



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2010/2011
OPEN, DISTANCE AND E-LEARNING EXAMINATION FOR THE DEGREE
OF BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

SIT 300: COMPONENT PROGRAMMING

DATE: Thursday 3rd February 2011

TIME: 8.00a.m -10.00a.m

INSTRUCTIONS: Answer any three questions.

QUESTION ONE

- a) Define the following terms as used in component programming
 - (i) Component
 - (ii) Object oriented
 - (iii) Polymorphism
 - (iv) Inheritance
 - (v) Encapsulation
- b) State five attributes of Java programming language
- c) Describe any three JFC components
- d) Briefly differentiate between AWT and Swing components in Java

QUESTION TWO

- a) Describe each of the following layout managers, paying particular attention to what happens with positioning and sizing with preferred and minimum sizes.
 - (i) FlowLayout
 - (ii) BorderLayout
 - (iii) GridLayout
 - (iv) GridBagLayout
 - (v) CardLayout
- b) Draw a class diagram that shows ALL of the relationships between `java.awt.Component`, `java.awt.Container` and `java.awt.LayoutManager`. You may use any notation but should provide a legend or description that makes the meaning of the relationships clear.
- c) Create a class called `MyButton` that is a subclass of `java.awt.Button`. Write a separate class that implements the `ActionListener` interface. Use `addActionListener()` and `getSource()` to provide a bi-directional association between the listener and the button instance.

QUESTION THREE

- a) Convert the following Swing applet into an AWT Applet. Make all the changes on the applet below i.e cross out any code that is not needed and add any new code required. Remember to include necessary imports etc.

```
// SWING test applet
//
import javax.swing.*;
import java.awt.*;
public class TestAppletSWING extends JApplet
{
    public void init()
    {
        JPanel cp=(JPanel) getContentPane();
        cp.setLayout(new FlowLayout());
        cp.add(new JLabel("test"));
    }
}
```

- b) Write a small java APPLICATION that displays the text from a text field when the control loses focus and automatically returns focus to the same control – hint: `FocusEvent` and `Component.requestFocus()`. (15 marks)

Question Four

- a) Describe the general process that occurs when an AWT image is loaded from a file and displayed (without using a `MediaTracker`). You should cover the whole process from selecting an image file through to the having it completely displayed. HINT: think about image observers, image update methods etc. (5 marks)
- b) Write Java code for a class that obtains a `Graphics` object and performs a graphics operation (HINT: `paint()` method) (5 marks)
- c) Describe what the following four `JButton` properties do:
- `rolloverIcon`
 - `borderPainted`
 - `mnemonic`
 - `actionCommand` (4 marks)
- d) Describe under what circumstances you might use the following event handling techniques:
- (i) Separate Listener Class
 - (ii) Inner Class
 - (iii) Anonymous Inner Class (6 marks)

QUESTION FIVE

- (a) What are the advantages/disadvantages of using layout managers? What is the alternative approach and what are its advantages/disadvantages? (8 marks)
- (b) Components in AWT have preferred and minimum sizes (they also have maximum sizes but these are not currently used in the AWT layout managers). What is the purpose of these attributes? How are they set/modified? (4 marks)
- (a) Write a dialog class called `AboutDialog` that extends `java.awt.Dialog` and serves as a generic 'about' dialog box. It should provide at the minimum, construction parameters to set the size and about message, and an ok button to dismiss the dialog. (8 marks)