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HW_2

Question 1:

a)

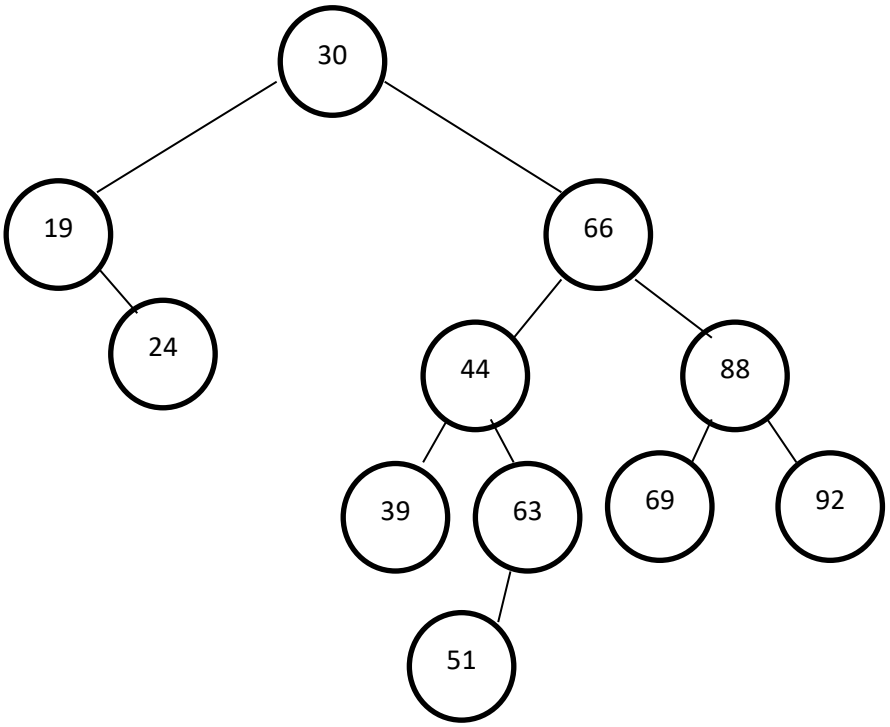
Preorder Traversal of the Tree: *, -, 1, 3, ^, 3, 2, +, 4, /, 21, 7

Inorder Traversal of the Tree: 13, –, 3, ^, 2, *, 4, +, 21, /, 7

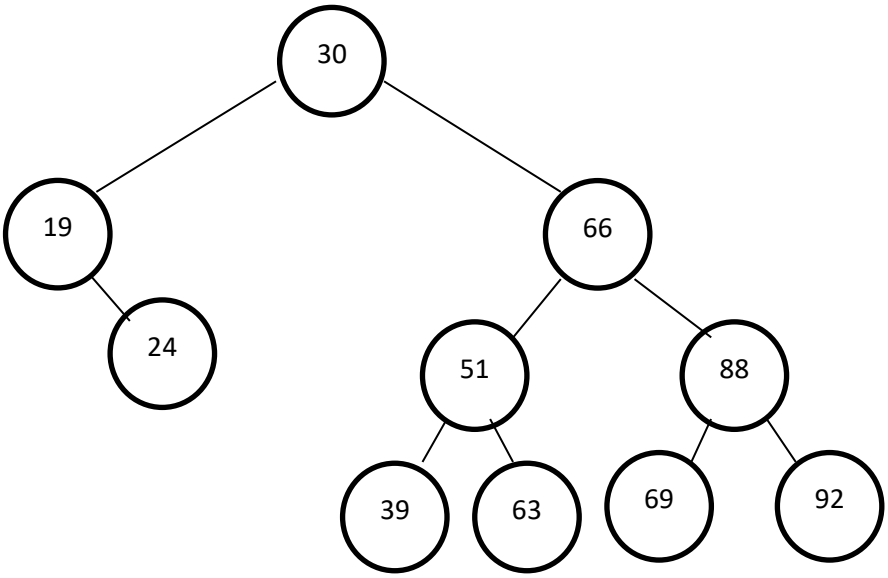
Postorder Traversal of the Tree: 13, 3, 2, ^, -, 4, 21, 7, /, +, *

