



# Trees - Part VIII

Course on Data Structure



# CS & IT Engineering

Data Structure  
Tree





# Topics

*to be covered*

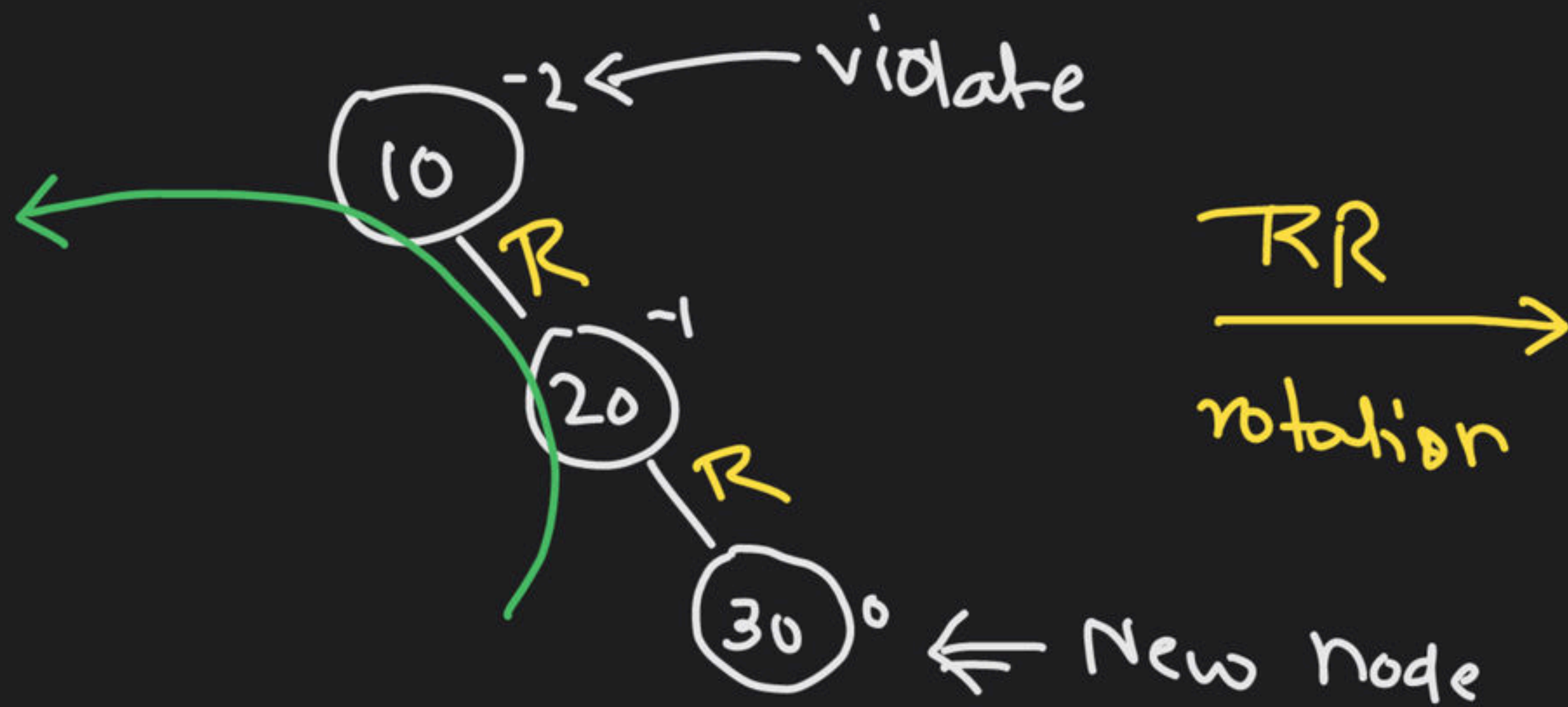


Tree-VII





① Insert keys 10, 20, 30



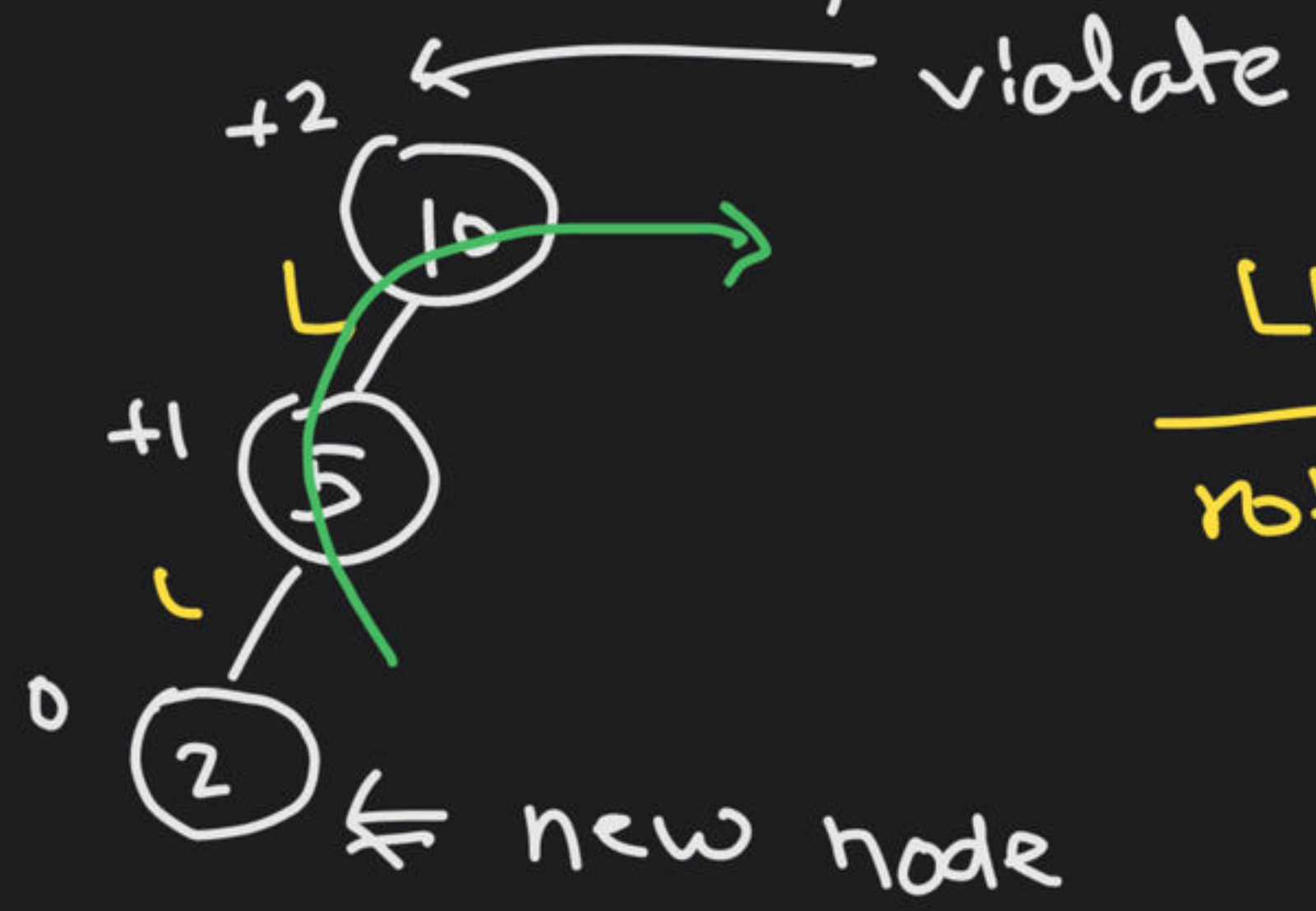
1st way: Tri-node structure

10, 20, 30



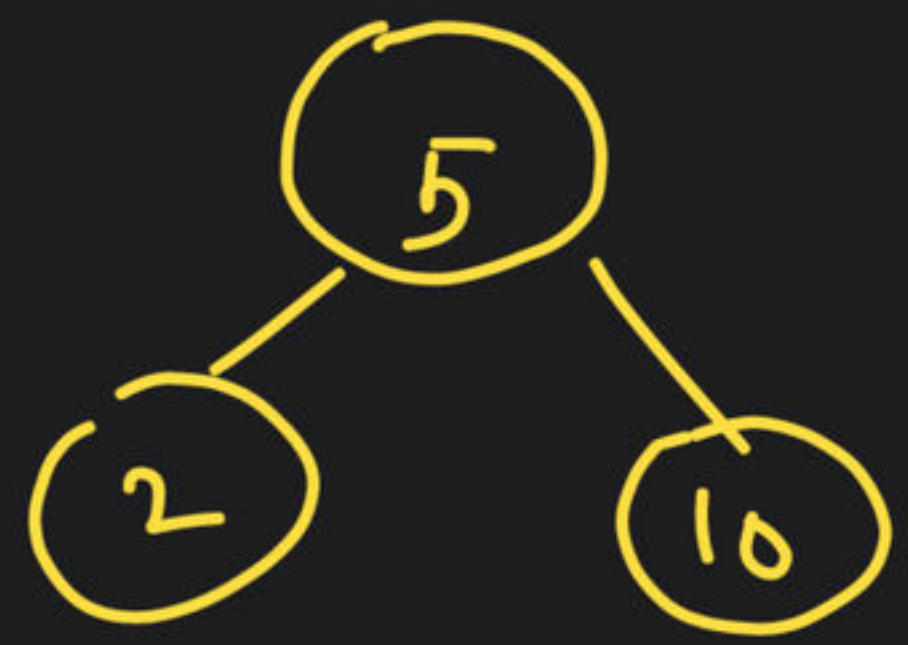
unacademy  
2. Insert

10, 5, 2



LL  
rotation

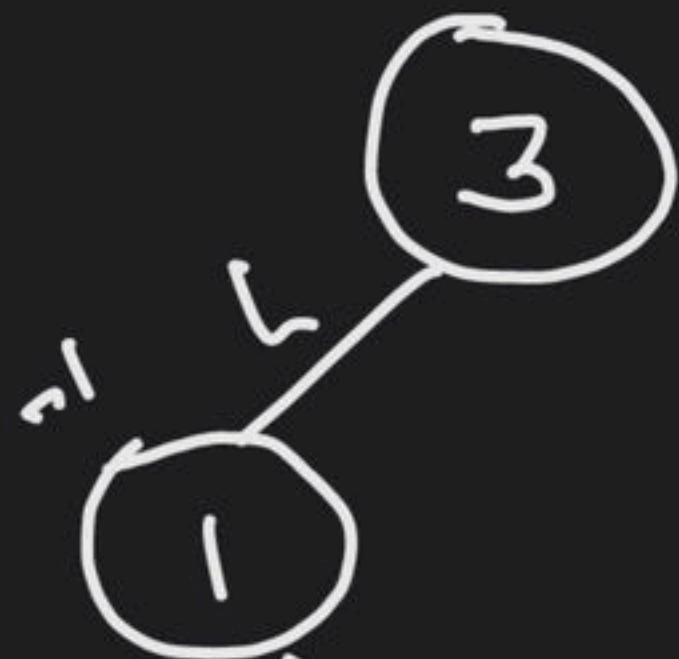
2, 5, 10



3.) unacademy Insert

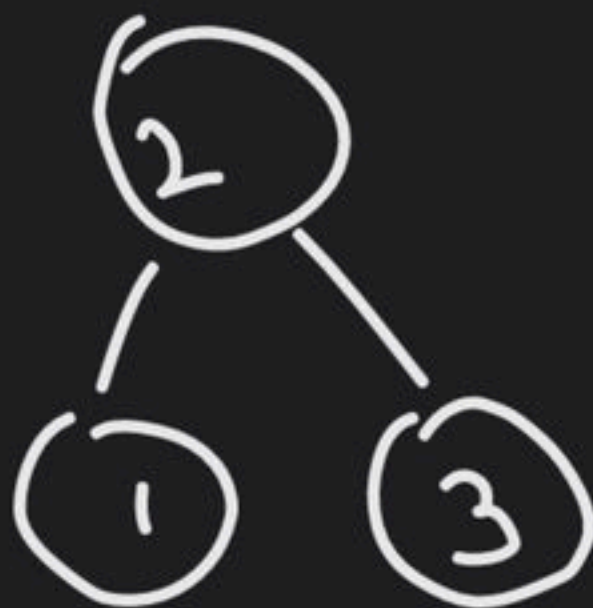
3, 1, 2

+2 ← violate

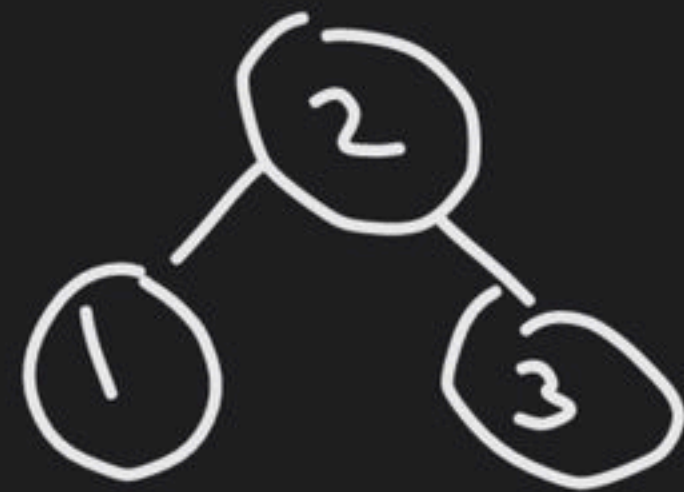


LR  
rotation

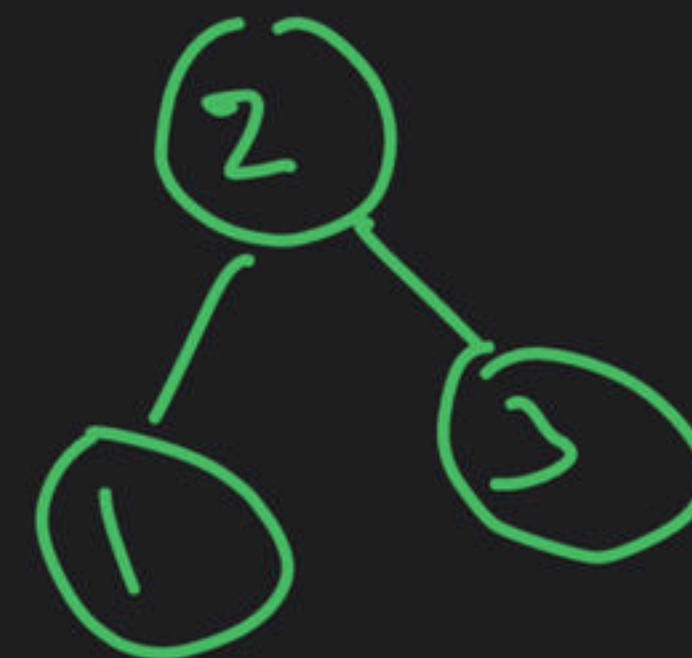
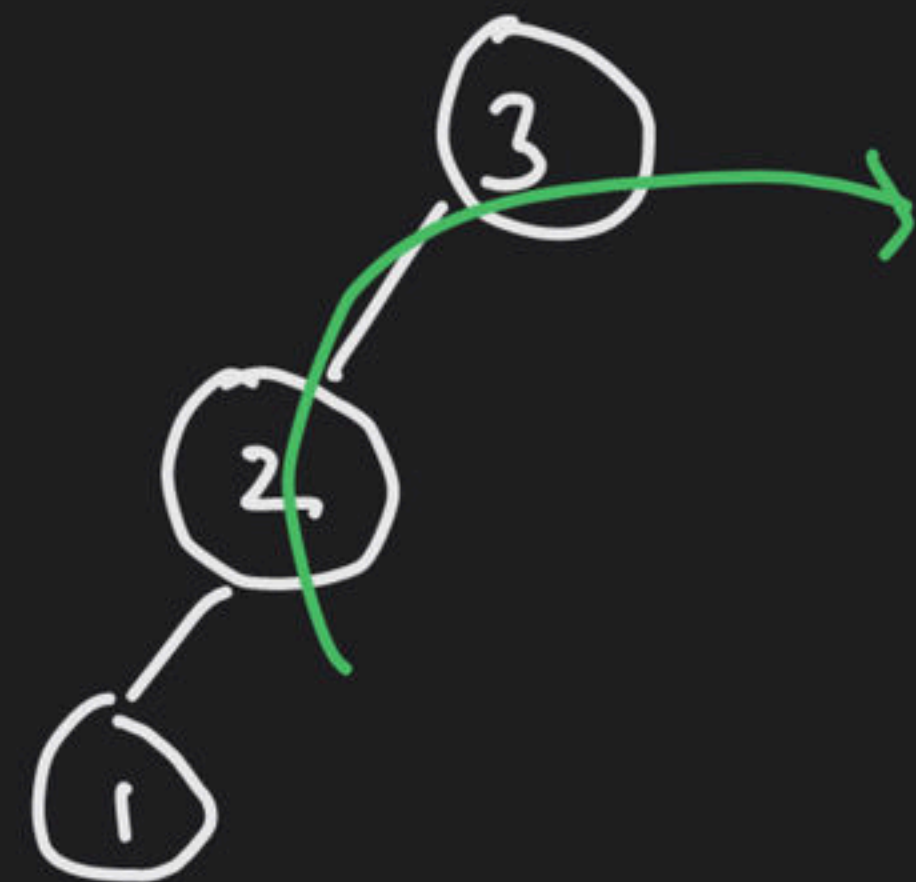
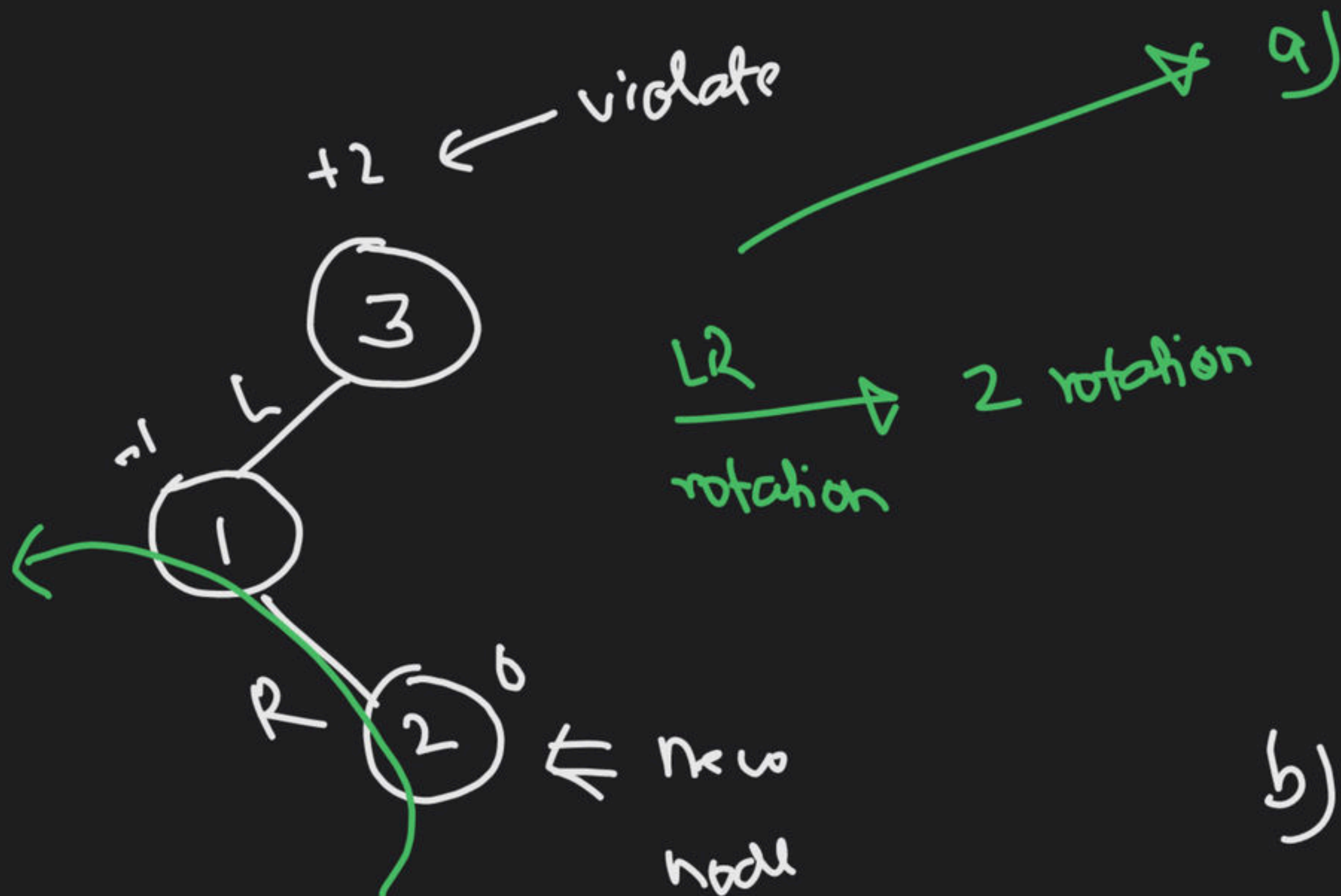
Tri-node



1, 2, 3







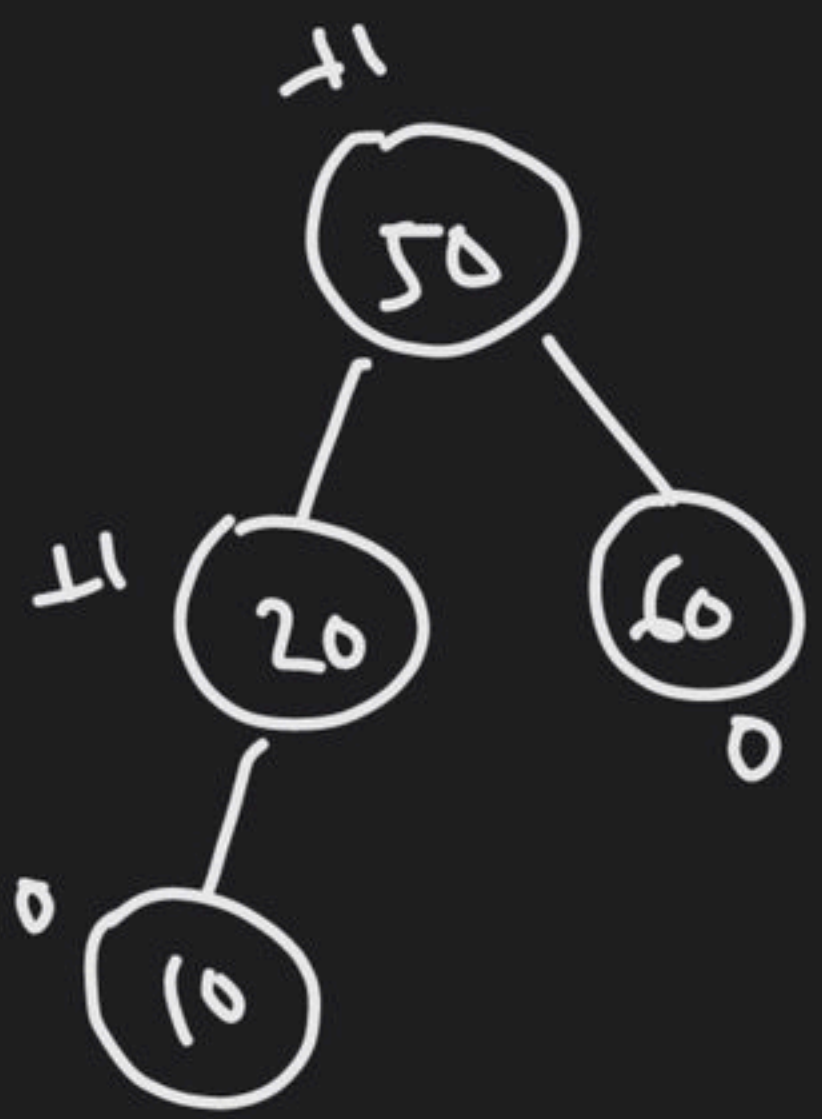


1) LL rotation } single rotations  
2) RR rotation }

3) LR rotation } double rotations  
4) RL rotation }

an AVL tree by inserting keys:

50, 20, 60, 10, 8, 15, 32, 46, 11, 48



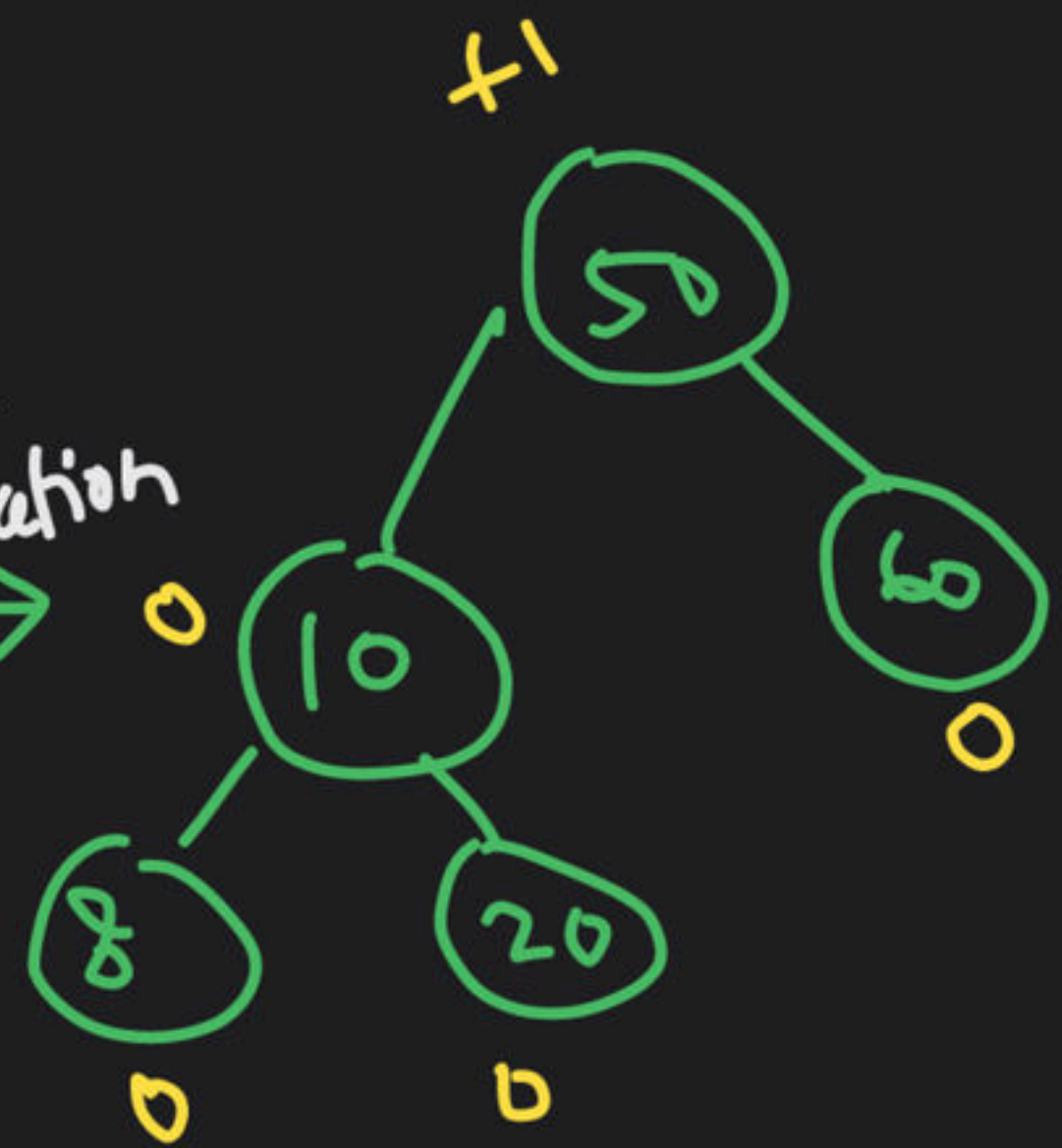
Insert

8

violate



LL violation

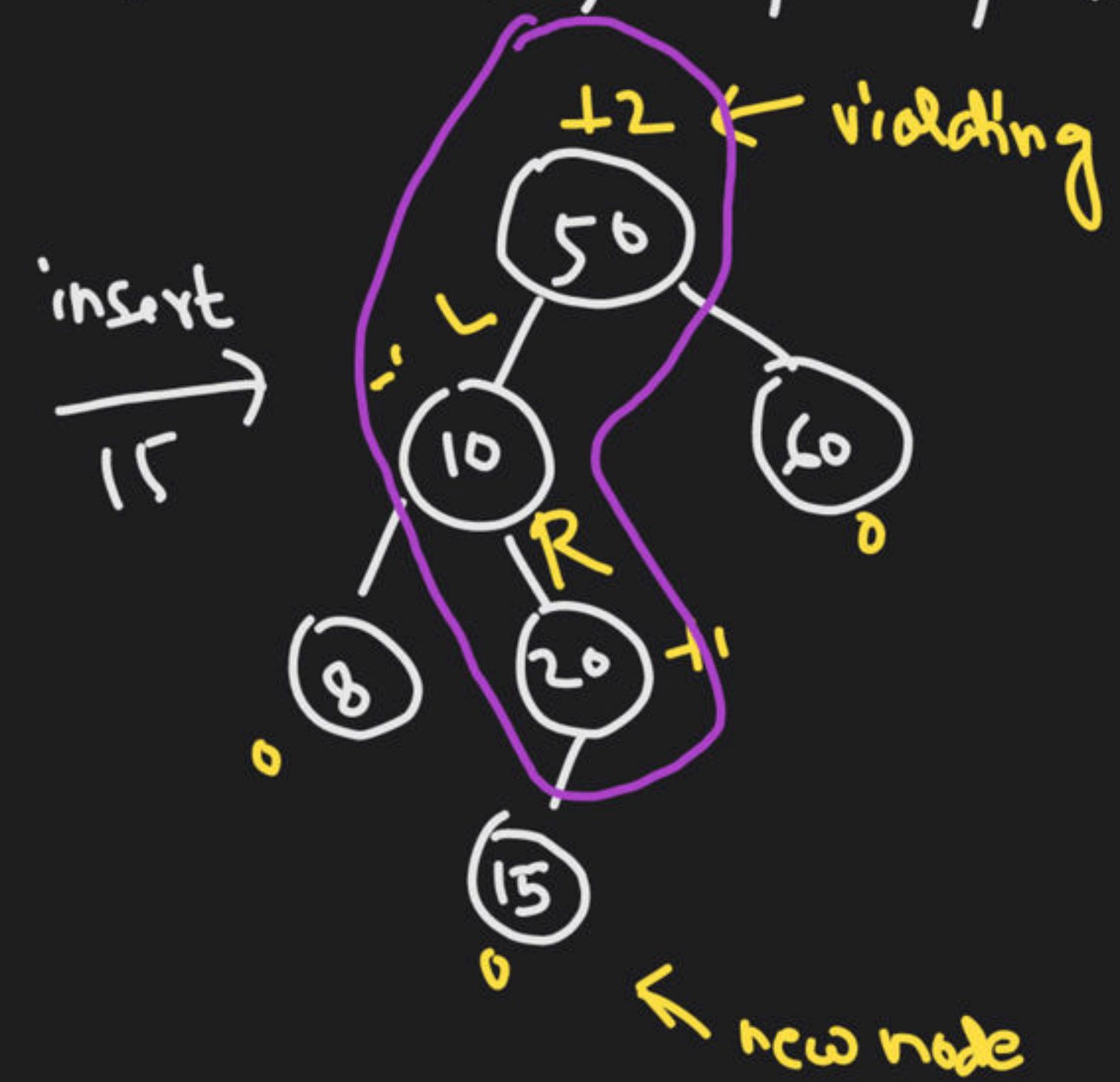


new node

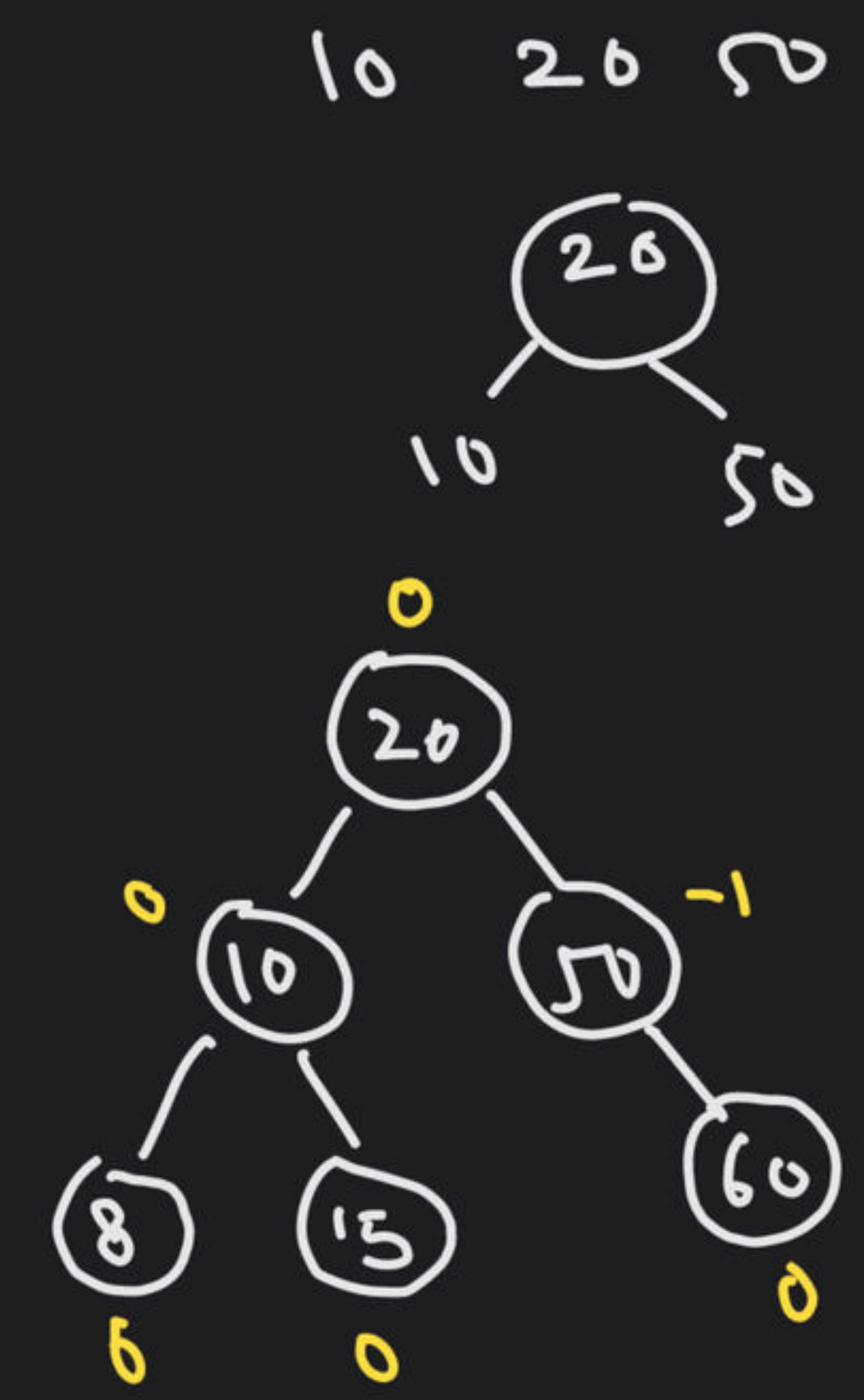


Construct an AVL tree by inserting keys:

