Syllabus Day

----------------------------------------

All stuff is in canvas - Syllabus etc.

GET YOUR GLASSES.

---------------------------

Case Study Three

Void mystery4(int n) {

For (int i = n; i > 0; i = i/2)

printf(i);

}

--------------

E.g. originally 16

8

4

3

1

0

Think in a n opposite way from the bottom to top, 1\*2\*2\*2\*2 = 16

So if the original input value is n, We get similar relationship 1\*2\*2\* …………\* 2 = n

2^x = n

X = logbase2n

APplication Binary Search Tree

BST is a special typ of Binary Tree

Values in the left subtree are less than the value in its parent node

Values in any right subtree are greater than equal to the value in its parent node.

Typical operations on a BST

Insert a value into the tree

Search for a number in the tree, such as minimun, max, etc.

Delete a value if found

Traversal: visit all values in the tree.

How many nodes or leaf nodes in the tree?

Compute the Depth of the tree.

Insert a Value into a BST

Steps to insert data into BST

1) if current node is null, make a new node that contains the data to be inserted, and assign the new node as current node.

2) if insert value is less than the current node vvalue, the value tiwll be inserted into the left subtree of the current node.

3) if insert value is greater than or equal to the current node value, the value will be inserted into the right subtree of the current node.

* Recursive insert -- given a node pointer, recur down and insert the given data into the tree. Returns the new node pointer (the standard way to communicate a changed pointer back to the caller.

Private Node insert(Node node, int data) {

If node null

Node = new node (data);

Else

If (data<node.data)

Node.left = insert(node.left, data);

Else

Node.right = insert(node.right, data);

Return (node); // in any case, return the new pointer to the caller.

}

Try to summarize the above into your own words.

-----------------------------------------

What is the time complexity of this operation (insert)

Logn is the Big O complexity, where n is how many nodes exist in the tree.