

CS202 Fall 2021–2022 Homework 2

Trees

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Question 1

Preorder Traversal

- * * A B - + C D E / F + G H

Inorder Traversal

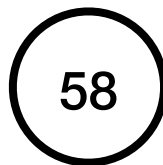
A * B * C + D - E - F / G + H

Postorder Traversal

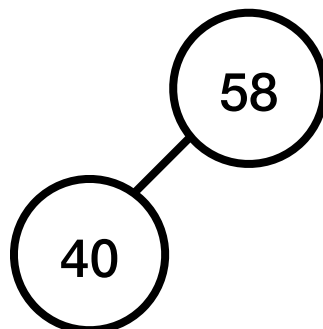
A B * C D + E - * F G H + / -

Question 2

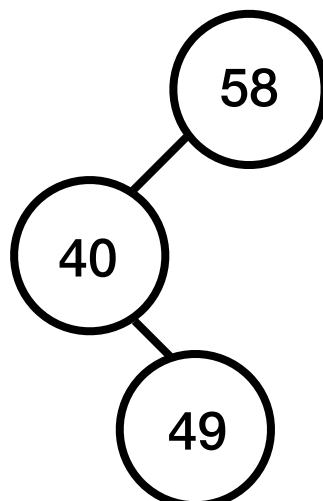
Insert 58



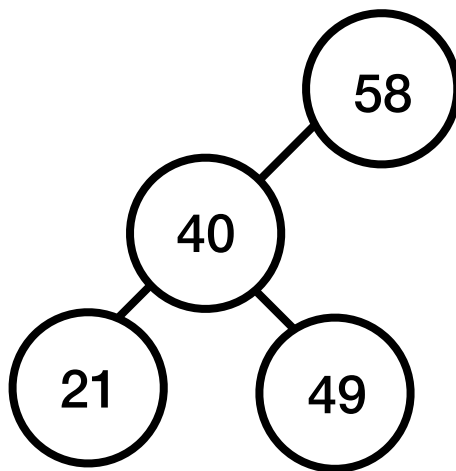
Insert 40



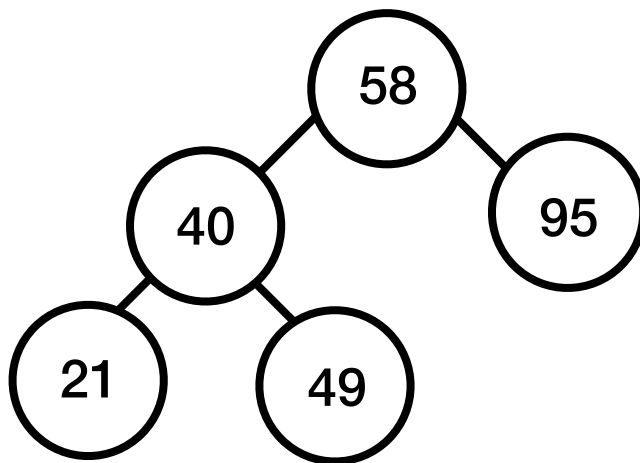
