DELETION IN AVL SEARCH TREE

In an event of imbalance due to deletion one or more rotations are needed to be applied to balance the AVL tree.

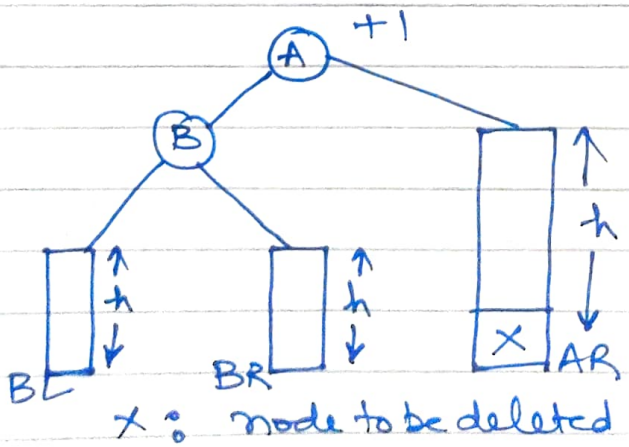
→ On deletion of node 'x' from AVL tree, rotations are to be applied depending on whether deletion occured in the Left subtree (L) or Right subtree (R).

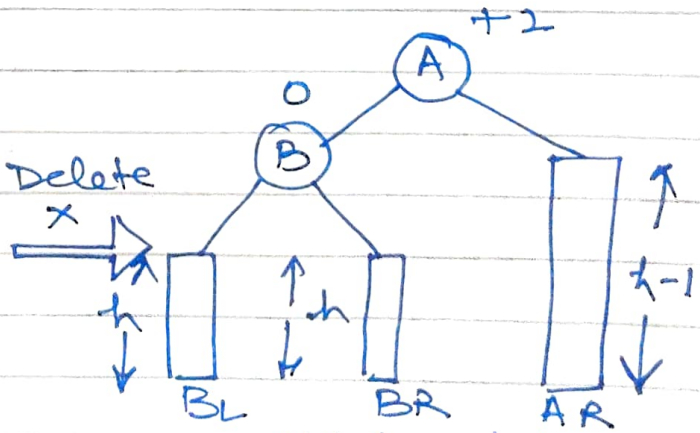
→ R imbalance can be classified as-
- → R0 (R zero)
- → R1 (R one)
- → R-1 (R minus one)

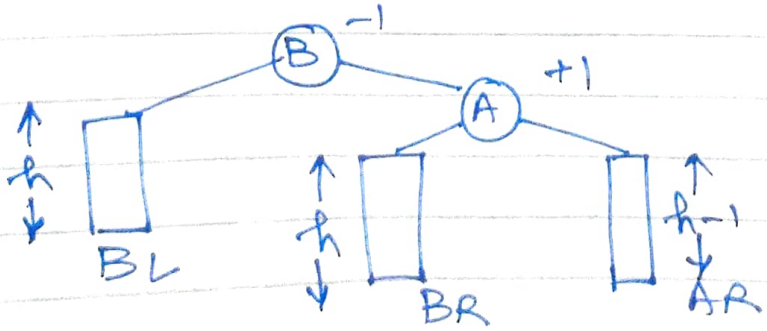
→ L rotations are also there which are mirror images of R rotations (L0, L1, L-1)

R0 Rotation (Similar to LL Rotation)

