COSC 3100 – Data Structures II

Assignment 8
Deadline November 6, 2023

Implement a template AVL Tree class. This class should have the following public member functions defined:

AVLTree();
Constructor to create an empty AVL tree
~AVLTree();
Destructor to deallocate all nodes, leaving an empty AVL tree
void destroy();
Destroy all nodes in the tree, leaving an empty tree.
void insert(const T& item);
Insert a new item into the appropriate location of the tree
Re-structure the tree as needed
void inorder() const;
Display values using the inorder traversal algorithm
void preorder() const;
Display values using the preorder traversal algorithm
void postorder() const;
Display values using the preorder traversal algorithm
T* search(const T& item) const;
Returns a pointer to the item, if it is found in the tree. If the value doesn't exist in the tree, the search() function should return nullptr.
int height() const;
Return the height of the tree

Follow the requirements of Assignment 6 to store Stock objects in the tree. Two differences:

a) The option to 'remove' a node is **not** required

b) When displaying the values in the tree, for each node also display the 'balance factor'

THE DEPARTMENT STANDARDS FOR "STYLE GUIDELINES" SHOULD BE FOLLOWED IN ALL CODE.