THE UNIVERSITY OF AUCKLAND

TEST 2002

COMPUTER SCIENCE

Introduction to Computing and Applications

(Time Allowed: ONE hour)

Surname **(Family name)**	
First Name(s) **(Given names)**	
Student ID:	

NOTE: Attempt **ALL** questions.
Write your answers in the space provided.
There is space at the back for answers that overflow the allotted space
Calculators are **NOT** permitted

Section	Marks	Possible Marks
Java		**40**
General Computing		**10**
Total		**50**

Java (40 marks)

1. Below is a program segment and a Java Console window. Write the output of the program in the Java Console window. You must take care to be exact. Please represent a space by a ^ and any blank line by ~~~.

```
//   What is the output?

final int THIS_NUMBER = 4;

int counter, upTo;
counter = 3;
upTo = 7;

System.out.println("2 * " + counter + " = " + (2 * counter) );

counter = counter + 5;


System.out.println(counter + " * " + (counter + 1) + " = " +
                                        (counter * (counter +1)) );

counter = counter - 3;


System.out.println(upTo + " * " + counter + " = " + (upTo *
                                                      counter));

System.out.println(upTo + " / " + THIS_NUMBER + " = " + (upTo /
                                                    THIS_NUMBER));
```

Write the output in the Java Console window below:

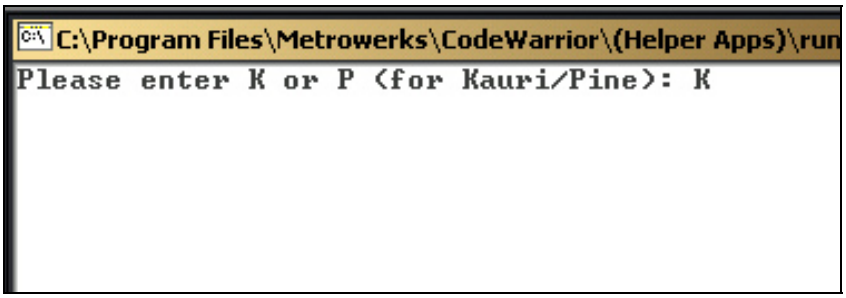
(6 Marks)

CONTINUED

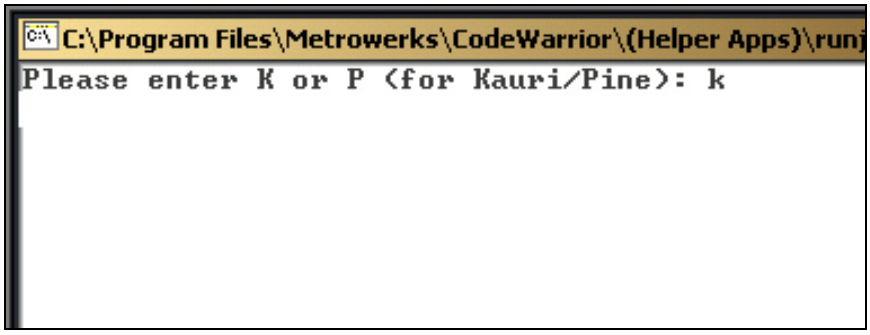
2. Below is a program segment and two questions

```
//    What is the output?
      char name;

      System.out.print("Please enter K or P (for Kauri/Pine): ");
      name = Keyboard.readChar();

      if (name == 'K')
            System.out.print("It is a native ");

      else if (name == 'P')
            System.out.print("It is not a native ");

      System.out.println("tree");
```

(a) What will be displayed in the Java Console window if the user enters the letter K from the keyboard and presses the Enter key?



(b) What will be displayed in the Java Console window if the user enters the letter k from the keyboard and presses the Enter key?



(4 Marks)

3. Below is a program segment and a Java Console window. Write the output of the program in the Java Console window. You must take care to be exact. Please represent a space by a ^ and any blank line by ~~~.

```
//    What is the output?
      final int THIS_NUMBER =2;

      int counter;
      counter = 1;

      do {
            System.out.print(counter);
            counter = counter + 1;
      } while ( counter <= THIS_NUMBER);
      System.out.println("End of first loop");

      do {
            System.out.println(counter);
            counter = counter + 1;
      } while ( counter <= 3 * THIS_NUMBER);
      System.out.println("End of second loop");

      while ( counter > 0) {
            System.out.println("X-");
            counter = counter - 2;
      }
      System.out.println("End of third loop");
```

