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Trees - Part VII

Course on Data Structure

Pankaj Sharma • Lesson 27 • Aug 7, 2024

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CS & IT Engineering

Data Structure

Tree

Lecture Number- 27

By- Pankaj Sir

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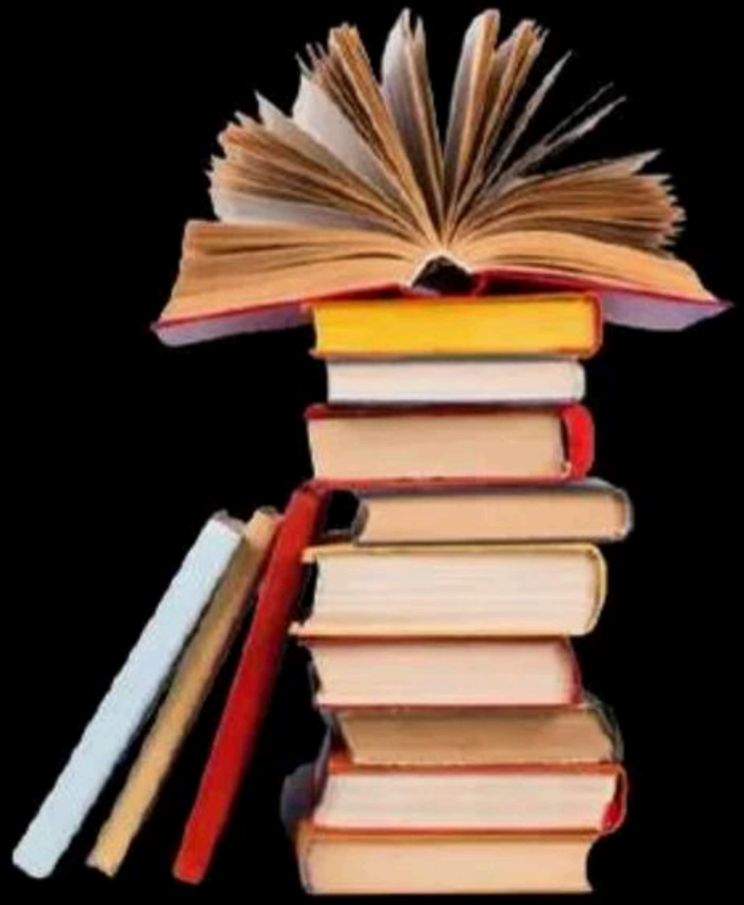
Topics

