Candidate Name _____

Centre Number _____

Candidate Number _____

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

General Certificate of Education Ordinary Level

7010/12

COMPUTER STUDIES

Paper 1

May/June 2011

TIME: 2 hours 30 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

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

READ INSTRUCTIONS OVERLEAF

The whole of this paper is © UCLES 2011.

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.

BLANK PAGE

1 (a) Give TWO features you would expect to find in a data protection act.

1 _____

_____

_____

2 _____

_____

_____ **[2]**

(b) Why would this act still not necessarily protect data stored in a computer system?

_____

_____

_____

_____ **[2]**

2 (a) What is meant by the term *user documentation*?

_____

_____

_____ **[1]**

(b) Give THREE items you would expect to see in user documentation.

1 _____

_____

2 _____

_____

3 _____

_____ **[3]**

(c) Rather than supply the user documentation on paper, a company decides to offer online help.

(i) Give ONE advantage of doing this.

_____

_____

(ii) Give ONE disadvantage of doing this.

_____

_____ **[2]**

3 Most operating systems provide a *user interface*.

(a) User interfaces can be either *command line interfaces (CLI)* or *graphical user interfaces (GUI)*.

Give ONE advantage and ONE disadvantage of both types of interface.

Advantage CLI: _____

_____

_____

Disadvantage CLI: _____

_____

_____

Advantage GUI: _____

_____

_____

Disadvantage GUI: _____

_____

_____ **[4]**

(b) Give THREE other tasks carried out by an operating system.

1 _____

_____

2 _____

_____

3 _____

_____ **[3]**

4 A company has decided to introduce an *intranet* and remove Internet access for its staff.

(a) Describe TWO reasons why the company will not allow its staff Internet access.

1 _____

_____

_____

2 _____

_____

_____ **[2]**

(b) Apart from removing Internet access, give TWO advantages to the company of using an *intranet*.

1 _____

_____

_____

2 _____

_____

_____ **[2]**

5 The following table shows FOUR applications which require specialist INPUT devices.

For EACH application, suggest ONE possible INPUT device and give a reason for your choice.

APPLICATION	INPUT DEVICE	REASON FOR CHOICE OF DEVICE
Virtual reality application		
Disabled person communicating with a computer system		
Automatic stock control system at a supermarket		
Information kiosk at an airport using a GUI interface		

[8]

6 FIVE security or data loss issues are shown on the left hand side.

FIVE possible methods of data recovery or protection are shown on the right.

Match the definitions/descriptions on the left to the most appropriate method on the right by drawing connecting arrows.

ISSUES	METHODS
Data loss caused by hard disk head crash	Anti-virus software
Hacking into files and changing or deleting data	Encryption
Introduction of software that self-replicates and can cause data loss	Anti-spyware software
Reading of illegally accessed documents	Make back-up files
Software that logs/records all key presses on your computer without you knowing	Use of passwords and a firewall

[5]

7 (a) Read the following section of code that inputs twenty (20) numbers and then outputs the largest number input.

```
1    h = 0
2    c = 0
3    REPEAT
4        READ x
5        IF x > h THEN x = h
6        c = c + 1
7        PRINT h
8    UNTIL c < 20
```

There are THREE errors in this code.

Locate these errors and suggest a corrected piece of code.

1 _____

_____

_____

2 _____

_____

_____

3 _____

_____

_____ **[3]**

(b) The above code is an example of a high-level language.

Give TWO features of a high-level language.

1 _____

_____

2 _____

_____ **[2]**

(c) The code is to be *interpreted* rather than *compiled*.

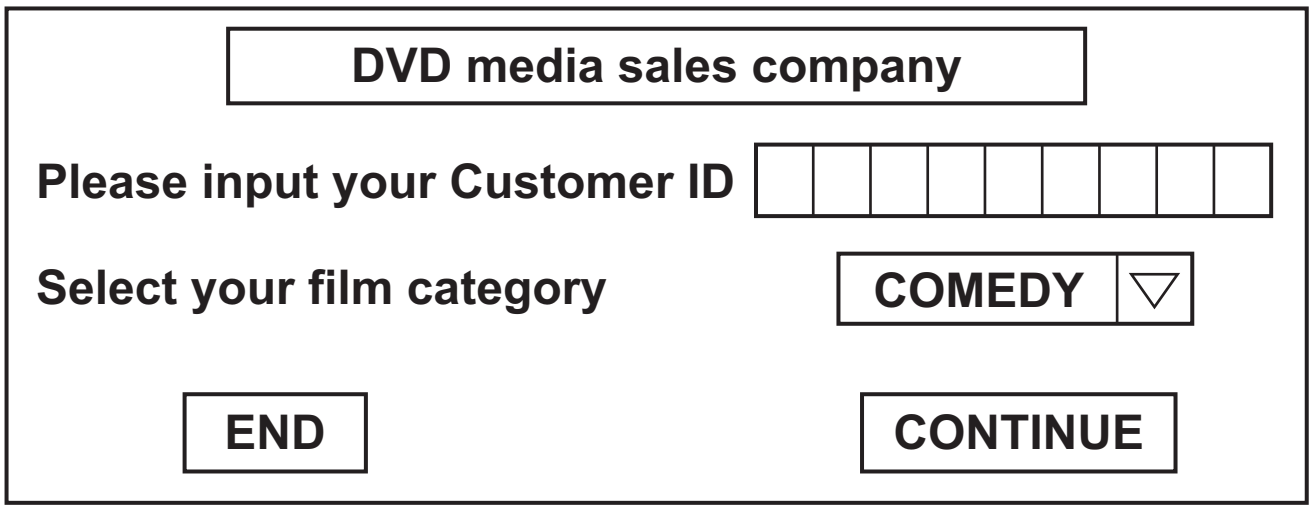
Give ONE difference between these two methods.

