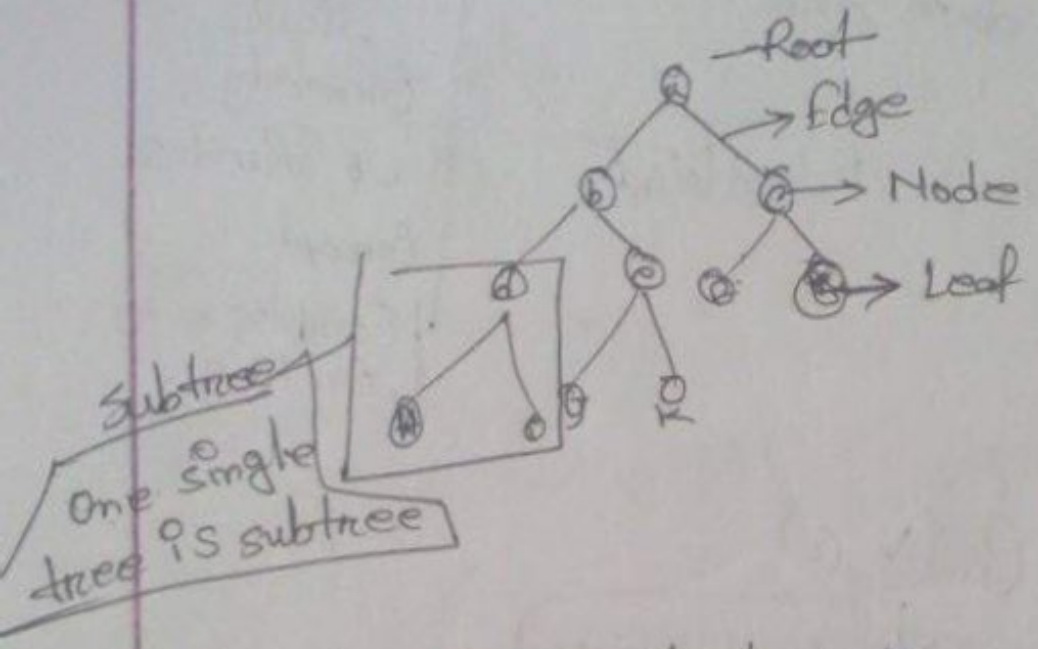
Tree



parent → a
Child → b, c, d, e, f, g
Sibling → bc, de, fg

Level → 0 (or start → 3)

