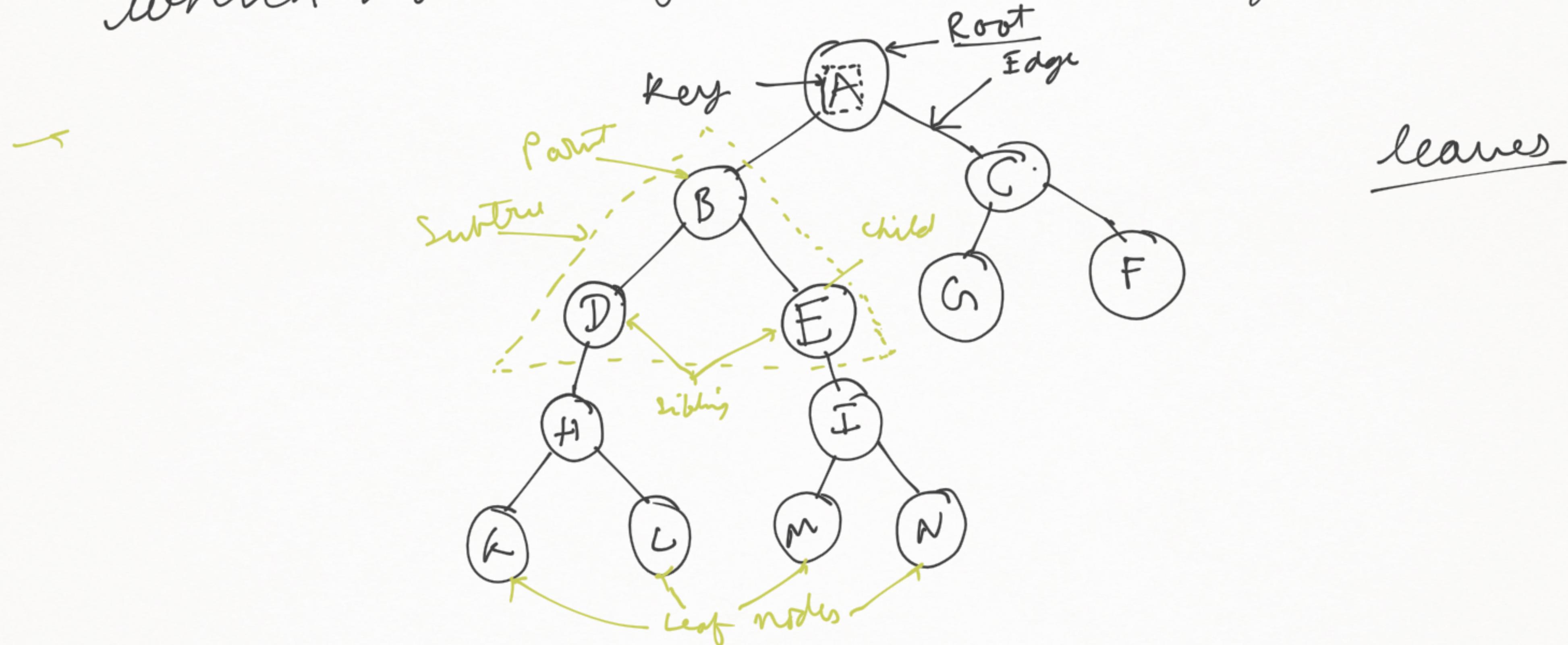
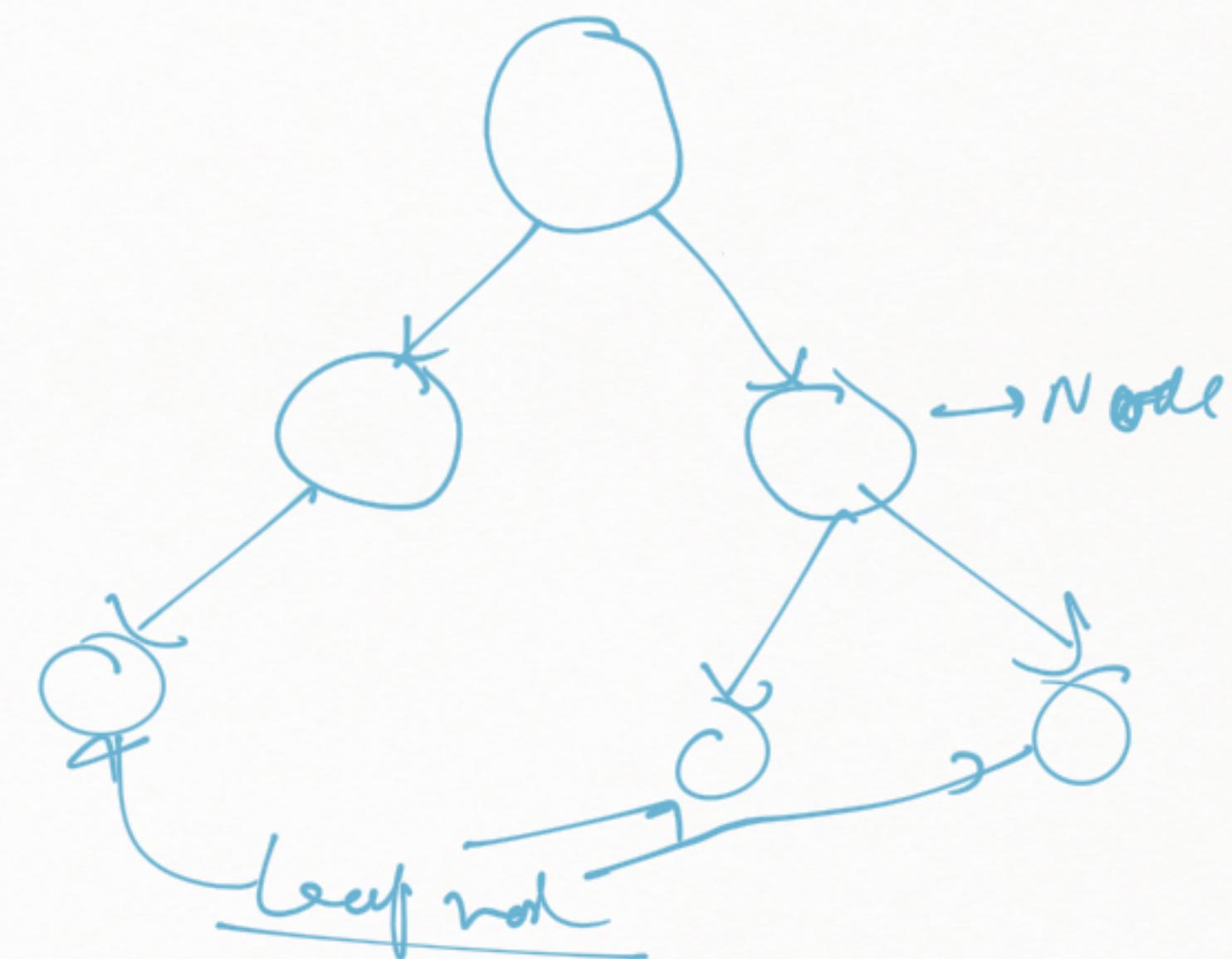