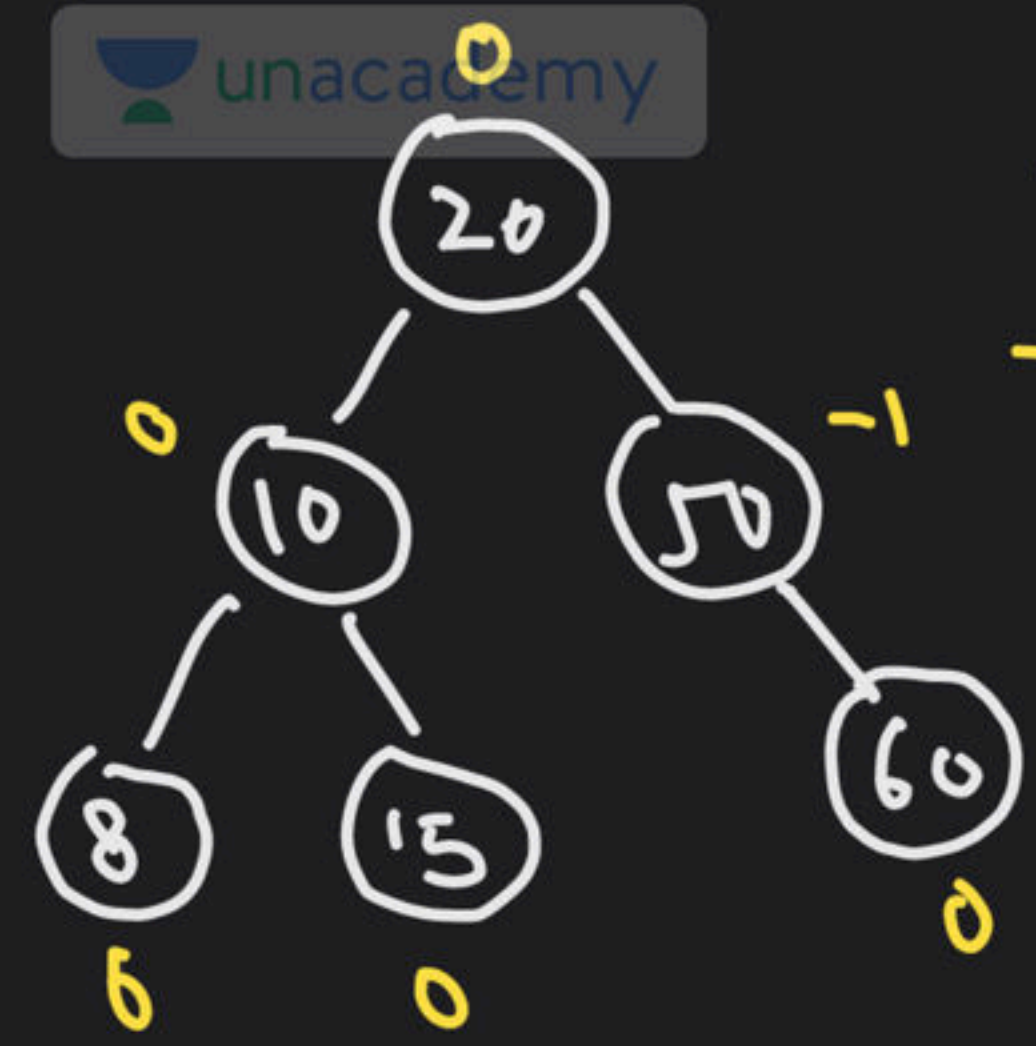
50, 20, 60, 10, 8, 15, 32, 46, 11, 48



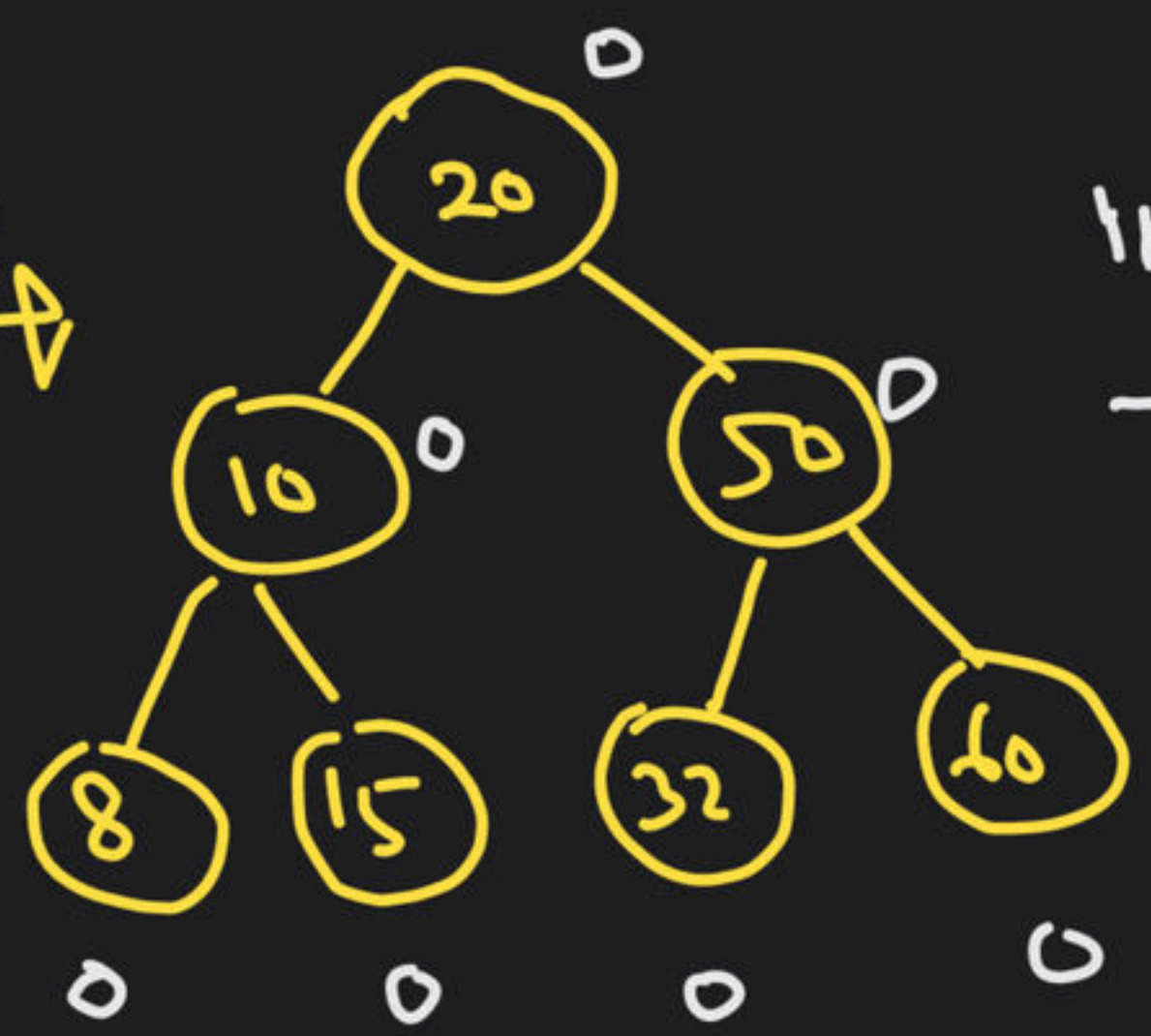
LR rotation



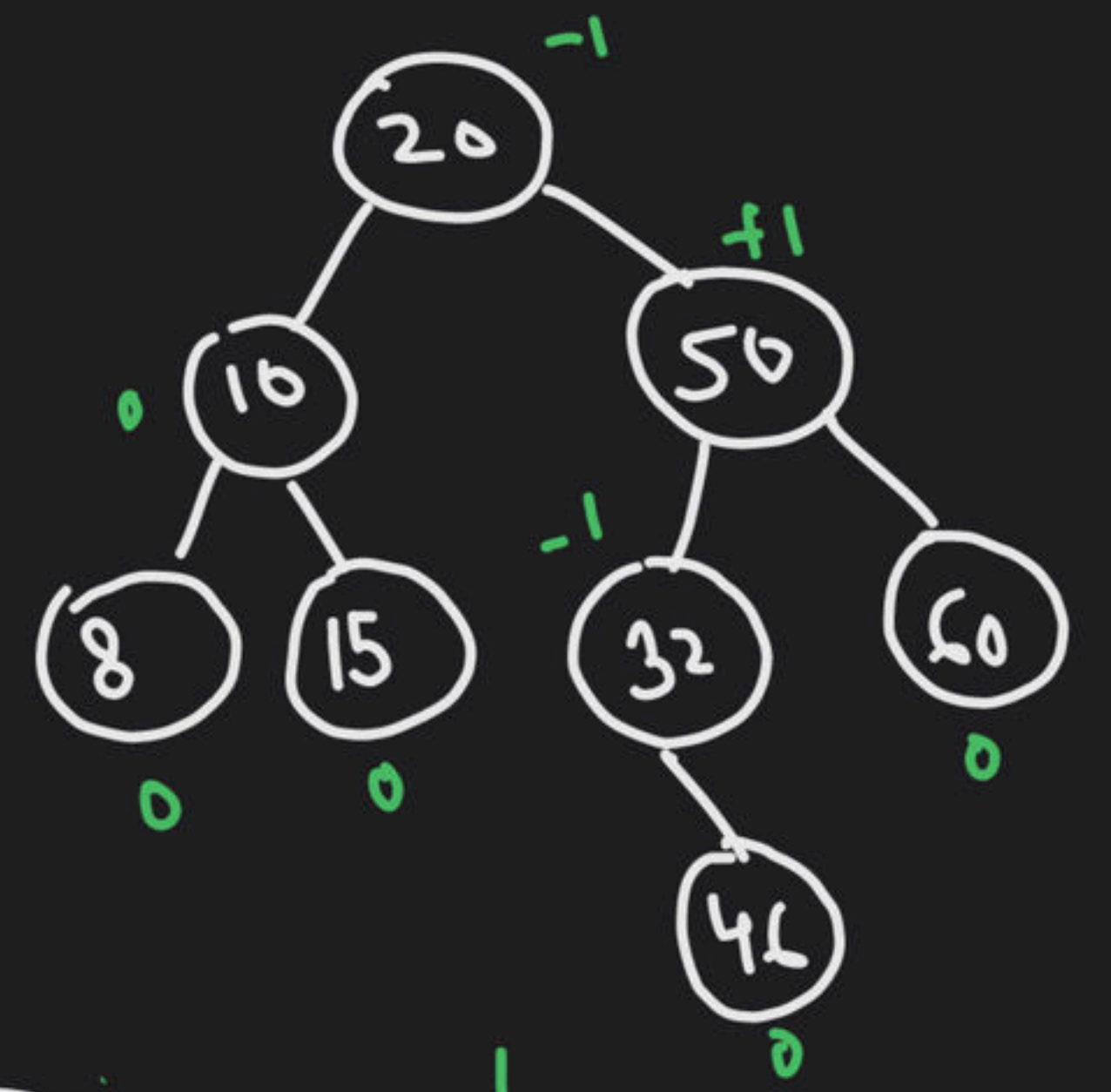




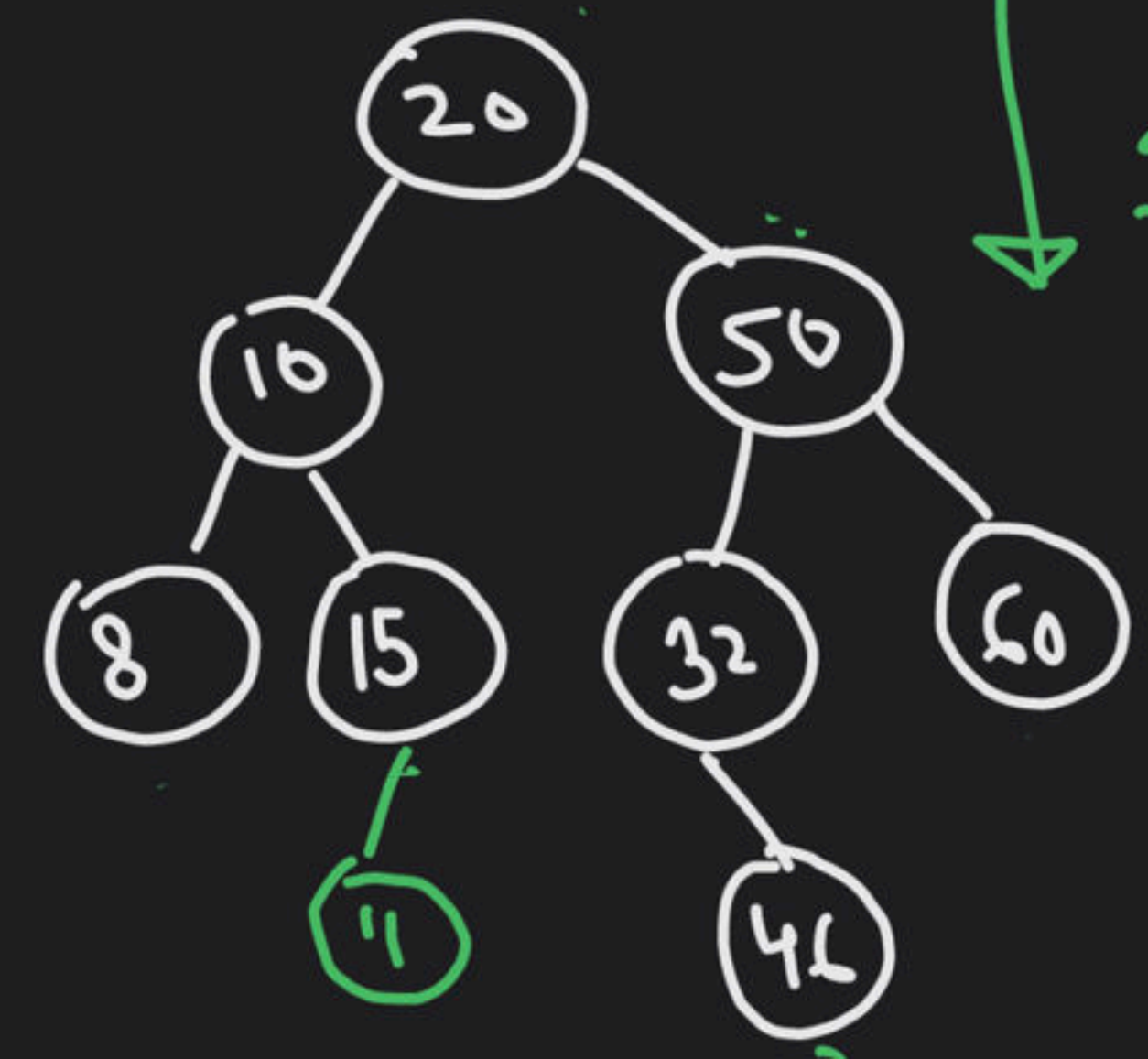
insert  
32



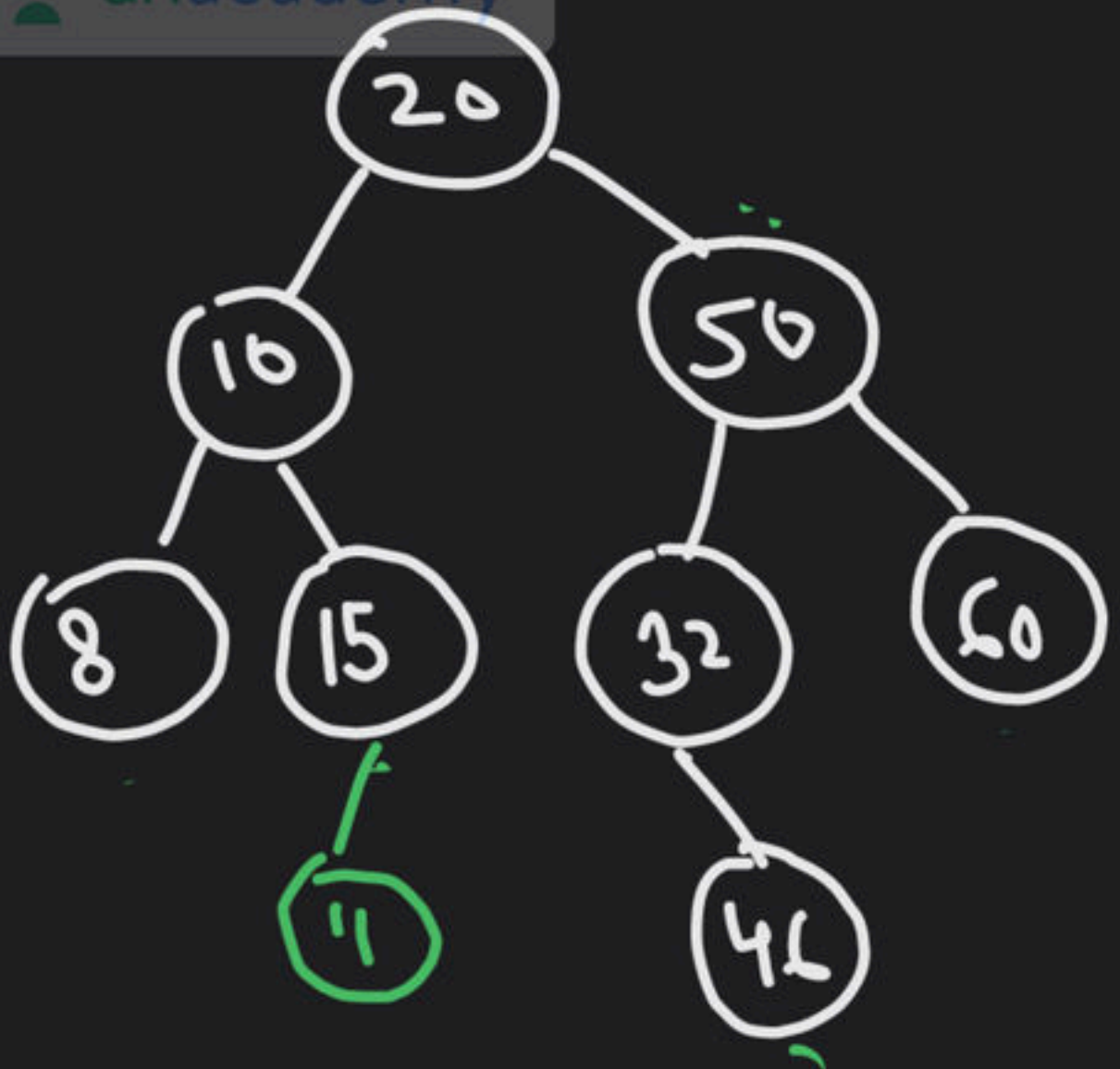
insert  
46



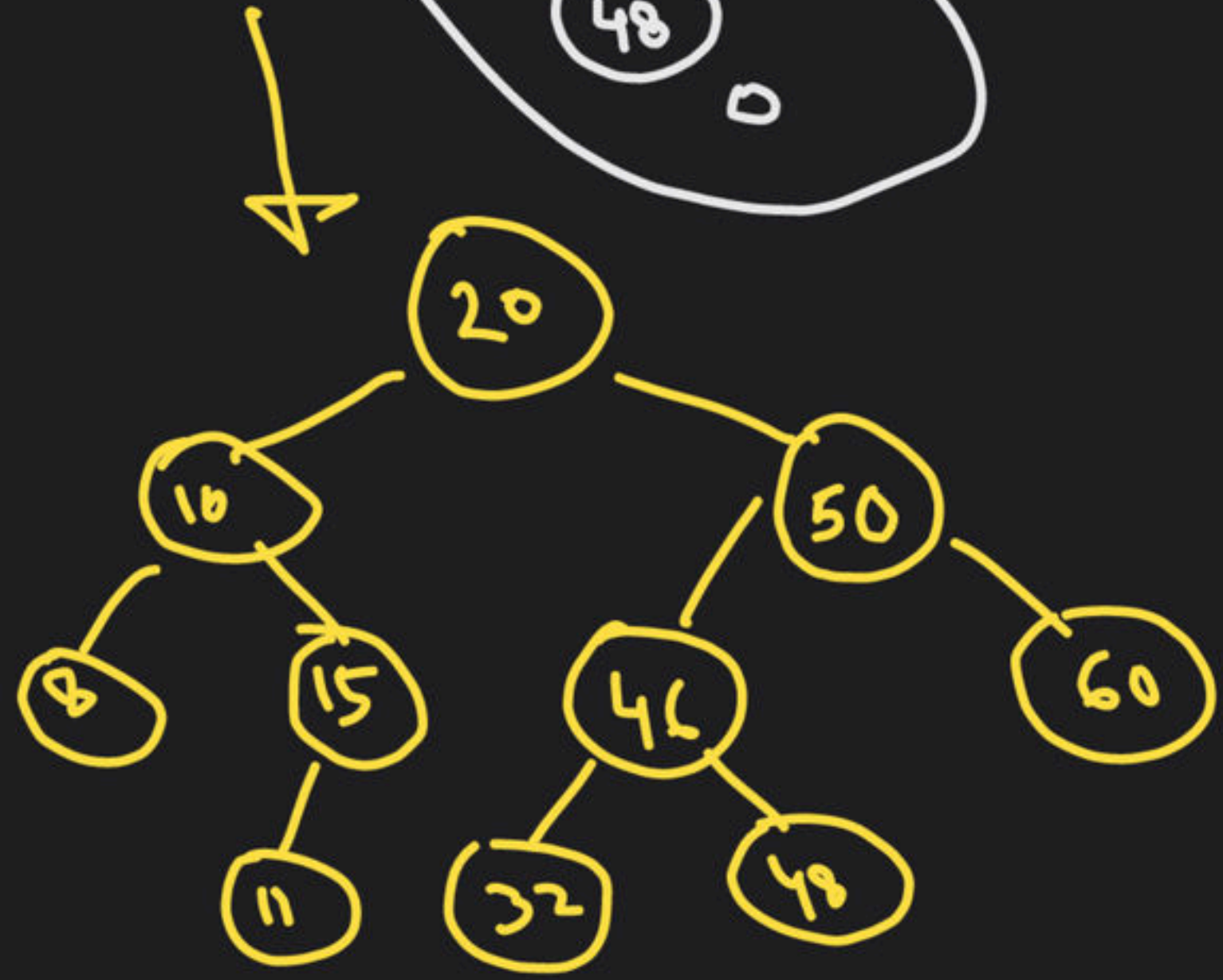
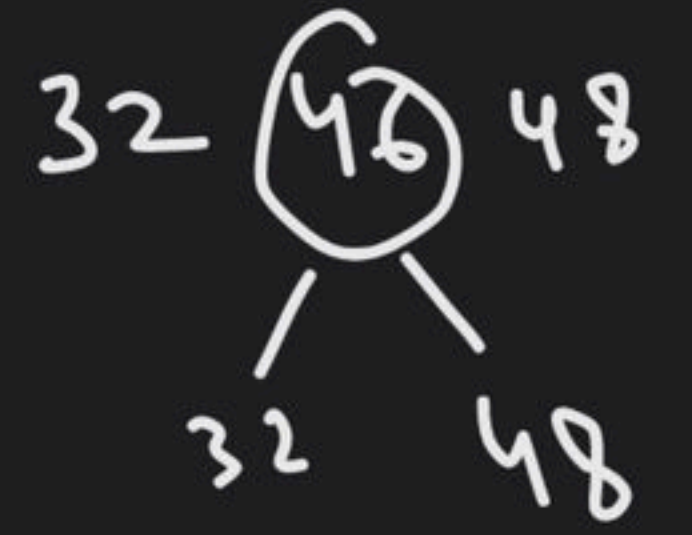
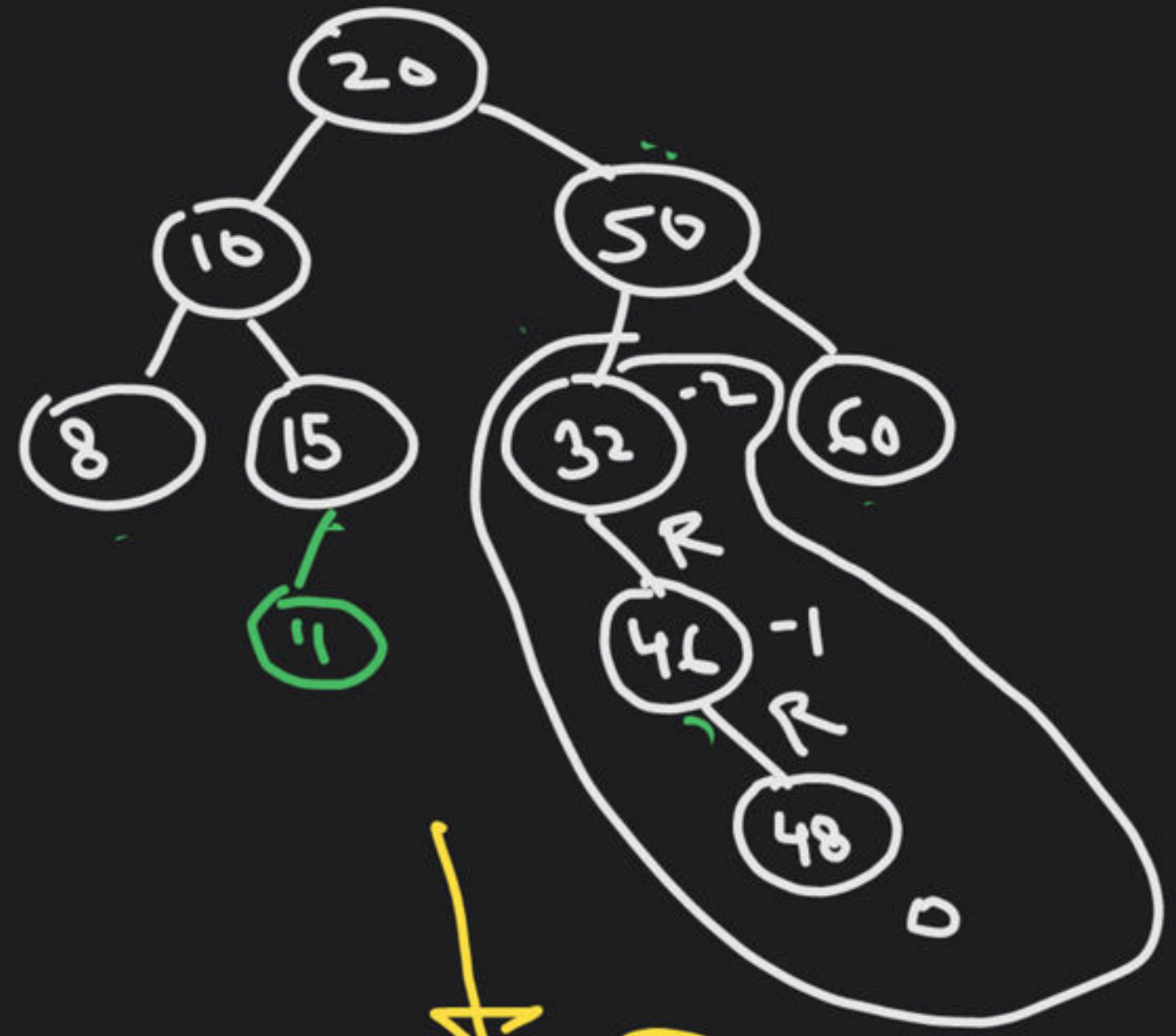
insert 11







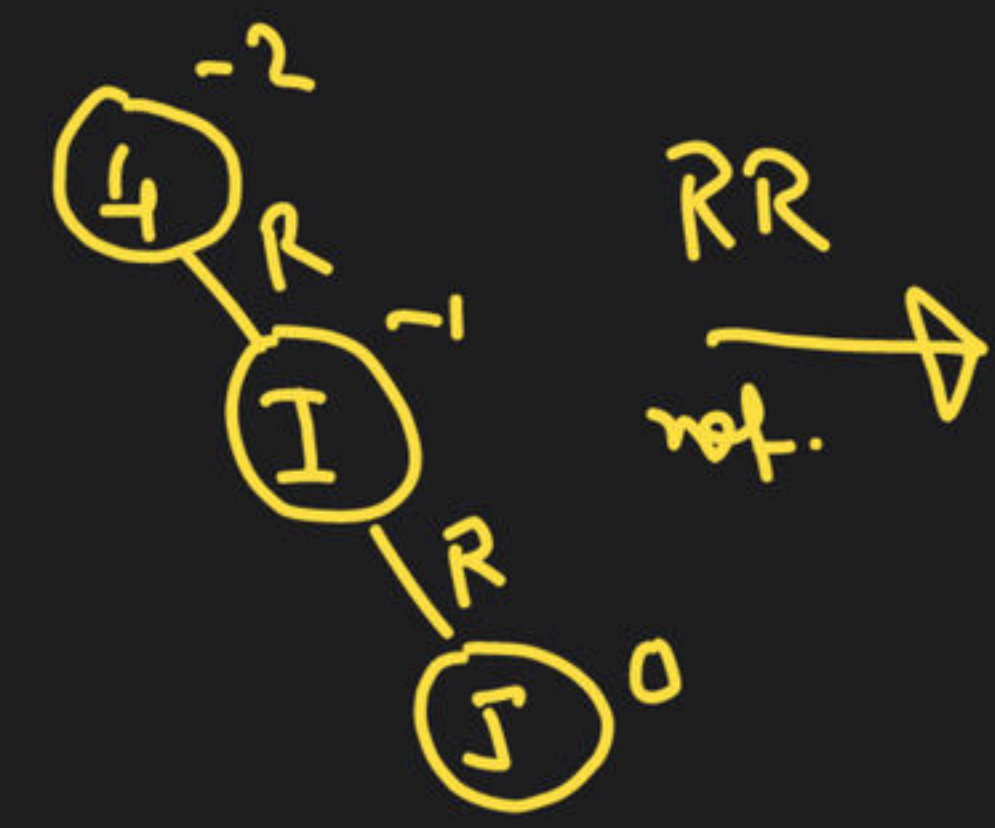
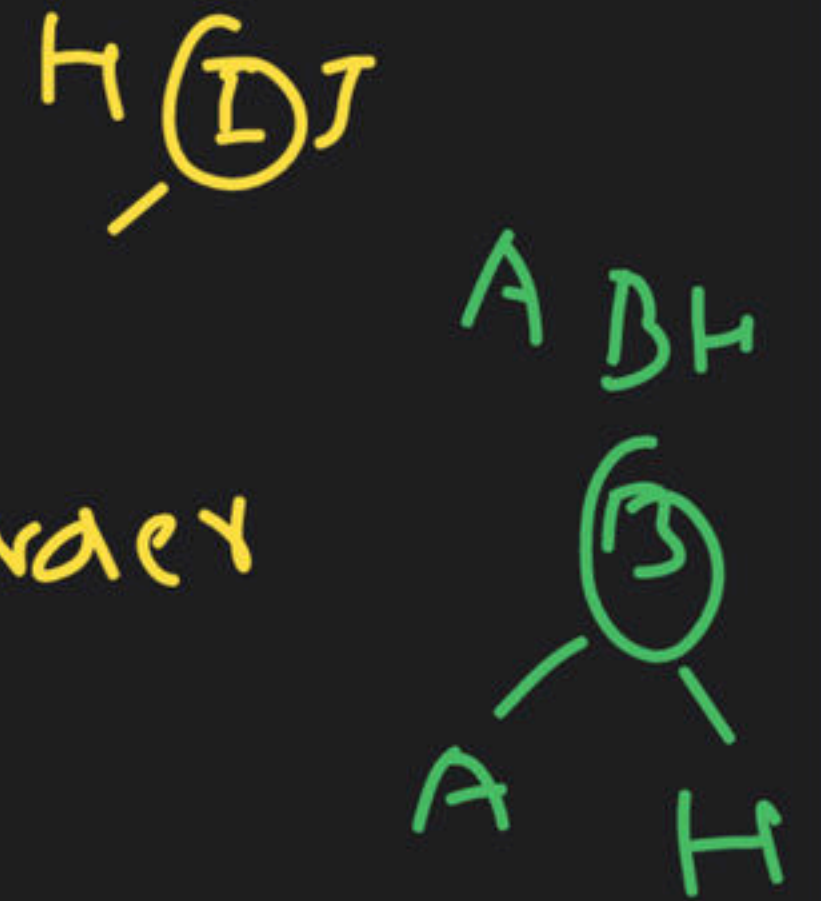
insert  
48



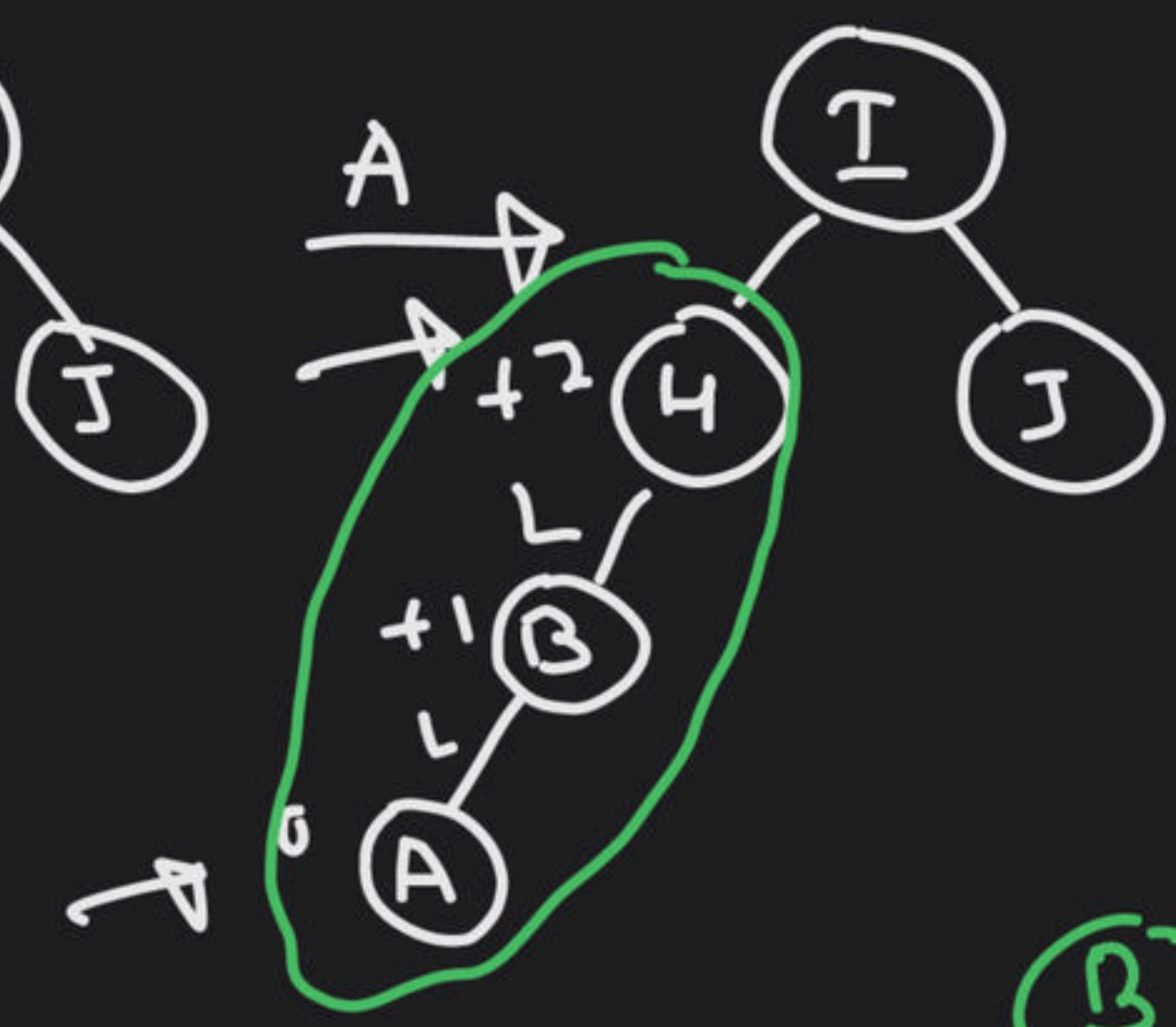
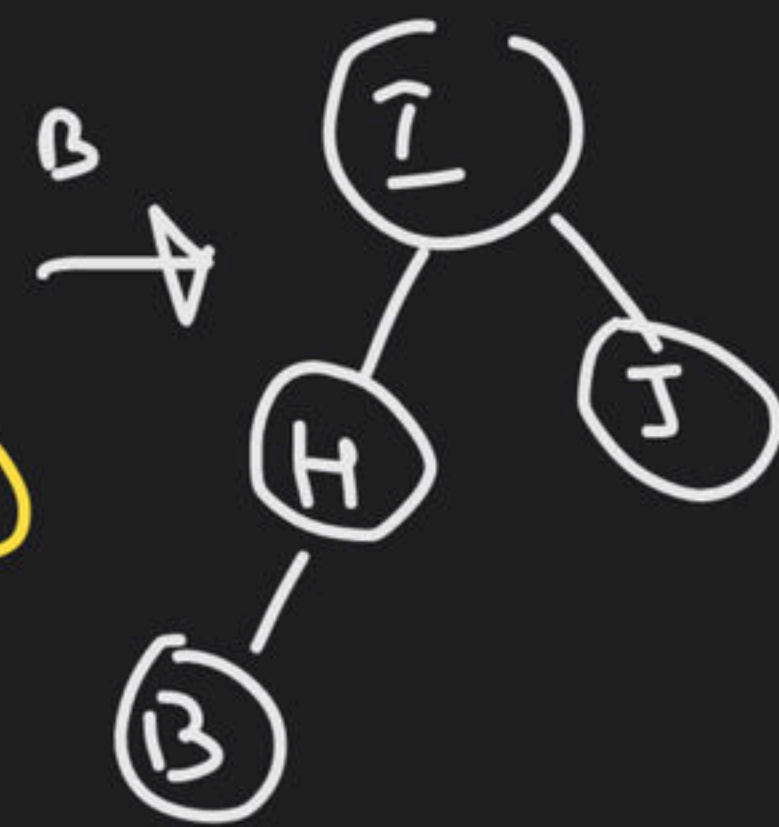
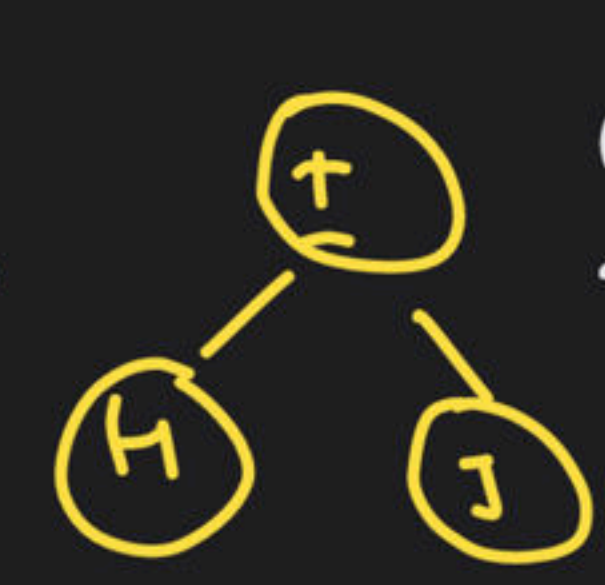