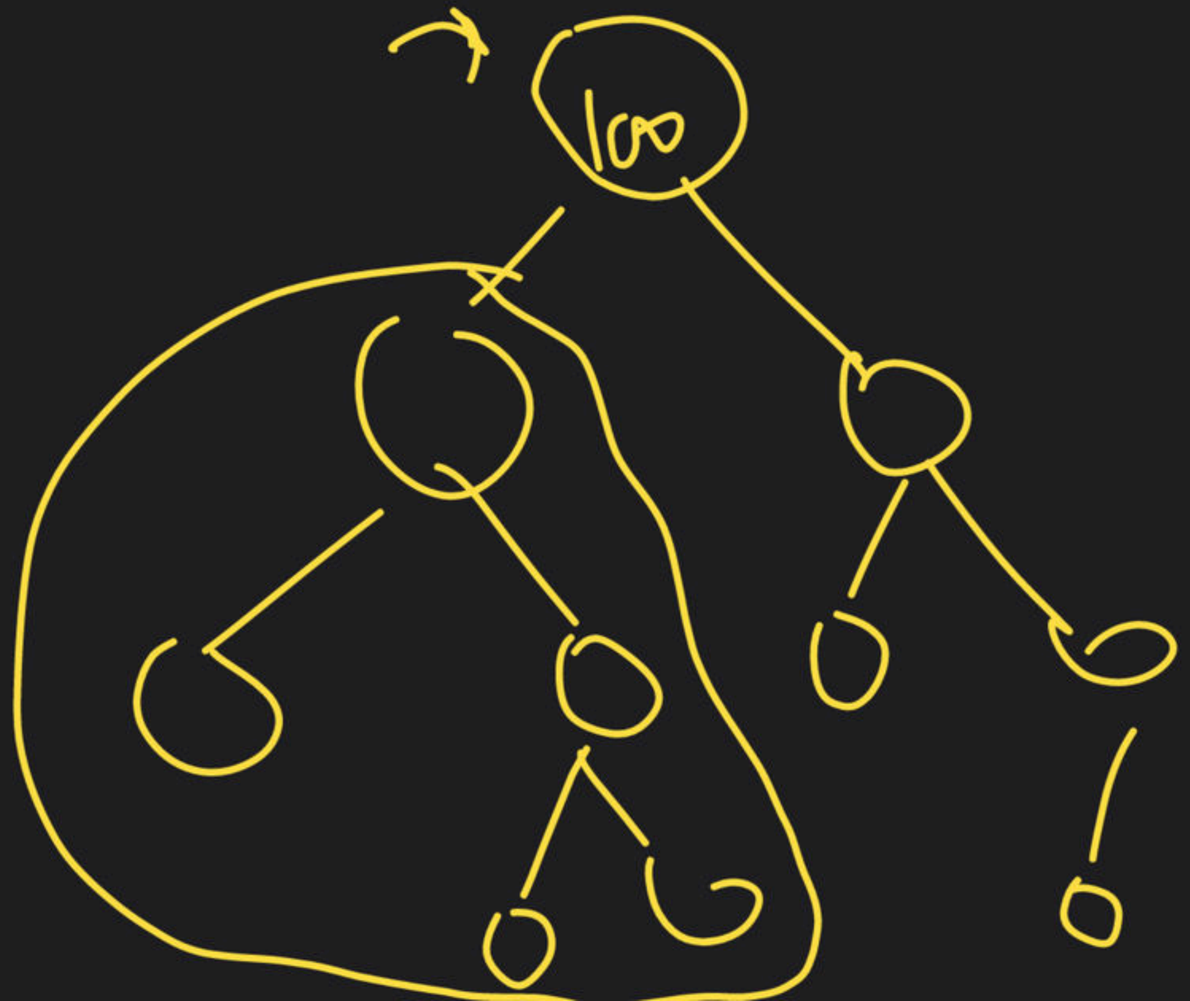
to be covered



1. Tree-VI

BST deletion

leaf node → O(1)



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Complexity → Worst Case ⇒ O(n)

Algo.

