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ID NO : 15391

Program : BS (C.S)

Assignment : Data Structure

Teacher Name : H Sir - Adil

Date : 24 / Jun / 2020



Q.1(a) Sort the given list using Insertion sort

56, 59, 45, 40, 43, 55

Ans

Total numbers are 6.

total number of steps

As we have

$$\text{Steps} = \text{total number} - 1 = 6 - 1 = 5$$

Step # 1 is

Element = 59

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

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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

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40, 45, (56), (43), 59, 55 ⁽³⁾

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.

x ~~~~~ x ~~~~~ x

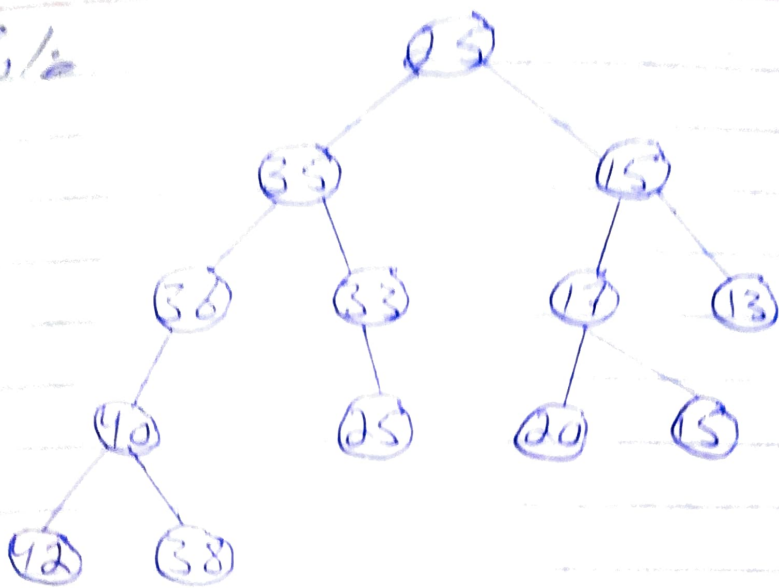
Q.2: Construct binary trees from given list of numbers & then verify the trees.

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

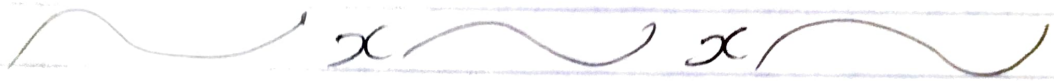
P.T.O

Solⁿ



Verification, by using In-order traversal

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



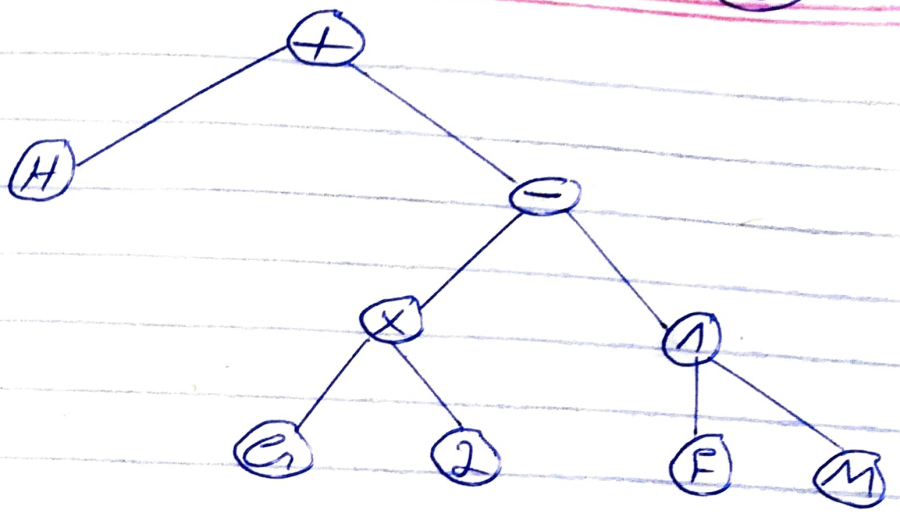
Q.3: Construct Binary trees from given MF.

i) $H + C \times 2 - (F \wedge M)$

Solⁿ

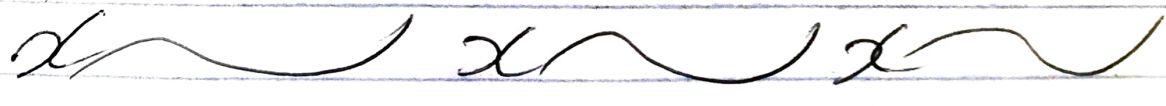
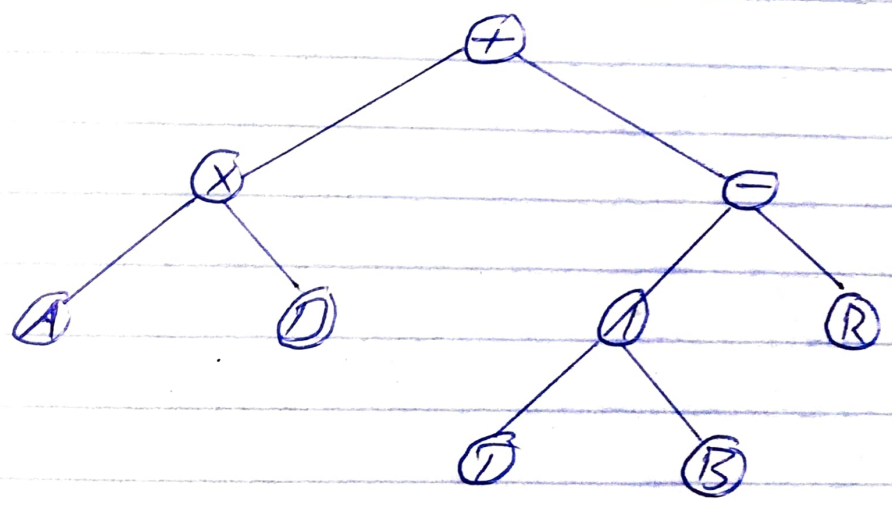
P. T. 0

Solⁿ



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

Solⁿ



Q.4: Apply all the three Binary Tree traversed techniques on each of the tree constructed in Q.3.

P.T.O

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Ans: ① Part (i)

(a) In-order traversal.

H, +, C, x, 2, -, F, A, M

(b) Pre-order traversal.

+, H, -, x, C, 2, A, F, M.

(c) Post-order traversal.

H, C, 2, x, F, M, A, -, +.

= part (ii)

(a) In-order traversal.

A, x, D, +, T, A, B, -, R.

(b) Pre-order traversal.

+, x, A, D, -, A, T, B, R.

(c) Post-order traversal.

A, D, x, T, B, A, R, -, +.

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Q.5

Fill in the blanks

- i) Node
- ii) Edge
- iii) Zero
- iv) Same Family
- v) older
- vi) non-linear
- vii) Forest
- viii) Younger

x ~~~~~ x ~~~~~ x ~~~~~

End