UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

0958480891

COMPUTER STUDIES **7010/11**

Paper 1 **May/June 2011**

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 **24** printed pages.

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For Examiner's Use

1 Give **three** tasks carried out by an operating system.

1 .....

.....

2 .....

.....

3 .....

..... [3]

2 A user decides to use an Internet search engine to help locate a hotel.

(a) What is a search engine?

.....

..... [1]

(b) Give **two** possible problems the user might encounter when using a search engine.

1 .....

.....

.....

2 .....

.....

..... [2]

(c) The search engine found the website of a suitable hotel.

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Give **three** features you would expect to see on a hotel website.

1 .....

.....

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2 .....

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3 .....

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..... [3]

For Examiner's Use

3 A worker at a company has to go through a logon procedure to gain access to her computer system.

(a) The first thing she has to do is type in a *user name* and a *password*.

Why is this done?

.....

.....

..... [1]

(b) The *password* is typed in twice.

Why is this done?

.....

.....

..... [1]

A menu then appears on her screen. She chooses to connect to the Internet.

(c) Describe **two** ways her computer system is protected against loss or corruption of files once the computer system is connected to the Internet.

1 .....

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2 .....

..... [2]

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(d) The worker leaves her computer system for a 10-minute break.

(i) From a health and safety aspect, why does she need to take a regular break?

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.....

.....

(ii) Apart from switching off her machine, how could she ensure her computer system was secure whilst taking her regular break?

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..... [2]

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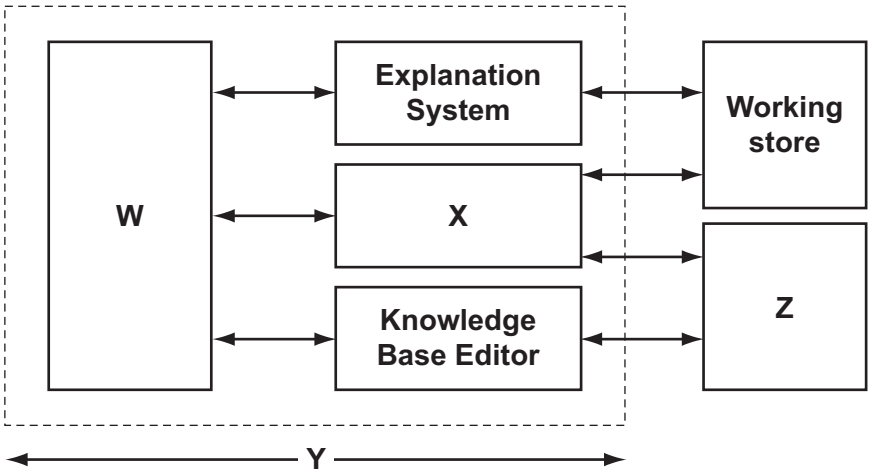
4 The following diagram shows a typical expert system.



(a) Name the missing labels **W** to **Z** using the following list of possible options.

Inference Engine	Expert System Shell
Knowledge Base	User Interface

W .....

X .....

Y .....

Z ..... [4]

(b) Name **one** of the components that makes up the knowledge base.

.....

..... [1]

(c) Give **one** advantage and **one** disadvantage of using expert systems.

Advantage: .....

.....

.....

Disadvantage: .....

.....

..... [2]

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(d) Name **two** examples of the use of expert systems.

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1 .....

.....

2 .....