Balanced BST

AVL Search Tree

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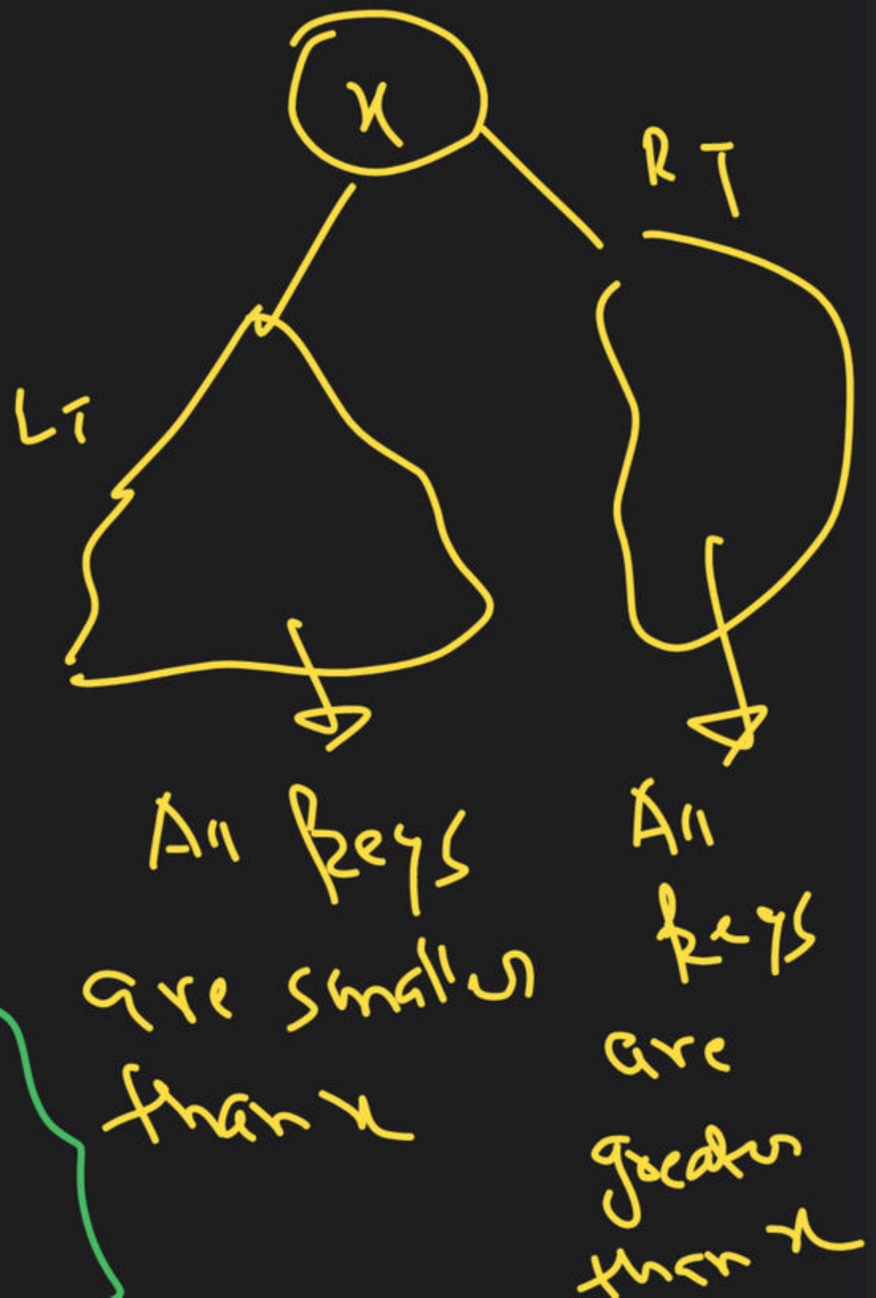
AVL Tree

