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General Certificate of Education
 June 2005
 Advanced Subsidiary Examination



COMPUTING **CPT2**
Unit 2 Principles of Hardware, Software and Applications

Thursday 9 June 2005 Afternoon Session

No additional materials are required.
 You may use a calculator.

Time allowed: 1 hour 30 minutes

Instructions

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided. All working must be shown.
- Do all rough work in this book. Cross through any work you do not want marked.

Information

- The maximum mark for this paper is 65.
- Mark allocations are shown in brackets.
- You will be assessed on your ability to use an appropriate form and style of writing, to organise relevant information clearly and coherently, and to use specialist vocabulary, where appropriate.
- The degree of legibility of your handwriting and the level of accuracy of your spelling, punctuation and grammar will also be taken into account.

For Examiner's Use			
Number	Mark	Number	Mark
1			
2			
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9			
Total (Column 1)	→		
Total (Column 2)	→		
TOTAL			
Examiner's Initials			

Answer **all** questions in the spaces provided.

- 1 Students studying Computing at AS level are likely to have some word-processed documents in their user areas on the school's network. State **three** other types of file that these students would be expected to have in their user areas.

1

2

3

(3 marks)

3

- 2 In a recent radio discussion programme, a contributor said that no sensible person would send a letter using ordinary mail if the option of using e-mail were available. Give **three** arguments in support of this statement.

1

.....

2

.....

3

.....

(3 marks)

3

3 A company backed by the UK government has been set up to provide on-line degrees from UK universities. All study material, tutorials and assessment will be on-line.

Students, aged 18 to 80, from all over the world have registered to study courses. Businesses are also being encouraged to take advantage of this scheme for the continuous professional development of their employees.

(a) Give **one** economic or social advantage to **each** of the following:

(i) UK universities for being partners in this scheme;

.....
.....
(1 mark)

(ii) students living overseas for registering with such a course of study;

.....
.....
(1 mark)

(iii) businesses for registering their employees on such a course of study.

.....
.....
(1 mark)

(b) Certain hardware and software are specifically required to study in this way.

Give **one** example of:

hardware;

software.

(2 marks)

5

- 4 (a) A student has been asked to explain the difference between security and integrity of data. Give **two** different types of problem for security and **two** different reasons for a failure of integrity which the student might use to demonstrate the difference between the meaning of these two items.

Security 1

.....

2

.....

Integrity 1

.....

2

.....

(4 marks)

- (b) Schools and Colleges keep many electronic records on their students.

- (i) The Data Protection Act 1998 states that all reasonable steps must be taken to ensure that personal data are kept secure. Give **two** practices that a school or college might implement to ensure this.

1

.....

2

.....

(2 marks)

- (ii) Apart from the need to keep data secure, give **three** implications for schools and colleges of the Data Protection Act 1998 on the collection and keeping of personal data.

1

.....

2

.....

3

.....

(3 marks)

5 A file of 1000 records has the following record structure.

PartNumber, Description, SupplierID, NumberInStock

- All Part Numbers are of the form xxnnnn, where x is a letter and n a numerical digit
- Descriptions are stored as 36 byte, fixed length strings
- All Supplier identifications have the format xxxnn, where x is a letter and n a numerical digit
- The data type for the field NumberInStock has been set to Byte as it is a whole number which is never greater than 120
- The system uses 8 bit ASCII to code characters

(a) What is the size of this file in bytes? Show your working.

.....

(3 marks)

(b) Suggest a suitable primary key field for this file. Explain your choice.

Field

Reason.....

.....

(2 marks)

(c) On close examination, it is found that 25% of the file storage space has been wasted.

(i) Why may this have occurred with the current record structure?

.....

(1 mark)

(ii) How could the record structure be changed whilst retaining four fields per record so that this problem is overcome?

.....

(1 mark)

(iii) Give **one** disadvantage of the restructured solution.

.....

(1 mark)

Turn over ►

6 All the agents in an estate agency have their own workstation. From there they can

- enter and edit details of properties for sale;
- enter and edit details of vendors (who want to sell their properties);
- enter and edit details of prospective purchasers;
- produce property details using a word processing package.

There is also one workstation attached to a colour laser printer which is dedicated to printing details of specific properties on request.

Data on properties, vendors and purchasers are held in a central file store.

