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Problem Solving
 Mathematics
 Iterations & Instructions
 Loops
 Arrays \rightarrow PS
 \rightarrow IF
 \rightarrow Subarray
 \rightarrow Kadane's
 2D Array

Recursion
 Double Recursion
 Linked List
 \rightarrow SLL
 \rightarrow DLL
 \rightarrow CLL \rightarrow SCLL
 \rightarrow DCLL
 Stack \rightarrow Array
 \rightarrow LL

Queue
 Circular Queue
 Dequeue
 Input Restricted
 Output Restricted
 Searching \rightarrow LS
 \rightarrow BS
 Sorting
 \rightarrow BS
 \rightarrow MS
 \rightarrow QS
 \rightarrow IS
 \rightarrow SS

① 8 task = PS
 ② Tree ② Graph



Tree



roots

Real Life :

Non Linear

Linear Structure

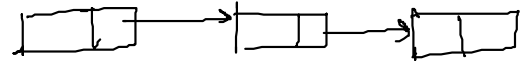
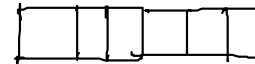


PG

- Tree (Hierarchical)

- Graph

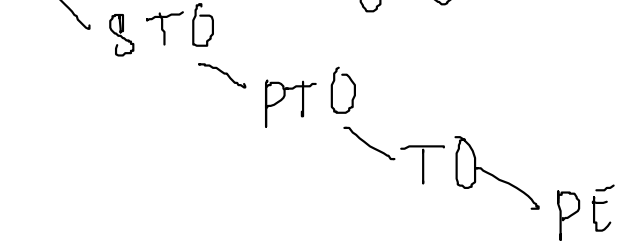
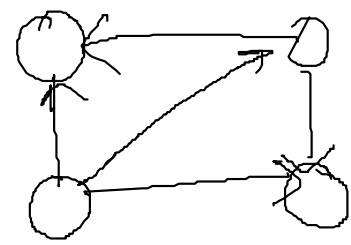
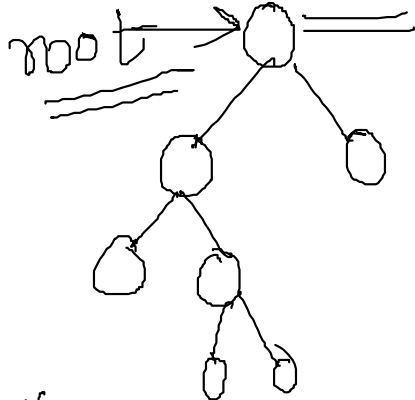
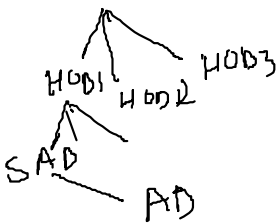
Tree

