



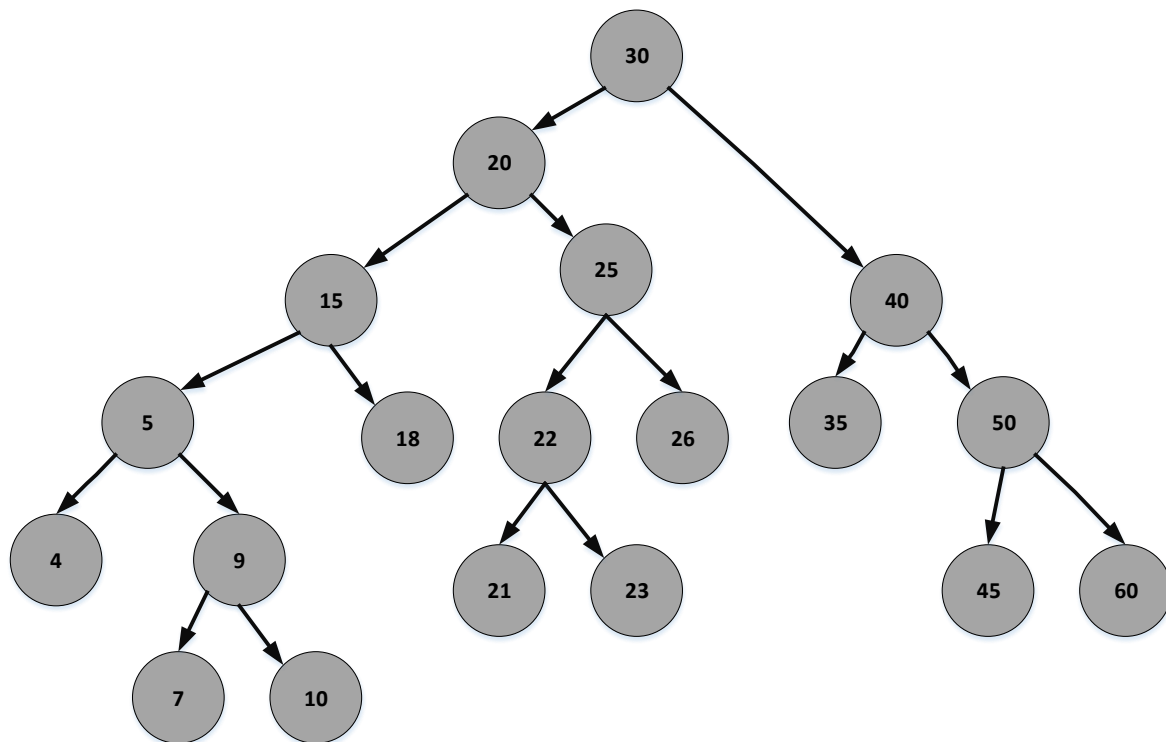
Assignment:	3	Subject:	Data structures and algorithms
Section:	D12	Total Marks	30
Submission Date:	07 Jun 2023		

INSTRUCTIONS

Note: Please read instruction before starting assignment and follow all the instructions. Only submission through portal is acceptable. Late submission or submission through email will not be accepted.

- Put all your relevant code files along with word file having all of your code in it in a .zip file and images of output of the program after running in visual studio.
 - Write your Name and registration number in word file.
 - Write your Name and registration number in code files and comment them.
 - Image of handwritten answer is not acceptable.
- Submission is created, submit .zip file on portal before submission deadline.

Q1. Find In-order, Pre-order and Post-order traversal of following tree. (code not required solve in word file) (10)



Q2. You are given with a ribbon length 'n' and an array containing pieces of ribbon which it can be cut into. Write a recursive program in C++ to give the maximum number of pieces that ribbon can be cut. (code required) (10)

For example, ribbon length is 5 and pieces array is {1, 2, 3}. The ribbon can be cut into:

$$1+1+1+1+1 = 5$$

$$1+2+2 = 5$$

$$2+3 = 5$$

$$1+1+1+2 = 5$$

The maximum pieces in which a ribbon can cut into is 5 ($1+1+1+1+1$), so the answer is 5.

Q 3. Given the root of a binary tree, return the length of the diameter of the tree. (Code Required).(10)

The diameter of a binary tree is the length of the longest path between any two nodes in a tree. This path may or may not pass through the root.

The length of a path between two nodes is represented by the number of edges between them.

