DSA through C++

Binary_Tree

Mohammad Tasin (Tasin Coder)

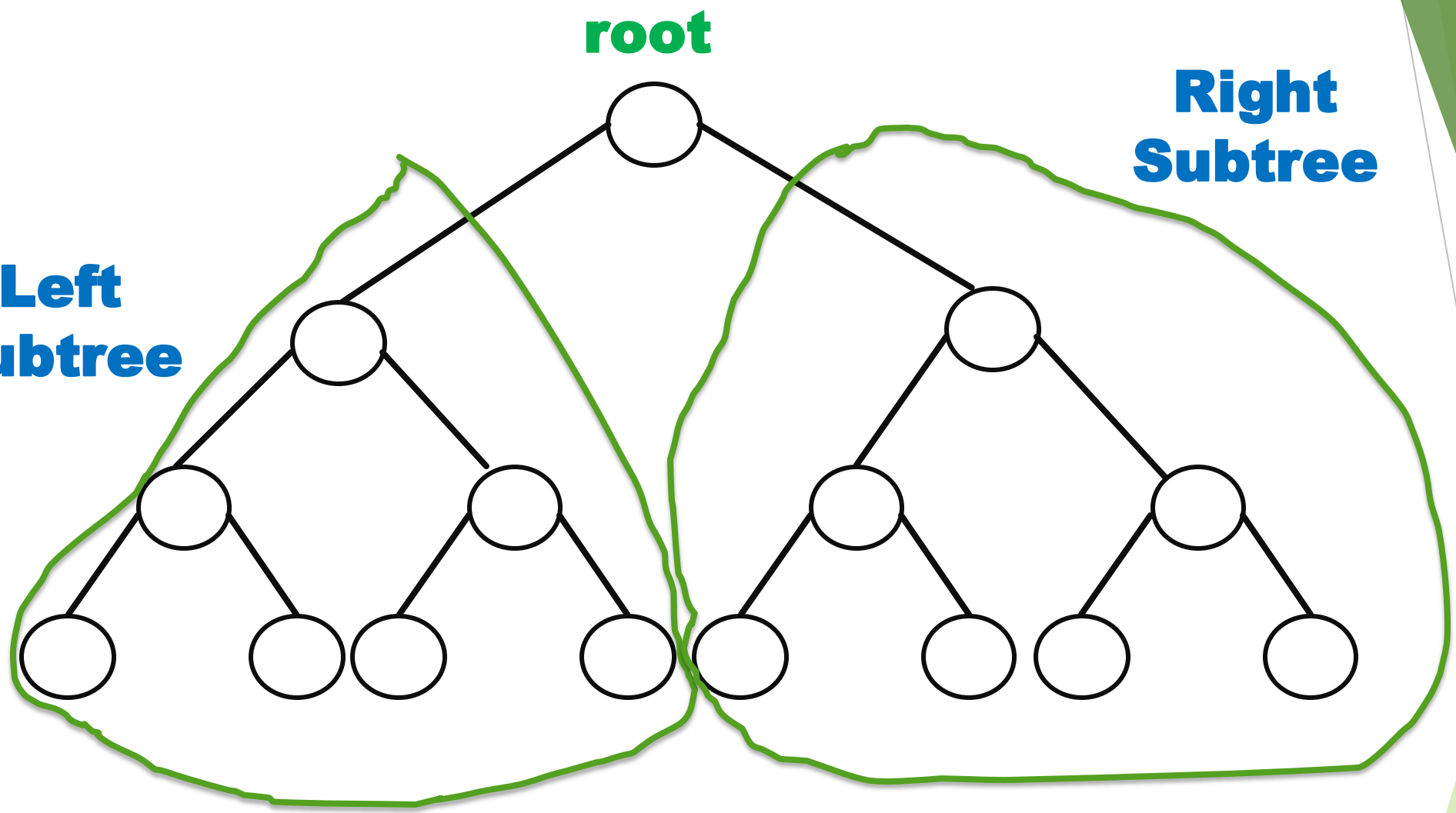
Agenda

- Binary Tree
- Complete Binary Tree
- Almost complete Binary Tree
- Strict Binary Tree
- Representation of Binary Tree

Binary Tree

- A Binary Tree is defined as a finite set of elements, called nodes, such that :

