

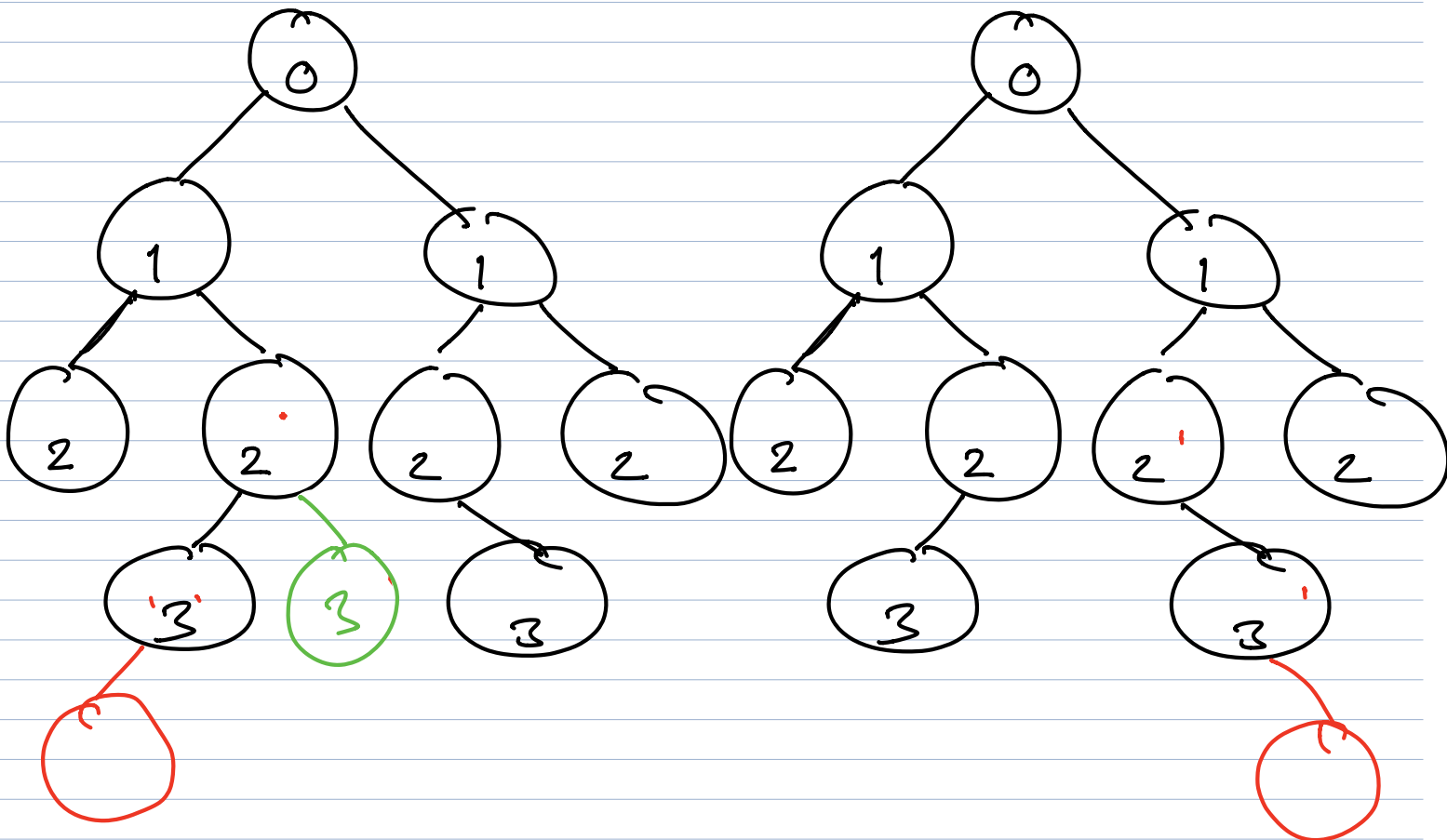
\forall nodes,

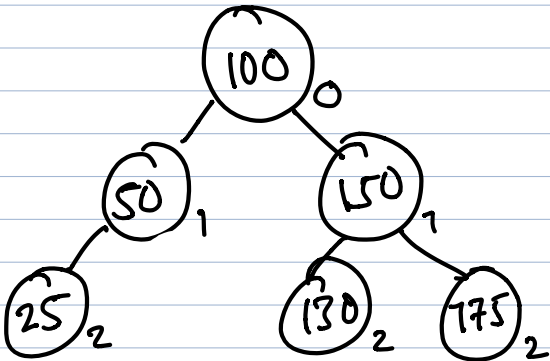
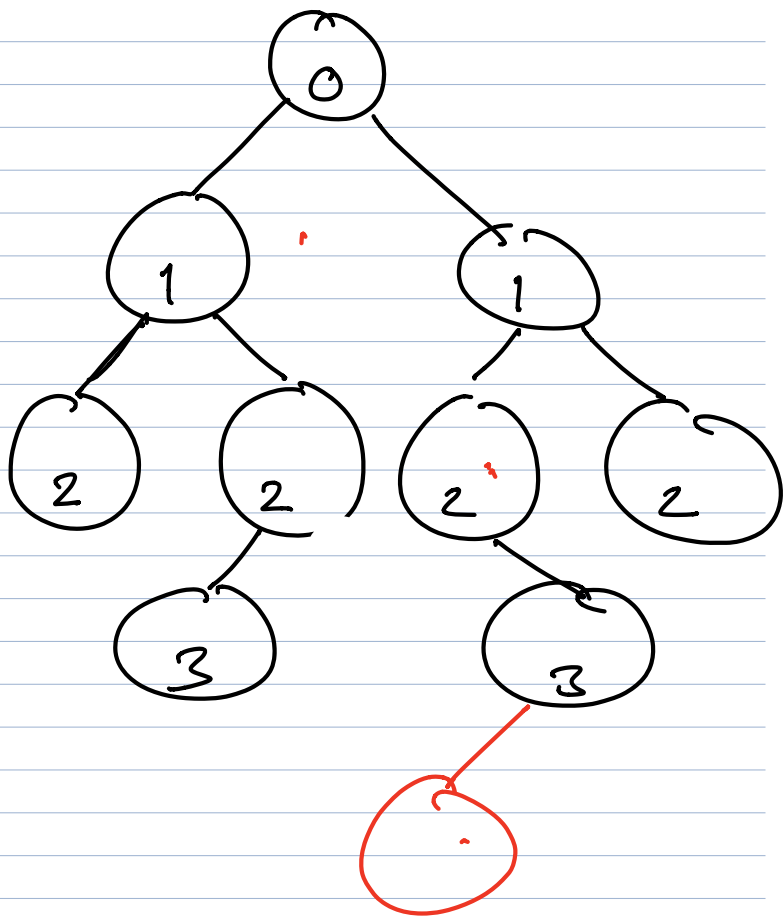
