THE UNIVERSITY OF AUCKLAND

FIRST SEMESTER, 2012
Campus: City

COMPUTER SCIENCE

Mastering Cyberspace: An Introduction to Practical Computing

(Time Allowed: TWO hours)

NOTE:
You must answer **all** questions in this exam.
No calculators are permitted
Answer Section A (Multiple choice questions) on the Teleform answer sheet provided.
Answer Section B in the space provided in this booklet.
There is space at the back for answers that overflow the allotted space.

Surname	
Forenames	
Student ID	
Login (UPI)	

	Question	Mark	Out Of
1 - 25	Multiple Choice		50
26	Programming using Python		10
27	Spreadsheets		10
28	Databases		10
29	LaTeX		10
30	XHTML and CSS		10
	TOTAL		100

SECTION A

MULTIPLE CHOICE QUESTIONS

Each question in this section is worth **2 marks**. There is only **one** correct answer for each question. For each question, choose the **best** answer according to the information presented in lectures. Select your preferred answer on the Teleform answer sheet provided by shading in the appropriate box.

Question 1
[2 marks] Given a machine that uses 5 dials, with each dial containing the digits 0 to 9, how many different numbers can we represent?

    (a) 32
    (b) 99,999
    (c) 10,000
    (d) 512
    (e) 100,000

Question 2
[2 marks] Which of the following decimal numbers is equal to the binary number 1000 0000?

    (a) 1000
    (b) 16
    (c) 256
    (d) 64
    (e) 128

Question 3
[2 marks] Which of the following statements is FALSE?

    (a) 1 MB is greater than 1MiB
    (b) 1 GiB is 2^{30} bytes
    (c) 1 GB is 10^9 bytes
    (d) 1 KB equals 1000 bytes
    (e) 1 MiB is 2^{20} bytes

Question 4

[2 marks] Which of the following statements is TRUE?

    (a) Computers usually have more primary memory than secondary memory.

    (b) CPUs must be kept cool otherwise they may malfunction.

    (c) Because CPUs are electronic with no moving parts, the temperature they operate at is not important.

    (d) Mass storage is much faster to access than RAM.

    (e) Expansion cards provide the primary memory the CPU needs to run.

Question 5

[2 marks] Which of the following statements about Solid State Drives (SSDs) is FALSE?

    (a) SSDs are cheaper than magnetic disks of the same capacity.

    (b) SSDs are faster for most purposes than magnetic disks.

    (c) USB memory sticks are small SSDs.

    (d) SSDs have no moving parts.

    (e) The computer uses SSDs in the same way as it uses magnetic disks.

Question 6

[2 marks] Which of the following is NOT an Operating System?

    (a) GNU General Public License

    (b) iOS

    (c) OS X

    (d) Microsoft Windows

    (e) Android

Question 7

[2 marks] Which of the following statements about Command Line Interfaces (CLIs) and Graphical User Interfaces (GUIs) is FALSE?

    (a) CLIs are easier for beginners than GUIs.

    (b) Most current personal computer operating systems use GUIs.

    (c) CLIs are text-based.

    (d) GUIs use windows, icons, menus and pointers.

    (e) CLIs provide powerful ways to combine different commands.

Question 8

[2 marks] Which of the following statements about the New Zealand three strikes copyright law, the "Copyright (Infringing File Sharing) Amendment Act 2011", is FALSE?

    (a) It is the job of the Internet Service Providers to pass notices of infringement on to their customers.

    (b) If you are not the Internet service account holder you can still be fined for copyright infringement under the amendment.

    (c) The copyright holders inform the Internet Service Provider of alleged copyright violations.

    (d) It is possible for a person to be fined even if someone else illegally accessed their Internet account.

    (e) The Internet service account holder can be fined up to $15000 after three notices about infringing material.

Question 9

[2 marks] Which of the following is the least effective way to safeguard children online?

    (a) Maintain a black list of sites the children are not allowed to access.

    (b) Filter content based on images and keywords.

    (c) Talk to the children about Internet content.

    (d) Keep the computers that children use in a public place.

    (e) Maintain a white list of sites the children are allowed to access.