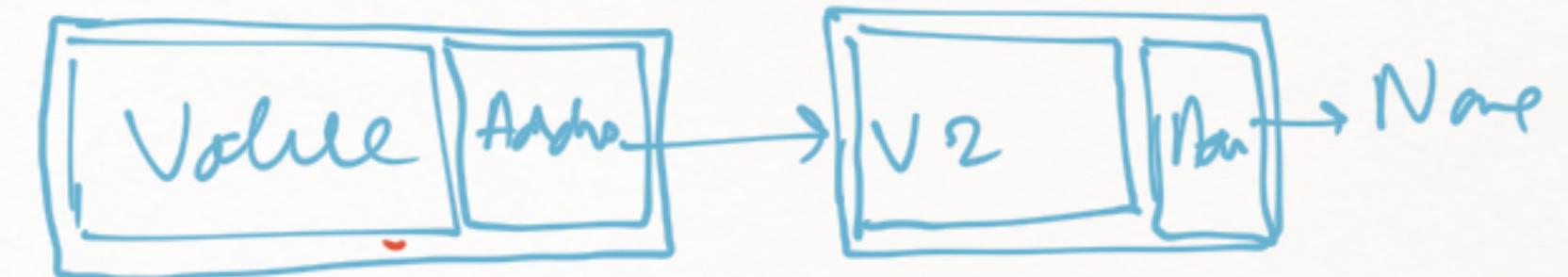
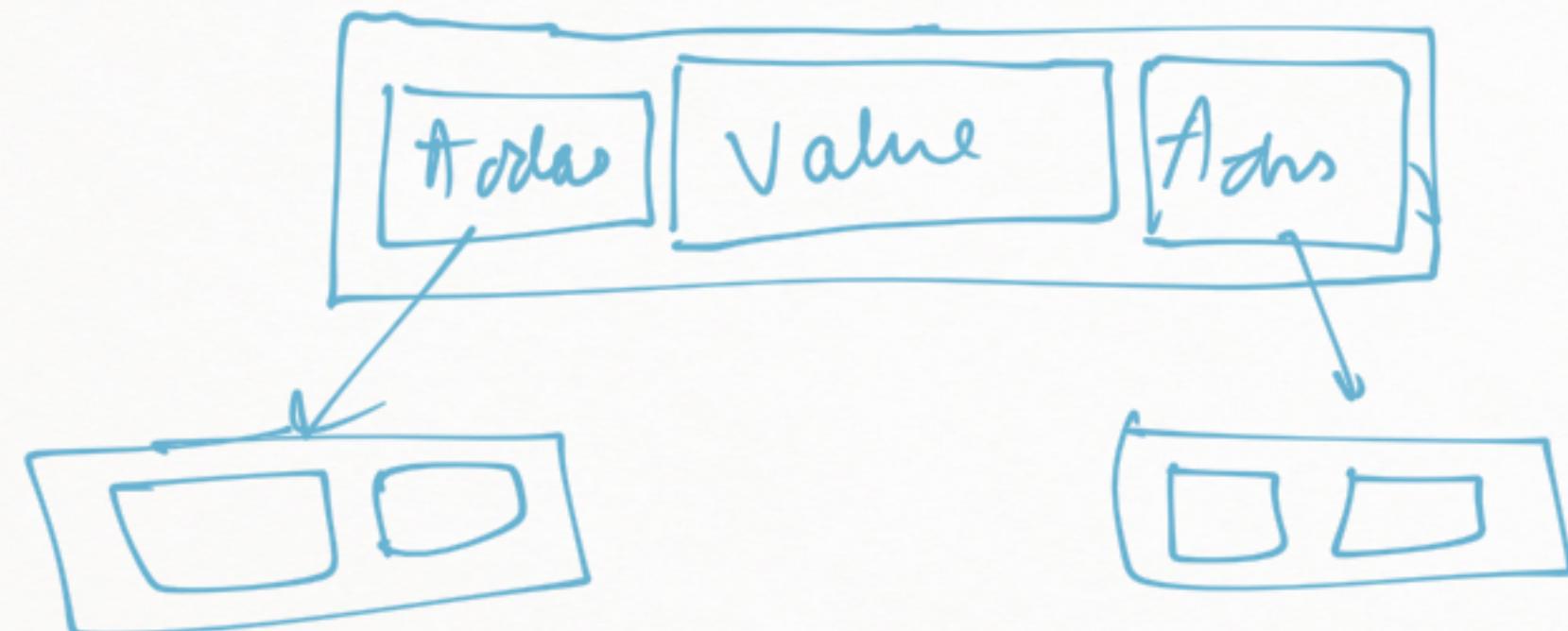