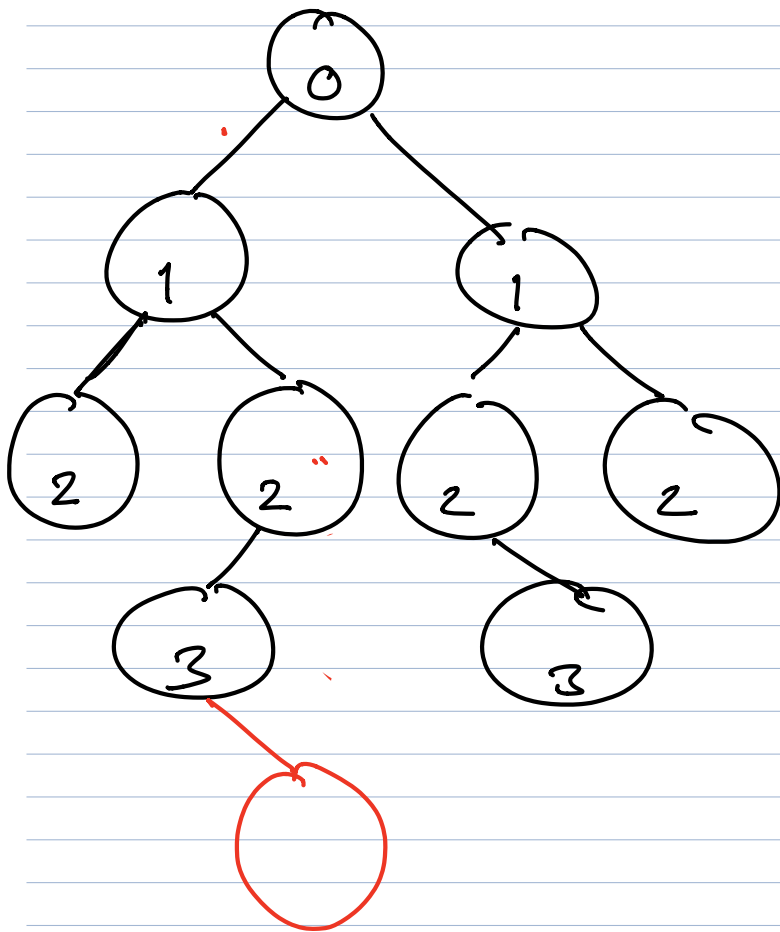
$$| \text{Height}(\text{L.S.T.}(\text{node})) - \text{Height}(\text{R.S.T.}(\text{node})) | = 0 \text{ or } 1$$