..... [2]

5 Study the following flowchart very carefully:

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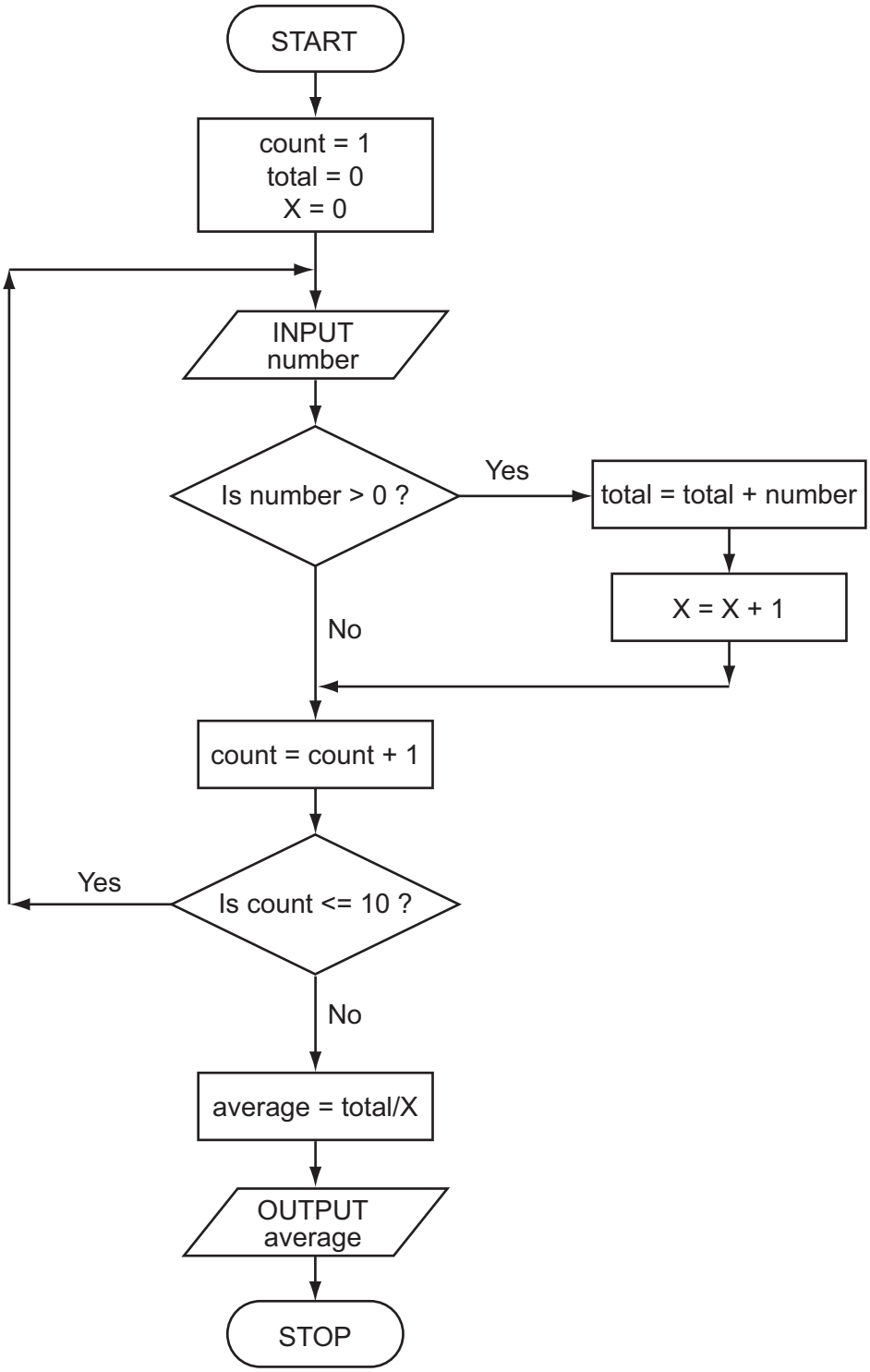

(a) Complete the trace table for the following data set:

15, -2, 0, 8, 0, 21, -8, -12, 1, 25

count	number	total	X	average	OUTPUT

[4]

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(b) What is the purpose of this flowchart?

.....

..... [1]

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6 Describe the role of computer software and hardware when producing animation effects in the television and film industry.