_____

_____ **[1]**

8 A media sales company has set up a website.

The opening page is:



(a) (i) What TYPE of menu is being used for the film category?

_____

(ii) Give ONE advantage of this type of menu.

_____

_____ **[2]**

(b) (i) Name a validation check that could be used on the *Customer ID* field?

_____ **[1]**

(ii) Describe TWO types of test data, together with examples, that could be used to see whether the validation check named in (i) works.

Type 1 _____

Example _____

_____

Type 2 _____

Example _____

_____ **[4]**

9 Juan decided to buy 40 tracks online from a music distribution company.
The tracks are all in MP3 format.

(a) What is the benefit of downloading tracks in MP3 format rather than in the normal CD format?

_____

_____ **[1]**

Juan uses a company which offers the following Internet broadband transfer rates:

- **56 megabits per second *DOWNLOAD***
- **16 megabits per second *UPLOAD***

(b) If each music track is 3.5 megabytes in size, how long would it take Juan to download his 40 tracks? (Show your working.)

_____

_____

_____

_____

_____ **[2]**

(c) He has decided to upload 36 photographs onto his social networking website. Each photograph is 1.8 megabytes in size.

How long would it take to upload his photographs?

_____

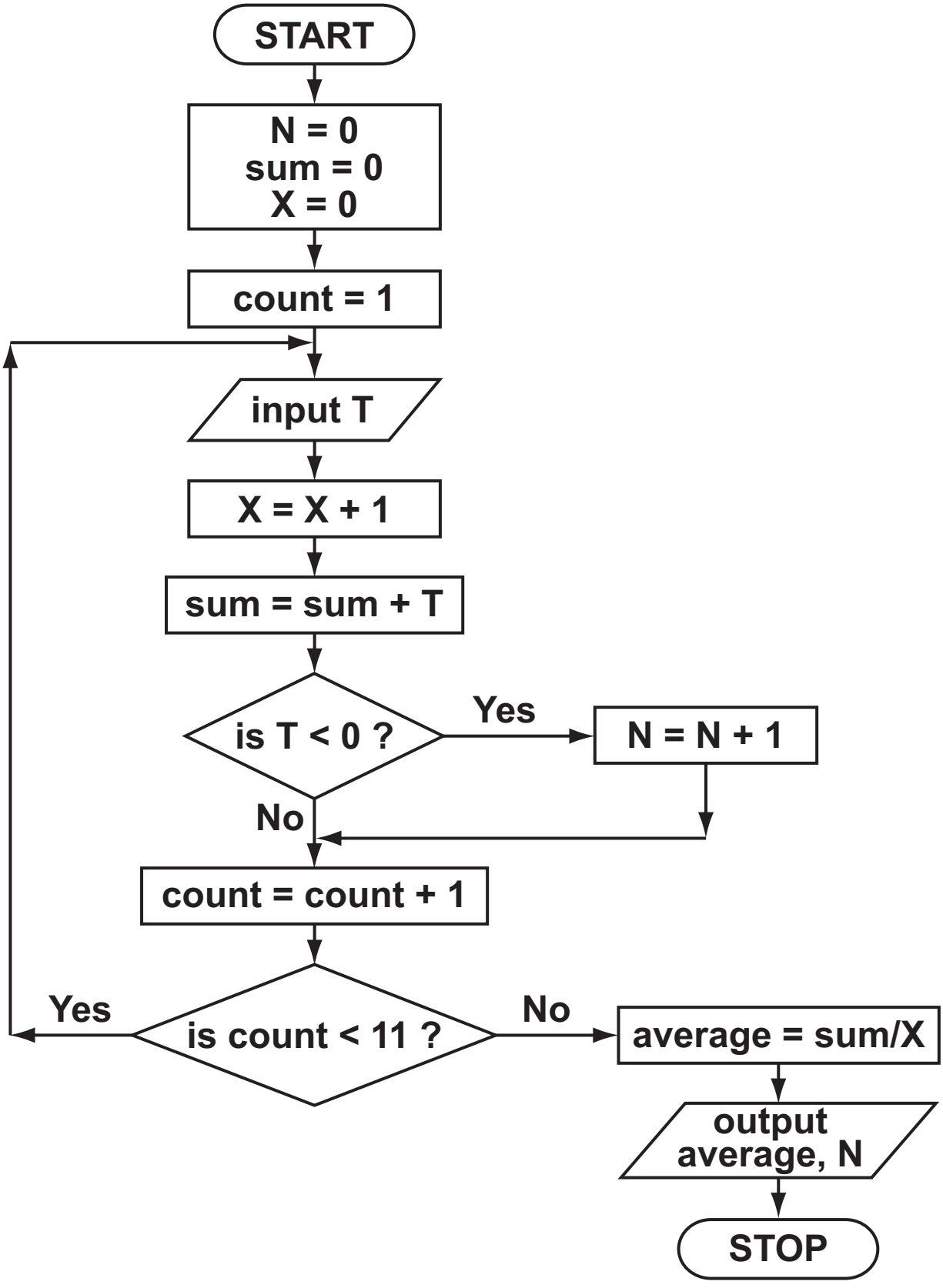
_____

_____

_____

_____ **[2]**

10 The following flowchart inputs ten temperatures and outputs the average (mean) temperature and the number of temperatures which were negative (i.e. < 0).



(a) Complete the trace table for this flowchart using the following test data:

5, 11, 16, -4, -10, 8, 10, -3, 17, 10

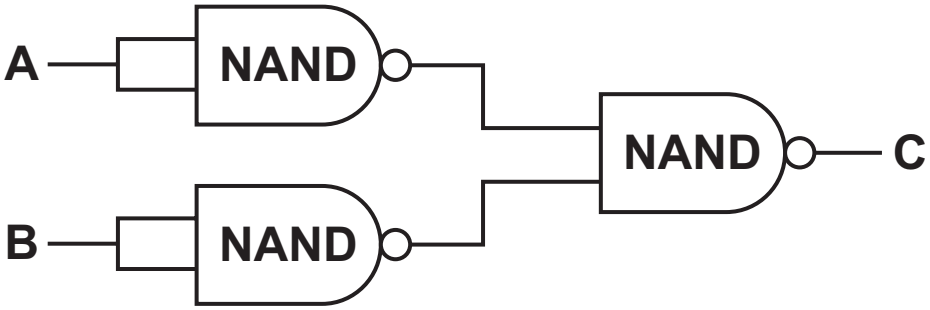
N	sum	X	count	T	average

[6]

(b) What values are output from the flowchart using the above test data?

_____ **[1]**

11 (a) (i) Complete the truth table for the following logic circuit:



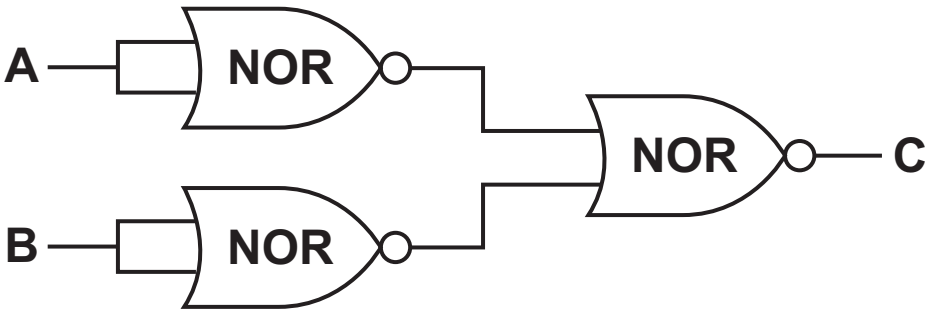
A	B	C
0	0	
0	1	
1	0	
1	1	

[2]

(ii) Which single logic gate has the SAME function as the above logic circuit?

_____ **[1]**

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



A	B	C
0	0	
0	1	
1	0	
1	1	

[2]

(ii) Which single logic gate has the SAME function as the above logic circuit?