Question 10

[2 marks] Which of the following would be the best example of a Trojan Horse?

    (a) A music player which crashes every time a song by Michael Jackson is played.

    (b) A racing car game which sends your address book information to another user.

    (c) An email attachment which deletes the contents of your disk drive.

    (d) The Internet Worm of Robert Morris.

    (e) The blue screen of death.

Question 11

[2 marks] Which of the following should you do to protect your computer from malware?

    (a) Only install programs from trusted sources.

    (b) Don't open executable files sent by email.

    (c) Keep your operating system up to date.

    (d) Scan files with a virus checker.

    (e) All of the above.

Question 12
[2 marks] Which of the following is NOT a protocol?

    (a) POP3
    (b) ISP
    (c) IMAP
    (d) HTTP
    (e) SMTP

Question 13
[2 marks] Which of the following statements about Spam is FALSE?

    (a) Spam comprises only a very small percentage of all email sent.
    (b) Spamming is illegal in many countries, but enforcement is difficult.
    (c) Many email clients provide Spam filters.
    (d) Spam is unsolicited bulk email.
    (e) Spam was named after a brand of canned meat.

Question 14
[2 marks] Which of the following statements about forums is FALSE?

    (a) Forums allow the formation of an online community.
    (b) Forums are made up of threads.
    (c) Forums have an administrator with the power to edit and delete.
    (d) Forums are a form of asynchronous communication.
    (e) A forum is an online diary.

Question 15
[2 marks] Which of the following statements about blogs is FALSE?

    (a) They can allow children to invite the wrong kind of attention.
    (b) They give people a voice.
    (c) They can allow people to provide too much information.
    (d) They do not allow people to provide enough information.
    (e) They are an enabling technology for grassroots movements.

CONTINUED

Question 16
[2 marks] Which of the following statements about wikis is FALSE?

    (a) Posts are always displayed in chronological order.
    (b) A wiki is easily edited.
    (c) Anyone with appropriate access can edit any page.
    (d) Wikipedia is an example of a wiki.
    (e) A wiki is like a simple online database.

Question 17
[2 marks] Which of the following is used to prevent unauthorized access to or from a private network?

    (a) A proxy
    (b) A web server
    (c) A cache
    (d) A firewall
    (e) A web browser

Question 18
[2 marks] What does WYSIWYG stand for?

    (a) What you sent is what you gave
    (b) What you send is what you gave
    (c) What you sent is what you get
    (d) What you see is what you get
    (e) What you see is what you gave

Question 19
[2 marks] Assuming you send an email that has addresses listed in the TO, CC and BCC fields, which of the following statements is TRUE?

    (a) The recipients listed in the CC field can see the addresses of people listed in the BCC field.
    (b) The recipients listed in the BCC field can't see the addresses of the people listed in the CC field.
    (c) The recipients listed in the TO field can't see the addresses of people listed in the CC field.
    (d) The recipients listed in the TO field can't see the addresses of people listed in the BCC field.
    (e) The recipients listed in the BCC field can't see the addresses of the people listed in the TO field.

Question 20

[2 marks] Which of the following file formats are good for icons and simple graphics?

    (a) GIF, PNG, and SVG

    (b) GIF and JPEG

    (c) Only PNG

    (d) Only GIF

    (e) PNG, JPEG, and SVG

Question 21

[2 marks] If you have a bit map image that is 80x70 pixels with 16 colours, how much memory would be required?

    (a) 11200 bits

    (b) 11200 bytes

    (c) 280 bytes

    (d) 280 bits

    (e) 2800 bytes

Question 22

[2 marks] Which of the following statements was Searle's main point behind the Chinese room?

    (a) That John Searle likes sitting in a room with lots of books.

    (b) Internal processes do matter.

    (c) That Chinese is a hard language for computers to understand.

    (d) That it is easy to fool a human.

    (e) That if you can converse in Chinese, you must be intelligent.

Question 23

[2 marks] Which of the following statements about strong AI and weak AI is FALSE?

    (a) Many AI researchers think that you need to define the words "thinking" and "intelligent" much more precisely before you can sensibly discuss these issues.

