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SUBJECT: DATA STRUCTURES AND ALG-

SEMESTER: 3<sup>RD</sup>

**PROGRAMME:** BS (SOFTWARE ENGINEERING)

Date: .....

Q1) Sort the given list using insertion sort?

56, 59, 45, 40, 43, 55

$$n = 6$$

$$\text{Steps} = n - 1 = 6 - 1 = 5$$

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, 45

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

45, 56, 59, 40, 43, 55

Step #3 Element = 40



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45, 56, (39), (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

Step # 5 Element 55

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

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

40, 43, 45, 55, 56, 59

APM

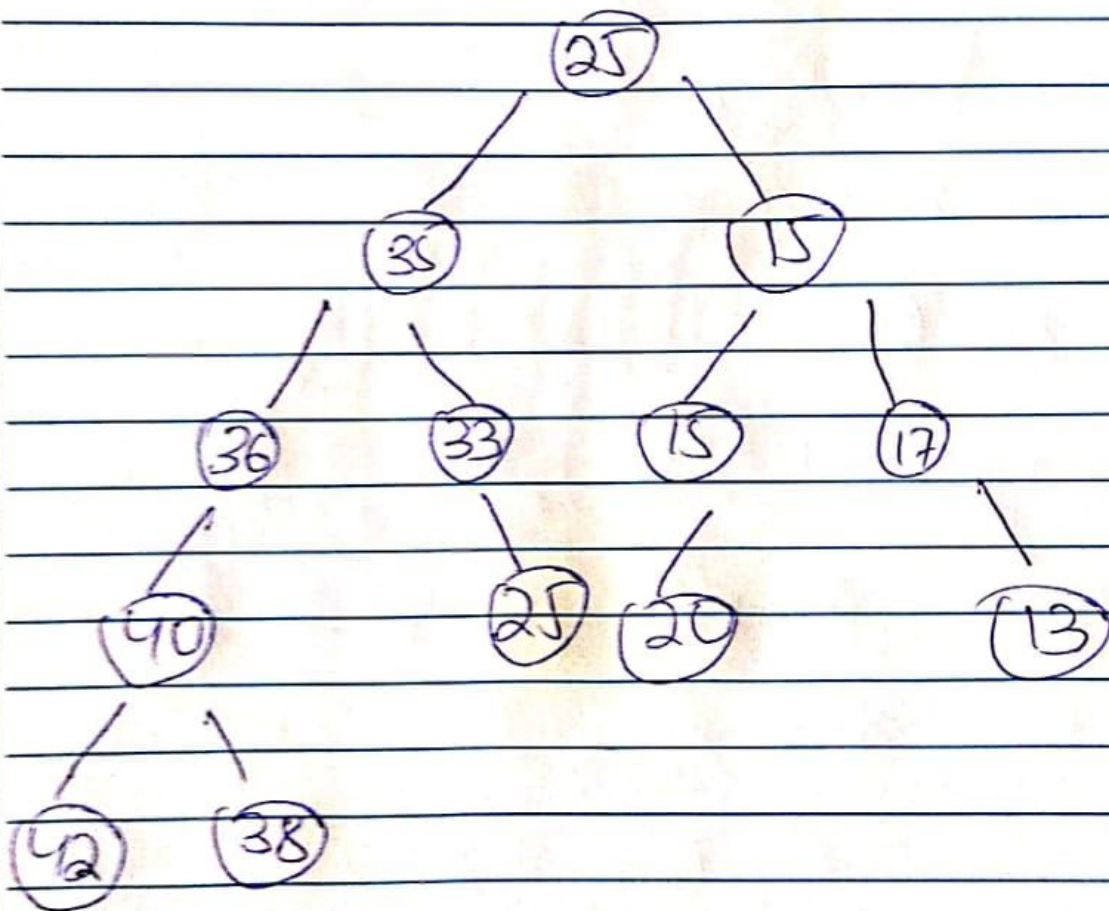


Date: \_\_\_\_\_

Q2) Construct Binary tree from given List ----?

