AVL
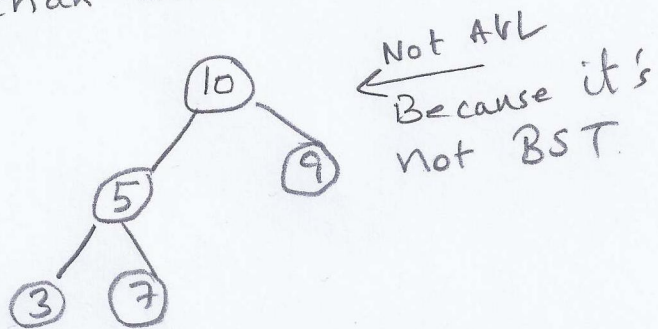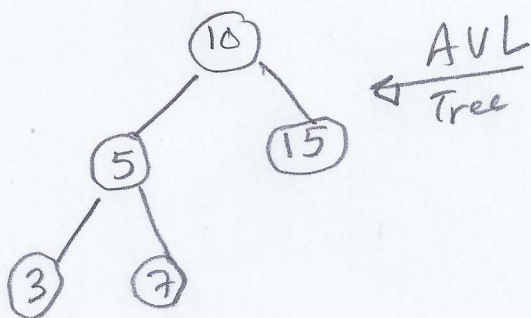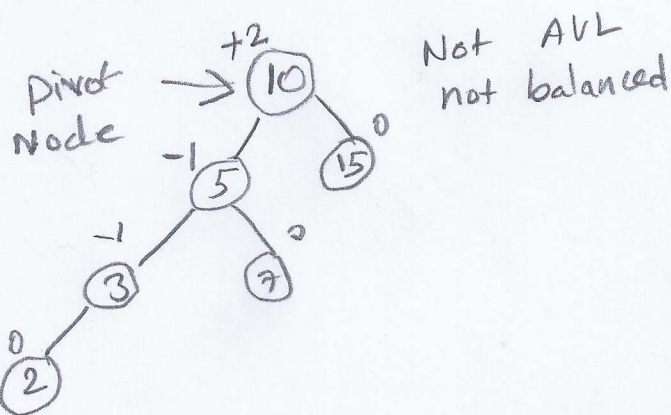
Adelson-Velsky and Landis

AVL is a balanced BST tree (BST)

Each node must have the difference between heights
both sides not more than one.

AVL Tree

Not AVL
Because it's
not BST

Pivot Node →

Not AVL
not balanced

Balancing Symbols

+1   Right > Left

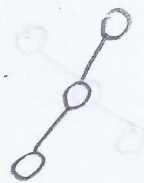0   Equal

-1   Left > Right
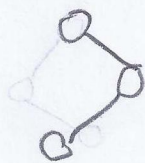
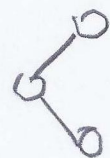There are four types of Rotation:

1- Single Left

2- Single Right

3- Double Left

4- Double Right

which 3 nodes to Rotate :
_____

-First found the Pivot node. then
check The heights, starting with Pivot node

if (Right height > Left Height) (+2)
{
    Go Right (second node)
    if (Right height >= Left Height) (+1 or 0)
        Go Right (third node)
    else (-1 or 0)
        Go Left (third node)