# AVL tree by inserting keys

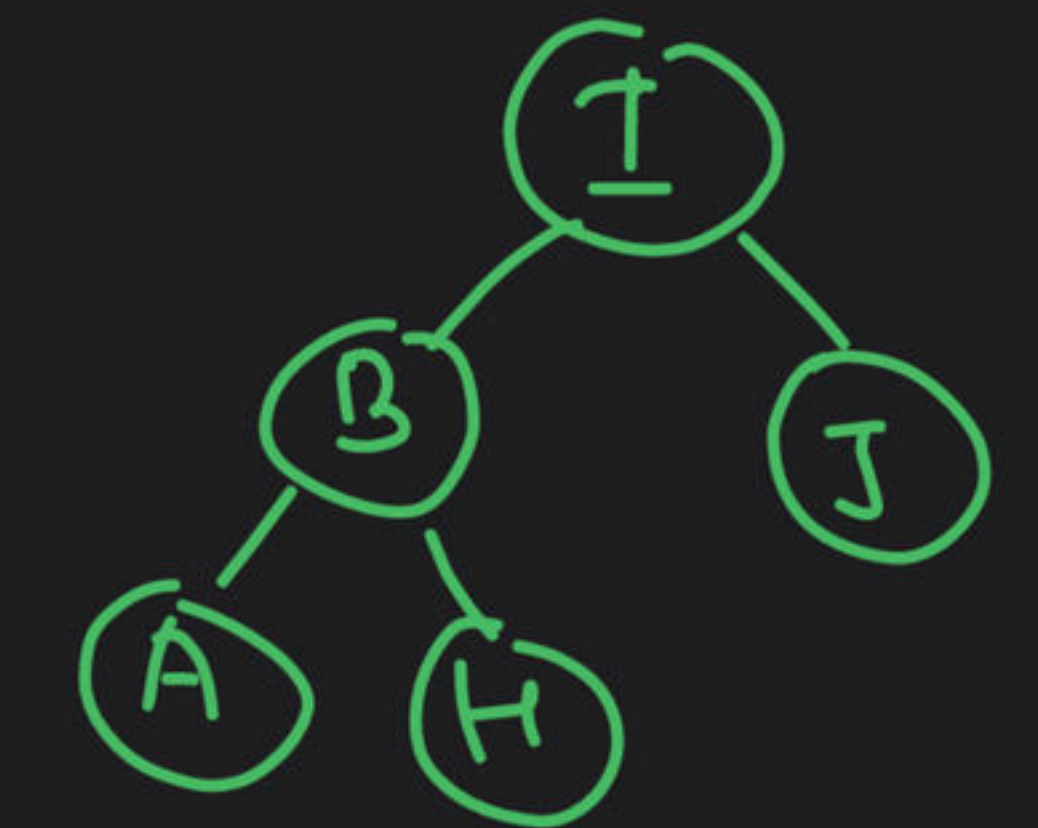
H, I, J, B, A, E, C, F, D, G, K, L in order



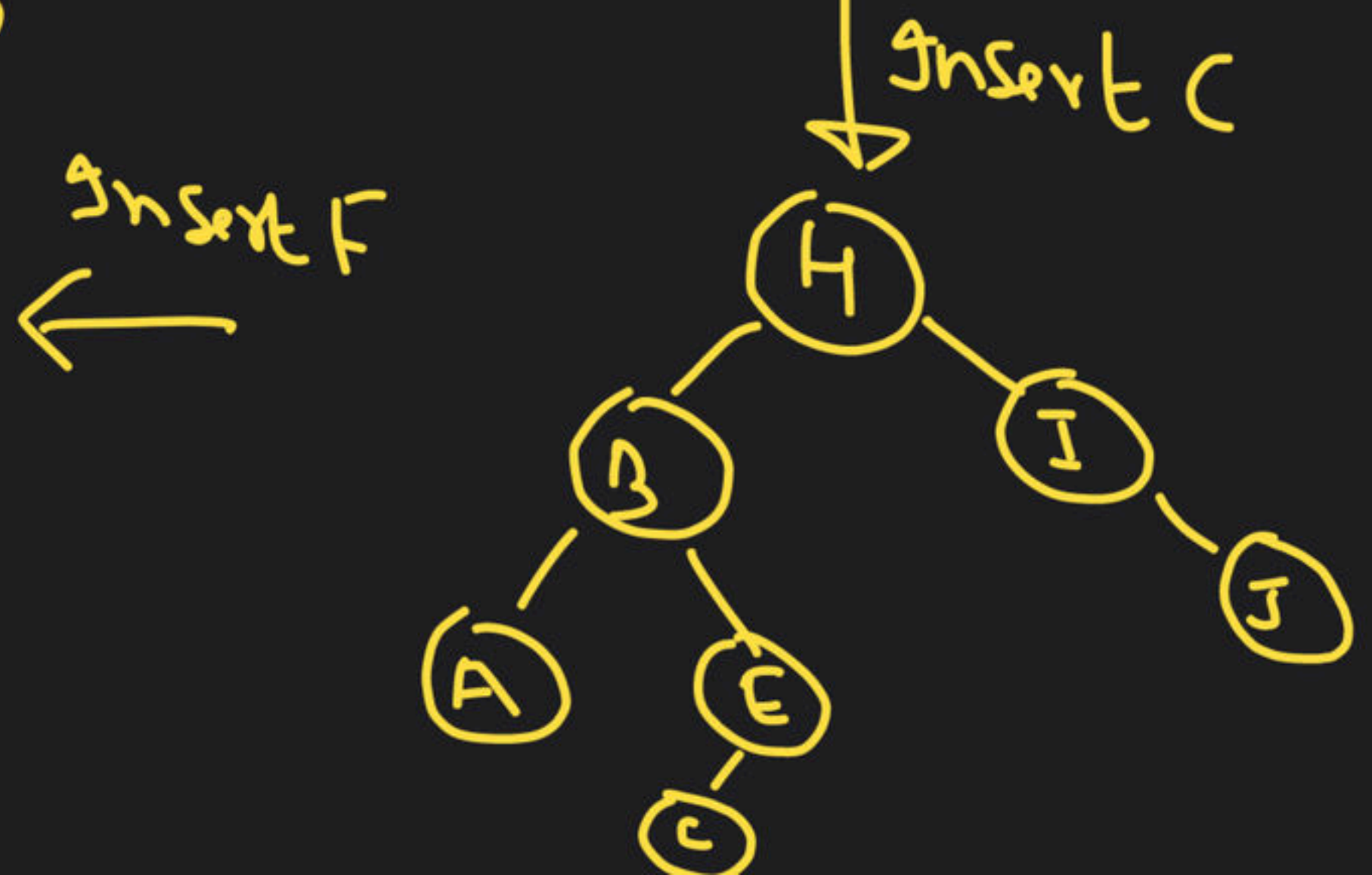
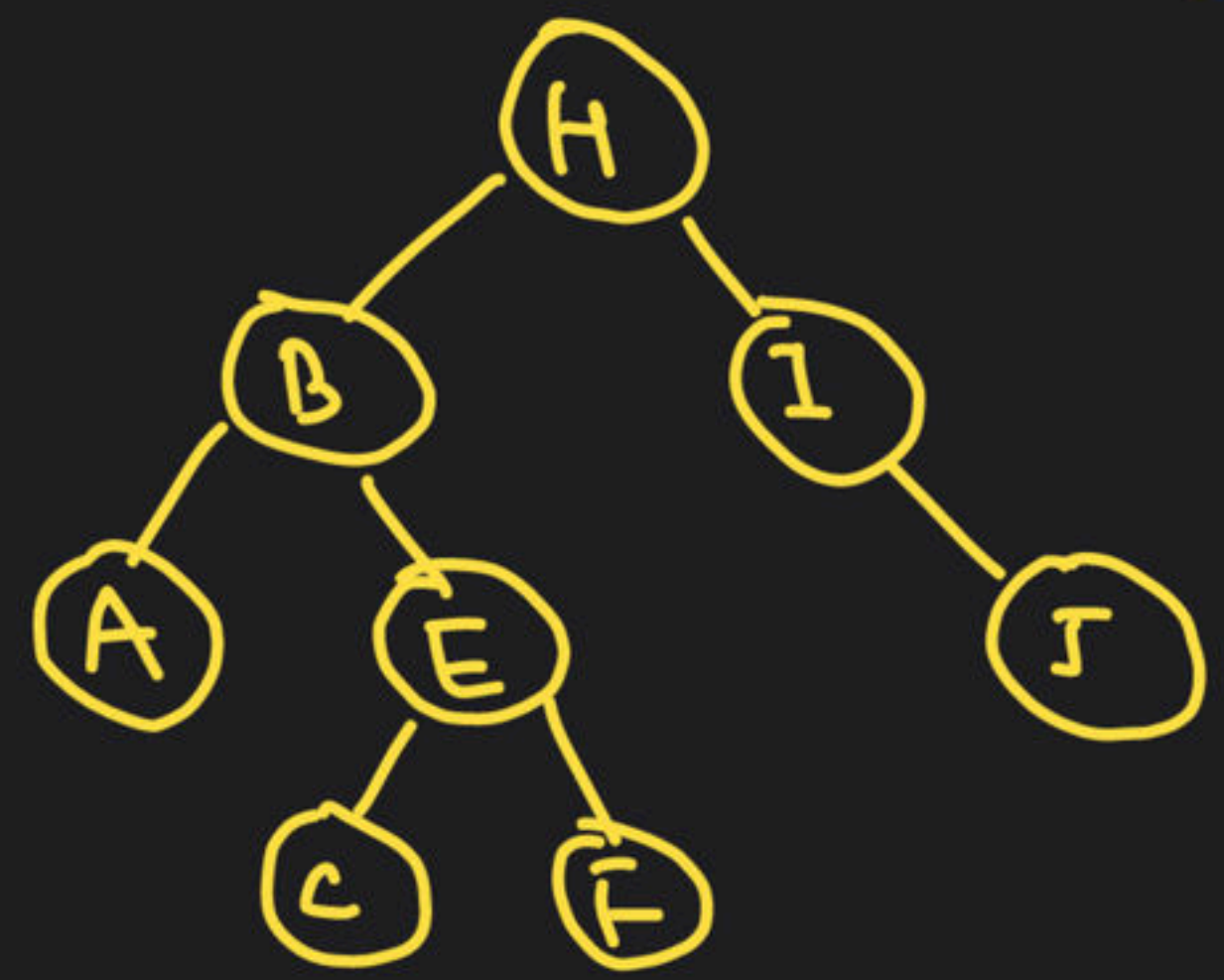
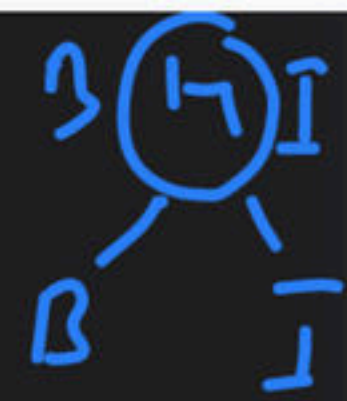
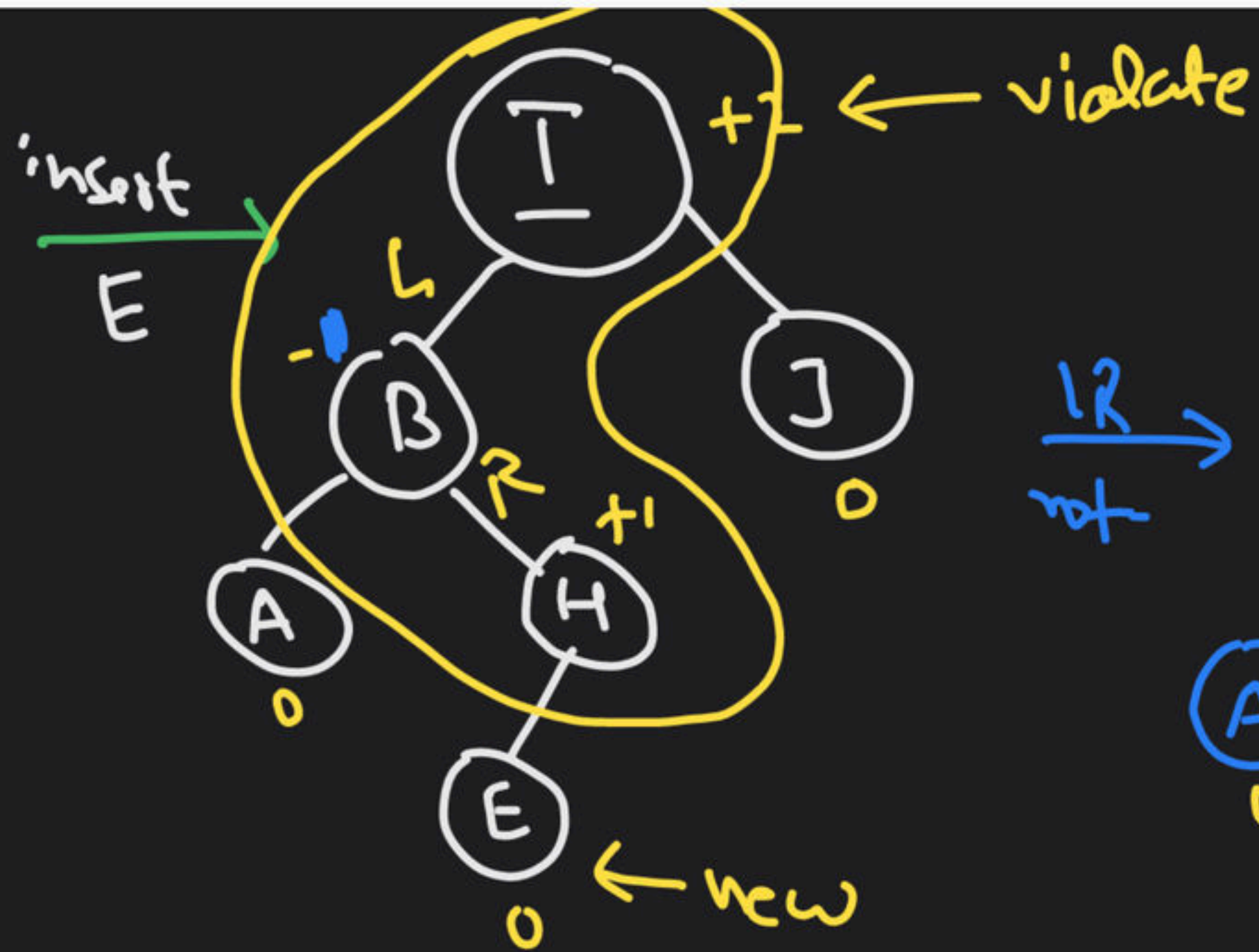
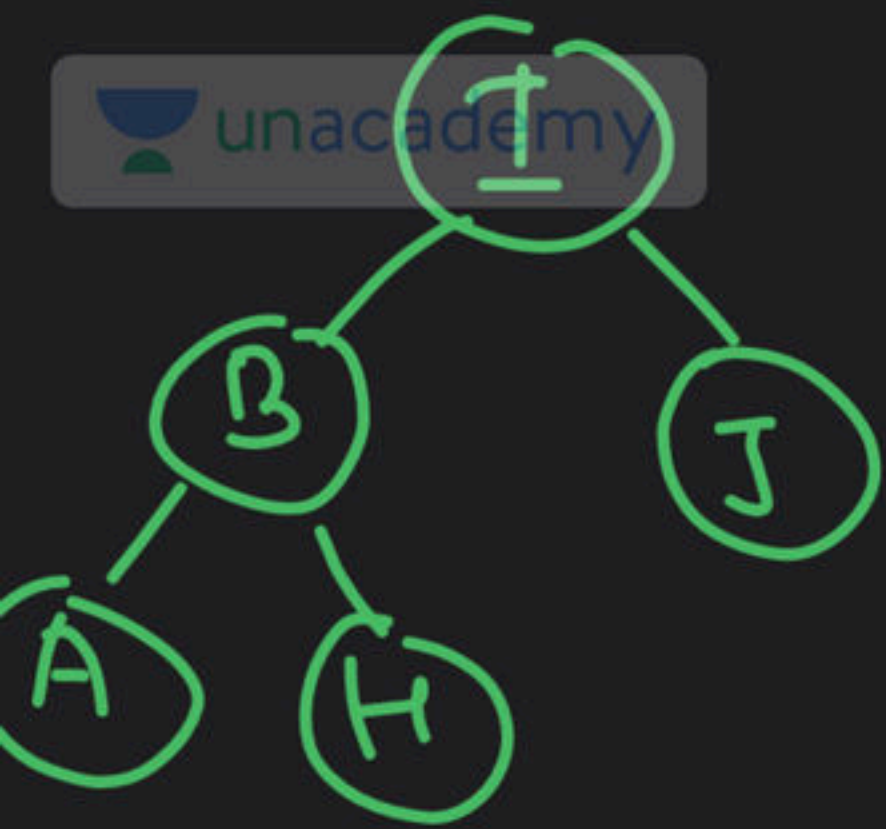
RR rot.



