415.111 FC 1998 - Introduction to Computing and Applications.

Test:
Sample Solutions

Section	Marks	Possible Marks
General Computing		15
Internet		20
HTML		7
ClarisWorks		3
Databases		10
Java		45
Total		100

General Computing [15 Marks]

Q1. What does CPU stand for?

Central Processing Unit

(1 Mark)

Q2. What does a data bus do?

Transports data between components of a computer.

(1 Mark)

Q3. Give an example of a device which is used to store secondary memory?

Any of Disk Drive, Hard Drive, Tape Drive, CD Rom, etc.

(1 Mark)

Q4. Which of the following are Peripheral Devices?

Device Name		YES (Peripheral)	NO (Not Peripheral)
Printer		✓	
Co-processor			
Mouse		✓	
Keyboard		✓	
RAM			

(3 Marks)

Q5. Whose contribution to the history of computing occured earlier: Charles Babbage or Blaise Pascal?

Blaise Pascal

(1 Mark)

Q6. Name two examples of computing technology developed at Xerox PARC?

Any of: GUI, WIMP, WYSIWYG, Ethernet, Smalltalk, Laser Printers

(2 Marks)

Q7. Is a GUI better than a CLI? Explain.

> **Yes, because it allows a user to operate software without assuming a high level of competency by providing selectable commands in a visual manner**
>
> **or**
>
> **No. The Command Line Interface is better because it is more powerful, even though it takes longer to master. Once a user is familiar with the commands, they are able to achieve greater performance than those who use GUI. It is better to have the capability of true greatness than to enforce mediocrity.**

(3 Marks)

Q8. Give the name of a common Operating System?

> **Any of: Windows 95, Linux, Unix, MS-Dos, Macintosh OS**

(1 Mark)

Q9. Convert the binary number 0010 1010 into decimal. (Show all working).

> | **128** | **64** | **32** | **16** | **8** | **4** | **2** | **1** |
> | --- | --- | --- | --- | --- | --- | --- | --- |
> | **0** | **0** | **1** | **0** | **1** | **0** | **1** | **0** |
>
> **= 32 + 8 + 2**
> **= 42**

(2 Marks)

15

Internet [20 Marks]

Q10. What was ARPANET?

> **A network of computers which became the Internet**

(1 Mark)

Q11. Why was the Internet designed as a distributed system, with no central controlling computer.

> **So that in the event of a nuclear war, the network would still be operational. It was designed from the beginning to operate when part of the network had been destroyed. It had to be distributed otherwise any central control would be subject to attack, thus rendering the network useless.**

(2 Marks)

Q12. What does HTTP stand for?

> **HyperText Transfer Protocol**

(1 Mark)

Q13. Give two problems with the structure of the WWW?

> **Dangling Links. If a page is moved, then the link on the referring page points to the wrong location**
> **No accounting facilities. Publishers don't benefit from material on WWW.**
> **Difficult to search, no structural index**
> **No security, can't change access privileges depending upon user.**

(2 Marks)

Q14. Give an example of an emoticon.

> **Any smiley... examples include: :-)   ;-)   =8^0 :0**

(1 Mark)

Q15. What was the Grand Renaming

> **The usenet groups were originally organised into 2 hierarchies: mod and net they were renamed into the groups we have today - comp, sci, talk, etc.**

(1 Mark)

Q16. Give two advantages of email over regular post

> **Email is faster, Email is cheaper**

(1 Mark)

Q17. Give two rules of Netiquette

> **Don't flame anyone. Don't send test messages to newsgroups.   Any other sensible comments regarding netiquette**

(2 Marks)

Q18. What is the difference between a search engine and a subject catalog

> **The index of a search engine is created automatically by a computer program. All the keywords are stored in a database which can be searched. A catalog is created by people who manually add a link to a page in the relevant section of the subject catalog.**

(2 Marks)

Q19. Explain two possible methods which are used by software to help parents who have children using the Internet?

> **Keeping a record of the sites which are looked at.**
> **Keeping a list of banned sites which it prevents access to.**
> **Keeping a list of keywords, and not allowing access to any page containing those keywords.**

(2 Mark)

Q20. "The Internet is no different to any other published media, and should follow the same laws which apply to traditional forms of media" - Do you agree or disagree with this statement. Discuss.