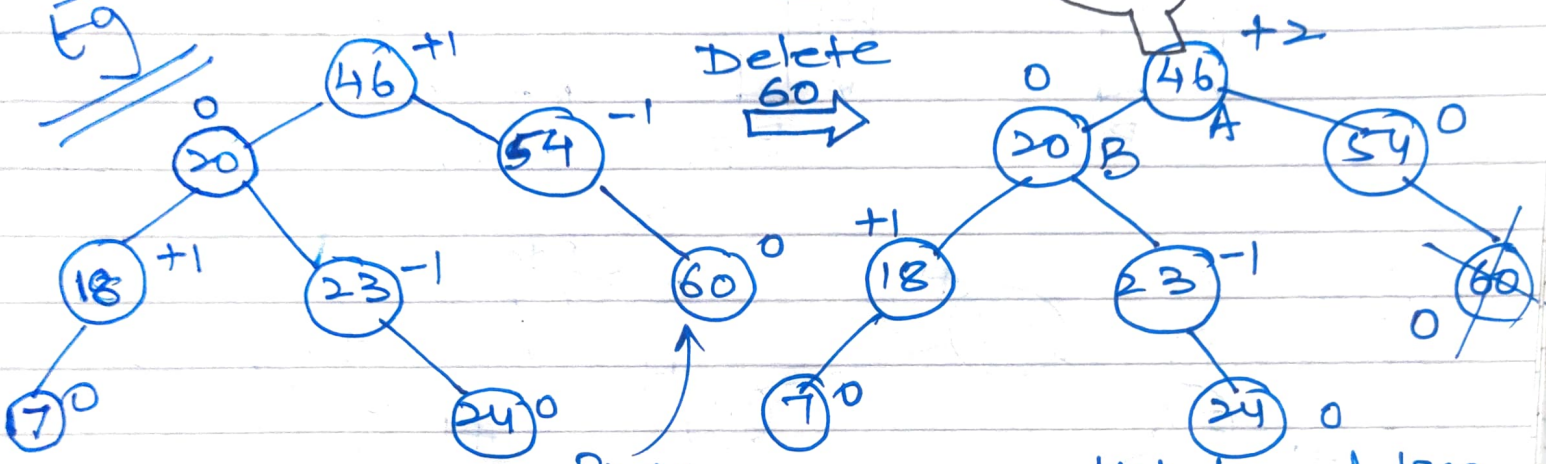
if balance factor BF(B) = 0



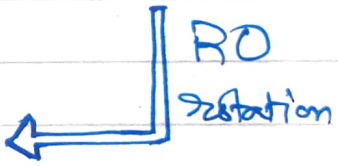


