UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

6232209025

COMPUTER STUDIES **0420/11**

Paper 1 **May/June 2010**

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.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
No marks will be awarded for using brand names of software packages or hardware.

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

This document consists of **17** printed pages and **3** blank pages.

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For Examiner's Use

1 Explain, with examples, the following **five** computer terms:

(a) Video conferencing .....

.....

..... [2]

(b) Simulation .....

.....

..... [2]

(c) Interrupt .....

.....

..... [2]

(d) Batch processing .....

.....

..... [2]

(e) Expert system .....

.....

..... [2]

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For Examiner's Use

2 State **two** tasks performed at the *design stage* in systems analysis.

1 .....

.....

.....

2 .....

.....

..... [2]

3 You have been asked to produce a presentation on the social impact of computers on shop workers.

(a) What software features would you use to make your presentation interesting?

.....

.....

.....

..... [2]

(b) What could you include in your presentation to show how the workers would be affected?

.....

.....

.....

..... [2]

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4 A company is concerned about three aspects of the security of data stored in computer files:

- data corruption
- data loss
- illegal access to data

For each of the above, give **one** reason why it could occur and state **one** method of prevention. Your reasons must be different in each case.

Data corruption
Reason: .....

.....

.....

Data corruption
Prevention: .....

.....

.....

Data loss
Reason: .....

.....

.....

Data loss
Prevention: .....

.....

.....

Illegal access to data
Reason: .....

.....

.....

Illegal access to data
Prevention: .....

.....

..... [6]

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For Examiner's Use

5 There are several methods used to implement new computer systems. Name **two** of these methods and for **each** named method give:

- a brief description
- one advantage compared to other methods
- one disadvantage compared to other methods

Method 1 .....

Description .....

.....

Advantage .....

.....

Disadvantage .....

.....

Method 2 .....

Description .....

.....

Advantage .....

.....

Disadvantage .....

..... [6]

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6 **(a)** Give **three** different types of device that allow human beings to interface with computer systems.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(b) Give **three** automatic data capture devices and give a suitable application for **each** device.

Device 1 .....

.....

Application 1 .....

.....

Device 2 .....

.....

Application 2 .....

.....

Device 3 .....

.....

Application 3 .....

..... [6]

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7 Describe how a supermarket would use computer technology to carry out automatic stock control.

.....

.....

.....

.....

.....

.....

..... [3]

8 **(a)** Describe the term *virtual reality*. Include examples of the special hardware needed to react with virtual reality systems in your answer.

.....

.....

.....

.....

.....

..... [3]

(b) Give **two** advantages of using virtual reality systems.

1 .....

.....

2 .....

..... [2]

(c) Give **one** example of an application that uses virtual reality.

.....

..... [1]

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9 Many software applications use drop-down menus.

(a) What is meant by the term *drop-down menu*?

.....

.....

.....

..... [2]

(b) A user is filling out an order form on the Internet.

(i) Give **one** example where a drop-down menu could help the user.

.....

.....

(ii) Give **one** example where a drop-down menu should **not** be used to help the user.

.....

.....

..... [2]

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For Examiner's Use

10 (a) Compilers and interpreters translate high-level languages. Give **two** differences between compilers and interpreters.

1 .....

.....

2 .....

..... [2]

(b) Programs can be written using high-level or low-level languages.

Give **one** advantage of using each method.

High-level language advantage .....

.....

.....

Low-level language advantage .....

.....

..... [2]

(c) What is meant by top-down design when developing new software?

.....

.....

..... [1]

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11 A student set up a spreadsheet to compare share prices in six companies over five years.

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	A	B	C	D	E	F	G	H
1	Name of company	Share price	Share price	Share price	Share price	Share price	Average share price	Highest share price
2	Year:	2005	2006	2007	2008	2009		
3	Global Oil	81	190	305	130	140	169	305
4	GSD	619	722	622	325	324	522	722
5	KLN	60	71	71	63	45	62	71
6	Nesto	316	418	522	600	640	499	640
7	Takkco	149	316	394	202	122	237	394
8	Uniway	122	135	254	365	570	289	570

(a) What formula is in cell G5 to find the average (mean) share price for KLN?

.....

[1]

(b) What formula is in cell H5 to find the highest share price for KLN?

.....

[1]

(c) If the data in cell E4 was changed to 425, which cells would be automatically updated?

.....

[1]

(d) The student wants to extend the spreadsheet to include share prices for 2010.

Describe how the student would do this.

.....

.....

[2]

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12 A golf course charges $10 for each game of two people. Each additional person incurs a further charge of $2 per game. If they book two or more games in advance, they get a 10% discount on the total charge.

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The following program has been written in pseudocode to calculate the charges for a game.

```
1  extracost = 0
2  input numberpeople, numbergames
3  charge = 10 * numbergames
4  extrapeople = numberpeople – 2
5  if numberpeople < 2 then extracost = 2 * extrapeople * numbergames
6  charge = extracost
7  if numbergames > 1 then charge = charge * 0.1
8  print charge
```

There are **three** errors in the program. Locate these errors and suggest a correct piece of coding.

Error 1 .....

.....

Correction 1 .....

.....

Error 2 .....

.....

Correction 2 .....

