

CSCI 201L Midterm - Written
Summer 2014
12% of course grade

1. **Classes/Objects** - Explain what variables and methods are accessible by each of the four access modifiers in Java. (1.5%)

2. **Inheritance** – There is an error in the following code. Describe the error and modify the code to fix it. (1.5%):

```
1 public class M {
2     int m;
3     protected int n;
4     public M() {
5
6     }
7     public void f() {
8         n = 9;
9     }
10    public static void main(String [] args) {
11        M m = new N();
12        m.f();
13        N n = new N();
14        n.f();
15    }
16 }
17
18 class N extends M {
19     N() {
20         super();
21         m = 7;
22         n = 8;
23     }
24     void f() {
25         n = 10;
26         super.f();
27     }
28 }
```

- 3. Inheritance/Methods** - Explain the differences among redefining, overloading, and overriding methods. Provide sample code exhibiting each. (3%)

4. **GUI** - Write the code to generate the following GUI. Do not include import statements or actions, but all other code is required. (3%)



5. GUI – Draw the GUI that is generated by the following code. (3%)

```
import java.awt.BorderLayout;
import java.awt.GridLayout;

import javax.swing.BoxLayout;
import javax.swing.JButton;
import javax.swing.JCheckBox;
import javax.swing.JFrame;
import javax.swing.JPanel;
import javax.swing.JTabbedPane;
import javax.swing.JTree;

public class MidtermGUIProblem5 extends JFrame {
    public MidtermGUIProblem5() {
        super("CSCI 201 Midterm");
        setLayout(new BorderLayout());
        JTabbedPane tabbedPane = new JTabbedPane();
        JPanel firstPanel = new JPanel();
        firstPanel.setLayout(new BoxLayout(firstPanel, BoxLayout.Y_AXIS));
        JCheckBox jcb1 = new JCheckBox("Box 1");
        JCheckBox jcb2 = new JCheckBox("Box 2");
        JCheckBox jcb3 = new JCheckBox("Box 3");
        JPanel innerPanel = new JPanel();
        innerPanel.setLayout(new GridLayout(1, 2));
        String [] data = {"103", "104", "201", "301", "477"};
        JTree tree = new JTree(data);
        tree.setRootVisible(true);
        innerPanel.add(tree);
        JButton jb = new JButton("Update");
        innerPanel.add(jb);
        firstPanel.add(jcb1);
        firstPanel.add(jcb2);
        firstPanel.add(jcb3);
        firstPanel.add(innerPanel);
        JPanel secondPanel = new JPanel();
        JPanel thirdPanel = new JPanel();
        tabbedPane.add("#1", firstPanel);
        tabbedPane.add("#2", secondPanel);
        tabbedPane.add("#3", thirdPanel);
        add(tabbedPane);
        setSize(500, 550);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setVisible(true);
    }

    public static void main(String[] args) {
        new MidtermGUIProblem5();
    }
}
```

