Homework

1)

a)

50

20 60

10 40 70

15 30 65 80

25 35 75

b)

50

15 60

10 40 70

25 65 80

35 75

c) preorder: 50, 20, 10, 15, 40, 30, 25, 35, 60, 70, 65, 80, 75

inorder: 10, 15, 20, 25, 30, 35, 40, 50, 60, 65, 70, 75, 80

postoder: 15, 10, 25, 35, 30, 40, 20, 65, 75, 80, 70, 60, 50

2)

a)

7

3 5

1 2 4

b)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7 | 3 | 5 | 1 | 2 | 4 |

c) 5

3 4

1 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 3 | 4 | 1 | 2 |

3)

a)

struct Node

{

Node\* leftchild;

Node\* rightchild;

Node\* parent;

Int data;

};

b)

insert (parentptr, newNodeptr)

if parent == null

return newNodeptr

else if (parentptr.data > newNodeptr.data)

tempPtr = insert(parentptr->leftchild, newNodeptr)

parentPtr->leftchild = tempPtr

tempPtr->parentPtr = parentPtr

else

tempPtr = insert(parentptr->rightchild, newNodeptr)

parent->rightchild = tempPtr;

return parentptr;

4)

a) O(C+S)

b) O(logC +S)

c) O(logC + logS)  
d) O(C + logS)

e) O(1)

f) O(S+logC)

g) O(C+SlogS)

h) O(Clogs)