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**CS300 M5-2**  
**Code Reflection  
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The purpose of this C++ program is to demonstrate the implementation and usage of a binary search tree (BST) to manage and manipulate bid information efficiently. This BST allows for inserting new bids, searching for specific bids by their ID, removing bids, and displaying all bids in an orderly fashion. The key operations of the binary search tree such as insertion, removal, and search are implemented recursively, adhering to the BST properties.

Developing this program involved understanding the binary search tree data structure, particularly how nodes are inserted, searched, and deleted while maintaining the tree's order. One challenge was ensuring that the removal of a node with two children correctly preserved the BST properties, which was addressed by finding the minimum node in the right subtree to replace the removed node. Another challenge was managing memory correctly to prevent leaks, especially in the destructor, which required a post-order traversal to delete all nodes safely.

**Pseudocode**  
Class BinarySearchTree

Initialize root node to null

Function Insert(bid)

If tree is empty

root = new Node(bid)

Else

Call addNode(root, bid)

Function Search(bidId)

Initialize current node to root

While current node is not null

If current node's bidId matches search bidId

Return bid

Else if search bidId is less than current node's bidId

Move to left child

Else

Move to right child

Return empty bid

Function Remove(bidId)

Call removeNode(root, bidId)

Function InOrder()

Call inOrder(root)

Private Function addNode(node, bid)

If bidId is less than node's bidId

If left child is null

node.left = new Node(bid)

Else

Call addNode(node.left, bid)

Else

If right child is null

node.right = new Node(bid)

Else

Call addNode(node.right, bid)

Private Function inOrder(node)

If node is not null

Call inOrder(node.left)

Display node's bid

Call inOrder(node.right)

Main

Parse command line arguments for CSV path and bidId

Initialize BinarySearchTree

Load bids from CSV

Provide menu for user to load bids, display all bids, find a bid, or remove a bid