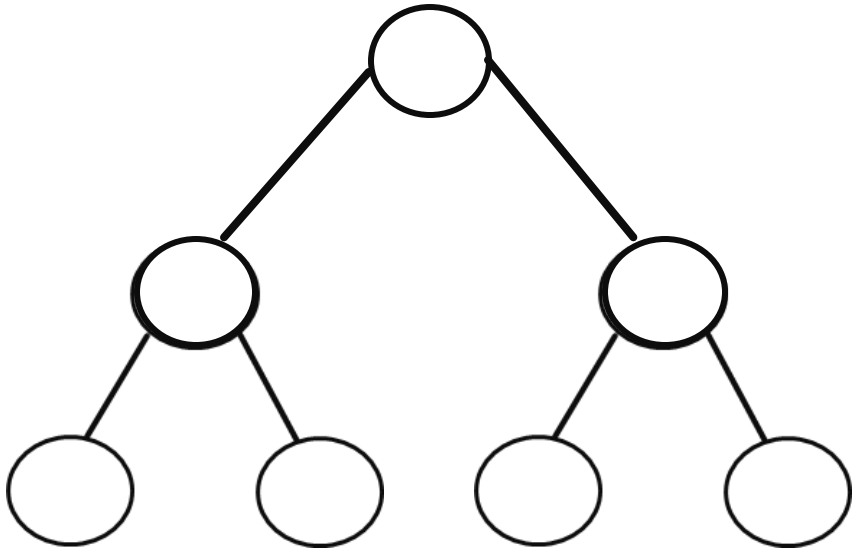
- T is empty (called the NULL tree or empty tree), or
- T contains a specific node R, called the Root of T, and the remaining nodes of T form an ordered pair of disjoint binary trees T1 and T2



