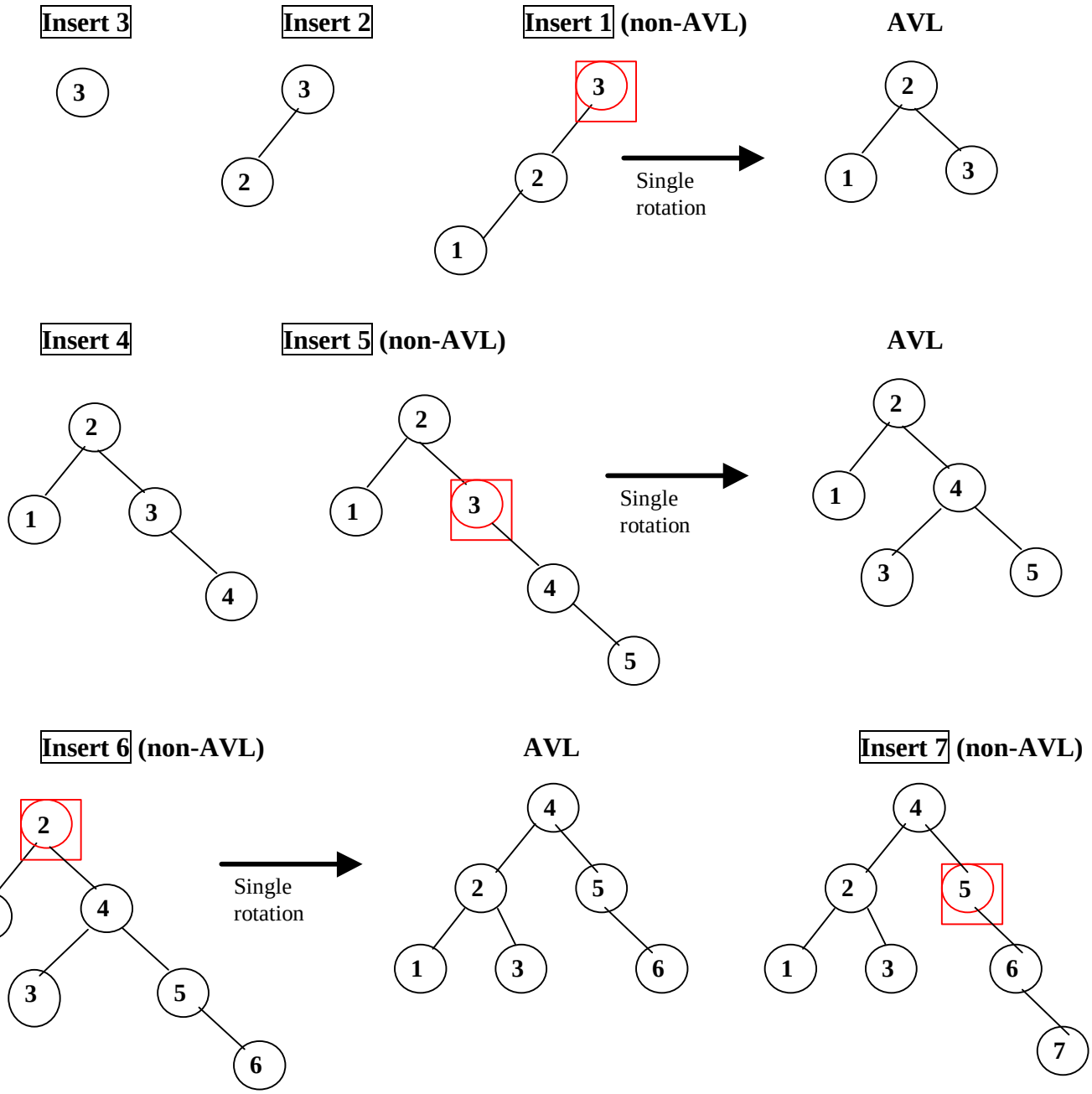
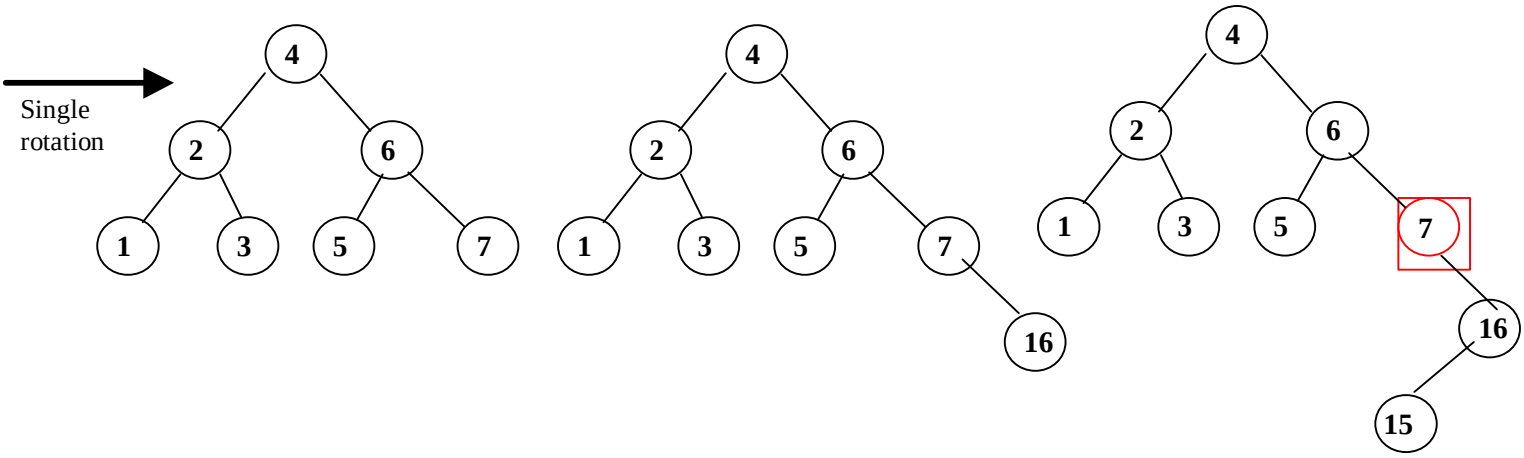
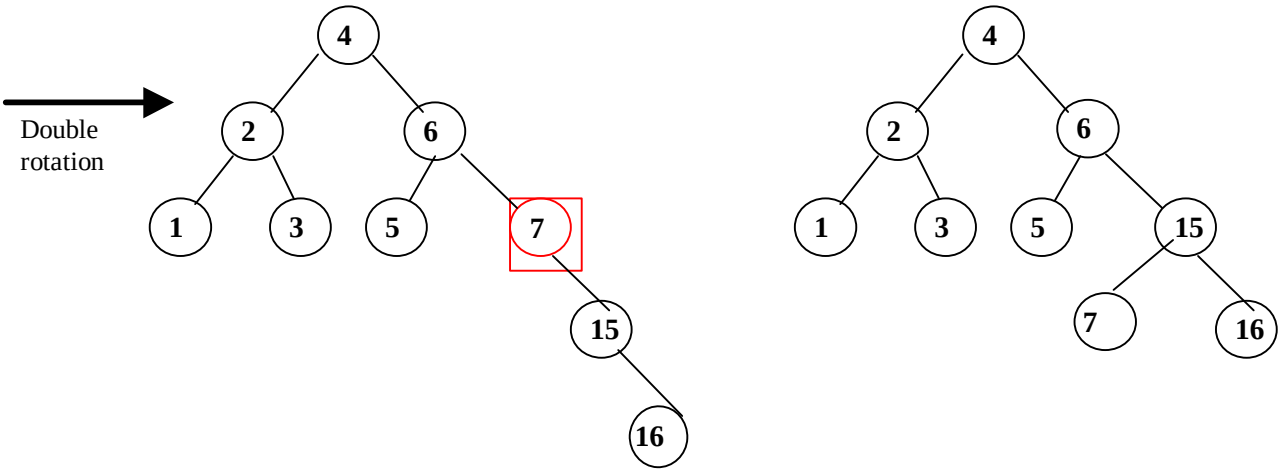
AVL Trees Example



