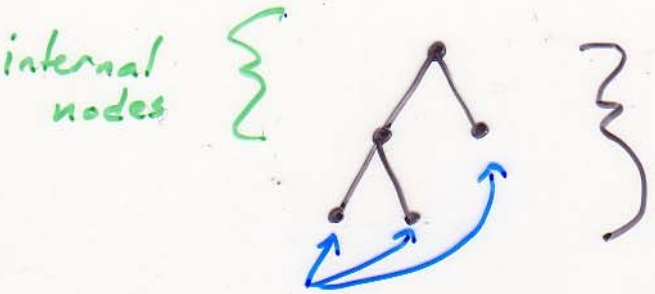
CS 223 Lec 8

Binary Search Trees



OPERATIONS

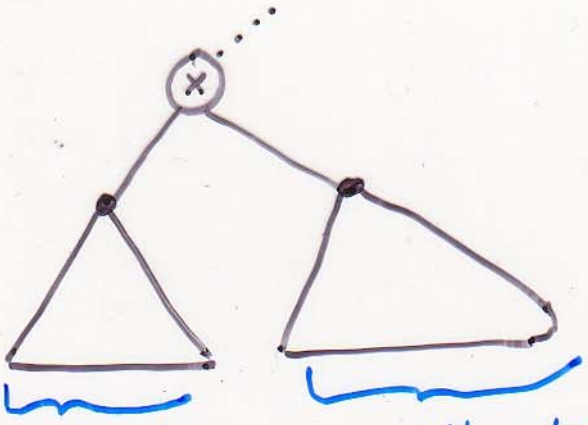
INSERT
DELETE
SEARCH
SUCCESSOR
PREDECESSOR
MIN
MAX

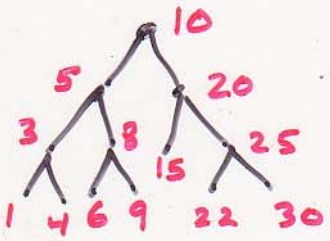
} O(h), h is the height the tree

height is critical, so try to minimize.

Binary Search Tree Property

Let $x \in T$
(x: node, T: BST)





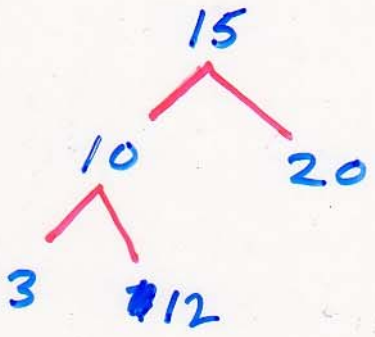
Tree Traversals

pre-order

in-order

post-order

```
pre-order ( node n )
    print n
    pre-order ( n → left )
    pre-order ( n → right )
```



output

15, 10, 3, 12, 20

```
in-order (node n)
    in-order (n -> left)
     print n
     in-order (n -> right)
```

output 3, 10, 12, 15, 20

note: sorted output

```
post-order (node n)
    post-order (n -> left)
    post-order (n -> right)
    print n
```

output

3, 12, 10, 20, 15

Sample Tree

Inserting: 10, 3, 8, 12, 4, 2, 1