Result of The Computation: 28 (left sub-tree 4 (13 - 9) and right sub-tree 7(4 + 3), 4*7 = 28)

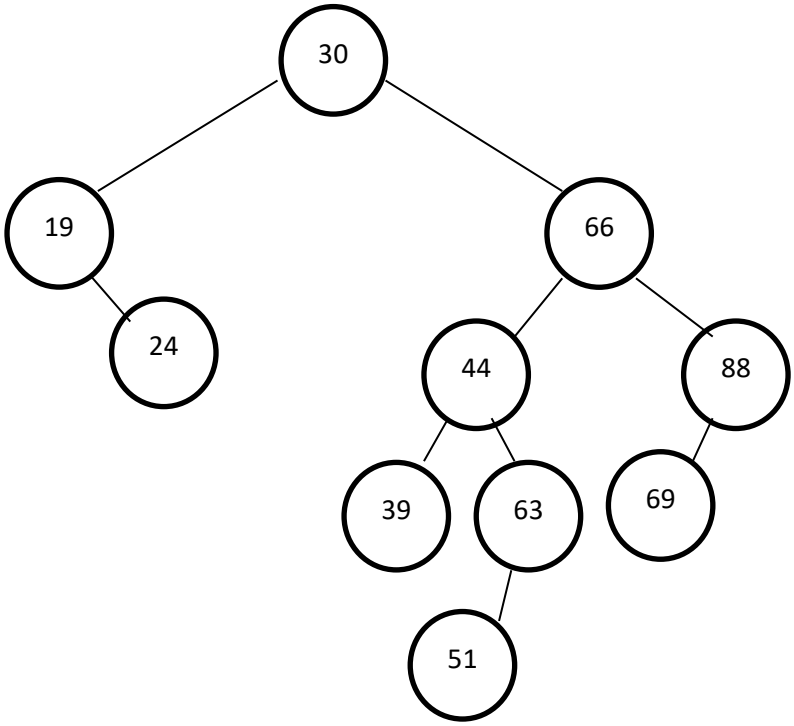
b) Tree after inserting: **30 – 19 - 24 – 66 – 44 – 39 – 88 - 63- 92- 69 – 51**