    (b) The Turing test is focused on seeing if a computer can act intelligently.

    (c) Weak AI focuses on making computers act as if they are intelligent.

    (d) Strong AI states that if a computer acts as if it is intelligent, then it is actually thinking and not simulating thinking.

    (e) None of the above.

Question 24

[2 marks] Which of the following computers was the first commercially available personal computer?

    (a) Commodore 64

    (b) Apple II

    (c) Apple I

    (d) Altair 8800

    (e) IBM PC

Question 25

[2 marks] Where was the original development work for Graphical User Interfaces and WYSIWYG done?

    (a) Microsoft Research Lab, Seattle

    (b) Apple Computer Inc., Cupertino

    (c) Xerox's Palo Alto Research Center (PARC)

    (d) Adobe Inc. Technology Labs, San Jose

    (e) IBM Research, Almaden

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK.

SECTION B

Answer all questions in this section in the space provided. If you run out of space then please use the Overflow Sheet and indicate in the allotted space that you have used the Overflow Sheet.

26. Programming Using Python (10 marks)

(a) Write a Python program that prints out the larger of two integer numbers entered by the user. The following examples show the exact formatting expected for the prompts. Your program must produce the same output as shown below given the input shown below. You can assume that the two numbers entered by the user will never be the same.

Example 1:
```
The first number? 10
The second number? 3
10 is the largest number.
```

Example 2:
```
The first number? 5
The second number? 17
17 is the largest number.
```

(4 marks)

(b) Show the output from the following program. Show each space in the output with the "^" character. Assume that the user types the value **4** when the program pauses for input.

```
print ("I can multiply by 2.")
number = int(input("What is the number to multiply? "))
answer = number * 2
print ("2 x", number, "=", answer)
```

(3 marks)

(c) Show the output from the following program.

```
power = 1
count = 0
while count < 5:
    power = power + power
    print(power)
    count = count + 1
print(power)
```

(3 marks)

CONTINUED

27. Spreadsheets (10 marks)

	A	B	C
1	3	7	10
2	23	43	66
3	31	5	36
4	2	1	3

(a) In the Microsoft Excel spreadsheet above, the values in the first column are added to the values in the second column to give the corresponding values in the third column. What is the **best** formula to use in **Cell C1**? Your formula should calculate the sum of A1 plus B1. You must ensure that your formula is able to be filled down.

(3 marks)

	A	B	C
1	5	6	30
2	3	2	5
3	76	3	79
4	3	76	228

(b) In the Microsoft Excel spreadsheet above, the contents of each cell in the third column depends on how the value of the corresponding first column cell compares to the value of the corresponding second column cell. You need to fill in the **best** formula to use in **Cell C1**. Your formula should check to see if the value in A1 is less than the value in B1. If it is less than the value in B1, then C1 is the product of A1 times B1, otherwise it is the sum of A1 plus B1. **Note:** you should use an IF function in this cell. You must ensure that your formula is able to be filled down.

=if(_____,_____,_____)

(3 marks)

CONTINUED

	A	B	C	D	E	F
1					**Quantity**	**Unit Price**
2					1	10
3					5	9
4					10	7
5	**Customer**	Tom	Mike	Sarah	20	4
6	**Quantity**	6	12	3		
7	**Unit Price**	9	7	10		
8	**Total Price**	54	84	30		

(c) The Microsoft Excel spreadsheet above calculates the total price of a customer ordering a specific quantity of units. The Unit Price in Row 7 depends upon the Quantity ordered (Row 6), and will be extracted from the Unit Price table in the rightmost two columns of the spreadsheet. The Total Price (shown in the 8th row) is the Quantity ordered times the Unit Price.

What is the **best** formula to use in **Cell B7**? Your formula should look up the Quantity in the Unit Price table and retrieve the appropriate Unit Price. Note: You must ensure that your formula is able to be filled right.

