Homework 5

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1. a.

50

20 60

10 40 70

15 30 65 80

25 36 74

b. In order: 10-15-20-25-30-36-40-50-60-65-70-74-80

Pre-order: 50-20-10-15-40-30-25-36-60-70-65-80-74

Post-order: 15-10-25-36-30-40-20-65-74-80-70-60-50

c. 50

25 60

10 40 70

15 36 65 80

74

1. a.

struct Node

{

int m\_value;

Node\* leftChildPtr;

Node\* rightChildPtr;

Node\* parentPtr;

};

b.

void insertInorder (int value， Node\* current, Node\* parent)

{

if current is nullptr

build a new node and set its m\_value to value, its parent pointer to parent, and children pointers to nullptr;

set this node as current

else

while current node is not a nullptr

if current node's m\_value equals to value

return;

if current node's m\_value is greater than value

insertInorder (value, node's leftChildPtr, current node)

if current node's m\_value is smaller than value

insertInorder (value, node's rightChildPtr, current node)

}

1. a. 8

3 6

0 2 4

b. array: {8 3 6 0 2 4}

c. array: {6 3 4 0 2}

1. a. O(C+logS)

b. O(logC +S)

c. O(logC+logS)

d. O(logS)

e. O(1)

f. O(logC+S)

g. O(SlogS)

f. O(ClogS)