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HW 5

1.



b. Inorder: 10,15,20,25,30,36,40,50,60,65,70,74,80

Preorder: 50,20,10,15,40,30,25,36,60,70,65,80,74

Postorder: 15,10,25,36,30,40,20,65,74,80,70,60,50

c. After deleting 30



After deleting 20



2. a.

Class BSTNode

{

public:

(member functions )

private:

int value;

BSTNode\* parent = nullptr;

BSTNode\* right = nullptr;

BSTNode\* left = nullptr;

};

b.

void addNode(int value)

Set a node pointer p to the root node of the tree;

While the loop is not broken out of {

If value is equal to p->value

break;

if value is greater than p->value {

If p->right is not a nullptr {  
 Set p to p->right;

Continue to the end of this loop;

}

else {

Set temp pointer to a new node that holds value

Set p->right to temp;

Set temp->parent to p;

Break out of the loop;

}

}

if value is less than p->value {  
 If p->left does not equal nullptr) {  
 Set p to p->left;

Continue to the end of this loop;

}

else {

Set temp pointer to a new node that holds value;

Set p->left to temp;

Set temp->parent to p;

Break out of the loop;

}

}

}

3. A.



B. result = [7,5,6,3,0,1]

C. result = [6,5,1,3,0]



4. a. O(C + S)

b. O(logC + S)

c. O(logS + logC)

d. O(C + logS) -> O(LogS)

e. O(S + C) -> O(1)

f. O(S + LogC)

g. O(S\*logS)

h. O(C\*logS)