COMSCI 32 - HW5 - XIANGYU WAN

1.a

50

20 60



10 40 70



15 30 65 80



25 39 71

1.b

pre-order: 50 20 10 15 40 30 25 39 60 70 65 80 71

in-order: 10 15 20 25 30 39 40 50 60 65 70 71 80

post-order: 15 10 25 39 30 40 20 65 71 80 70 60 50

1.c

50



25 60



10 40 70



15 39 65 80



71

2.a

struct Node {

Node\* parent;

Node\* leftChild;

Node\* rightChild;

int data;

};

2.b

insert(Node\* thisPtr, int newData): Node\* {

if (thisPtr is nullptr) {

ptr = new Node

ptr->data = newData

return ptr

}

else if (newData < thisPtr->data) {

ptr = insert(thisPtr->leftChild, newData)

thisPtr->leftChild = ptr

ptr->parent = thisPtr

}

else if (newData > thisPtr->data) {

ptr = insert(thisPtr->rightChild, newData)

thisPtr->rightChild = ptr

ptr->parent = thisPtr

}

}

3.

a) 7



3 6



0 2 4

b)

index 0 1 2 3 4 5

content 7 3 6 0 2 4

c)

index 0 1 2 3 4

content 6 3 4 0 2

4.

a) O(C + S)

b) O(logC + S)

c) O(logC + logS)

d) O(logS)

e) O(1)

f) O(logC + S)

g) O(SlogS)

h) O(ClogS)