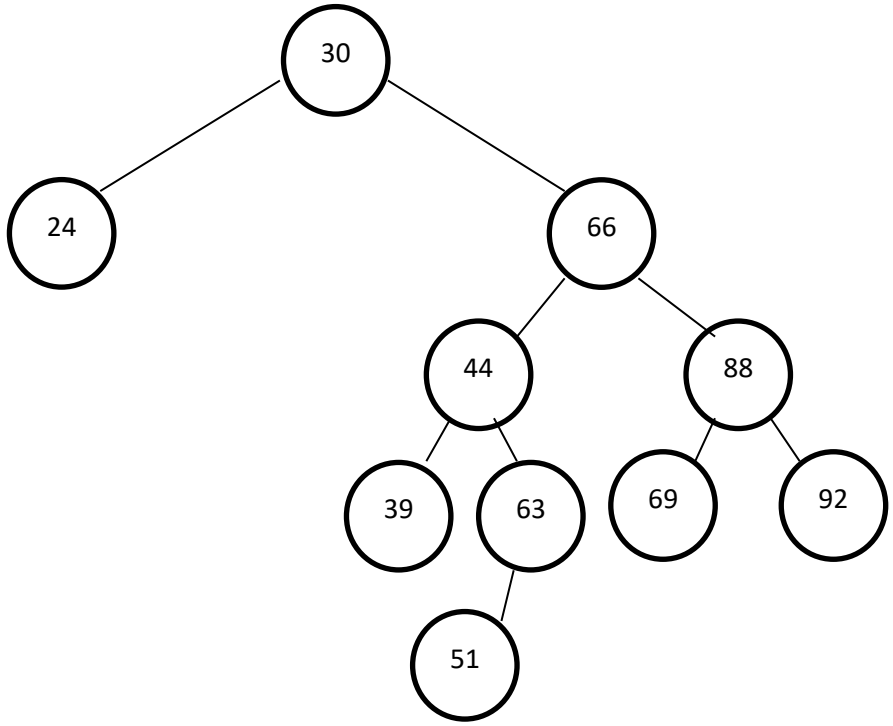
Tree After Deleting **44**



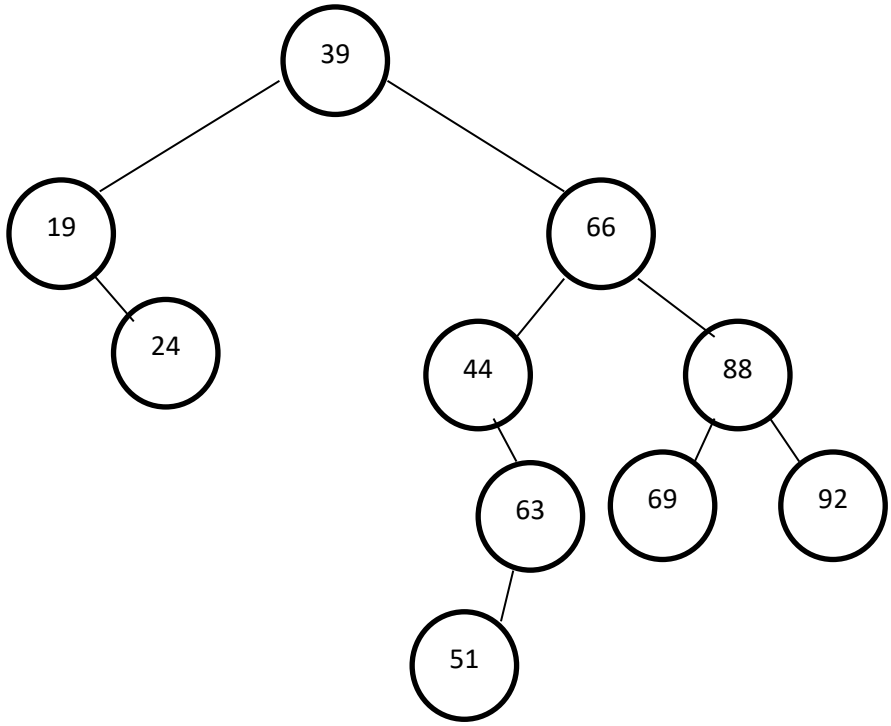
Tree After Deleting **92**



Tree After Deleting 19



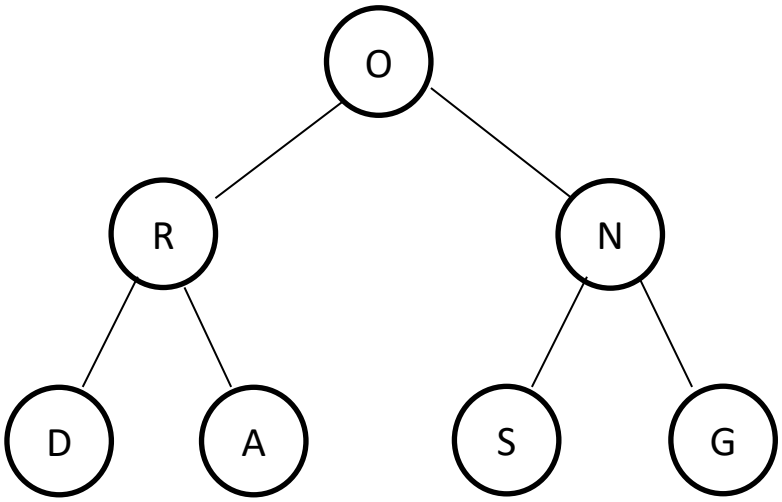
Tree After Deleting 30



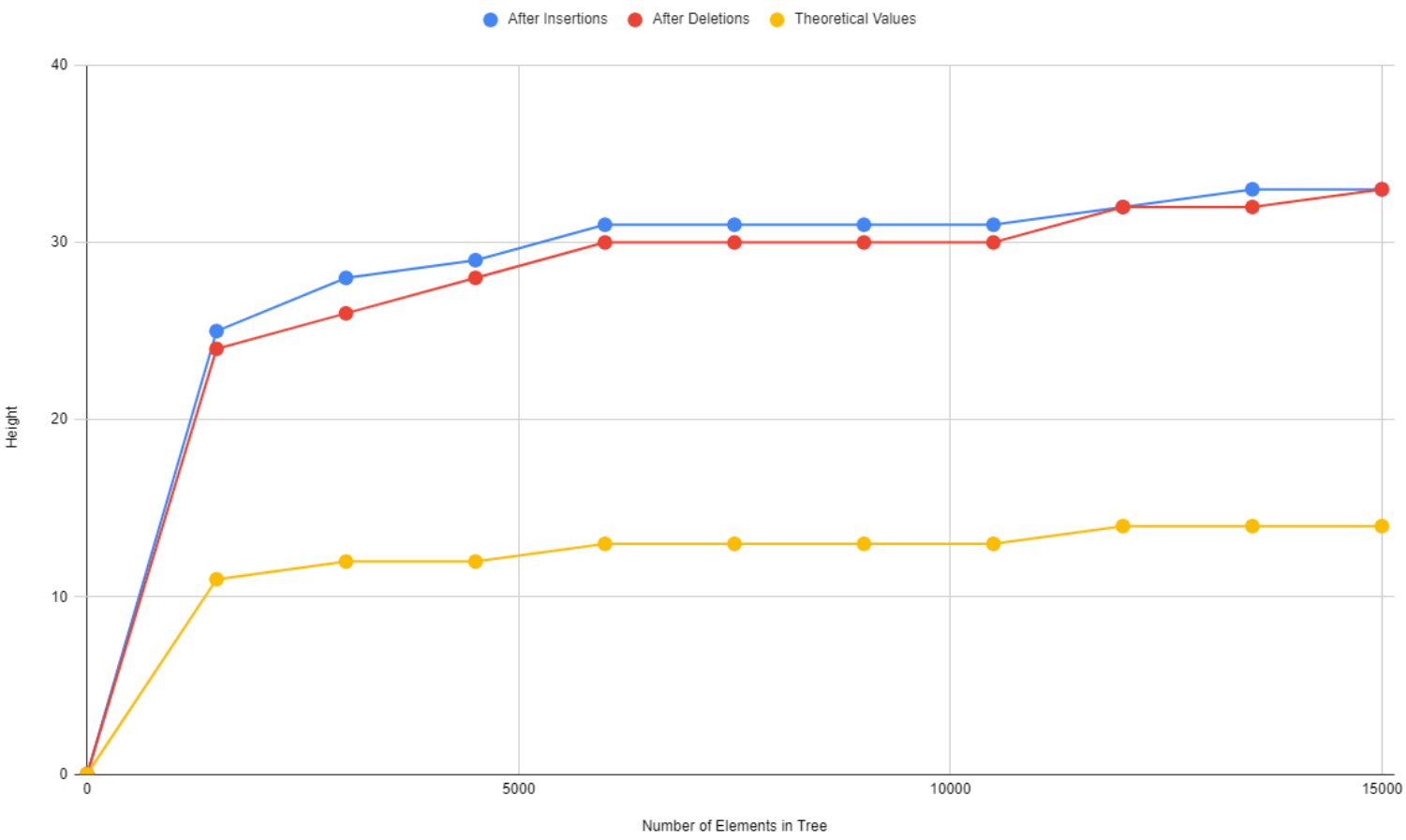
c)

Inorder form: **D, R, A, O S, N, G**

Tree:



Question 3:



Different Results:

Although theoretical values are clearly less than my obtained values, their growth rate is similar, which is log (n). The reason for this difference is random values are not perfectly put to the tree. Therefore, my tree was not quite balanced and the outputs become larger than the theoretical ones.

If Sorted Values Inserted:

The height of the tree would significantly increase. The height would be proportional to the number of elements, which in this case height would be 15000 when we insert 15000 items.