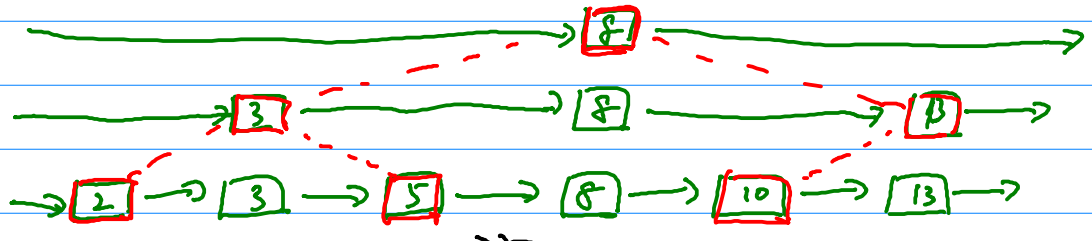
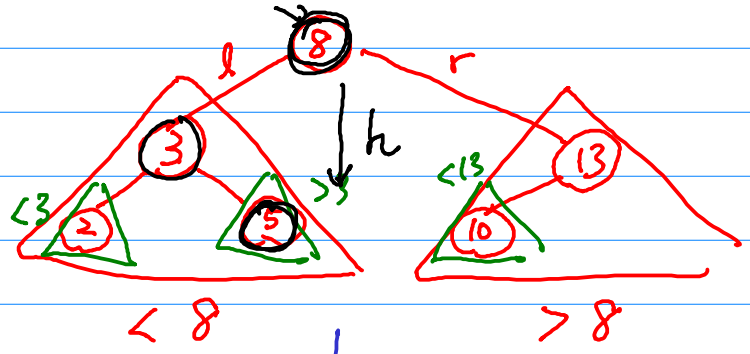
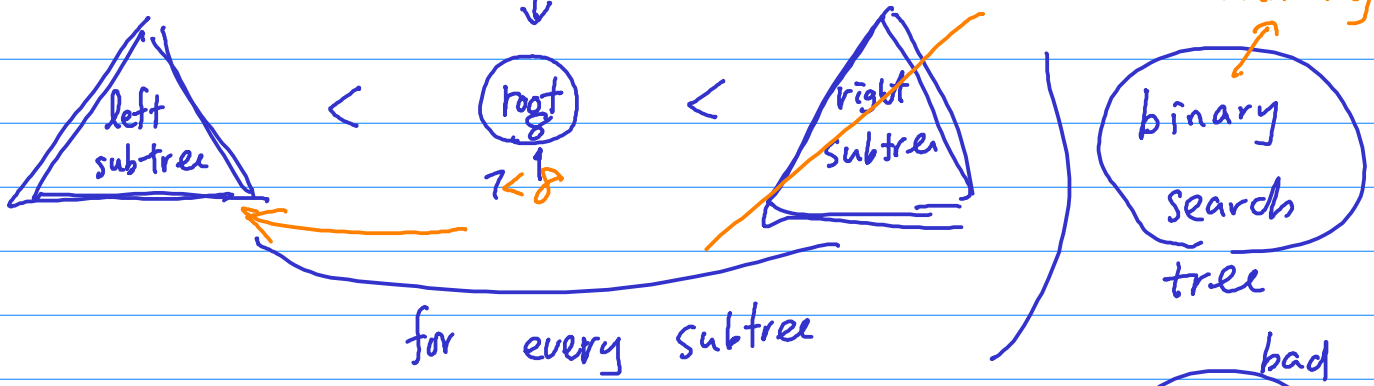
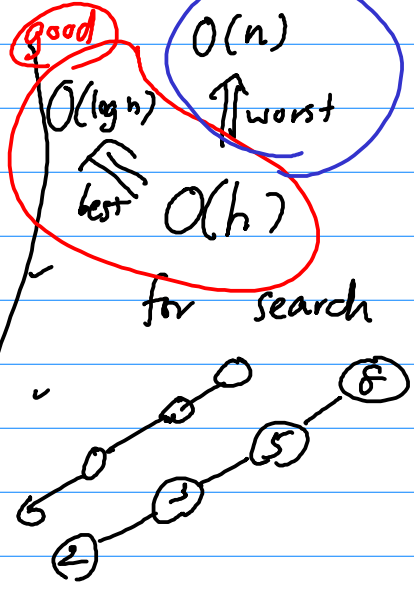


