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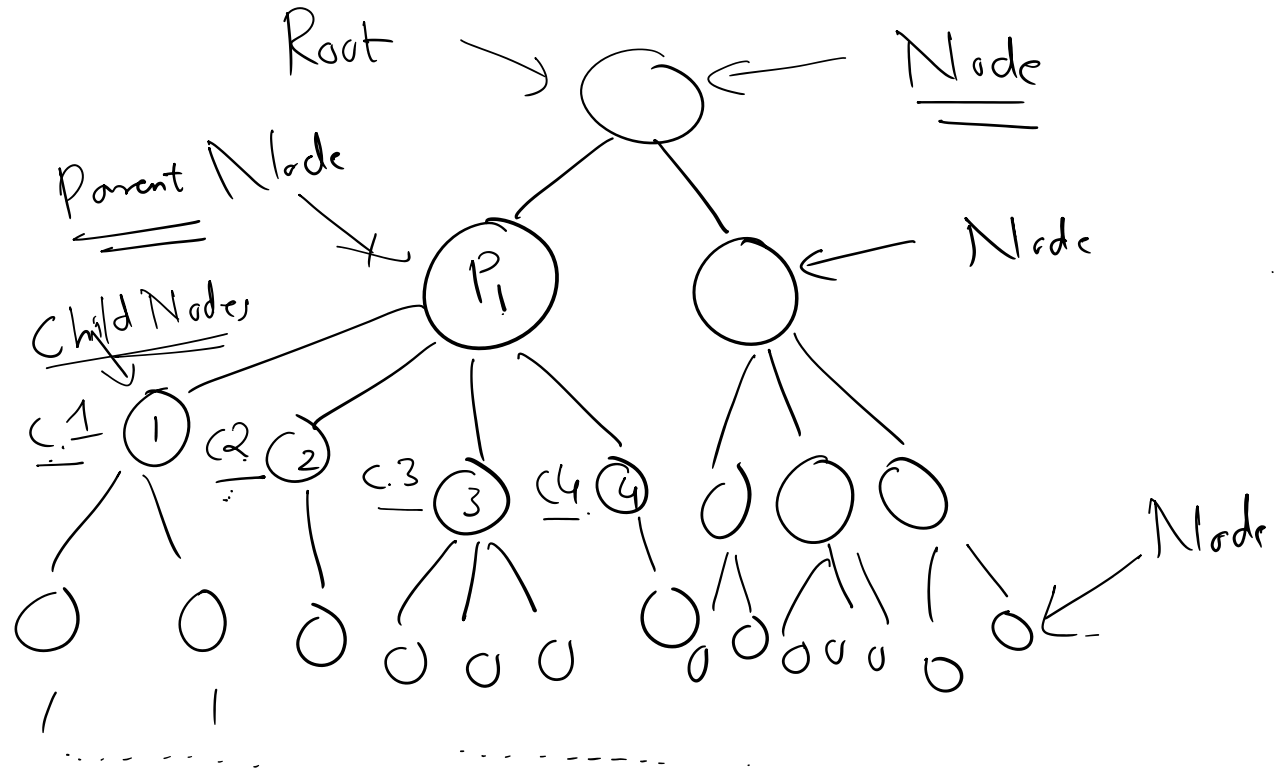
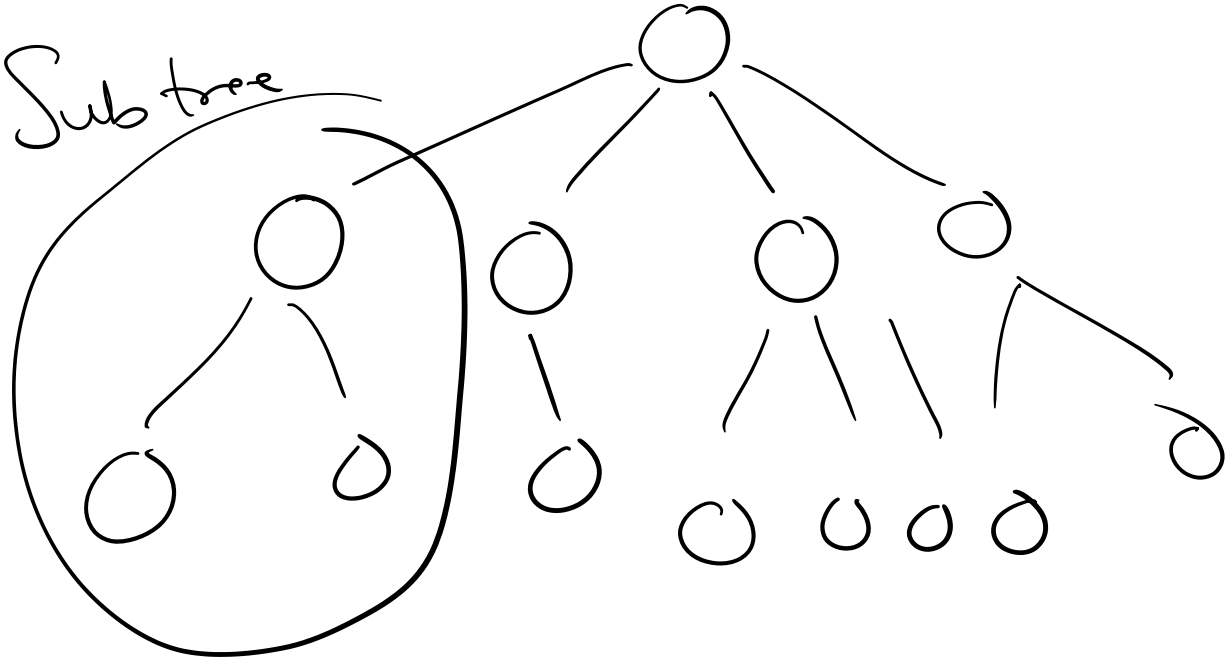
Trees :-

