



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2014/2015**

COURSE NAME : JAVA PROGRAMMING
COURSE CODE : BIT 33803
PROGRAMME : 3 BIT
EXAMINATION DATE : JUNE 2015 / JULY 2015
DURATION : 3 HOURS
INSTRUCTION : A) ANSWER **ALL** QUESTIONS.
B) ANSWER IN THIS QUESTION BOOKLET.

THIS QUESTION PAPER CONSISTS OF **TWELVE (12)** PAGES

- Q1 (a) Figure **Q1(a)** shows a program with selection statements. Determine the output for Figure **Q1(a)**.

```
class Q1a{
    public static void main(String[] args)
    {
        int i = 7;

        if (i > 0){
            System.out.println("Great value is "+ i);
            switch (i%4){
                case 1: System.out.println("First value");
                    break;
                case 2: System.out.println("Second value");
                    break;
                case 3: System.out.println("Third value");
                case 4: System.out.println("Fourth value");
                case 5: System.out.println("Fifth value");
                    break;
                default: System.out.println("Finishing line");}
        }}
}
```

FIGURE Q1(a)

(5 marks)

Answer:

- (b) Figure **Q1(b)** shows a program with looping statements to calculate sum of even values in the range of 1 to 20. Rewrite the program using while loop structure.

```
class Q1b{
    public static void main(String[] args)
    {
        int j,sum_even;

        sum_even = 0;

        for (j=2;j<=20;j+=2){
            sum_even = sum_even + j;
        }

        System.out.println("Sum of even values:" + sum_even);
    }
}
```

FIGURE Q1(b)

(10 marks)

Answer:

(c) Given a single dimensional array named `numList` that holds ten integer values.

(i) Write a code segment to find the smallest value from the array `numList`.

(5 marks)

Answer:

(ii) Write a method called `sumPositive` that receives the array `numList` and returns the sum of positive values only.

(10 marks)

Answer:

Q2 (a) Draw a class diagram for the scenario in Figure Q2(a).

A faculty has a number of persons. The person can be student or staff. A person has a name, address, identification number, and phone number. A student has a class status. A staff can be a technician or an academician. A staff has a department, salary, and date hired. An academician has office hours and a rank. A technician has a laboratory title. An academician teaches two courses. A course has course name, course code, and credit hour. A technician assists 2 or 3 academicians.

FIGURE Q2(a)

(10 marks)

Answer:

(b) Determine the output for Figure Q2(b).

```
public class Human {
    public String toString() {
        return "Class Human";
    }
}
class Ancestors extends Human {
    public String toString() {
        return "Class Ancestors";
    }
}
class GrandFather extends Human {}
class Father extends Ancestors {}
class Son extends Father {
    public String toString() {
        return "Class Ancestors "+new Alone();
    }
}
class Alone {
    public String toString() {
        return "I'm not alone";
    }
}
class FinalProg {
    public static void main (String[] args) {
        printOutput(new Son());
        printOutput(new GrandFather());
        printOutput(new Ancestors());
        printOutput(new Alone());
        printOutput(new Father());
    }
    public static void printOutput(Object obj) {
        System.out.println(obj.toString());
    }
}
```

FIGURE Q2(b)

(10 marks)

Answer:

Q3 (a)

Based on the specification in Figure Q3(a)(i), complete the GUI program in Figure Q3(a)(ii). The program allows user to enter a length value. Then, it will calculate the conversion of length measure either from feet to centimeters or from centimeters to feet unit.

- Add listeners in the program to handle the events.
- When user clicks the 'Feet to Centimeters' or 'Centimeters to Feet' button, show the result in 'Result' text field.
- The formula for Feet and Centimeters are as follows:

$$\begin{aligned}\text{Feet} &= \text{length} * 30.48 \\ \text{Centimeters} &= \text{length} / 30.4\end{aligned}$$

- The output will be as follows:

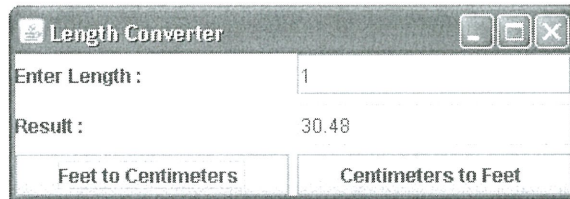


FIGURE Q3(a)(i)