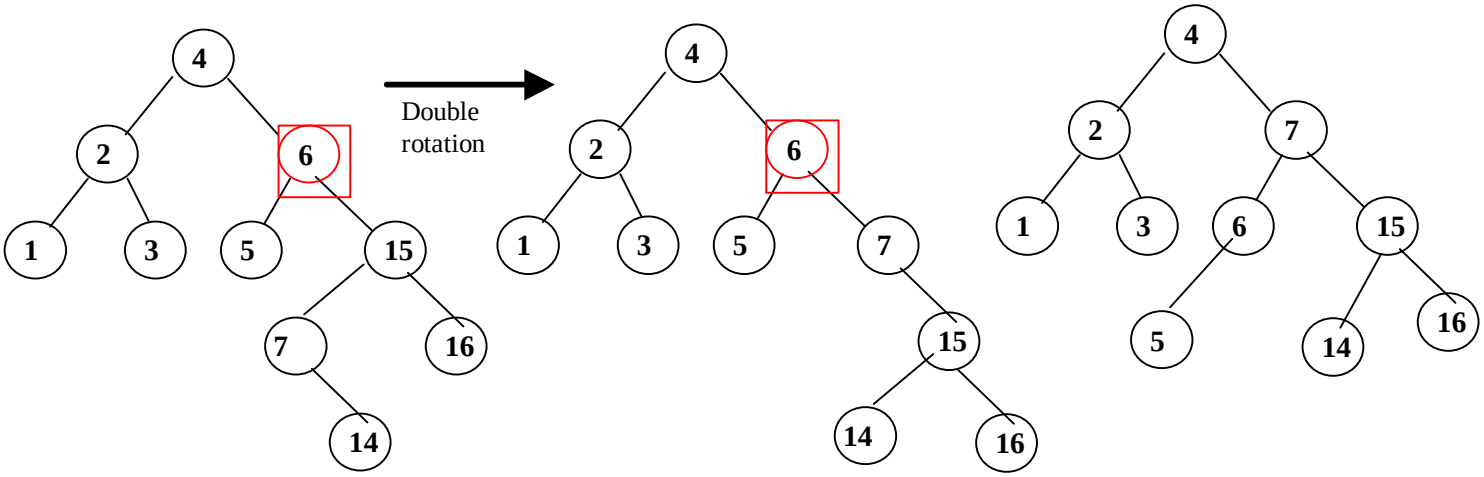
AVL **Insert 16** **Insert 15 (non-AVL)**