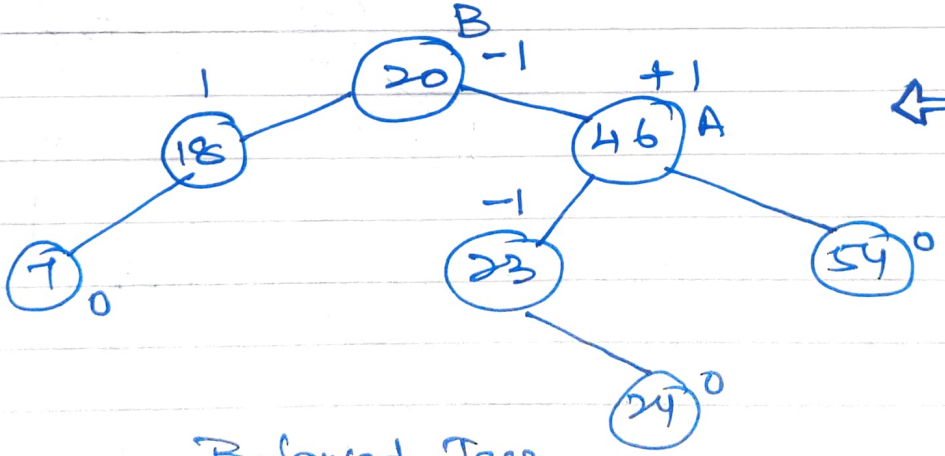


Eg



Delete 60

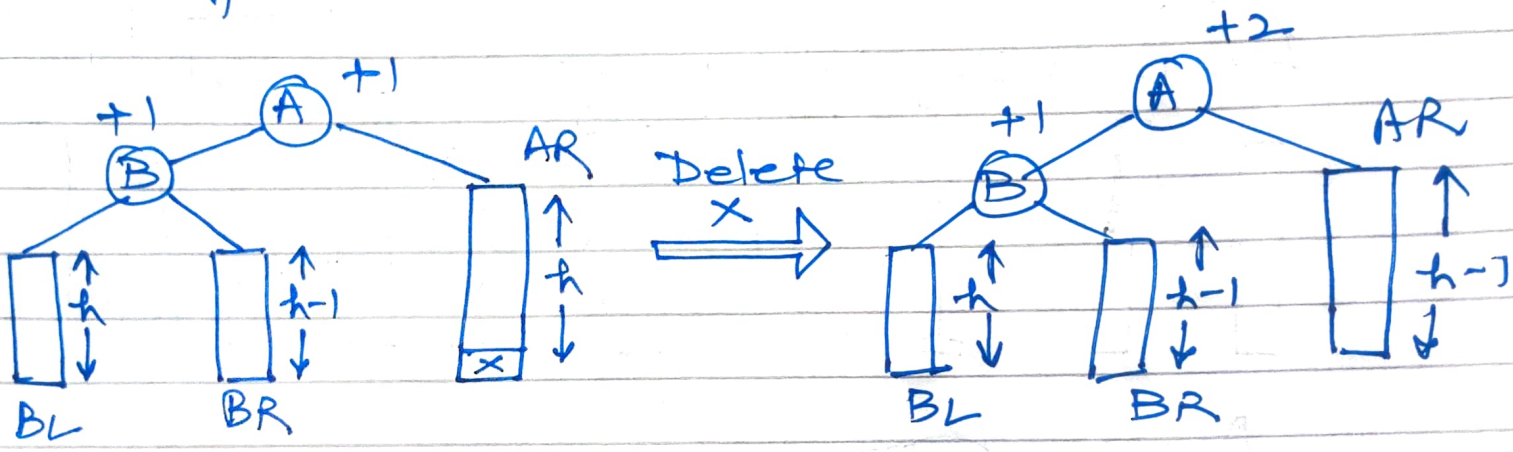


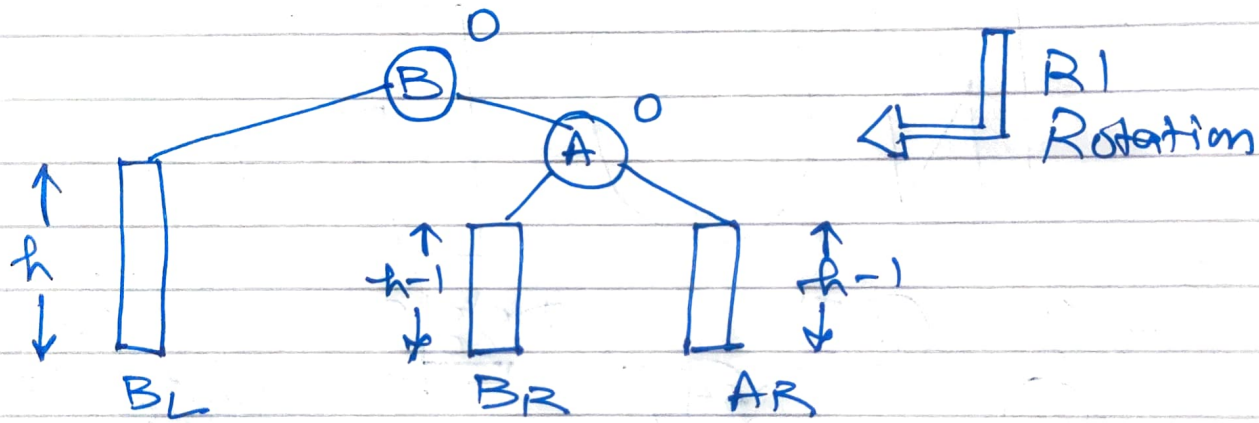