height → level + 1 → 3 + 1 = 4

Degree → Number of edge

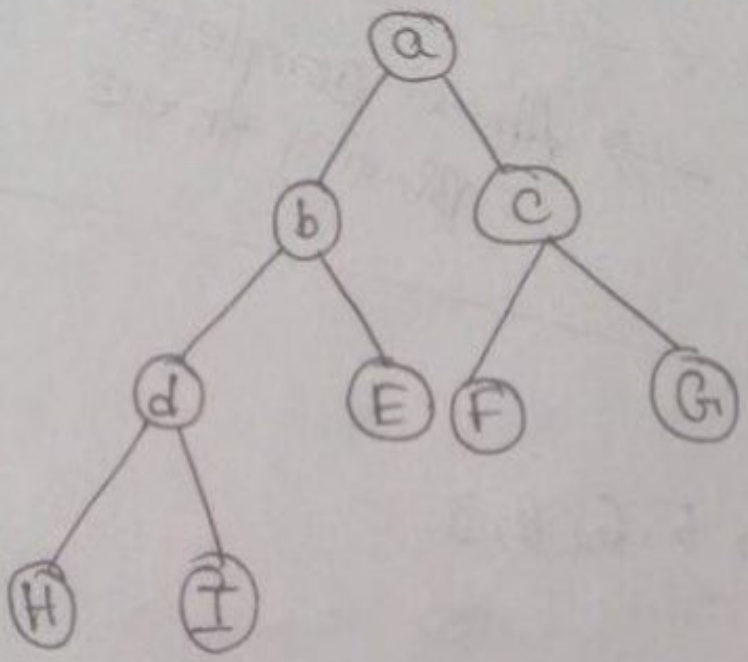
a = 2
c = 5

Ancestor of "f" → a, c

Descendant of "b" → d, e

Tree - traversal

1. Pre-side → Root, L, R
2. In-side → L, Root, R
3. post-side → L, R, Root



pre → a, b, d, H, I, E, C, F, G

In → H, d, I, b, E, a, F, C, G,

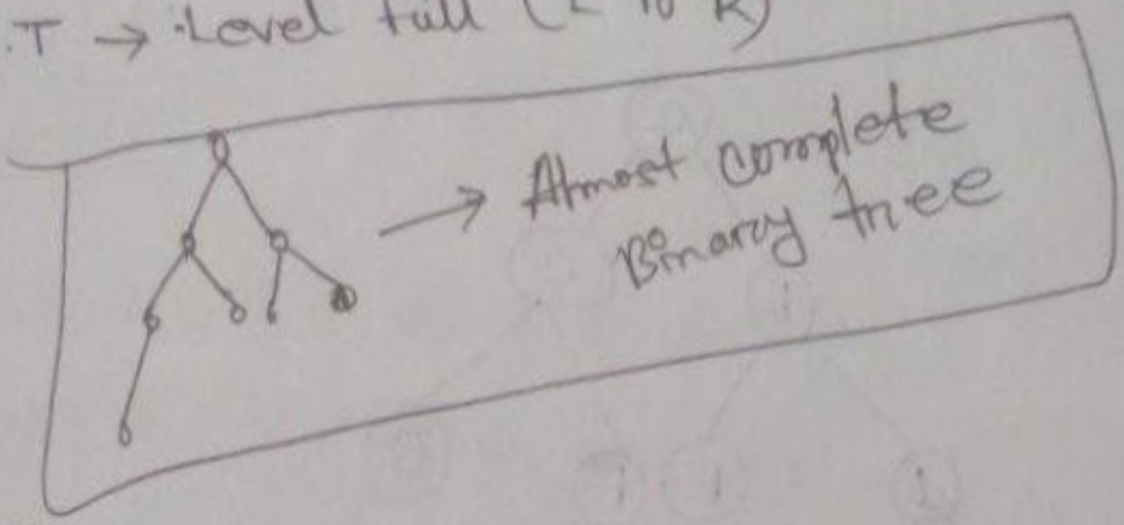
post → H, I, d, E, b, F, G, C, a

Binary tree → At most 2 (0/1/2)

full B.T → 0/2

~~C.B.T~~ CBT

A.C.B.T → Level full (L to R)



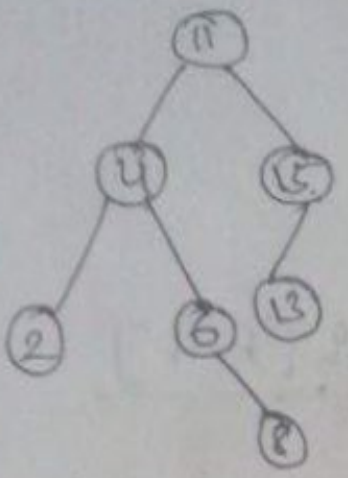
B.S.T

key → 11, 42, 5, 6, 8, 3

Root > L

Root < R

Note: Root = key ~~note~~ হবে,
Condition key <= Root then
Left.
It's called left bias
Condition key > = Root then
Right
It's called Right bias.