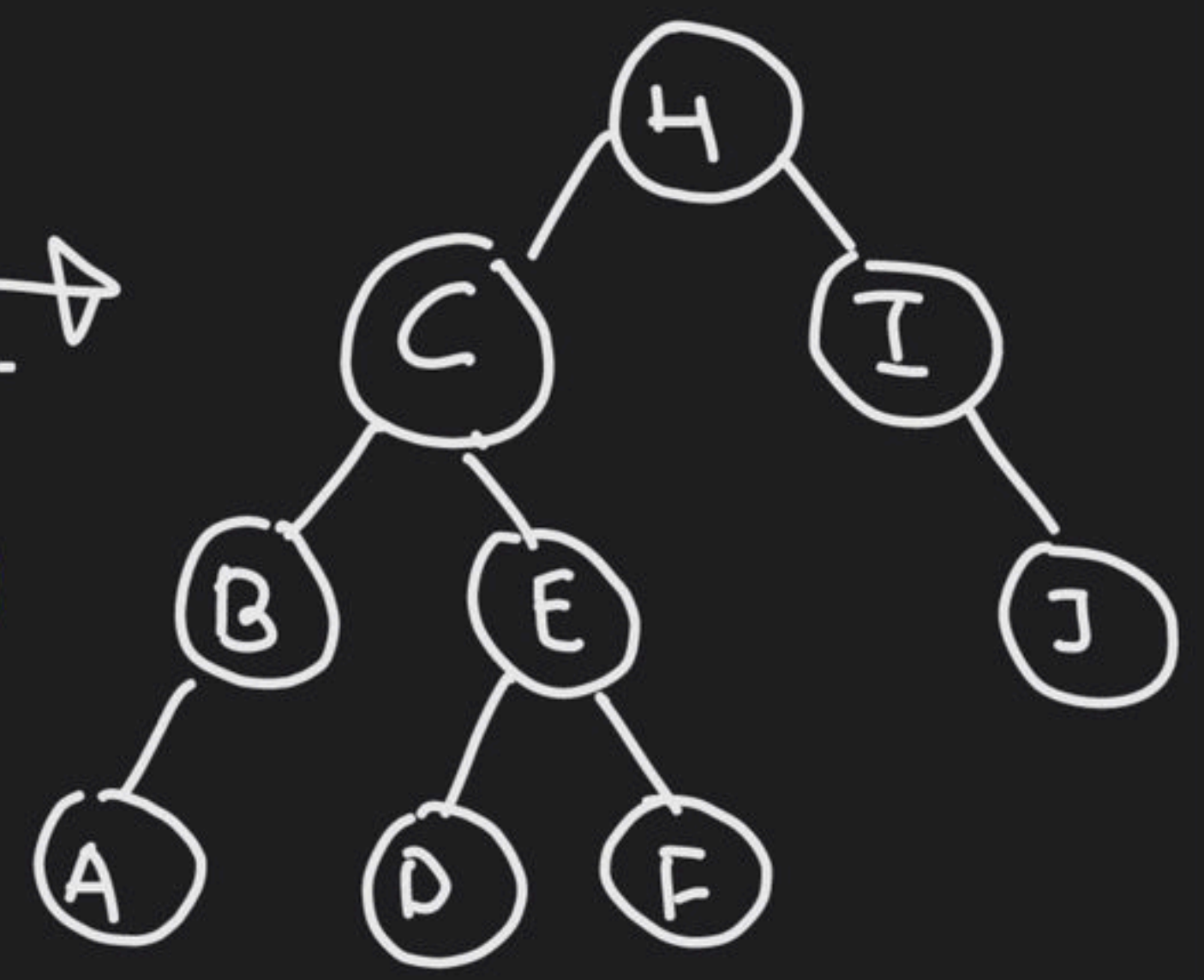
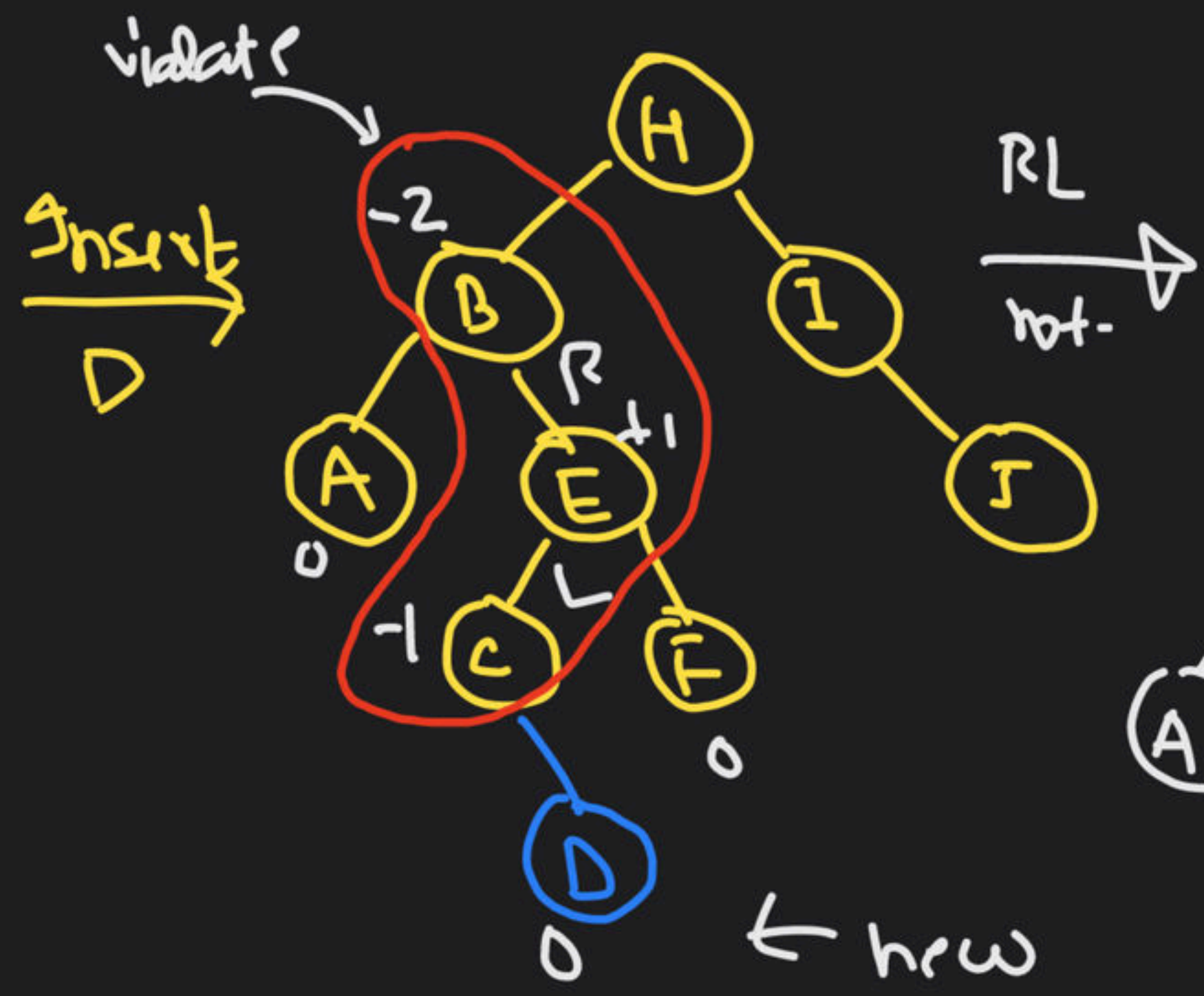
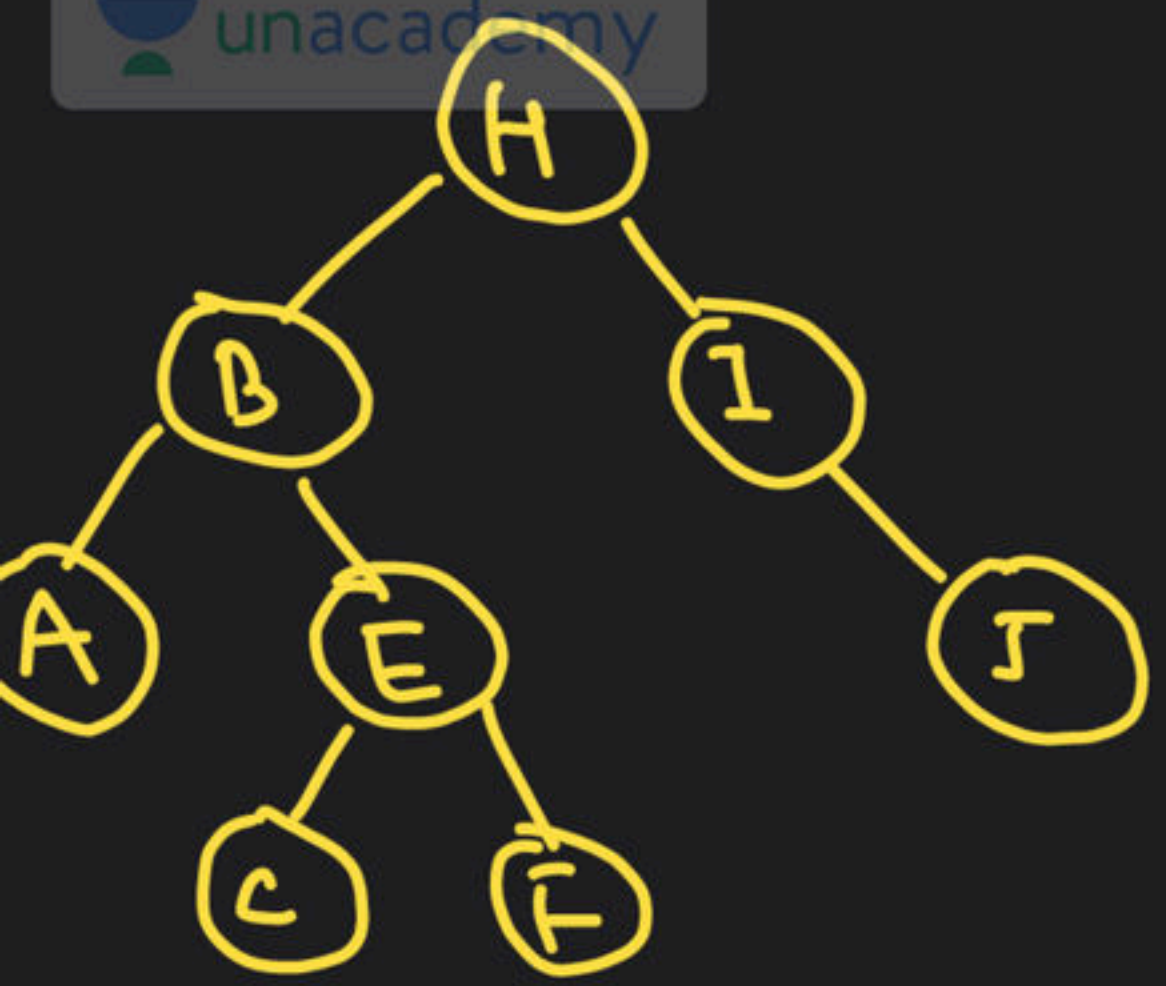
LL rot.

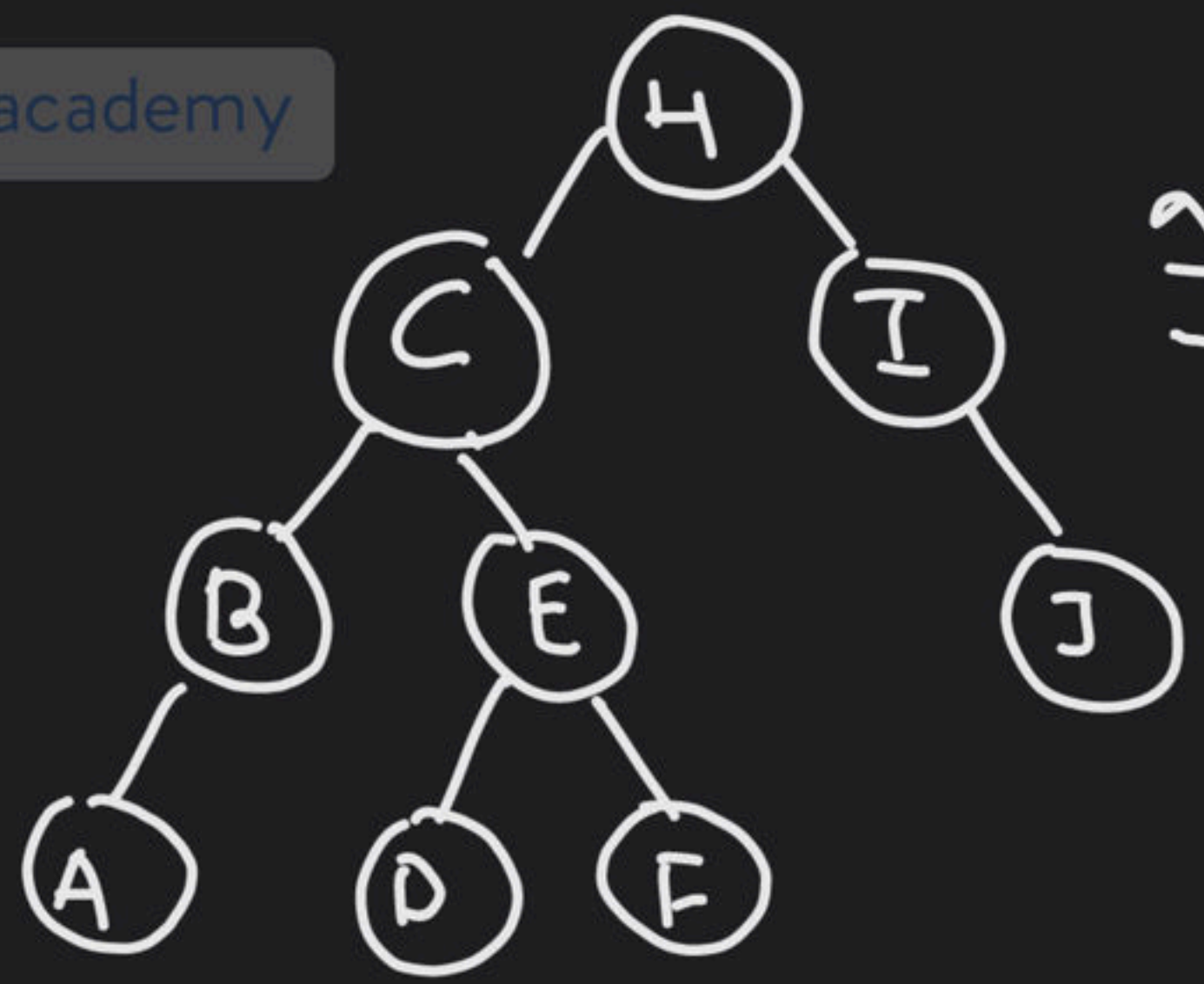




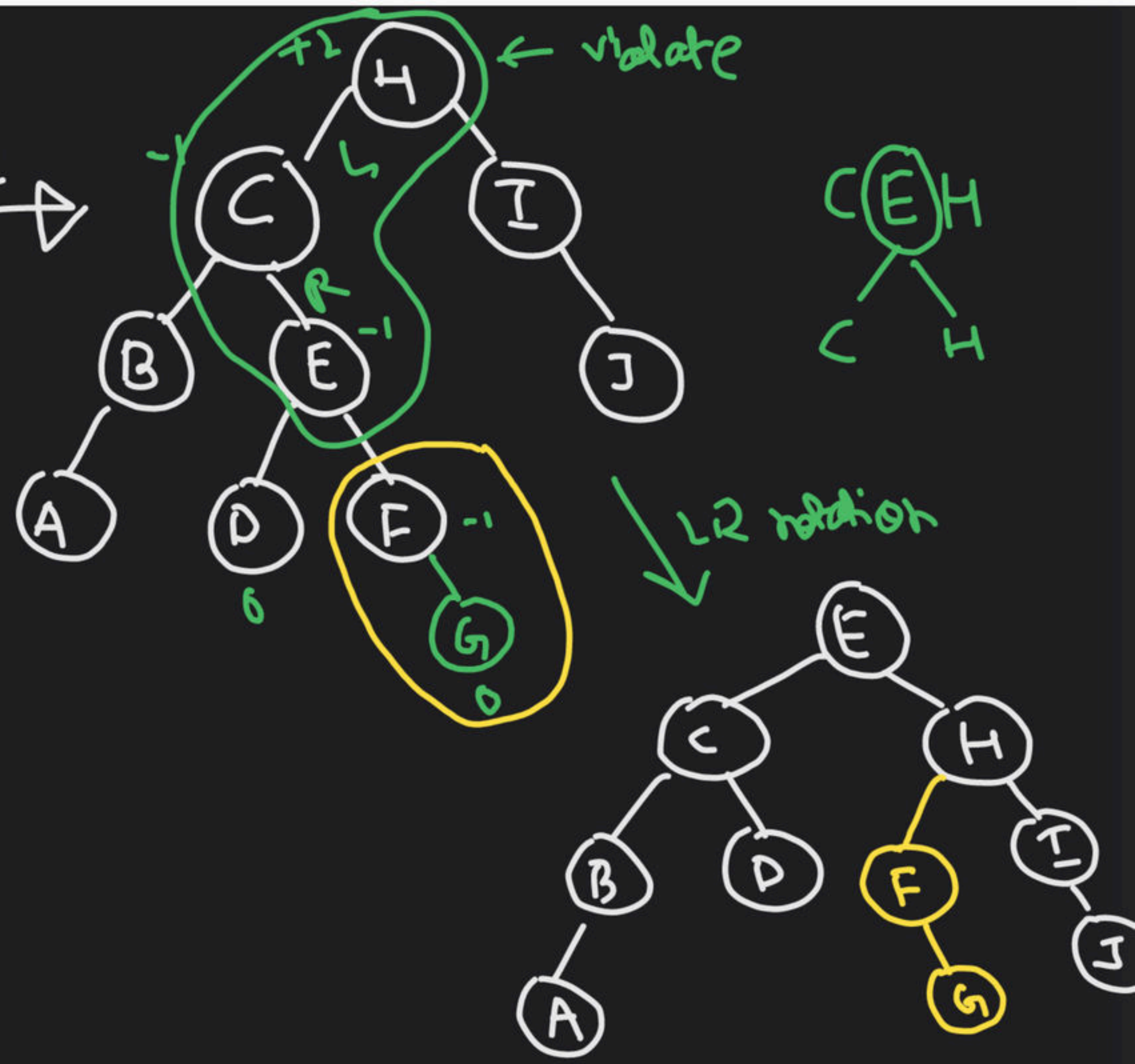




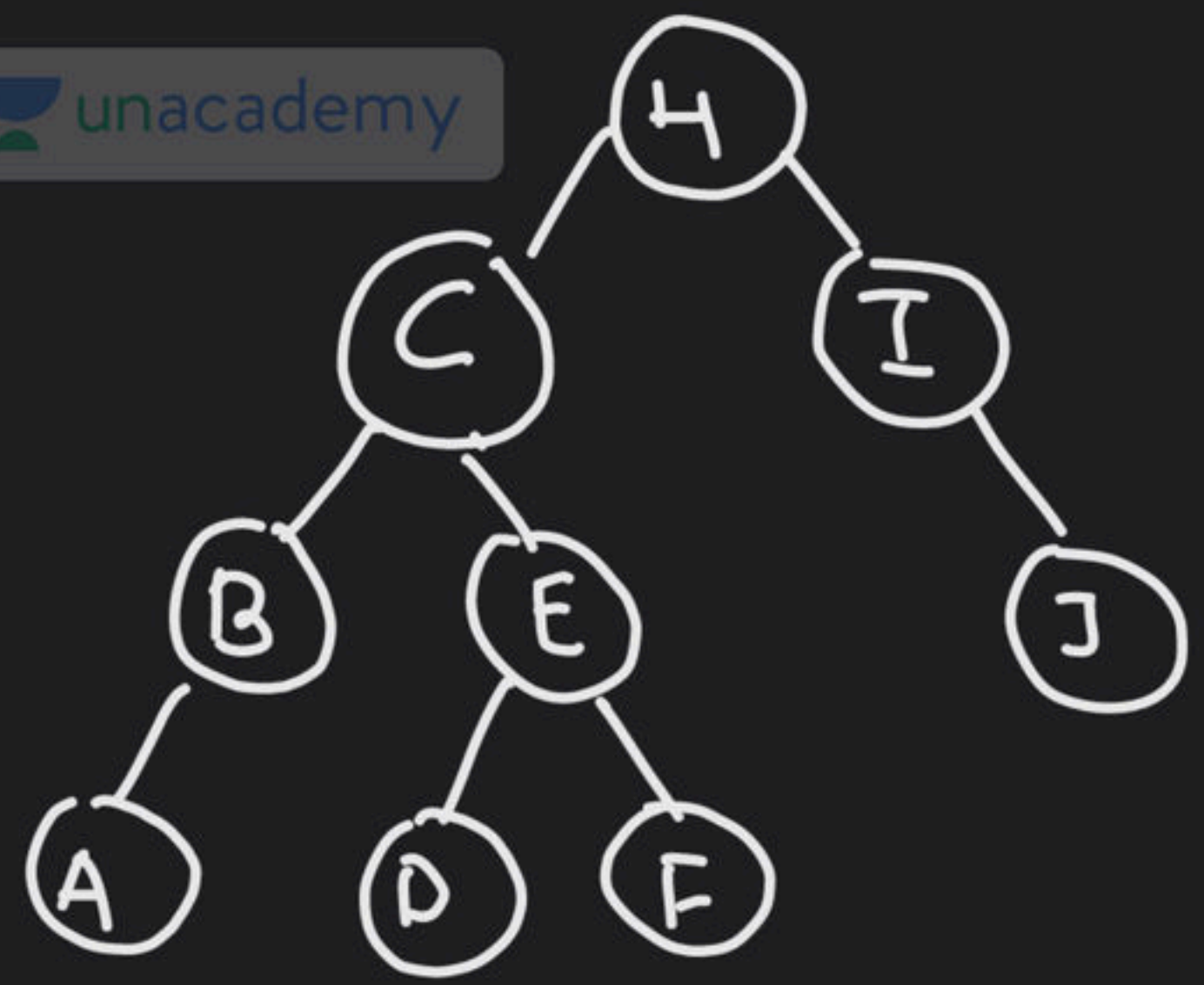




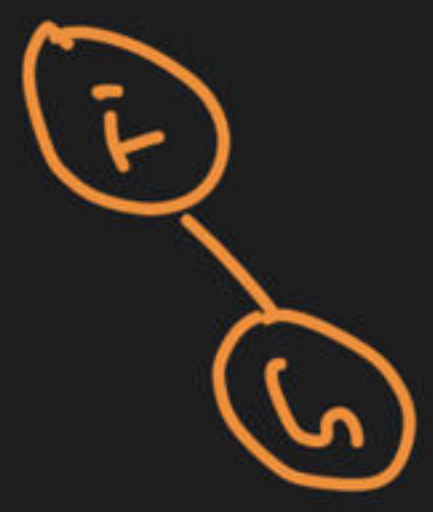
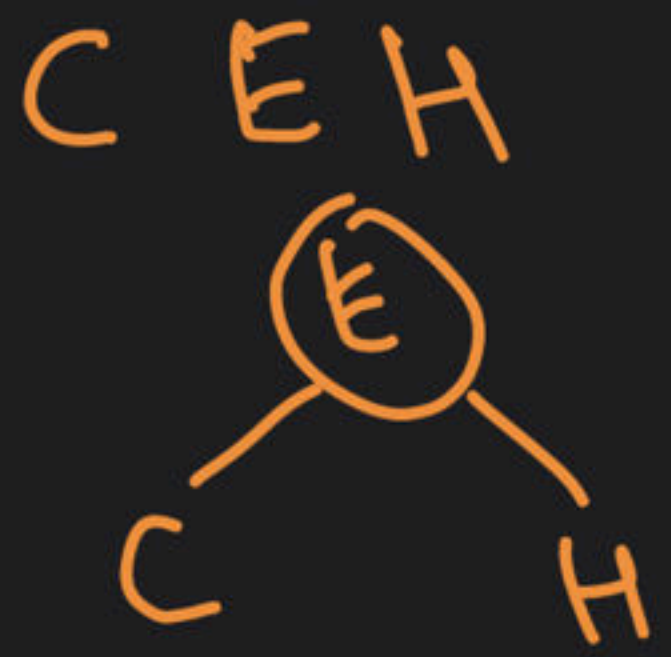
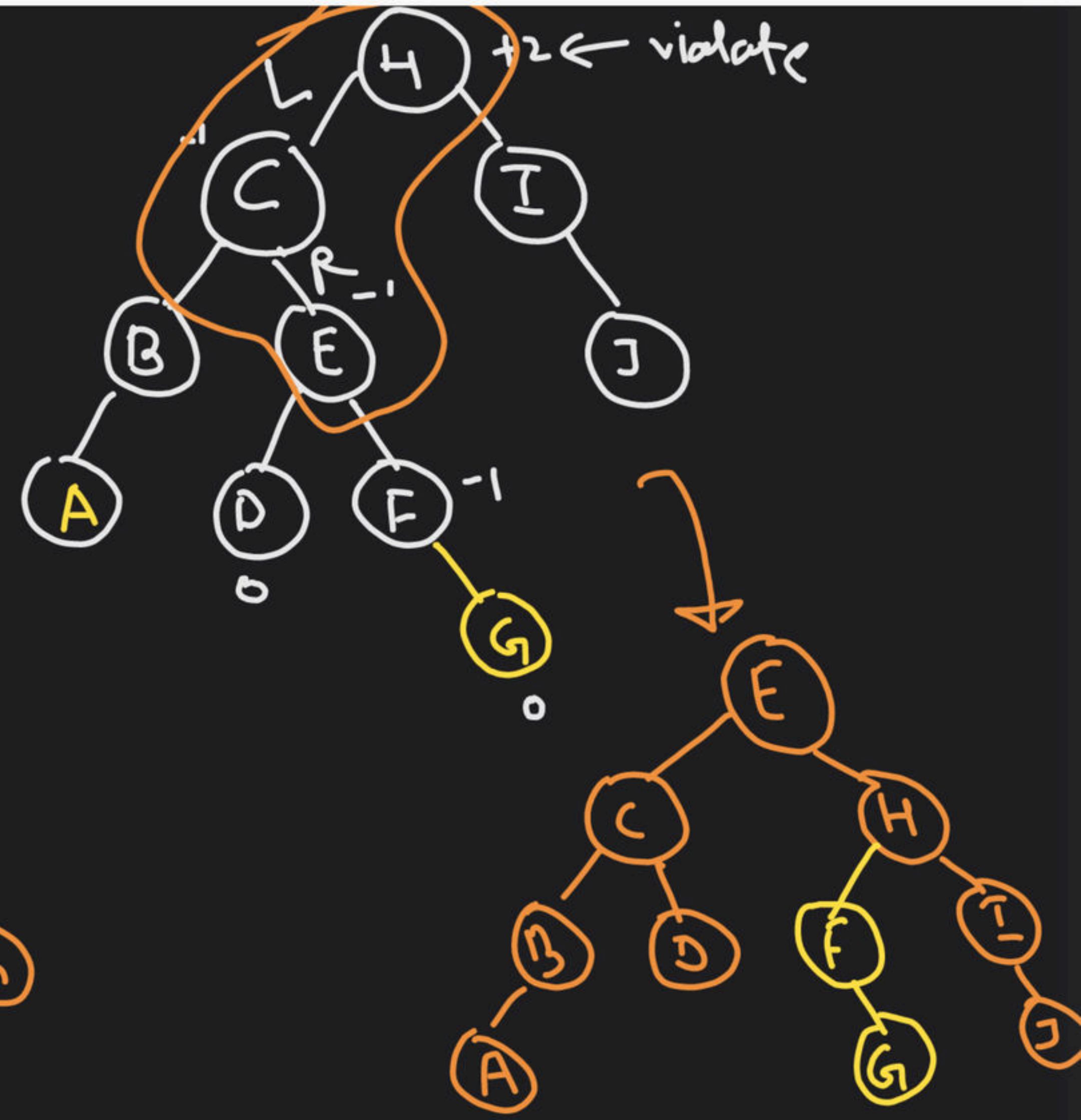
Insert  
↙ ↘