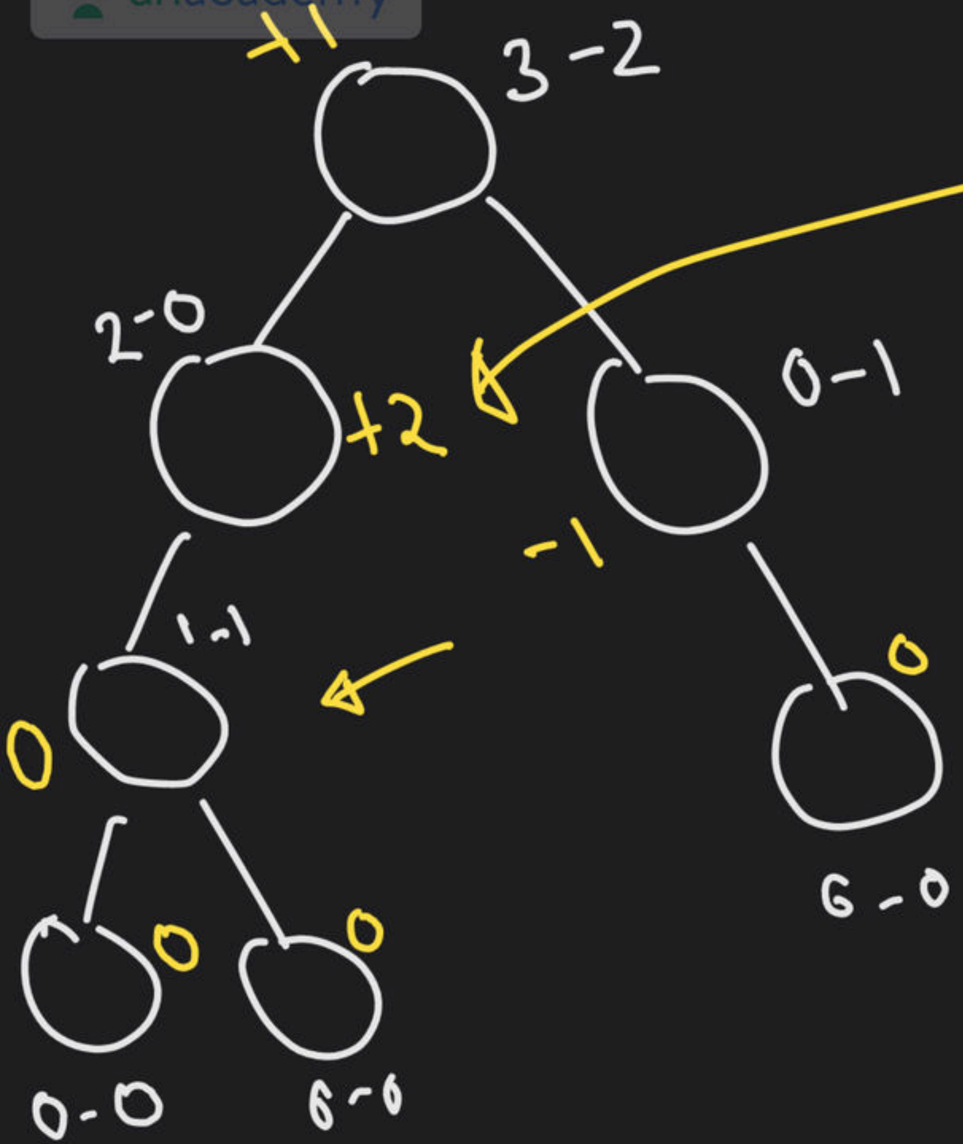
Every node, satisfies 2 property

a) BST property: All the keys in the left subtree of a node are smaller than the node value and

All the keys in the right subtree of a node are greater than node value.

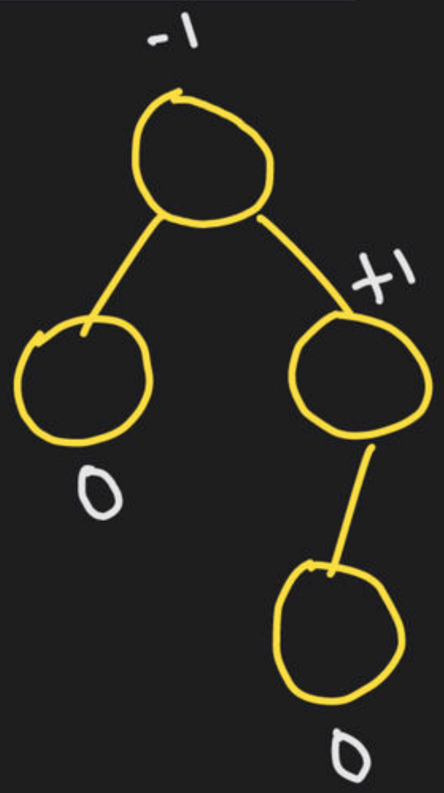
b) AVL tree property: The balancing factor of each node is +1 or 0 or -1