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

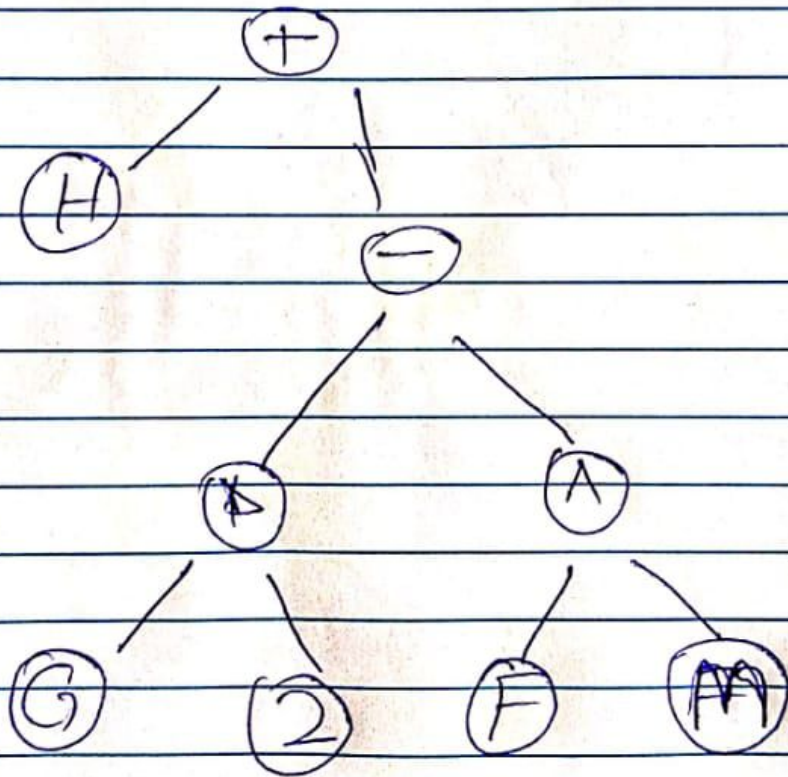
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Q3) Construct Binary Trees from given Mathematically Expressions?