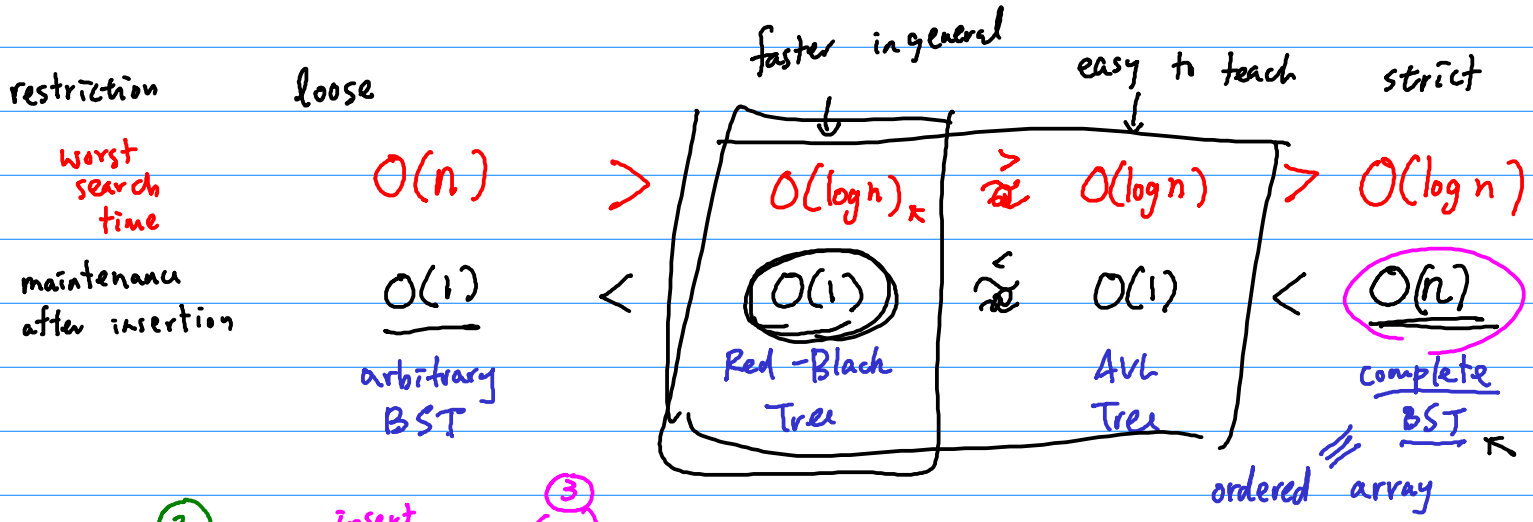


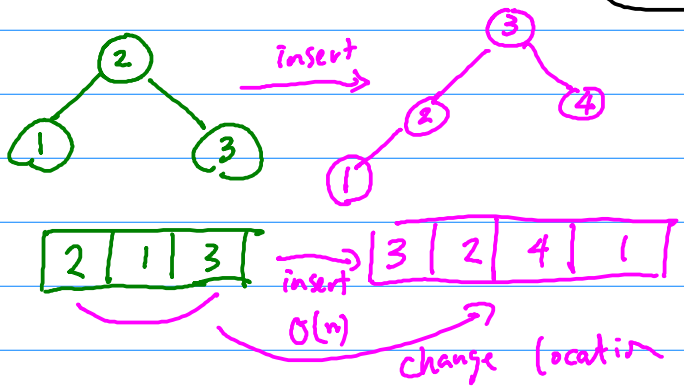
binary tree




```
BST-Search (k, T) {
    mid ← root of T
    if (k < mid)
        return BST-Search (k, T->left)
    if (k > mid)
        "          "  T->right
    else // ( "=" )
        return mid.value
}
```







