Centre Number	Candidate Number	Name

CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

COMPUTER STUDIES **0420/01, 0421/01**

Paper 1

May/June 2003

2 hours 30 minutes

Candidates answer on the Question Paper.
Additional Materials: As listed in Instructions to Supervisors

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen in the spaces provided on the Question Paper.
You may use a soft pencil for any diagrams, graphs, music or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

This document consists of **14** printed pages and **2** blank pages.

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Local Examinations Syndicate

[Turn over

1 Explain, using examples where appropriate, the meaning of these computer terms.

(a) check sum

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.....[2]

(b) relational database

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.....[2]

(c) random access memory (RAM)

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.....[2]

(d) top-down design

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.....[2]

(e) alphanumeric characters

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.....[2]

2 State **two** ways that computer-based learning (CBL) has affected learning and testing methods.

1 .....

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2 .....

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.....[2]

3 **(a)** State **two** sensors that would be used in a microprocessor-controlled camera.

1 .....

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2 .....

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.....[2]

(b) Describe how the data collected by the sensors would be used by the camera's control program.

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.....[2]

[Turn over

For Examiner's Use

4 **(a)** State **two** types of computer crime.

1 .....

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2 .....

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.....[2]

(b) Describe **two** ways of protecting against computer crime.

1 .....

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2 .....

.....[2]

5 **(a)** State the purpose of a compiler.

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.....[2]

(b) State **one** difference between a compiler and an assembler.

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.....[1]

6 State the purpose of an interrupt when data is sent to a disk drive.

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.....[2]

7 Digital photographs stored on a computer are going to be used in a multimedia presentation.

(a) State **two** ways in which these photographs can be edited using graphics software.

1 .....

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2 .....

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.....[2]

(b) Describe how the edited photographs can be inserted into the multimedia presentation.

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.....[2]

(c) State **one** multimedia element that could be included in the presentation other than graphics and text.

.....[1]

(d) Describe the mulitmedia hardware that would be needed for developing and displaying the presentation.

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.....[3]

8 **(a)** Draw and label a diagram to show the relationship between a root directory, a sub-directory and a file.

[3]

(b) State **two** file management tasks that would be carried out by an operating system.

1 .....

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2 .....

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.....[2]

(c) Explain how the operating system will deal with errors that occur whilst a program is running.

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.....[2]

9 A shop owner wants to change from a manual stock control system to a computerised stock control system.

(a) State **three** reasons why the shop owner would want a computerised system.

1 .....

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2 .....

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3 .....

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.....[3]

(b) Describe **three** methods of fact-finding that would be used to analyse the manual stock control system.

1 .....

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2 .....

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3 .....

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.....[3]

10 A multi-national company allows employees to telework or work at home and communicate with the office using the Internet.

(a) State the hardware, software and services required to access and use the Internet.

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.....[3]

(b) State **two** ways that a report could be sent to the office using the Internet.

1 .....

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2 .....

.....[2]

(c) State **two** of the additional items of hardware that would be required for video conferencing.

1 .....

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2 .....

.....[2]

(d) Give **one** benefit to the company of using video conferencing.

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.....[1]

(e) Give **two** disadvantages for the employee of teleworking.

1 .....

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2 .....

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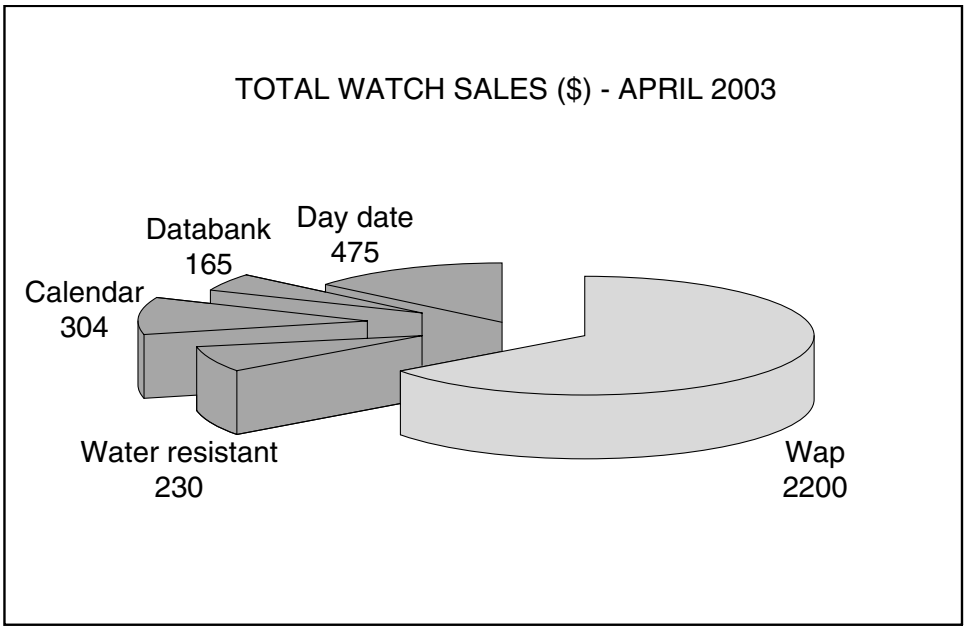
.....[2]