i)  $H + G * 2 - (F * M)$

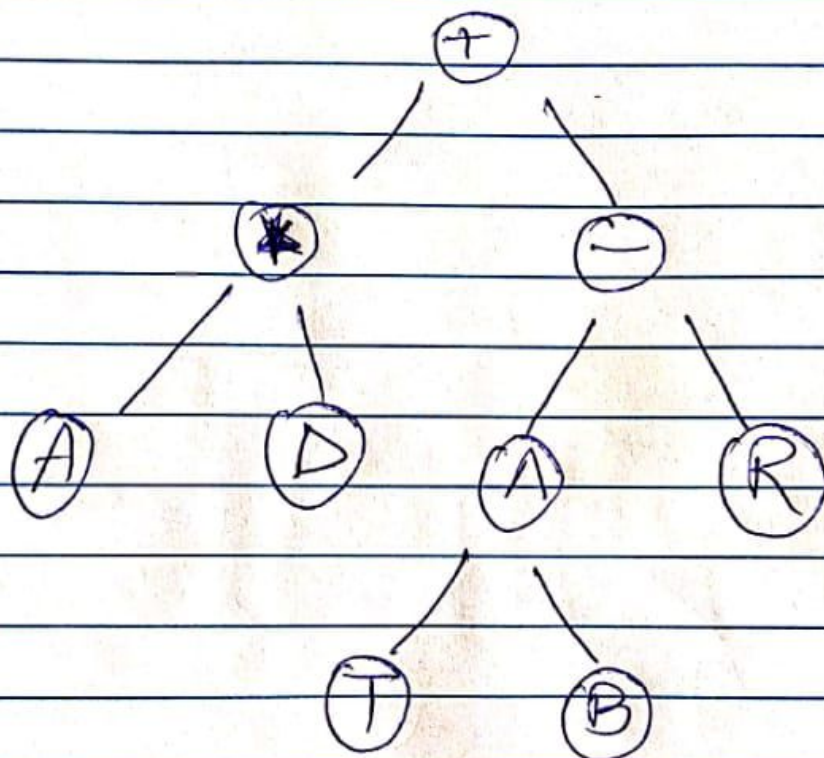




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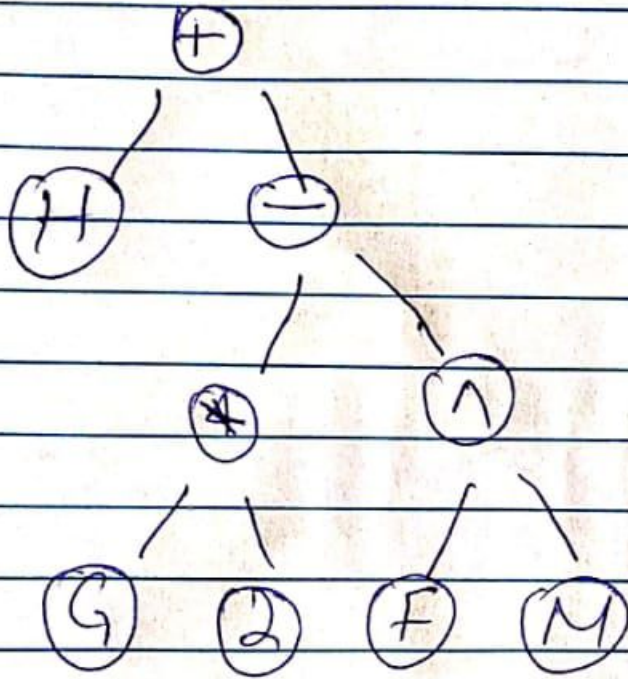
ii)

$$A * D + T \wedge B - R$$



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Q4) Apply all the three Binary Tree Traversal technique ...?



First condition:

H, +, G, \*, 2, F, ^, M, -

Second condition:

+, H, -, \*, G, 2, ^, F, M

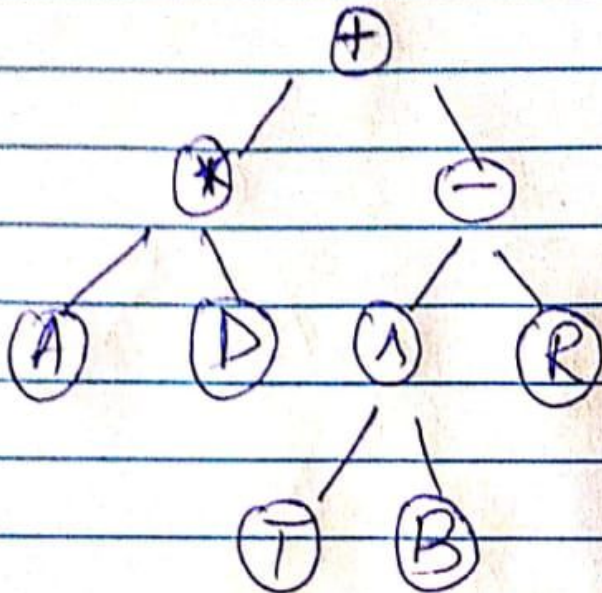
Third condition:

H, G, 2, \*, F, M, ^, -, +



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ii)  $A * D + T \wedge B - R$



First Condition:

$A, *, D, +, T, \wedge, B, -, R$

Second Condition:

$+, *, A, D, -, \wedge, T, B, R$

Third Condition:

$A, D, *, T, B, \wedge, R, -, +$



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Q5 Fill in The Blank:

1) Elements of a Tree are called Node

2) The graphical line drawn between nodes of a Tree is called EDGE

3) Level number of a Root is First Subset.

4) All the nodes with same level number belong to Same Family.

5) The left most child node is older node.

6) The right most child node is younger node

7) A Tree is a non-linear Data structure

8) An ordered set of a ordered Trees is called a Forest