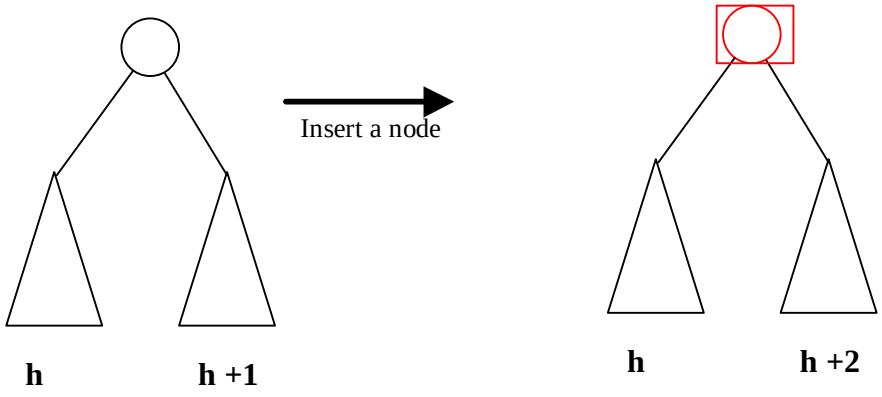
Step 1: Rotate child and grandchild **Step 2: Rotate node and new child (AVL)**