Any node in the binary tree has either 0, 1 or 2 chid nodes

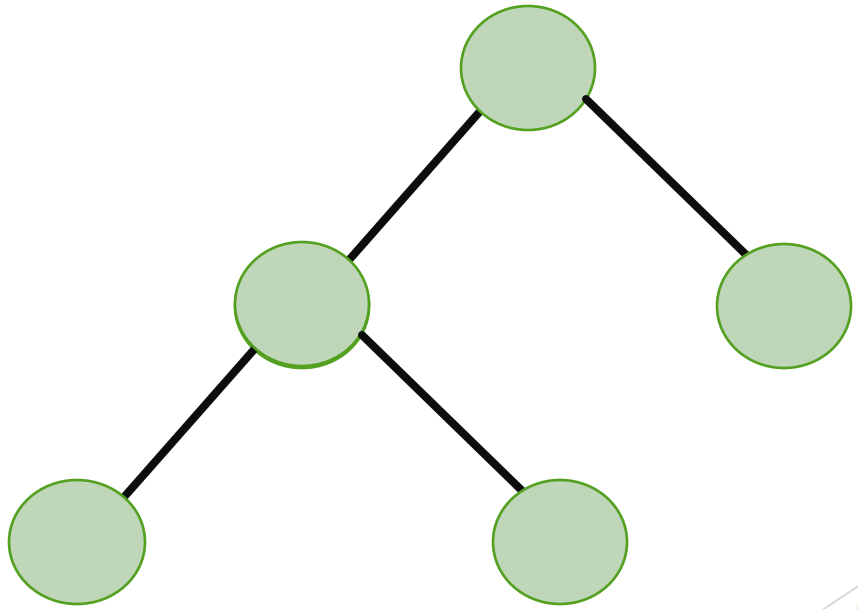
Complete Binary Tree

- **All levels are completely filled.**



Almost Complete BT

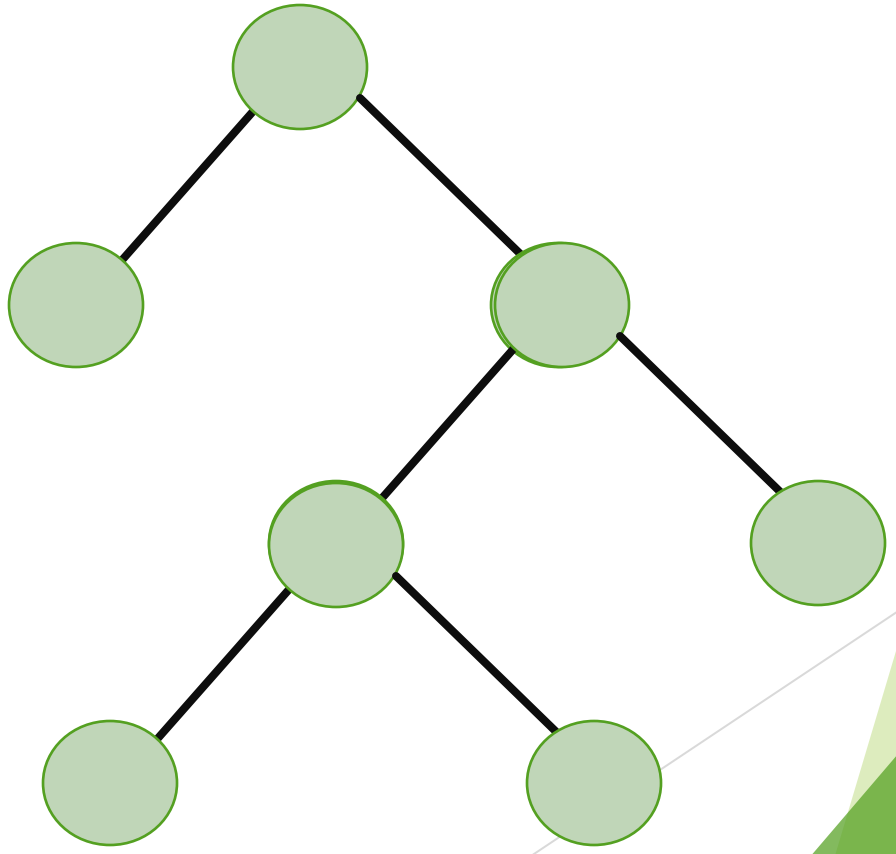
- All levels are completely filled, except possibly the last level and nodes in the last level are all left aligned.



Strict Binary Tree

- Each node of a strict Binary Tree will have either 0 or 2 Children.

Full Binary Tree

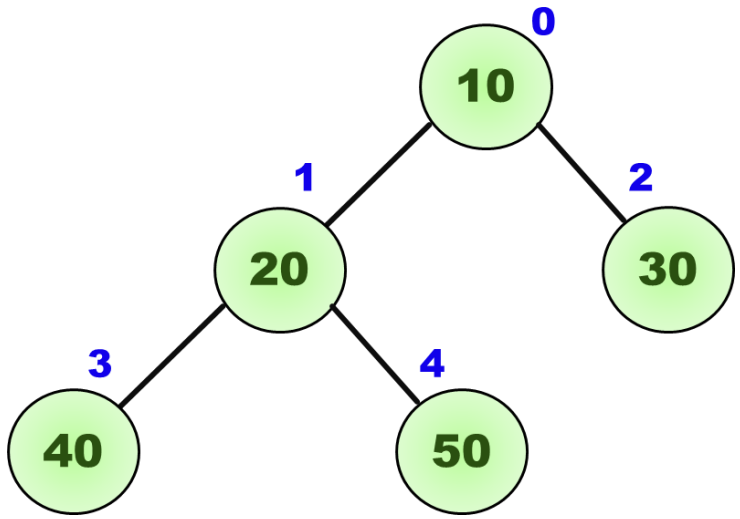


Representation of BT

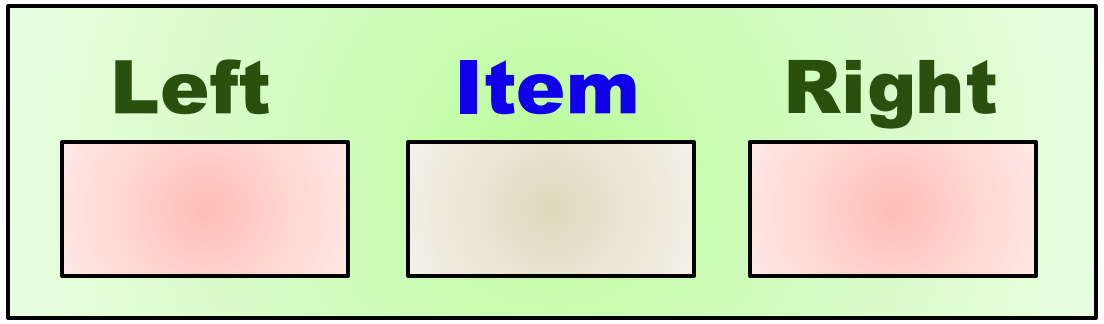
- There are two possible representations of binary tree.
  - Array Representation
  - Linked Representation (by default)

