Maeneka Grewal – 204901948

Nachenberg CS32

Homework 5

1a.

1b.

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

1c.

2a.

struct node

{

int value;

node \*leftChild, \*rightChild, \*parent;

};

2b.

void insert(int x)

{  
 if (root == nullptr)

root = new node w/ value;

Node \*cur = root;

For(;;) //infinite loop until inserted

{

if (cur value == x)

return; //already there

if (cur value < x)

if (cur left child is not null)

cur now points to cur’s left child

else

create new node at cur’s left child

return;

else

if (cur right child is not null)

cur now points to cur’s right child

else

create new node at cur’s right child

return;

}

}

3a.

3b. array:

|  |  |
| --- | --- |
| 0 | 8 |
| 1 | 3 |
| 2 | 6 |
| 3 | 0 |
| 4 | 2 |
| 5 | 4 |

3c.

|  |  |
| --- | --- |
| 0 | 6 |
| 1 | 3 |
| 2 | 4 |
| 3 | 0 |
| 4 | 2 |

4a. C + S

4b. S + logC

4c. logC + logS

4d. 1 + logS 🡪 logS

4e. 1

4f. logC + S

4g. SlogS

4h. ClogS