



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

READ THESE	INSTRUCTIONS FIRST		
No Additional N	Materials are required.		
Candidates and	swer on the Question Paper.		
			2 hours 30 minutes
Paper 1			May/June 2011
COMPUTER S	TUDIES		0420/12
CENTRE NUMBER		CANDIDATE NUMBER	
CANDIDATE NAME			

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.

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This document consists of 20 printed pages.



(a)	Give two features you would expect to find in a data protection act.	Exami Us
	1	
	2	
	[2]	
(b)	Why would this act still not necessarily protect data stored in a computer system?	
	[2]	

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1

2	(a)	Wha	at is meant by the term user documentation?
			[41]
			[1]
	(b)	Give	e three items you would expect to see in user documentation.
		1	
			
		2	
		3	
			[3]
	(c)	Pati	her than supply the user documentation on paper, a company decides to offer
	(0)		ne help.
		(i)	Give one advantage of doing this.
		/ii\	Give one disadvantage of doing this.
		(" <i>)</i>	Cive one disadvantage of doing this.
			[2]

Most operating systems provide a user interface. 3 (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: **(b)** Give **three** other tasks carried out by an operating system. 1 ______ 2

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3

4

A con	A company has decided to introduce an <i>intranet</i> and remove Internet access for its staff.			
(a) D	Describe two reasons why the company will not allow its staff Internet access.			
1				
2	2			
	[2]			
	Apart from removing Internet access, give two advantages to the company of using an <i>ntranet</i> .			
1				
2	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.

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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.

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Issues Methods

Data loss caused by hard disk head crash

Hacking into files and changing or deleting data

Introduction of software that self-replicates and can cause data loss

Reading of illegally accessed documents

Software that logs/records all key presses on your computer without you knowing

Anti-virus software

Encryption

Anti-spyware software

Make back-up files

Use of passwords and a firewall

[5]

7 (Read the following section of code that inputs twenty (20) numbers and then outputs the largest number input.	For aminer's Use
		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]	
(I	၁)	The above code is an example of a high-level language.	
		Give two features of a high-level language.	
		1	
		2	
		[2]	

		••••
	Give one difference between these two methods.	
(C)	The code is to be <i>interpreted</i> rather than <i>compiled</i> .	

10 A media sales company has set up a website. 8 The opening page is: DVD media sales company Please input your Customer ID Select your film category COMEDY CONTINUE **END** (a) (i) What type of menu is being used for the film category? (ii) Give **one** advantage of this type of menu. Name a validation check that could be used on the Customer ID field? (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

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Example

Type 2

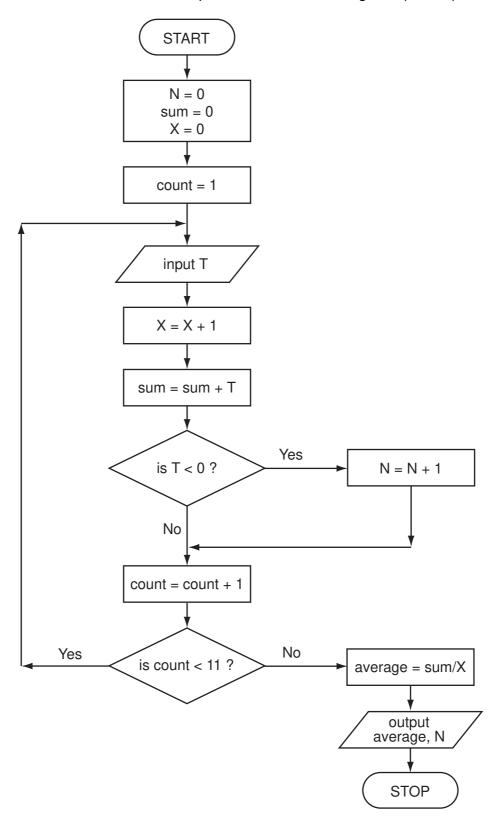
9

	lecided to buy 40 tracks online from a music distribution company. acks are all in MP3 format.
	hat is the benefit of downloading tracks in MP3 format rather than in the normal CD rmat?
	[1]
Juan u	ses a company which offers the following Internet broadband transfer rates:
	6 megabits per second <i>download</i> 6 megabits per second <i>upload</i>
	each music track is 3.5 megabytes in size, how long would it take Juan to download s 40 tracks? (Show your working).

	[2]
	e has decided to upload 36 photographs onto his social networking website. Each notograph is 1.8 megabytes in size.
Но	ow 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).

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(a)	Complete	the trace	table for t	this flowchart	using the	following test of	data:
١	ς,	Complete	and ando	table let	tino nomonar	acing the	Tonowing toot	Julu.