Insert 49



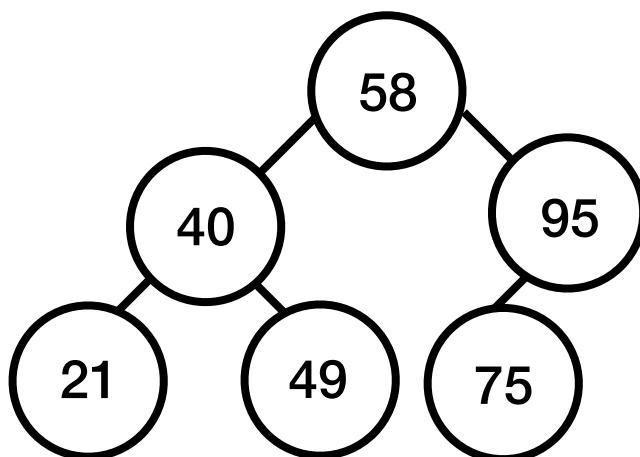
Insert 21



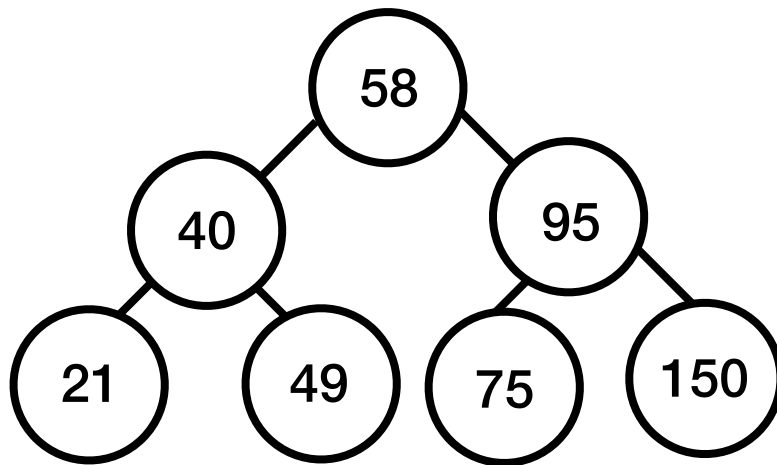
Insert 95



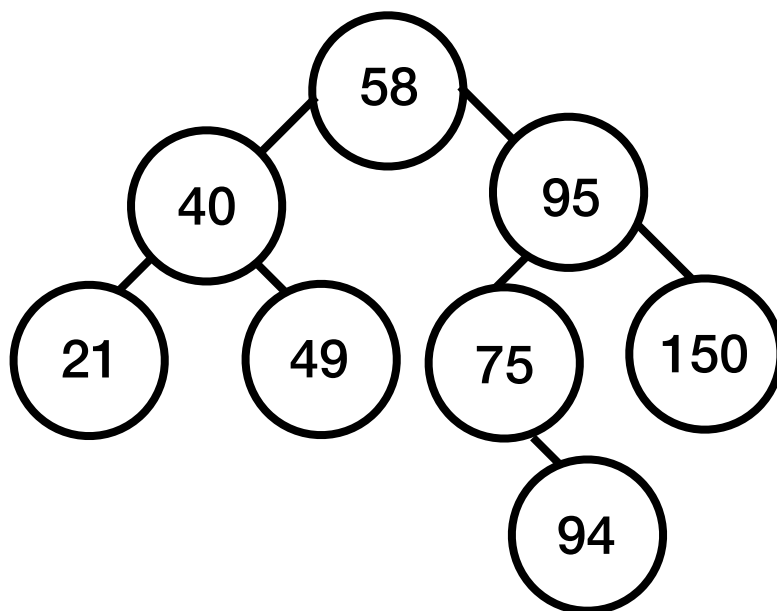
Insert 75



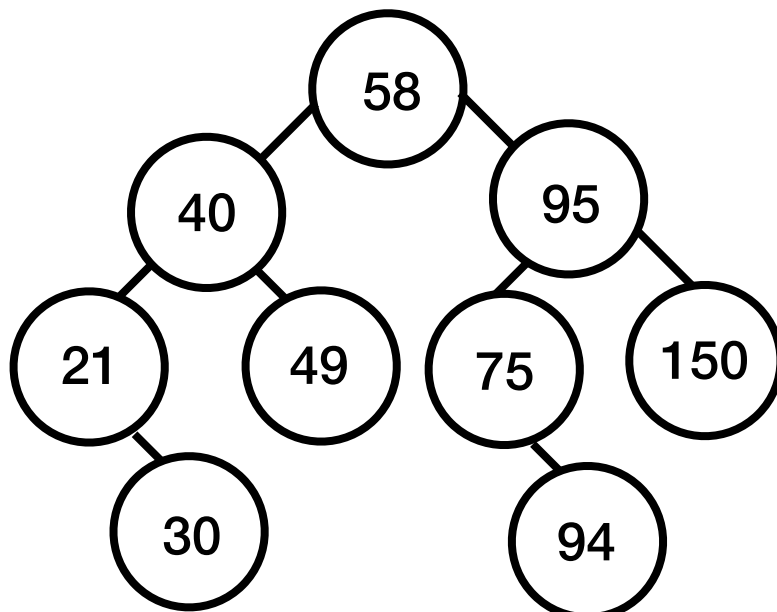
Insert 150



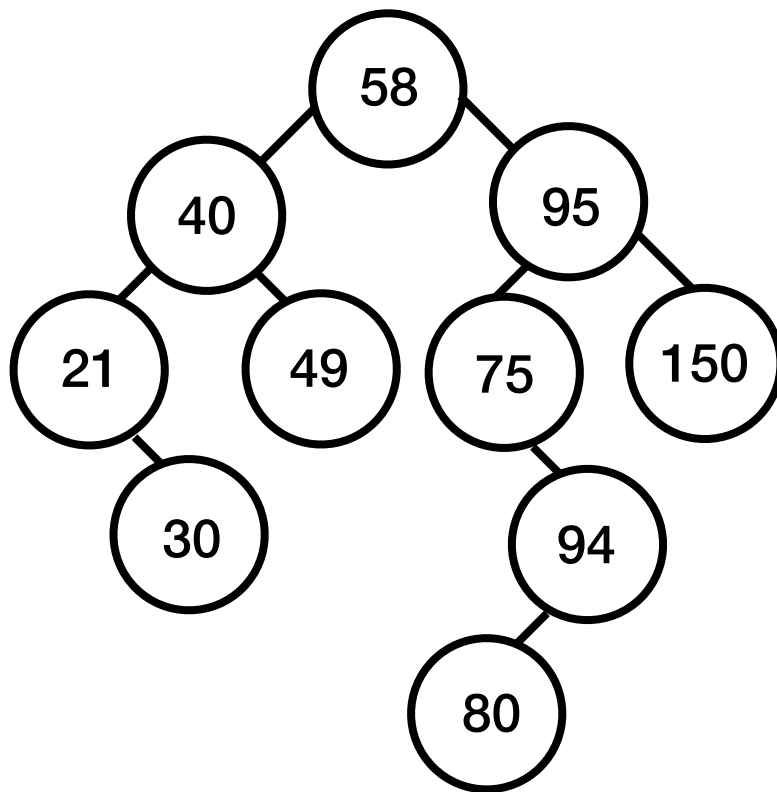