The syntax of the **vlookup** function to search the first column of a table, and then return a value from any cell on the same row of the table is given below:
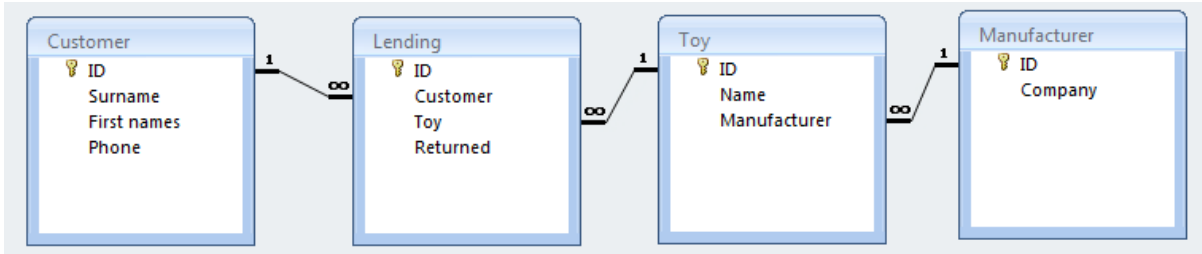
```
vlookup(lookup_value, table_array, col_index_num,[range_lookup])
```

=vlookup(_____,_____,_____,_____)

(4 marks)

28. Databases (10 marks)

Use the following Microsoft Access relationship diagram to answer the questions in this section. This simple database structure is used by a toy library. Note that the primary key of each table uses the AutoNumber type to ensure uniqueness.

(a) What **foreign keys** (if any) are in the **Lending** table?

(3 marks)

(b) What is the appropriate data type for the **Manufacturer** field in the **Toy** table?

(1 mark)

(c) Fill in the query-by-example form below so that it generates a query that will display a list of customers who have borrowed toys manufactured by Mattel. The list will contain the customer's surname and the name of the Mattel toy borrowed. An example of the results of the query is given below:

Surname	Name
Simpson	Sleepy Susan
Griffin	Rocking Horse
Simpson	Turtle Pull-Along

Field:				
Table:				
Sort:				
Show:	☐	☐	☐	☐
Criteria:				

(3 marks)

CONTINUED

(d) Write an SQL expression that lists the first names and phone numbers of all customers with the surname of "Jones". An example of the results of the query is given below:

First names	Phone
Alistair	926-9387
Mary	928-9487
Susan	947-8105
Peter	920-8598

(3 marks)

CONTINUED

29. LaTeX (10 marks)

Write the LaTeX code that will produce the following output:

<div style="border:1px solid black;padding:1em;">

<div align="center">

Quick Maths

A. Student

Semester One, 2012

</div>

1   Gauss and the Maths teacher

A teacher asked the students to add all of the integers from 1 up to 100. Johann Gauss quickly gave the answer as 5050.

1.1   How did Gauss do it?

$$\sum_{i=1}^{100} i = 1 + 2 + 3 + \ldots + 98 + 99 + 100$$

Gauss rearranged this as:

$$1 + 100 + 2 + 99 + 3 + 98 + \ldots + 48 + 53 + 49 + 52 + 50 + 51$$

which is 101 fifty times

1.1.1   More generally

The sum of the first n integers is:

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2} \tag{1}$$

</div>

The following LaTeX commands have been included as a reference. You will not need to use all of these commands. Note that the basic document structure has been completed for you.