Tree Data Structure

A tree is a non linear hierarchical data structure which consists of nodes connected by edges



Node: It contains a key or value and pointers to child node



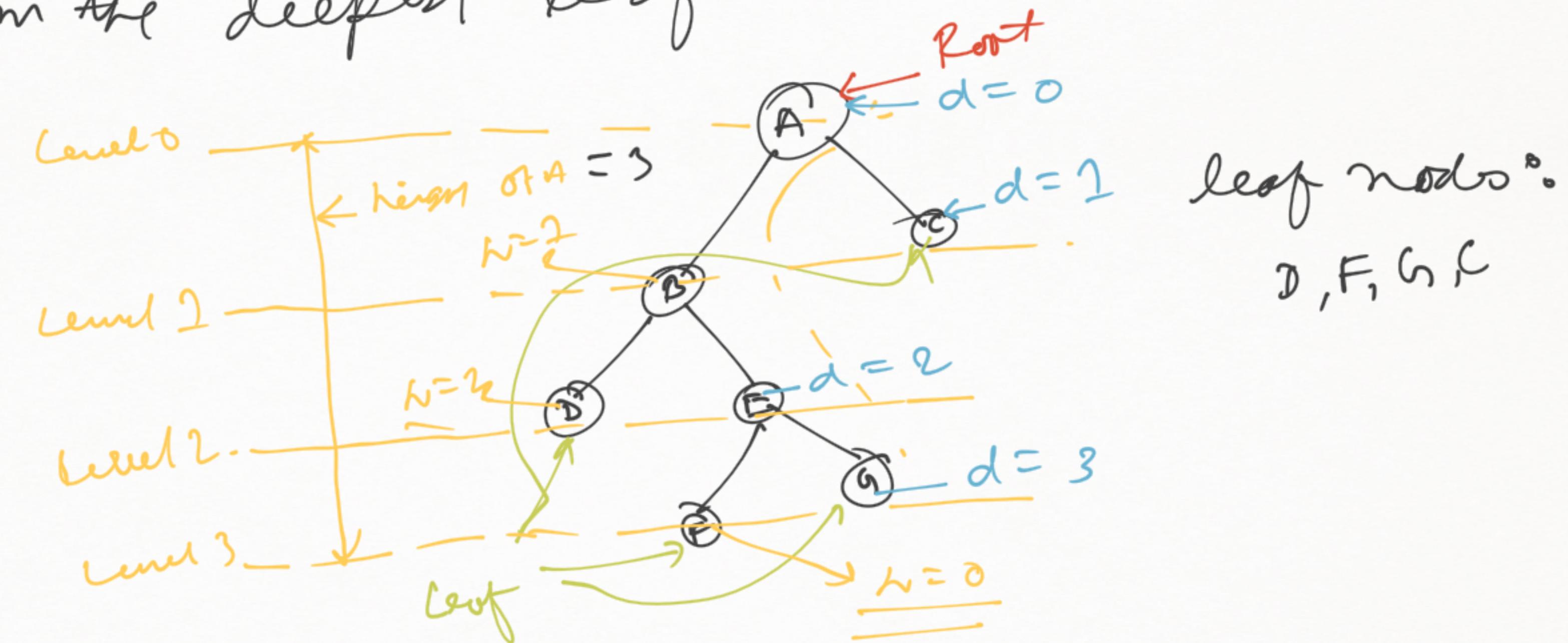
Edge : It is the link b/w any two Nodes

Root : It is the top most node of a tree.

