Programming 2B Exam Memo

Information Technology (Damelin)

TITLE	**HET: DIPLOMA IN INFORMATION TECHNOLOGY**
SUBJECT	**Programming 2B**
SUBJECT CODE	**PRG220 / PRG320**
TEST/EXAM	**Exam Memo**
SEMESTER	**2nd**
DATE WRITTEN	**08 November 2021**

NUMBER OF PAGES	**10**
TOTAL MARKS	**100**
DURATION	**2 HOURS**
PASS MARK	**50%**
WEIGHTING	**60%**
EXAMINER	**Thandanani Dube**

REQUIREMENTS:

Learner Requirements:

Equipment Requirement:

This paper consists of: **100 Marks**

1. Section A: Short Questions 30 Marks
2. Section B: Medium Questions 20 Marks
3. Section C: Long Questions 50 Marks

Unless otherwise stated, please answer ALL questions.

Please read the assessment rules and regulations that follow

Learners are warned that contravening any of the examination rules or disobeying the instructions of an invigilator could result in the examination being declared invalid. Disciplinary measures will be taken which may result in the students' expulsion from Damelin.

ASSESSMENT RULES AND REGULATIONS

Please ensure that you have read and fully understand the following assessment rules and regulations prior to commencing with your assessment:

1. To be permitted access to the examination, a learner must arrive with:
   1.1 an Identity Document or other official proof of identity (for example, - a student card, passport or driver's licence card with photo); and
   1.2 The required exam stationery.
2. No learner may enter the examination room more than 30 minutes after the examination sitting has commenced and no candidate may leave the room less than one hour after the examination sitting has commenced.
3. No extra time will be allowed should a student arrive late.
4. All learners must sign the *Attendance Register* for the examination on arrival.
5. It is the responsibility of learners to familiarise themselves with the examination rules prior to sitting for the examination.
6. All examinations are to be written on the date and time officially stipulated by the College.
7. It is the responsibility of learners to ensure that they are writing the correct paper and that the question paper is complete
8. Cell phones must be switched *off* prior to entering the exam venue. Cell phones and wallets may be placed under candidates' chairs rather than at the front of the room.
9. Learners may not handle cell phones or wallets during the exam.
10. No weapon of any description may be taken into the assessment room.
11. All personal belongings are to be placed at the front of the examination room. Personal belongings brought to the examination are at the owner's risk.
12. Smoking is not permitted and learners will not be allowed to leave the examination room in order to smoke
13. Once the examination has commenced, all conversation of any form between candidates must cease until after candidates have left the room, after the examination.
14. *Only* the official College examination book, as supplied by the College, may be used.
15. Learners must ensure that their student number is written on the answer book.
16. Learners are responsible for ensuring that they follow the instructions in the examination for submitting their answers.
17. Please read the instruction appearing on the examination paper carefully
18. The number of every question must be clearly indicated at the top of every answer.
19. No pages may be torn out of the answer book. All question papers and scrap paper must be handed to the invigilator after the examination.
20. Learners finishing earlier are to leave the examination room as quietly as possible on the instruction of the invigilator, and may not talk until outside the building where the examination is being written.
21. Only under exceptional circumstances will a learner be permitted to leave the examination room during the examination, and if the invigilator gives permission. An invigilator must accompany the learner. Only one learner at a time may be absent from the examination room.
22. Candidates may not act dishonestly in any respect.

SECTION A: SHORT QUESTIONS **[30]**

Answer all questions in this section.

Question 1: **[20]**

1.1 The operator that combines two conditions into single Boolean vale that is true only when all of the conditions is true is

A. &&
B. !!
C. ||
D. //

1.2 Which of the following is not a valid if statement

A. If(age = 23) { }
B. If(age >= 23) { }
C. If(age != 23) { }
D. If(age <= 23) { }

1.3 Java's print( ) and println( ) methods are defined in the _____ class

A. BufferedOutputStream
B. PrintStream
C. System
D. Print

1.4 The Exception class is in ……. Package

A. java.file
B. java.swing
C. java.util

D. java.IO

1.5 Using a bubble sort involves_____

A. Comparing parallel arrays
B. Comparing each array element to the average
C. Comparing each array element to the adjacent array element
D. Swapping every array with its adjacent element

1.6 Java's print( ) and println( ) methods are defined in the _____ class

A. BufferedOutputStream
B. PrintStream
C. System
D. Print

1.7 Which of the following method closes the BufferredReader method

A. Me.Close()
B. application.Exit()
C. close()
D. flush()

1.8 Which of the following is a correct method declaration in java

A. public static generate( )
B. public void generate( )
C. private void int generate( )
D. protected int static generate( )

1.9 Which of the following is a constructor to the class:
public class Bingo{ }

A. public void Bingo( ) { }

B. public int Bingo( ){ }

C. public bingo( ){ }

D. public Bingo( ){ }

1.10 Java constants are usually written in all _____ letters

A. Sentence case

B. Upper case

C. Lower case

D. None of the above

Answer all questions in this section.

