THE UNIVERSITY OF AUCKLAND

TEST 2003

COMPUTER SCIENCE

Introduction to Computing and Applications

Time Allowed: ONE hour

(100 Marks)

Surname **(Family name)**	
First Name(s) **(Given names)**	
Student ID:	
Lab Time:	Mon Tue Wed Thur Fri (circle) 10 1 2 4

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

History of Computers (10 marks)

1. What is the computer generation that we are currently in?

2. What major component characterised 1st generation computers?

3. What was the world's first spreadsheet application called?

4. The Intel 4004 (developed in 1971) was the world's first 4th generation microchip. What was so special about it?

5. What caused IBM to stop producing personal computers in the early 1990's?

6. Mechanical calculators were used prior to the arrival of 1st generation computers. Choose a mechanical calculator that has been discussed in lectures. Give its name and briefly describe what it did.

CONTINUED

Hardware and Software (10 marks)

7. Define what a *bus* is. (The computer bus, not the vehicle) Give one example of a bus in modern computers.

8. Give one advantage and one disadvantage of using magnetic tape for storage.

9. Name 1 example of *primary storage* and 3 examples of *secondary storage*.

10. Name two components of an operating system and briefly describe what they do.

Binary (15 marks)

11. Solve the following equations, show your working.

```
  1 1 1 1 0 1 1 0          1 1 1 1 1 1 0 0 0 1
+ 1 0 1 1 1 1 1 1        +         1 1 1 1 1
  ---------------          -------------------
```

```
  1 0 0 0 0 0 0          1 0 1 1 0 1 0 0 0
-       1 1          -   1 0 1 0 1 0 1 1 1
  _____________          _________________
```

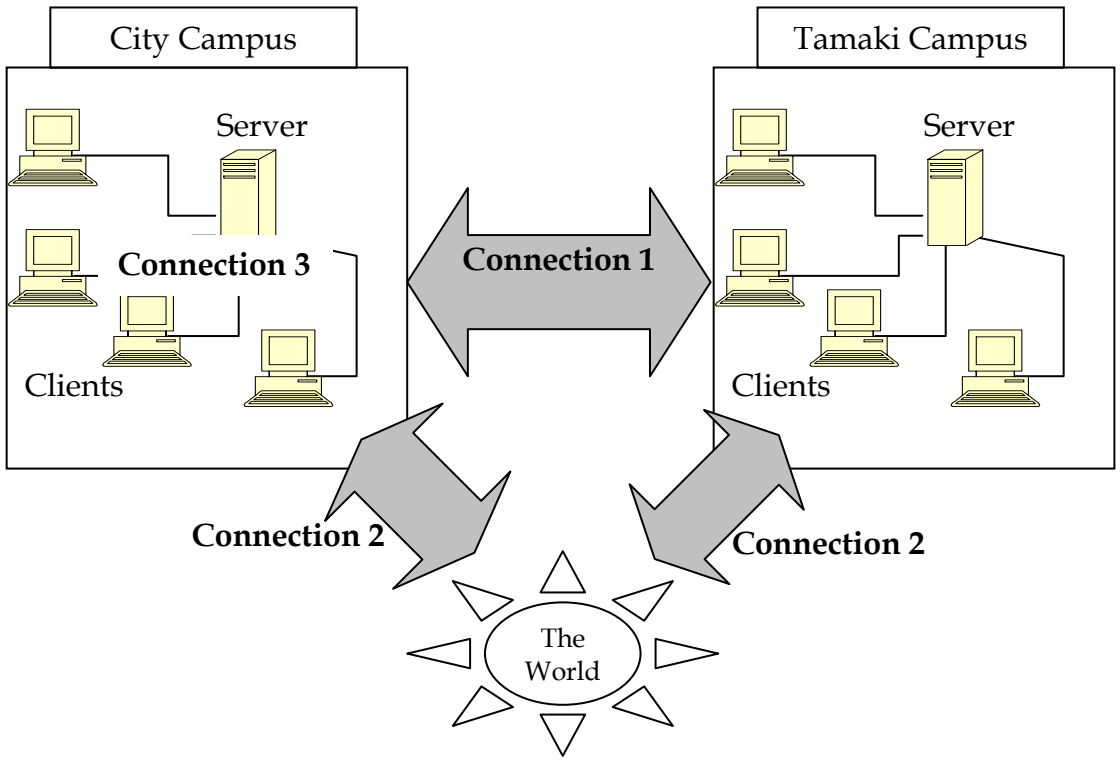
12. Convert the following Binary numbers into decimal:

a) 1 1 1 0 0 1 1 1

b) 1 0 0 0 1 0 1 0

Networks and the Internet (5 marks)

