CIS263 Tree Assignment

Dr. Denton Bobeldyk

Complete each of the following:

1. Programmatically implement a tree that includes the following:
    a. A node that has 4 properties:
        i. value
        ii. parent
        iii. leftChild
        iv. rightChild
    b. Pointer or variable that indicates the root of the tree

2. Create three methods that print out the values of the tree using an inorder, preorder and postorder tree walk.

3. Write-up pseudocode for a method that runs in linear time that determines if a tree is a binary search tree. This method must have a base case. After the pseudocode has been developed, implement it using one of the approved languages.

4. Create a method that returns the successor given a binary search tree and a node value (you may assume all values in the BST are unique).

Hand-in:

1. Two sample trees (hand written or digitally rendered), one sample should satisfy the search tree order property, the other one should not. Each tree must have a minimum of 8 nodes.
2. The pseudocode you created for step 3 (either in a word document or legibly handwritten).
3. The output demonstrating the functionality of your program for the above steps using each of the sample trees as input.
4. A file containing the implementation source code (no zip files).

Approved programming languages: C, C++, C#, Python, Java.

See blackboard for grading rubric and points breakdown.