NAME:

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Final Exam

Data - Structures.

Q:1: Sort the given list using Insertion Sort.

56, 59, 45, 40, 43, 55.

Given:

N = 6

Steps = n - 1 = 5

Step # 1 Element = 59.

(56), (59), 45, 40, 43, 55.

56, 59, 45, 40, 43, 55

Step # 2 Element = 45.

56, (59), (45), 40, 43, 55

(56), (45), 59, 40, 43, 55.

45, 56, 59, 40, 43, 55.

Step # 3 Element = 40

45, 56, (59), (40), 43, 55

45, (56), (40), 59, 43, 55

(45), (40), 56, 59, 43, 55

40, 45, 56, 59, 43, 55

Step #4 Element = 43

40, 45, 56, 59, 43, 55

40, 45, 56, 43, 59, 55

40, 45, 43, 56, 59, 55

40, 43, 45, 56, 59, 55

40, 43, 45, 56, 59, 55

Step #5 Element = 55

40, 43, 45, 56, 59, 55

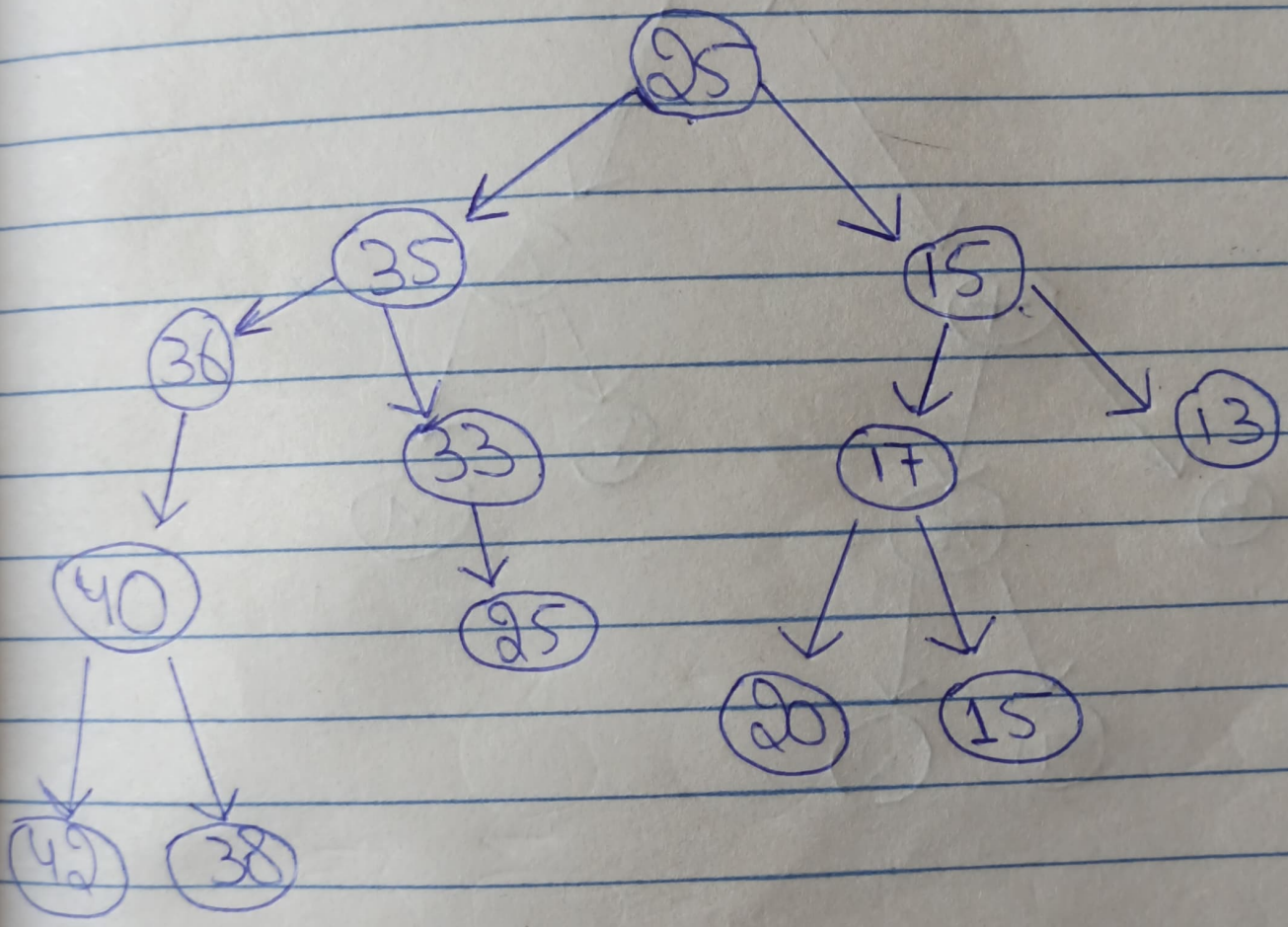
40, 43, 45, 56, 55, 59

40, 43, 45, 55, 56, 59

Hence, 40, 43, 45, 55, 56, 59 is the sorted list.

Q:2 Construct binary tree from given list of numbers and then verify the tree.
25, 15, 35, 17, 33, 36, 25, 13, 15, 40, 38, 42, 20.

Given:

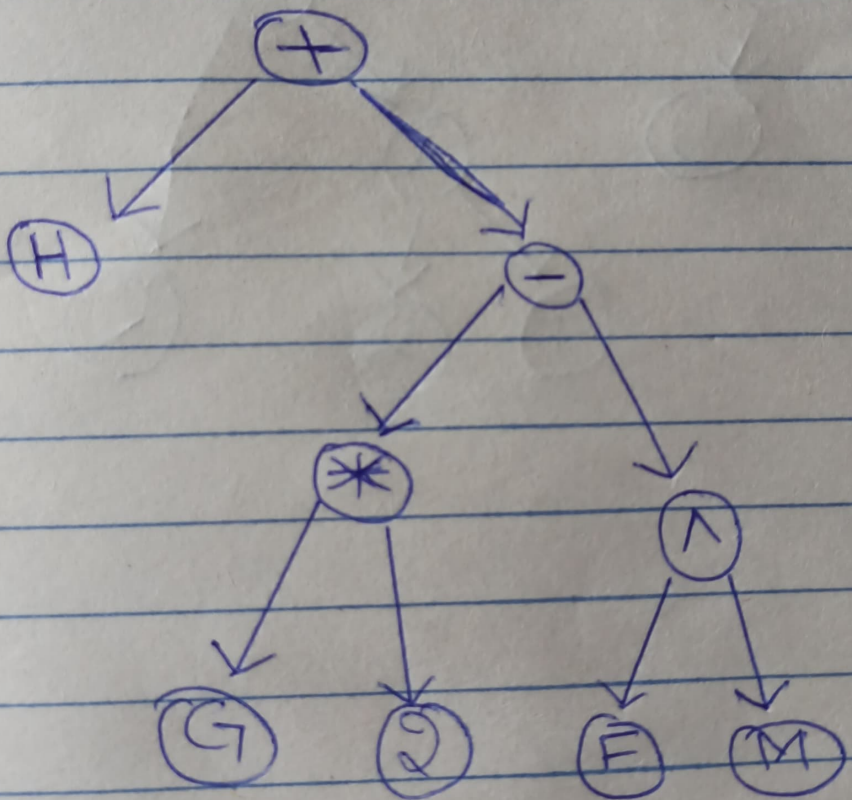


Verification using In-Order traversal:

