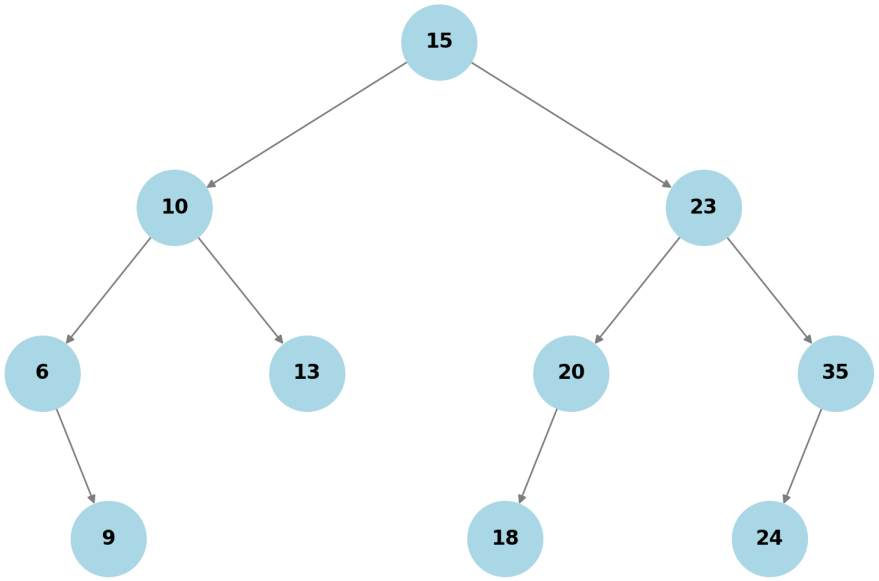
Binary Search Tree (BST) - Lab 6

Task Description

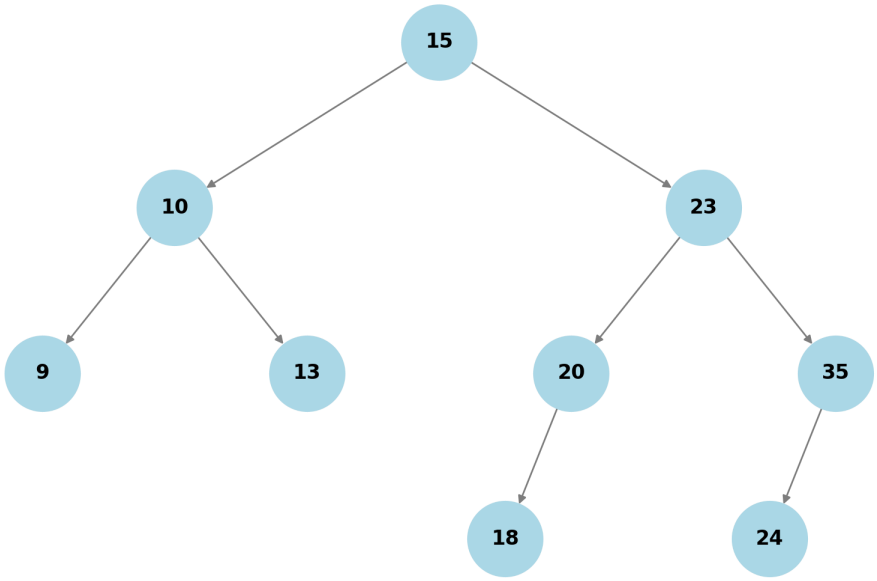
This document presents the implementation of a Binary Search Tree (BST) in Java, demonstrating insertion, search, and deletion operations. The BST is visualized using Python. i inserted specific elements into the tree, performed deletions, and analyzed the impact on structure.

BST Before and After Deletions

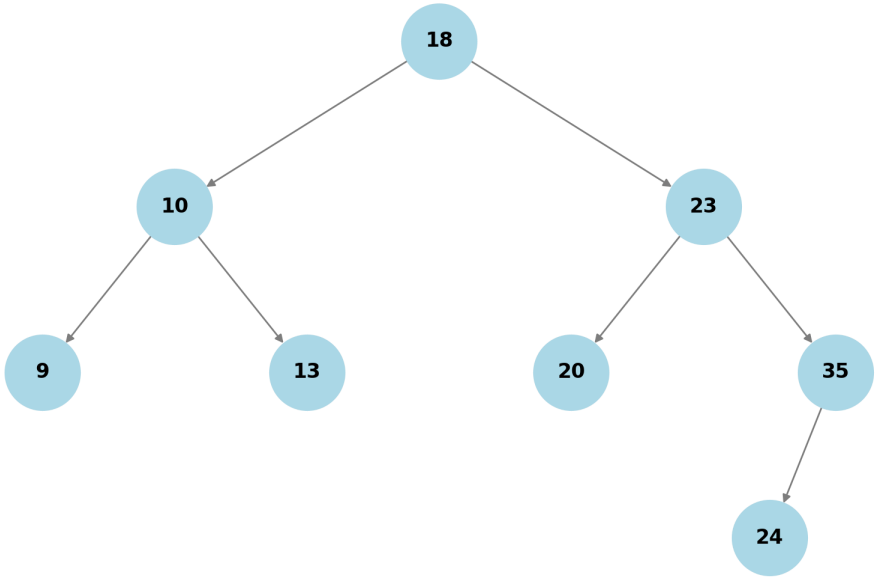
BST Before Deletion



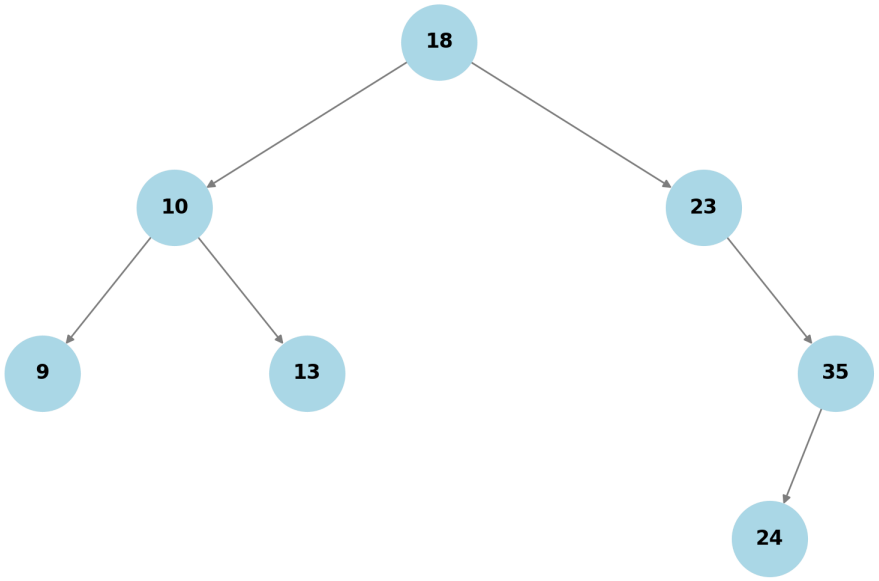
BST After Deleting 6



BST After Deleting 15



BST After Deleting 20



Justification of BST Changes

1. **Deleting 6**: Since 6 was a leaf node, it was removed directly without affecting the structure.
2. **Deleting 15**: The node had children (10, 23), so it was replaced by its in-order successor (18).
3. **Deleting 20**: The node was replaced by its smallest right subtree element (24).

This sequence of operations maintains the BST properties.