I disagree. The Internet is not like any media form we are familiar with. It is a complicated environment which we are still coming to terms with. The major problem which is faced is that the Internet is international, so no single country has the right to make rules which affect the whole Internet, and no single country has the power to enforce rules which affect the whole Internet even if they wanted to. There is no international body which governs the Internet, so it is impossible to get rules applied equally across the entire Internet. This means that material which is legal to publish in one country may be viewed in another country where the material is illegal. The publishing paradigm on the Internet is very different in that publishing a document costs the publisher very little, and the document can be moved and published at a different location extremely easily. It is difficult to locate the source of these publishers to impose fines or other legal action upon them. In its current form, the Internet cannot have the same laws as traditional media applied.

or

I agree. The laws which govern published media are provided to protect the public interest and are well established. These same laws should apply to the Internet since it is a form of media accessable by the general public. It is important to provide rules which will protect people from dangerous or inappropriate material, especially for young children. The structure of the Internet could easily accomodate laws which govern published media. One possible solution would be to set up an official international committee which would be able to agree upon rules affecting the whole Internet. These rules could be enforced within each country, or else Internet sanctions could occur (the rest of the world cutting access to or from that country). This ruling body could be something like the United Nations (could even be decided through them).

(5 Marks)

20

HTML [7 Marks]

Q21. What are the differences between Structural and Surface markup

Structural markup is used to describe the underlying structure of the document, i.e. what things are headings, which text forms a paragraph etc.
Surface markup describes physical properties about the way text appears. e.g. bold, italics, 12 point palatino font, margins 12 cm etc.

(1 Mark)

Q22. Give an example of an HTML tag which uses Surface markup

<B>, <I>, <BR>, etc.

(1 Mark)

Q23. Draw the Table which the following HTML code would produce in Netscape:

<TABLE BORDER=10>
<TR><TD>2</TD><TD>1</TD></TR>
<TR><TD>3</TD><TD>5</TD></TR><TR><TD>6</TD><TD>4</TD></TR>
</TABLE>

The border must be thicker than the internal cell divisions. Each cell should contian the appropriate data and have no extra space.

(5 Mark)

7

ClarisWorks [3 Marks]

Q24. Why would you want to define your own Style in ClarisWorks?

> **In order to maintain consistency within the same document. Applying the style can make several changes at once, so it is quicker and easier. It also makes sure that the same changes are applied each time. If you wanted to alter your document, you only have to change the style definition and all the text of that style is altered.**

(1 Mark)

Q25. Explain how the information in a painting document is stored differently from the information in a drawing document.

> **Drawing document uses a vector graphics paradigm. Information is recorded about each object and stored independantly of each other.**
> **Painting documents use bitmaps to store the information, so the picture is mapped into memory with a 1 to 1 mapping between pixels and memory locations.**

(2 Marks)

3

Databases [10 Marks]

Q26. What is the smallest unit in a database?

> **Field**

(1 Marks)

Q27. Name one advantage and one disadvantage of a relational database compared with a flat file database.

> **Advantage of Relational: More flexible, removes anomalies.**
> **Disadvantages: Lose referential integrity. Slower.**

(2 Marks)

Q28. What Normal Form is data in a relational database usually normalized to?

> **3rd Normal Form or 3NF**

(1 Marks)

Q29. What Normal Form is data in a flat file database?

> **1st Normal Form or 1NF**

(1 Marks)

Q30. What are the three types of queries for a relational database?

> **Select, Project and Join.**

(3 Marks)

Suppose a database has the following relation

> employee(<u>employee-id</u>, name, office-no, division)

Q31. What is the name of the table?

> **employee**

(1 Marks)

Q32. What field is the primary key for the relation?