Height of a Node : The height of a Node is the number of edges from the deepest leaf

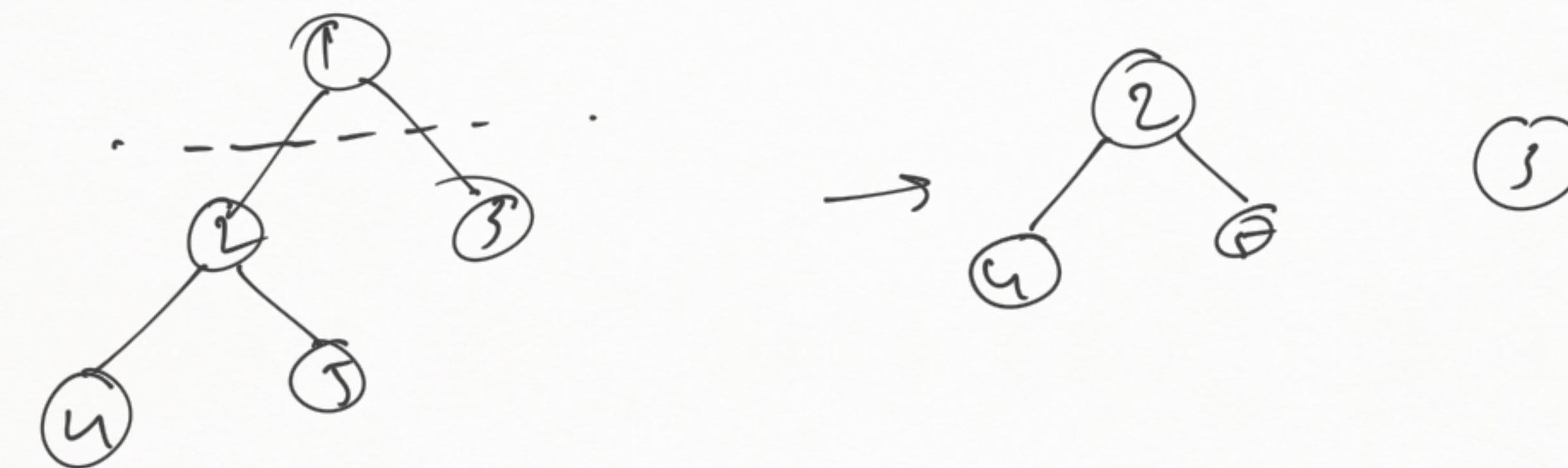
Depth of a Node :

The number of edges
from root to Node

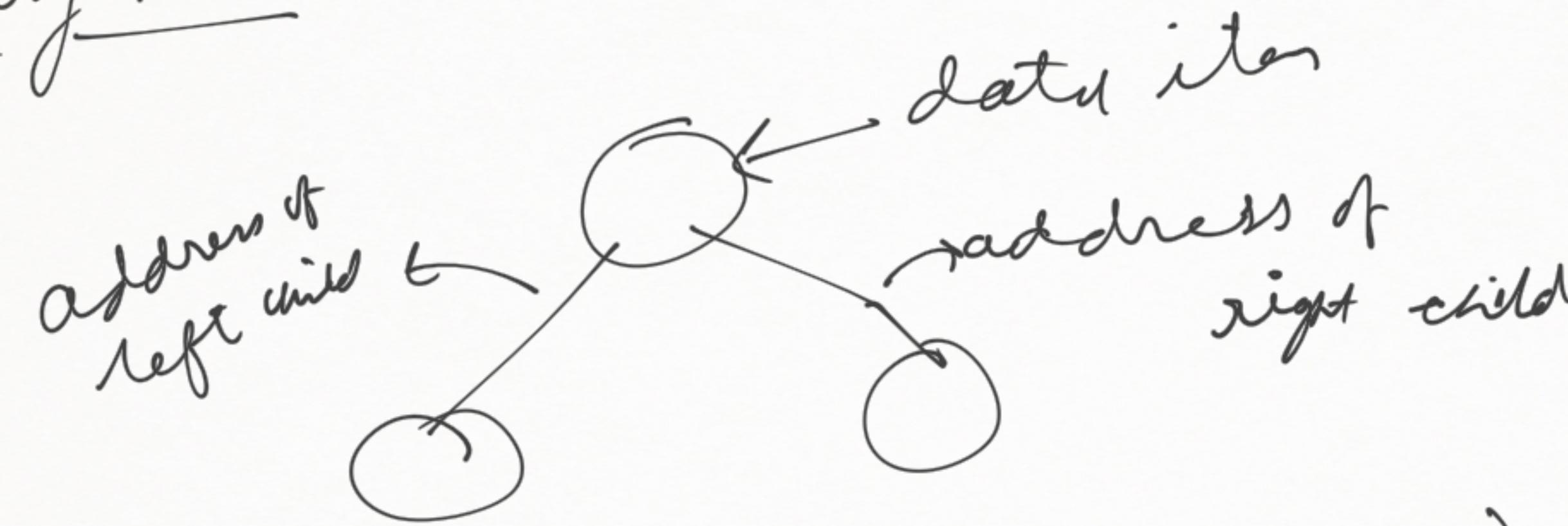


Degree of a Node: The total number of branches of the node

Forest: A collection of disjoint tree is called as forest.