Balanced Tree

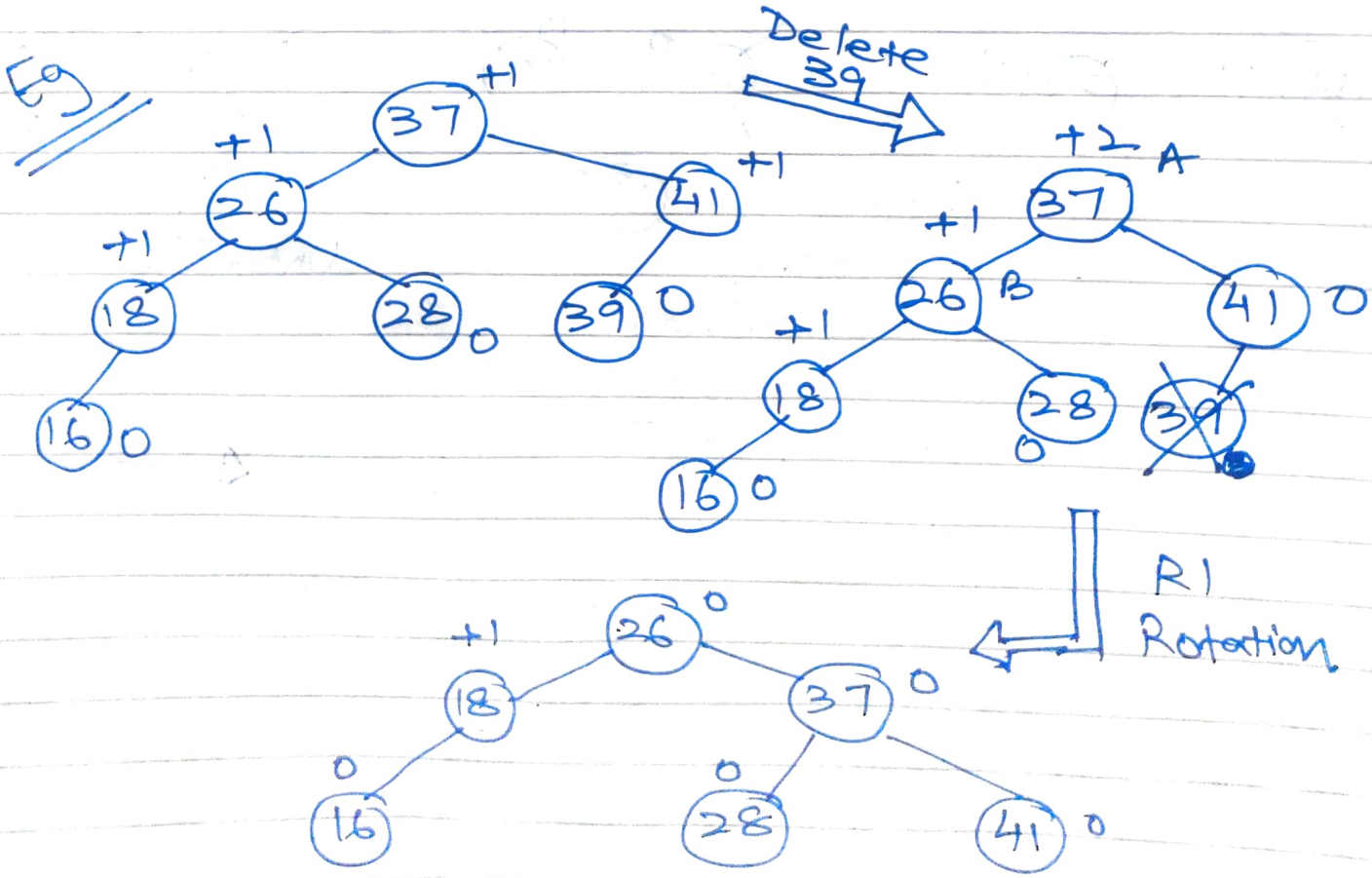
R1 Rotation

If BF(B) = 1

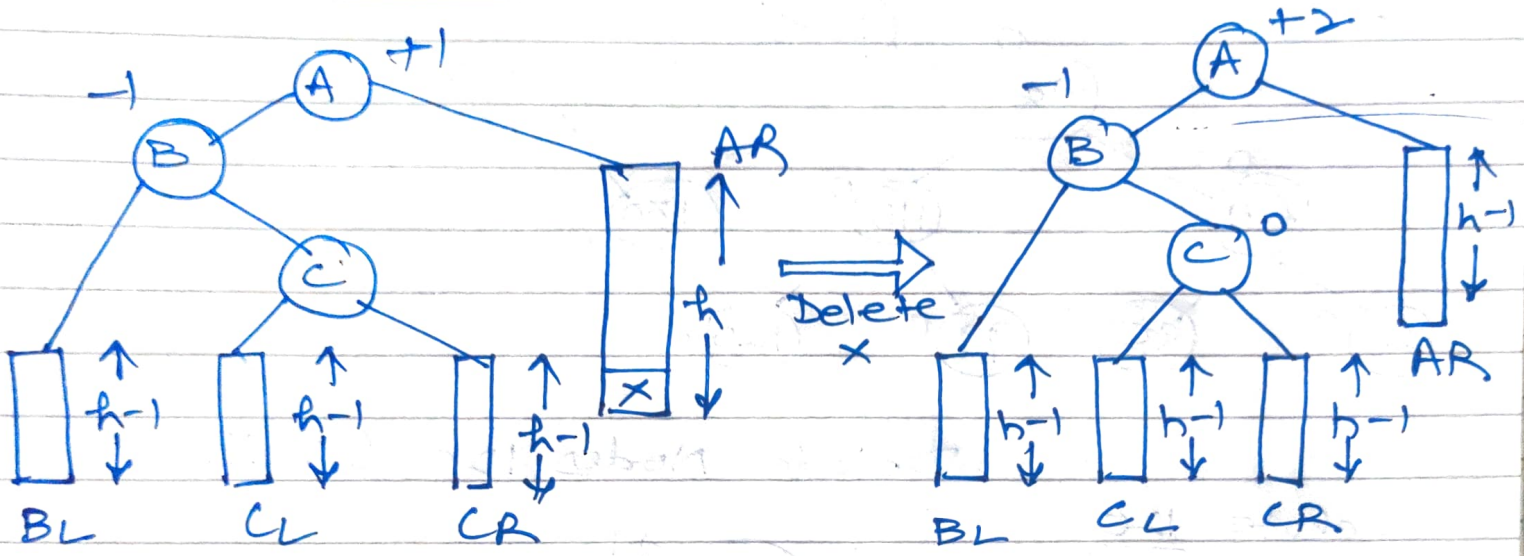


