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Paper Data structure

Submitted to Sir. ADIL

Q1 Sort the given list using Insertion Sort.

56, 59, 45, 40, 43, 55

n = 6

steps = n-1 = 6-1 = 5

steps #1 Element = 45

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

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

45, 56, 59, 40, 43, 55

step#2 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# 3 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 # 4 Element = 55

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

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

40, 43, 45, 55, 56, 59

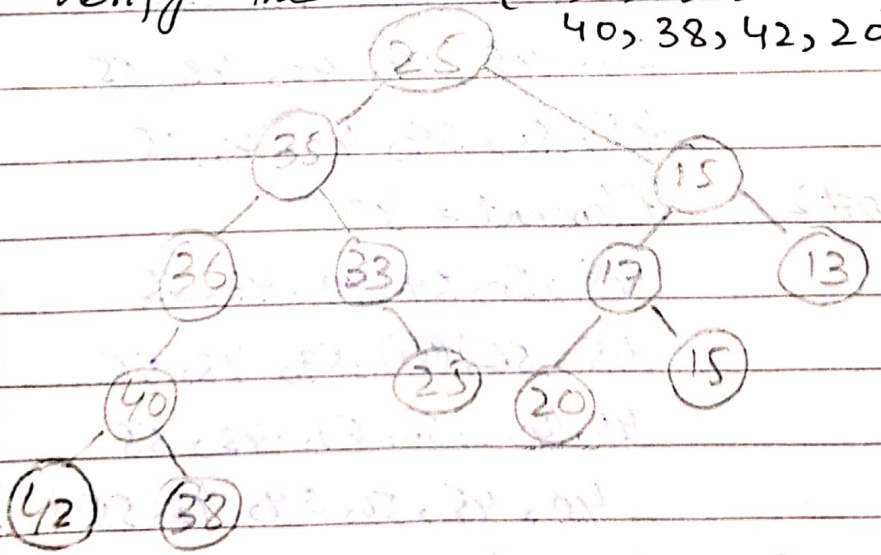
step# 5 element = 59

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

40, 43, 45, 55, 56, 59

list is sorted.

Q2 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].



verify the tree

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

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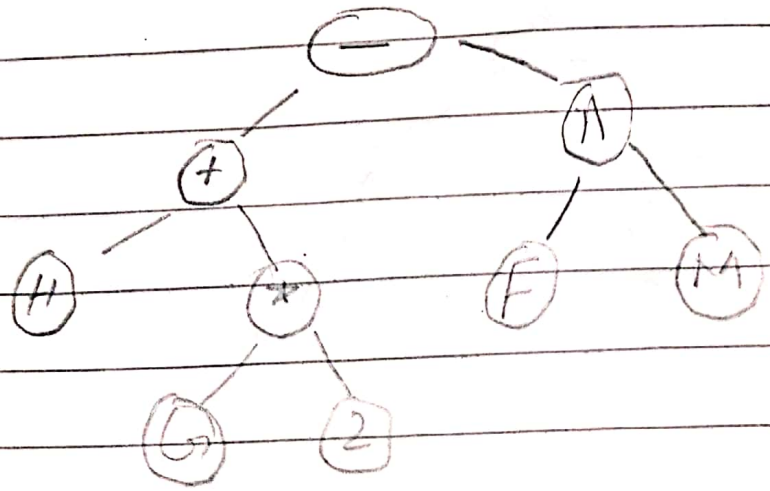
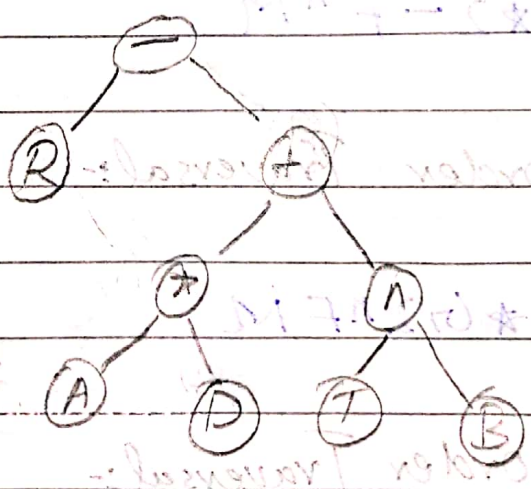
Q3 Construct Binary Trees from given Mathematical Expression:

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



(ii) A*D+T^B-R



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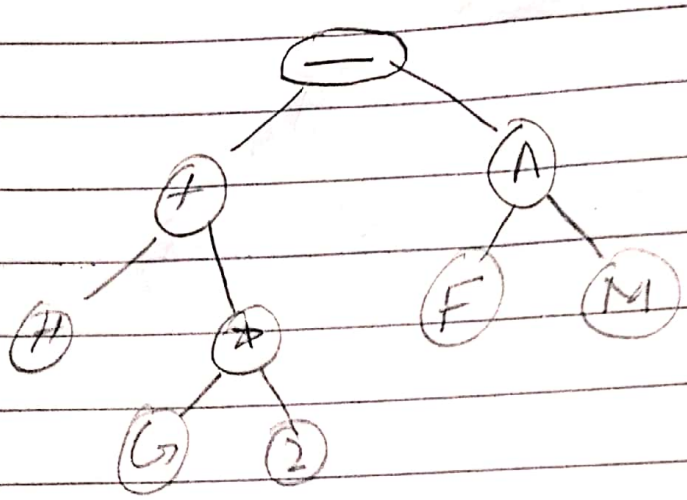
Q4 Apply the tree: Binary Traversal Techniques on each of the tree. Constructed in Q#3.

(i)



1) In order Traversal :-

H + G * 2 − F ^ M

2) Pre order Traversal :-

− + H * G 2 ^ F M

3) Post order Traversal :-

G 2 * H + F M ^ −

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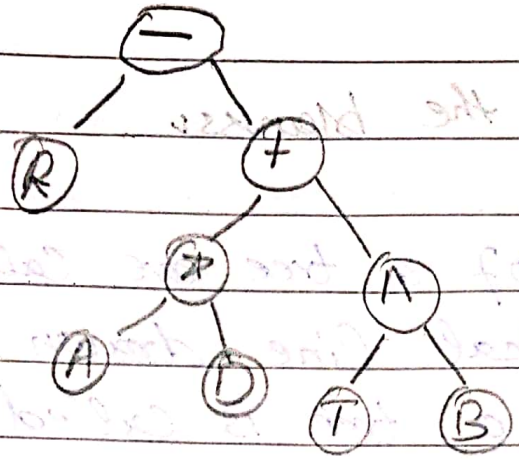
(91)



In order terversal:-

R - A * D + T ^ B

Pre order Terversal:-

— R + * ^ A D T B

Post order Traversal:-

R A D * T B ^ + —

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Q#3 Fill in the blanks:

1) Element of a tree are called Nodes
2) The graphical line drawn between Nodes of a tree is called Branches
3) Level Number of a root is 1
4) All the nodes with same level Number belong to Sibling nodes.
5) The left-Most child Node is oldest/left Node.
6) The Right-Most child Node is Youngest/Right Sibling Node
7) A Tree is a Non-linear Data structure.
8) An ordered set of ordered Trees is called a Plan Tree.