(15 marks)

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

public class FinalExam2 extends JFrame {
    JTextField jtfLength= new JTextField(15);
    JTextField jtfResult = new JTextField(15);

    public FinalExam2() {
        JButton jbtConvert1 = new JButton("Feets to
Centimeters ");
        JButton jbtConvert2 = new JButton("Centimeters to
Feets ");

        JPanel p1 = new JPanel();
        jtfResult.setEditable(false);
        p1.setLayout (new GridLayout(3,2,5,5));
        p1.add(new JLabel("Enter Length :"));
        p1.add(jtfLength);
        p1.add(new JLabel ("Result :"));
        p1.add(jtfResult);
        p1.add(jbtConvert1);
        p1.add(jbtConvert2);

        add(p1, FlowLayout.LEFT);
    }
}
```

Answer:

```
public static void main(String[] args) {
    JFrame frame = new FinalExam2();
    frame.setTitle("Length Converter");
    frame.setLocationRelativeTo(null); // Center the frame
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.pack();
    frame.setVisible(true); } }
```

FIGURE Q3(a)(ii)

- (b) Write an applet to display three labels and three text fields as shown in Figure Q3(b). The layout of the applet is set to `GridLayout`.

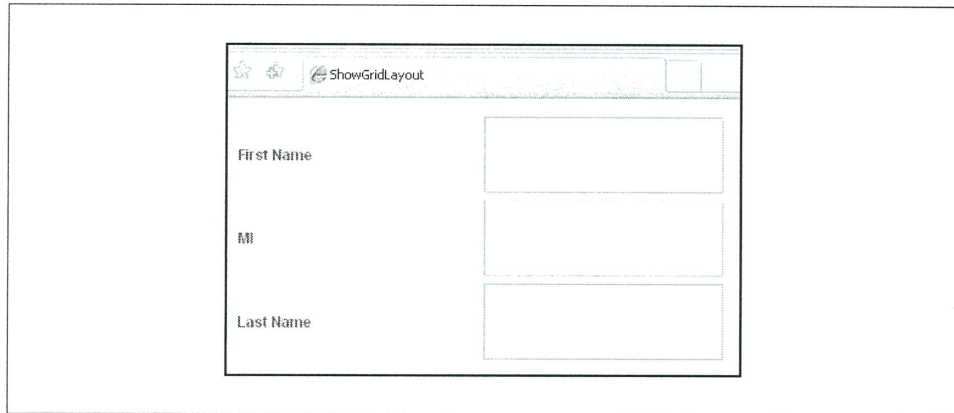


FIGURE Q3(b)

(10 marks)

Answer:

- Q4 (a) Figure Q4(a) shows a class with exception handling. Determine the output of the program. Justify your answer.

```
public class TestException {
    public static void main(String args[]) {
        int total = 0;
        int[] list = {12,16,20,54,13};
        try {
            for (int i = 1; i < 6; i++)
                total = total + list[i];
        }
        catch (ArithmeticException ex) {
            System.out.println("ArithmeticException");
        }
        catch (RuntimeException ex) {
            System.out.println("RuntimeException");
        }
        catch (Exception ex) {
            System.out.println("Exception");
        }
        System.out.println(total);
    }
}
```

FIGURE Q4(a)

(5 marks)

Answer:

- (b) Figure Q4(b) shows content of an input file called "student.txt", a performance scale based on marks, and sample output in a file called "result.txt". Write a program to read the content of the input file. Each row of the input file presents a student number, test, assignment and project marks. Then the program will calculate the total marks and determine performance status for each student based on the performance scale. Finally, the program will display each student number, total marks and performance status in the output file.
- (c)

Input File: student.txt		
A146112	20	20 18
A151633	15	17 14
Performance scale		
Marks	Performance	
85-100	Excellent	
70-84	Good	
50-69	Mediocre	
0-49	Weak	
Output File: result.txt		
A146112	73	Good
A151633	66	Mediocre

FIGURE Q4(b)

(20 marks)

Answer:

- END OF QUESTION -