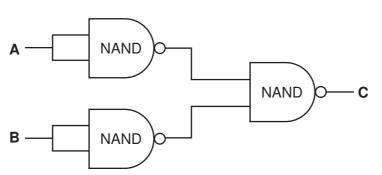
5, 11, 16, -4, -10, 8, 10, -3, 17, 10

sum	X	count	Т	average
	sum	sum X	sum X count	sum X count T

г	-	•	٦
	r	٦	
	L	J	1

(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:



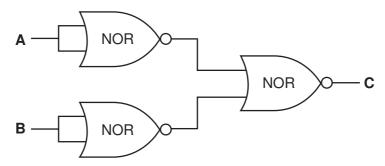
Α	В	С
0	0	
0	1	
1	0	
1	1	

[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:



Α	В	С
0	0	
0	1	
1	0	
1	1	

[2]

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

[1]

Use

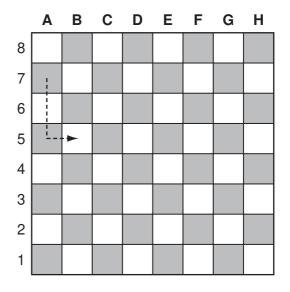
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12 An electronic chess board is connected to a computer. There are sensors under **each** square and **each** chess piece has a magnet in its base.

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

In the example on the right, 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.
	[2]
	[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.
(0)	maine the type of software application that can play chess games in this way.
	[1]

13 Describe three advantages and two disadvantages to the general public of using the Internet to do online shopping.

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<u>Advan</u>	<u>tages</u>		

1	
<u></u> 2	
2	
3	
<u>Di</u>	<u>sadvantages</u>
1	
<u></u> 2	
_	
	[5]

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

	Α	В	С	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?

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	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)	Des	scribe a way of filtering out only those models which are scale 18.
		[2]

15	5 Name three different types of storage media and give an example of each.					
	Тур	e 1				
	Exa	ımple				
	Тур	e 2				
	Exa	imple				
	Тур	e 3				
	Dev	vice				[3]
16 A book shop uses barcodes for its computerised stock control.						
16				ca stock control		
16		·	·			
16	Eacl	h book title has a bard	code which identifies			393 000146
16	Eacl	·	code which identifies			3931000146
16	Eacl The	h book title has a bard	code which identifies	it.		393.000146
16	Eacl The	h book title has a bard data is stored in a tab A sample of the data	code which identifies ble. stored in the table is	it. s shown below:	0 2 7	393 0000146 1
16	Eacl The	h book title has a bard data is stored in a tab A sample of the data Barcode	stored in the table is	s shown below:	Copies	Publication date
16	Eacl The	h book title has a bard data is stored in a tab A sample of the data Barcode 123456789012	stored in the table is Book title Blue Lagoon	s shown below: Author AA Smith	Copies 27	Publication date 10/2001
16	Eacl The	h book title has a bard data is stored in a tab A sample of the data Barcode 123456789012 345678901234	stored in the table is Book title Blue Lagoon Happy Hour	s shown below: Author AA Smith BJ Cocktail	Copies 27 30	Publication date 10/2001 11/1997
16	Each The (a)	h book title has a bard data is stored in a tab A sample of the data Barcode 123456789012	stored in the table is Book title Blue Lagoon Happy Hour Young Blood	s shown below: Author AA Smith	Copies 27	Publication date 10/2001
116	Each The (a)	h book title has a bard data is stored in a tab A sample of the data Barcode 123456789012 345678901234 567890123456	stored in the table is Book title Blue Lagoon Happy Hour Young Blood	s shown below: Author AA Smith BJ Cocktail	Copies 27 30	Publication date 10/2001 11/1997
16	Each The (a)	h book title has a bard data is stored in a tab A sample of the data Barcode 123456789012 345678901234 567890123456	stored in the table is Book title Blue Lagoon Happy Hour Young Blood	s shown below: Author AA Smith BJ Cocktail CM Vein	Copies 27 30 19	Publication date 10/2001 11/1997 06/2009
16	Each The (a)	h book title has a bard data is stored in a tab A sample of the data Barcode 123456789012 345678901234 567890123456 (i) Which is the key (ii) Give two example	stored in the table is Book title Blue Lagoon Happy Hour Young Blood	s shown below: Author AA Smith BJ Cocktail CM Vein in the table will	Copies 27 30 19	Publication date 10/2001 11/1997 06/2009
16	Each The (a)	h book title has a bard data is stored in a tab A sample of the data Barcode 123456789012 345678901234 567890123456 (i) Which is the key (ii) Give two example	stored in the table is Book title Blue Lagoon Happy Hour Young Blood field?	s shown below: Author AA Smith BJ Cocktail CM Vein in the table will	Copies 27 30 19	Publication date 10/2001 11/1997 06/2009
16	Each The (a)	h book title has a bard data is stored in a tab A sample of the data Barcode 123456789012 345678901234 567890123456 (i) Which is the key (ii) Give two examples	stored in the table is Book title Blue Lagoon Happy Hour Young Blood field?	s shown below: Author AA Smith BJ Cocktail CM Vein in the table will	Copies 27 30 19	Publication date 10/2001 11/1997 06/2009

(b)	Ead	ch barcode has a <i>check digit</i> .	
	(i)	Explain how the check digit is used as a validation check.	-
	(ii)	What type of error can the check digit identify?	
		[2]	
(c)	Nar	me different suitable validation checks for each of the following fields:	
	Boo	ok title:	
	Cop	oies:	
	Puk	olication 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).

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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]

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