

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use

General Certificate of Education
June 2008
Advanced Level Examination



COMPUTING **CPT2R**
Unit 2 Principles of Hardware, Software and Applications

Friday 16 May 2008 9.00 am to 10.30 am

You will need no other materials.
You may use a calculator.

Time allowed: 1 hour 30 minutes

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Show all your working.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The maximum mark for this paper is 65.
- The marks for questions are shown in brackets.
- The use of brand names in your answers will **not** gain credit.
- You are reminded of the need for good English and clear presentation in your answers.

For Examiner's Use			
Question	Mark	Question	Mark
1		9	
2			
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6			
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8			
Total (Column 1) →			
Total (Column 2) →			
TOTAL			
Examiner's Initials			



JUN08CPT2

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

- 1** A large local hardware store is introducing self-checkouts for customers. The store sells a wide range of products of all shapes and sizes and with different packaging.

- 1** (a) The designers of the system are considering the following input and output devices. For each of the following, give **one** reason why it might be used in this system. Two answers have been started for you.

Bar Code Reader;

To read the bar code in order to

.....

Credit & Debit Card Reader;

To read the chip (or magnetic strip) in order to

.....

Touch Sensitive Screen;

.....

Numeric Keypad;

.....

Speech Synthesizer;

.....

Printer;

.....

(6 marks)

- 1** (b) Explain **one** economic consequence to the store if they introduce this system.

.....

.....

(2 marks)



2 The Head of Computing in a school has been asked to create a disk file of students' examination results. Students' full names will be recorded, together with their GCSE subjects and grades. The resulting file will have variable length records.

2 (a) (i) Give **two** ways variable length records could arise in this file.

1

.....

2

.....

(2 marks)

2 (a) (ii) Give **two** ways the data within a file of variable length records could be delimited.

1

.....

2

.....

(2 marks)

2 (b) The Head of Computing could arrange that the file had fixed length records. Give and explain **two** major effects of this.

1

.....

.....

2

.....

.....

(4 marks)



- 3 (a) Give **three** statements which describe serial file organisation and the subsequent processing of file contents.

1

.....

2

.....

3

.....

(3 marks)

- 3 (b) What are serial files typically used for?

.....

(1 mark)

- 3 (c) How would a serially organised file be re-organised to a new file with sequential organisation?

.....

(2 marks)

- 3 (d) A student creates a sequential file of data about her music CDs. The file currently has 250 records with the following structure:

Reference	Artist	Title	DateBought	Cost

- Reference is a 16 bit integer
- Artist is a 24 character field
- Title is a 30 character field
- DateBought is stored in character form using 6 digits (ddmmyy)
- Cost is a real number to two decimal places; the software allocates 8 bytes for this

The system uses 8 bit ASCII to code characters.



Calculate the file size of this file in bytes. Show your working.

.....
(2 marks)

8

- 4 A group of sixth form students at AQA Independent School have decided to celebrate the 250th anniversary of the founding of their school by writing a book about its history for publication. This book, which is expected to be at least 100 pages long, will include facts, comments, poetry, copies of old prints and more modern photographs, plus details and lists of achievements of past and more recent pupils.

- 4 (a) A word processor supports standard features such as text editing, spell checking, grammar checking, character and paragraph formatting and the use of headers and footers for such items as page numbering. Give **three** additional features of word processing software which the students will need to produce their book.

1

2

3
(3 marks)

- 4 (b) What legislation must the students be aware of when compiling their book? Name **two** Acts and explain why they will be relevant to this project.

1 Name

Relevance

.....

2 Name

Relevance

.....
(4 marks)

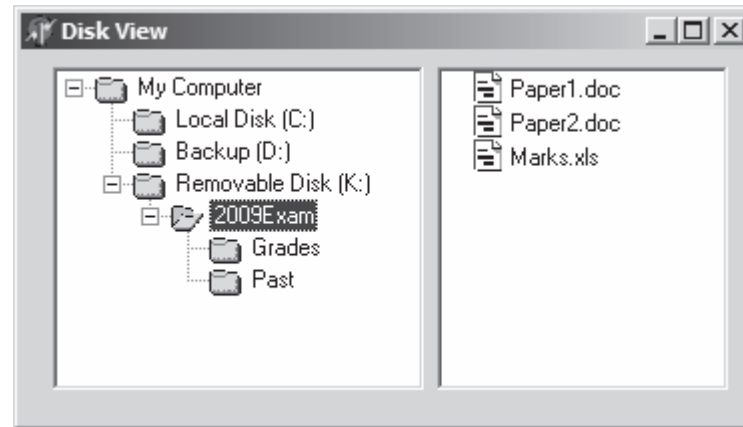
7

Turn over ►



5 **Figure 1** shows a graphical representation of part of a computer system.

Figure 1



5 (a) Using only the information contained in **Figure 1**, give **one** example of each of the following

5 (a) (i) A logical drive

5 (a) (ii) A subfolder

5 (a) (iii) A full file pathname

(3 marks)

5 (b) Give **three** pieces of information that can be derived from any full file pathname.

