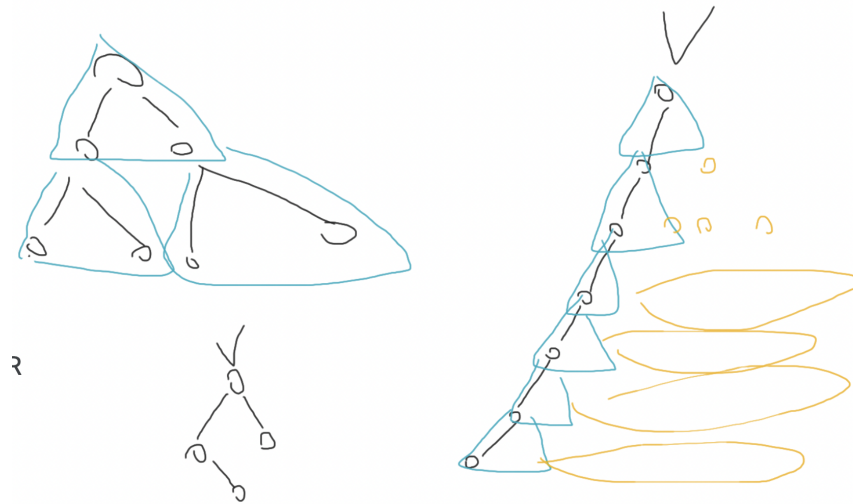


Phill-DS-0320

AVL tree - Adelson V L

高度平衡的二元搜尋樹 → efficiency (不能有空隙, 計算量會增加)



$$T \in AVL$$

$$T_L, T_R \in AVL$$

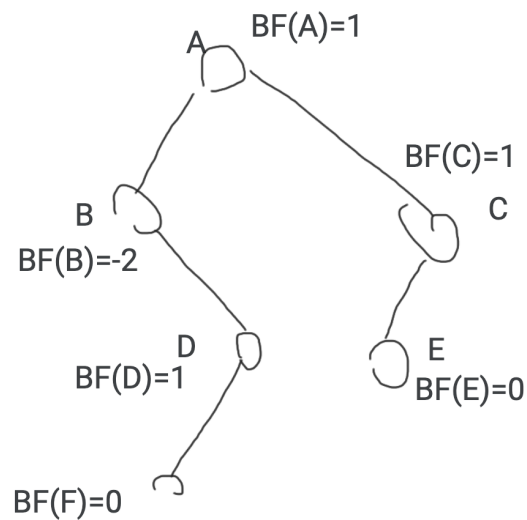
$$|h_L - h_R| \leq 1 \rightarrow \text{balanced}$$

$$T_L \quad T_R$$



balance factor 平衡因子 BF → 針對某一個節點的高度計算結果 → BF(n), n → node

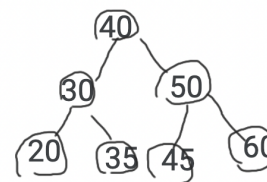
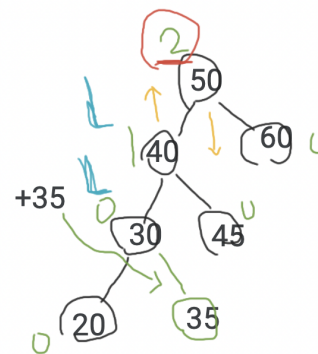
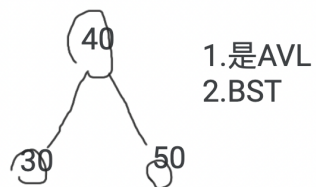
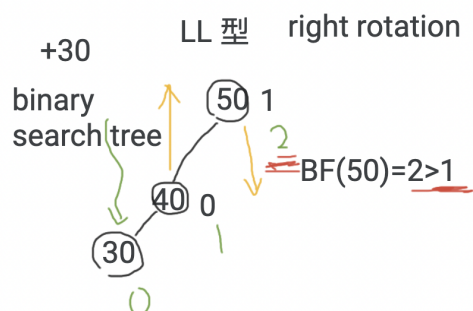
$$|BF(n)| \leq 1 \rightarrow -1, 0, 1$$



AVL tree 加入 node

- 針對四種不同的 types → 作 re-balanced

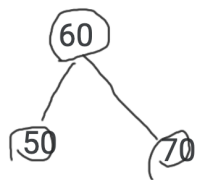
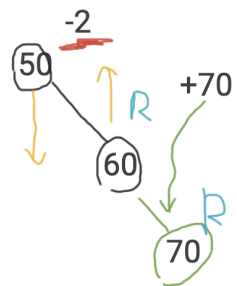
LL type



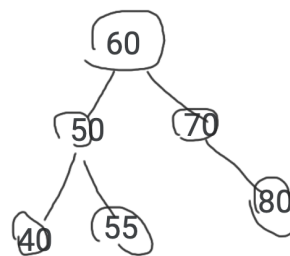
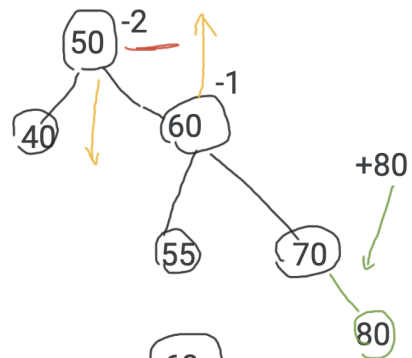
1. AVL → Yes
2. BST → Yes