}
else (-2)
{
    Go Left (second node)
    if (Left height >= Right Height) (-1 or 0)
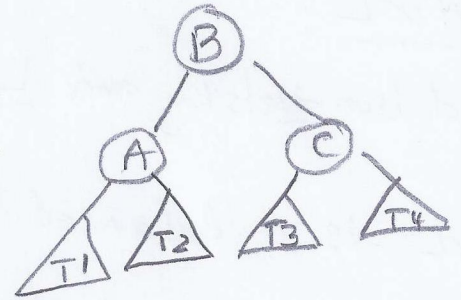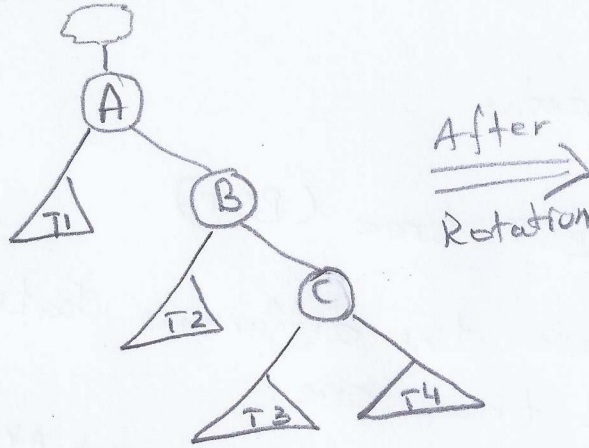   Go Left (third node)
    else (+1)
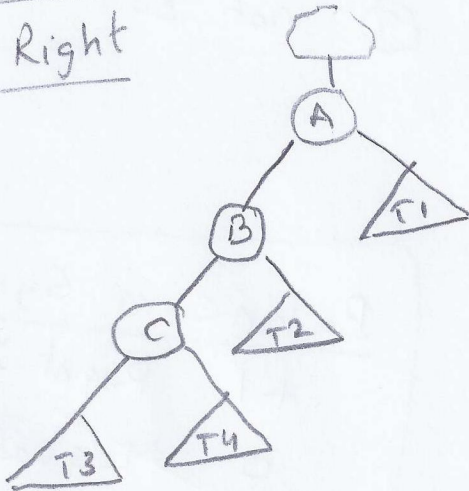   Go Right (third node)

}

How to do Rotation:

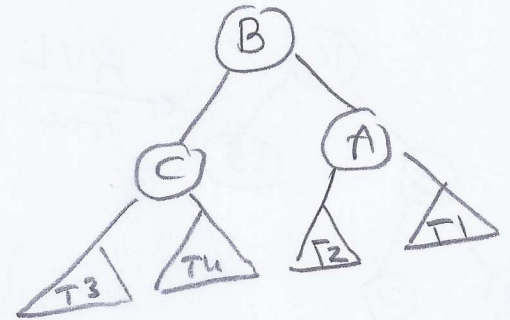## Single Left

A is pivot Node
B is middle value
(new Root)
T1, T2, T3, T4
subtrees.

After Rotation →
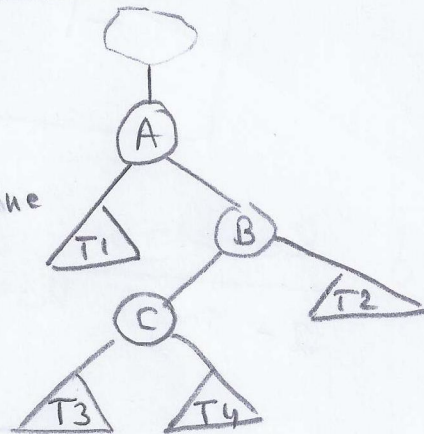

Single Right

After Rotation →

Double Left
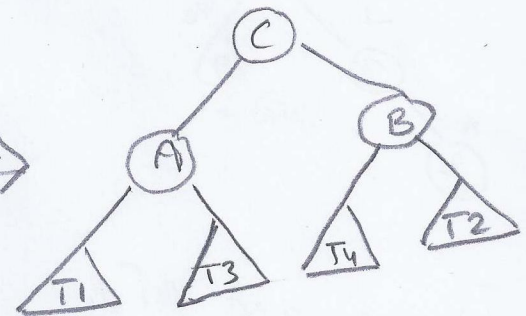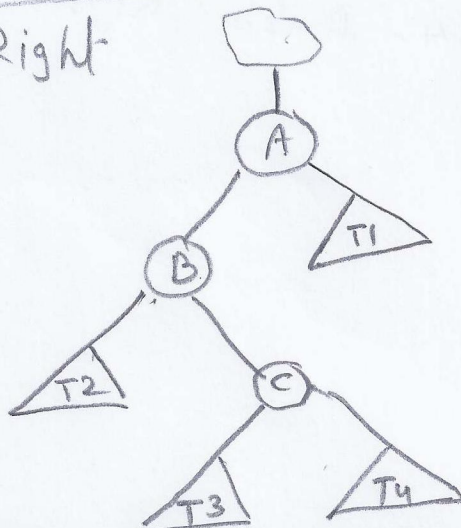
A is Pivot Node
C is middle Value
(new Root)

After Rotation →

Double Right

After Rotation →