pre : 11, 4, 2, 6, 8, 15, 13

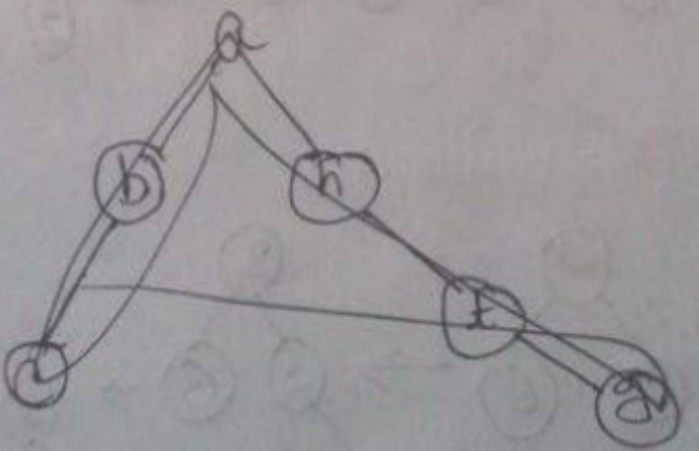
in : 2, 4, 6, 8, 11, 13, 15,

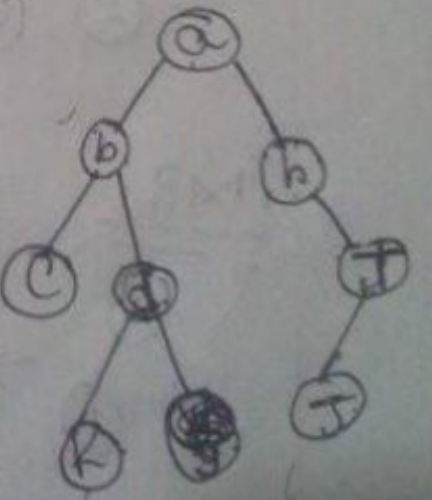
post : 2, 8, 6, 4, 13, 15, 11

pre → a, b, c, d, k, y, h, t, J

in → c, b, k, d, y, a, h, J, t

pre → c, k, y, d, b, J, t, h, a





Hip → Operative, orde
orders

Struct → A.C.B.T

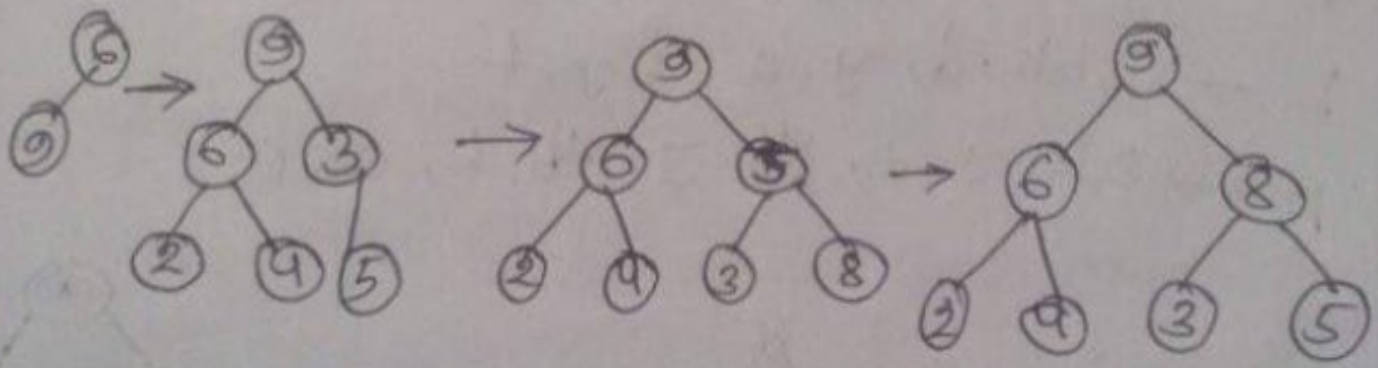
Max - Min [Hip]

