THE UNIVERSITY OF AUCKLAND

SUMMER SEMESTER, 2011
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
                Write your answers in the space provided.
                There is space at the back for answers that overflow the
                allotted space.

Surname	
Forenames	
Student ID	
Login (UPI)	

	Question	Mark	Out Of
1	Hardware and Software		15
2	Internet		15
3	Programming using Python		12
4	Spreadsheets		13
5	XHTML and CSS		12
6	Databases		13
7	LaTeX		12
8	AI and Social Issues		8
	TOTAL		100

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1. Hardware and Software (15 marks)

(a) What does RAID stand for?

(2 marks)

(b) Name **two** standard slots which can be used to plug extension cards into the Motherboard.

(i)

(ii)

(2 marks)

(c) Name **three** important laptop criteria you have to consider when buying a laptop.

(i)

(ii)

(iii)

(3 marks)

CONTINUED

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(d) What is software?

(2 marks)

(e) Name **two** software standards and provide **one** example for each standard.

(i)

Example:

(ii)

Example:

(4 marks)

(f) Name **one advantage** and **one disadvantage** of text-based command line interfaces.

Advantage:

Disadvantage:

(2 marks)

CONTINUED

2. Internet (15 marks)

(a) What does LAN stand for? What does WAN stand for? What is the difference between LAN and WAN?

LAN:

WAN:

Difference between LAN and WAN:

(3 marks)

(b) Name **four** common internet protocols.

(i)

(ii)

(iii)

(iv)

(4 marks)

(c) What is spam?

(2 marks)

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(d) What does ISP stand for? What does an ISP do?

(4 marks)

(e) What are the dangers of any electronic communication?

(2 marks)

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3. Programming using Python (12 marks)

(a) Write a program that asks the user to enter the number of coins two players will begin a game with. If the first player has **greater than or equal to** the number of coins of the second player, the program prints: `Player One has more coins.` Otherwise, it prints: `Player Two has more coins.`

Your program must also determine the probability that Player One will lose the game, given by the following equation:

    Probability = Player Two's coins / (Player One's coins + Player Two's coins)

i.e. by dividing the number of coins **Player Two** has by the **total** number of coins.

For example, if the user enters **8** for Player One and **12** for Player Two, the output that is expected from your program is shown below:

```
Enter Coins for Player One: 8
Enter Coins for Player Two: 12
Player Two has more coins.
Probability that Player One will lose: 0.6
```

(6 marks)

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(b) Complete the output produced by the following program when the user enters **5** at the prompt.

```python
curr = int(input("Please enter a number: "))
last = 7

while curr < last:
    print("current:", curr)

    if last - curr < 2:
        print("1")
    else:
        print("2")
    curr = curr + 1

print("current:", curr)
```

```
Please enter a number: 5
current: 5
2
current: 6
1
current: 7
```

(6 marks)

4. Spreadsheets (13 marks)

Questions (a) to (c) refer to the spreadsheet shown below. The spreadsheet lists scores (over 3 rounds) for a set of players. A player achieves a bonus if their total score exceeds 200 points. The value of the bonus is a percentage (as specified in cell C2) of the player's total score.

	A	B	C	D	E	F	G	H	I	J
1										
2		**Bonus:**	10.00%							
3										
4		**Player**	**Round 1**	**Round 2**	**Round 3**	**Total**	**Bonus Achieved**	**Bonus Score**	**Final Score**	
5		Adam	32	45	35	112	N	0	112	
6		Greg	87	90	82	259	Y	25.9	284.9	
7		Jude	23	87	80	190	N	0	190	
8		Jimmy	5	13	12	30	N	0	30	
9		Lucy	76	85	82	243	Y	24.3	267.3	
10										

(a) What is the **best** formula to use in cell F5? The formula must be able to be filled down.

(2 marks)

(b) Cell G5 records whether a player has received a bonus ("Y"), or not ("N"). A player achieves a bonus if their total score in cell F5 exceeds 200 points. What is the **best** formula to use in cell G5? The formula must be able to be filled down.

(2 marks)

(c) Cell H5 lists the bonus amount a player has achieved. This will be 0 if the player has not achieved a bonus (i.e. cell G5 = "N"). Otherwise the value of the bonus is a percentage (as specified in cell C2) of the player's total score in cell F5.

What is the **best** formula to use in cell H5? The formula must be able to be filled down.

(3 marks)

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Questions (d) and (e) refer to the spreadsheet shown below.