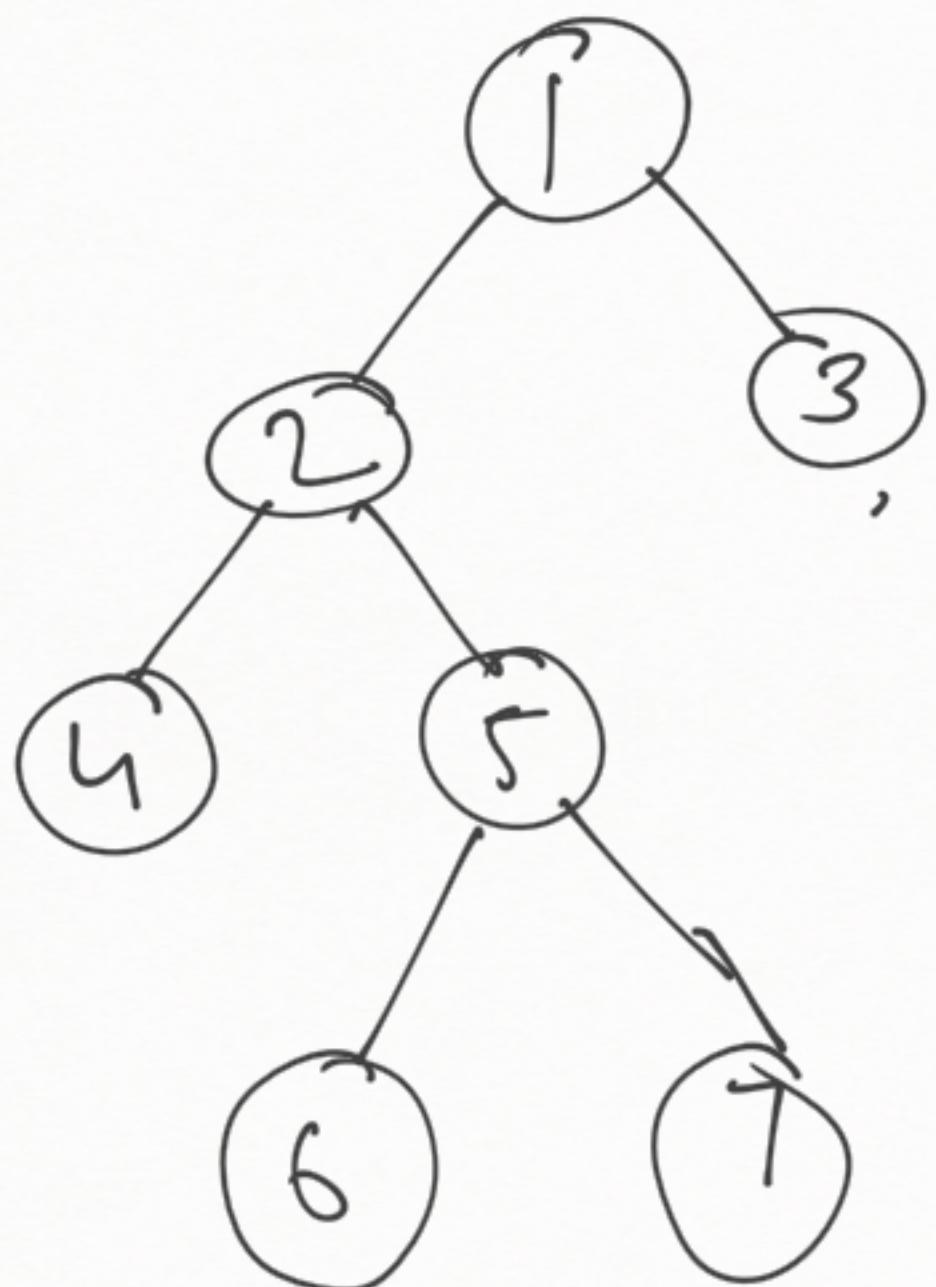
Binary tree



- 1) at most two children
- 2) Each node will have
 - data items
 - address of left child
 - address of right child