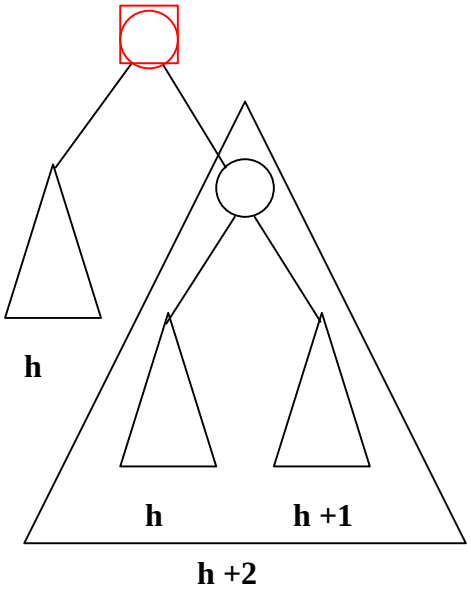
Insert 14 (non-AVL) **Step 1: Rotate child and grandchild** **Step 2: Rotate node and new child (AVL)**



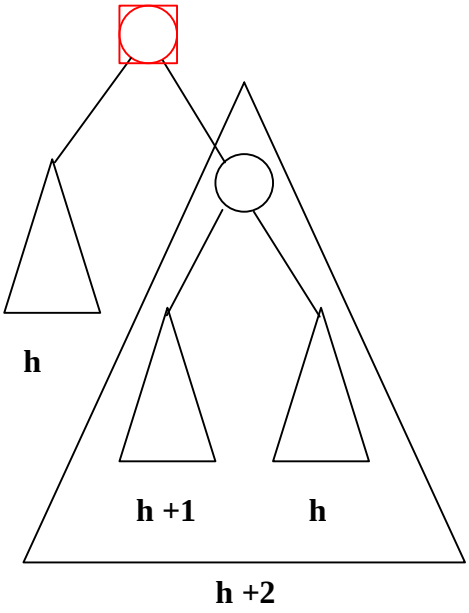
AVL Tree **No longer AVL, must rebalance**



Two ways to expand subtree of height h+2:



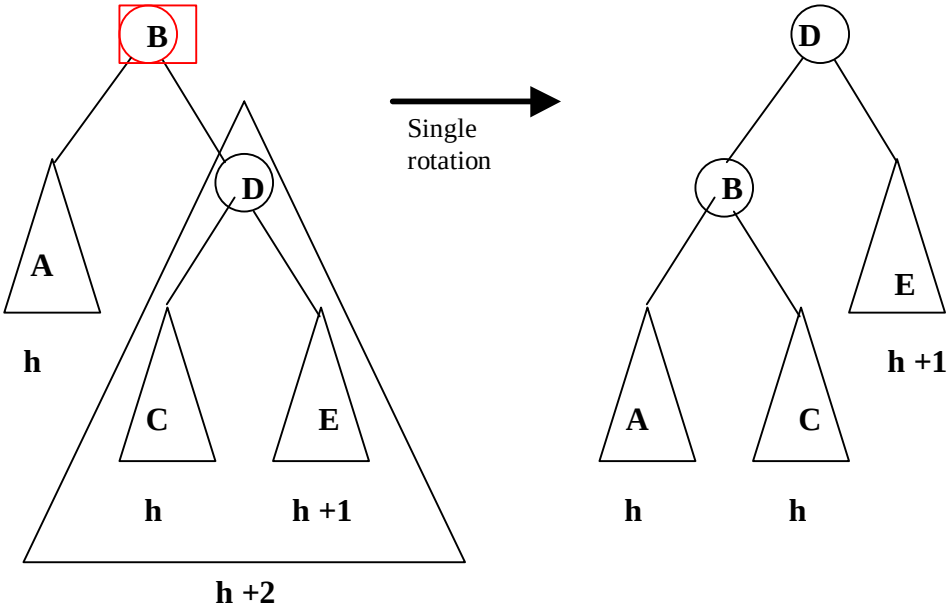
Apply a <u>Single</u> Rotation



Apply a <u>Double</u> Rotation

<u>Note</u>: the symmetrical case is handled identically (i.e. mirror image)

Single Rotation:



Double Rotation: