

* Map with list of strings \Rightarrow *** imp

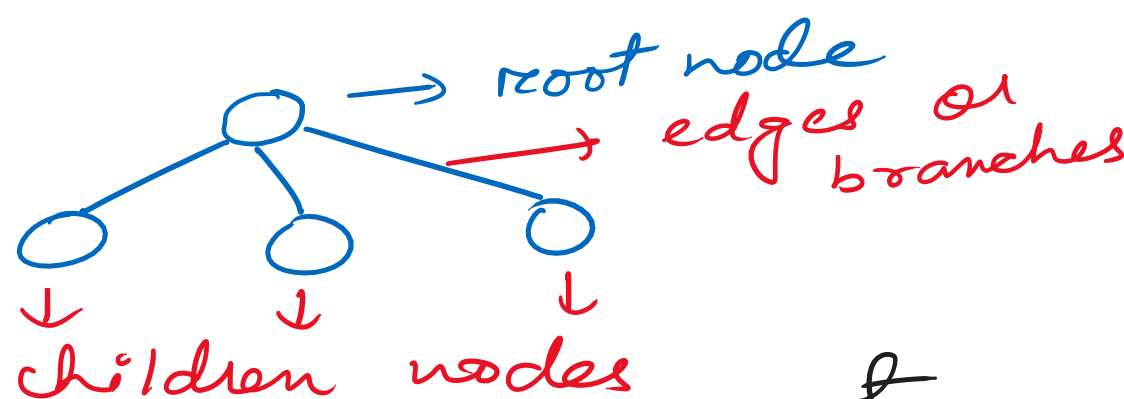
Question: Illustrate the use of an ordered-map by using a list \rightarrow (DLL) of strings.

* Difference between : ****

push-back();
emplace-back(); } vector

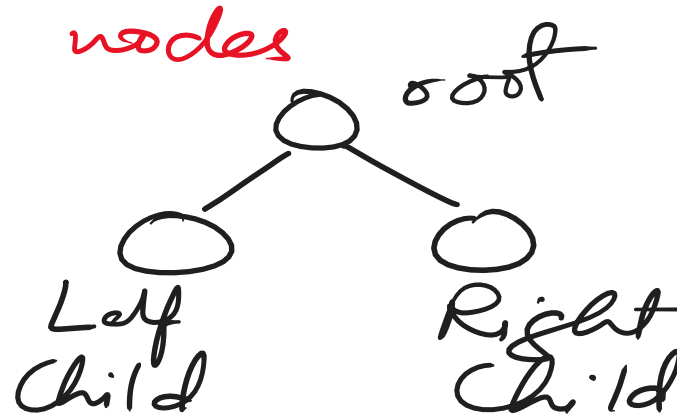
Introduction to non-linear data structures.

1) Trees \Rightarrow



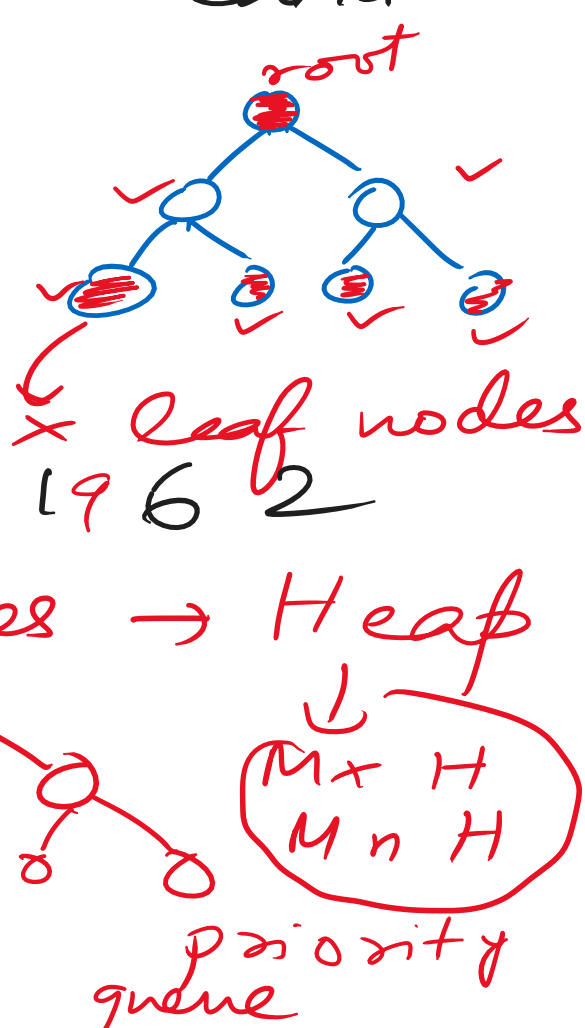
2) Binary Tree:

- * 0 children
- * 1 child
- * 2 children



Types of Binary Trees:

- (i) Normal Binary Tree
- (ii) Binary Search Tree
- (iii) AVL Tree
Adelson Velsky & Gregory Landis \rightarrow 1962



*** (iv) Complete Binary Trees \rightarrow Heap

(v) Tricks L-R

(vi) Red Black Trees

(vii) Segment Trees

(viii) K-D Trees

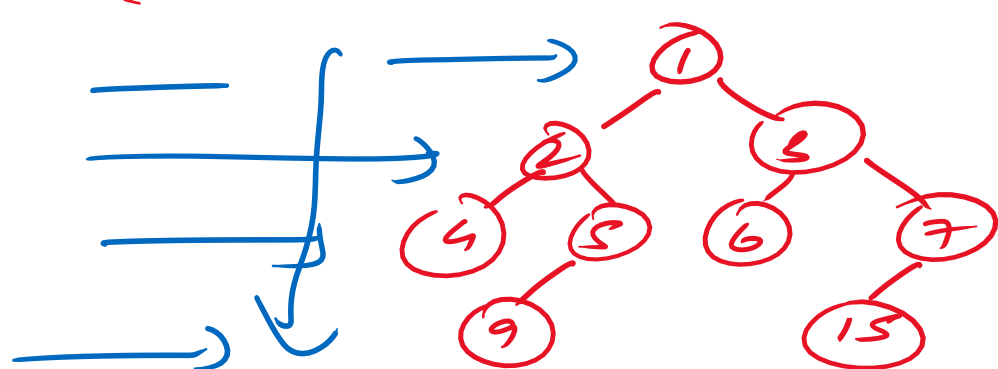
(ix) BIT - Binary Index Trees

(x) B/B+ Trees

Tree Traversal Techniques \Rightarrow

(i) Breadth First Search

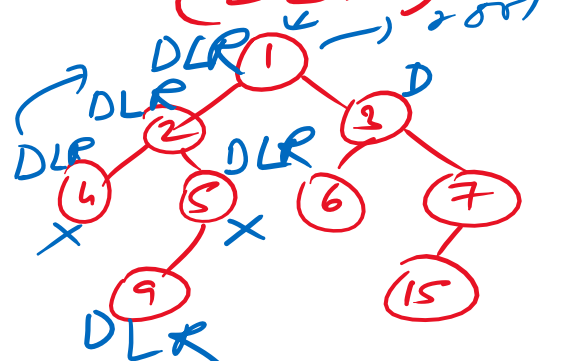
(Level Order Traversal)



Top to Bottom
&
Left to Right
(Queue)

(ii) Depth First Search: L \rightarrow left D - data R - right

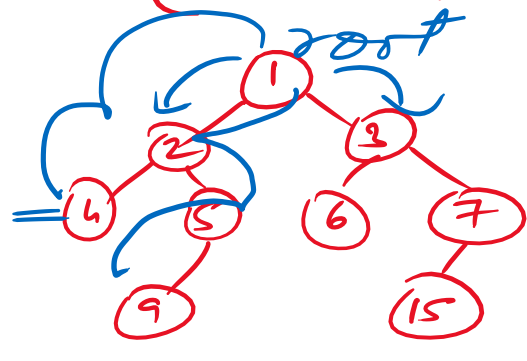
(1) Pre-Order (DLR)



Op: 1, 2, 4, 5, 9, 3, 6, 7, 15

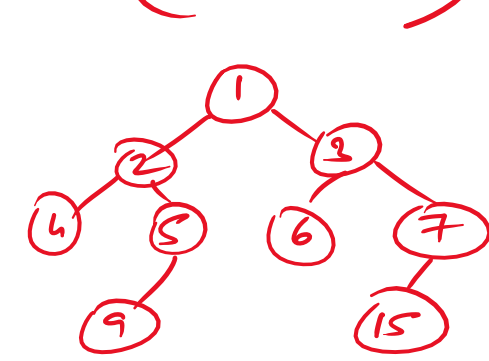
Recursion

(ii) In-Order (LDR)



4, 2, 9, 5, 1, 6, 3, 15, 7

(iii) Post Order (LRD)



4, 9, 5, 2, 6, 15, 7, 3, 1

* Important Questions on Trees:

(i) Identical Trees

(ii) Mirror of a Binary Tree

(iii) Lowest Common Ancestor (LCA)

(iv) Sorted Array to BST

Level ***
order
Traversal (BFS)

\rightarrow In-order Traversal

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