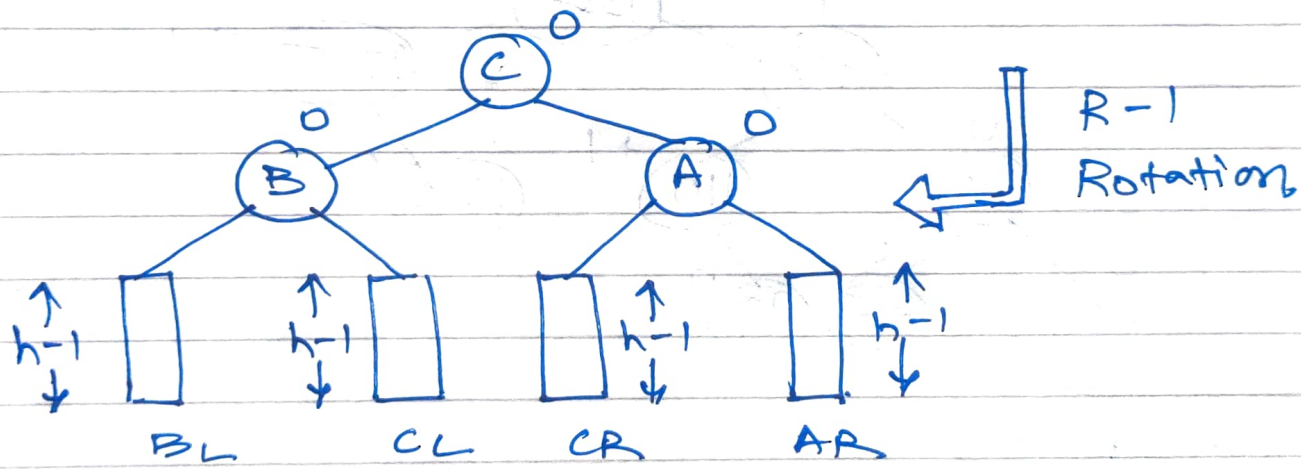


Eg



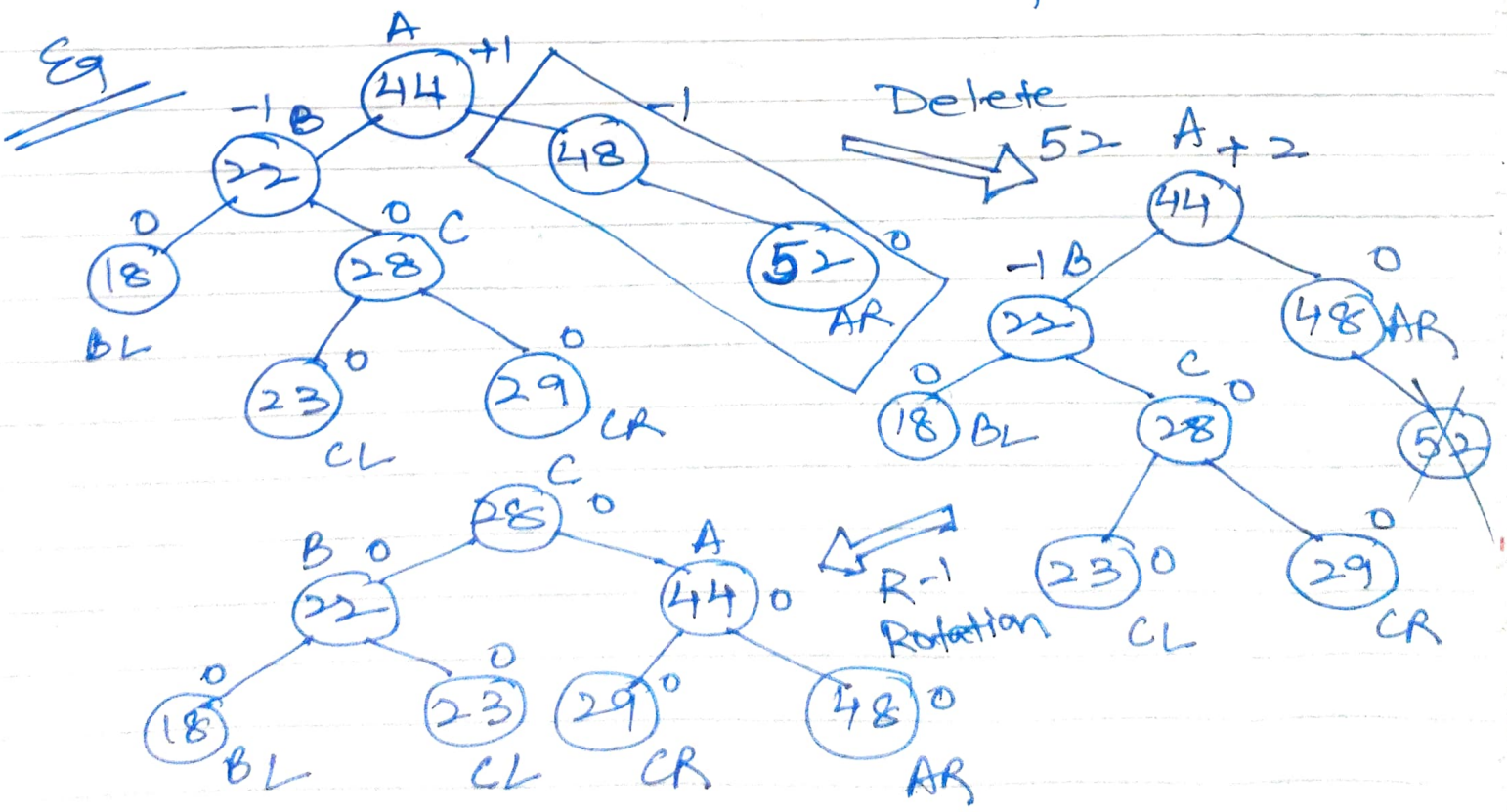
R -1 Rotation



