

NAME :: IBKAR Aji

ID No :: 13008

Department :: Electrical

Subject :: Data-Structure

Teacher :: Prof - Sri Adil

Semester :: 8th

Date :: 24-06-2020

ID = 13008

Page (1)

ID = 13008

(Q1) sort the given list using insertion sort.

56, 59, 45, 40, 43, 55

SOLUTION:

We know that

steps#1) $n = 6$
 $n - 1$
 $6 - 1$
 $n = 5$

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

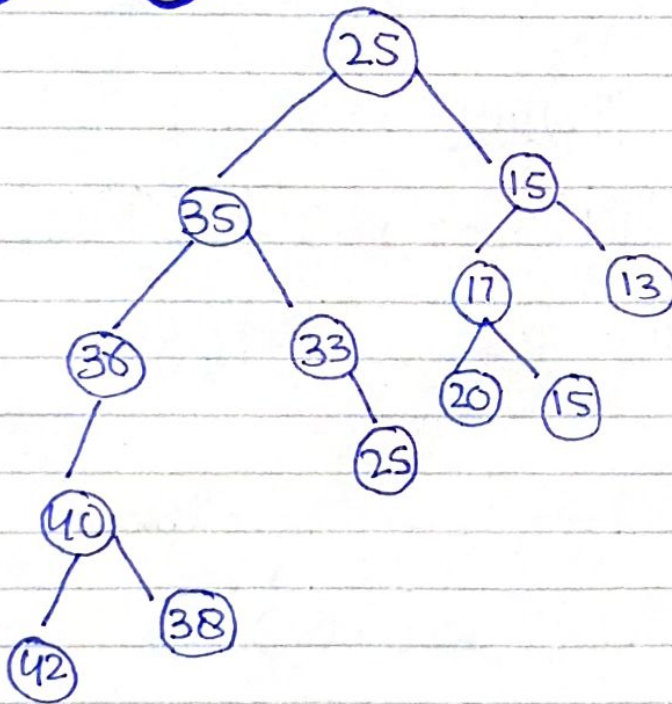
40, 43, 45, 55, 56, 59 Ans.



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

SOLUTION



Verify the tree:

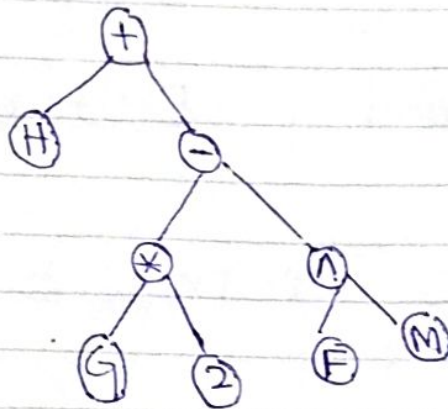
42, 40, 38, 36, 35, 33, 25, 25

20, 17, 15, 15, 13

Q3) Construct binary Trees from given mathematical expression.

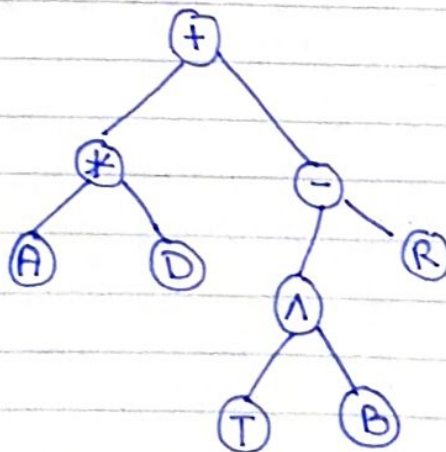
1) $H + G * 2 - (F * M)$

Solution :-



2) $A * D + T * B - R$

Solution :-



Q5) 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 structure.
- 8) An ordered set of ordered tree is called a Forest.

Q4) 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, -, + Ans.