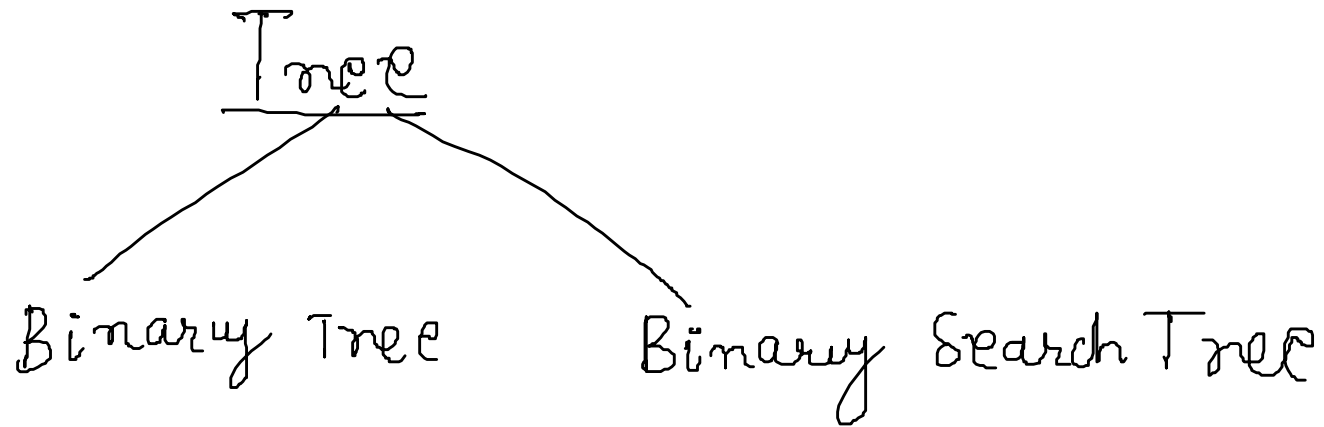


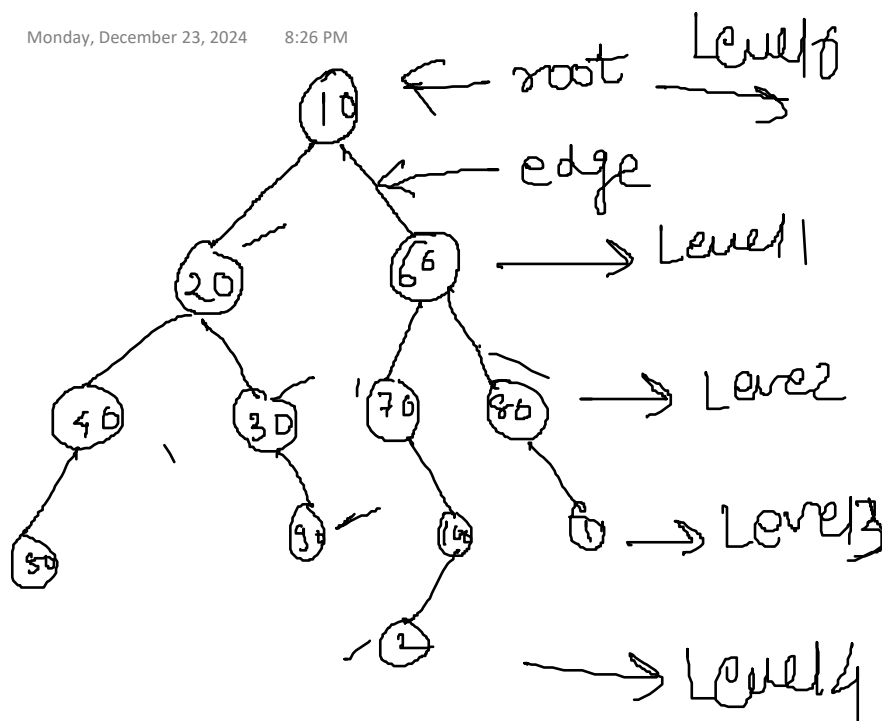
Linear DS

Graph

EP1 ED1 EP3







- ① Node
- ② root
- ③ edge
- ④ child node
- ⑤ sibling
- ⑥ ancestor
- ⑦ pendant
- ⑧ leaf node
- ⑨ height = 4
- ⑩ depth

Binary Tree

It's every node can have at most 2 children.

0 ✓

1 ✓

2 ✓

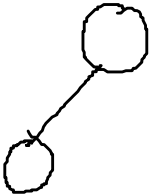
3 ✗

①



✓

②



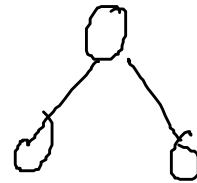
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③



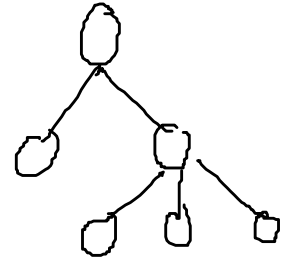
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④



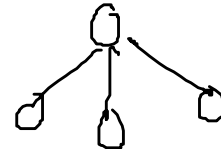
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⑤

