CL2001 – Data Structures Lab

Lab Task # 08

Note:

- Copied task will be awarded **zero** marks.
- Use comments wherever applicable.
- Submit a pdf file containing all your C++ code with all possible screenshots of every task output on Google Classroom. The name of file should be your roll no followed by your name (roll-no-name.pdf) i.e., (23P-1234-Ali.pdf).
- Variables and functions names should be meaningful.

Problem: 1 | Multiply two numbers using Recursion

Write a function for multiply (a, b), where a and b are both positive integers, but you can only use the + or − operators.

Note: Use Recursion to solve the above problem.

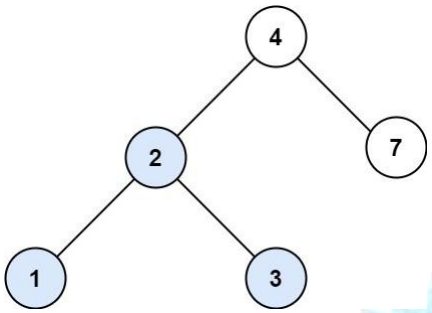
Problem: 2 | Insertion & Traversal in BST

- Write a function to insert a new node in BST.
- Write a function that performs in order Traversal of a BST
- Write a function that performs Pre order Traversal of a BST.
- Write a function that performs Post order Traversal of a BST.
- Write a function to find the smallest value in BST.
- Write a function to count the nodes in a BST.

Node: Create a C++ menu driven program to perform all these functions.

Problem: 3 | Searching in Binary Search Tree

- You are given the root of a binary search tree (BST) and an integer value.
- Find the node in the BST that the node's value equals value and return the subtree rooted with that node. If such a node does not exist, return null.



Example 1:

Input: root = [4,2,7,1,3], value = 2

Output: [2,1,3]

Input: root = [4,2,7,1,3], value = 5

Output: []