Homework 5

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1a.

Diagram

Description automatically generated

1b.

Inorder: 10, 15, 20, 23, 30, 35, 40, 50, 60, 62, 70, 75, 80

Preorder: 50, 20, 10, 15, 40, 30, 23, 35, 60, 70, 62, 80, 75

Postorder: 15, 10, 23, 35, 30, 40, 20, 62, 75, 80, 70, 60, 50

1c.

Diagram

Description automatically generated

Diagram

Description automatically generated

2a.

struct Node {

Node\* right;

Node\* left;

Node\* parent;

int m\_val;

};

2b.

void insert(Node\* insert, Node\* curr, Node\* prev) {

if curr is nullptr:

set insert’s parent pointer to prev

set insert’s left and right pointer to nullptr

return

if insert value equal to curr value:

return

if insert’s value less than curr’s value:

recursive call with parameters insert, curr->left , curr

if insert value greater than curr:

recursive call with parameters insert, curr->right, curr

}

3a.

Diagram

Description automatically generated

3b.

7 5 6 4 0 3

3c.

6 5 3 4 0

4a. O(C + S)

4b. O(logC + S)

4c. O(logC+ logS)

4d. O( logS)

4e. O(1)

4f. O(logC + S)

4g. O(SlogS)

4h. O(ClogS)