Parent > child → in Max

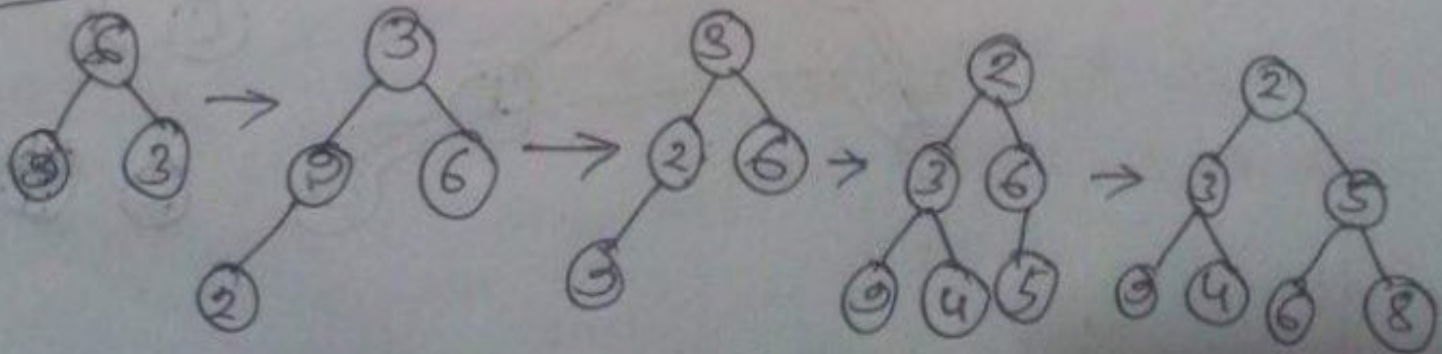
Parent < child → in Min

Example: Max

6, 9, 3, 2, 4, 5, 8

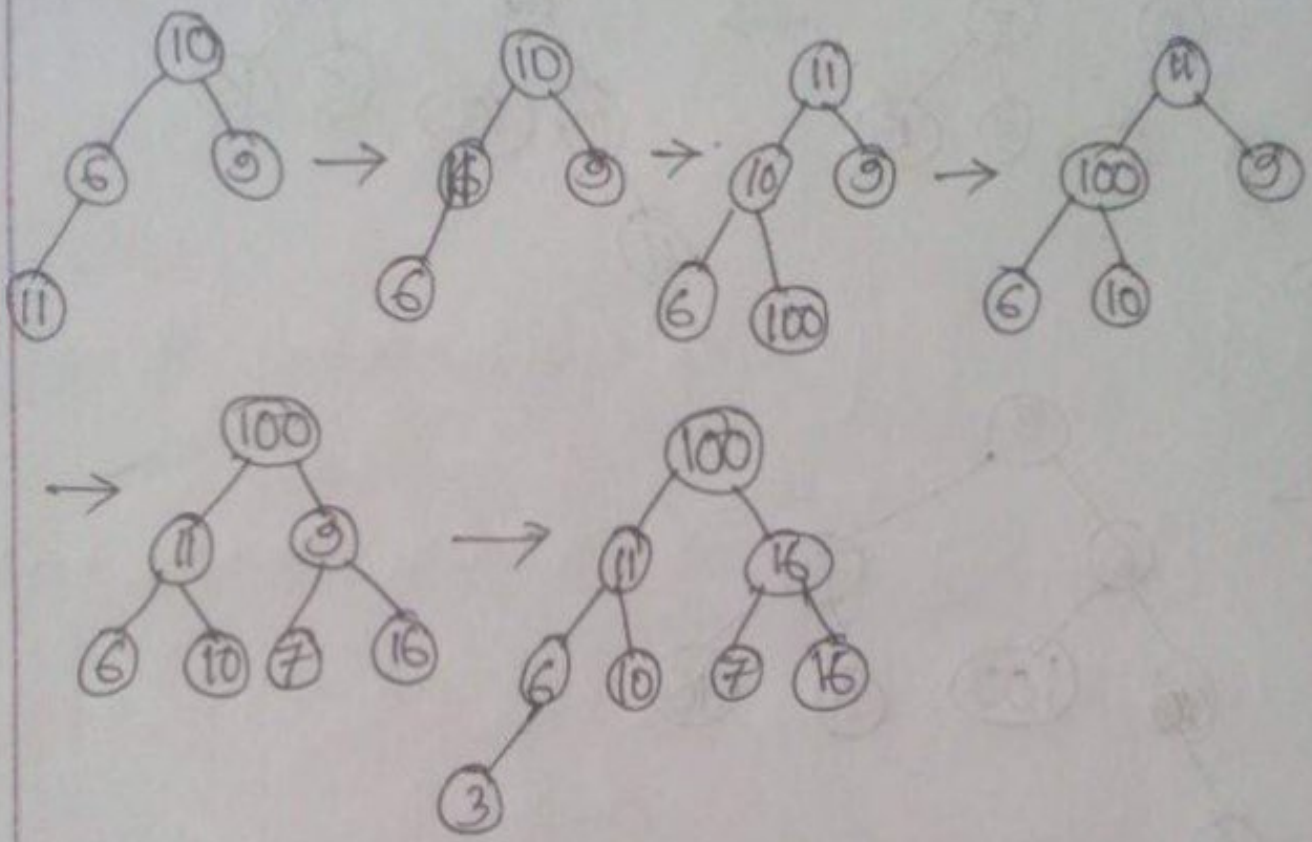


Min:

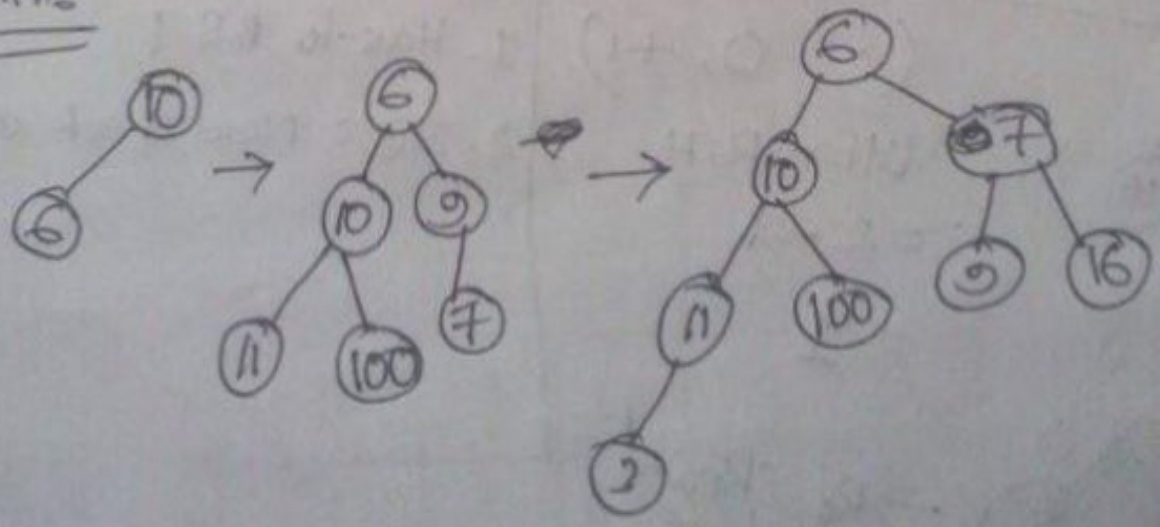


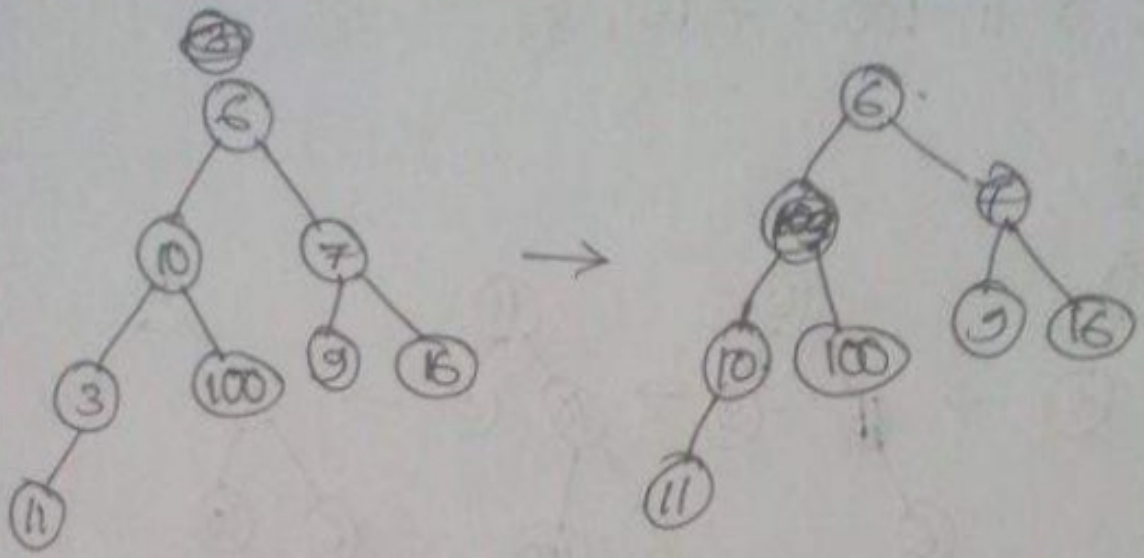
10, 6, 9, 11, 100, 7, 16, 3

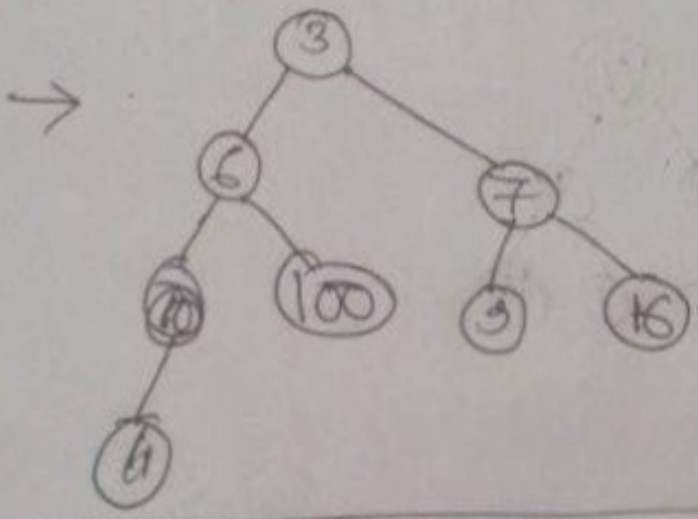
Max:



Min:







Balanced B.S.T → ALL

H → Height

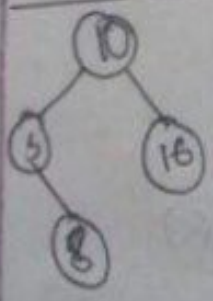
(-1, 0, +1)

L.H - R.H

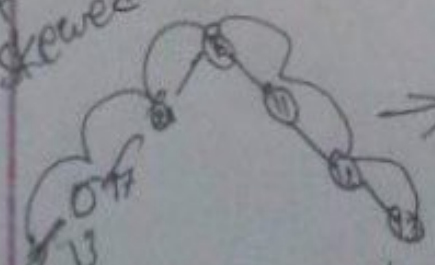
= 2 - 1

= 1

1. Has to B.S.T
2. Node check



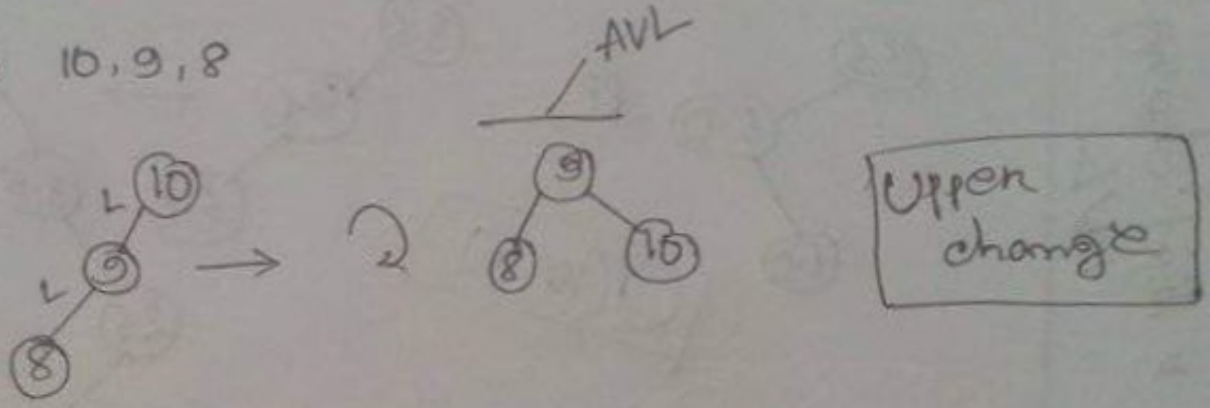
Left skewed



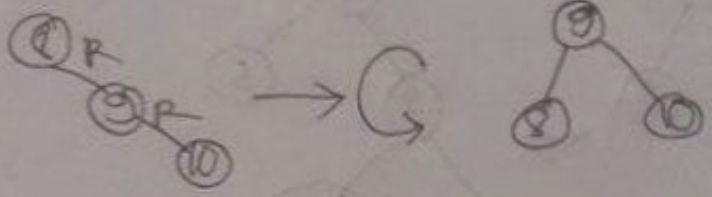
→ R8 skewed tree

LL, RR, LR, RL

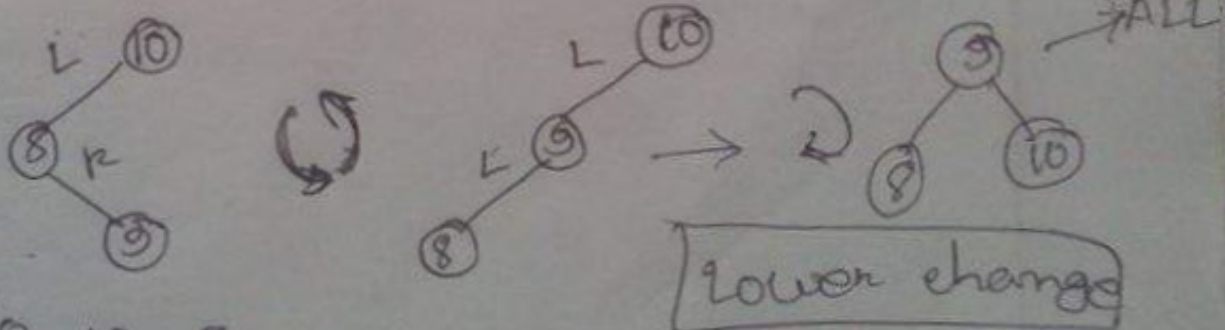
LL: 10, 9, 8



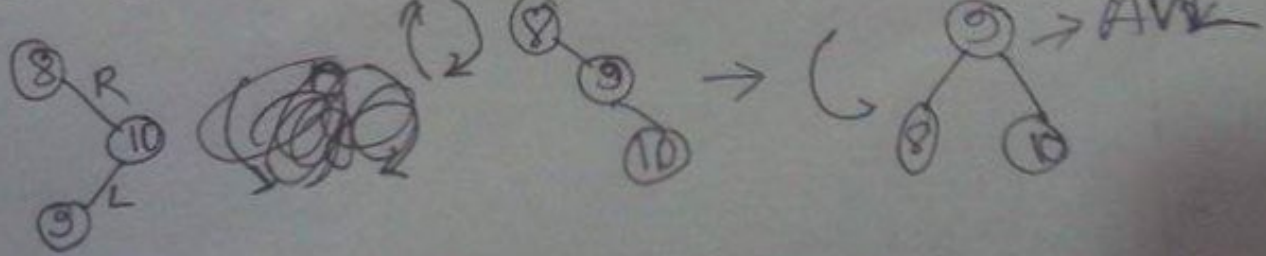
