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CS32 Homework 5

**1a.**

50

20 60

10 40 70

15 30 64 80

23 36 75

**1b.**

inorder: 10 15 20 23 30 36 40 50 60 64 70 75 80

preorder: 50 20 10 15 40 30 23 36 60 70 64 80 75

postorder: 15 10 23 36 30 40 20 64 75 80 70 60 50

**1c.**

50

15 60

10 40 70

23 64 80

36 75

**2a.**

struct Node

{

int data;

Node\* left;

Node\* right;

Node\* parent;

};

**2b.**

//Source for this pseudocode – Carrano 3rd ed pp 527

InsertItem(inout treePtr:TreeNodePtr,

in newItem:TreeItemType)

//Inserts newItem into the BSR to which treePtr points

if (treePtr is NULL)

{

Create a new node and let treePtr point to it

Copy newItem into new node’s data portion

Set the pointers in the new node to NULL

}

else if (newItem.getKey() < treePtr->item.getKey())

insertItem(treePtr->leftChildPtr, newItem)

else

insertItem(treePtr->rightChildPtr, newItem)

**3a.**

                7  
        5           6  
    3   1      2

**3b.**

**Index Value**

0      7  
 1      5  
 2      6  
 3      3  
 4      1  
 5      2

**3c.**

**Index Value**

0      6  
 1      5  
 2      2  
 3      3  
 4      1  
 5

**4a.**

O(C +log S)

**4b.**

O(logC + S)

**4c.**

O(logC + logS)

**4d.**

O(C + logS)

**4e.**

O(C+ S)

**4f.**

O(logC + S)

**4g.**

O(logC + S)

**4h.**

O(C + logS)