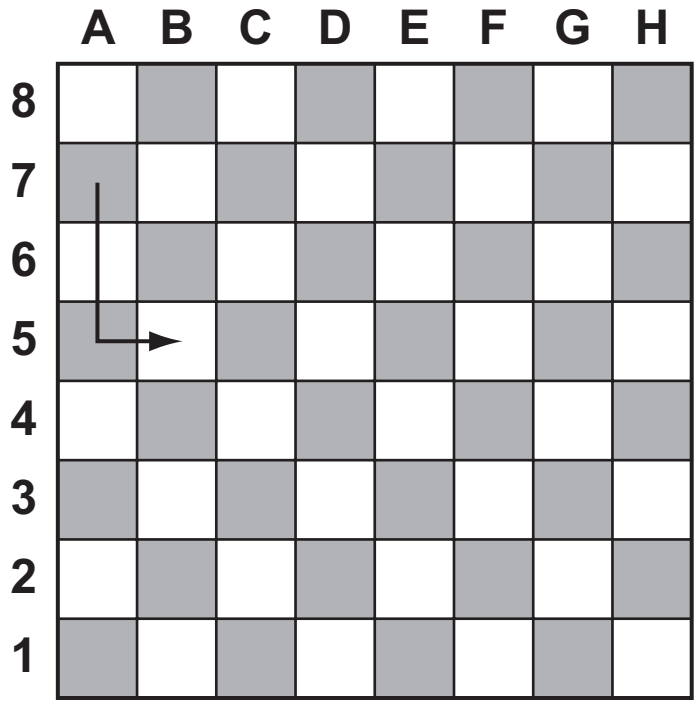
_____ **[1]**

12 An electronic chess board is connected to a computer. There are sensors under EACH square and EACH chess piece has a magnet in its base.

In a game, one player is the computer and the other player a person.

In the example below, a piece has been moved FROM A7 TO B5.

Each chess piece has pre-programmed legal moves.



(a) Describe how the computer knows when or if a chess piece has moved.

[3]

(b) A person moves a chess piece when prompted by the computer. How would the computer know if the move made was legal?

[2]

(c) Name the type of software application that can play chess games in this way.

_____ **[1]**

BLANK PAGE

13 Describe THREE ADVANTAGES and TWO DISADVANTAGES to the general public of using the Internet to do online shopping.

ADVANTAGES

1 _____

_____

_____

2 _____

_____

_____

3 _____

_____

_____

DISADVANTAGES

1 _____

_____

_____

2 _____

_____

_____ **[5]**

14 A spreadsheet has been set up to show the size of some model cars.

	A	B	C	D	E
1	NAME	FULL LENGTH (M)	SCALE	SCALE LENGTH (M)	IS MODEL > 0.25 M ?
2	Raudi R8	5.22	18	0.29	
3	Monda Civil	4.30	43	0.10	
4	R Skate	6.12	18	0.34	
5	Silly for 2	2.76	12	0.23	
6	Citron C1	3.42	18	0.19	
7	Singer S2	5.20	10	0.52	
8					

(a) What formulas must be in column D?

	D
1	SCALE LENGTH (M)
2	
3	
4	
5	
6	
7	
8	

[2]

(b) (i) The formula = IF (D2 > 0.25, "Y", "N") was typed into E2. What output would be shown in E2?

_____

(ii) If this formula was replicated all the way down from E3 to E7, what formula would be in E7?

_____

_____ **[2]**

(c) Describe a way of filtering out only those models which are scale 18.

_____

_____

_____

_____

_____ **[2]**

15 Name THREE different types of storage media and give an example of each.

Type 1 _____

_____

Example _____

Type 2 _____

_____

Example _____

Type 3 _____

_____

Example _____ **[3]**

16 A book shop uses barcodes for its computerised stock control.

Each book title has a barcode which identifies it.

The data is stored in a table.

(a) A sample of the data stored in the table is shown below:

BARCODE	BOOK TITLE	AUTHOR	COPIES	PUBLICATION DATE
123456789012	Blue Lagoon	AA Smith	27	10/2001
345678901234	Happy Hour	BJ Cocktail	30	11/1997
567890123456	Young Blood	CM Vein	19	06/2009

(i) Which is the key field?

_____

(ii) Give TWO examples of when the data in the table will need to be changed.

1 _____

_____

2 _____

_____ **[3]**

(b) Each barcode has a *check digit*.

(i) Explain how the *check digit* is used as a validation check.

_____

_____

(ii) What type of error can the check digit identify?

_____

_____

_____ **[2]**

(c) Name DIFFERENT suitable validation checks for EACH of the following fields:

Book title: _____

_____

Copies: _____

_____

Publication date: _____

_____ **[3]**

17 A school has 1800 students. The start date and leaving date for each student is stored on file. Dates are in the format YYMMDD (e.g. a student starting on 10th September 2007 and leaving on 4th August 2012 has the data 070910 and 120804 on file).

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

- **inputs Student ID for all 1800 students**
- **inputs the start date and leaving date for each student**
- **carries out a check to ensure the second date is later**
- **if error, increments error counter**
- **outputs the number of errors**

[5]

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

[2]

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.