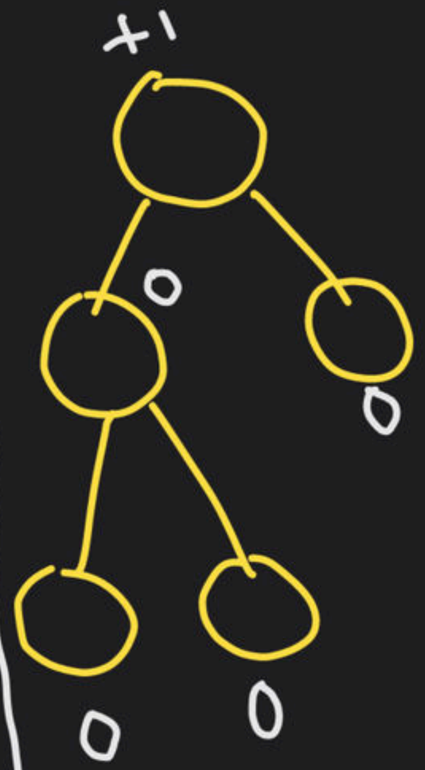


violating AVL tree property

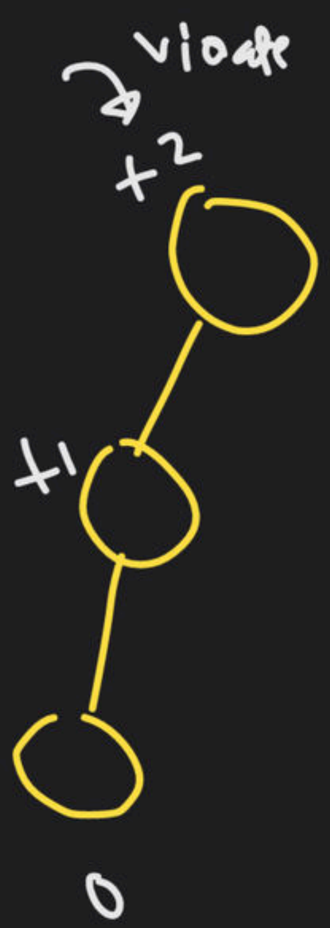
X



AVL tree property ✓

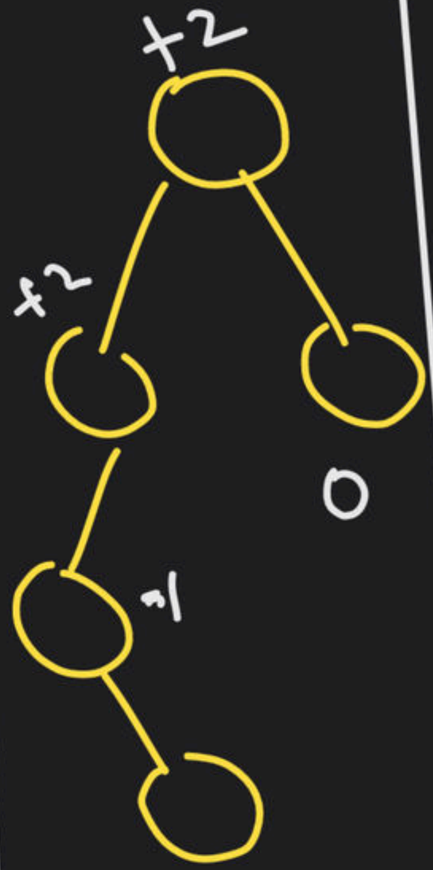


AVL tree property ✓



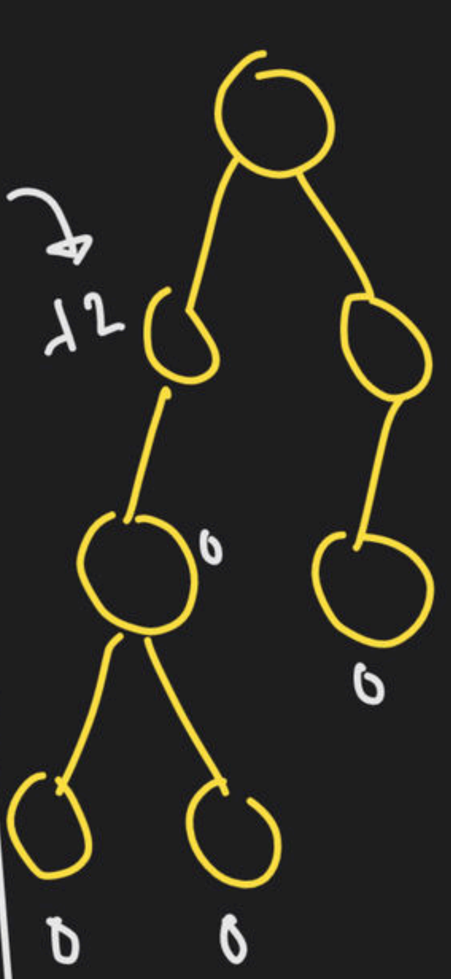
X

AVL tree property

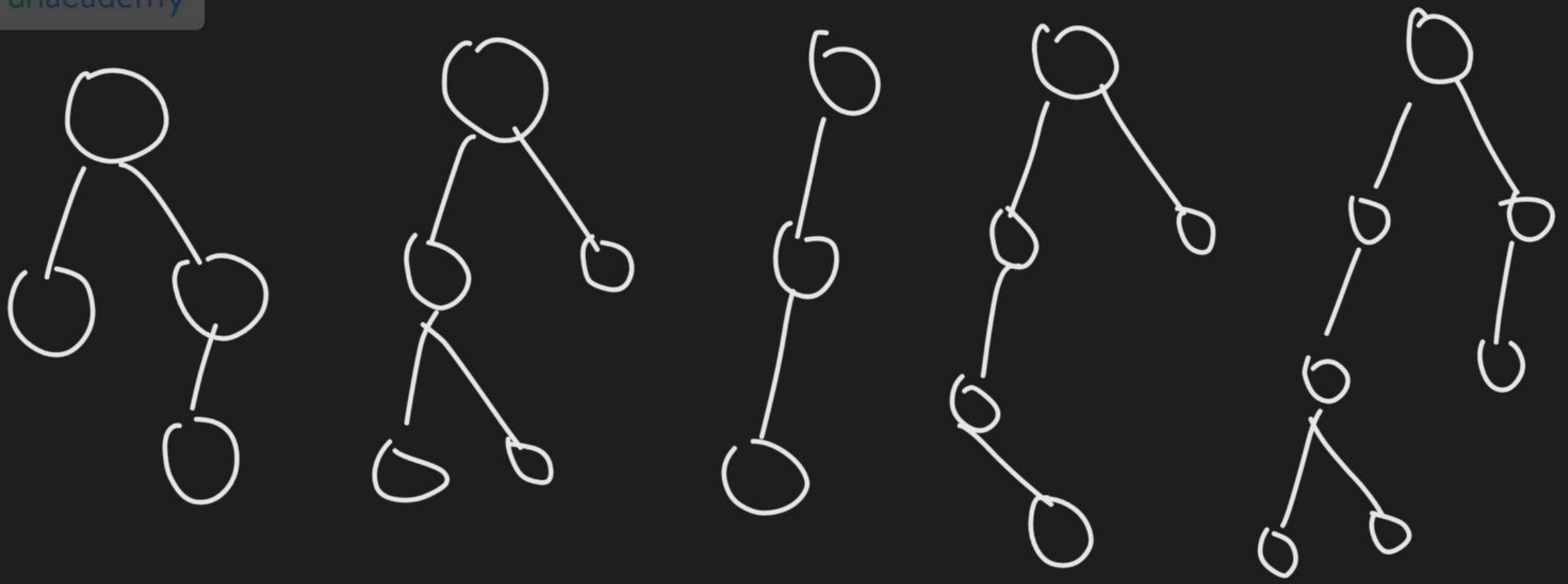


X

AVL tree property



AVL tree property X

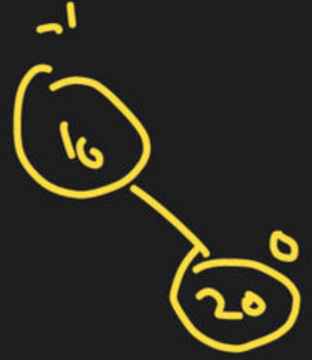


Construct an AVL tree by inserting keys 10, 20, 30 in this order.

Insert ⇒ same as insert in BST

(i) 

(ii) Insert 20



(iii)

Insertion of a key may cause the balancing factor of a node becomes other than +1, -1 or 0 (unbalanced)

To balance it ⇒ rotations are performed

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THANK YOU!

Here's to a cracking journey ahead!