> **employee-id**

(1 Marks)

10

JAVA [45 Marks]

Event (passed as a parameter in methods)	Listener Interface (implements ...)	Listener Methods (must have all these methods defined even if you do nothing in them)
ActionEvent	ActionListener	actionPerformed()
KeyEvent	KeyListener	keyPressed() keyReleased() keyTyped()
MouseEvent	MouseListener	mouseClicked() mouseEntered() mouseExited() mousePressed() mouseReleased()
MouseEvent	MouseMotionListener	mouseDragged() mouseMoved()

Q33. Complete the Java statement below so that the value in the String variable, stringNum, is converted into an int and assigned to the int variable, intNum

```
String stringNum = "55";
int intNum;
  ................
```

```
   intNum = Integer.parseInt( stringNum );
```

(2 Marks)

Q34. Write a Java statement which causes the TextField, tName, to display the string value, "My name:"

```
TextField tName;
......
tName = new TextField(12);
```

```
   tName.setText("My name:");
```

(2 Marks)

Q35. Write a Java statement which will create a new TextField object called tMiles which can contain up to 20 characters

```
TextField tMiles;
......
```

```
    tMiles = new TextField(20);
```

(2 Marks)

Q36.   Complete the Java statement below so that the value in the int variable, intNum, is converted into a String and assigned to the String variable, stringNum:

```
String stringNum;
int intNum = 56;
```

```
    stringNum = String.valueOf(intNum);
```

(3 Marks)

Q37. Write a Java statement which will add the Label object called lKilos to the applet

```
Label lKilos;
lKilos = new Label("Number of Kilos");
```

```
    add(lKilos);
```

(2 Marks)

Q38. Write a Java statement which will assign a random int value from 80 to 99 [80, 81, 82,...99] to the int variable called randInt

```
int randInt;
```

```
    randInt = (int) (Math.random() * 20) + 80;
```

(3 Marks)

Q39. Evaluate the following algebraic expression:

```
(25 / 6) - 16 % 5
```

3

(3 Marks)

Q40. Evaluate the following boolean expression:

```
(3 * 2 + 1 >= 16 % 9)
```

true

(3 Marks)

Q41. What string is assigned to the String variable, stringMessage, in the following piece of code:

```
String stringMessage = "Two results: ";
int intNum1 = 6, intNum2 = 5;
 ......
 stringMessage = stringMessage+intNum1+ " and " + intNum2;
```

"Two results: 6 and 5"

(3 Marks)

Q42. What is the value of the int variable, intResult, after the following piece of code has been executed

```
int intResult = 8, intNum1 = 5;
 .....
if (intNum1 >= 4)
    intResult = intResult + 12;
```

20

(3 Marks)

Q43. Write a Java statement which draws a rectangle in the applet window beginning at pixel (10 across, 20 down) and having width of 40 pixels and height of 80 pixels

```
public void paint(Graphics g){
```

g.drawRect(10,20,40,80);

(2 Marks)

```
}
```

Q44. Write a Java statement which draws a line in the applet window from pixel (30 across, 40 down) to pixel (80 across, 90 down)
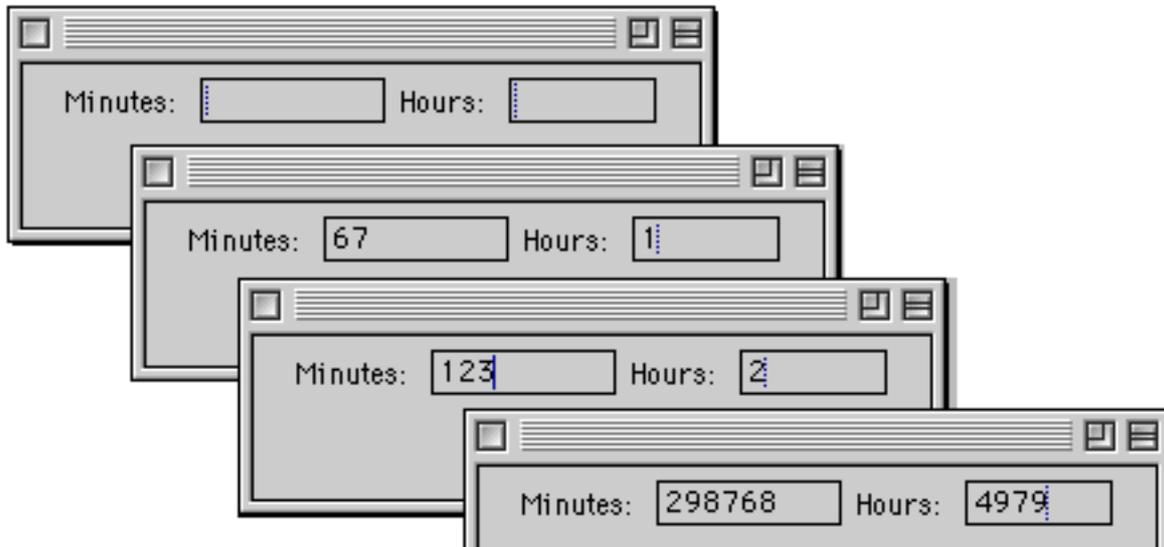
```
public void paint(Graphics g){
```

