

UNIVERSITY OF EDINBURGH  
FACULTY OF SCIENCE AND ENGINEERING  
DIVISION OF INFORMATICS  
SCHOOL OF COMPUTER SCIENCE

## **Computer Literacy 1h**

Resit Examination [2<sup>nd</sup> draft]  
Sample answers

**Date:** September 2001  
**Time:** unknown  
**Place:** unknown  
**Room:** unknown

### **Board of Examiners**

**Chair:** Stuart Anderson  
**External Examiner:** Muffy Calder

### **Instructions to Candidates**

Attempt **ALL** questions in part 'A' and **ONE** question from part 'B'

Marks for questions are indicated in brackets after each question and the total for the exam is 70.

## Part "A"

1. (a) Give one example of a device that would be connected to a computer via a *serial* interface and one that would be connected by a *parallel* interface [2 marks]  
*serial: modem; keyboard, mouse, any USB device; parallel: (non-USB) printer; hard disk, CD-ROM, floppy*
- (b) What is the key weakness in single (private) key encryption processes and what systems avoid this problem? [2 marks]  
*having to send the password in some clear form to the recipient. Avoided by dual (public) key encryption systems*
- (c) Give an example of data you would need to store using *lossless* data compression and one where *lossy* data compression would be more appropriate [2 marks]  
*Lossless: Anything that needed to be recovered exactly – programs, text files etc.; Lossy: anything where an approximation would do in the interests of saving space: photographic images, music tracks etc.*
- (d) What is RSI (Repetitive Strain Injury) and how can it be prevented when using computer systems? [2 marks]  
*Pain in the wrists due to repeated typing motion with the wrists in an awkward position. Prevent by use of wrist rests and avoidance of long periods of activity; (perhaps) choice of software.*
- (e) What is ‘defensive programming’ and why would it be used? [2 marks]  
*writing collections of programs or routines that don’t trust each other and react in a controlled manner if they receive bad input such as “31/2/2001”;*  
*used to introduce fault tolerance in software.*

2. (a) Describe some of the costs in both time and money of ownership of a computer system over its entire lifetime. [4 marks]  
*specifying, selecting and buying the computer in the first place; paying for it; paying for software; installing it; paying for and installing hardware and software upgrades; carrying out maintenance such as defragmentation; sorting problems such as viruses; removing data etc. prior to selling or disposing of it, etc. etc.*

(b)

	A	B	C	D
1	1.00			1.50
2	2.00			2.00
3	3.00			4.00
4	4.00			6.00

<i>function(b)</i>	<i>function(c)</i>
=A1*D1	=\$A1*D\$1

- (i) In the spreadsheet above, the formula "=A1\*D1" was entered in cell B1 and dragged downwards. State the formulae and values that would be generated for cells B1:B4 [3 marks]

- (ii) Similarly, the formula "=\$A1\*D\$1" was entered in C1 and dragged down. State the formulae and values that would be generated for cells C1:C4 [3 marks]

**Solution:**

	A	B	C	D	<i>function(b)</i>	<i>function(c)</i>
1	1.00	1.50	1.50	1.50	=A1*D1	=\$A1*D\$1
2	2.00	4.00	3.00	2.00	=A2*D2	=\$A2*D\$1
3	3.00	12.00	4.50	4.00	=A3*D3	=\$A3*D\$1
4	4.00	24.00	6.00	6.00	=A4*D4	=\$A4*D\$1

3. (a) A company sells a successful application for desktop PCs which tracks and displays share prices. Describe some of the issues they will need to consider when developing a version of this application for a Personal Digital Assistant with inbuilt mobile/WAP capability [4 marks]

*A PDA has no proper keyboard, a tiny screen and no mouse. It will not have a permanent network connection (not yet anyway) and the one it has will be much slower than a desktop PC and connect time will be expensive. Software will need to display information in tiny chunks with a very simple user interface. The application will need to learn the user's profile as well to optimise what is sent but I don't expect them to get this!*

- (b) You are provided with:

- a) A floppy disk
- b) A brand-new (empty) 250 Mb ZIP disk
- c) A ZIP disk with 3Mb of free space left on it
- d) A ZIP disk with 25Mb left on it
- e) An 80 Gb tape

Making best use of the media you have, how would you create copies of the following:

1. An on-line copy of the Edinburgh telephone directory
2. A 3 minute album track recorded as MP3
3. The contents of the hard disk of a medium-sized desktop PC bought in 2001
4. A one-third full CD-ROM
5. An 8-page essay

[5 marks]

*This tests their understanding of the sizes of common data objects. They know the essay will be small (< 1Mb), that a telephone directory is about 15-20 Mb, an MP3 track is about 2Mb and so on. The correct answer is therefore:*

*1: d; 2: c; 3: e; 4: b; 5: a*

- (c) What is the critical additional factor introduced when information is conveyed as XML as opposed to HTML? [1 mark]

*Meaning; HTML just conveys content.*

4. (a) . [4 marks]

(b) [3 marks]

(c) [3 marks]

5. (a) [4 marks]

(b) [3 marks]

(c) [3 marks]

## Part "B"

### Answer ONE question only from this section

- B1.** Describe the process of conception, design and creation of a web-based offshoot of a company that sells cameras and electronic goods and what the company should do *after* the web enterprise is launched to ensure it remains successful.

[20 marks]

*The issues I hammered in about web pages were:*

Function: *What is the web page for? How does it support the organisation for whom it is being written? Is it to inform, amuse, sell, advertise ...?*

Style: *Clean, attractive style that is easily maintained, engages the user's interest quickly and leads them in.*

Navigation: *Layout of pages so as to make it obvious where the user is in the page and how to move on*

Content: *Consideration given to who the visitors will be and what they will want to know.*

Exposure: *How people will know the site is there – advertising through other media and search engines*

*Once the site is established it is necessary to look at feedback of all forms and update the site accordingly. It will also be necessary to keep the content up to date and update the graphical style periodically.*

- B2.** The computing service of a small department is staffed by a graduate service manager and a clerical/operator assistant. Describe what you think the issues are in designing and managing a computing service and what their jobs entail.

[20 marks]

*(There was a lecture on service management. The precise split between the manager and assistant is not important here. They should also be able to add material from personal experience)*

Service Manager: *specification of machines, purchase; design of network; selection of software; installation of software, design and installation of complex software such as mail systems and print queues; sorting complex problems; handling security; identifying updates that are (and are not) required; creating solutions whereby an increasing number of machines do not require increasing effort (I mentioned this point explicitly)*

Assistant: *breaking out new machines and installing them; noting serial numbers etc. and registering them with the manufacturer for warranty; ordering supplies, changing paper and cartridges in printers, backing up data and recovering it, adding new users, deleting junk; handling lost passwords, giving first-line assistance; calling out or fixing hardware faults; rebuilding stricken machines; (in public labs e.g. library or University) selling media e.g. floppies; applying updates*

- B3** [20 marks]

- B4** [20 marks]