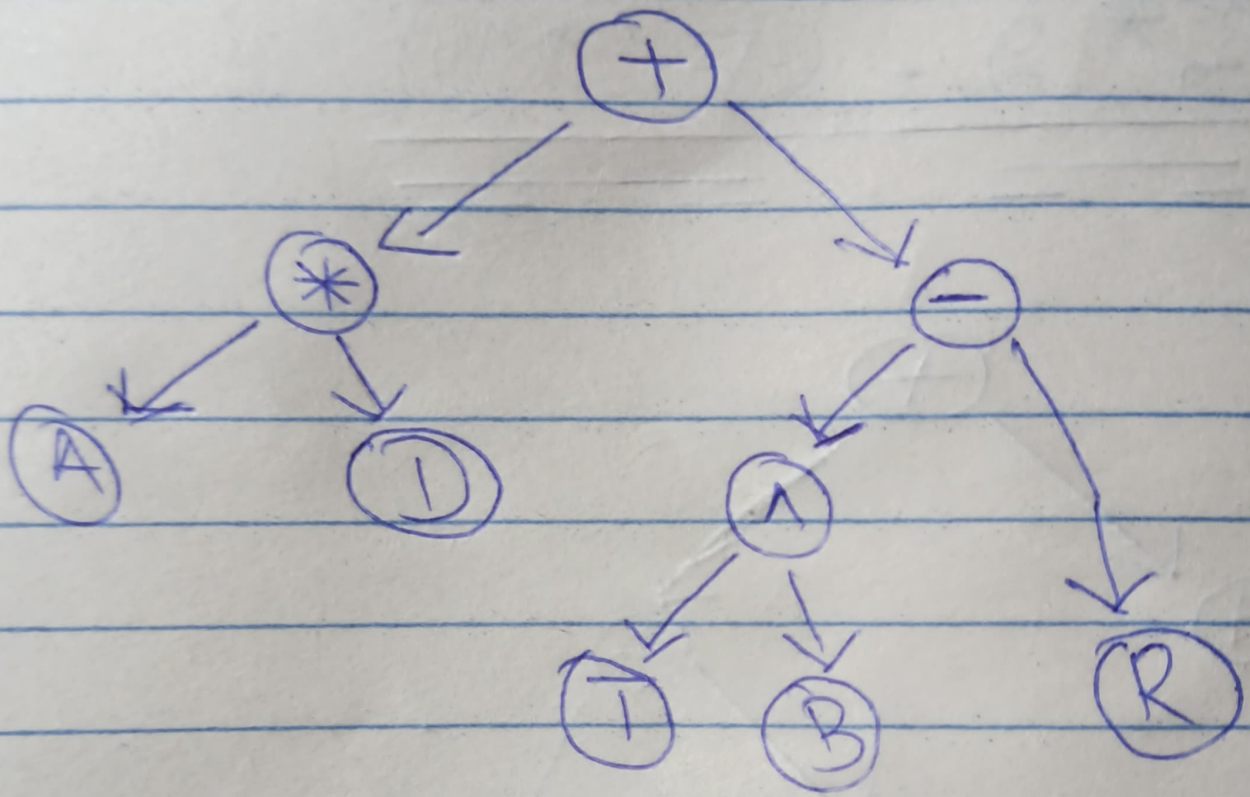
42, 40, 38, 36, 35, 33, 25, 20, 17, 15, 15, 13

Q3 Construct Binary Trees from given Mathematical Expressions.

i: H+G*2-(F^M).



ؤ: A * D + T ^ B - R



Q4:

Part : 1

Given:

H+G*2-(F^M)

In-Order Traversal:

H, +, G, *, 2, −, F, ^, M

Pre-Order Traversal:

+, H, −, *, G, 2, ^, F, M

Post-Order Traversal:

H, G, 2, *, F, M, ^, −, +

Q: 4.
Part : 2.

Given: A * D + T ^ B - R.

In-Order Traversal:

A, *, D, +, T, ^, B, -, R.

Pre-order Traversal:

+, *, A, D, -, ^, T, B, R.

Post-Order Traversal:

~~(A, D, *, T, B, ^, R)~~

A, D, *, T, B, ^, R, -, +.

Q#5. Fill in the blanks.

i: NODE
ii: NDGE
iii: FIRST, SUBSET
iv: SAME FAMILY
v: OLDER
vi: YOUNGER
vii: NON-LINEAR
viii: FOREST.