1

2

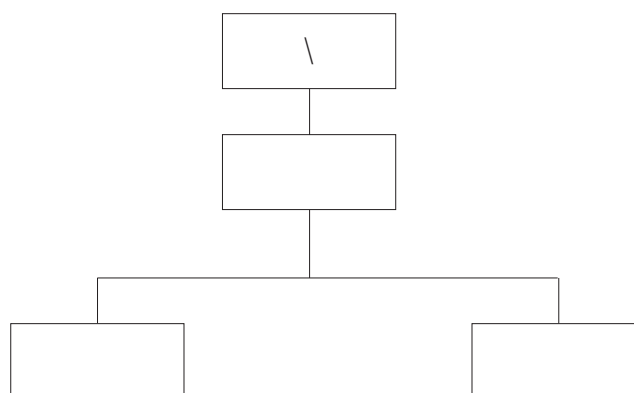
3

(3 marks)



- 5 (c) Using the information contained within **Figure 1**, complete the directory structure diagram shown in **Figure 2** for the removable disk K:

Figure 2



(1 mark)

7

- 6 You come across a batch of old CD-Rs which contain old digital photographs of your family. The CD-Rs have clearly been well looked after and do not have any scratches or other physical defects.

It is the year 2050. Why might you be unable to display the photographs on your computer? Give **two** reasons.

1

.....

2

.....

(2 marks)

2

Turn over ►



- 7 A local free recycling group has been set up in small community. If Member A no longer needs an item, he can advertise it on the group's website. If Member B needs an item, she can search for it on the site. The two members then get in contact and Member A gives the item to Member B.

Items are removed from the site when exchanged or after six weeks.

The scheme is based on a relational database, which includes the two tables, **Member** and **Item**.

- 7 (a) Complete the definition below.

A relational database is a collection of in which relationships are created through

(2 marks)

- 7 (b) Each table below shows a small selection of the records.

Table Member

MemberID	EmailAddress	KnownAs	Password	Date joined
Flintstone	fred127@internetmail.abc	Fred	wonderland	15/08/07	
Hollyberry	panbdy23@aqa.org.uk	Pam	schnuki2	02/09/07	
Sunnyboy	pssmith@localmail.fin	Peter	pwrrsmith	10/10/07	
ContraryMary	mary.peters@webmail.wyz	May	thisismypassword	15/11/07	

Table Item

ItemNumber	Date Posted	MemberID	ItemOnOffer	Description
2435	12/12/07	Flintstone	Paving slabs	15 York stone paving slabs, 600 mm square, dirty but good condition.
2436	12/12/07	Flintstone	Lawn mower	Greengrass petrol driven lawnmower. Too heavy for me now!
2438	14/12/07	ContraryMary	Bunk beds	Wooden bunk beds, 150 cm x 100 cm, with mattresses.
2439	14/12/07	ContraryMary	Chair	Rocking chair. Wooden arms. Needs new upholstery.
2442	15/12/07	Hollyberry	Child's bed	Child's bunk bed with desk area underneath. Wooden. Slightly worn.
2443	16/12/07	We54rey	Chairs	6 garden chairs, good as new.
2445	19/12/07	Dnukia69	Bed	5 ft double bed. Firm sprung mattress.



- 7 (b) (i) The primary key in table **Member** is the **MemberID**. What is the purpose of a primary key?

.....
(1 mark)

- 7 (b) (ii) Why is **EmailAddress** not a good choice for use as a primary key?

.....
(1 mark)

- 7 (b) (iii) Explain, in the context of this question, the advantage of indexing the **Item** table on the field **ItemOnOffer**.

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

- 7 (b) (iv) Name the foreign key in the table **Item**.

.....
(1 mark)

- 7 (c) When searching a database, inexact matches can be achieved by using one or more wild card characters. For example, if Pam cannot remember if a member is called Peter or Pete, she can type Pete* in the criterion field for **KnownAs**.

In fact, Pam is looking for any type of bed for her child. She has used the site before and is familiar with the way it works.

- 7 (c) (i) Complete the QBE grid for her search, so that she can find out as much as possible about as many relevant advertised items as possible, and then can contact their owner.

Field name	ItemOnOffer		
Table			
Criterion			

(3 marks)

- 7 (c) (ii) From the records shown in the **Item** table, how many records would be found from your search?

.....
(1 mark)

Turn over ►



8 Since the introduction of chip and pin cards, UK card fraud losses have fallen significantly. However, they are still a serious problem.

8 (a) How can fraudsters obtain your PIN without your realising it? Give **two** different ways.

1

2

(2 marks)

8 (b) Online transactions are still a major target for fraudsters. When making a purchase online, how can a purchaser know that the site is secure?

.....

(1 mark)

8 (c) What security method is typically used for the transmission of personal data on a secure site?

.....

(1 mark)

4



- 9 (a) In a computing examination students were asked to 'Describe three methods for the hardware or software protection of online files against unauthorised access or deliberate corruption.' The students could gain up to 2 marks for each of the three methods.

One student wrote:

- (1) passwords
- (2) virus checker
- (3) access rights

The teacher considered that, although the student had the right idea, these answers were too brief to show understanding of the topic. This student gained no marks for this question.

Provide the full answers that this student could have given to this question, in order to gain two marks for each part.

1. Passwords
.....
(2 marks)

2. Virus Checker
.....
(2 marks)

3. Access Rights
.....
(2 marks)

- 9 (b) Describe in full **one** other method for the hardware or software protection of online files against unauthorised access or deliberate corruption.

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

- 9 (c) Data must be protected against other threats as well as unauthorised access and deliberate corruption. Give **one** example.

.....
(1 mark)

- 9 (d) Another concern is the integrity of the data. Give **two** examples of threats to data integrity.

1
2
(2 marks)

END OF QUESTIONS



There are no questions printed on this page

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