	A	B	C	D	E	F	G	H	I
1									
2		**Chess Ratings Scale Table**							
3									
4		**Rating**	**Class**			**ID**	**Player**	**Rating**	**Class**
5		0	Class D			1	Adam	1800	Class A
6		1400	Class C			2	Greg	2475	Senior Master
7		1600	Class B			3	Jude	1998	Class A
8		1800	Class A			4	Jimmy	750	Class D
9		2000	Expert			5	Lucy	2210	National Master
10		2200	National Master						
11		2400	Senior Master				*Average:*	*1846.6*	
12									

(d) Cell I5 uses a VLOOKUP formula to look up the **class** of a chess player, using their **rating** from cell H5.

What is the **best** formula to use in cell I5? The formula must use a VLOOKUP function to get the appropriate value from the table in cells B5:C11, and must be able to be filled down.
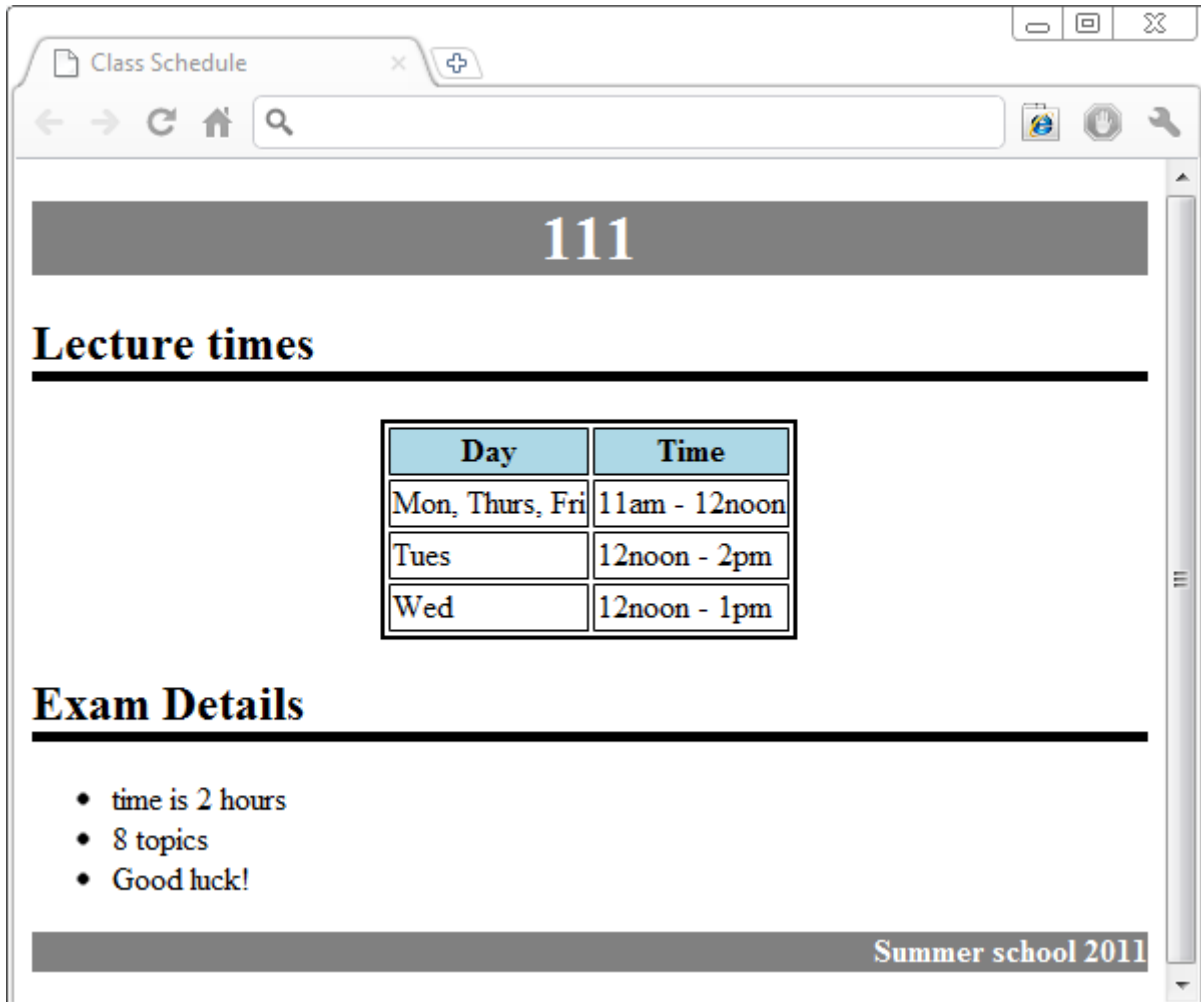
（4 marks)

(e) What is the **best** formula to use in cell H11?

