University of Wollongong

SCSSE
School of Computer Science and
Software Engineering

Family Name ....

First Name ....

Student Number...

Table Number ....

CSCI213

Java Programming and Applications

This paper is for students studying at:

[x] Wollongong [ ] Batemans Bay [ ] Bega [ ] Loftus

[ ] Moss Vale [ ] Shoalhaven [ ] Sydney [ ] Distance

SPRING SESSION 2010 FINAL EXAMINATION

Time Allowed: 3 hours 15 minutes

Number of Questions: Examination has two parts
    A) Multiple choice (25 questions, 25 marks total),
        True/False (5 questions, 5 marks total)
    B) Short answers (questions 1, 2, and 3, 30 marks total)

Assessment: This paper is worth 60% of the total marks for the subject.

DIRECTIONS TO CANDIDATES

Examination paper is printed on both sides.

EXAMINATION MATERIALS/AIDS ALLOWED
Nil

Part A – Multiple Choice   **Total 25 marks**

Answer Part A questions 1 to 25 on a Computer Marking Sheet by selecting the most correct answer. Each question is of equal value and worth 1 mark.

1   Java program language

   A. is not an OO language.
   B. can access to pointer.
   C. has no #defines, macros.
   D. has free functions to release unused memory.

2   What output of the following java program will be?
   class relation {
           public static void main(String[] args) {
                   int x = 5;

                   if(0 <= x <= 10)
                           System.out.println("x's value is between 0 and 10");
                   else
                           System.out.println("Out of range");
           }
   }

   A. x=5
   B. x's value is between 0 and 10
   C. Out of range.
   D. Compilation error.

3   Functions in Java program

   A. must be defined as global functions.
   B. must be defined as private functions of a class.
   C. must be defined as member functions of a class.
   D. must be defined as public functions of a class.

4   All exception classes are subclasses of:

   A. RuntimeException
   B. Exception
   C. Error
   D. Throwable

5   An interface class

   A. contains abstract methods that cannot be overridden.
   B. contains both abstract methods and final methods.
   C. contains abstract methods and some constants.
   D. contains protected data members and some other methods.

6   What the following Java program output will be?
```
import java.util.*;
class MyData {
    private int x;

    public MyData() {      x = 0;    }
    public MyData(int v) {      x = v;    }
    public int getX() {      return x;    }
    public void setX(int v) {      x = v;    }
}
class Objass {
        public static void main(String[] args) {
                Vector<MyData> data = new Vector<MyData>();
                MyData tmp = new MyData(2);

                data.add(tmp);
                tmp = new MyData(5);
                data.add(tmp);

                tmp = data.elementAt(1);
                tmp.setX(8);

                System.out.println(data.elementAt(1));
        }
}
```

A. compilation error
B. 2
C. 5
D. 8

7   What the following Java program output will be?

```
String tmp = new String("ABC, DEF; HIJ, KLM;  NOP, QRS, ");
String[] words = tmp.split(";");
for(int i=words.length-1; i>=0; i--)
        System.out.print("["+words[i]+"]");
```

A. [ABC, DEF; HIJ, KLM; NOP, QRS,]
B. [NOP, QRS,][HIJ, KLM][ABC, DEF]
C. [ABC][DEF][HIJ][KLM][NOP][QRS]
D. [ABC, DEF][HIJ, KLM][NOP, QRS,]

8   To define a constant value PI and set its value as 3.14, in Java program, which of the
        following statements is correct?

A. const PI = 3.14;
B. const double PI = 3.14;
C. final static double PI = 3.14;
D. static double PI = 3.14;

9   Which of the following statement is **NOT correct**?

JDBC driver manager
A. keeps track of available drivers.
B. handles establishment of connection between a database and the appropriate driver.
C. connects to a database system.
D. deals with login time limits, printing of log and tracing messages.

10   The following JDBC code

```
        PreparedStatement stmt =    dbConnection.prepareStatement(
                "select name from customers where id=?");
        ResultSet rset = stmt.executeQuery();
```

A. can generate compilation error.
B. can generation exception error.
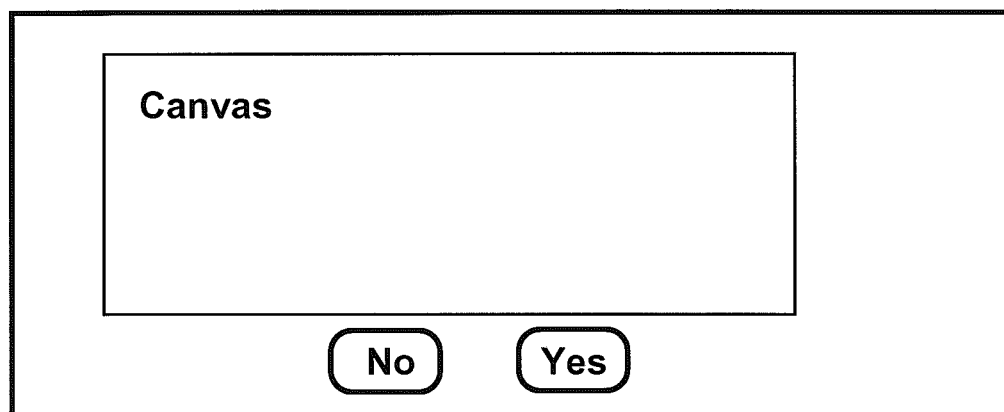C. can find name of customers.
D. can print out name of customers.