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..... [3]

7 A spreadsheet has been set up to compare the costs of types of fruit juice sold by a shop.

	A	B	C	D
1	NAME OF FRUIT JUICE	NORMAL PRICE PER BOTTLE ($)	VOLUME OF BOTTLE (LITRES)	COST PER LITRE ($)
2	Apple	3.50	1.0	3.50
3	Orange	2.80	1.0	2.80
4	Pomegranate	4.55	0.7	6.50
5	Caju	2.00	2.0	1.00
6	Mango	1.05	0.7	1.50
7			Average cost:	3.06

(a) (i) What formula is in cell D5 to calculate the cost of *Caju juice* per litre?

.....

(ii) What formula is in cell D7 to calculate the mean (average) cost of fruit juice per litre?

..... [2]

(b) What validation check could be carried out on the data in cells B2 to B6?

.....

..... [1]

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(c) Three extra columns are to be added to this spreadsheet:
Column E will show a percent discount on the normal price of a bottle of fruit juice (as shown in column B);
Column F will show this discount in dollars ($);
Column G will show the price of a bottle of fruit juice after discount.

Complete the spreadsheet by showing the **formulas** that need to be placed in cells F2 to F6 and G2 to G6.

	E	F	G
1	Percentage discount (%)	Discount amount ($)	Discounted price per bottle ($)
2	10		
3	20		
4	15		
5	10		
6	5		

[4]

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[Turn over

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8 Many computer-controlled systems use sensors to gather physical data. For example, temperature sensors are used in the control of central heating systems.

(a) Name **three** other sensors and give a different application for each named sensor.

Sensor 1: .....

Application: .....

.....

.....

Sensor 2: .....

Application: .....

.....

.....

Sensor 3: .....

Application: .....

.....

..... [6]

(b) Describe how temperature sensors are used in computer-controlled central heating systems.

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.....

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.....

..... [3]

9 An international company uses video-conferencing. The system is set up as follows:

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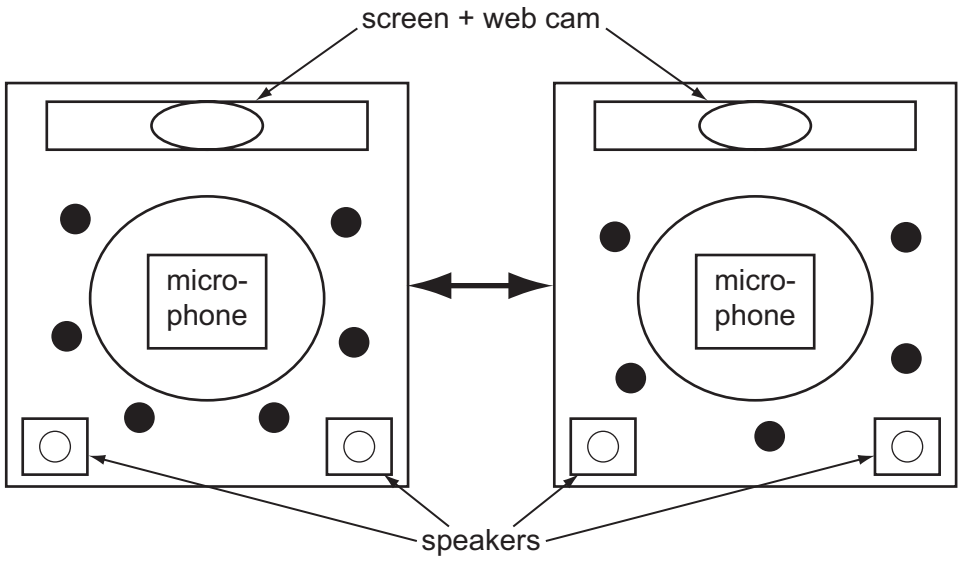

(● represents a person at the meeting)

(a) Describe how the video-conferencing system works.

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.....

..... [4]

(b) Give **two** reasons why video-conferencing is gaining in popularity.

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1 .....

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2 .....

.....