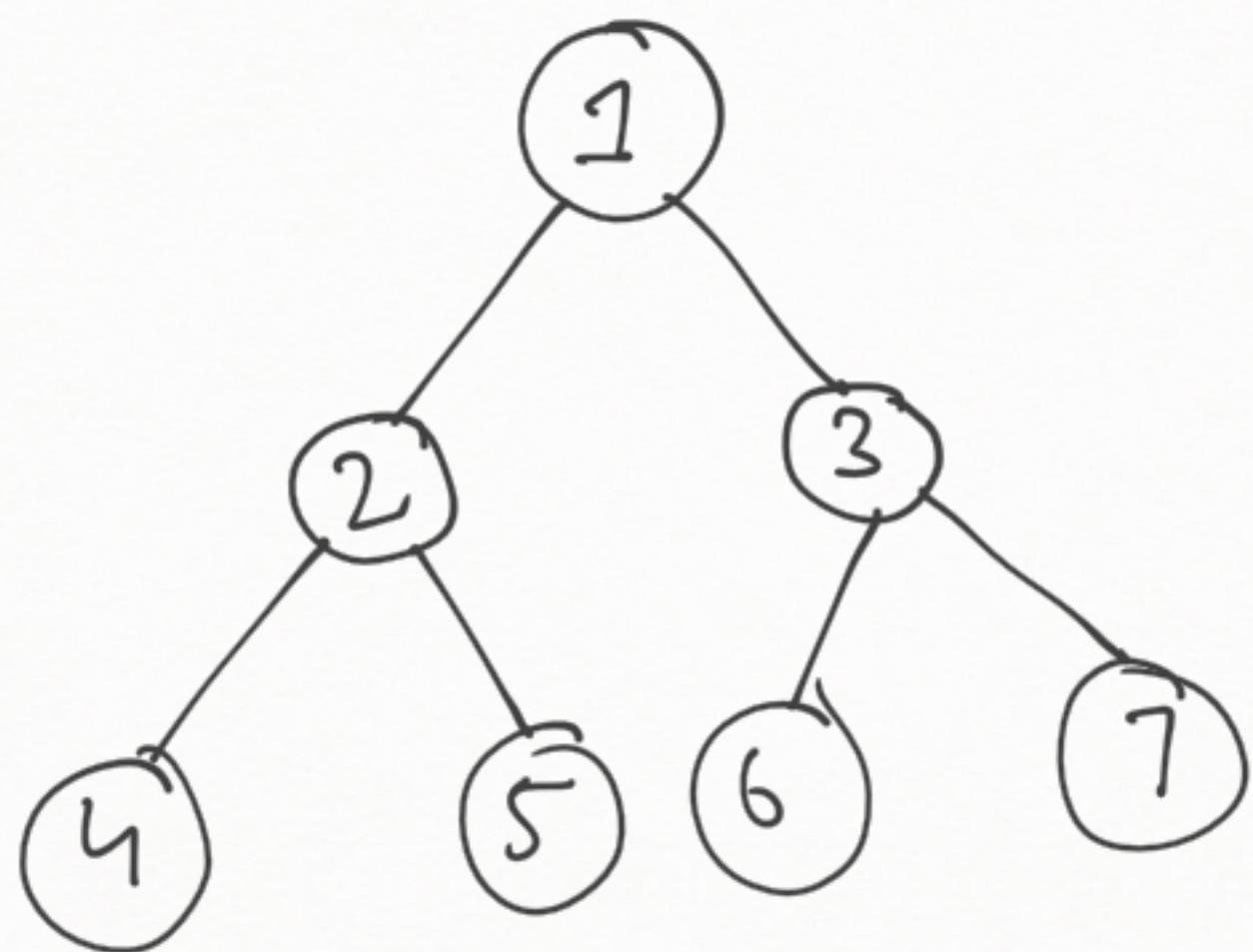
Types of binary tree

1. Full Binary Tree



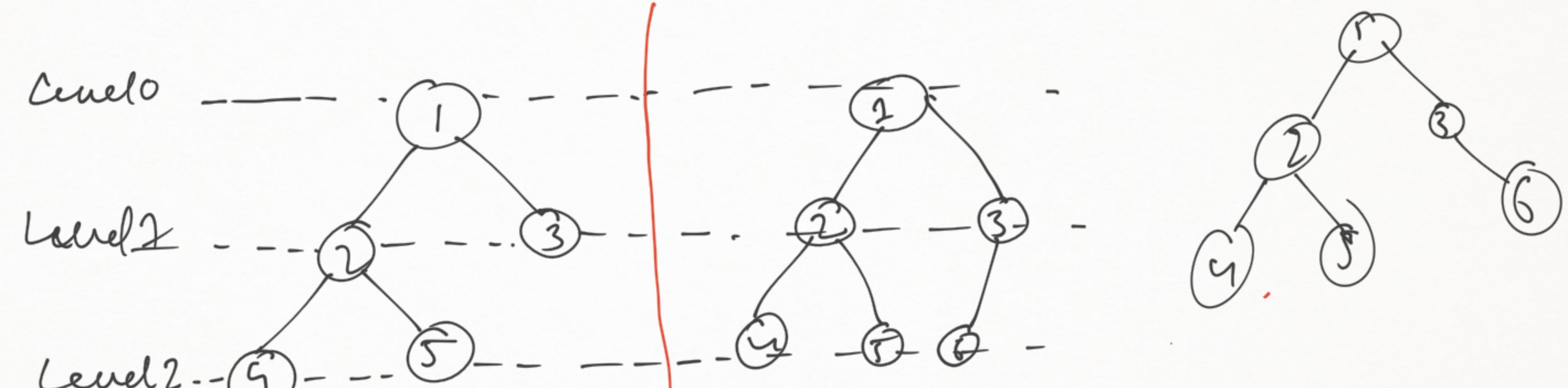
- 1) every parent have
 - 0 or 2 child nodes

2. Perfect Binary Tree:



- 1) every internal node has exactly 2 child nodes
- 2) all the leaf nodes are at same level

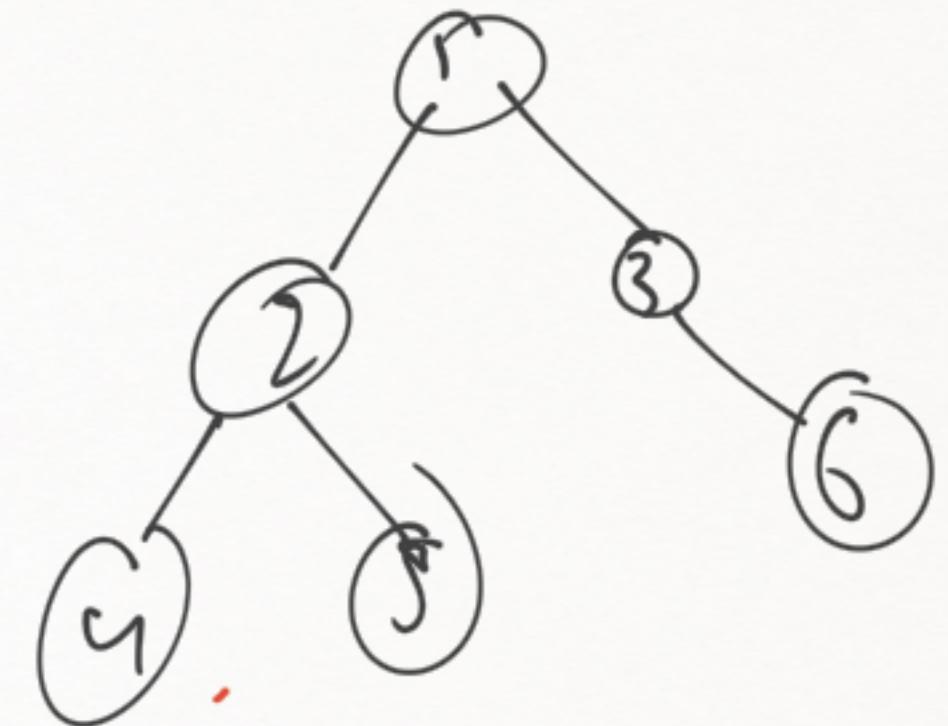
3) Complete Binary Tree:



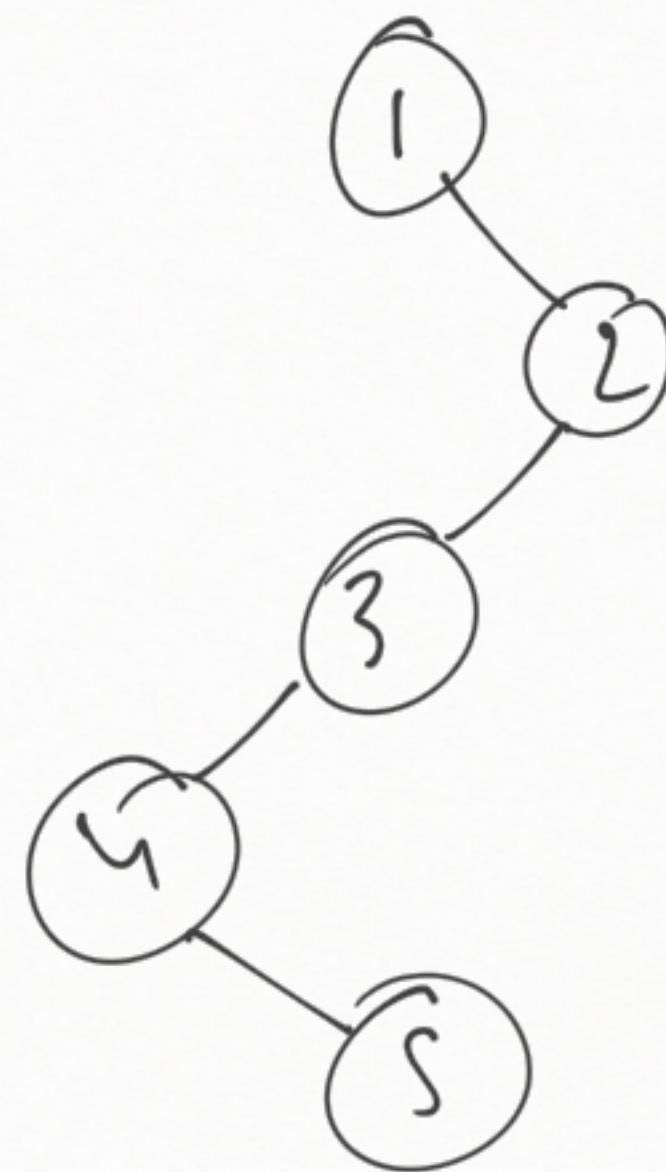
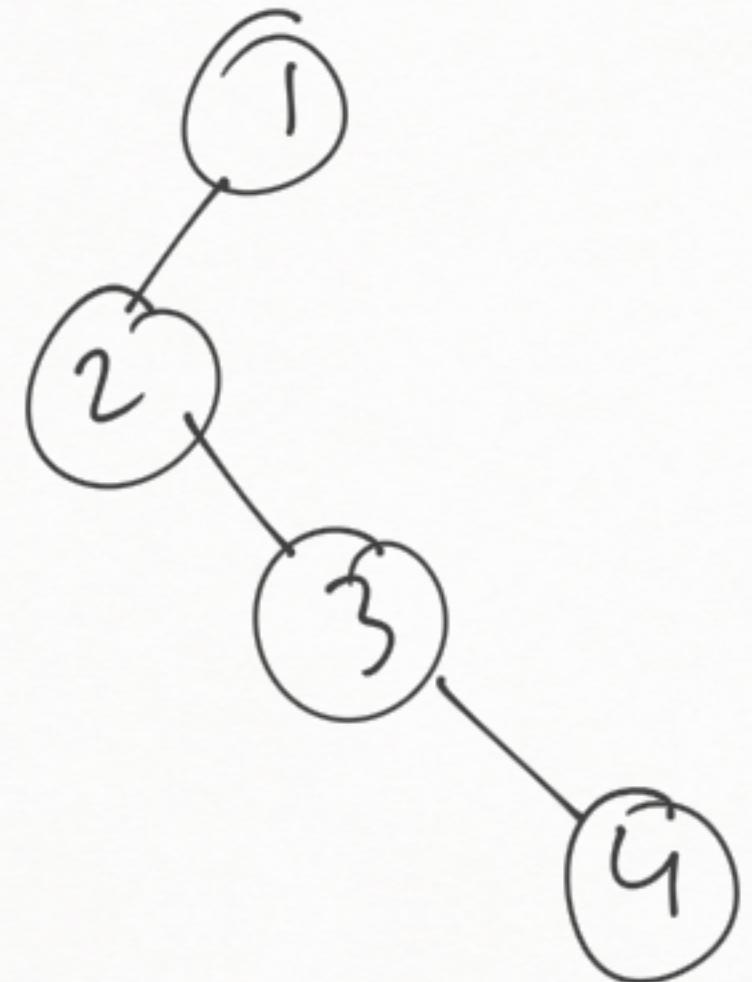
Full Binary tree