Insert 94



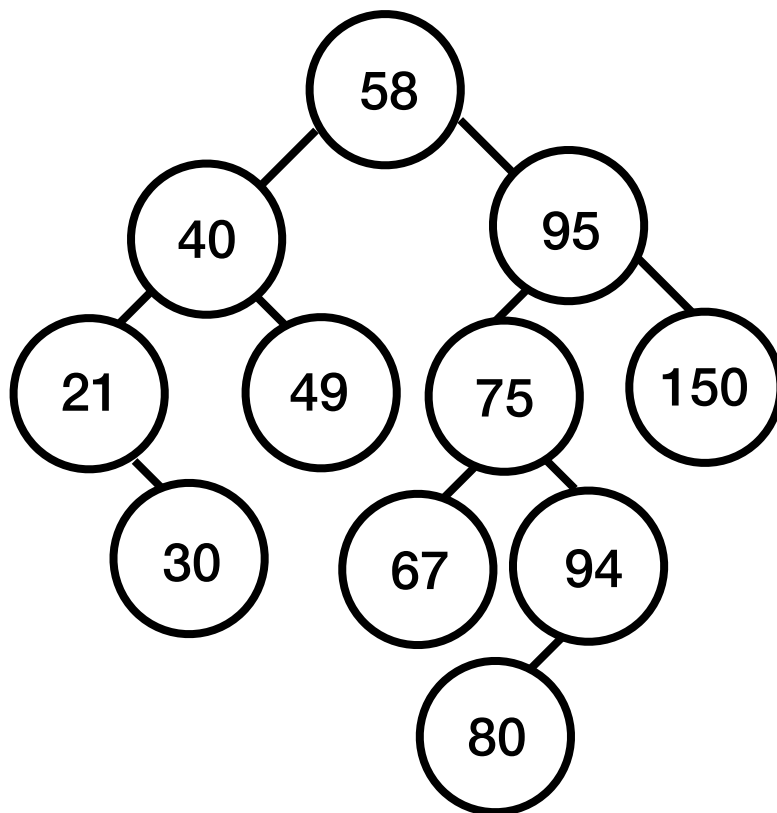
Insert 30



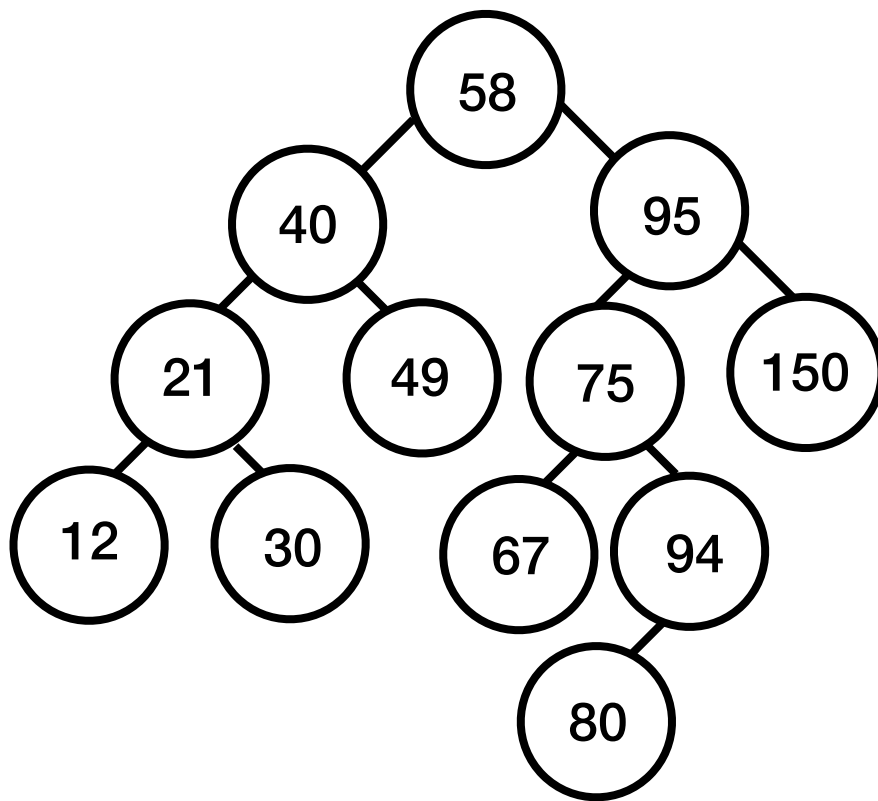
Insert 80



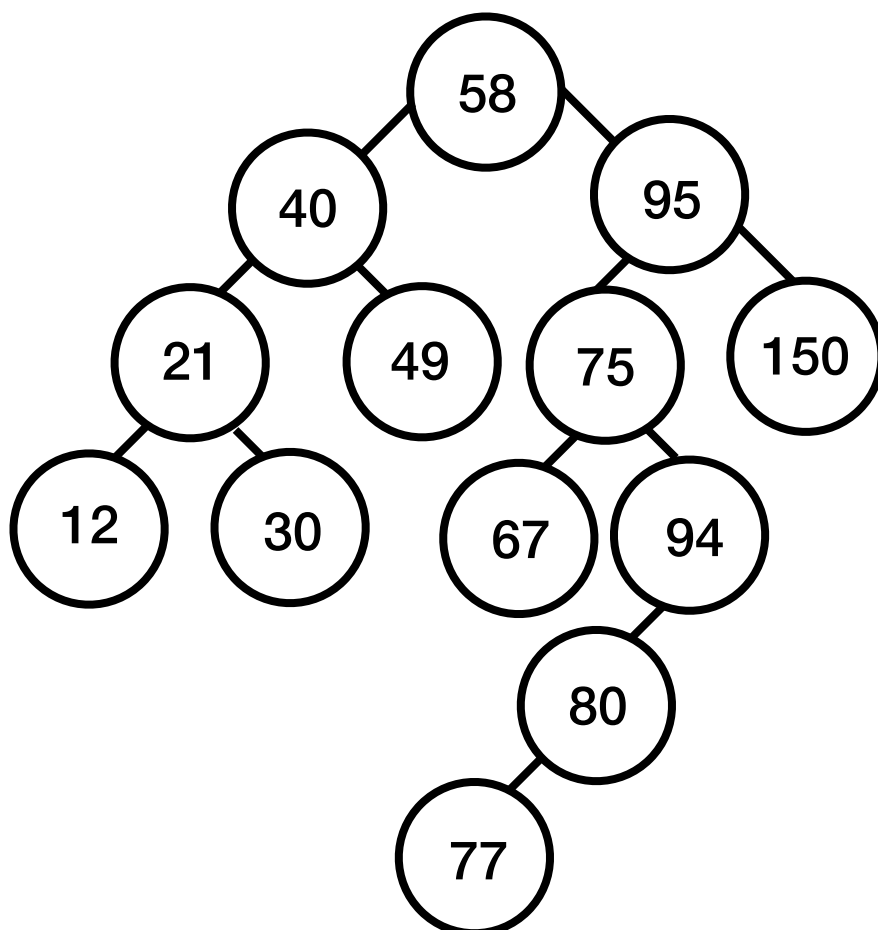
Insert 67



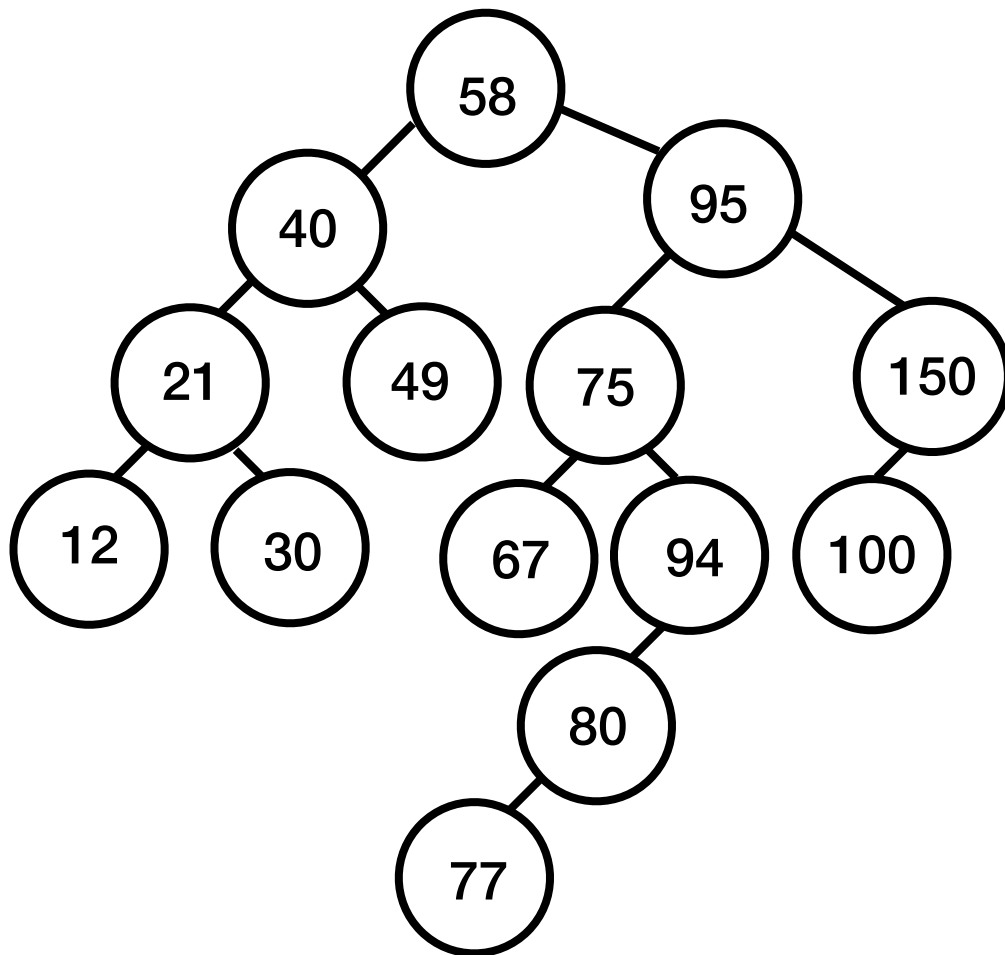
Insert 12



