### **Project Proposal: Binary Search Tree Implementation in C++**

**Objective:**  
The goal of this project is to design and implement a Binary Search Tree in C++ that supports fundamental operations such as insertion, deletion, updating, and inorder traversal. This will help in understanding tree-based data structures and their real-world applications in searching and sorting.

**Scope of Work:**  
The BST will include the following features:

* **Insertion:** Adds a new node to maintain the BST property.
* **Deletion:** Removes a node, handling all possible cases (leaf, one child, two children).
* **Update:** Updates a node by deleting the old value and inserting the new one.
* **Traversal:** Inorder traversal to display the tree in sorted order.

**Methodology:**

* Use C++ classes to encapsulate BST logic.
* Employ a recursive approach for all core operations.
* Perform testing using a sample main function to validate all features.

**Expected Outcome:** A working console-based application that allows users to:

* Insert, delete & search in the BST
* Display the sorted tree using inorder traversal

**Benefits:**

* Strengthens understanding of data structures and recursion
* Useful as a foundation for advanced tree structures like AVL or Red-Black Trees

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