..... [2]

For Examiner's Use

10 (a) Two logic gates are the AND gate and the OR gate. Complete the truth tables for these two gates:

AND gate

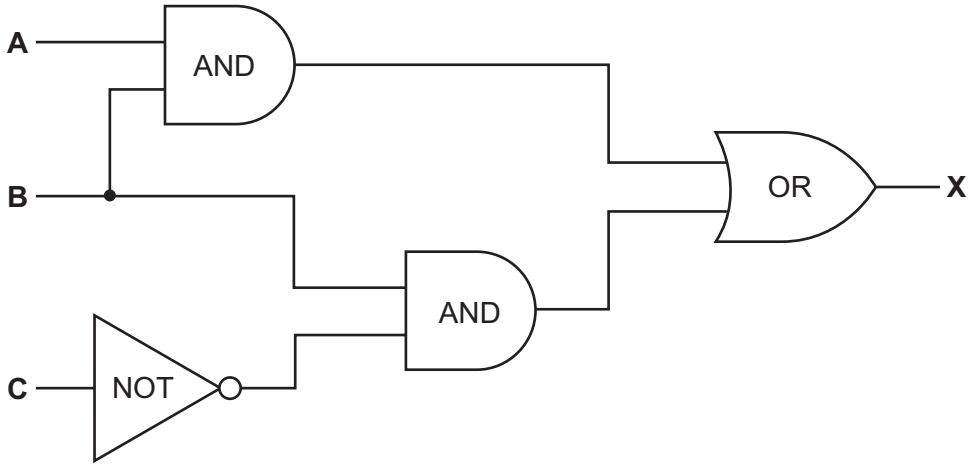
A	B	X
0	0	
0	1	
1	0	
1	1	

OR gate

A	B	X
0	0	
0	1	
1	0	
1	1	

[2]

(b) Complete the truth table for the following logic circuit:



A	B	C	X
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	

[4]

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11 (a) Describe **three** features you would expect to find in a Computer Aided Design (CAD) package.

1 .....

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2 .....

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3 .....

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..... [3]

(b) Give **three** different applications where CAD might be used.

1 .....

.....

.....

2 .....

.....

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3 .....

.....

..... [3]

For Examiner's Use

12 Many vehicles use Global Positioning Systems (GPS) to know their exact location at all times.

(a) How does GPS work?

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.....

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.....

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.....

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.....

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..... [3]

A taxi company uses GPS in all its vehicles.

(b) One of its taxis is on Main Street and needs to go to Railway Street.

How is GPS technology used to help the taxi driver get to his new destination?

.....

.....

.....

.....

..... [2]

(c) Name **one** other feature of GPS that could be useful to the driver.

.....

.....

..... [1]

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(d) Give **two** reasons why the GPS could take the driver to the wrong destination or cause error messages.

1 .....

.....

.....

2 .....

.....

..... [2]

13 It has been decided to model the traffic flow at a busy road junction.

(a) Describe how data is gathered for this model.

.....

.....

.....

.....

.....

.....

..... [3]

(b) Give **two** reasons why a model is used.

1 .....

.....

2 .....

..... [2]

14 (a) Name and draw **two** common types of network topology.

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Type 1: ..... Type 2: .....

[2]

(b) Give **two** advantages of networking computers.

1 .....

.....

.....

2 .....

.....

..... [2]

15 A database showing the population of world cities has been produced. A section of the database is shown below.

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Ref No	Name of City	Country	Area	City Population (m)	Urban Population (m)	Capital
1	Tokyo	Japan	Asia	33.2	34.1	Yes
2	New York	USA	America	17.8	21.9	No
3	Sao Paulo	Brazil	America	17.7	20.2	No
4	Seoul	S Korea	Asia	17.5	22.3	Yes
5	Mexico City	Mexico	America	17.4	22.7	Yes
6	Osaka	Japan	Asia	16.4	16.8	No
7	Manila	Philippines	Asia	14.8	14.9	Yes
8	Mumbai	India	Asia	14.4	19.7	No
9	Jakarta	Indonesia	Asia	14.3	17.2	Yes
10	Calcutta	India	Asia	12.7	15.6	No

(a) How many records are shown above?

