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Subject :: Data-Structure

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Q 1

Sort the given list using  
in section 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

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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

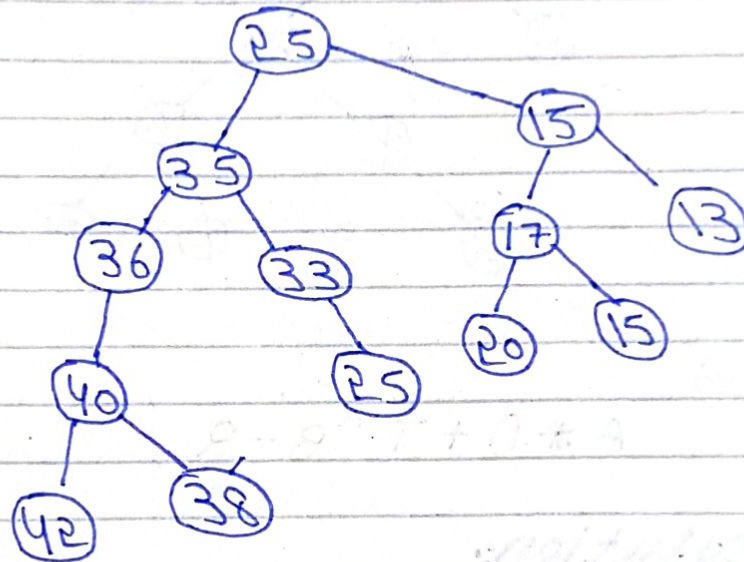
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Q 2

Construct binary trees  
from given 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

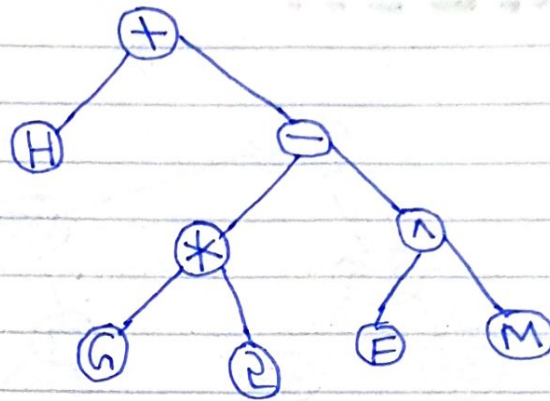
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Q3

Construct binary trees from given mathematical expression.

1)  $H + G * 2 - (F \wedge M)$

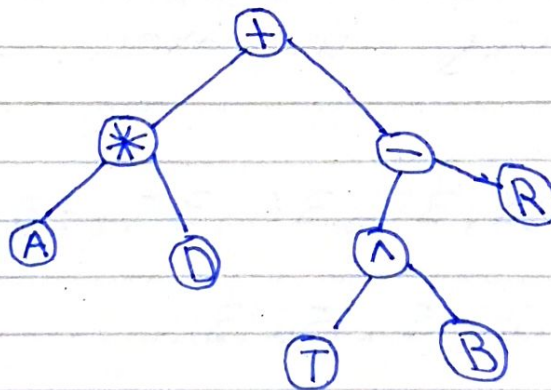
Solution:



2)

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

Solution:



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Q 4 Apply all the trees Binary tree reversal techniques on each of the tree constructed in Q #3

Solution: 1

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 , - , + A8 .

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Q5 Fill in the blanks...

- 1) Element of a tree / 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 structure
- ⑧ An ordered set of ordered tree is called a Forest.