11   To draw graphics, different platforms do share

A. similar coordinate models.
B. similar range of functions.
C. similar (r, g, b) colour space.
D. all of above.

12   "WindowEvents" will be generated by

A. Frame
B. Button
C. Menu item
D. CheckBox

13   Which layout should be chosen in the graphic user interface design as following?

A. BorderLayout
B. FlowLayout
C. GridLayout
D. CardLayout

14   To handle button click event, which of the following method should be implemented?

> A. paintComponent(ButtonEvent e)
> B. actionPerformed(ActionEvent e)
> C. mouseClicked(MouseEvent e)
> D. mousePressed(MouseEvent e)

15   An exception code contains two catch clauses: Exception and IOexception. Is the order of them important?

> A. No.
> B. You cannot have multiple catch clauses at all.
> C. Yes, Exception should be caught first.
> D. Yes, IOexception should be caught first.

16   Which of the following statement is **NOT correct**?

> In javax.swing package,
> A. the components added into JFrame are managed by contentPane.
> B. JDialog uses BorderLayout as default layout.
> C. JCanvas allows graphics to be drawn in its area.
> D. JPasswordField allows echo characters to be asterisks ('*').

17   Consider you have been given the following design

> "A person has a name, age, address and sex. You are designing a class to represent a type of person called a patient. This kind of person may be given a diagnosis, have a spouse and may be alive". Given that the person class has already been created, what of the following would be appropriate to include when you design the patient class?

> A. name
> B. age
> C. sex
> D. diagnosis

18   MediaTracker can be used to

> A. search media files on the server computer.
> B. delay displaying or playing media files until specified media files have been loaded.
> C. display or play media files.
> D. clear media buffer inside computer system.

19   Which of the following statement is **NOT** correct?

A. A user's run-time routine responds to an interrupt caused by events like the user clicking a mouse button or keying a character
B. A user's run-time routine fills information in events data structure.
C. Events are added into a queue of events and sometime be processed later.
D. A user's run-time routine may not handle some events.

20   An applet

A. can be embedded in a web browser.
B. can access local files.
C. can access some details of enclosed web page.
D. All of above.

21   Which of the following statements is true?

A. All operators in Java may be overloaded.
B. A constructor is inherited.
C. From a constructor you can call the classes' super-class constructor.
D. A class must have a public constructor.

22   Compare with multiple processes, multiple threads

A. consume more OS resources.
B. communicate among themselves is easier.
C. start up slower than multiple processes.
D. depend on platforms.

23   Which of the following method should be implemented for creating a thread?

A. main()
B. init()
C. paint()
D. run()

24   The following code

```
Socket sock = null;
try {
        sock = new Socket(hostname, port);
}
catch(Exception e) {
        System.out.println("Failed to connect because " + e.getMessage());
        System.exit(1);
}
```

A. will build network connection to a server host.
B. will build network connection to a client host.
C. will generate compilation errors.
D. will generate exception.

25   Use "this" in Java program

A. to store the local integer's value.
B. to define a variable of "this" type.
C. to reference the constructor of a class.
D. to reference the current object for which a method is being executed.

Part A – True/False   **Total 5 marks**

Answer Part A questions 26 to 30 on a Computer Marking Sheet by selecting the most correct answer. Each question is of equal value and worth 1 mark.

26   Server will create a new thread or process to handle the requirements from a client.

      A. True
      B. False

27   JDBC PreparedStatement potentially more efficient as pre-compiled and stored for further use.

.

      A. True
      B. False

28   Java controls thread via language statements rather than function calls.

      A. True
      B. False

29   Java applet source codes should be put in "body" portion of a web page.

      A. True
      B. False

30   In Java GUI design, the graphic must be drawn in a JPanel.

      A. True
      B. False

* End of Part A *

Part B – Short Answers   Total 30 marks

Please answer **all** questions and write your answer in the examination booklet provided.

Question 1 – Basic Java Programming Concepts   (Total 10 marks)

1.1   Explain differentiate between interface and abstract class in Java.

(2 marks)

1.2   Explain inheritance and polymorphism in Java programming.

(2 marks)

1.3   If you want to read data from a data file, which JAVA package(s) must be imported? If you want to create a GUI, which JAVA package(s) must be imported?