g.drawLine(30,40,80,90);

(2 Marks)

```
}
```

Q45. The following applet converts the number of minutes, entered by the user, into whole hours. [The applet ignores any minutes which are remaining.] The applet runs as follows:

Add a Button, labelled "Clear", which, when clicked, clears the 'Minutes' TextField and the 'Hours' TextField.   The applet will now run as follows:

Applet after the Clear button has been clicked
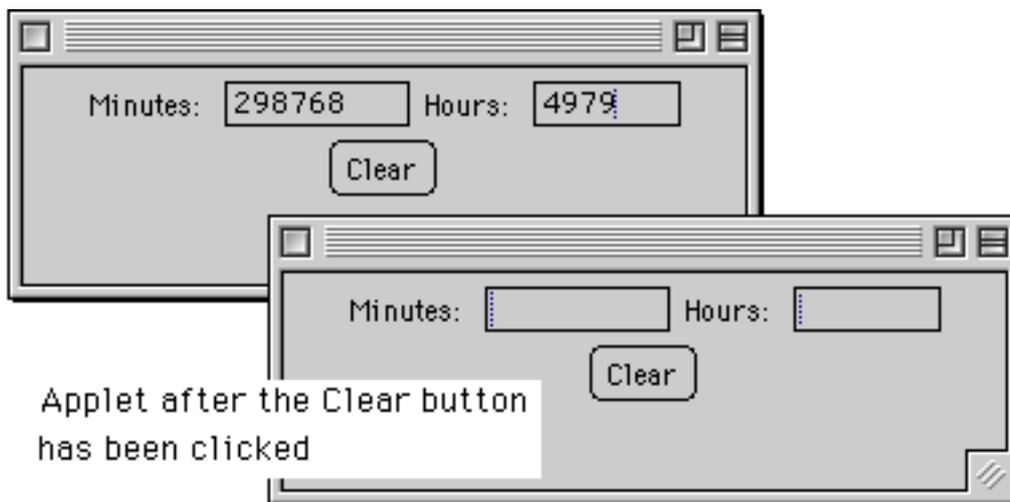
Put your additions into the Java source code shown below:

```
/*Converts minutes to whole hours - ignores the remaining minutes*/
import java.awt.*;
import java.applet.Applet;
import java.awt.event.*;

public class PerMaggioAppletQ1 extends Applet implements ActionListener{
      static final int HOURSTOMIN = 60;
      TextField tMinutes, tHours;
      Label lMinutes, lHours;
      int numMinutes, numHours;
```

```
      Button Clear;
```

```
public void init() {
                    //Create 2 labels
          lMinutes = new Label ("Minutes:");
          lHours = new Label ("Hours:");
                    //Create 2 TextFields
          tMinutes = new TextField(7);
          tHours = new TextField (5);
                    //Add components to applet
          add(lMinutes);
          add(tMinutes);
          add(lHours);
          add(tHours);
               //tMinutes will inform applet if ActionEvent occurs
          tMinutes.addActionListener(this);
```

```
          Clear = new Button("Clear");
          add(Clear);
          Clear.addActionListener(this);
```

```
     }//end if init() method

     public void actionPerformed(ActionEvent e) {
          if (e.getSource() == tMinutes){
               numMinutes = Integer.parseInt(tMinutes.getText());