Nodes
Root
Parent
Child
Leaf
Siblings
Sub tree



Root :- A node that do not have any above it.

Leaf Node :- Is a node that does not have any child.


Sub tree

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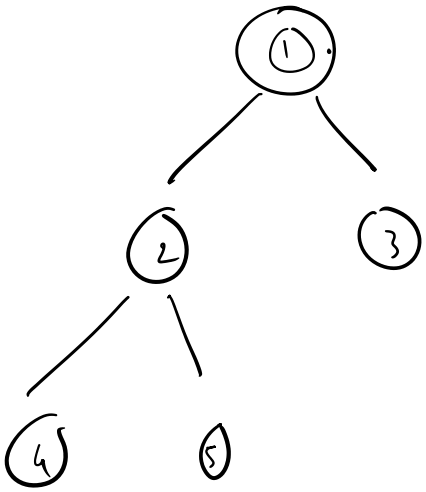
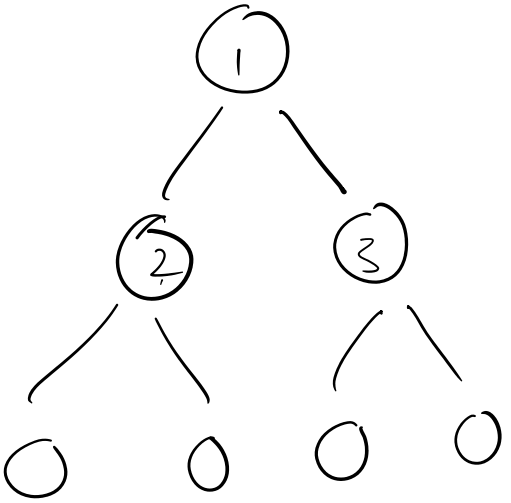
Binary Tree :-



Perfect Binary Tree



leaf → ○ ○ ○ ○

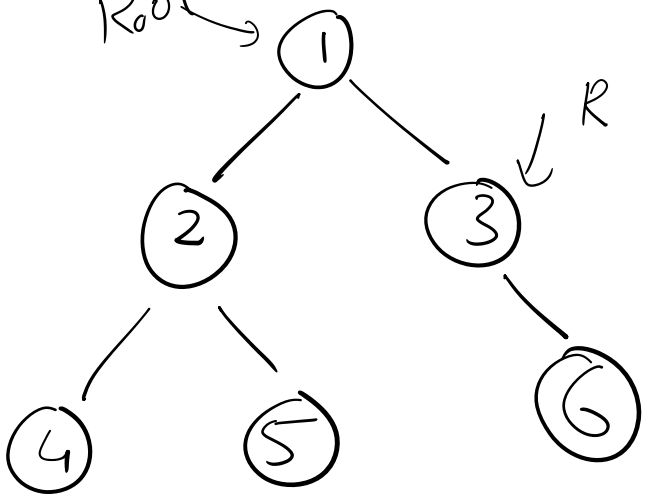
leaf should be at same level.

Traversal :- It is a process of visiting each & every node of a tree in a specific pre-defined order.

* Based on the specific pre defined order.
3 types of traversals.

