

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

## **Computer Literacy 1h**

Class Examination

**Date:** Saturday 27<sup>th</sup> January 2001  
**Time:** 9:30 – 11:00 (1 and a half hours)  
**Place:** Roxburgh Place Hall  
**Room:** A

### **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) A medium-to-fast PC purchased in early 2001 will be built around a 1 GHz processor chip. What speed of chip might be found in an equivalent machine in early 2006? Justify your answer in terms of what you know about trends in processor speeds. [2 marks]
  - (b) Give three factors other than processor speed that might determine the speed of a computer system. [3 marks]
  - (c) More and more, new technology is linked to provision of services (e.g. mobile phones, ISPs or cable/satellite TV). Using your understanding of trends in computing explain why this should be so. [2 marks]
  - (d) A doctor proposes to trade in her old PC and upgrade. Given the nature of her work what advice would you give on safely disposing of the old PC? Justify your answer. [2 marks]
  - (e) My Web page background colour is defined by the HTML tag `<BODY BGCOLOR="#8c8c9c">` but I want it 8 units greener. Write down the new BODY tag that I require. [1 mark]
  
2.
  - (a) Identify four of the features you would expect of a good computer application. [2 marks]
  - (b) A text editor, word processor, desktop publishing package and web authoring tool all allow the creation of documents. What features distinguish these four applications? [2 marks]
  - (c) A mail attachment is a means of transmitting a binary file across a network. Describe the steps that your mailer has to perform in order to compose an intelligible GIF image attachment for a remote mail system and what the resulting mail would look like if viewed as plain text. [3 marks]
  - (d) What problems are likely to arise when using computers in a poorly designed work environment? Choose one and explain how it could be alleviated. [3 marks]
  
3.
  - (a) I wish to invite visiting speakers to give talks in a lecture series later this year. Describe the factors to be considered when choosing how to contact them from a choice of email, letter, fax or phone. One of the speakers works in Hong Kong. [3 marks]

(b) I have prepared a spreadsheet fragment (below) to display a consultant's fees and expenses for two visits in both pounds and Euros. Cell E6 contains the formula  $=B\$6 * D1$  which I propose to drag down one row then right one column to create the "Euros" table.

- (i) What value will be displayed in cell E7 after this operation? [1 mark]  
 (ii) Write down an amended version of the formula that will create the correct table when dragged down then right as described. [2 marks]

	A	B	C	D	E	F
1	Conversion: Pounds to Euros:			1.5		
2						
3	Consultant costs (pounds)				Consultant costs (Euros)	
4						
5		Fees	Expenses		Fees	Expenses
6	Visit 1	300	600		450.00	
7	Visit 2	1000	800			

- (c) One function of a DBMS is to maintain data integrity. What problems would you expect when using a database that did not show this property? [2 marks]
- (d) A zoom operation within a GIS is not simply a process of making a displayed image larger or smaller. Describe some of the other processes involved in zooming in or out of a map image. [2 marks]
4. (a) Give three important functions of a communications protocol. [3 marks]
- (b) You are asked to install a LAN in an old building. Explain the questions that must be answered in devising a suitable solution. [4 marks]
- (c) Briefly explain the concept of an active document. [3 marks]
5. (a) Outline how you would choose a suitable algorithm for sorting your collection of several hundred CDs into a new preferred order. [3 marks]
- (b) Choose two of the first four so-called generations of programming languages and outline two important aspects in which they differ. [2 marks]
- (c) Briefly describe a key difference between compilation and interpretation. [2 marks]
- (d) Explain three important considerations in choosing a programming language for solving a specific problem. [3 marks]

## Part "B"

- B1.** A small company sells specialised holiday packages (Scottish distillery tours) and is considering going on-line as it believes a market may exist in the USA. It has got as far as believing it needs a web page but has no idea what that implies or how to make the concept improve their business. They have engaged you as consultant to advise them on the benefits and pitfalls and what needs to be done. Describe what you would say in your initial report. [20 marks]
- B2.** A colleague left a phone message saying that his computer “seems to be going very slowly at times” and has asked if you can phone him back and help him identify the likely problem or problems and fix them. All you know before ringing back is that he is running some sort of PC and that it is on an office network. Using any knowledge you have from the course and from being a computer user outline some of the questions you would ask and how you would go about trying to find out what his problem might be. [20 marks]
- B3.** Imagine that two new media are proposed for communication between computers.
- (a) List six questions that can be asked to establish their likely suitability [9 marks]
  - (b) Explain which characteristics may make one more suitable for a LAN and the other suitable for a WAN. [11 marks]
- B4.** Bubblesort and Mergesort are two algorithms for sorting lists of items into order. Explain concisely how each works. [10 marks]
- Demonstrate the operation of Bubblesort on the list
- 5 3 8 2 [4 marks]
- and of Mergesort on the list
- tidy maybe sort cat inside a pan fit [6 marks]
- In both cases show the list after each operation on it.