Quiz 5
Due 11:59 PM Saturday October 30
Programming Quiz 5

- Implement the private method numGreaterThan in the BST class

- The implementation must make use of the structure of a binary search tree and it must be recursive. You can add private variables and methods (I added one private method)

- DO NOT JUST SEARCH THE WHOLE TREE.
import java.util.*;
import java.io.*;

public class BST {
   //Implements a binary search tree of ints
   //There are no duplicates in the tree
   private class Node {
      private Node left;
      private int data;
      private Node right;
      private Node(Node L, int d, Node R) {
         left = L;
         data = d;
         right = R;
      }
   }

   private Node root;
   public BST() {
      root = null;
   }
}
public void insert(int d) {
    root = insert(root, d);
}

private Node insert(Node r, int d) {
    if (r == null) return new Node(null, d, null);
    if (d < r.data) r.left = insert(r.left, d);
    else if (d > r.data) r.right = insert(r.right, d);
    //else duplicate so do nothing
    return r;
}
public int numGreater Than(int d) {
    // return the number of items in the tree that are greater than d
    return numGreater Than(root,d);
}

private int numGreater Than(Node r, int d) {
    // return the number of items in the subtree rooted at r that are greater than d
    // the method must be recursive and it must make use of the structure of
    // the binary search tree
    // DO NOT JUST SEARCH THE WHOLE TREE
    return numGreater Than(root,d);
}
public static void main(String args[]) throws IOException {
    BST b = new BST();
    Scanner s = new Scanner(new File(args[0]));
    while (s.hasNextInt()) {
        int i = s.nextInt();
        b.insert(i);
    }
    System.out.println(b.numGreaterThan(Integer.parseInt(args[1])));
}
Programming Quiz 5 Submission

• Upload one zip file to Canvas. The zip file must contain **only one file** called **BST.java**. Do not upload your whole Eclipse project!

• The only comment you need in quiz programs is a comment at the top of the file that includes your name.