NANYANG TECHNOLOGICAL UNIVERSITY
School of Electrical & Electronic Engineering

EE2008/IM1001 Data Structures and Algorithms

Tutorial No. 7 (Sem 2, AY2021-2022)

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

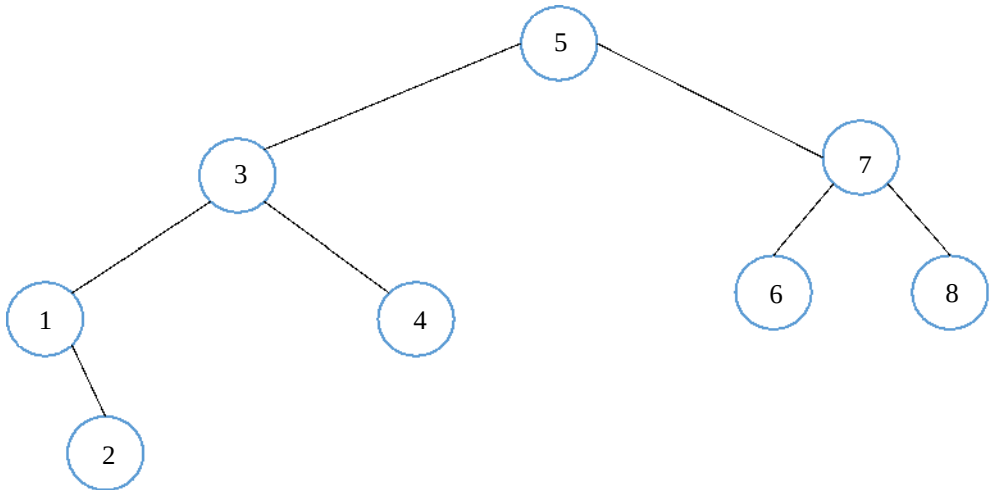
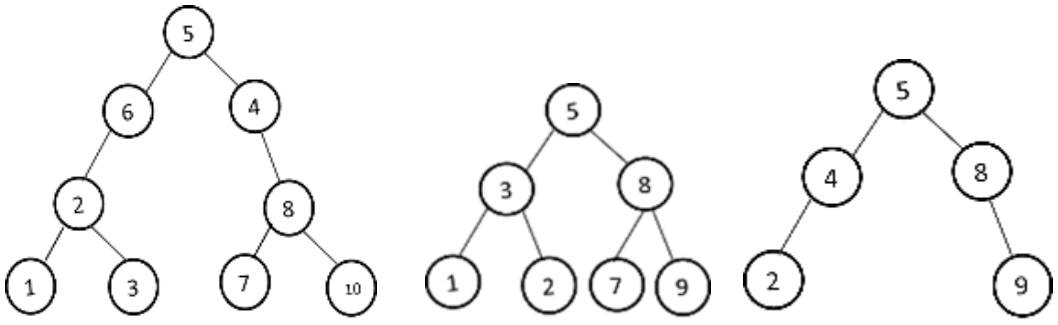


Figure 1

2. Which of the following binary trees are AVL trees?



(a) (b) (c)

Figure 2

3. Consider the AVL tree shown in Figure 3. Show the steps taken to balance the tree when
   i. 14 is inserted
   ii. 23 is inserted
   iii. 70 is inserted

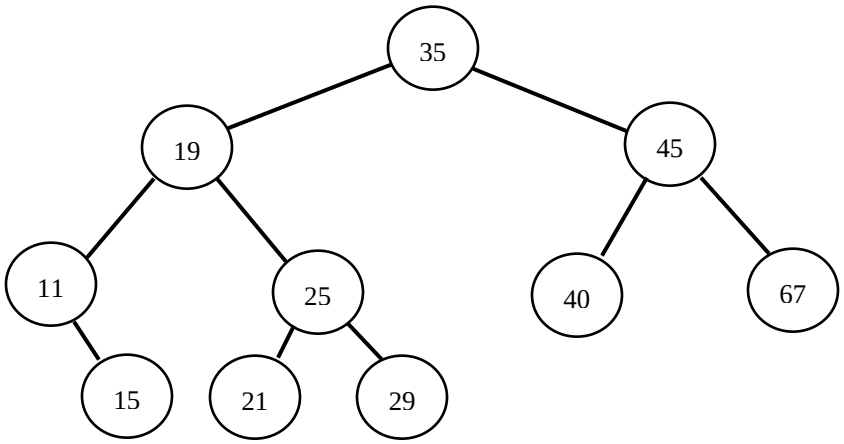


Figure 3

4. For each of the following lists, construct an AVL tree by inserting their elements successively, starting with the empty tree.

   a) 1, 2, 3, 4, 5, 6
   b) 6, 5, 4, 3, 2, 1
   c) 3, 6, 5, 1, 2, 4