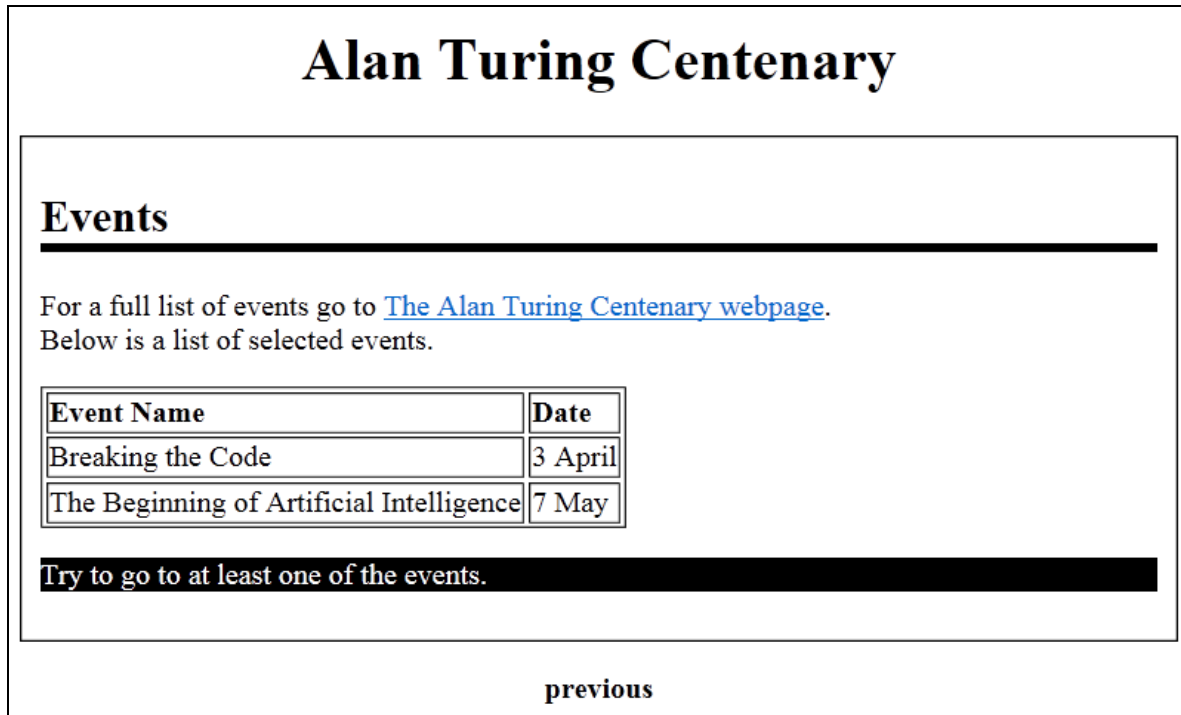| *Normal commands*	*Environments*	*Math mode commands*
\emph{}	itemize	$
\section{}	enumerate	\sum_{}^{}
\subsection{}	verbatim	\sum
\subsubsection{}	flushright	\frac{}{}
\textbf{}	center	\sqrt{}
\title{}	quote	\cdots
\author{}	displaymath	\ldots
\date{}	equation	
\maketitle	quotation	^
\item		_

```
\documentclass[a4paper]{article}
\begin{document}




\end{document}
```

(10 marks)

30. XHTML and CSS (10 marks)

The following screenshot shows the body of a web page created using XHTML 1.0 strict and
    Cascading Style Sheets:

Complete the XHTML code below so that it produces the output shown above.

You **must** use the styles defined in the internal style sheet in the head section below, and
 must not define any new styles.

Note: The url for the Alan Turing Centenary webpage is:
        http://www.mathcomp.leeds.ac.uk/turing2012/

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE html
     PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
     "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">

<head>
   <title>Alan Turing</title>
<style type="text/css">

h1 {
   text-align: center;
}
h2 {
   border-bottom-color: black;
   border-bottom-style: solid;
   border-bottom-width: thick;
}
```

CONTINUED

```
.events{
  border-color: black;
  border-style: solid;
  border-width: thin;
  padding: 10px;
}
.invert {
  background-color: black;
  color: white;
}
.label {
  font-weight: bold;
}
#footer {
  text-align: center;
  font-weight: bold;
}

</style>
</head>

<body>

<!-- Main heading -->
```

(1 mark)

```
<!-- Events heading, etc.-->
```

(3 marks)

CONTINUED

```
<!-- Events table with 2px border -->
```


(3 marks)

```
<!-- Events bottom -->
```


(2 marks)

```
<!-- Footer -->
```


(1 mark)

```
</body>
</html>
```

CONTINUED

- Overflow Sheet 1 -
Write the question number and letter next to your answer. You must ALSO indicate in the allotted space that you have used the overflow sheet.

- Overflow Sheet 2 -
Write the question number and letter next to your answer. You must ALSO indicate in the allotted space that you have used the overflow sheet.

Rough Working – This page will not be marked

Rough Working – This page will not be marked

Rough Working – This page will not be marked