11 The following pie chart shows the total value of watch sales in April 2003:



(a) On the spreadsheet below, shade the cells that must be used to create the pie chart.

	A	B	C	D	E	F
1		Stock	Amount Sold	Stock Left	Price ($)	Total Sales ($)
2	Wap	20	10	10	220	2200
3	Water resistant	10	2	8	115	230
4	Calendar	5	4	1	76	304
5	Databank	15	5	10	33	165
6	Day date	10	5	5	95	475
7	Total					3374

[2]

(b) State the format of the data in column **B**.

.....[1]

(c) Columns **D**, **E** and **F** contain formulae. Write down a formula that could be in cell **F7** to calculate the Total Sales.

.....[1]

(d) The value in **C5** is changed to 6. State the cells in which the values should change automatically.

.....[2]

(e) Give **one** benefit of using a template for this spreadsheet.

.....[1]

12 An estate agent keeps a file of properties for rent in the city. Several records are shown in the following diagram:

REF	AREA	TYPE	FEATURE	RENT($)
H002	South	Detached	Waterfall	21000
H006	South	Bungalow	Pool	19000
H008	West	Bungalow	Pond	15000
H005	South	Detached	Patio	14000
H003	North	Semi-Detached	Pool	12000
H009	North	Detached	Courtyard	11000
H004	West	Bungalow	Pool View	9000
H001	South	Semi-Detached	Fish Pond	8000
H007	North	Terraced	BBQ Pit	2000

(a) Which field in the file should be used as a key field?

.....[1]

(b) State a validation check that should be made on the **AREA** data as it is entered into the file.

.....[1]

(c) Which **RENT($)** data will be listed if the following search condition is input?

(**FEATURE** = "Pool") OR (**TYPE** = "Bungalow")

.....[2]

(d) Write down a search condition to find all the properties in the south which have a rent less than $15000.

.....[3]

(e) Write down the reference numbers if the file is sorted in ascending order on **TYPE** then **AREA**.

.....[3]

13 Read this algorithm.

```
input A, B
    if A > B then
        T = A
        A = B
        B = T
    endif
output A, B
```

(a) Write down the output if the following two numbers are input:

41, 38

.....[1]

(b) Explain the purpose of the variable **T**.

.....

.....[1]

(c) Explain why an algorithm is written as a subroutine (procedure) and stored in a program library.

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.....[2]

14 A bank stores personal data about its customers on a computer file.

(a) State **two** ways that data protection laws protect personal data stored on computer systems.

1 .....

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2 .....

.....[2]

(b) State **three** items of personal data, in addition to the customer account number, that would be stored.

1 .....

2 .....

3 .....[3]

(c) The customer account number contains a check digit. Describe how this check digit is calculated.

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.....[2]

(d) State a reason for updating a customer's details and describe the processing that would be done by the computer system.

Reason

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Processing

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.....[3]

15 Describe how an expert system could help a doctor to diagnose illnesses.

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.....[3]

16 A coffee pot is to be designed using a computer-aided design (CAD) program.

State **four** benefits of using a CAD program to do this.

1 .....

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2 .....

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3 .....

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4 .....

.....[4]

[Turn over

17 A school wants to monitor the number of hours spent by a class of 30 students on the Internet.

Using pseudocode or otherwise, write an algorithm which will;

- for each student, record the times logged on and logged off
- calculate the length of time each student spends online
- calculate and output the average length of time per day spent by each student on the Internet.

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