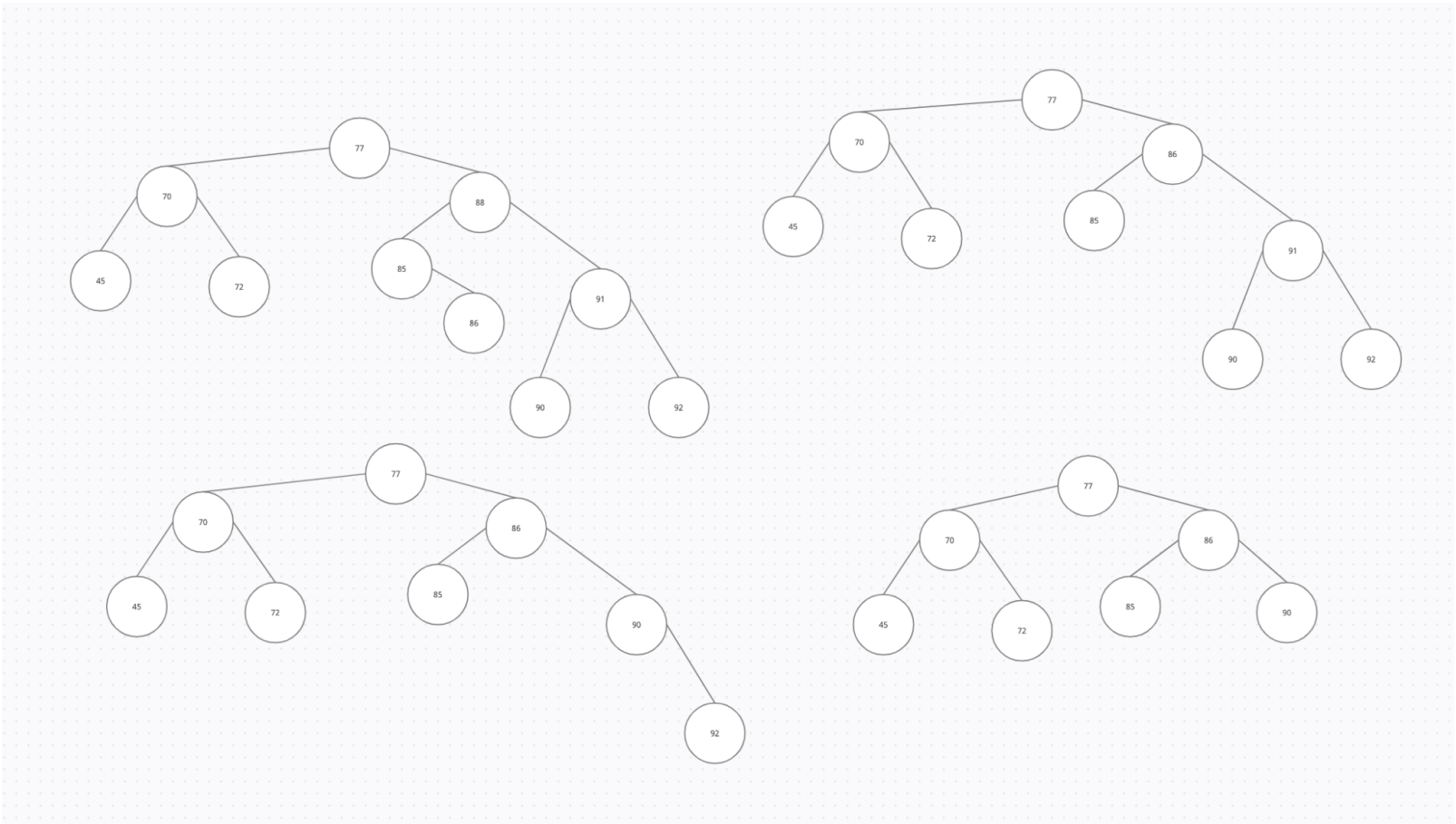


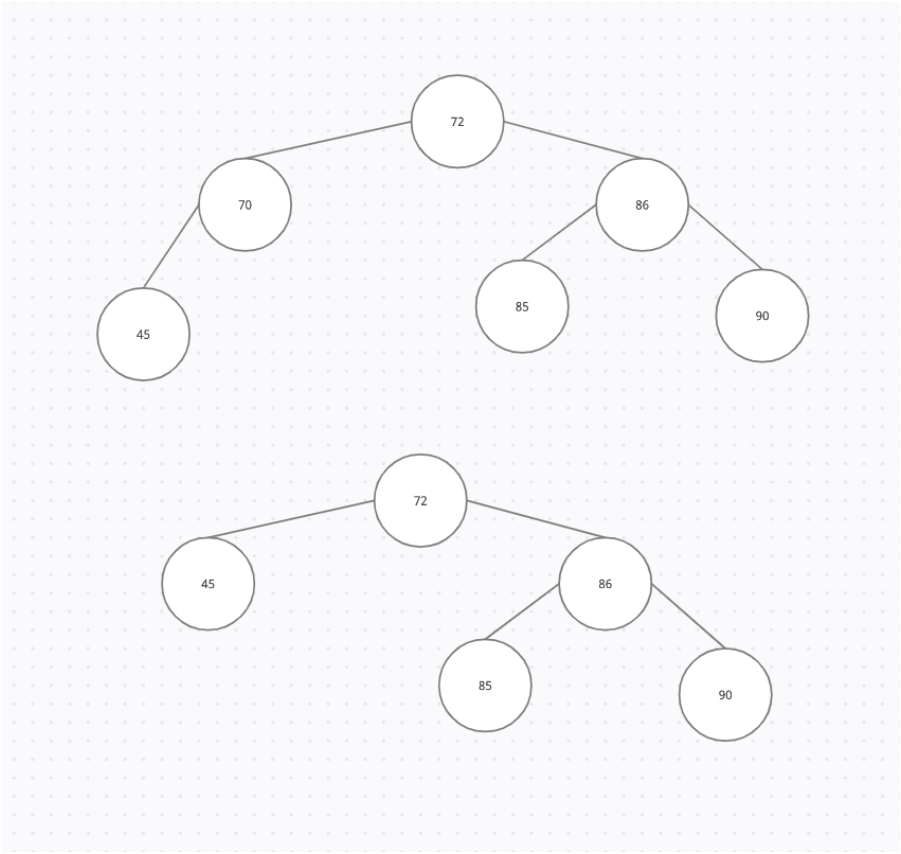


2. Remove the following integers in the order presented from the given BST and show each step of removal by drawing the BSTs after each step of removal in the box below (i.e. 5 trees in total). When removing a node with 2 children, you must replace it with its **in-order predecessor** to get credits.

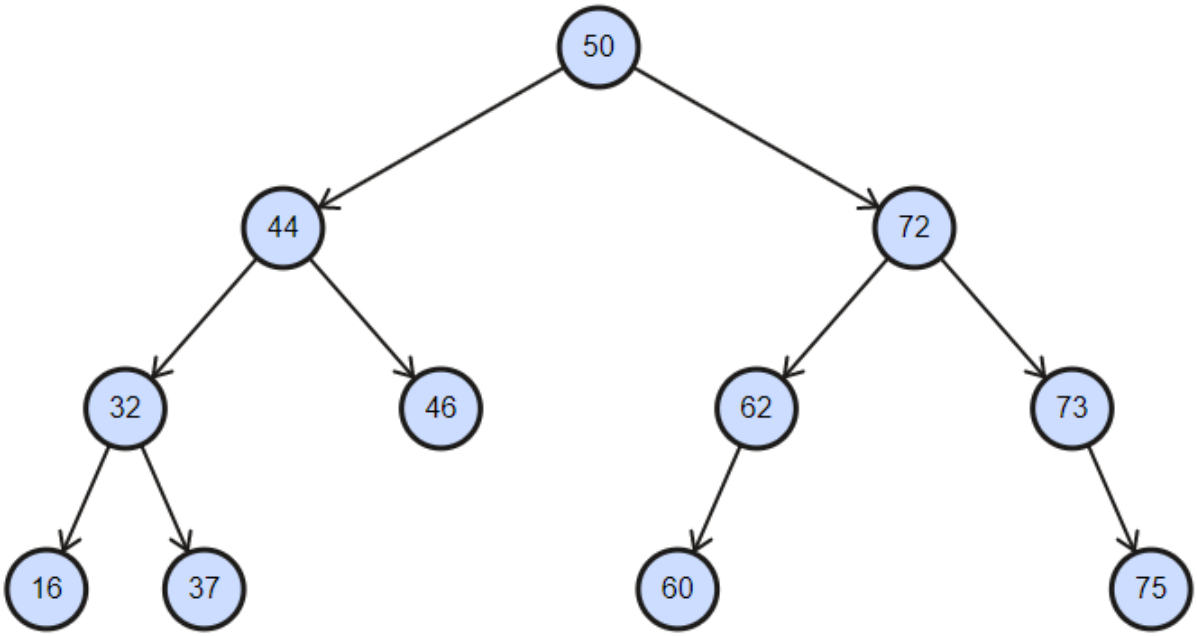


Elements to remove: [88, 91, 92, 77, 70]




72
70
86
45
85
90
72
45
86
85
90

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



In-order	16, 32, 37, 44, 46, 50, 60, 62, 72, 73, 75
Pre-order	50, 44, 32, 16, 37, 46, 72, 62, 60, 73, 75
Post-order	16, 37, 32, 46, 44, 60, 62, 75, 73, 72, 50

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

Pre-order	[52, 42, 28, 26, 46, 48, 70, 68, 77, 75, 88, 85]
Post-order	[26, 28, 48, 46, 42, 68, 75, 85, 88, 77, 70, 52]