KENYA METHODIST UNIVERSITY

END OF TRIMESTER EXAM DAPRIL 2009

FACULTY	**:**	**ARTS AND SCIENCES**
DEPARTMENT	**:**	**COMPUTER INFORMATION SYSTEMS**
COURSE CODE	**:**	**CISY213**
COURSE TITLE	**:**	**ADVANCED PROGRAMMING**

Total Marks (60)

TIME: 2 HOURS

Instructions

Answer all questions in SECTION A and ANY TWO questions in SECTION B

SECTION A – Answer all questions

Question 1 – 30 marks

a. Describe the differences between the following GUI objects
   i. Buttons and radio buttons
   ii. Text fields and text areas
   iii. Check boxes and radio buttons (6 marks)

b. Give two reasons why Swing is preferred to AWT in building GUI components. (2 marks)

c. Using an example, explain the four arguments that are contained in a **showMessageDialog** method. (4 marks)

d. Write a program that converts pounds to kenya shillings. The program uses dialog boxes to accept input from a user and displays the output using a dialog box.

(7 marks)

e. Determine whether each statement is true or false. If false, explain why.
   i. Only one layout manager can be used per `Container`.
   ii. `JRadioButton`s provide a series of mutually exclusive options (i.e., only one can be `true` at a time).
   iii. `BorderLayout` is the default layout manager for a `JFrame`'s content pane.
   iv. A `JTextArea`'s text is always read-only. (8 marks)

f. Briefly describe the general process through which Java can connect to and interact with a database. (3 marks)

SECTION B – Answer ANY TWO question

Question 2 – 15 marks

a. Write four java statements that each adds 1 to the variable x. (4 marks)

b. Specify what methods are used in performing the following function. Ensure that the method name is written correctly as would be used in a Java program.

   i. To set the maximum number of elements that are displayed when the user clicks the JComboBox.
   ii. Setting the font of text fields. (4 marks)

c. Write a temperature conversion application that converts from Fahrenheit to Celsius. The Fahrenheit temperature should be entered from the keyboard via a JTextField. A JLabel should be used to display the converted temperature. Use the following formula for the conversion: *Celcius = 5/9 * (Fahrenheit -32).* (7 marks)

Question 3 – 15 marks

a. Differentiate between lightweight and heavyweight GUI components. (1 marks)
b. Complete the source code below to display a combo box that displays a list of image names. The parts of the code requiring completion are numbered and marked with /*…*/. Write down only the missing bits indicating the line number. For example, *Line 1: import java.awt.event.*;* (14 marks)

```
import java.awt.*;
/*…..…*/                    Line 1.
import javax.swing.*;

public class ComboBoxTest extends JFrame
{
        private JComboBox imagesComboBox;
        private JLabel label;
        private String names[] = {"mac.gif", "win.gif", "caution.gif", "warning.gif"};
        private Icon icons[] = {new ImageIcon(names[0]), new ImageIcon(names[1]),
        new ImageIcon(names[2]), new ImageIcon(names[3])};

        //setup GUI
        /*…..…..…*/       Line 2
        {
                super("Testing JComboBox");
                //get Content pane and set its layout
                Container container = getContentPane();
                container.setLayout(new FlowLayout());

                //set up JComboBox and register its event handler
                imagesComboBox = new JComboBox(names);
                imagesComboBox.setMaximumRowCount(3);
        imagesComboBox.addItemListener(
                //anonymous inner class to handle JCombo Events
                new ItemListener()
```

```
                {
                        //handle JCombo event
                        public void itemStateChanged(ItemEvent event)
                        {
                                //determine whether check box selected
                                /*……*/                                    Line 3
                                label.setIcon(icons[imagesComboBox.getSelectedIndex()]);
                        }
                }//end anonymous inner classes
        ); //end call to addItemListener

        /*……*/.add(imagesComboBox);                                      Line 4

        //setup JLabel to display ImageIcons
        label = new JLabel(icons[ 0 ]);
        /*……*/                                                           Line 5

        setSize(350,200);
        /*……*/                                                           Line 6
}

//execute applciation
public static void main(String arg[])
        {
        /*……*/                                                           Line 7
        /……*/                                                           Line 8
}
```

Question 4 – 15 marks

a. Differentiate between applets and applications. (2 marks)
b. Name and explain the three Object Oriented principles. (3 marks)

c. Write a program to create the following GUI. Do not provide any functionality. (10 marks)