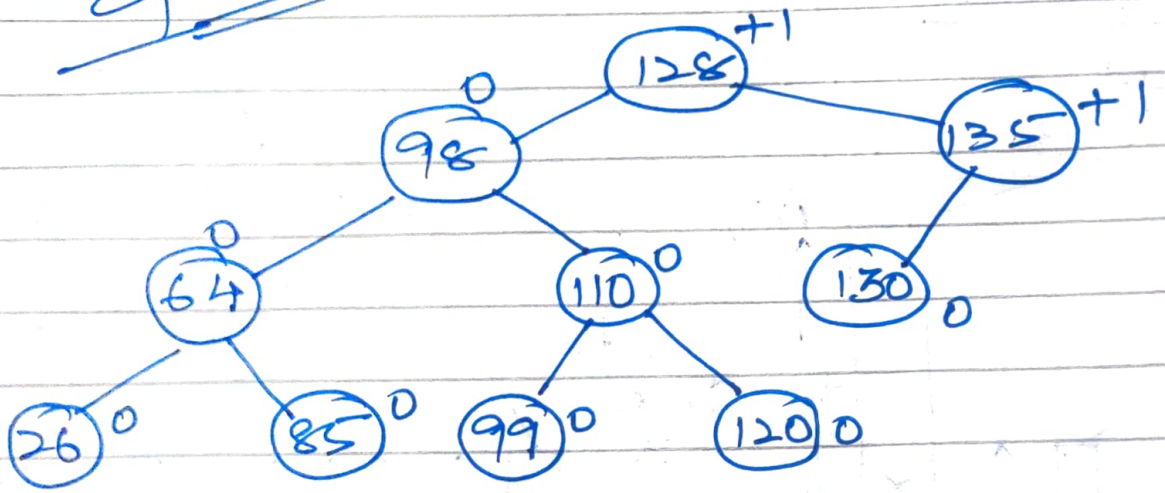


Balanced AVL Tree after Rotation

Eg

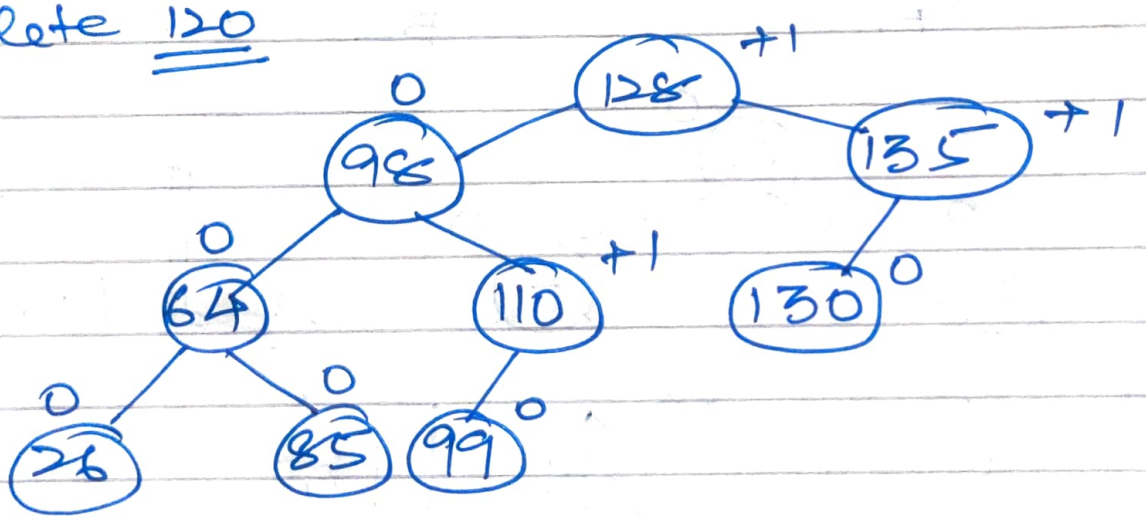


Eg QUESTION

