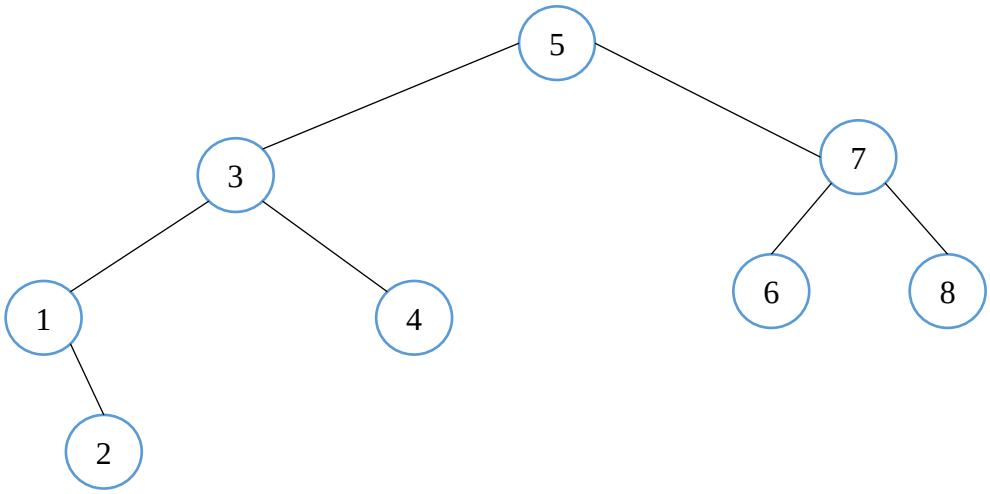
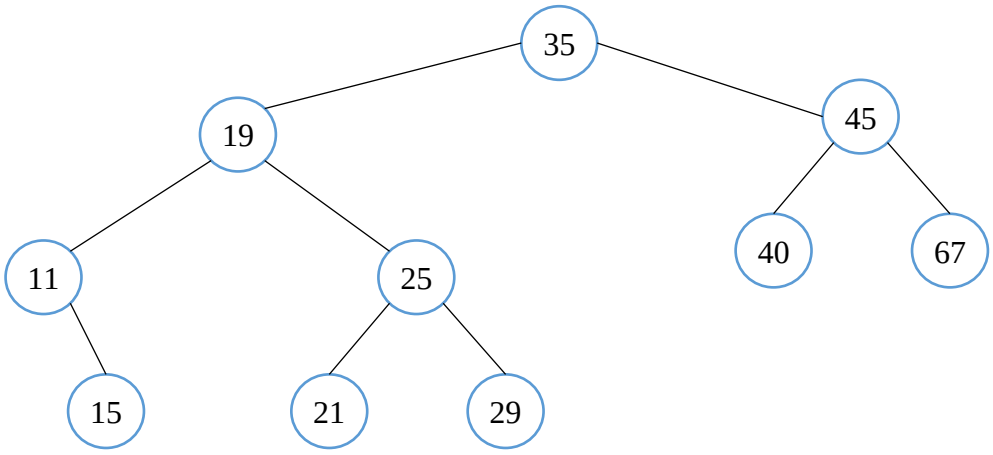
Tutorial 7

1. **Consider the following binary tree. Determine the heights of the left and right sub-trees at**
   - **i. node 1**
   - **ii. node 4**
   - **iii. node 3**
   - **iv. node 5**



2. **Consider the AVL tree shown below. Show the steps taken to balance the tree when**
   - i. **14 is inserted**
   - ii. **23 is inserted**
   - iii. **70 is inserted**



3. **Given a pointer *ref* to a node in an AVL tree where there is an imbalance of the right-right case, write an algorithm to restore the imbalance.**

4. **Given a pointer *ref* to a node in an AVL tree where there is an imbalance of the right-left case, write an algorithm to restore the imbalance.**

5. **A tromino is an L-shaped tile formed by** 1**-by-**1 **adjacent squares. The problem is to cover any** *n***-by-***n* **chessboard with one missing square (anywhere on the board) with trominos, where** *n* **is a power of** 2**. Trominos should cover all the squares except the missing one with no overlaps. Design a divide-and-conquer algorithm for this problem.**

A tromino