RR: 8, 9, 10



LR: 10 8 9 ← ইলাস্ট্রেশন LL করলে হবে

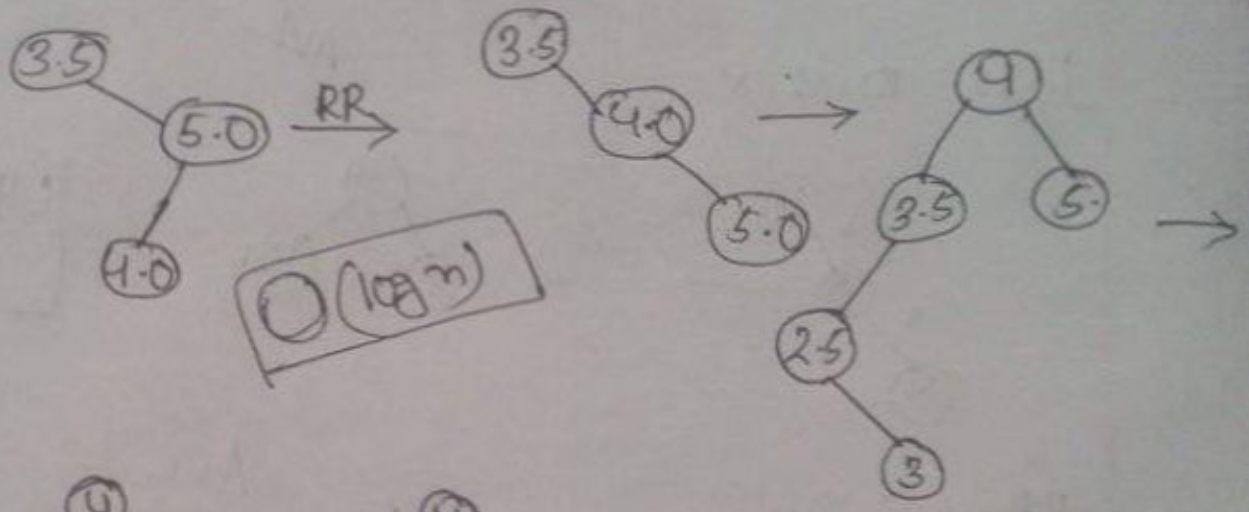


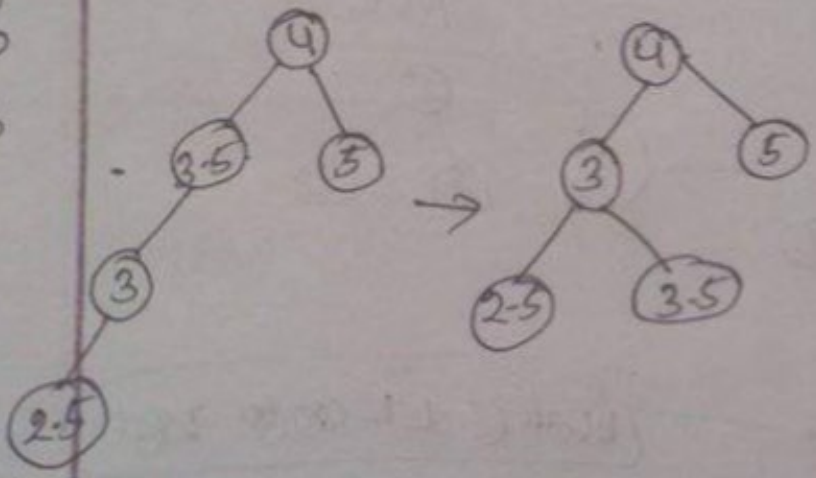
RL: 8 10 9



निम्न डाटा 2 Height change for AVL

3.5, 5.0, 4.0, 2.5, 3.0, 6.0, 7.8, 2.0, 2.8





Dealete

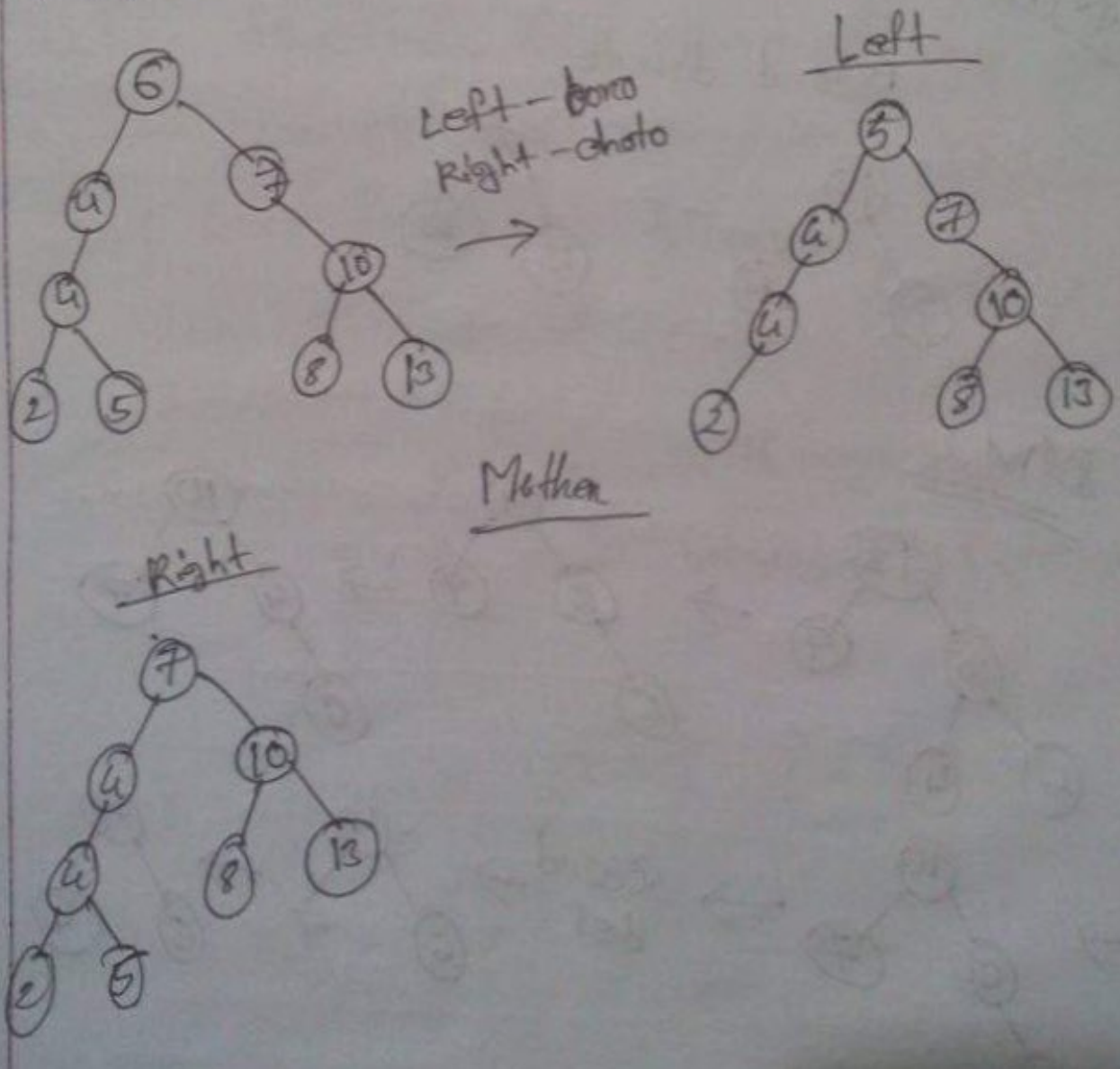
~~Mother node~~

leaf node delete ⟶ only delete