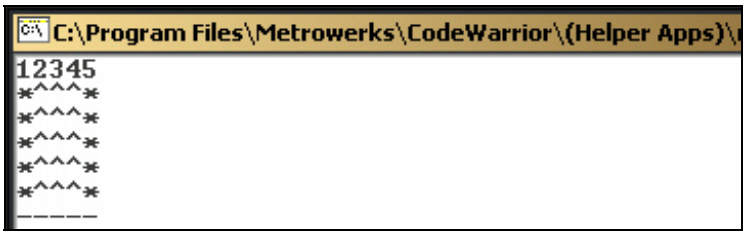
Write the output in the Java Console window below:

CONTINUED

(8 Marks)

Answer Sheet

4. Below is a program segment to draw a pattern, with some boxes for you to fill in. Complete the program segment so that it produces the output shown in the Java Console window:




```
final int MAX = 5;
int i, j;

i = 1;
// Print a line of numbers from one to MAX
// You must use a loop
```

[ ]

```
System.out.println();
// Print MAX lines of stars and carot marks
i = 0;
do {
        j = 1;
        System.out.print("*");

        // Print a line of (MAX - 2) carot marks (^s)
        // You must use a do while loop
```

[ ]

```
        System.out.println("*");
        i = i + 1;
} while ([ ]);

// Print a line of MAX minus signs
// using a while loop
i = 1;
 while [ ]  {
         System.out.print("-");
         i = i + 1;
}
```

(10 Marks)

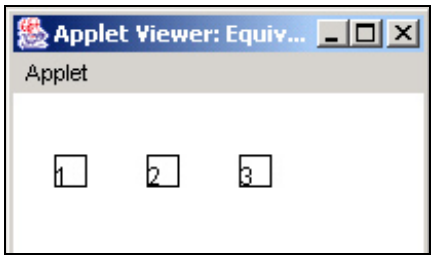
CONTINUED

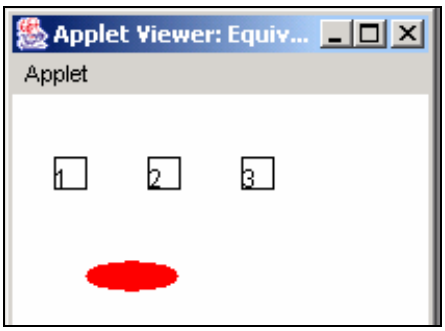
Answer Sheet

Name: _____ - 7 - COMPSCI 111FC

5. Below is a program segment with some spaces for you to fill in. Your program should initially display the three buttons as shown in the leftmost Applet window shown below.

- If the user clicks in button 1 a red circle of 1 unit in diameter is filled in.
- If the user clicks in button 2 a red oval of width 2 units and height 1 unit is filled in
- If the user clicks in button 3 a red oval of width 3 units and height 1 unit is filled in (see the rightmost Applet window).





NOTE:

- The width and height of each button is one unit.
- The squares are separated by a distance of 3 units.
- The numbers are in the bottom left hand corner of each square.
- You must use the variables provided.
- You can use the integers 1, 2, 3, 4, 5, 6 & 7 in your program.

```
// Program to draw an oval whose size depends on the user's mouse click

        int left1; // The leftmost position of the first small square
        int top1;  // The top of the three small squares
        int left2; // The leftmost position of the oval
        int top2;  // The top of the oval

        int unit;   // The unit size

    // Declare any extra variables here



    // initialize

        left1 = 20;
        left2 = 35;
        top1 = 30;
        top2 = 80;
        unit = 15;

     // initialize your variable(s) here
```

CONTINUED

```
// Use a single loop to:
  // Draw the three squares
  // And place a number in each









// Get the mouse coordinates of the click point



// Set the color  to red



// Check which square has been clicked in and
// fill the corresponding oval (no loop is required here)
```

12 Marks

CONTINUED

General Computing (10 marks)

6. List 2 common symptoms of OOS.

(1 mark)

7. Give an example of a secondary storage device.

(1 mark)

8. Give the names of the founders of Apple Computers

(2 marks)

9. How many different numbers can be represented using 4 bits?

(1 mark)

10. Convert the following decimal number to binary: 17

(1 mark)

CONTINUED

11. Give 4 examples of computer software companies (other than Microsoft) and give an example of a product that each company produces (e.g. Microsoft produces Windows XP).

(4 marks)

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