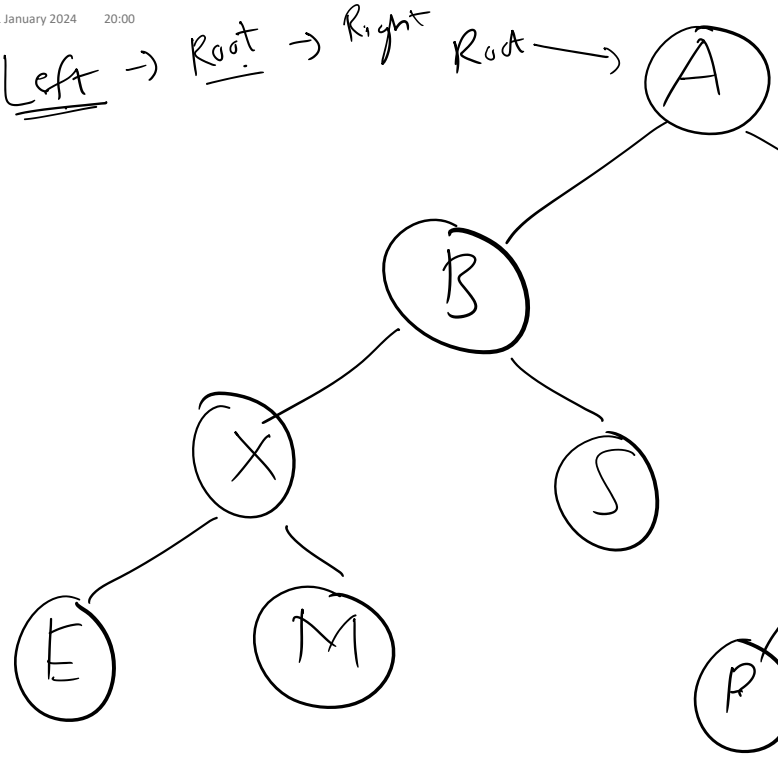
(1) In order traversal → Root → left → Right
(2) Pre order traversal → left → Root → Right
(3) Post order traversal → Left → Right → Root.

In order traversal :- Left → Root → Right



[4 → 2 → 5 → 1 → 3 → 6]

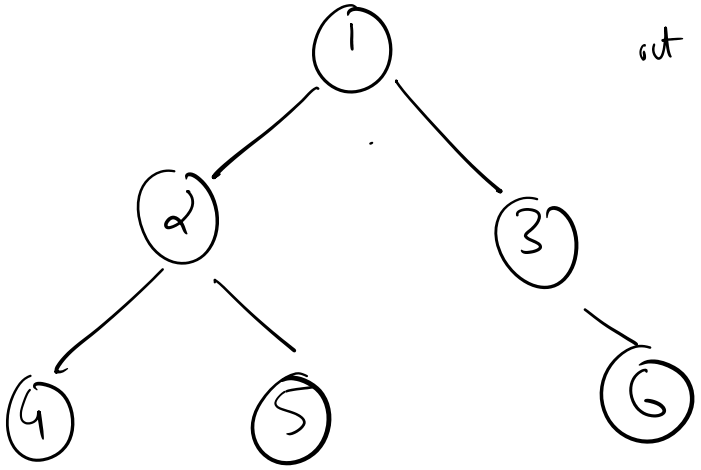
Left → Root → Right Root →



Inorder Traversal.

[E → X → M → B → S → A → P → T → N → W → H → C]

② Pre-Order Traversal :- Root → Left → Right



out

[1 → 2 → 4 → 5 → 3 → 6]