RR type → left rotation

RR 型



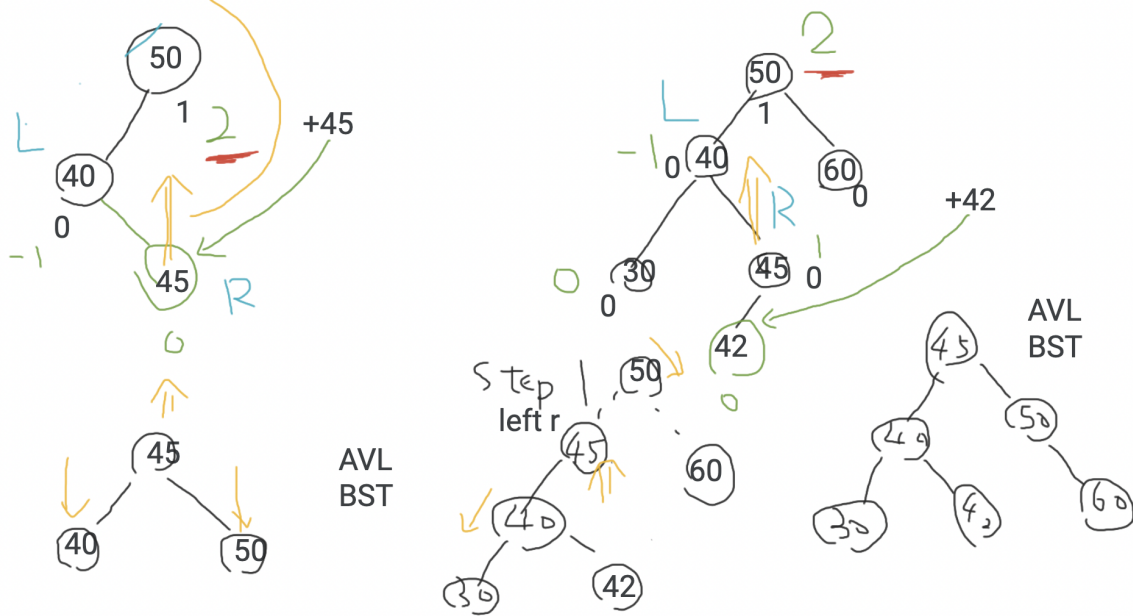
1.AVL -> Yes
2.BST -> Yes



1.AVL-> Yes
2.BST -> Yes

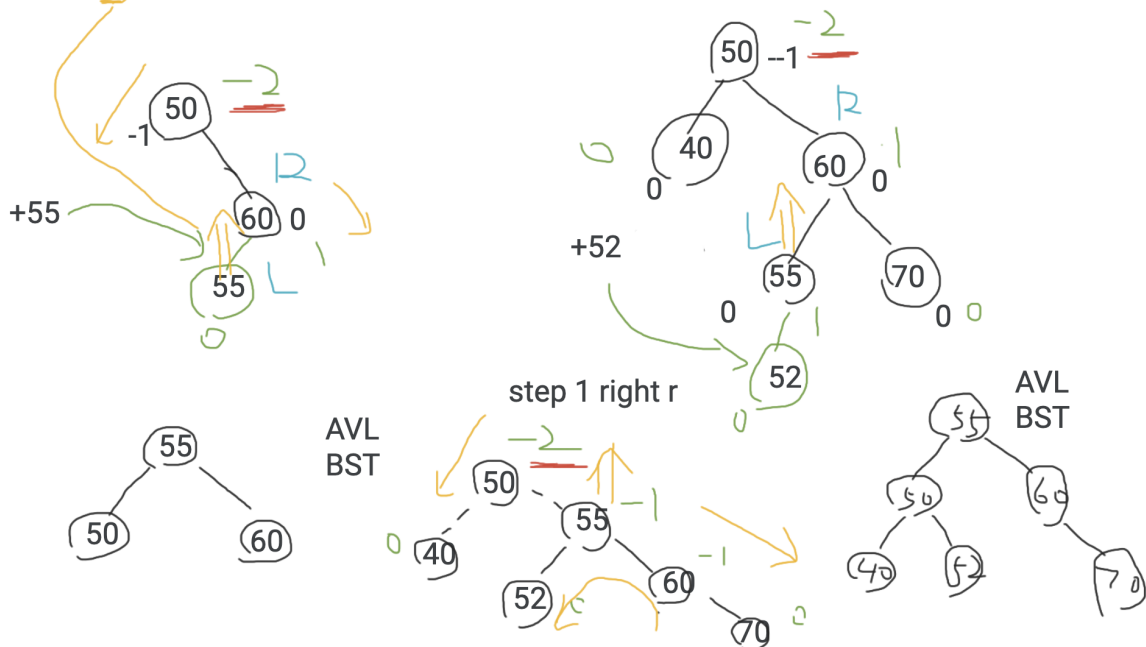
LR type

LR type -> (R45, left rotation) -> 整個right rotation



RL type

RL type -> (L55 Right rotation), 整個left rotation



例子

字串 AVL → BST 原則大小 alphabetic order 大小