(2 marks)

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5. XHTML and CSS (12 marks)

The following screenshot shows 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.

```
<?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>Class Schedule</title>
```

```
<style type="text/css">

  h1 {
    text-align: center;
  }

  h2 {
    border-bottom-color: black;
    border-bottom-style: solid;
    border-bottom-width: thick;
  }

  .headline {
    background-color: gray;
    color: white;
  }

  #footer {
    text-align: right;
    font-weight: bold;
    background-color: gray;
    color: white;
  }

  .tableheader{
    background-color: lightblue;
    text-align: center;
  }

  .table{
    border-style: solid;
    border-color: black;
    margin-left: auto;
    margin-right: auto;
    text-align: left;
  }
  </style>
</head>
<body>
```

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

(1 mark)

```
  <!-- Lecture times subheading -->
```

(1 mark)

CONTINUED

```
<table class="table" border="2px"
```

```
<!— Table header row with centred text-->
```


(2 marks)

```
<!-- Table detail rows -->
```


(3 marks)

```
</table>
```

CONTINUED

ID..…………………….

```
<!-- Exam details subheading -->
```

(1 mark)

```
<!-- Exam details list -->
```

(2 marks)

```
<!— Footer -->
```
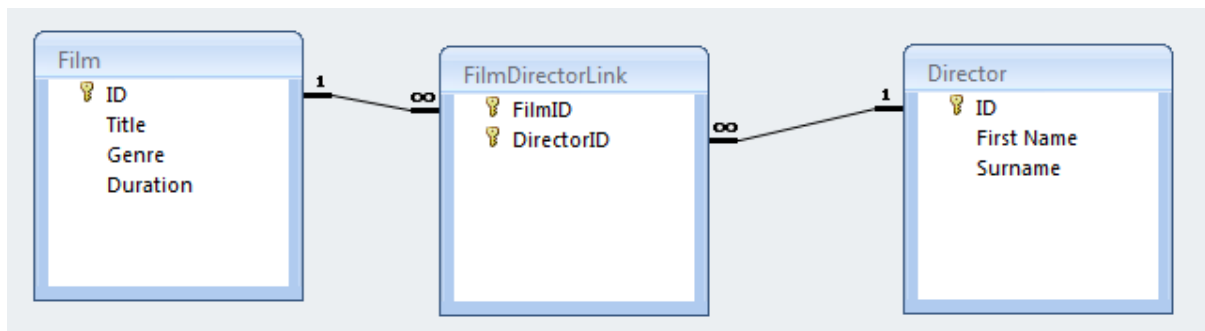
(2 marks)

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

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6. Databases (13 marks)

(a) Briefly describe the difference between a Database and a Database Management
System (DBMS).

(3 marks)

The following relationship diagram is used in questions (b), (c) and (d):

(b) What is the primary key of the **FilmDirectorLink** table above?

(1 mark)

(c) What is the primary key of the **Film** table above?

(1 mark)

(d) State the foreign key(s) (if any) of the **FilmDirectorLink** table above.

(2 marks)

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The following Query By Example (QBE) diagram is used in questions (e) and (f):

Field:	Title	Genre	▼
Table:	Film	Film	
Sort:			
Show:	✓	☐	
Criteria:		="Comedy"	
or:			

(e) Explain what the above Query By Example (QBE) does.

(3 marks)

(f) Write the SQL statement that would give the same output as the above QBE.

(3 marks)

CONTINUED

7. LaTeX (12 marks)

Write the LaTeX code that will produce the following output:

1 Gambler's Ruin

1.1 Description

- Two players have a finite amount of coins (say n_1 for Player One and n_2 for Player Two).

- Players flip a coin and the loser transfers one of their coins to the winner.

1.2 Probability Equation

If this process is repeated *indefinitely*, the probability that Player One **will go bankrupt** is given by the following equation:

$$P_1 = \frac{n_2}{n_1 + n_2} \tag{1}$$

The following 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	\sum_{}^{}
\section{}	enumerate	\frac{}{}
\subsection{}	verbatim	\sqrt{}
\large	flushright	\geq
\textbf{}	center	\pi
\title{}	quote	\infty
\author{}	displaymath	^
\date{}	equation	_
\maketitle		
\item		

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




```

CONTINUED

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```
\end{document}
```

(12 marks)

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8. Artificial Intelligence and Social Issues (8 marks)

(a) Briefly describe the Turing Test.

(3 marks)

(b) Briefly explain the difference between strong AI and weak AI.

(3 marks)

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(c) A lot of "dangerous" material found on the Internet can also be found in books at your
    local library. Briefly explain why this type of material poses more of a risk when it is
    available on the Internet.

(2 marks)

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- 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.

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ID..…………………….

- 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.

ID..…………………….

- Overflow Sheet 3 -
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

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Rough Working – This page will not be marked

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Rough Working – This page will not be marked