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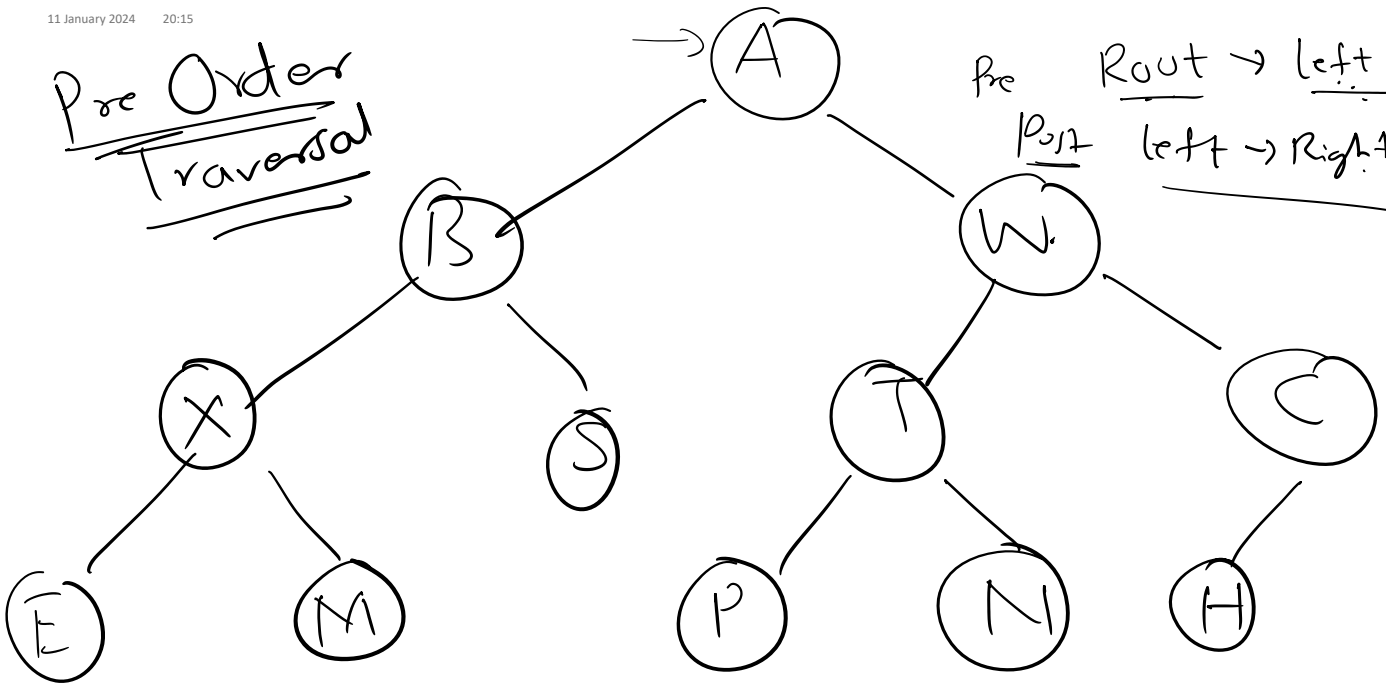
Pre Order Traversal



Pre Root → left → Right

Post left → Right → Root.

Pre [A → B → X → E → M → S → W → T → P → N → C → H]

Post [E → M → X → S → B → P → N → T → H → C → W → A]

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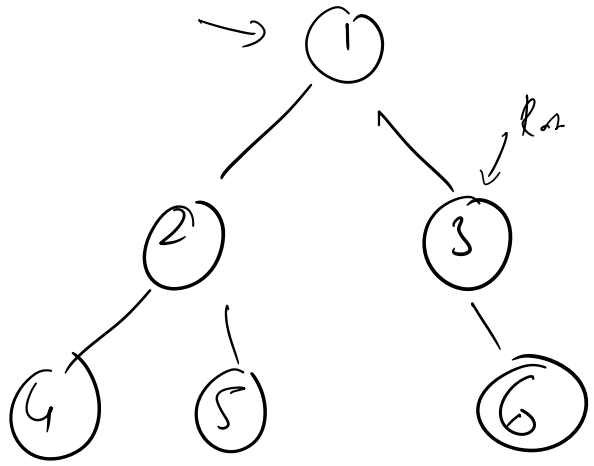
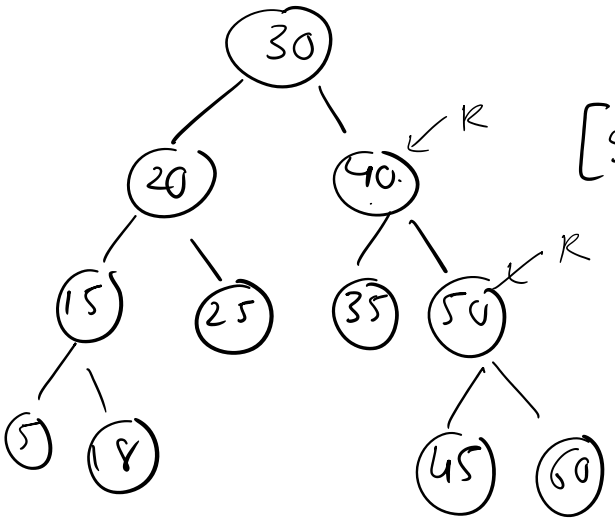
Post Order Traversal :- Left → Right → Root.



[4 → 5 → 2 → 6 → 3 → 1]



Inorder :- Left → Root → Right.

[5 → 15 → 18 → 20 → 25 → 30 → 35 → 40 → 45 → 50 → 60]

Pre Order Traversal :- Root → Left → Right

[30 → 20 → 15 → 5 → 18 → 25 → 40 → 35 → 50 → 45 → 60]

Post Order :- Left → Right → Root

[5 → 18 → 15 → 25 → 20 → 35 → 45 → 60 → 50 → 40 → 30]

Inorder

Pre Order

Post Order