Assignment 3

Student should submit a copy of his/her source codes in one zip file on the Google classroom assignment link on or before 23:59 Saturday May 2, 2020

Question 1 (5 Marks)

Write C++ code to detect whether an input tree is **a binary minimum heap**. Use the following tree to test your program. Include all checks that shows that the input tree satisfies all the necessary conditions for a binary minimum heap including that it is originally a binary tree in addition to all the conditions that should be satisfied for a minimum heap.
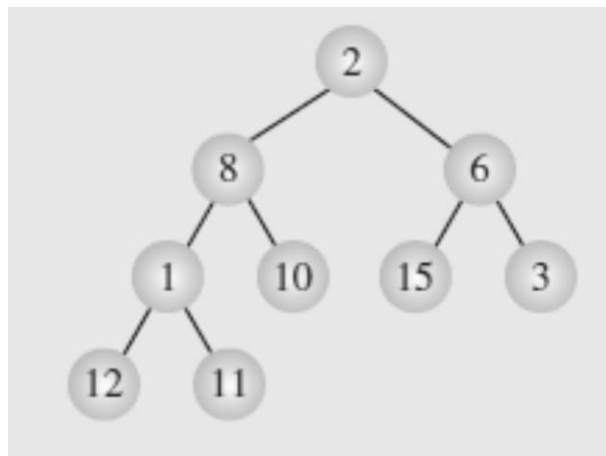
Question 2 (15 Marks)

Write C++ code to implement each of the following functions:

a) Function to return the **number of nodes** in a binary tree.
b) Function to return the **number of leaves** in a binary tree.
c) Function to return the **number of nodes with only one child** in a binary tree.
d) Function to return the **height of the tree** in a binary tree.
e) Function to check whether a binary tree **is perfectly balanced**.