

Sort - Array using Recursion
←————→

Indry Recursion

- ① Infix
- ② postfix
- ③ Max

8 skip

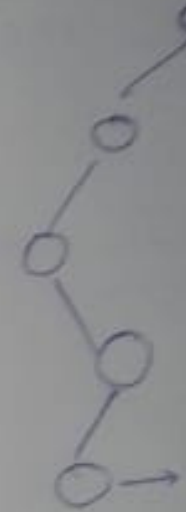
BST

←————→

Types are hierarchical data
structure

Eg= Computer folder and folders
in mobile Bann

⇒ in hierarchical
binary tree



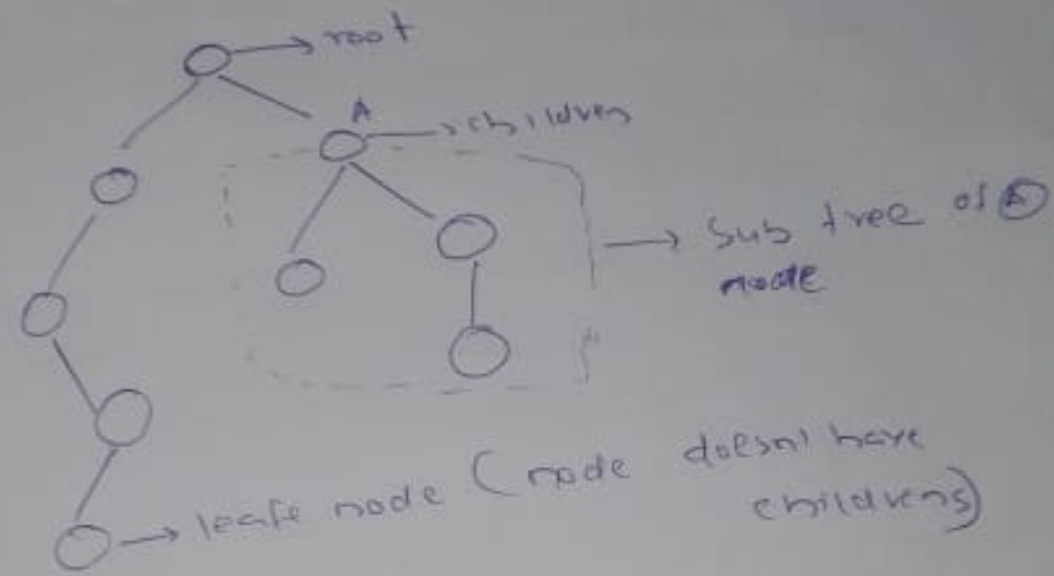
Arrested

Full BT

either

X

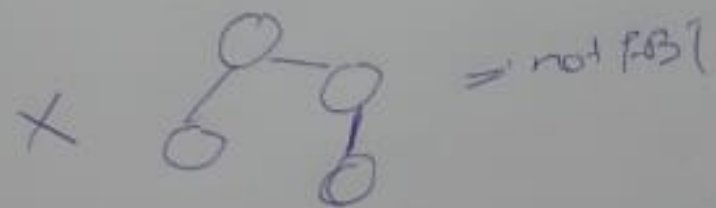
⇒ in hierarchy max 2 guys so it called binary trees



Arceste ⇒ node's parents

Full BT

either has 0 or 2 children



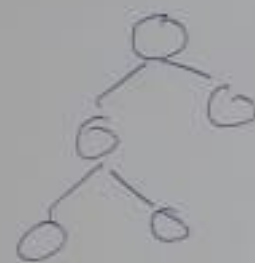
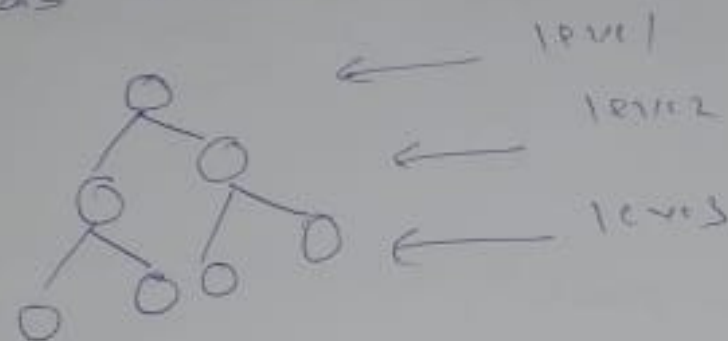
Complete Binary Tree

⇒ all level are
the last leaf

completely filled except

⇒ last level has all nodes is left
as possible

Eg ⇒



have not complete
but last node as much as
left

But



not as second level

filled except

nodes in left

12

13

as much as



\log_2 of search space

PERFECT BT

All leaf nodes are same level



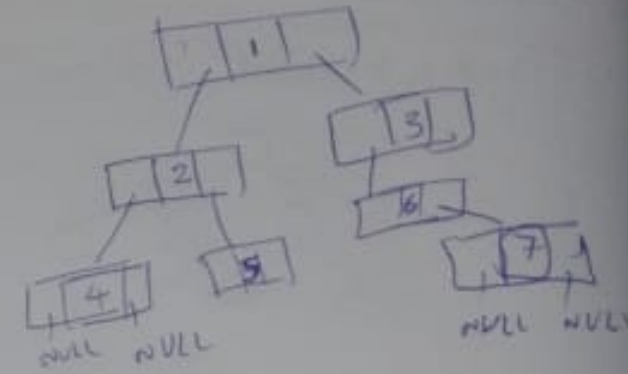
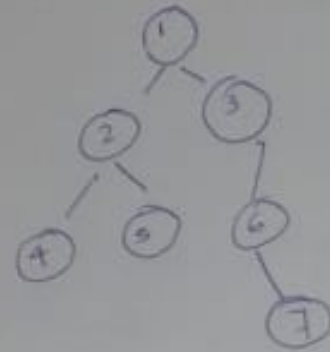
Balanced BT

Degenerate tree



$n=5$

increased by:



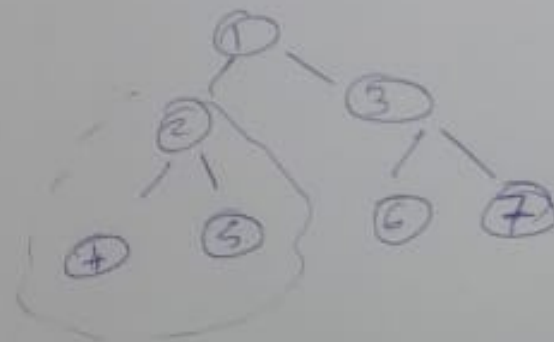
Traversal Technique

- ① DFS - Depth First Search
- ② Breadth First Search (BFS)

① DFS = 3 types

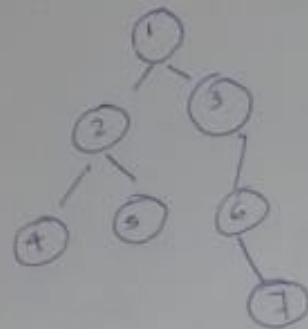
① IN ORDER TRAVERSAL (Left Root Right)

~~② In above tree~~ 4 2 5, 1



first extreme
left ->
right

4 2 5, 1 6 3, 7



Traversal Technique

- ① DFS - Depth First Search
- ② Breadth First Search (BFS)

① DFS = 3 steps

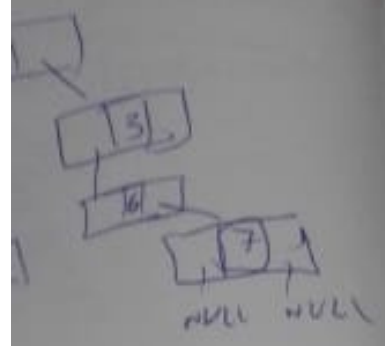
① IN ORDER TRAVERSAL (Left Root Right)