$\rightarrow -1, 1, 0$

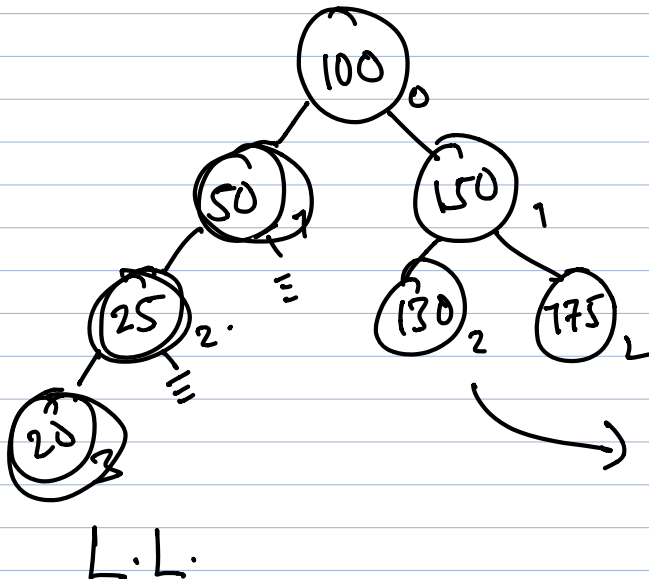
$n \in \text{AVL Tree} \rightarrow$

$$H(L(n)) - H(R(n)) = 0 \vee 1 \vee -1$$

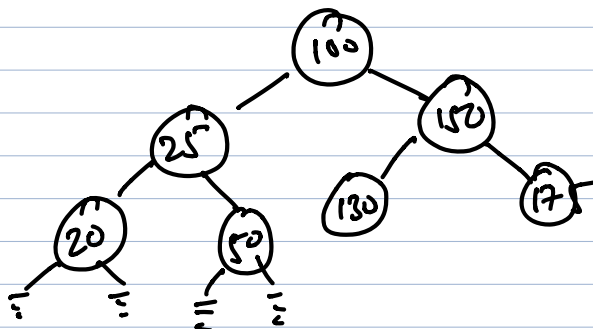




$$\begin{array}{l|l}
 \text{B.F.}(100) = 0 & \text{B.F.}(150) = 0 \\
 \text{B.F.}(50) = 1 & \text{B.F.}(130) = 0 \\
 \text{B.F.}(25) = 0 & \text{B.F.}(175) = 0
 \end{array}$$

