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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2013/2014**

COURSE NAME : VISUAL PROGRAMMING
COURSE CODE : BIE 20404
PROGRAMME : 2 BIE
EXAMINATION DATE : JUNE 2014
DURATION : 3 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES

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SECTION A

Q1 State either `True` or `false` for each of the following question.

- (a) If an interface contains three different methods, all of the methods will be included in a class that implements the interface. (1 mark)
- (b) Graphic files GIF and JPEG are supported by the `ImageIcon` class. (1 mark)
- (c) The statement `setLayout(new GridLayout(2,9));` establishes a `GridLayout` with nine horizontal rows. (1 mark)
- (d) Method `exists()` of class `File` returns `true` if the name specified as the argument to the `File` constructor is a file or directory in the specified path. (1 mark)
- (e) Event handlers are abstract classes. (1 mark)
- (f) An absolute path contains all the directories, starting with the root directory, that lead to a specific file or directory. (1 mark)
- (g) `destroy()` method is handled right before an applet finishes running. (1 mark)
- (h) To determine what object generated the `ActionEvent`, you can use the following statement: `Object source = e.getSource();` (1 mark)
- (i) Input stream and output stream are used to read from a file in Java program. (1 mark)
- (j) `getSize()` is used to determine the size of a file in `File` class. (1 mark)

SECTION B

- Q2** (a) Give **TWO(2)** differences between container and components, and give an example of each. (5 marks)
- (b) Create a `JFrame` that holds buttons `Button1`, `Button2` and `Button3` using `FlowLayout`. (3 marks)
- (c) Based on **Q2(b)**, analyse what will happen if we changed the `FlowLayout` into `GridLayout`? (3 marks)
- (d) Provide **ONE(1)** constructor for `GridLayout` and `GridBagLayout`. (3 marks)

Q3 Based on the program in Figure Q3, understand and analyse the codes.

```

import java.applet.*;
import java.awt.event.*;
import java.awt.*;

public class EventListeners extends Applet implements
    ActionListener{
    TextArea txtArea;
    String Add, Subtract;
    int i = 10, j = 20, sum =0, Sub=0;
    public void init(){
        txtArea = new TextArea(10,20);
        txtArea.setEditable(false);
        add(txtArea, "center");
        Button b = new Button("Add");
        Button c = new Button("Subtract");
        b.addActionListener(this);
        c.addActionListener(this);
        add(b);
        add(c);
    }
    public void actionPerformed(ActionEvent e){
        sum = i + j;
        txtArea.setText("");
        txtArea.append("i = " + i + "\t" + "j = " + j + "\n");
        Button source = (Button)e.getSource();
        if(source.getLabel() == "Add"){
            txtArea.append("Sum : " + sum + "\n");
        }
        if(i > j){
            Sub = i - j;
        }
        else{
            Sub = j - i;
        }
        if(source.getLabel() == "Subtract"){
            txtArea.append("Sub : " + Sub + "\n");
        }
    }
}

```

FIGURE Q3

(a) Draw the expected GUI of the program.

(3 marks)

- (b) Carry out `exception` handling in the program by writing only the relevant codes. (3 marks)
- (c) Based on your observation, outline how we are able to convert the applet as in Figure Q3 into an application? (4 marks)
- (d) Differentiate the `init()` and `start()` method in applet. (4 marks)
- Q4** (a) Compare **TWO(2)** file streams approaches. (4 marks)
- (b) Outline the steps to open `student.txt` file for input. Use `Scanner` variable `inStudent`. (5 marks)
- (c) Describe the object serialization and what happens after a serialized object has been written into a file. (5 marks)
- Q5** (a) Draw the illustration of applet calling in web browser. (6 marks)
- (b) Compare and contrast the applets and applications. Give at least **ONE(1)** similarity and difference on each. (4 marks)
- (c) By using example, demonstrate how we use the Java methods for playing and manipulating audio clips. (4 marks)
- Q6** (a) State **THREE(3)** typical causes of errors. (3 marks)
- (b) Describe the `catch` processing in Java programming. (4 marks)
- (c) `Exceptions` are better than traditional error handling. Justify. (4 marks)

- (e) Analyse the code in Figure Q6(e), and write your understanding of the code and the exception.

```

int a = 4;
int b = 0;
int result = 0;

try {
    int c = a / b;
    result = c;
} catch(ArithmeticException ex) {
    result = 0;
}

return result;

```

FIGURE Q6(e)

(3 marks)

SECTION C

- Q7** Develop a temperature conversion application that converts between Fahrenheit, Celsius and Kelvin. The temperature is entered from keyboard (via `JTextField`). A `JLabel` is used to display the converted temperature. Use the following formulas for the conversion:

$$\begin{aligned} \text{Celsius} &= 5/9 \times (\text{Fahrenheit} - 32) \\ \text{Kelvin} &= \text{Celsius} + 273.15 \end{aligned}$$

- (a) Design an appropriate GUI for this application. (5 marks)
- (b) Write a full Java program for the application. Use at least **ONE(1)** exception. The original temperature value before conversion and the converted temperature value must be stored into `result.txt` file. (15 marks)

- END OF QUESTION -