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ID NO # 13290

SUBJECT # DATA STRUCTURE

DEPARTMENT # BEE

SEMESTER # 8TH

TEACHER NAME

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QUESTION NO 1

PART # (A)

Sort the given list using Insertion sort.

56, 59, 45, 40, 43, 55

Solution :-

We know that

Steps

$n = 6$

$n - 1$

$6 - 1$

$n = 5$

Step # 1

Element = 59

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

Step #5 Element = 55

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

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

40, 43, 45, 55, 56, 59

Ans

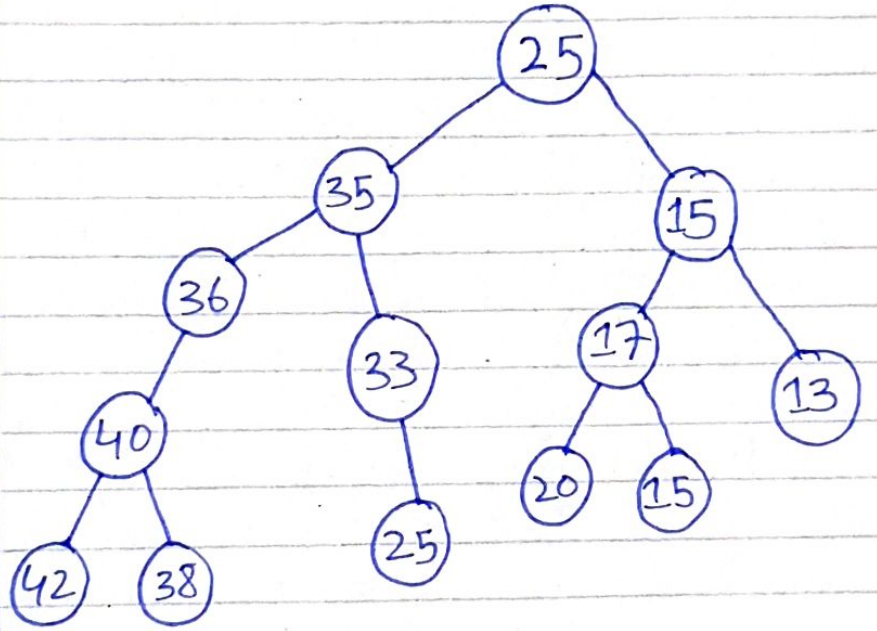
QUESTION NO 2

Construct binary Trees From give list of numbers and then verify the tree.

25 , 15 , 35 , 17 , 33 , 36 , 25

13 , 15 , 40 , 38 , 42, 20

Solution :-



Verify the tree,

42 , 40 , 38 , 36 , 35 , 33

25 , 25 , 20 , 17 , 15 , 15

13

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 = 5

40 , 43 , 45 , 56 , 59 , 55

40 , 43 , 45 , 56 , 55 , 59

40 , 43 , 45 , 55 , 59

Ans

QUESTION NO # 3

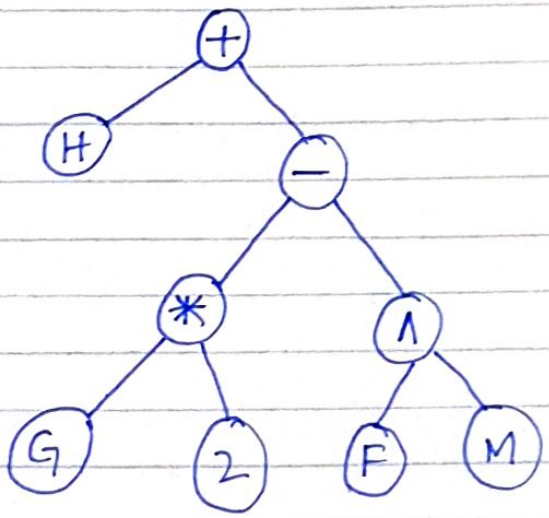
Construct Binary Trees from given Mathematical Expressions:

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

ii) A * D + T ^ B - R

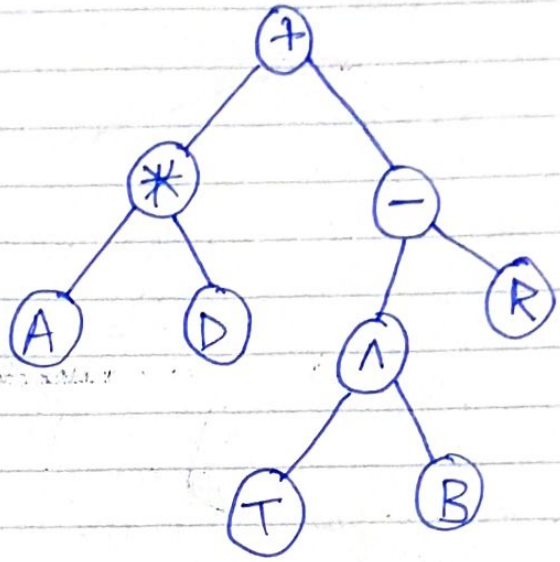
i) H+G * 2-(F^M)

Solution :-



2) A * D + T ^ B - R

Solution:-



QUESTION NO # 4

Apply all the trees Binary tree Reversal Techniques on each of the tree constructed in Q # 3.

Solution :-

i) In - order - Traversal

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

ii) Pre - order - Traversal

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

iii) Post-order-Traversal:

H, G, 2, *, F, M, ^, −, +

2)

i) In-order-Traversal:

A, *, D, +, T, ^, B, −, R

ii) Pre-order-Traversal:

+, *, A, D, −, ^, T, B, R

iii) Post-order-Traversal:

A, D, *, T, B, ^, R, −, +

Ans

QUESTION NO 5

Fill in the blanks

1) Elements of a trees are called nodes.

2) The graphical line drawn between nodes of a tree is called edge.

3) Level number of a root is 0.

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

5) The left-most-child is oldest brother node.

6) The right most-child is Youngest brother node.

7) A Tree is a non-linear Data structur.

8) An ordered set of ordered Tree is called a Forest.