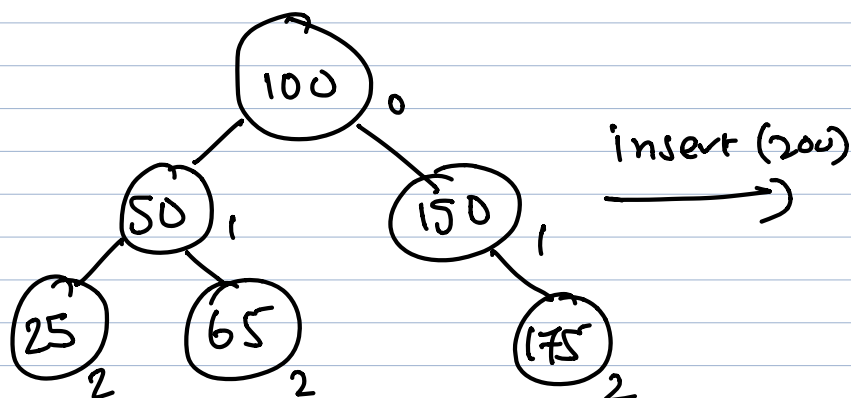


$$\begin{array}{l}
 \text{B.F.}(100) = 1 \\
 \text{B.F.}(150) = \text{B.F.}(130) = \text{B.F.}(175) = 0 \\
 \text{B.F.}(25) = 1 \quad \text{B.F.}(20) = 0 \\
 \text{B.F.}(50) = 2
 \end{array}$$

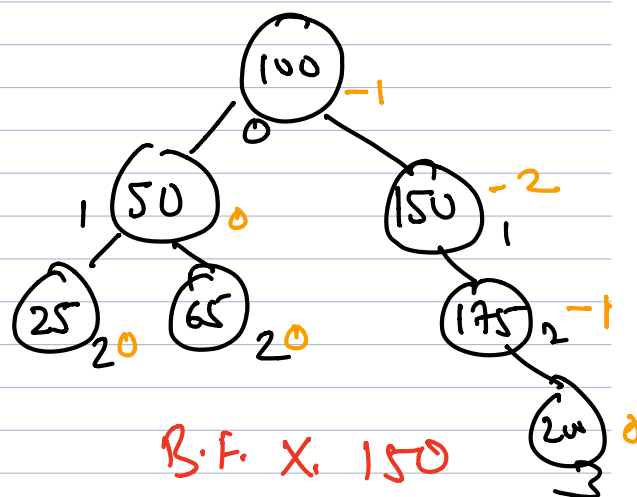


$$B.F.(p \rightarrow \text{run} \rightarrow \text{parent}) = 2 \wedge B.F.(p \rightarrow \text{run}) = 1$$

└ Right Rotate Around (p-run-parent)
 ─────────→ Case-1).



