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| Centre Number | Candidate Number | Name |
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**COMPUTER STUDIES**

**0420/01**

Paper 1

May/June 2004

**2 hours 30 minutes**

Candidates answer on the Question Paper.  
No Additional Materials are required.

**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 **16** printed pages.



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

(a) byte .....  
.....  
.....[2]

(b) compiler .....  
.....  
.....[2]

(c) handshaking .....  
.....  
.....[2]

(d) technical documentation .....  
.....  
.....[2]

(e) simulation .....  
.....  
.....[2]

2 (a) Give **one** example of wireless technology.

.....[1]

(b) Give **one** benefit and **one** disadvantage of the use of wireless technology.

Benefit .....  
.....  
.....

Disadvantage .....  
.....  
.....[2]

3 (a) State **two** places where robots are used.

1 .....

.....

2 .....

.....[2]

(b) State **two** benefits of using robots.

1 .....

.....

2 .....

.....[2]

4 (a) State **two** effects of a computer virus.

1 .....

.....

2 .....

.....[2]

(b) State **two** ways of protecting computers against viruses.

1 .....

.....

.....

2 .....

.....

.....[2]

- 5 Interfaces enable computer users to interact with the operating system.

State **three** advantages for using a graphical user interface (GUI) for loading programs and files.

1 .....

.....

.....

2 .....

.....

.....

3 .....

.....

.....[3]

- 6 (a) Name **one** item used in the home, other than a computer, that contains a microprocessor.

.....[1]

- (b) For your item named in (a) describe **two** different tasks that the microprocessor performs.

1 .....

.....

.....

2 .....

.....

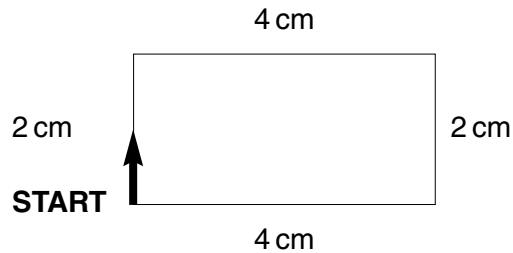
.....[2]

- 7 A programming language has instructions for moving a pen on a piece of paper.  
Examples are:

|            |                              |
|------------|------------------------------|
| <b>F10</b> | <b>Move forward 10 cm</b>    |
| <b>B20</b> | <b>Move backwards 20 cm</b>  |
| <b>R90</b> | <b>Turn right 90 degrees</b> |
| <b>L90</b> | <b>Turn left 90 degrees</b>  |

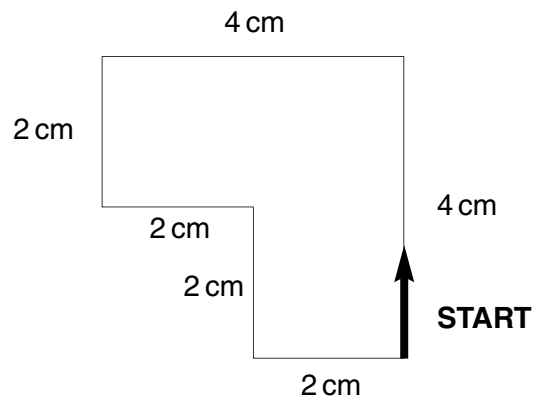
Read the following set of instructions which makes the pen draw the rectangle below and study the drawing that is produced.

F2  
R90  
F4  
R90  
F2  
R90  
F4  
R90



Write a set of instructions that would produce the following drawing:

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



[3]

8 A school wants to create its own website to advertise the school.

(a) State the type of software that would be used to create a web page.

.....[1]

(b) State **two** features of the software used to design web pages.

1 .....

.....

2 .....

.....[2]

(c) State where the finished website would be stored so that people surfing the Internet can visit it.

.....[1]

9 A supermarket uses point of sale (POS) terminals at the checkout for scanning barcodes on the products.

(a) State **two** items of data that are stored on the barcode.

1 .....

2 .....[2]

(b) Describe how the computer system checks that the barcode has been read correctly.

.....

.....

.....[2]

(c) State the type of file access that is used to get the price from the central computer.

.....[1]

(d) Explain how the system updates the file when an item has been sold.

.....

.....

.....[2]

(e) Give **two** benefits for the supermarket manager of using point of sale (POS) terminals.

1 .....

.....

2 .....

.....[2]

10 (a) A company has decided to use a computer for stock control. Describe the process of systems analysis from the time the decision was made to proceed with computerisation until final testing.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

(b) Give **two** reasons why it may be necessary to modify this system in the future.

1 .....

.....

2 .....

.....[2]

- 11 A family has purchased a computer system with the following specification:

**Processor speed 2200 MHz**  
**RAM 512 Megabyte**  
**Hard disk drive 120 Gigabytes**  
**CD ROM**  
**DVD writer**  
**Modem 56k**  
**Monitor 17"**

- (a) The computer has been purchased for buying goods and services over the Internet. Explain how each of these items of hardware would be used for this purpose.

Hard disk drive .....

.....

.....

RAM .....

.....

.....

DVD writer .....

.....

.....

Modem .....

.....

.....[4]

- (b) State the type of software that is needed for logging onto the Internet and finding websites selling goods and services.

logging on .....

.....

finding websites .....

.....[2]

- (c) State **one** advantage and **one** disadvantage for customers of using the Internet for shopping.

advantage .....

.....

disadvantage .....

.....[2]

- (d) Describe **two** effects on society of an increase in the use of the Internet for e-commerce.

1 .....

.....

.....

2 .....

.....