~~6 2 5, 1~~ 4 2 5, 1



first extreme
left ->
right

4 2 5, 1 6, 3, 7

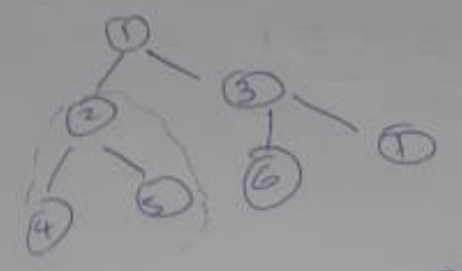


BFS)

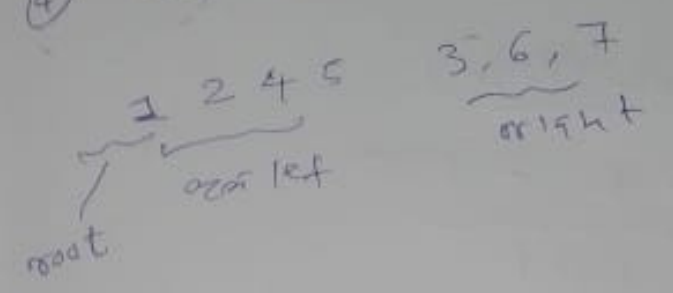
Left Root Right

Extreme
(-) do
-> go

Preorder TRAVERSE Root Left Right



First root is visited
then go to extreme left



POST ORDER TRAVERSE Left Right Root

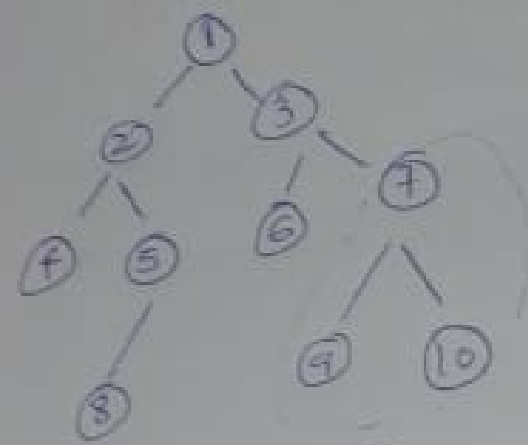
Ans) Left : 4
then 5 : 5
root : 2

} left done

6
7
3

} Right done

1 } Root done



INORDER (Left Root Right)

2 2 8 5 1 6 3 9 7 10
 ~~~~~  
 left    root    Right

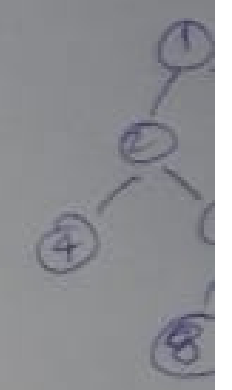
Preorder (Root Left Right)

1 2 4 5 8    3 6 7 9 10  
 ~~~~~  
 root left Right

POST ORDER Trav (Left Right Root)

4 8 5 2 6 9 10 7 3 1
 ~~~~~  
 left    right    root

② BFS



⇒



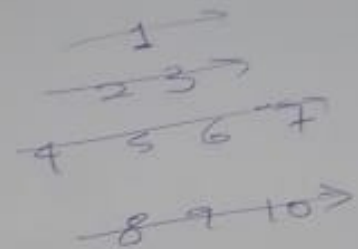
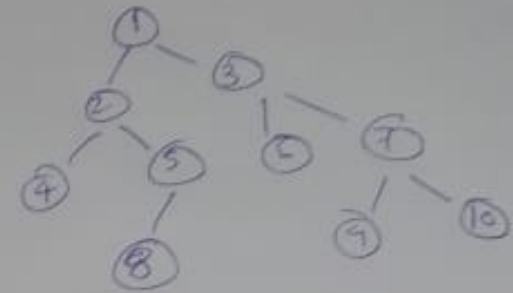
at Root)

51 639710  
~  
root Right.

Right Root)

3  
~  
root

② BFS breathly first Search



⇒ 1 2 3 4 5 6 7 8 9 10  
level wise traverse

⇒