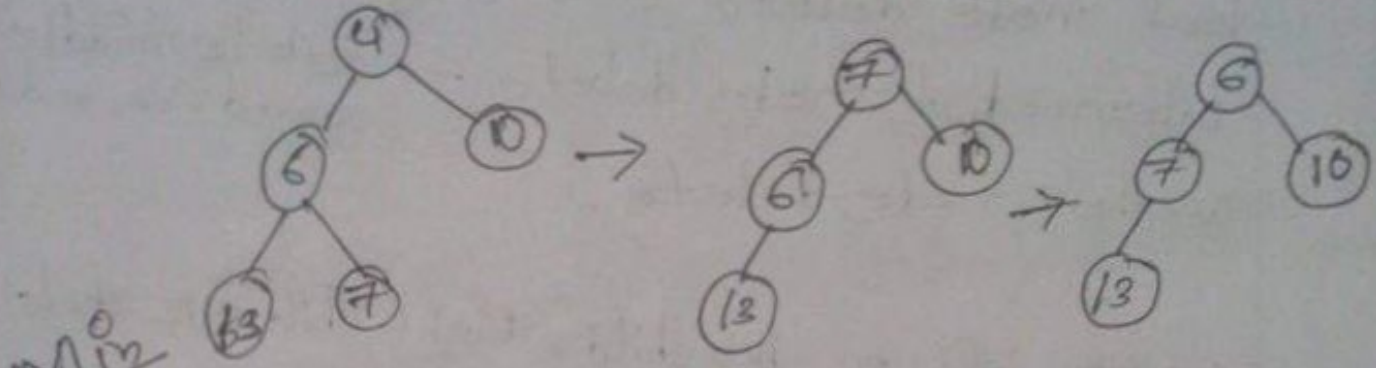
intermediat node delete → delete middle add grand mom and child

mother node delete.

* ~~Node~~ left বা bro child, Right child বা choto child

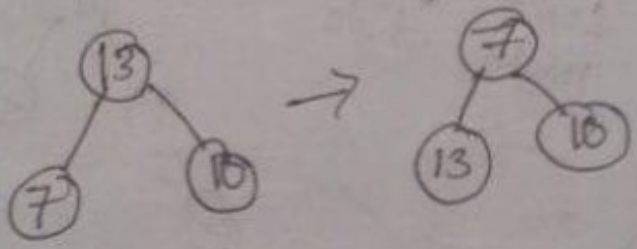


Hip में Dolete root there → ~~ad~~ last inserted node replace root



Min

Second delete



~~M~~Max