13. The diagram shows a simple model of the University network. Identify the types of network each connection indicates. The Labels you have to choose from are: LAN, WAN and Internet



Spreadsheets (20 marks)

Formulae that ***might*** be helpful for this section:

If(logical, true_value, false_value)	**Count(Cell Range)**
Sum(Cell Range)	**And(logical_1, logical_2)**
Average(Cell Range)	**Or(logical_1, logical_2)**
Max(Cell Range)	**Not(logical_1)**
Min(Cell Range)	**Vlookup(lookup_value, Cell Range, index, approximate match <true/false>**

14.

	A	B	C	D	E	F
1		**Weekly Income**	**Weekly Expenses**	**Savings**	**% of Earnings**	
2	Bobby	500	388	112	78	**Save More**
3	Joe	250	250	0	100	**Save More**
4	Mary	600	195	405	33	**Good Work!**
5	Sue	300	145	155	48	**Good Work!**
6			**Total**	672		

Bob, Joe, Mary and Sue are trying to work out how much they can collectively save on a weekly basis to go on holiday. They have created a simple spreadsheet listing their weekly income and expenses.

In a vain effort to aid their saving, they have also listed the percentage of their income that their expenses take up. A message is displayed next to this percentage to indicate how well that person is doing based on this percentage. A percentage score of more than 50 displays the message "Save More", while a score equal to or less than 50 displays "Good Work!"

The spreadsheet has been designed well, the formulae have been written so that they can be filled down.

With this in mind, what formula might they have used in each of the following cells?

D2

D6

E2

F2:

	A	B	C	D	E	F
1	Crate No.	Apple Grade	Price ($)			
2	888147	A	50		Grade	Price ($)
3	888321	D	10		A	50
4	888369	C	20		B	35
5	888452	A	50		C	20
6	888456	D	10		D	10
7	888489	B	35			
8	888654	B	35			
9	888684	C	20			
10	888785	D	10		Average Price	26.67
11					Number of Crates	9
12					Cost	240

15. An Apple export company wishes to export apples it receives from various orchards to the world. Each crate of apples is graded according to quality, with each grade of apples fetching a different price. Unfortunately the price of apples has been fluctuating dramatically, so it can never be predicted what a particular grade of apple is going fetch at the time data is entered.
The company has solved this problem by creating a lookup table in their spreadsheet. With this table they can simply update the prices for each grade of apple and their spreadsheet will automatically update the cost of the apples. They have also designed their spreadsheet well, so that they can fill down their formulae to save time.

What formulae may they have used in the following cells:

C2:

F10:

F11:

F12:

CONTINUED

HTML (25 marks)

```
<HTML>
<HEAD>
        <TITLE>
                My Alien Page
        </TITLE>
</HEAD>
<BODY>
        <!—- Boy this code is good ->
        <H1>Oh My Goodness!</H1>
        The Aliens are here!
        <HR>
        <H4>I am not crazy…</H4>
        I
        AM<BR>
        <STRONG>NOT</STRONG> <BR>
        Crazy
        I tell you.
</BODY>
</HTML>
```

16. Above is a listing of the source code for an HTML page. You are to draw the output of this page in the window below.

17. To the right is a screenshot of a table from an html page. Write html code that would result in this table being produced. Skeleton code has been provided to get you started. Make sure you indent your code correctly.

Name	Income	Expense
Bob	450	200
Sue	500	250

NB: The border around the table is set to "2".

(10 marks)

Alice (15 marks)

18. Variables can store various types of data. Name 3 of the data types that Alice uses.

19. Name two loops that are used in Alice and describe what each loop does.

20. The event "While something is true" will call 3 different methods, depending on the state of a Boolean condition or question. **What** are these 3 methods called and **when** are they called?

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

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