* Adelson Velskii Landis (1962)

a BST such that

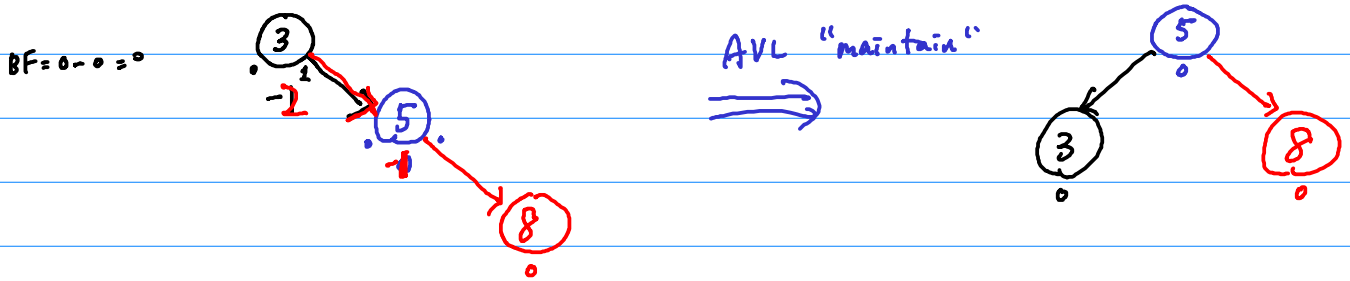
$|\ \text{height}(T_L) - \text{height}(T_R)\ | \leq$ | for every subtree

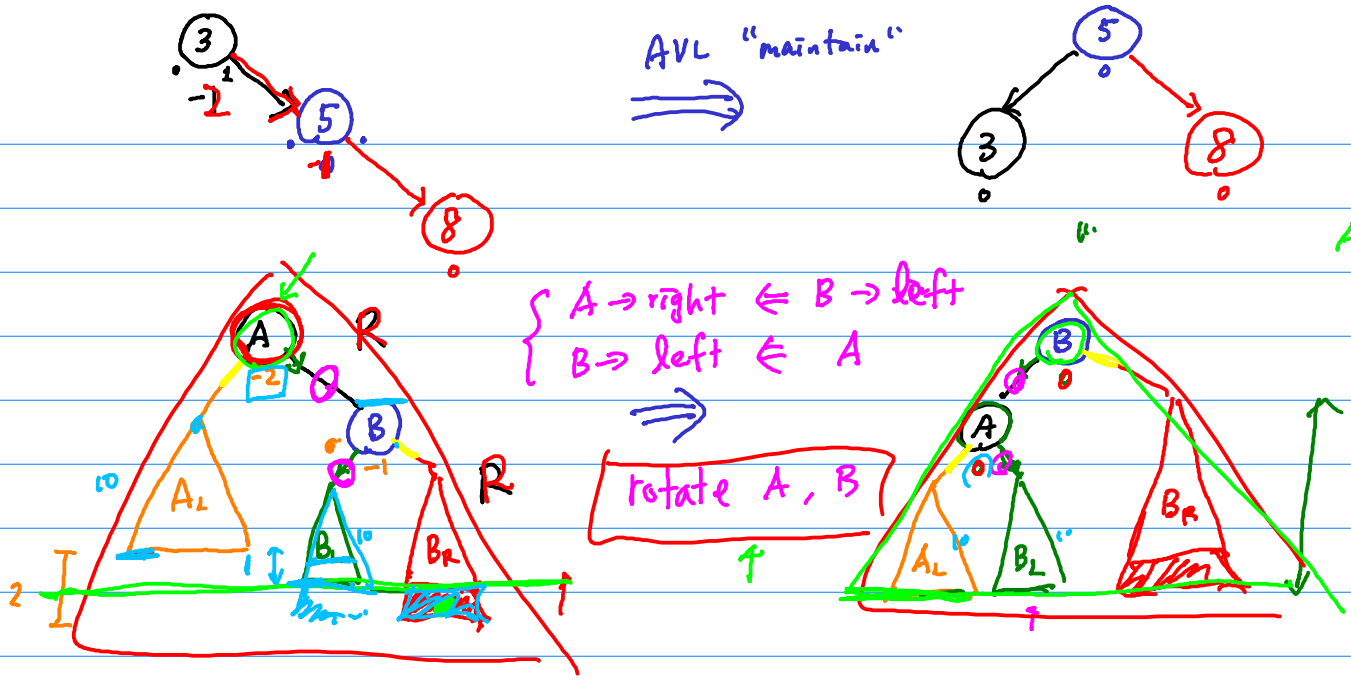
$h_L \qquad h_R$

$$BF(T) = h_L - h_R \begin{cases} 1 \\ 0 \\ -1 \end{cases}$$

balance factor

* 3 5 8




3
5
8
AVL "maintain"
A
B
R
R
A_L
B_L
B_R
A → right ∈ B → left
B → left ∈ A
rotate A, B
AVL : RR
LL

* 1, 2, 3, 4, 5, 6, 7