Homework 5

Q1)



50

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20 60

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10 40 70

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15 30 68 80

/ \ /

26 35 75

1. Pre-order : 50, 20, 10, 15, 40, 30, 26, 35, 60, 70, 68, 80, 75

In-order : 10, 15, 20, 26, 30, 35, 40, 50, 60, 68, 70, 75, 80

Post-order : 15, 10, 26, 35, 30, 40, 20, 68, 75, 80, 70, 60, 50

After deleting 30

50

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20 60

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/ \ \

10 40 70

\ / / \

15 35 68 80

/ /

26 75

After deleting 20

50

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/ \

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/ \

15 60

/ \ \

/ \ \

10 40 70

/ / \

35 68 80

/ /

26 75

Q2)

Struct Node

{

Int data;

Node\* right;

Node\* left;

Node\* parent;

Node(value)

: data(value), right(nullptr), left(nullptr), parent(nullptr){}

}

Insert(val, root)

If root is nullptr

Create a new node

Set root data to val

Return new node

If val is greater than root val

If root right child is not nullptr

Recursively call insert with root->right child

else

Create new node

Set root->right pointer to new node

Set parent of new node to root

Return new node

If val is less than root val

If root left child is not nullptr

Recursively call insert with root->left child

else

Create new node

Set root->left pointer to new node

Set parent of new node to root

Return new node

If val is equal to root val

Return root

Q3)



7

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5 6

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1 0 3

1. [7, 5, 6, 1, 0, 3]
2. [6, 5, 3, 1, 0]

Q4)

1. O(C + S)
2. O(logC + S)
3. O(logC + logS)
4. O(logS)
5. O(1)
6. O(logC +S)
7. O(S + S\*logS) = O(S\*logS)
8. O(C\*logS)