(2 marks)

1.4   When might you use JAVA thread explicitly?

(2 marks)

1.5   Describe the arrangement of components produced by the BoderLayout layout and GridLayout managers.

(2 marks)

Question 2 – Simple Java programming   **(Total 10 marks)**

2.1   Define an abstract class Account which contains account number, name, date of birth, address, phone number and balance. Define default constructor and initialization constructor for the class.
Define a final class Saving that inherit from the Account and record the latest transaction date. Implement default constructor and initialization constructor.
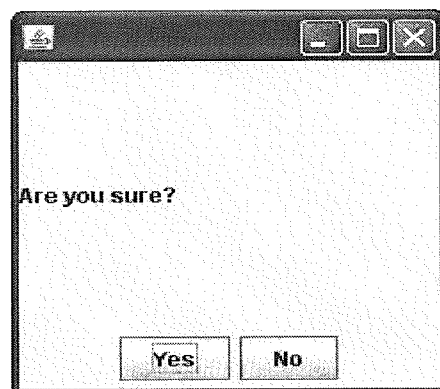
(2 marks)

2.2   Define a data member in a class MyData as following
                public class MyData {
                        private Vector<String> list;
                }
Define and implement a Java method toString() that convert elements of list to a string. Use ";" to separate those elements.

(2 marks)

2.3   Implement a Java GUI program to display the following output frame.

The frame can to be closed by click on "close" button.

(3 marks)

2.4   Write a simple console based Java program to create two threads, one thread display even integers from 0 to 10, one thread display odd integers from 1 to 11.

(3 marks)

Question 3 – Java designs and programming   (Total 10 marks)

3.1   A programmer wants to create a tabbed pane and add three sheets in it. Read the following java code carefully. Fill in correct java statements that missing to make it works. (**4 marks**)

```java
import java.awt.*;

public class MyTabbedPane extends JFrame {
        private JTabbedPane tabbedPane;
        private MessagesPanel mp;
        private TablePanel tp;
        private InfoPanel ip;

        public MyTabbedPane() {
                setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

                ip = new InfoPanel();
                tabbedPane.addTab("Info", ip);

                mp = new MessagesPanel();
                tabbedPane.addTab("Message", mp);

                tp = new TablePanel();
                tabbedPane.addTab("Table", tp);
                setLayout(new GridLayout(1, 1));

                try {
                        tabbedPane.setSelectedComponent(ip);
                } catch(Exception e){}

                setSize(400,400);
        }

        public static void main(String[] args) {
                MyTabbedPane t = new MyTabbedPane();
        }
}
```
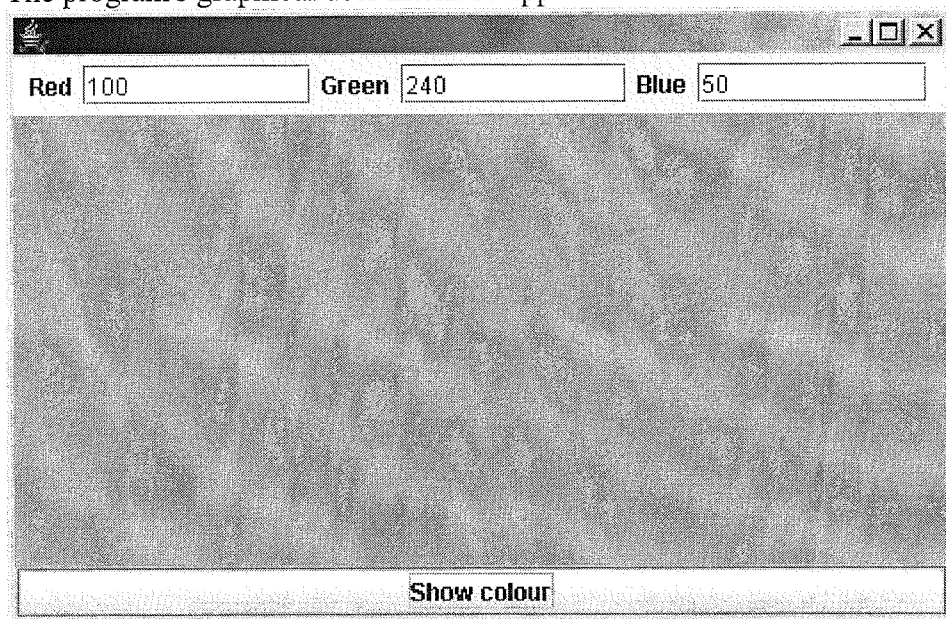
```
class MessagesPanel extends JPanel {

    public MessagesPanel() {

        add(new JLabel("Message panel"));

    }

}


class TablePanel extends JPanel {

    public TablePanel() {

        add(new JLabel("Table panel"));

    }

}


class InfoPanel extends JPanel {

    public InfoPanel() {

        add(new JLabel("Information panel"));

    }

}
```

3.2 The program's graphical user interface appeared somewhat similar to the following:

1) Identify the classes of components and their responsibilities, and provide simple sketch Java code that builds such a graphical user interface.

(3 marks)

2) Explain (with simple sketch Java code) how the program would monitor the button click, how it would obtain data from the text input fields, and how it would arrange for the chosen color to be displayed.
(3 marks)

End of Examination