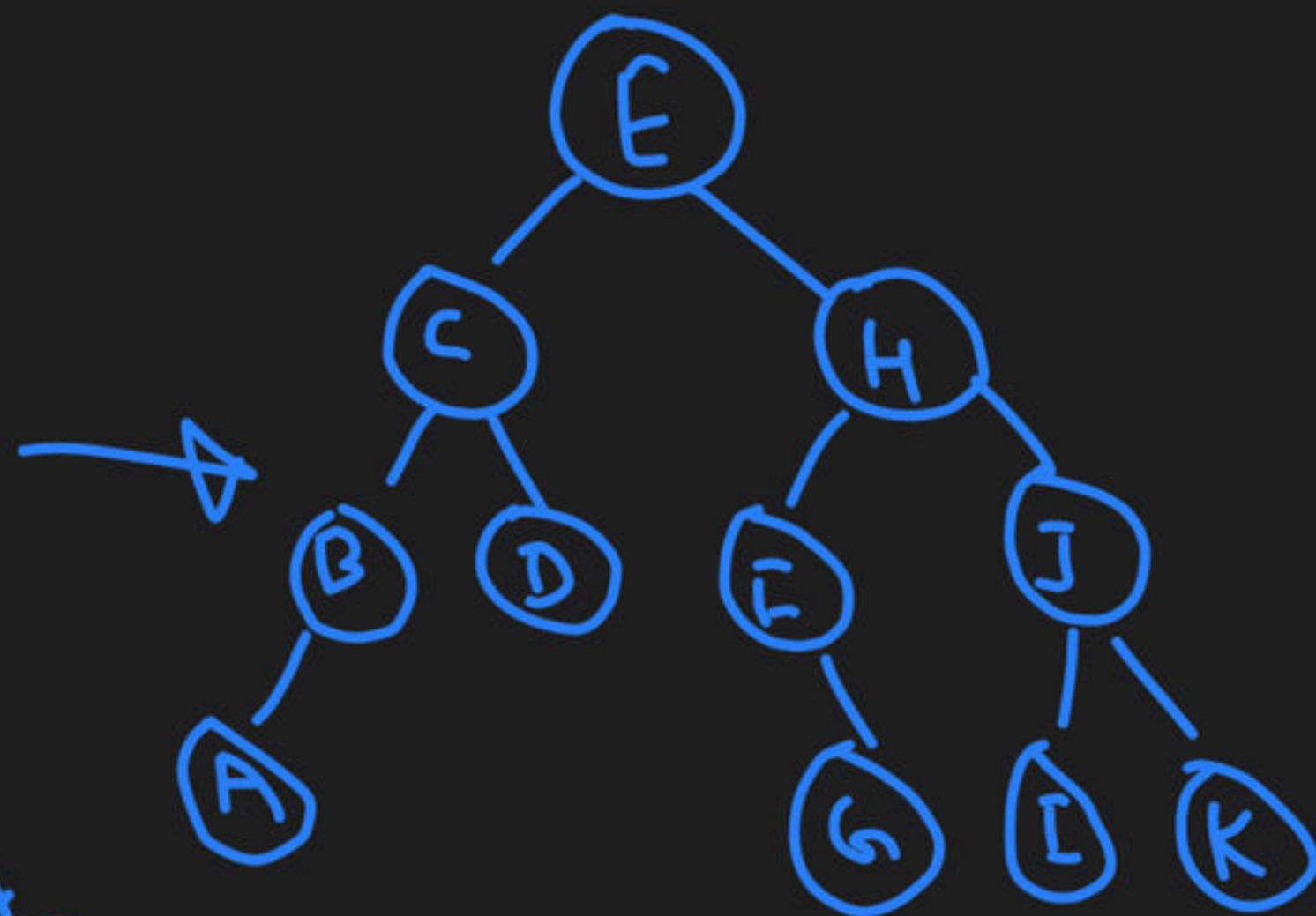
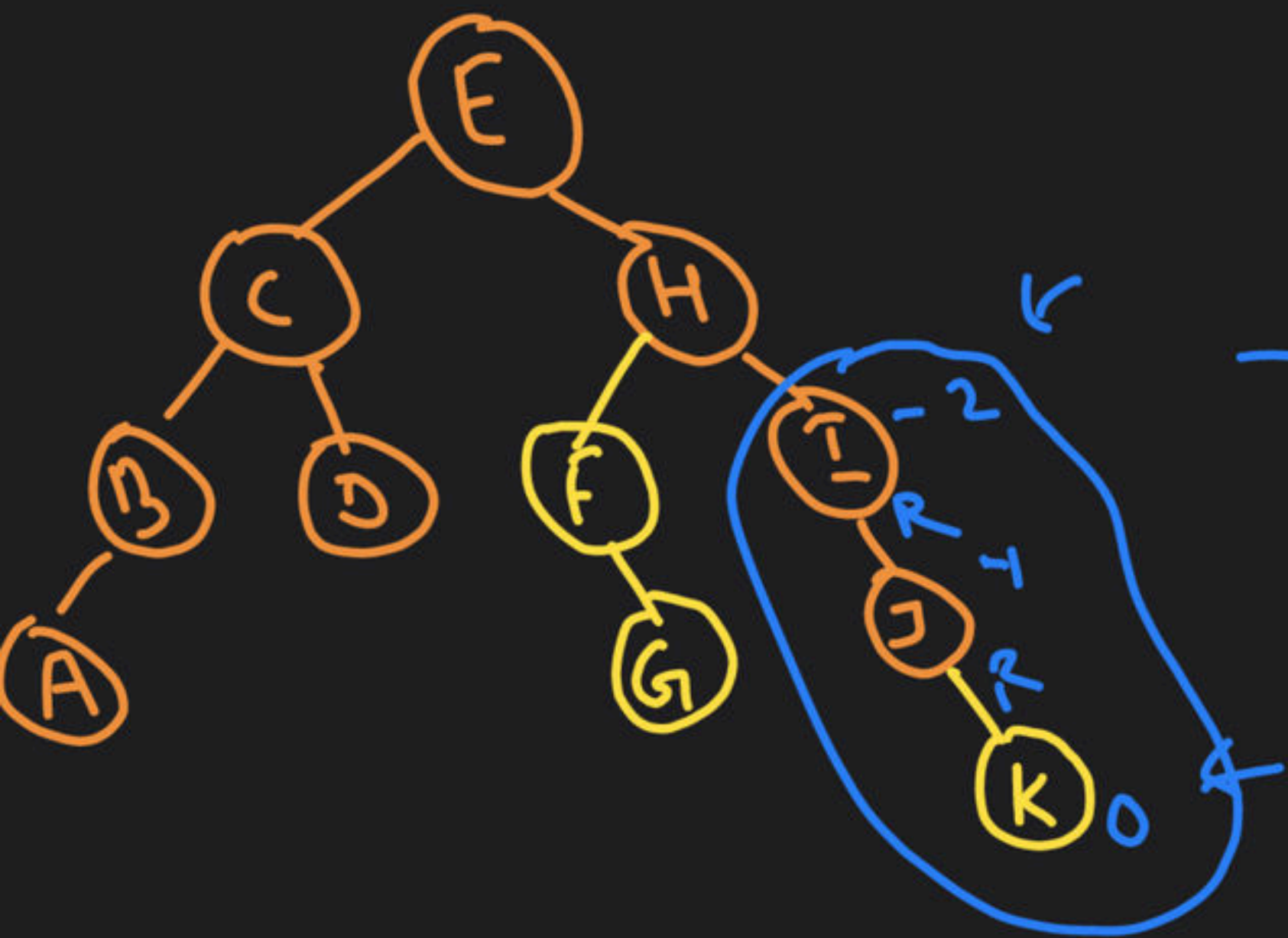




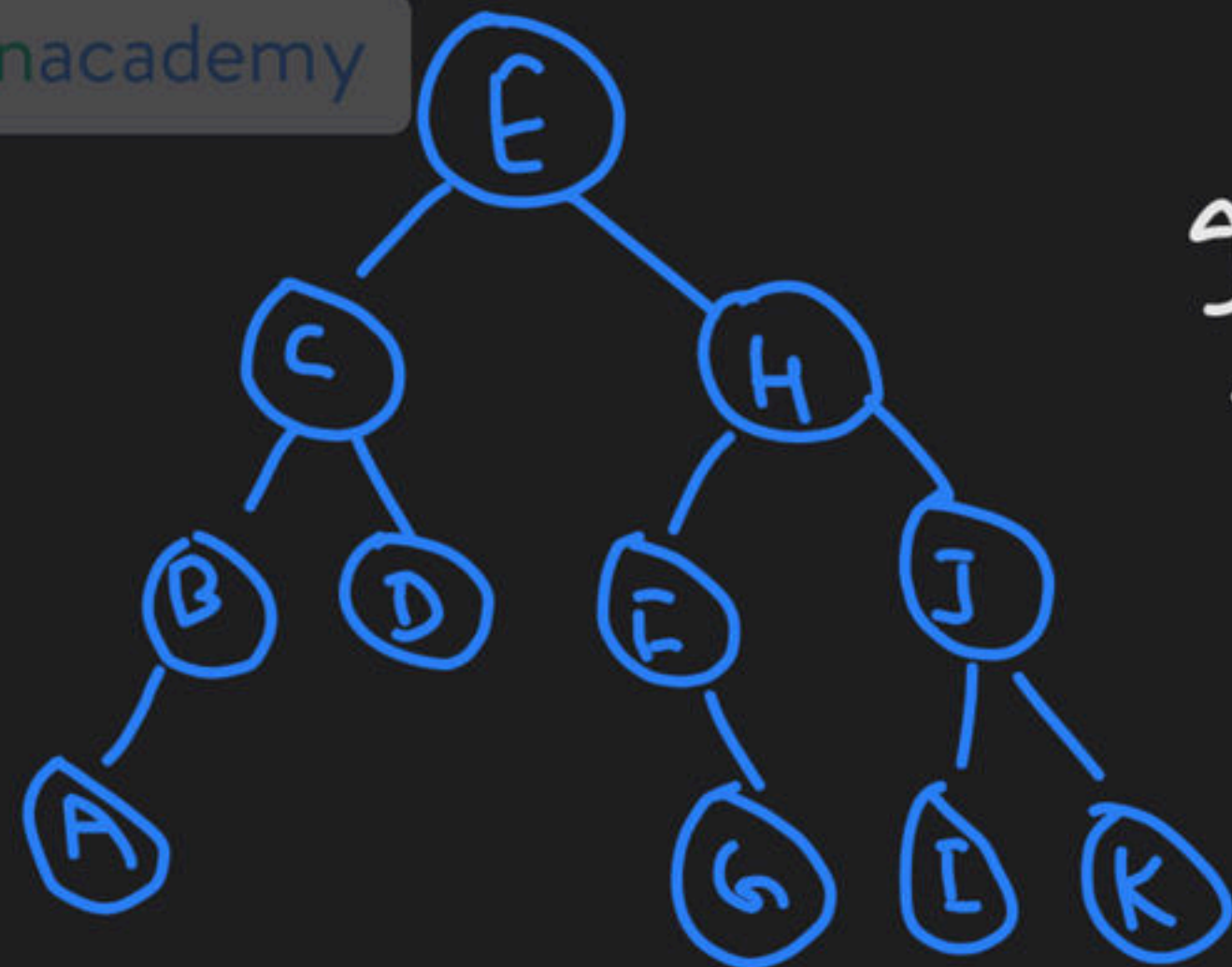


Insert  
↳

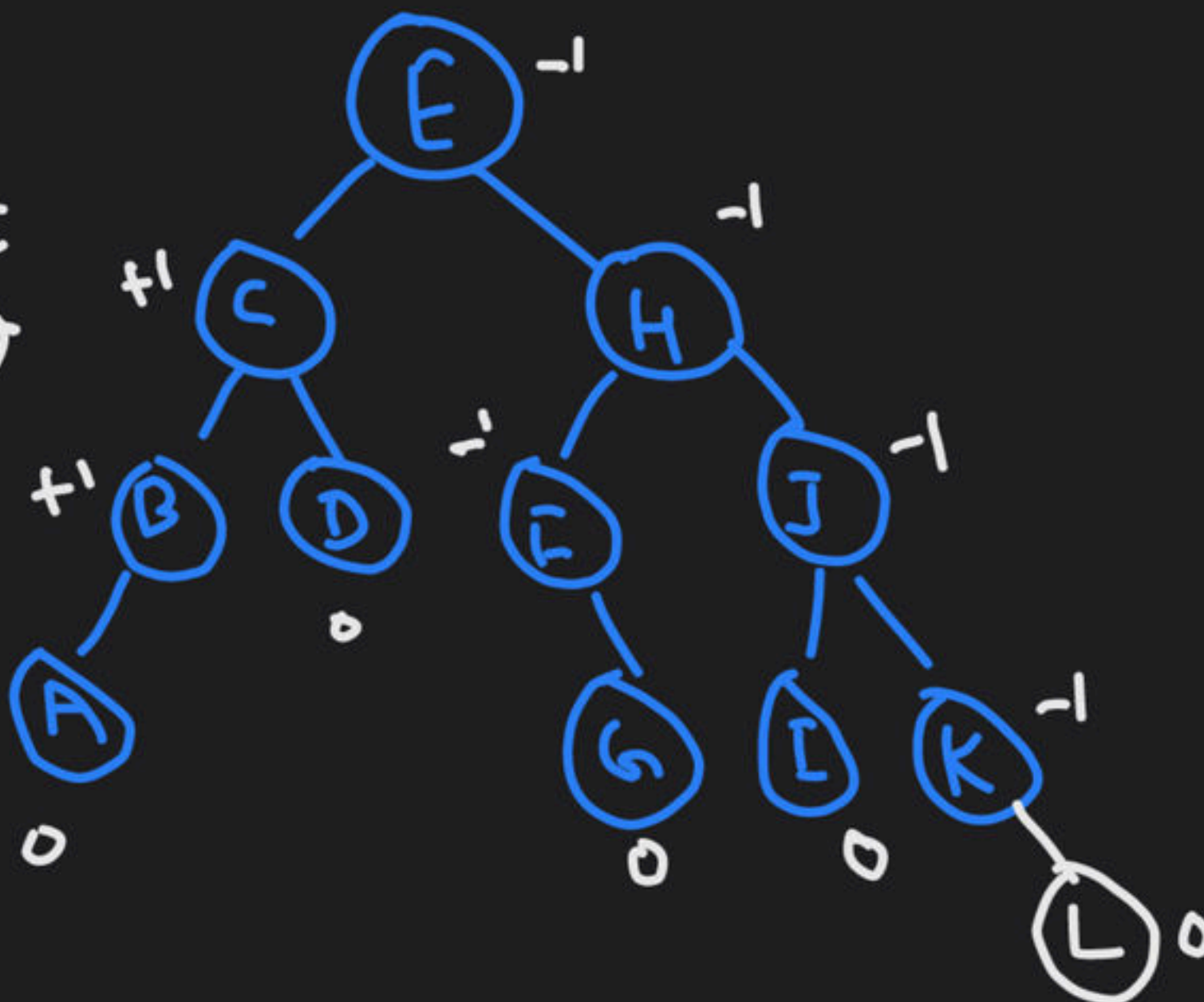








Insert  
L

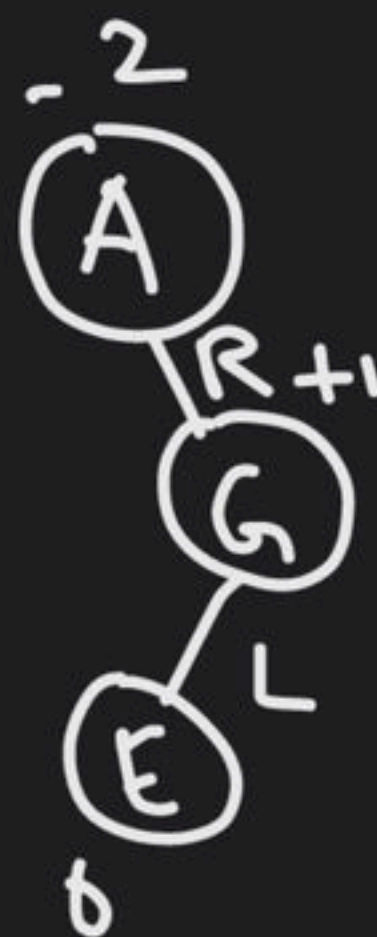




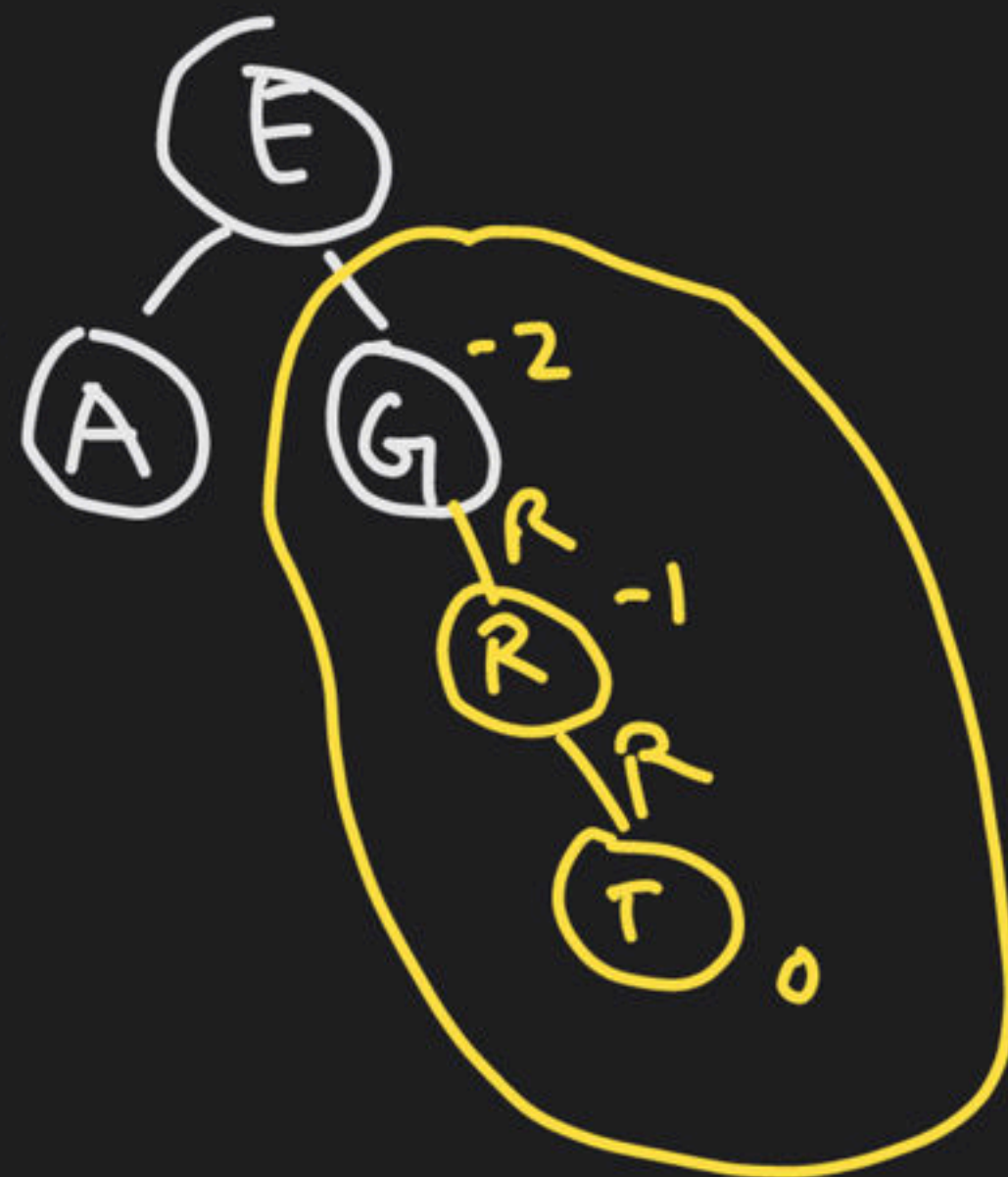
AVL tree by inserting keys

A, G, E, R, T, S, P, Q, W, C, M, D, X

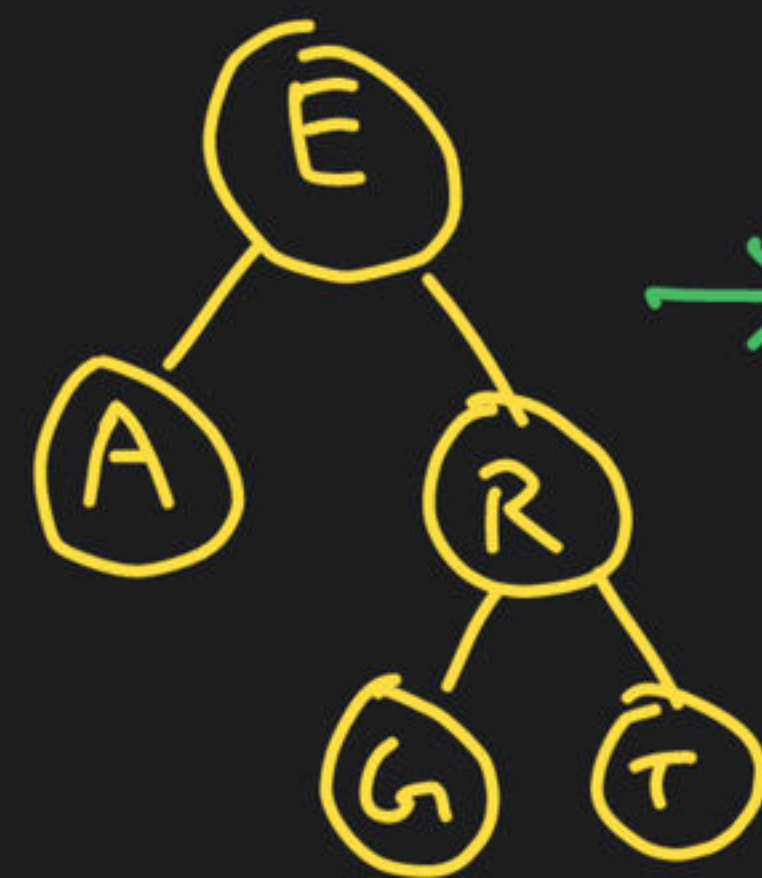
A E G



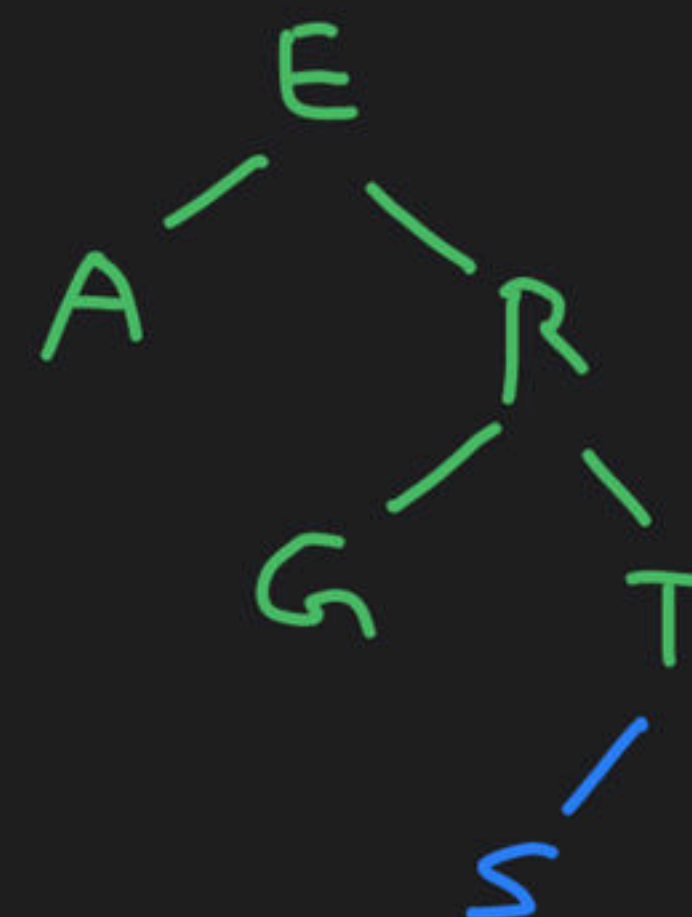
RL  
rot.