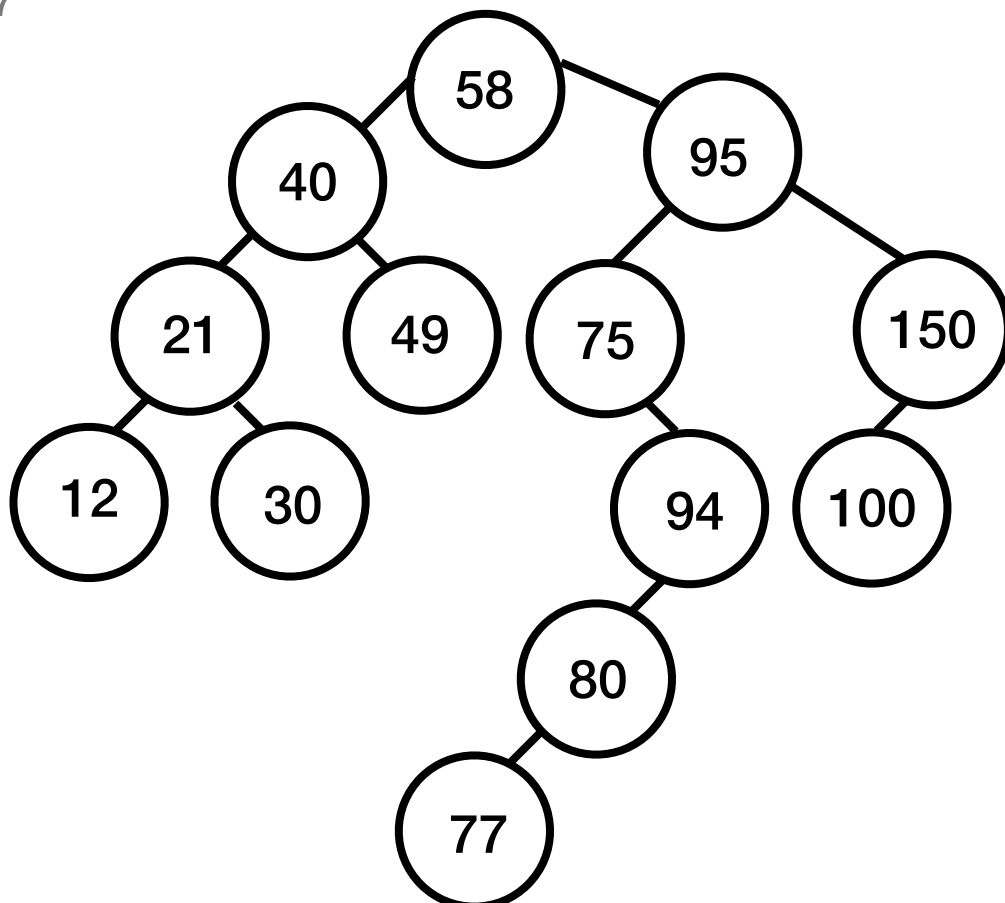
Insert 77



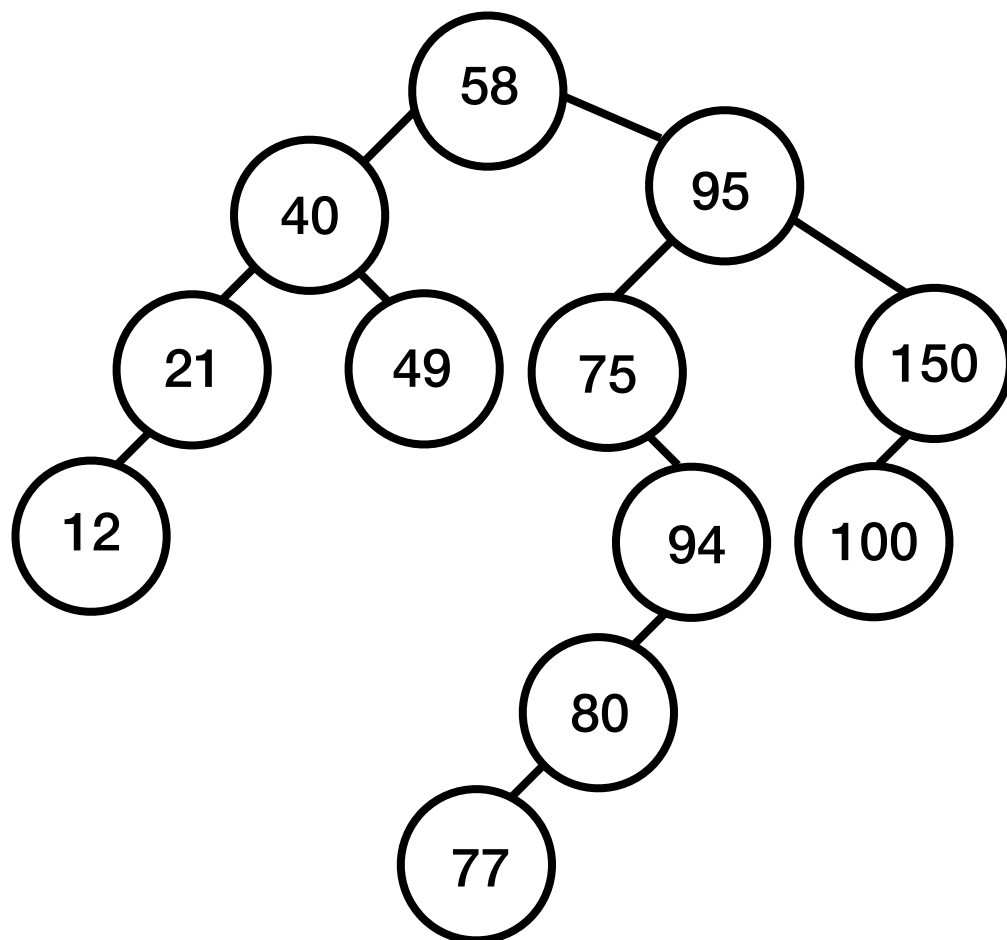
Insert 100



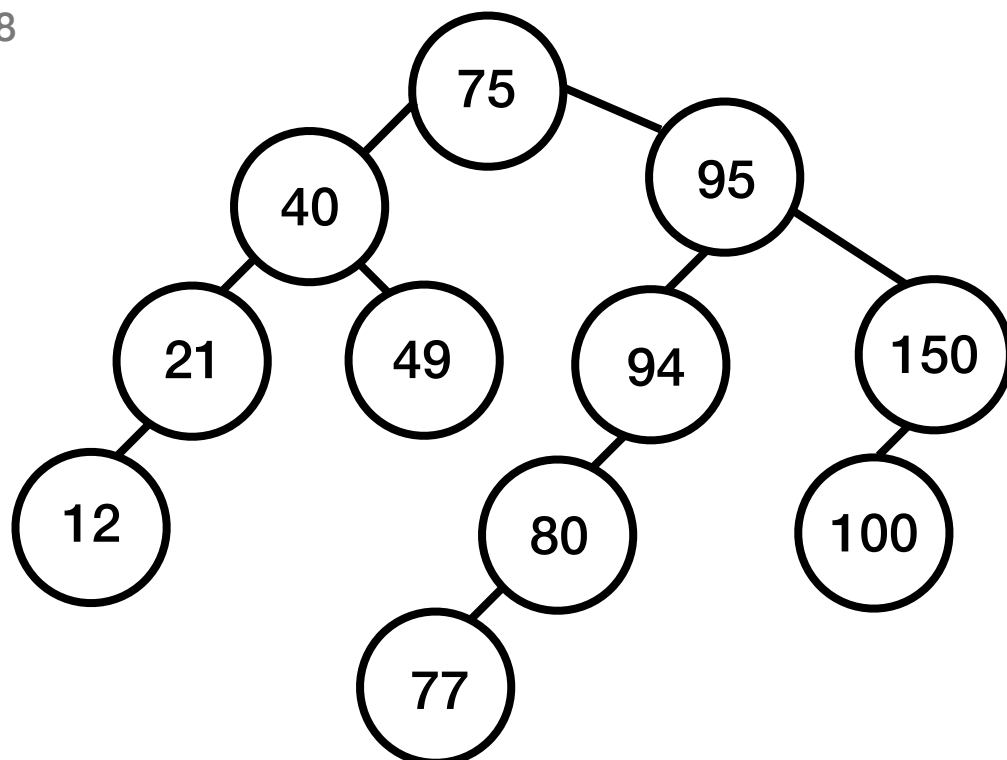
Delete 67



Delete 30



Delete 58



Question 3

addNgram Analysis

addNgram only iterates through all items of the tree recursively. then adds the item in an appropriate location. Therefore, as mentioned as the slides, the worst case of the insertion of a tree is $O(N)$. N is the number of n-grams (the tree items).

operator<< Analysis

addNgram also only iterates through all items of the tree recursively. Then counts the all ngrams of the tree (items of the tree). Therefore, as mentioned as the slides, the worst case of the traversal of a tree is $O(N)$. N is the number of n-grams (the tree items).