COSC2436 hw4: BST

1. Introduction

In this homework, you are going to manipulate a BST. There will be 4 functions that you have to design. Insert, Mirror, PrintLR, and PrintLevel. Read number 5 for more information.

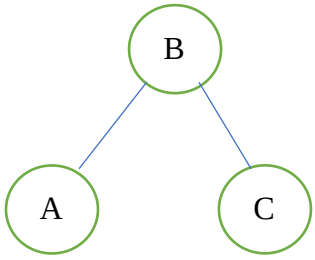
2. Input files

- This file cannot be empty
- You can safely consider that all the inputs are in the correct format.
- While reading the input, \n and \r should be removed before processing the string.
- Each line s going to include a command
- Insert(n) will add n to the BST
- If n is a string, then in alphabetical order (A goes to the left and Z to the right)
- If n is int, then the numerical order
- Mirror will mirror the existing BST
- PrintLR prints the BST from the most left element to the far right element.
- PrintLevel(n) prints all the nodes in the nth level from the base/ top of the tree (base is level 0). If the level doesn't exist, simply print: "Does Not Exist!"

3. Output:

Each print function will have its line and separate the nodes by a space (" ").

For instance:



PrintLR

output: A B C

PrintLevel(0)

output: B

printLevel(1)

output: A C

4. Operations

Initially, you will start with a bst with the smaller number to the node's left and the greater number to the right.

When the "Mirror" is called, you must mirror the whole tree (hint: the left and right of each node will have to swap). Also, you will have to change the insertion function after a "Mirror" to add the smaller to the right and greater to the left.

It is obvious that if the mirror is called again, the bst and insertion go to the original form.

5. Requirements

Homework is individual. Your homework will be automatically screened for code plagiarism against code from other students and code from external sources. Code that is copied from another student (for instance, renaming variables, changing for and while loops, changing indentation, etc. will be treated as copy) will be detected and result in a" 0" in this homework. The limit is 50% similarity.

6. Turn in your homework

Homework 4 needs to be turned in to our Linux server; follow the link here https://rizk.netlify.app/courses/cosc2430/2_resources/

Make sure to create a folder under your root directory, name it "hw4" (case sensitive), and copy all your .cpp and .h file to this folder, "ArgumentManager.h" need to be included as well.

PS: This document may have typos; if you think something is illogical, please email TAs for confirmation.