Project: Binary Search Tree Documentation

This project is a binary search tree that allows the user to do various functions. The main point of the project is to create a blank binary search tree that the user can then insert, delete and find nodes on. The user can also choose to run a premade list of commands for a premade binary search tree. This allows the user to customize the tree and then test to see if it works. There is also a menu that allows the user to chose what option that they want to take.

The program starts off with the customary visual studio opening includes of iostream and using namespace std, along with including the header with the BST node and class in it. In the header it makes a struct node that encases the data and left/right node functions. After that is a BST class that has the root node under private. In the public of the BST it has multiple functions. The first makes the root. The next is a void that takes data that has been input and then runs it through a temporary node to implement into the BST in its place on whether it is greater or lesser then other nodes. The next function takes the number input and looks through the tree till the number matches the node number. After that it deletes that node while reconfiguring the tree so that the tree structure overall is kept. The next function takes the number chosen and looks for that number in the list order, if it is there it displays it if not it prints out data not found. The next function just starts at the root and then keeps going to the right node till it can’t find anymore nodes and displays that number. The display function starts at the root and then loops in on itself looking at if left is nullptr and then if right is nullptr till all nodes are shown.

The cpp section is the main function that has variables for inputted data and a new binary search tree for the user. It also welcomes the user and has a checkpoint that can be looped back to. It then calls the user command function that gives the choices in the main menu. After that it asks for a number input and then asks for input/runs a function depending on the number given. Choices are insert node to tree, search for data in the tree, search for the max value of the tree, delete data from the tree, run the automated test function or exit from the system. The other main function is the test function that runs through a set if predetermined functions and values.

Example of the display case scenarios

