CS 340 Programming Quiz 3

Due 11:59 PM Tuesday October 5
Programming Quiz 3

• Implement the constructor for BinaryTree that expects a String parameter. See the next slide for details about the format of the string.

• Implement the public method longestPath and a recursive private method that does most of the work required to find the value longestPath must return.

• The public method returns a string containing the characters in the longestPath in the tree. The longest path is the path from the root to a leaf that has the most nodes.
The string representation for the tree is an in order representation where ! represents an empty tree and a non-empty tree is represented by (left data right). The string contains no whitespace. The data will never be (, ) or !.
String Representation of the Tree shown Below
((((D)B)A(((F(H))C(G))))
Programming Quiz 3

• Sample Input: (((!D!)B!)A(!F(!H!))C(!G!)))

• Sample Output: ACFH
import java.util.*;
import java.io.*;

public class BinaryTree {
  private class Node {
    private Node left;
    private char data;
    private Node right;

    private Node(Node L, char d, Node r) {
      left = L;
      data = d;
      right = r;
    }
  }

  private Node root;

  public BinaryTree() {
    root = null;
  }
}
public BinaryTree(BinaryTree b1, char d, BinaryTree b2) {
    root = new Node(b1.root, d, b2.root);
}

public BinaryTree(String t) {
    //build the tree from the inorder representation of the tree
    //in the inorder representation an empty tree is ! and a non-empty tree is (leftdataright)
    //there is no whitespace in the representation
}
public String longestPath() {
    // Create a recursive private method to do most of the work
}

public static void main(String args[]) {
    // DO NOT CHANGE MAIN
    BinaryTree b = new BinaryTree(args[0]);
    System.out.println(b.longestPath());
}

}
Programming Quiz 3 Submission

• Upload one zip file called pq3.zip to Canvas. The zip file must contain only one file called BinaryTree.java. Do not upload your whole Eclipse project!