State whether true or false:

Question 2: **[10]**

2.1 When you place objects in order, beginning with the object that has the lowest value, you are sorting in ascending order; conversely, when you start with the object that has the largest value, you are sorting in descending order.

True

2.2 When mathematicians use a two-dimensional array, they often call it a Algorithm or a table; you might have used a two-dimensional array called a spreadsheet.

False, When mathematicians use a two-dimensional array, they often call it a matrix or a table; you might have used a two-dimensional array called a spreadsheet.

2.3 In Java and all object-oriented languages, inheritance is a mechanism that enables one class to inherit, or assume, both the behaviour and the attributes of another class.
True

2.4 In a bubble sort, you continue to compare pairs of items, swapping them if they are out of order, so that the smallest items “bubble” to the top of the list, eventually creating a sorted list.
True

2.5 The ability to use inheritance in Java makes programs easier to write, less error prone, and more quickly understood.
True

Define the following terms:

Question 3: **[20]**

List 10 swing Components:

- Abstract Button: Abstract super class for swing buttons.
- Button Group: Encapsulates a mutually exclusive set of buttons.
- Image Icon: Encapsulates in icon.
- Japplet: The swing version of applet.
- JButton: Class of swing push button.
- JCheck Box: Class of swing check box.
- JCombo Box: Encapsulates a combo box.
- JLabel: The swing version of a label
- JRadio Button: The swing version of radio button.
- JScroll pane: Encapsulates a scroll bar window.

Answer all questions in this section.

Practical question:

Question 4: [30]

Create a program called "Keyboardinput" using java.io.*; stream that allows you to discover which keys the user typed last.

```
/*
 * To change this template, choose Tools | Templates
 * and open the template in the editor.
 */
package keyboardinput;
import java.io.*;
/**
 *
 * @author Tyrone
 */
public class KeyboardInput {

    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {

        // Instantiate a bridge stream and pass the object instantiated by System.in to
// its constructor.
InputStreamReader isr = new InputStreamReader( System.in );
// Instantiate a buffered stream and pass the InputStreamReader to its
// constructor.
BufferedReader kbd = new BufferedReader( isr );
try
{
System.out.print( "Enter some characters and press" + " enter when finished: " );
String s = kbd.readLine( );
```

```
System.out.println( "The String was: " + s );
// Close the initial stream; this will close all streams connected to it.
kbd.close( );
}
catch( IOException e )
{
e.printStackTrace( );
}


      // TODO code application logic here
   }
}
```

Question 5: **[20]**

in the next page shows a JFrame containing a JLabel that prompts the user for a name, a JTextField into which the user can type a response, a JButton to click, and a second JLabel that displays the name entered by the user. The actionPerformed() method executes when the user clicks the pressMe JButton; within the method, the String that a user has typed into the JTextField is retrieved and stored in the name variable. The name is then used as part of a String that alters the second JLabel on the JFrame.

There are 10 errors in this demonstration correct the errors to ensure the program functions correctly

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
public class JHelloFrame extends JFrame implements ActionListener
{
JLabel question = new JLabel("What is your name?");
Font bigFont = new Font("Arial", Font.BOLD, 16);
JTextField answer = new JTextField(10);
JButton pressMe = new JButton("Press me");
JLabel greeting = new JLabel("");
final int WIDTH = 175;
final int HEIGHT = 225;
public JHelloFrame()
{
super("Hello Frame");
setSize(WIDTH, HEIGHT);
setLayout(new FlowLayout());
question.setFont(bigFont);
greeting.setFont(bigFont);
add(question);
```

```
add(answer);
add(pressMe);
add(greeting);
setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
pressMe.addActionListener(this);
}
public void actionPerformed(ActionEvent e)
{
String name = answer.getText();
String greet = "Hello, " + name;
greeting.setText(greet);
}
}
```

The JHelloFrame class that produces output when the user clicks the JButton

```
public class JHelloDemo
{
public static void main(String[] args)
{
JHelloFrame frame = new JHelloFrame();
frame.setVisible(true);
}
}
```

An application that instantiates a JHelloFrame object

A typical execution of the JHelloDemo program is shown below. The user enters Lindsey into the JTextField, and the greeting with the name is displayed after the user clicks the button.

TOTAL MARKS: 100