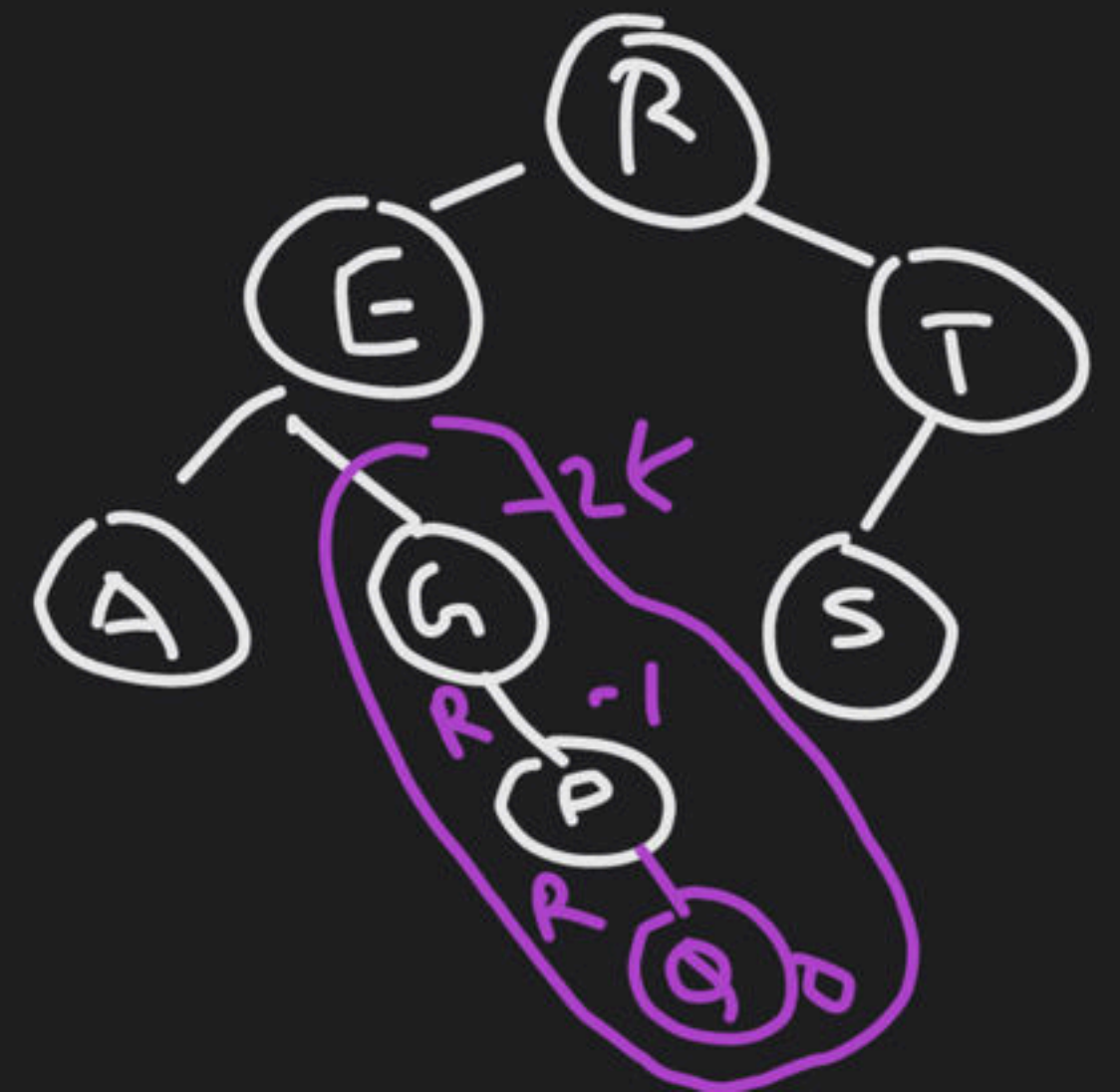
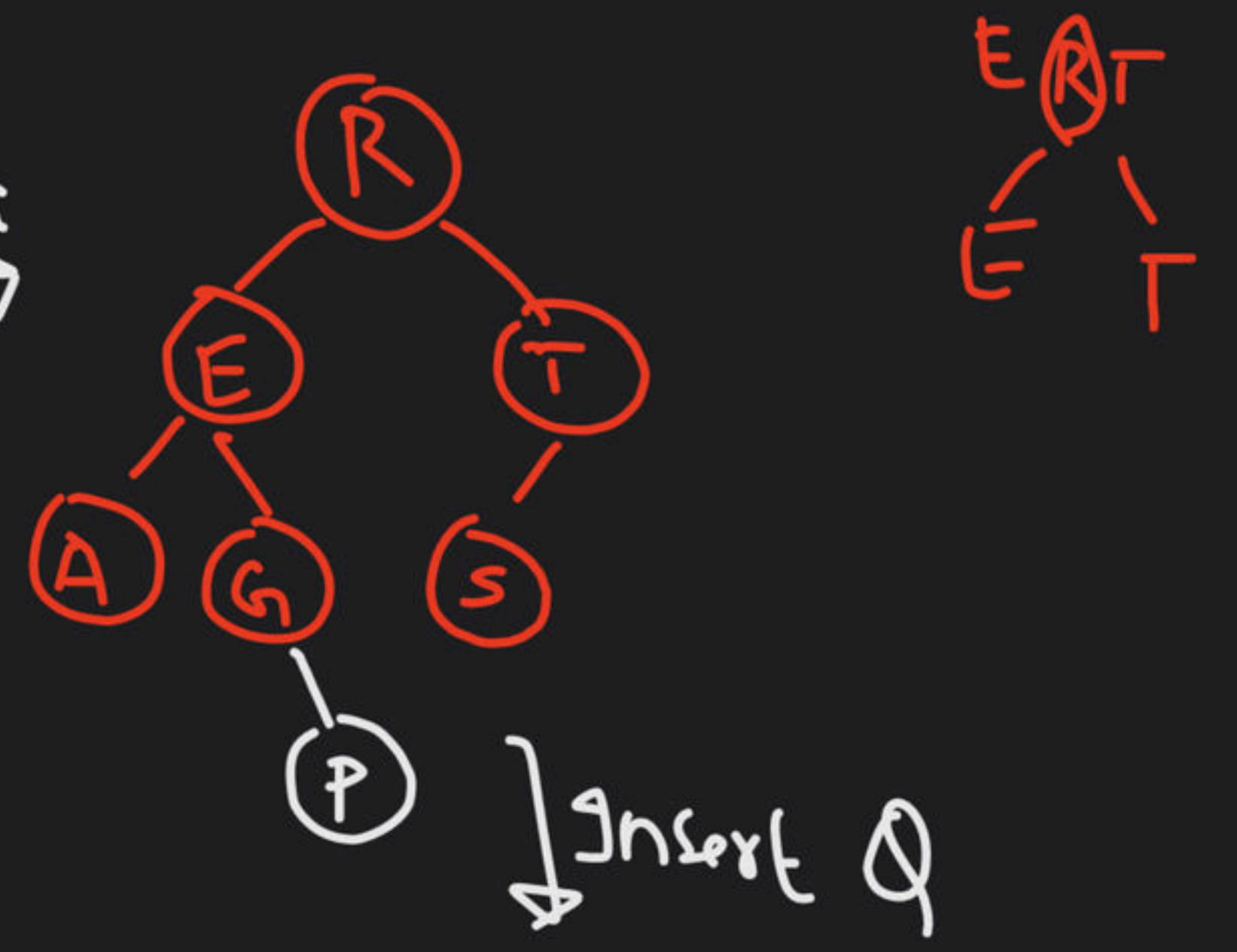
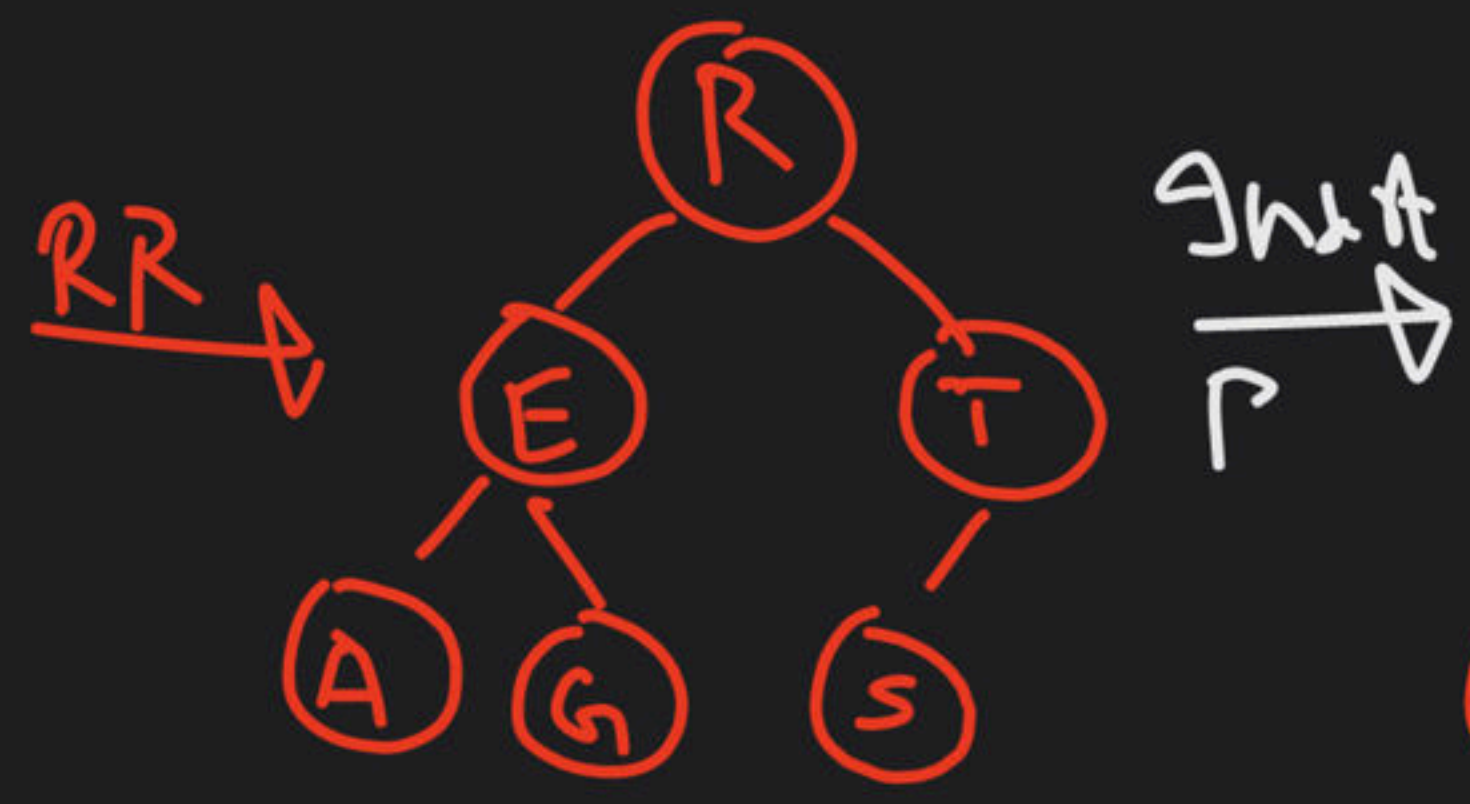


RR

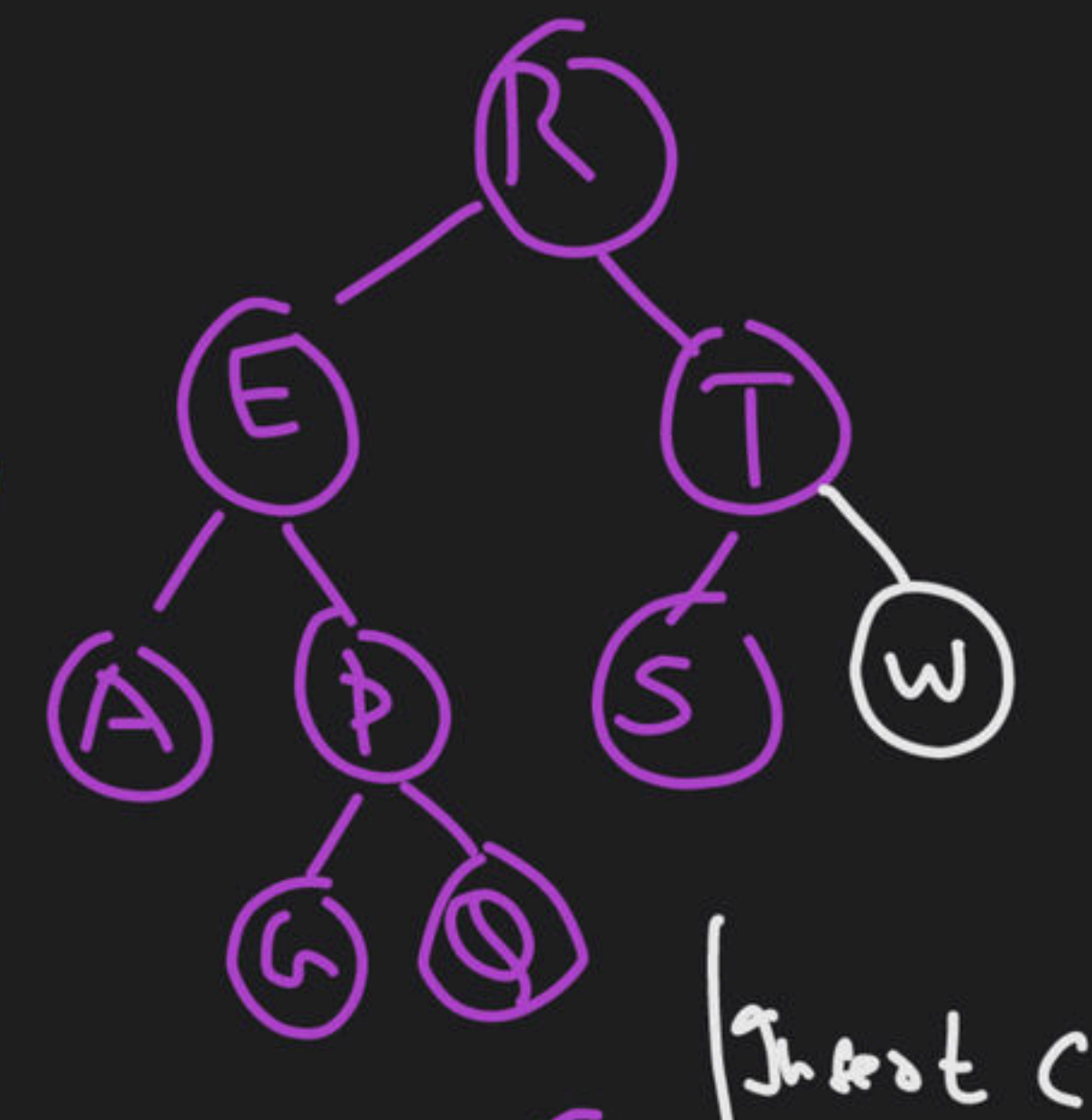
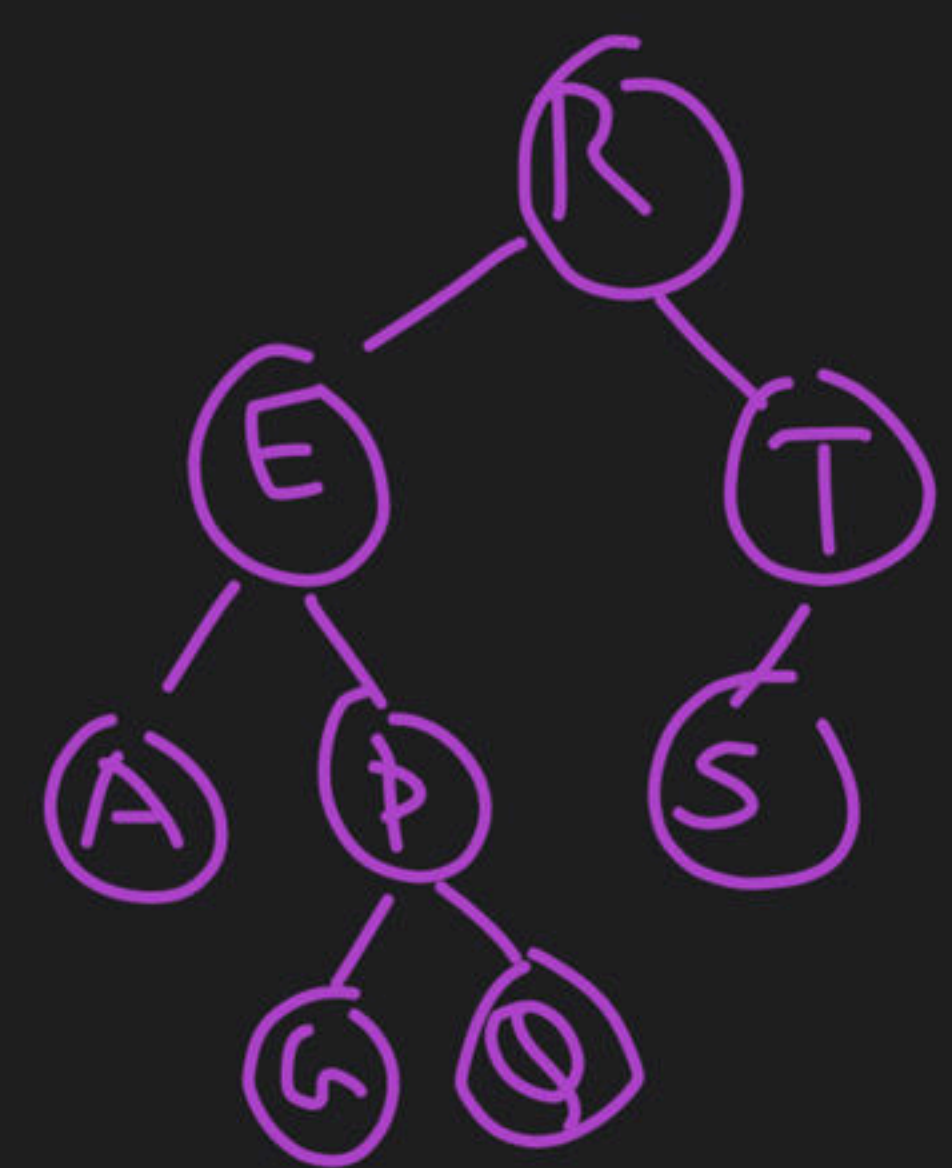
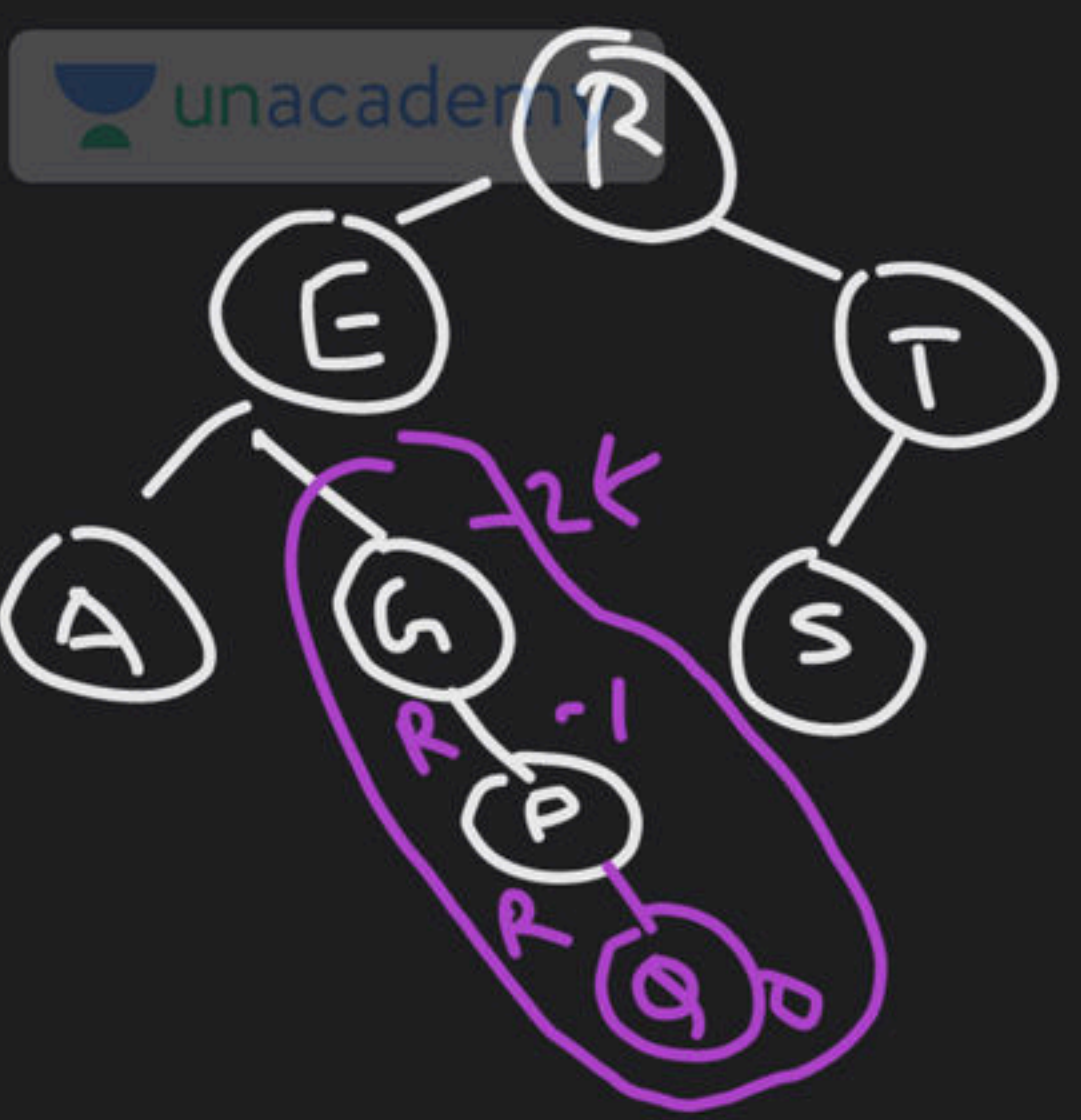


