



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2021/2022**

- COURSE NAME : VISUAL PROGRAMMING
- COURSE CODE : BIE 20404
- PROGRAMMECODE : BIP
- EXAMINATION DATE : JULY 2022
- DURATION : 3 HOURS
- INSTRUCTION :
1. ANSWER ALL QUESTIONS
 2. THIS FINAL EXAMINATION IS AN **ONLINE** ASSESSMENT AND CONDUCTED VIA **CLOSED BOOK**.
 3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 (a) Indicate whether each of the following statements is **TRUE** or **FALSE**.

- (i) Classes from which objects can be instantiated are called concrete classes. (2 marks)
- (ii) All methods in an abstract class must be declared as abstract methods. (2 marks)
- (iii) In Java, invoking a subclass-only methods through a superclass instance is allowed. (2 marks)
- (iv) If a superclass declared an abstract method, a subclass that extends it must implement that method. (2 marks)
- (v) An object of a class that implements an interface is known as an object of that interface type. (2 marks)

(b) Determine whether each of the following contain **Error** or **No Error**. Justify your answers.

- (i) `buttonName = JButton("Caption");` (2 marks)
- (ii)

```
abstract public void getName(){
    return name;
}
```

 (2 marks)
- (iii) `txtField = new JTextField (50, "Default Text");` (2 marks)
- (iv)

```
//creating JFrame and display
JFrame f = new JFrame("A window");
f.setVisible(true);
```

 (2 marks)
- (v)

```
public interface AnimalSound {
    public void Cat() {
        System.out.println("Meow.. Meow..");
    }
}
```

 (2 marks)

Q2 Answer **Q2(a) – Q2(e)** based on Java code segments in **Figure Q2(a)** and GUI in **Figure Q2(b)**.

```
public class Age {  
    public static void main(String[] args) {  
        int age;  
        age = Integer.parseInt(JOptionPane.showInputDialog("How  
            old are you?"));  
        System.out.println("Your age is:" +age);  
    }  
}
```

Figure Q2(a)



Figure Q2(b)

- (a) If the user enters the input as in **Figure Q2(b)** and click the OK button, what is the output of the program? Justify your answers. (6 marks)

- (b) Apply exception handling for the segment code in **Figure Q2(a)** by using `try..catch` block and `showMessageDialog()`. (8 marks)

- (c) With appropriate examples, discuss types of Java exceptions. (6 marks)

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Q3 Answer Q3(a) and Q3(b) based on **Figure Q3**.

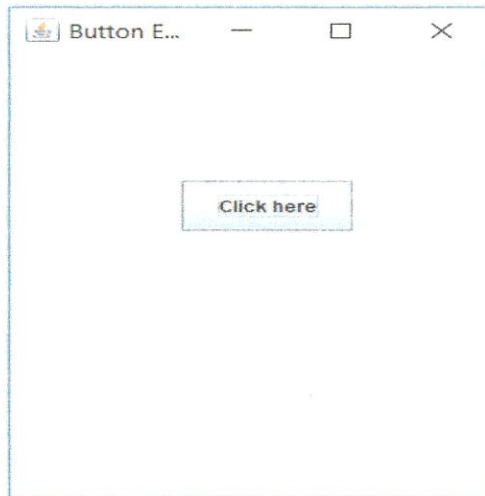


Figure Q3

(a) Based on The Delegation Event Model, explain how the event handling process involved when a user clicks the button in **Figure Q3**. (10 marks)

(b) Discuss the main elements of GUI applications. (10 marks)

Q4 Answer Q4(a) – Q4(c) based on the GUI application in **Figure Q4(a)** and the incomplete program codes in **Figure Q4(b)**.

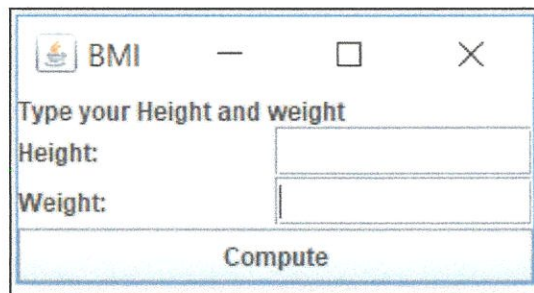


Figure Q4(a)

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```

import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

public class BMI implements ActionListener{
//Write Swing GUI component declaration

private final JFrame frame;

    public BMI() {

        //Write code statements to set up GUI components

        computeButton.addActionListener(this);
        frame = new JFrame("BMI");
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.setLayout(new BorderLayout());
        frame.add(bmiLabel, BorderLayout.NORTH);
        frame.add(center, BorderLayout.CENTER);
        frame.add(computeButton, BorderLayout.SOUTH);
        frame.pack();
        frame.setVisible(true);
    }

    public void actionPerformed(ActionEvent event) {

        //write code statements to
        //Handle clicks on compute button to calculate the BMI
        //Read height and weight data from text fields

    }

    public static void main (String args[]) {
        BMI gui = new BMI();
    }
}

```

Figure Q4(b)

- (a) Identify the GUI components in **Figure Q4(a)** and write the swing GUI components declaration statements for the program. (4 marks)
- (b) Write code statements to set up the GUI components as depicted in **Figure Q4(a)**. (10 marks)
- (c) Write the method implementation for `actionPerformed()`. The formula to calculate Body Mass Index (BMI) is given as follows:

$$BMI = \frac{weight}{height^2} \times 703$$

(6 marks)

-END OF QUESTIONS -