(a) What type of operating system – real, interactive, batch, or network – is required at each of the workstations so that:

(i) agents can wordprocess property details;

.....
(1 mark)

(ii) agents can access the central file store for details of possible properties?

.....
(1 mark)

(b) Word processed property details are stored on the H: drive of the fileserver. The H: drive is a *logical drive*.

(i) What is meant by the term logical drive?

.....
.....
(1 mark)

(ii) With the help of an example, explain why logical drives are used.

Reason

Example

(2 marks)

- (c) Details of all properties within a postcode area are saved in a directory named after that area.

GU12	dir
GU13	dir
GU14	dir
GU15	dir
:	
:	
RG9	dir
RG10	dir
:	
:	

Within the appropriate directory, property detail filenames are composed of the remaining characters of the postcode followed by the first three letters of the surname of the vendor.

- (i) There are rules on acceptable filenames under all operating systems. Give **one** example of such a rule, naming an operating system which imposes it.

Rule

Operating System

(2 marks)

- (ii) What is the full file pathname for a file 2DLDAY.doc in the postcode area GU15 on logical drive H?

.....

(1 mark)

- (d) House details produced by the estate agency usually contain at least one photograph. Suggest an input device that could be used to input a photograph into the computer system. Explain the process by which the photograph will become part of the Property Details document.

Device

Method

.....

.....

.....

(3 marks)

Turn over ►

7 A relational database is used to record details for an online database of hotels, attractions and other places of interest in a popular holiday resort. The database will be accessible from work stations in tourist information offices across the resort. There are also town plans for the towns in the resort on which hotels and other sites are identified by a unique number for ease of use.

(a) (i) What is a relational database?

.....
(1 mark)

(ii) How are relationships implemented in a relational database?

.....
(1 mark)

(b) Two of the relations (tables) used for this database are:

Town(TownName, Population, Attractions)

Hotel(HotelName, TownName, NumberOnPlan, Stars, RoomRate, NoOfBedrooms, Restaurant, SwimmingPool)

TownName is the primary key in the Town relation.

NumberOnPlan is the primary key in the Hotel relation.

(i) Why might HotelName **not** be suitable as the primary key for the Hotel relation?

.....
.....
(1 mark)

(ii) Name the attribute that is the foreign key in the Hotel relation.

.....
(1 mark)

(iii) Indexes are created on the fields HotelName and TownName in the Hotel relation. Why is an index used?

.....
(1 mark)

(iv) Explain **one** disadvantage of having multiple indexes.

.....
.....
(2 marks)

(c) A user interface for such a system would have certain requirements, such as a means of making a selection, and clear on-screen instructions.

(i) The work stations are placed in busy tourist information offices to be used, unsupervised, by tourists. Suggest a suitable input method for the tourist to make a selection in this system.

.....
(1 mark)

(ii) The system provides information about hotels and places of interest, plus pictures and maps of the resort. What feature might be built into the software to enable all this information to be accessed on screen in a manageable way?

.....
(1 mark)

(iii) Suggest **two** distinct requirements of the user interface to make the system more accessible to the many users.

1

2

(2 marks)

11

8 (a) Explain what is meant by a template, as used in word processing.

.....
.....
.....

(2 marks)

(b) This page of your examination paper has been produced with the help of a template. State **three** settings that would have been defined for this template.

1

2

3

(3 marks)

5

Turn over ►

9 Among the files held by business organisations will be *transaction files* and *master files*.

(a) (i) What is meant by a transaction file?

.....
.....
(1 mark)

(ii) What is meant by a master file?

.....
.....
(1 mark)

(b) A company employs 50 people on an hourly pay rate, paid weekly. They have a master payroll file which is held in sequential order on EmployeeID. They have a payroll transaction file which is processed against the master file.

(i) Give **two** fields, other than the EmployeeID, which would have to be held in the master payroll file.

Field 1.....
Field 2.....
(2 marks)

(ii) Give **two** fields which should be held in the payroll transaction file.

Field 1.....
Field 2.....
(2 marks)

(c) The payroll transaction file is processed against the master file.

(i) What would be the purpose of this process?
.....
(1 mark)

(ii) How often should this process take place?
.....
(1 mark)

(iii) How should the transaction file be ordered?
.....
(1 mark)

(iv) Why should it be ordered this way?.....
.....
.....
(1 mark)

END OF QUESTIONS

THERE ARE NO QUESTIONS PRINTED ON THIS PAGE