               numHours = numMinutes/HOURSTOMIN;
               tHours.setText(String.valueOf(numHours));
          }
```
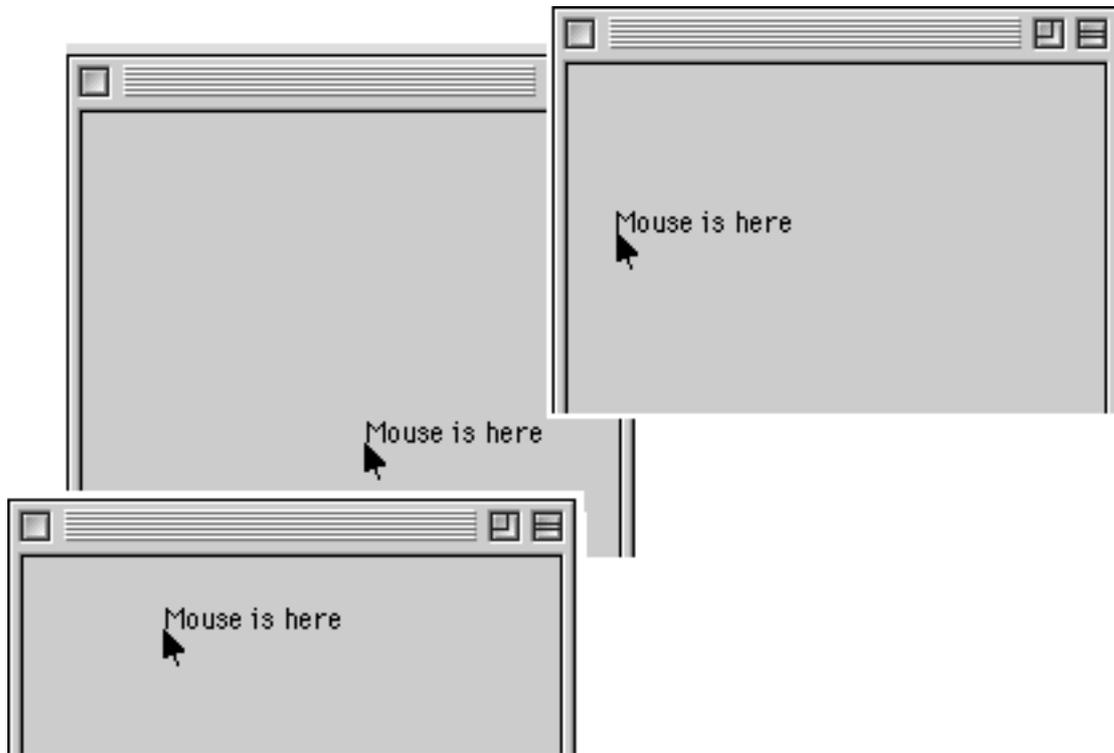
```
          else if (e.getSource() == Clear){
               tMinutes.setText("");
               tHours.setText("");
          }
```

```
     }//end of actionPerformed()
}//end of applet
```

(5 Marks)

Q46. Write a Java applet which displays the String, "Mouse is here" **whenever the mouse is moved.** The String, "Mouse is here", is displayed in the applet area wherever the mouse position is. Your finished applet should run as follows:


```
/*Displays "Mouse is here" wherever the mouse is while mouse is
being moved*/

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

//CONTINUE YOUR SOURCE CODE HERE
```

```
    public class PerMaggioAppletQ46 extends Applet
                        implements MouseMotionListener{

    int currentX, currentY;
    boolean isMoved = false;


    public void init() {
        this.addMouseMotionListener(this);
    }


    public void mouseDragged(MouseEvent e) {
        isMoved = false;
        repaint();
    }
```

```
    public void mouseMoved(MouseEvent e) {
        isMoved = true;
        currentX = e.getX();
        currentY = e.getY();
        repaint();        //1
    }

    public void paint(Graphics g) { //1
        if (isMoved == true)
            g.drawString("Mouse is here",currentX,
currentY);
    }
}
```

45

Overflow Sheet 1

Write the question number next to your answer.
You must **ALSO** indicate in the allotted space that you have used the overflow sheet.

Rough Working

This sheet will **NOT** be marked

Rough Working

This sheet will **NOT** be marked

Rough Working