DATA STRUCTURES AND ITS APPLICATIONS

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DATA STRUCTURES AND ITS APPLICATIONS

BST Implementation using Dynamic Allocation: Insertion

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Binary Search Tree ⊠ An Application of Binary Tree

Background

Problem : find a target key in a list of elements

Sequential: Potentially enumerate every key

Ordered List: Searching can be done on logn

Frequent insertions and deletions: Ordered List is much slower

Solution: Binary Trees provide an excellent solution to this by organizing every element in the list as a node in the tree

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Binary Search Tree: Definition

A Binary Search Tree is a binary tree which has the following properties:

all the elements in the left subtree of a node n are less than the contents of node n

all the elements in the right subtree of a node n are greater than or equal to the contents of node n

Binary Search Tree ⊠ An Application of Binary Tree

A Binary Search Tree with the nodes inserted in the order: 5, 3, 6, 4, 2, 8, 1,7, 9

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5

Binary Search Tree - Implementation

Linked implementation

Here every node will have its own info along with the links to left child and right child

```
typedef struct tree_linked
{
 int info;
 struct tree_linked *left,*right;
}NODE;

NODE *root=NULL; //root points to Root of the tree and initially it is null
```

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Binary Search Tree - Implementation

Linked implementation: 5, 3, 7, 8, 1, 4

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N

N

N

N

N

N

N

N

N

N

N

N

N

N

N

N

Root

3 < 5

1 < 5

1 < 3

7 > 5

8 > 5

8 > 7

4 < 5

4 > 3

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THANK YOU
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