Complete Binary tree

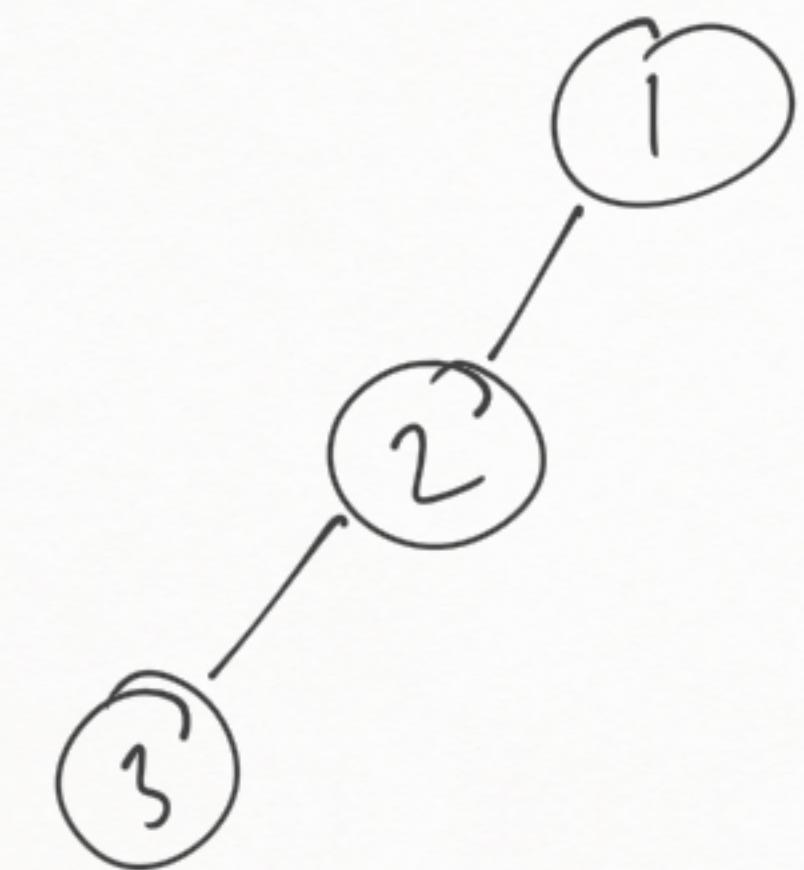
- 1) Every child must be at same level
- 2) leaf element lean towards left



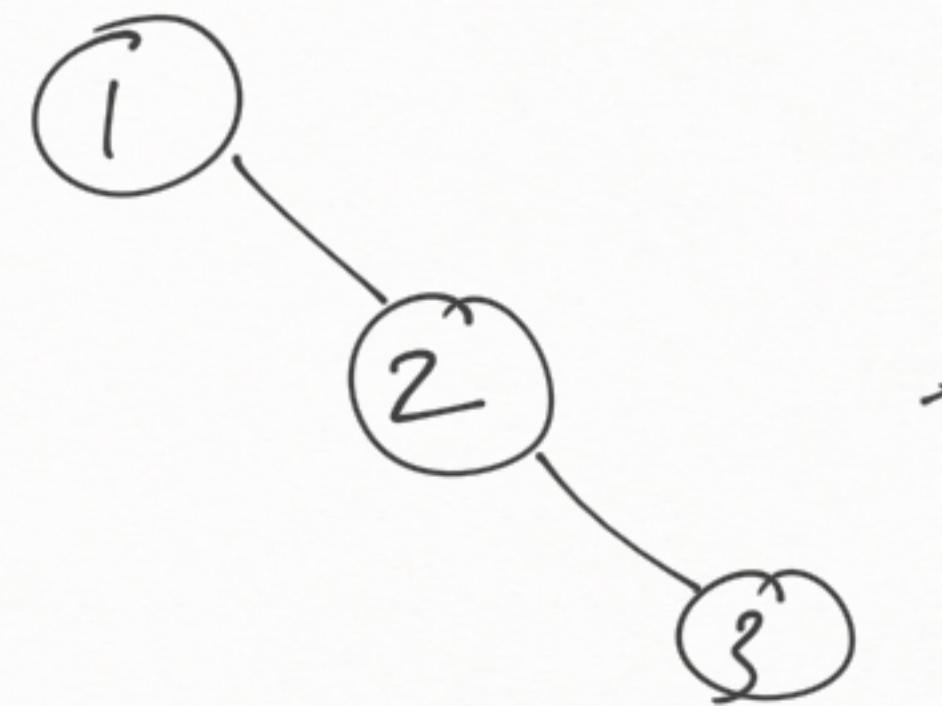
5. Degenerate or Pathological Tree



5) Skewed Binary Tree



left-skewed binary
tree



right-skewed
binary tree .

6. Balanced Binary tree.