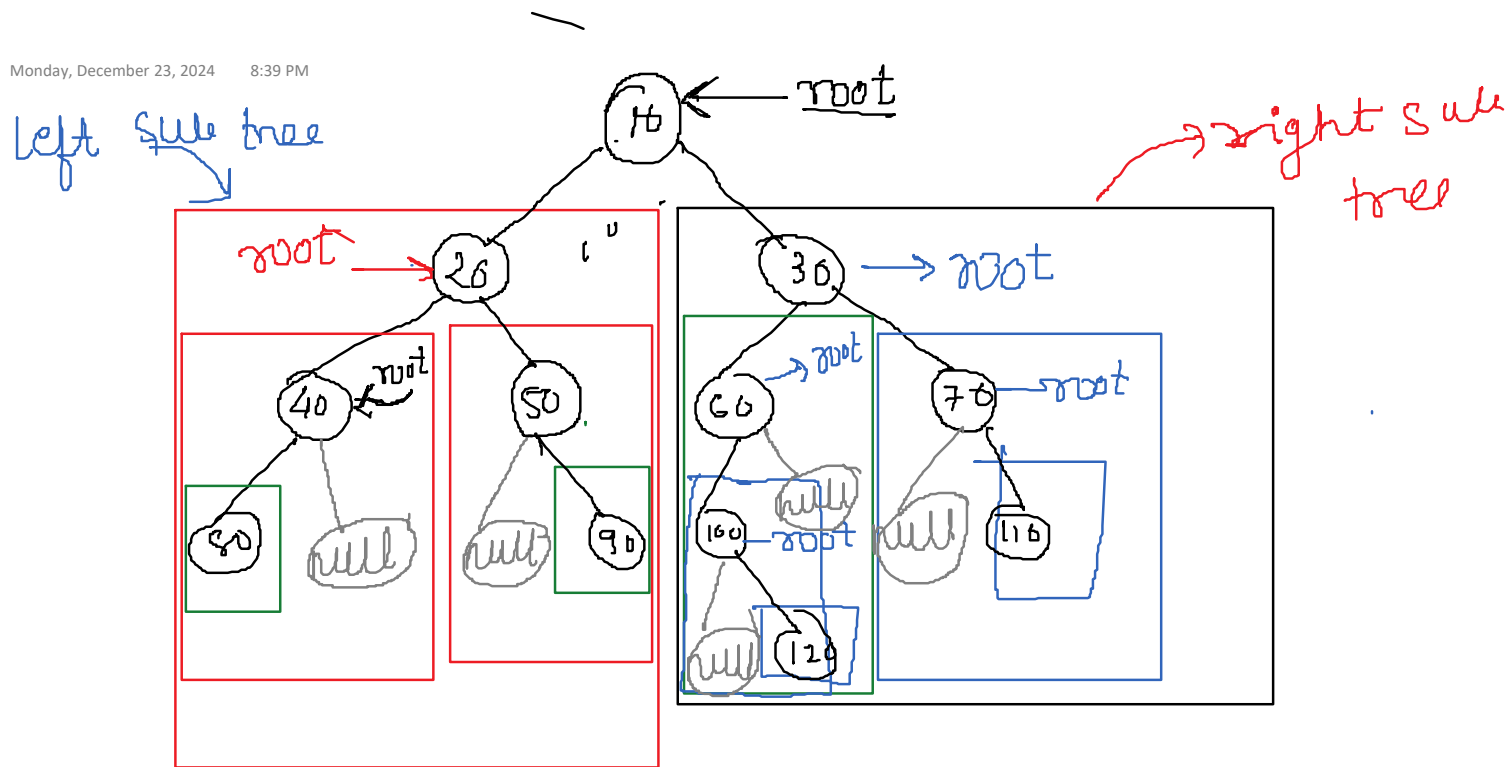


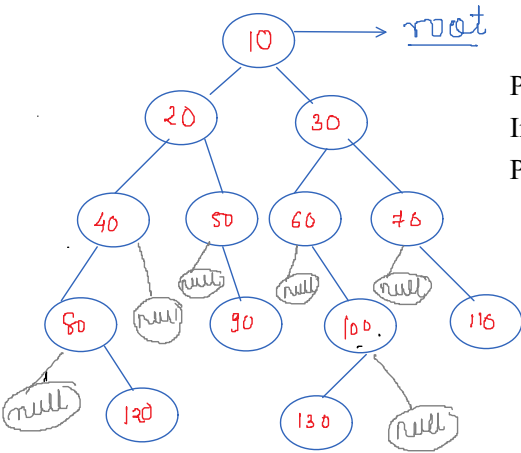
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⑥

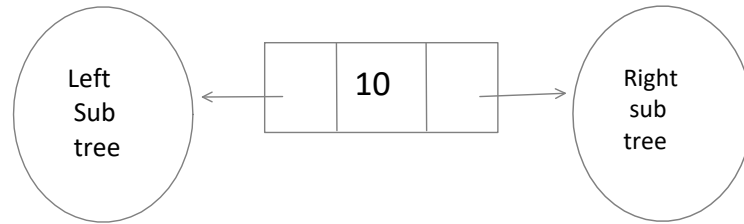


✗





Preorder - DLR 10 20 40 80 120 50 90 30 60 100 130 70 110
 Inorder - LDR 80 120 40 20 50 90 10 60 130 100 30 70 110
 Postorder - LRD 120 80 40 90 50 20 130 100 60 110 70 30 10



① Node
 prev
 next
 data

② BT
 built BT
 preorder
 inorder
 postorder