Pre-Quiz3-Summer 2007

A. Short Answer

a. What is the difference between FlowLayout and BorderLayout?

FlowLayout is placed starting from the left to the right. BorderLayout requires you to specify a region (i.e. BorderLayout.NORTH) to place the component.

b. What does an ActionListener do? What happens in a GUI without one?

An ActionListener listens for an action and does something (perhaps nothing) when it occurs. Nothing happens in a GUI without an ActionListener.

c. What is the difference between a JTextArea and JTextField?

A JTextField can only hold one line of text of a specified length. A JTextArea can hold multiple lines of text of a specified length.

B. Tree Traversals (Interactive tutorial on tree traversals)

1. What is the pre-order traversal of this tree?
   A: 4 9 2 7 5 8 3 1 6 10

2. What is the in-order traversal of this tree?
   A: 7 2 5 9 8 4 6 1 3 10

3. What is the post-order traversal of this tree?
   A: 7 5 2 8 9 6 1 10 3 4
1. What is the pre-order traversal of this tree?
   A: 1 2 3 5 6 4 7 1 11 7 2 8 10 9 12

2. What is the in-order traversal of this tree?
   A: 5 3 6 2 7.1 4 11 1 10 8 9 7.2 12

3. What is the post-order traversal of this tree?
   A: 5 6 3 7.1 11 4 2 10 9 8 12 7.2 1
C. GUI Trees
Consider the following code:
import javax.swing.*;
import java.awt.*;

public class GUITree extends JFrame {
    JButton button1, button2, button3, button4, button5, button6, button7;
    JTextField inputField;

    public GUITree(){
        super("Non-functioning calculator");
        this.getContentPane().setLayout(new BorderLayout());

        button1 = new JButton("+"); button2 = new JButton("-");
        button3 = new JButton("/"); button4 = new JButton("*");
        button5 = new JButton("Clear"); button6 = new JButton("%" );
        button7 = new JButton("!"); inputField = new JTextField(10);

        JPanel panel1 = new JPanel();
        panel1.add(button1); panel1.add(button2);
        panel1.add(button6);
        this.getContentPane().add(panel1,BorderLayout.NORTH);

        JPanel panel2 = new JPanel();
        panel2.add(button3); panel2.add(button4);
        panel2.add(button7);
        this.getContentPane().add(panel2,BorderLayout.CENTER);

        JPanel panel3 = new JPanel();
        panel3.add(inputField); panel3.add(button5);
        this.getContentPane().add(panel3,BorderLayout.SOUTH);

        this.pack();
        this.setVisible(true);
    }
}

1. What does the GUI look like when we run the line `GUITree tree = new GUITree();` in the Interactions Pane?

2. What does the tree representation of the GUI look like?