.....

[1]

(b) Using **Ref No** only, which records would be found if the following search condition was typed in

(**Country** = "India" **OR Area** = "America") **AND** (**Capital** = "No")

.....

.....

[2]

(c) Write a search condition to find the cities in Asia with a city population greater than 17 million OR an urban population greater than 20 million.

.....

.....

.....

[2]

(d) Give **one** advantage of using Y or N rather than Yes or No in the **Capital** column.

.....

.....

.....

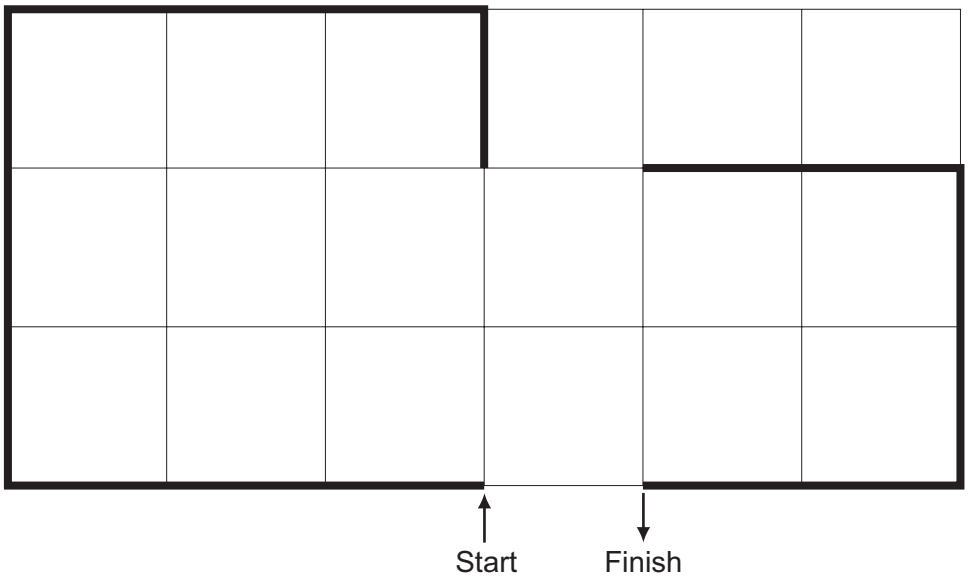
[1]

16 A floor turtle can use the following instructions:

For Examiner's Use

Instruction	Meaning
FORWARD ***d***	Move ***d*** cm forward
BACKWARD ***d***	Move ***d*** cm backward
LEFT ***t***	Turn left ***t*** degrees
RIGHT ***t***	Turn right ***t*** degrees
REPEAT ***n***	Repeat the next set of instructions ***n*** times
ENDREPEAT	End of REPEAT loop
PENUP	Raise the pen
PENDOWN	Lower the pen

(Each square in the drawing below is 10 cm by 10 cm.)



Complete the set of instructions to draw the above shape (shown in bold lines).

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PENDOWN

LEFT 90

REPEAT .....

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[5]

For Examiner's Use

17 Daniel lives in Italy and travels to Mexico, India and New Zealand. The times differences are:

Country	Hours	Minutes
Mexico	-7	0
India	+4	+30
New Zealand	+11	0

Thus, if it is 10:15 in Italy it will be 14:45 in India.

(a) Write an algorithm, using pseudocode or otherwise, which:

- Inputs the name of the country
- Inputs the time in Italy in hours (H) and minutes (M)
- Calculates the time in the country input using the data from the table
- Outputs the country and the time in hours and minutes

[4]

(b) Describe, with examples, **two** sets of test data you would use to test your algorithm.

1

2

[2]

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