.....[2]

- 12 The following spreadsheet shows the profit or loss on sales at an ice-cream stall during a four week period.

|    | A               | B               | C                  | D           | E             | F           |
|----|-----------------|-----------------|--------------------|-------------|---------------|-------------|
| 1  | Ice-Cream Stall |                 |                    |             |               |             |
| 2  |                 | Cost Price (\$) |                    |             |               |             |
| 3  | Ice-Cream       | 3               |                    |             |               |             |
| 4  | Orange Juice    | 2               |                    |             |               |             |
| 5  |                 |                 |                    |             |               |             |
| 6  |                 | Ice-Cream Sales | Orange Juice Sales | Income (\$) | Expenses (\$) | Profit/Loss |
| 7  | Week 1          | 300             | 40                 | 980         | 900           | Profit      |
| 8  | Week 2          | 250             | 10                 | 770         | 900           | Loss        |
| 9  | Week 3          | 450             | 10                 | 1370        | 900           | Profit      |
| 10 | Week 4          | 300             | 20                 | 940         | 900           | Profit      |

- (a) State the format of the data in cell **B6**.

.....[1]

- (b) Write down a formula that could be in cell **D7** to calculate the Income for week 1.

.....[2]

- (c) Describe how the formula in **D7** can be copied into the cells **D8**, **D9** and **D10**.

.....  
 .....  
 .....[2]

- (d) Cell **F7** contains the function:

=IF(D7 > E7, Profit, Loss)

and is copied into cells **F8**, **F9** and **F10**. Write down the function that will be in cell **F10**.

.....[1]

- (e) State the cells that are needed to create a line graph to show the Income and Expenses for Week 1 to Week 4.

.....  
 .....[2]

**13** A city uses a computerised traffic control system.

**(a)** State **two** benefits of using computerised traffic control systems.

- 1 .....
- .....
- 2 .....
- .....[2]

**(b)** Describe the input, processing and output from this control system.

Input .....

.....

.....

Processing .....

.....

.....

.....

.....

Output .....

.....

.....[5]

**(c)** Describe what the traffic control program should do when an emergency occurs.

.....

.....

.....[1]

- 14** A surgery uses a star local area network (LAN) to access the Internet (WAN) and to store the patient database.

**(a)** Give **one** reason why the surgery has installed a star network rather than a ring network.

.....

.....[1]

**(b)** Draw and label the star network used by the surgery.

[3]

(c) Give **two** benefits for the surgery of storing the patient database on the LAN.

- 1 .....
- .....
- .....
- 2 .....
- .....
- .....[2]

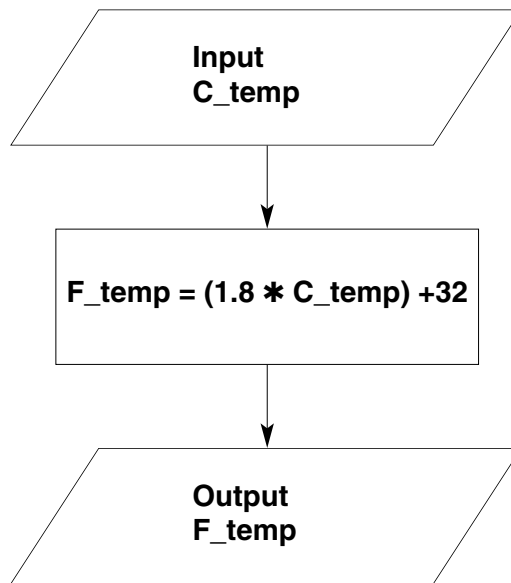
(d) State **two** data protection rules that the surgery staff must obey.

- 1 .....
- .....
- .....
- 2 .....
- .....
- .....[2]

(e) Describe how the database can be recovered from a system failure.

- .....
- .....
- .....[2]

- 15** Read this algorithm. The algorithm converts a temperature from degrees Centigrade to degrees Fahrenheit.



- (a)** Write down the output for each of the following inputs:

**(i)** 1

.....[1]

**(ii)** 5

.....[1]

- the maximum temperature
- the minimum temperature
- the average temperature

for that day.

[illegible]

..[5]

- 16** A music club keeps a file of members on a computer system. Part of the file is shown in the following diagram:

| CODE  | SURNAME | INITIAL | SEX | PHONE NO | DATE OF BIRTH |
|-------|---------|---------|-----|----------|---------------|
| M1001 | Philips | R       | F   | 3294625  | 11/12/86      |
| M1011 | Patel   | P       | M   | 2453674  | 04/01/88      |
| M1025 | Brown   | A       | F   | 2756484  | 15/05/86      |
| M1037 | Khan    | S. L    | M   | 2759815  | 18/02/87      |
| M1057 | Lee     | B. R    | M   | 2456785  | 21/07/86      |
| M1073 | Smith   | L       | F   | 3297684  | 09/02/88      |
| M1096 | Chong   | M. A    | M   | 2765492  | 03/09/87      |
| M1102 | Schon   | G       | M   | 2451843  | 22/04/88      |
| M1124 | Shah    | J. A    | M   | 3298746  | 14/04/86      |
| M1139 | Davies  | S. L    | F   | 2768798  | 09/01/88      |

- (a)** State how many fields there are in each record.

.....[1]

- (b)** State the data type that should be used for the CODE data.

.....[1]

- (c)** State **two** reasons why the data in the SEX field has been coded.

1 .....

.....

2 .....

.....[2]

- (d)** Which CODE data will be listed if the following search condition is input?

(DATE OF BIRTH < 01/01/87) AND (SEX = "M")

.....[2]

- (e)** Describe how the file can be sorted in ascending order of SURNAME.

.....

.....

.....[2]