Computer Science III **Binary Search Trees** Name _____ Per _____

Binary Tree

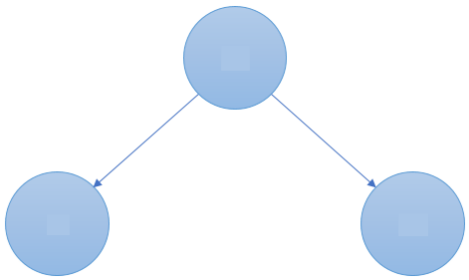
Regular Tree Node

```
TNode<E>
E data
List<TNode<E>> children;
```

Binary Tree Node

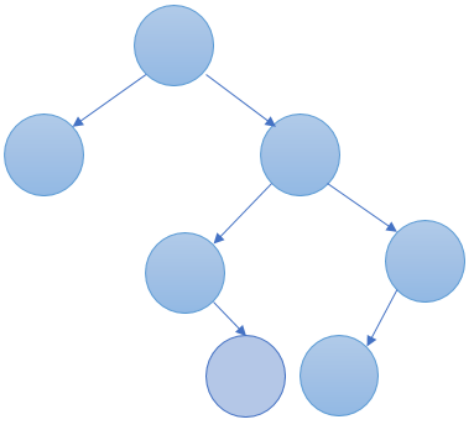
```
BNode<E>
E data
BNode<E> left;
BNode<E> right;
```

Binary Search Tree



Populating a BST

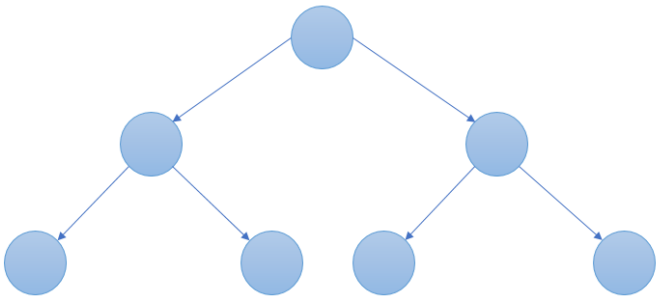
Add the following list of number to a Binary Search Tree [2, 7, 9, 3, 8, 1, 6]



Activity 1 – *Populate a BST with the following numbers*

[6, 2, 8, 3, 1, 9, 7]

What is the algorithm to "search" for a value (target) in a BST?



How many "checks" will it take to find the value 7 in this BST?

What is the **Big-O** of the Search method on a BST?

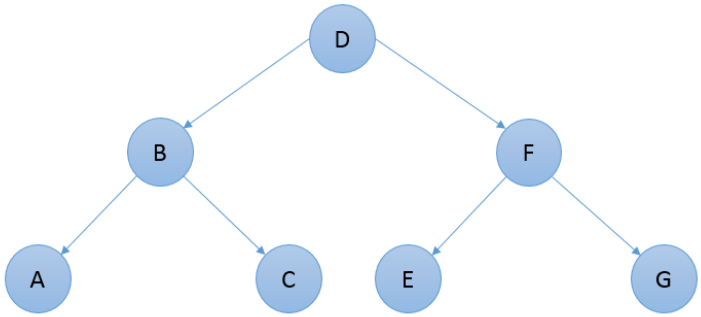
Printing the contents of a Binary Tree

Activity 2 - Draw a BST that represents this list of numbers, then write out the Preorder of the tree. [4, 7, 9, 2, 8, 1, 3]

Activity 3 - Draw a BST that represents this list of numbers, then write out the Postorder of the tree. [8, 6, 5, 7, 2, 4, 9]

Activity 4 - Draw a BST that represents this list of numbers, then write out the Inorder of the tree. [7, 3, 5, 2, 6, 1, 9]

Activity 5: Write each of the three representations of the following tree



Pre Order

In Order

Post Order

Activity 6: Create three new trees by adding the values (in the order provided)

Pre:	In:	Post:
D B A C F E G	A B C D E F G	A C B E G F D