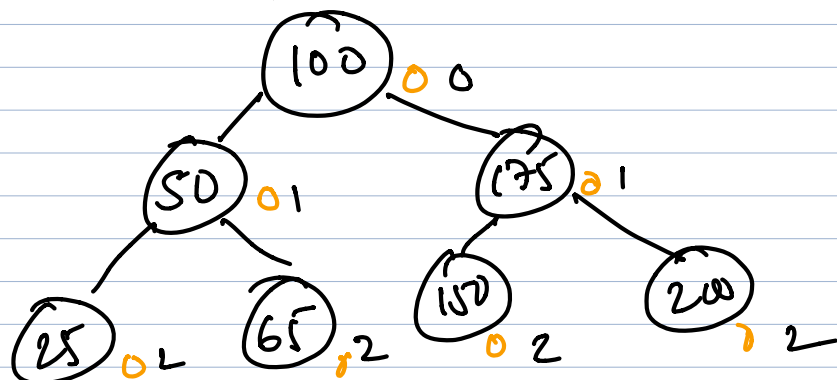
B.F. ✓



B.F. X. 150

$$B.F.(150) = -2$$

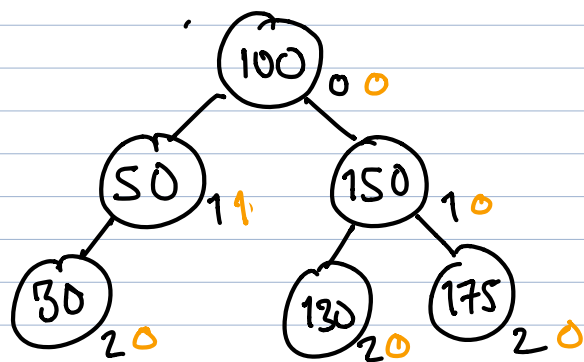
L.R. (150)



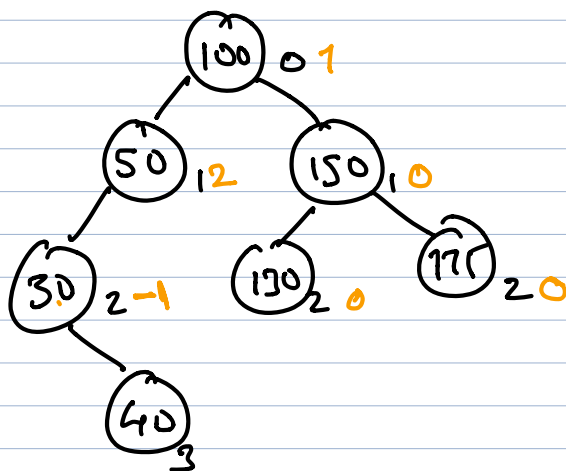
B.F. ✓

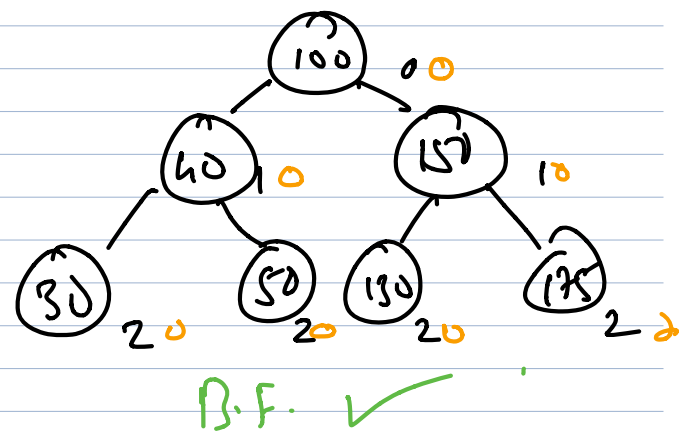
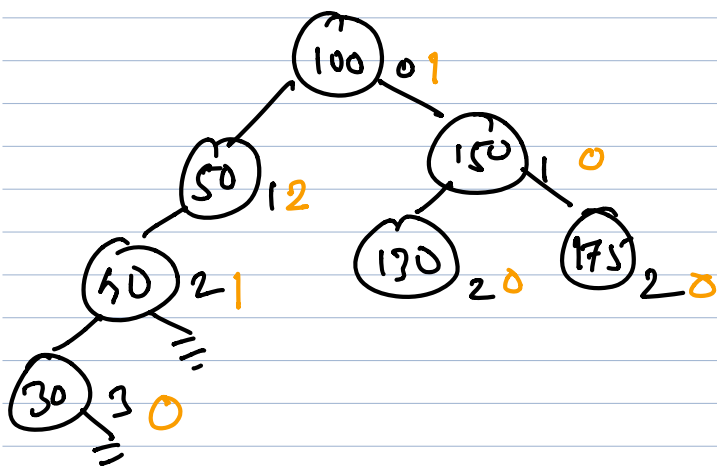
$$B.F.(p \rightarrow \text{run} \rightarrow \text{parent}) = -2 \wedge B.F.(p \rightarrow \text{run}) = -1$$

→ Left Rotate (p-run-parent). R.R.



