COSC 2436 Lab: Binary Search Tree

1. Introduction

Create a C++ program that constructs a Binary Search Tree (BST) and performs the following related functions: Insertion, Deletion, and Traversal. You must make your own BST class.

2. Description

Build and operate on a binary search tree with the input lines to determine the matching traversal method: Inorder, Preorder, or Postorder.

3. Input Files

- Each input file can contain any of the 3 operations: Insert, Remove, and Traverse

  Insert
  - The line following “Insert” contains integer(s) to be added to the tree
  - Each number will separated by a space
  - Make sure that the binary search tree does not have any duplicates

  Remove
  - The line following “Remove” contains integer(s) to be removed from the tree
  - Each number will separated by a space.
  - To remove a node, replace it with the in-order successor if exists. Otherwise, replace it with the in-order predecessor if exists.

  Traverse
  - The line following "Traverse" will determine what you print to your output file
  - Each line contains a printing order of the tree that potentially matches at least one of the three traversal methods.
  - Check the traversal following the order: Inorder, Preorder, Postorder

- There will be no empty files and no blank lines.
- Remove all \n and \r before processing any input lines.

4. Output Files

For each traversal line, you'll print the type of traversal(s) (Inorder, Preorder, Postorder) or False.

- Output the traversal method if the print matches.
  - In the case that the traversal matches multiple types, print in the order that was checked.
- Output "False" for any other case.

5. Submission

- Turn in your lab assignment to our Linux server with your login credentials
- Process of Testing and Submitting
    1. Make a folder for the assignment (lowercase with no spaces!)
    2. Copy your program files (name must have no spaces!) into the folder
    3. Copy your ans and input files, ArgumentManager.h, and test.sh file (NO output.txt files)
    4. Test your submission in your assignment folder:
        a. cd folder_name/
        b. chmod u+x test.sh
        c. sh test.sh
    5. Verify all cases pass and then DELETE all .txt files
    6. Set your permissions for the folder and files:
        a. cd
        b. chmod -R 775 folder_name/
    7. Log out and close

Please reach out to the TAs via email or teams for any clarifications or typos.