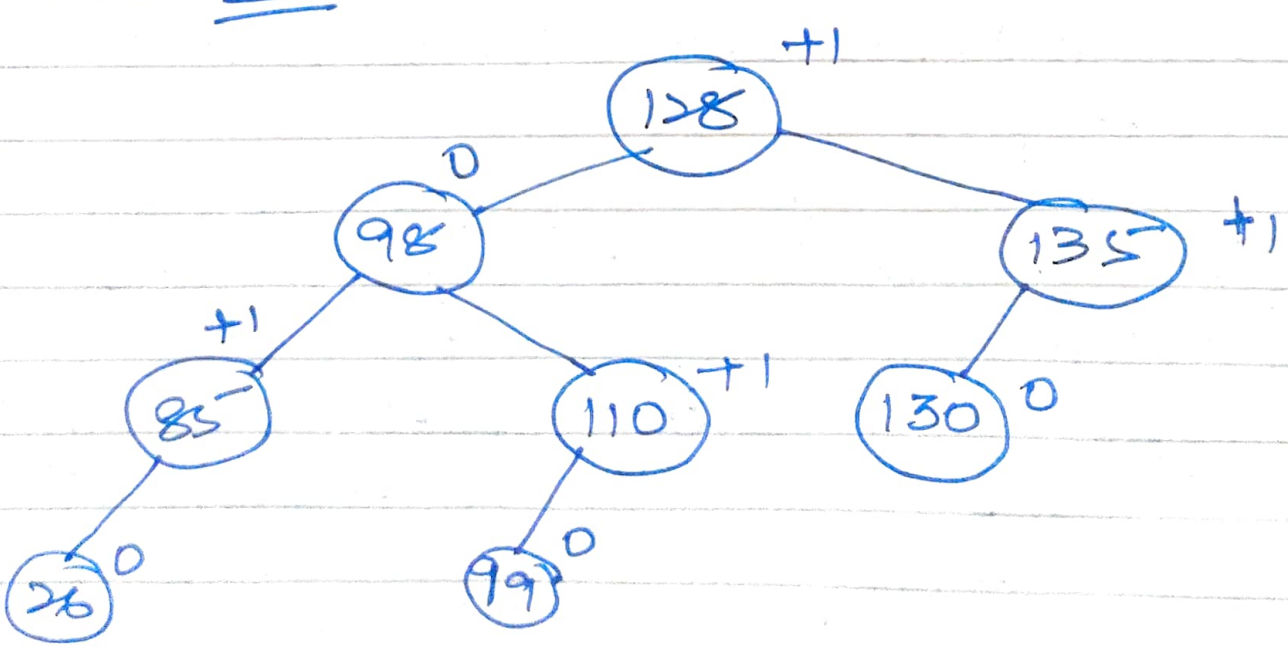


Delete Nodes 120, 64, 130

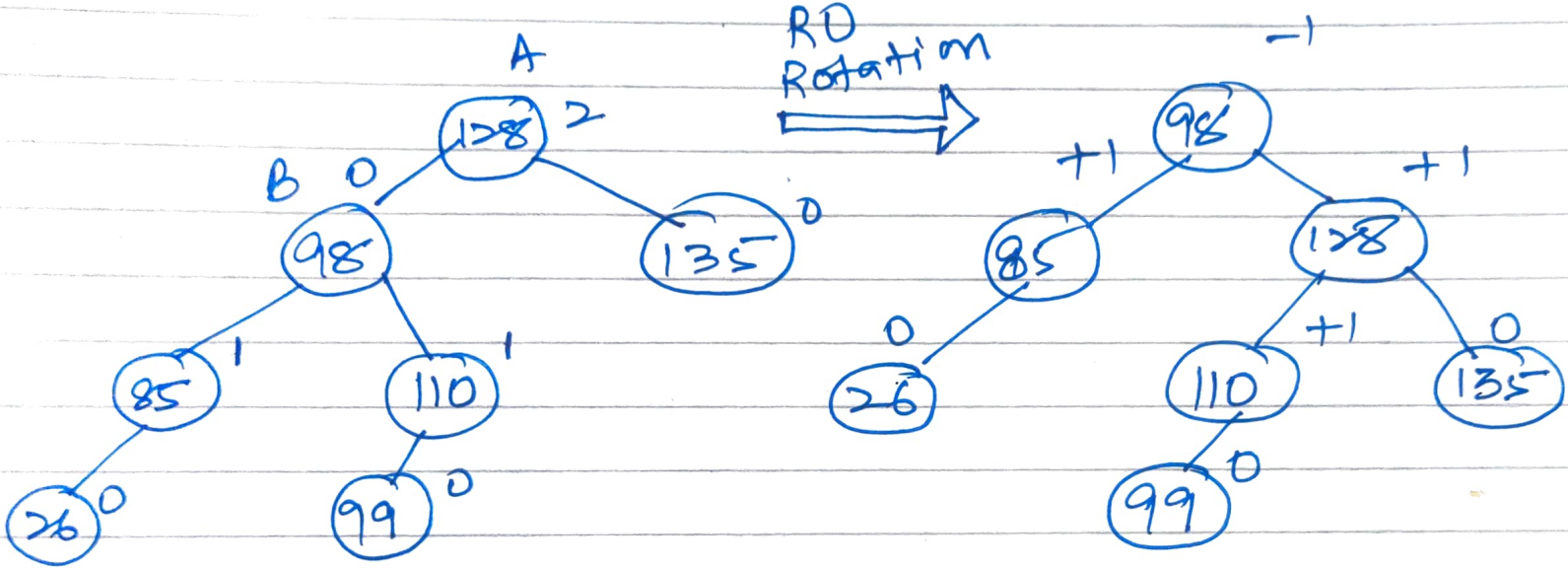
Delete 120



Delete 64



Delete 130


A
128
2
B
0
98
135
0
85
1
110
1
26
0
99
0
RD
Rotation
-1
98
+1
+1
85
128
0
+1
0
26
110
135
99
0