Original tree

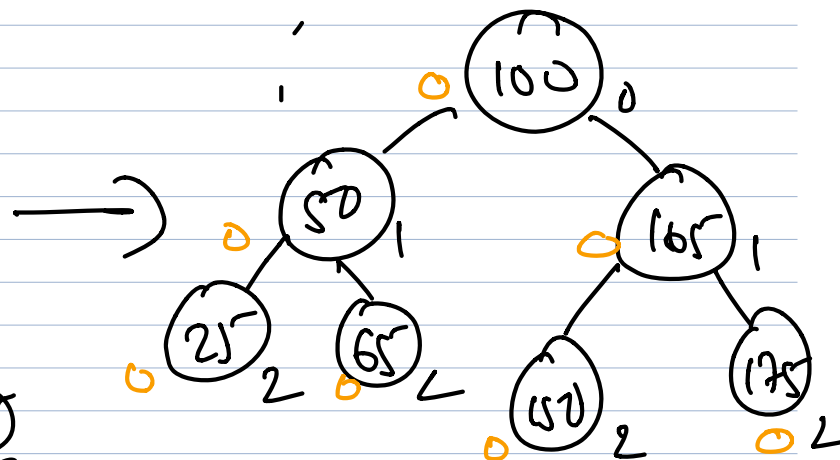
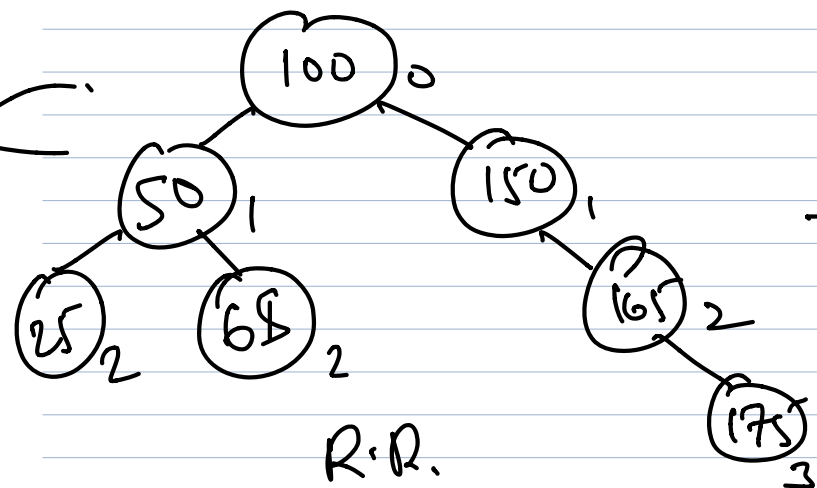
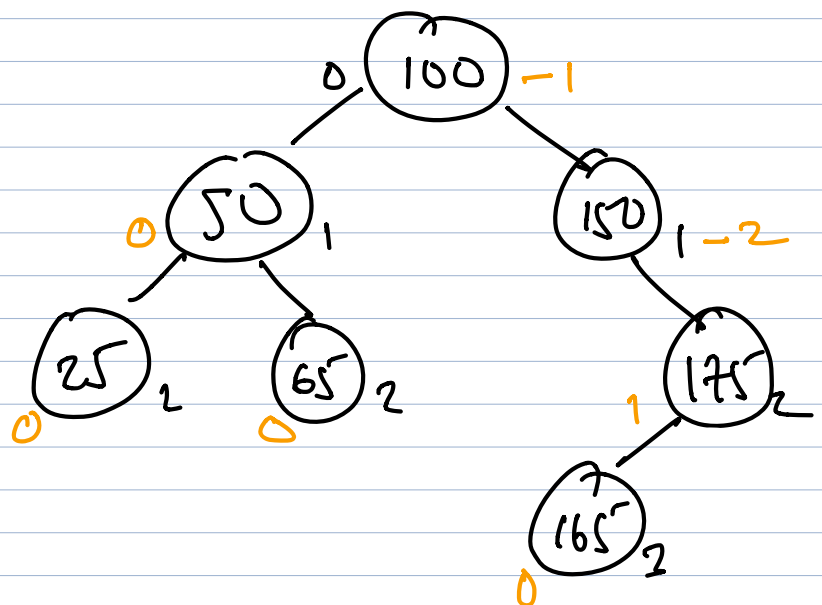
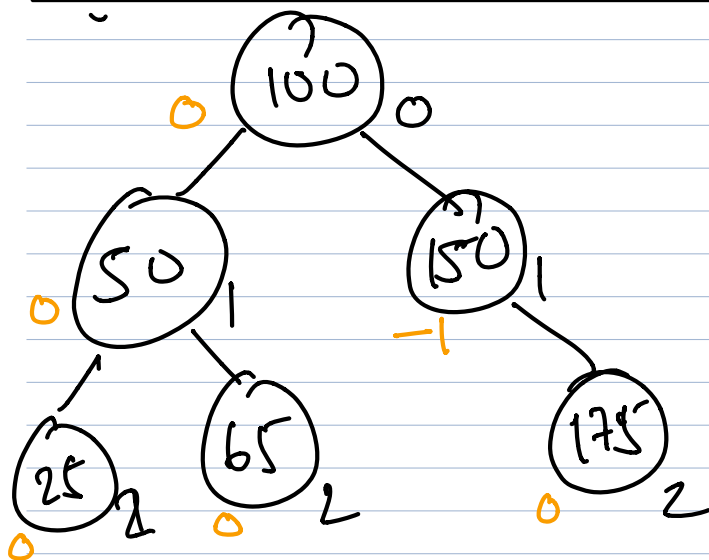




B.F. (p-run → parent) = ± 2 ∨ B.F. (p-run) = -1

Left Rotate (p-run)

Right Rotate (p-run → parent → parent) LR.



B.F. $(p \rightarrow \text{parent}) = -2 \wedge \text{B.F.}(p \rightarrow \text{run}) = 1$

R.R. $(p \rightarrow \text{run})$

L.R. $(p \rightarrow \text{run} \rightarrow p \rightarrow p)$

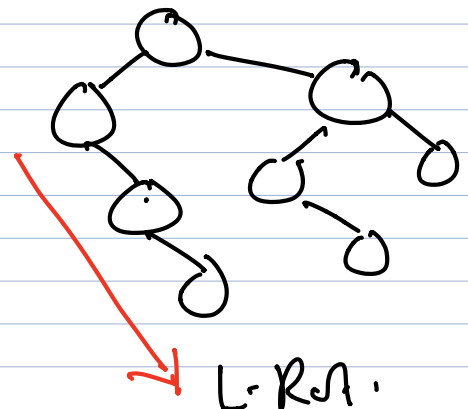
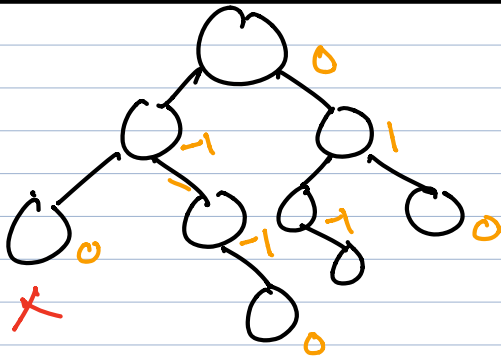
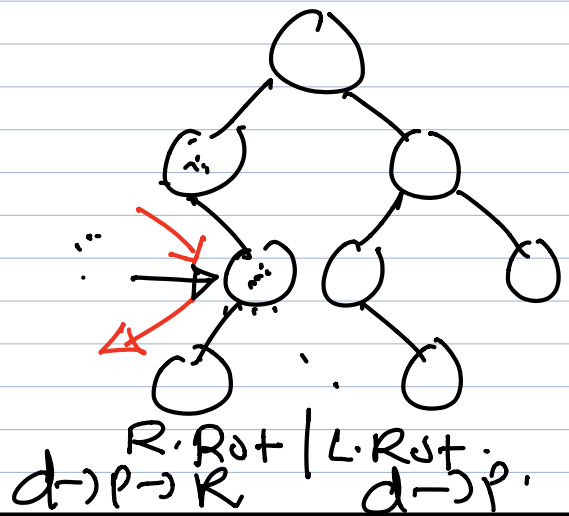
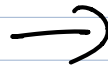
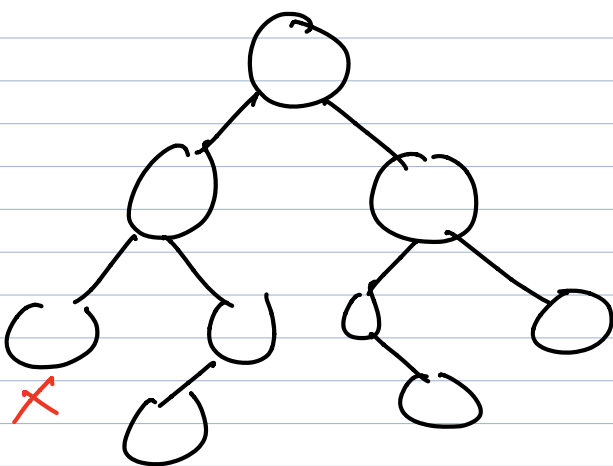
LL. \rightarrow R.Rot $(p \rightarrow \text{parent})$ 2 1

RR. \rightarrow L.Rot $(p \rightarrow \text{parent})$ -2 -1

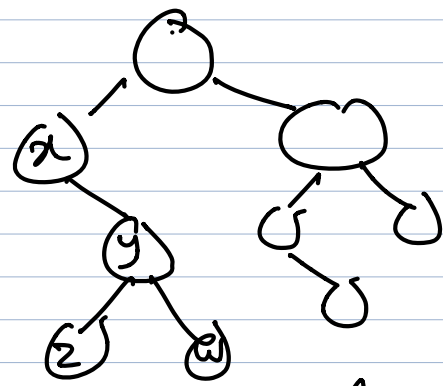
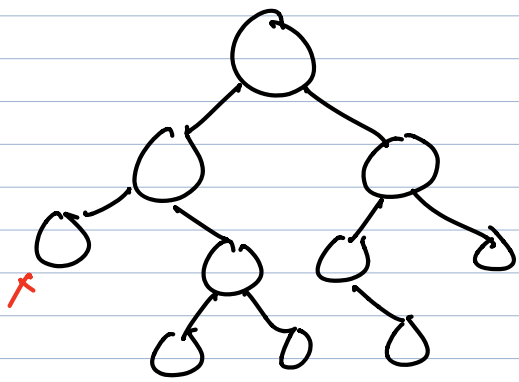
2' L.R. \rightarrow L.Rot $(p \rightarrow \text{run})$ | R.Rot $(p \rightarrow \text{parent} \rightarrow \text{parent})$

2' RL. \rightarrow R.Rot $(p \rightarrow \text{run})$ | L.Rot $(p \rightarrow \text{parent} \rightarrow \text{parent})$

Before deleting a node from tree the tree was an AVL tree. B.F. $(1, -1, 0)$



L.Rot $(d \rightarrow p)$



L. RWT (d → p)