Array Representation

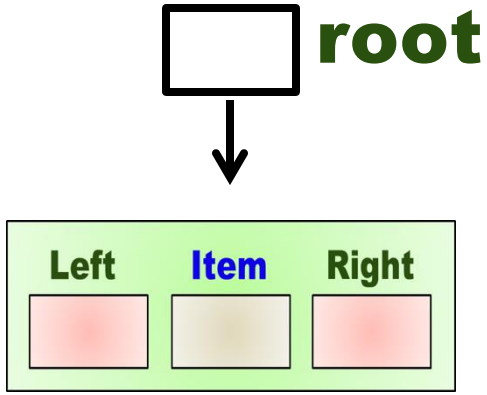
0	1	2	3	4
10	20	30	40	50



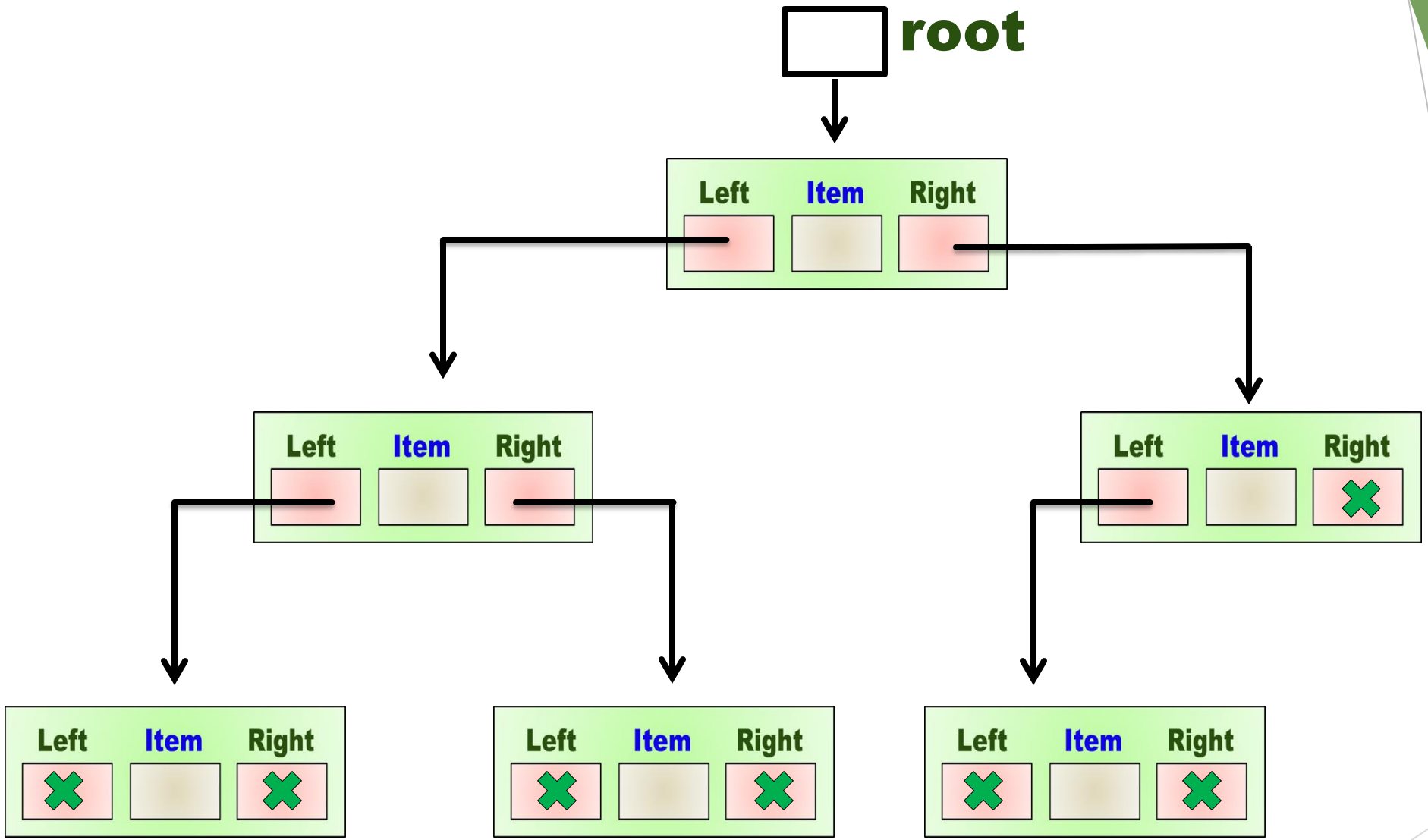
Linked Representation



Node



- Root is a Node pointer
- When root contains NULL, tree is Empty


root
Left
Item
Right
Left
Item
Right
Left
Item
Right
Left
Item
Right
Left
Item
Right
Left
Item
Right

Discuss

- How to insert an item in a Binary Tree ?
- How to traverse a Binary Tree ?