→

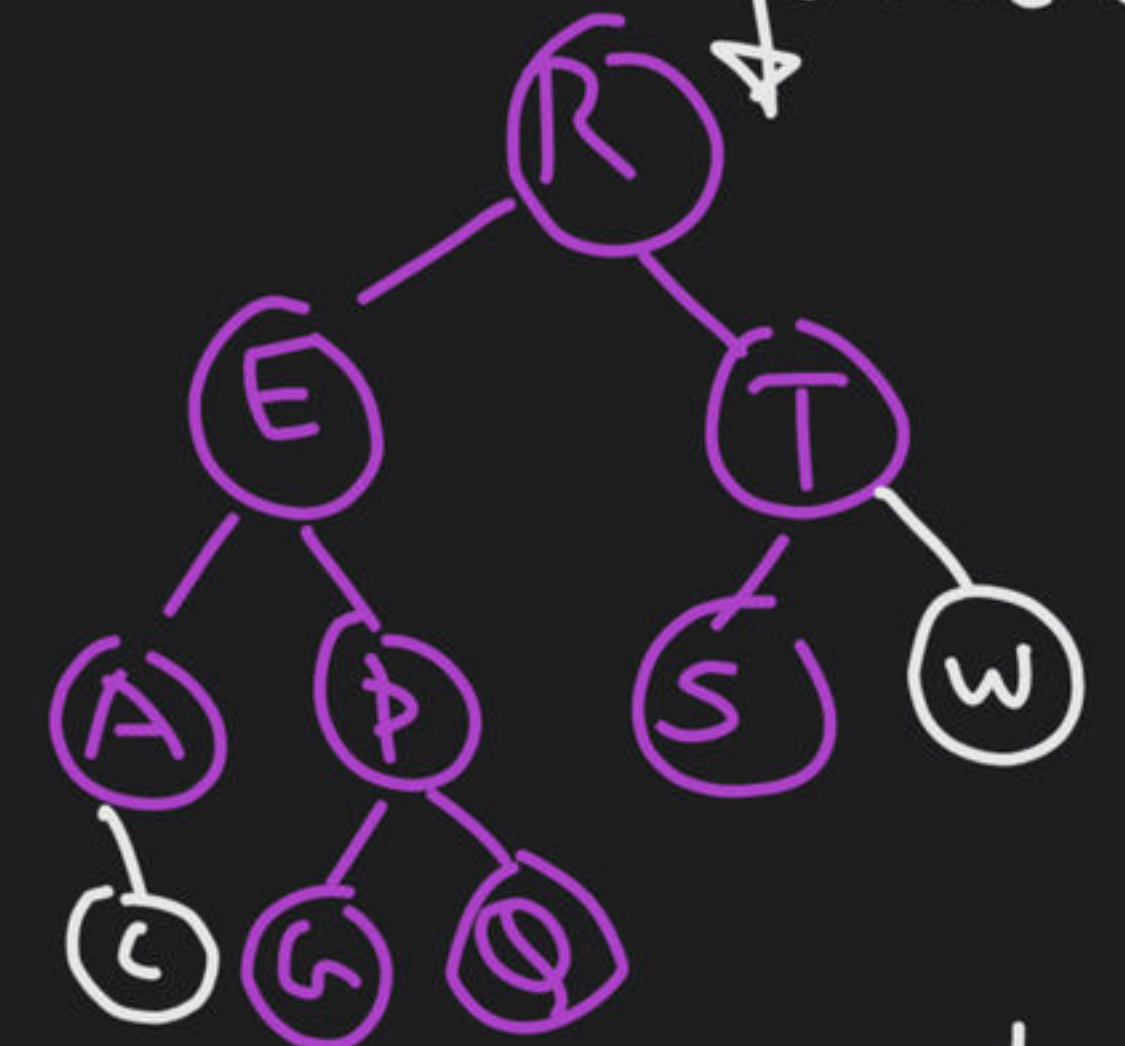




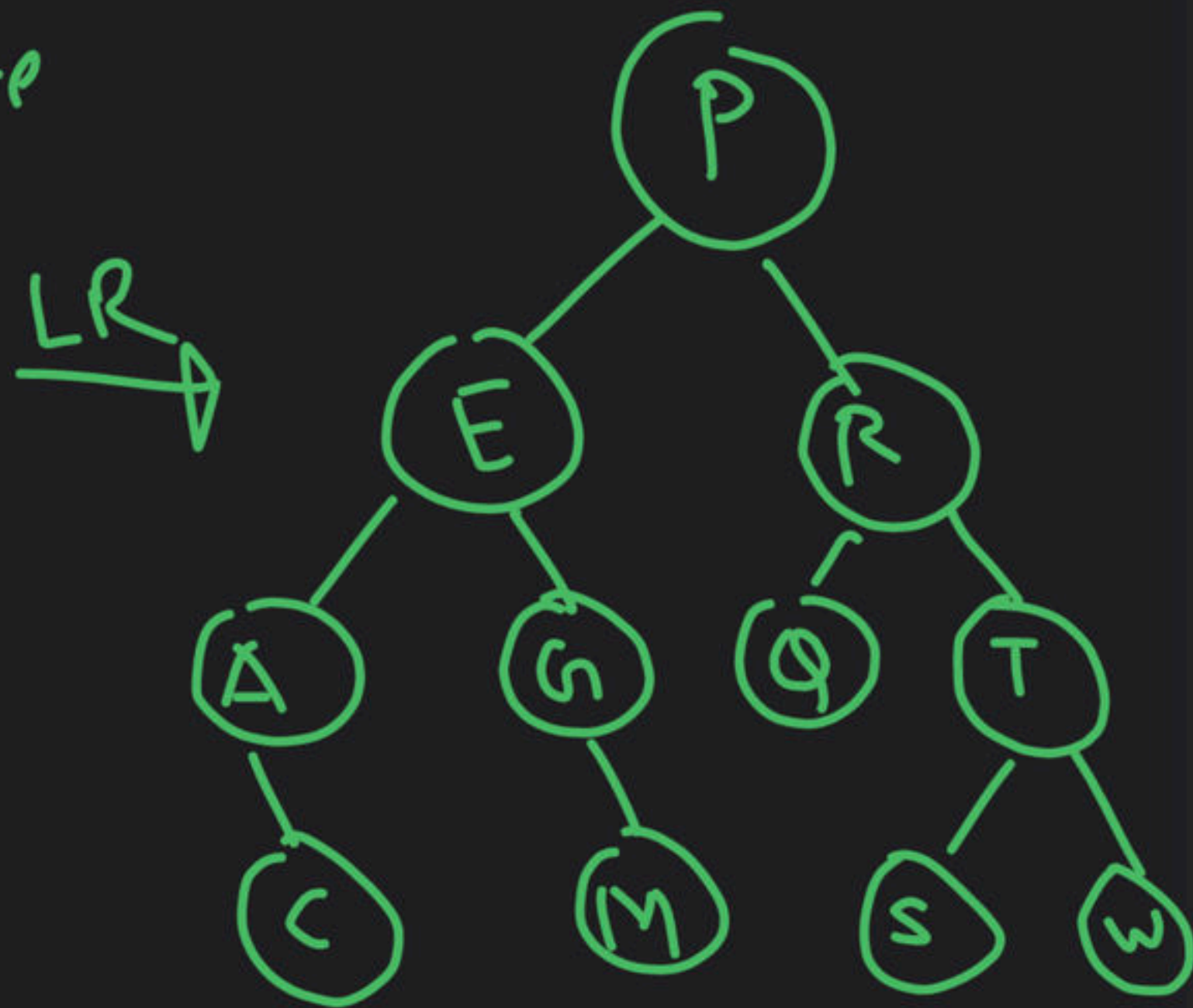
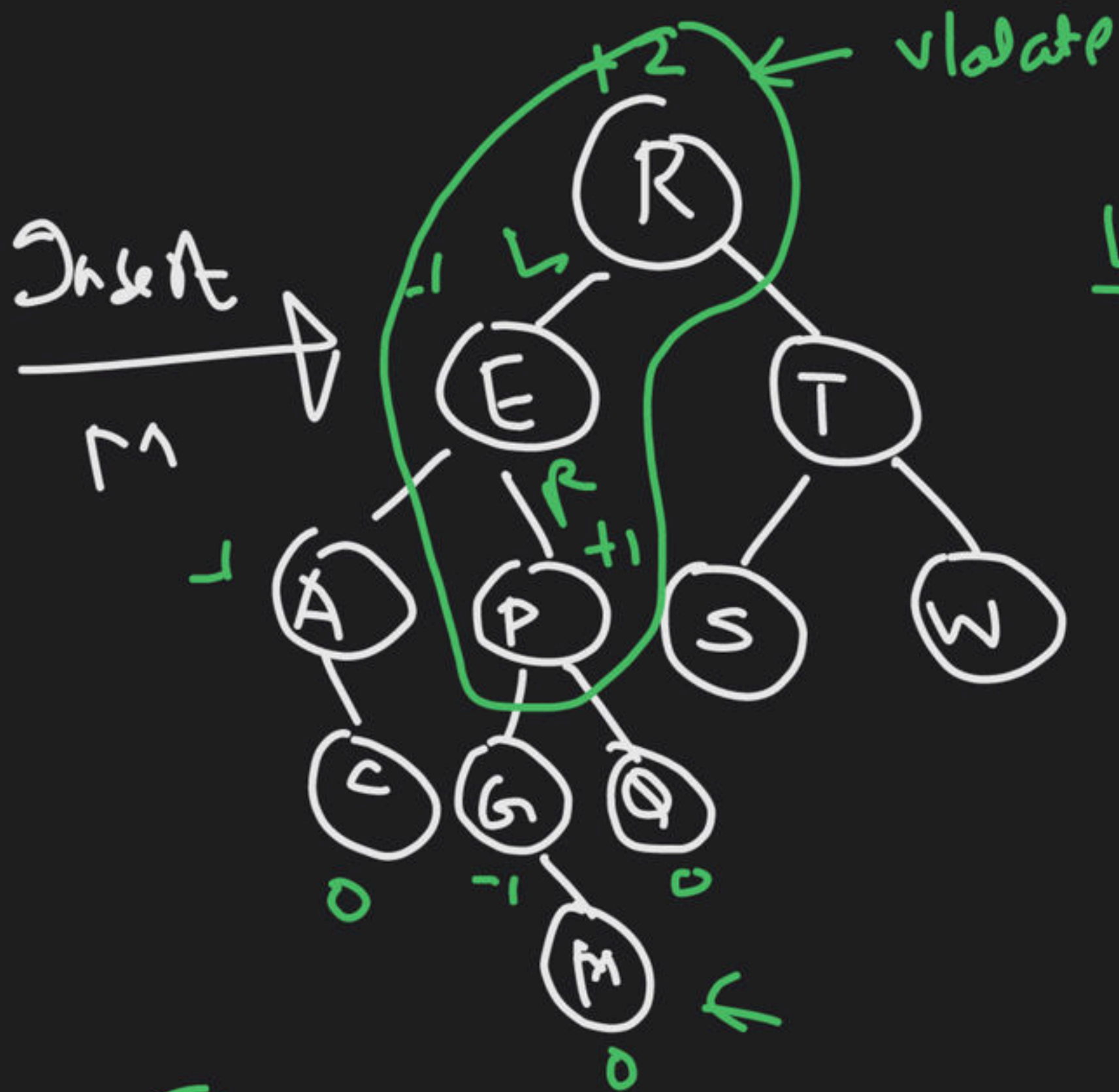
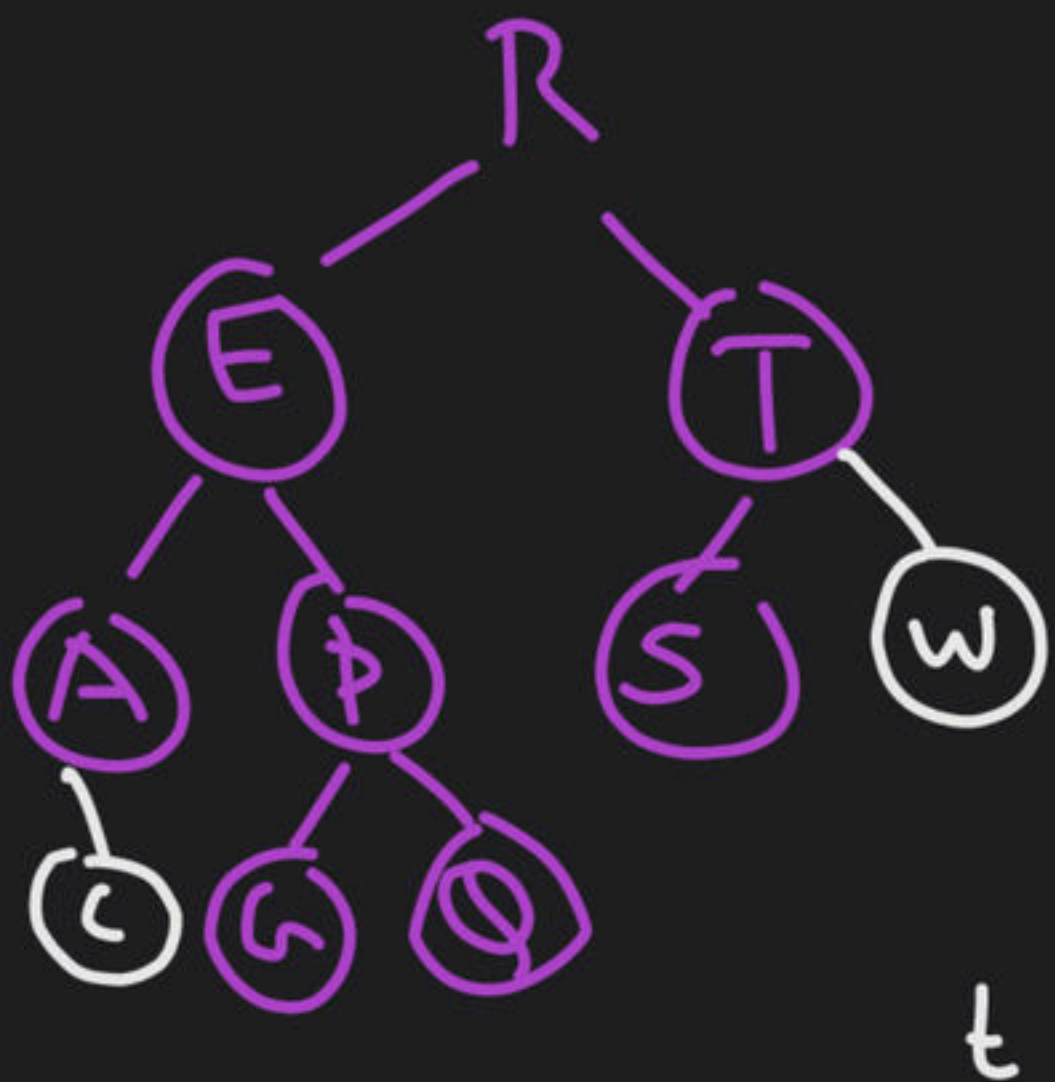




Insert C



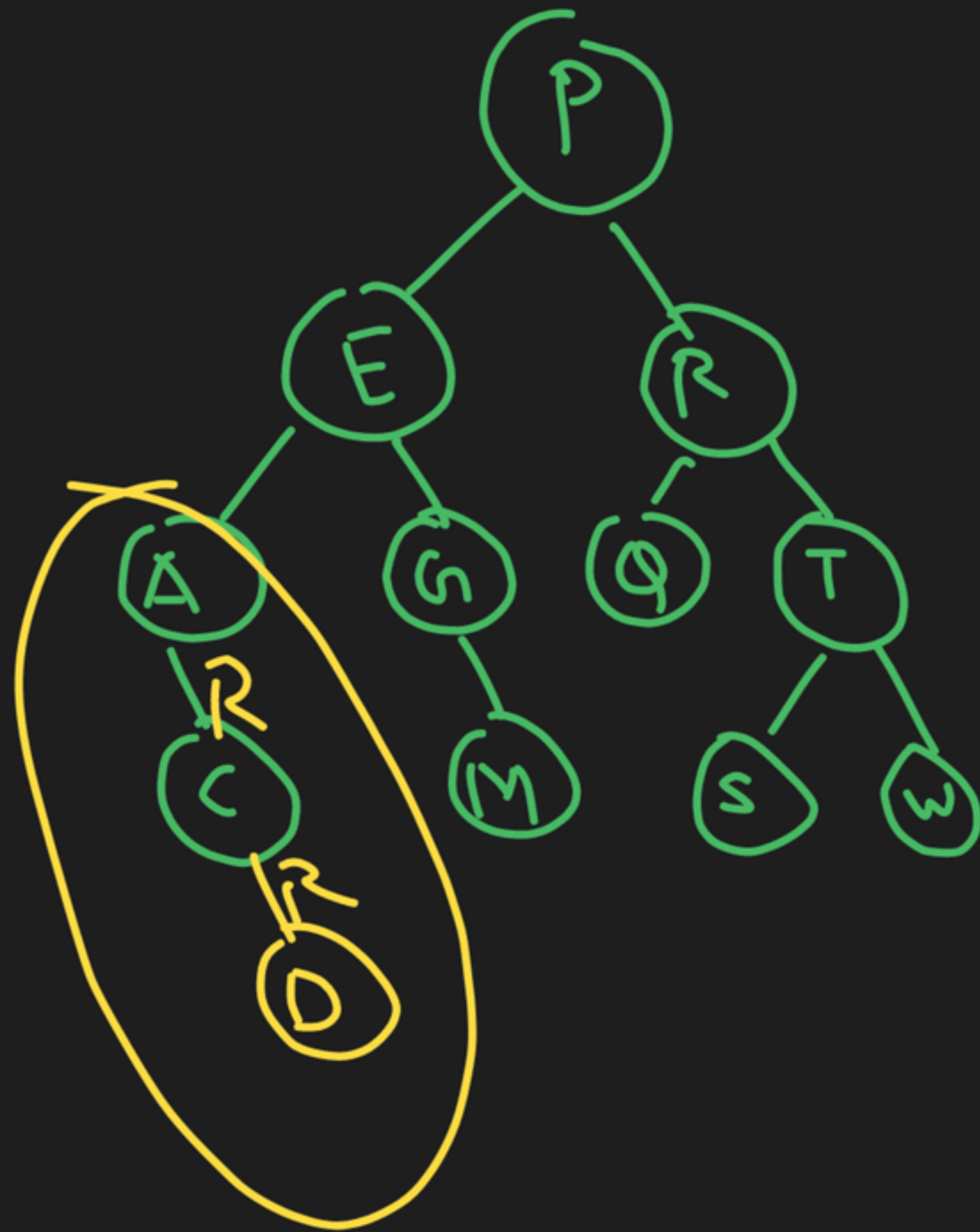
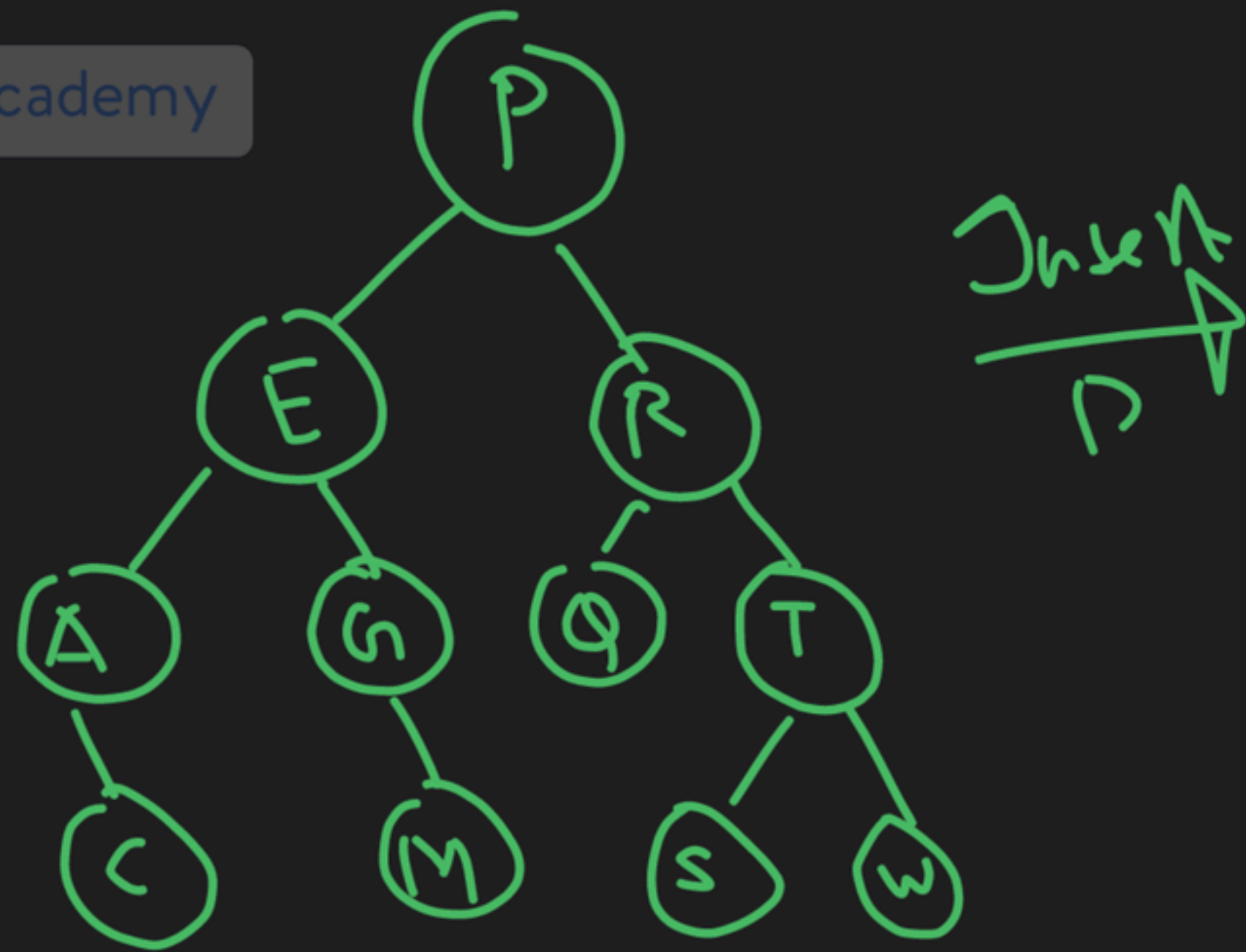


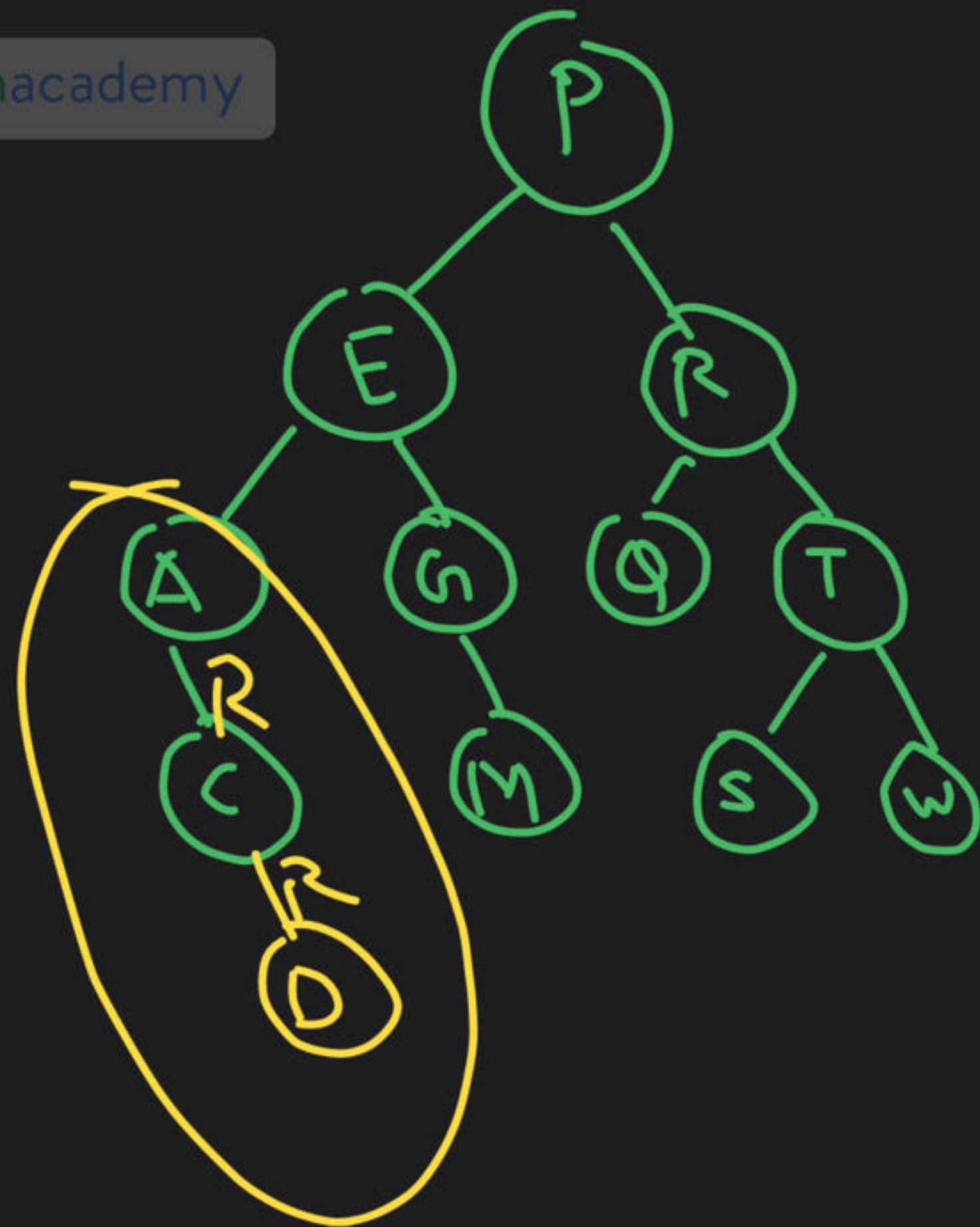


EP R

5-7









AVL tree





# THANK YOU!

Here's to a cracking journey ahead!