.....

Error 3 .....

.....

Correction 3 .....

..... [6]

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For Examiner's Use

13 Networks can have ring, bus or star topology.

(a) Draw and name a diagram to show **two** of these networks.

Network 1 Network 2

Name: ……. Name: …….

[2]

(b) Give **one** advantage of each chosen network.

Advantage network 1 .....

.....

.....

Advantage network 2 .....

.....

..... [2]

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14 A shower unit is controlled by sensors and a microprocessor.

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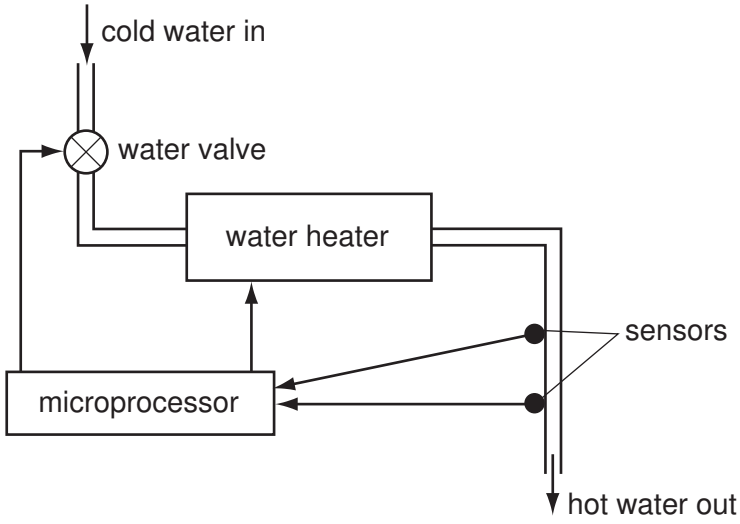

(a) Describe how the sensors and microprocessor are used to ensure the correct water flow and water temperature are maintained.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(b) Give **one** safety feature that could be built into the shower unit in case the sensors and/or microprocessor fail.

.....

..... [1]

(c) What is the advantage of having microprocessor control rather than manual control of water flow and temperature?

.....

..... [1]

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15 A database has been set up to bring together information about the world's tallest buildings. A section of the database is shown below.

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Ref No.	Building Name	City	Country	Year	No. of Floors	Height (m)	Height (ft)
TA1	Taipei 101	Taipei	Taiwan	2004	101	508	1667
MA1	Petronas Towers	Kuala Lumpur	Malaysia	1998	88	452	1483
US1	Sears Tower	Chicago	USA	1974	110	442	1451
CH1	Jiu Mao Building	Shanghai	China	1999	88	421	1381
CH2	Finance Centre	Hong Kong	China	2003	88	415	1362
CH3	CITIC Plaza	Guangzhan	China	1996	80	391	1283
CH4	Shun Hing Square	Shenzhen	China	1996	69	384	1260
US2	Empire State Building	New York	USA	1931	102	381	1250
CH5	Central Plaza	Hong Kong	China	1992	78	374	1227
CH6	Bank of China	Hong Kong	China	1989	70	367	1205
DU1	Emirates Tower	Dubai	Dubai	1999	54	355	1165
TA2	Tuntex Sky Tower	Kaohsiung	Taiwan	1997	85	348	1140

(a) How many records are in the section of the database shown?

.....

[1]

(b) Using Ref No. only, which records would be output if the following search condition was entered:

(Year < 1990) AND (Height (m) > 375)?

.....

[1]

(c) Write down a search condition to find out how many buildings are in China or how many buildings have more than 80 floors.

.....

.....

.....

[2]

(d) For each of the following fields give a different validation check.

Year .....

.....

Ref No. .....

.....

[2]

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(e) The database was sorted in descending order of Year. Using Ref No. only, write down the results of the sort.

For Examiner's Use

.....

..... [1]

16 A company has set up an Internet website to sell their electrical goods online.

(a) Give **two** features you would expect to see on the website.

1 .....

.....

2 .....

..... [2]

(b) Payments for goods can be made by credit/debit cards. Data from the cards is encrypted.

(i) What is encryption?

.....

.....

(ii) Why is data encrypted?

.....

..... [2]

(c) Apart from credit card fraud, people have other fears about buying from the Internet. Describe **one** of these fears.

.....

..... [1]

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For Examiner's Use

17 (a) Two methods of connecting to the Internet are *dial-up* and *broadband*.

Give **two** advantages of using broadband.

1 .....

.....

.....

2 .....

.....

..... [2]

(b) Computers often use wireless (WiFi) technology to connect to the Internet. Give **one** advantage and **one** disadvantage of using WiFi.

Advantage .....

.....

.....

Disadvantage .....

.....

..... [2]

(c) Apart from computers, name another device that uses WiFi technology.

.....

..... [1]

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18 A group of students were monitoring the temperature every day over a one-year period. Readings were taken ten times **every** day (you may assume a year contains 365 days).

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Write an algorithm, using pseudocode or flowchart, which

- inputs all the temperatures (ten per day)
- outputs the **highest** temperature taken over the year
- outputs the **lowest** temperature taken over the year
- outputs the average temperature **per day**
- outputs the average temperature **for the whole year**

[7]

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