

**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.**

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**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*?**

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**[1]**

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

**1** \_\_\_\_\_

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**2** \_\_\_\_\_

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**3** \_\_\_\_\_

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**[3]**

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

**(i) Give ONE advantage of doing this.**

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**(ii) Give ONE disadvantage of doing this.**

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**[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
<b>Virtual reality application</b>		
<b>Disabled person communicating with a computer system</b>		
<b>Automatic stock control system at a supermarket</b>		
<b>Information kiosk at an airport using a GUI interface</b>		

**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

**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**

## METHODS

**Anti-virus software**

**Encryption**

**Anti-spyware software**

**Make back-up files**

**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:**

<b>DVD media sales company</b>	
Please input your Customer ID	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Select your film category	<b>COMEDY</b> ▼
<b>END</b>	<b>CONTINUE</b>

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

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

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**[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?**

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**[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.)**

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**[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?**

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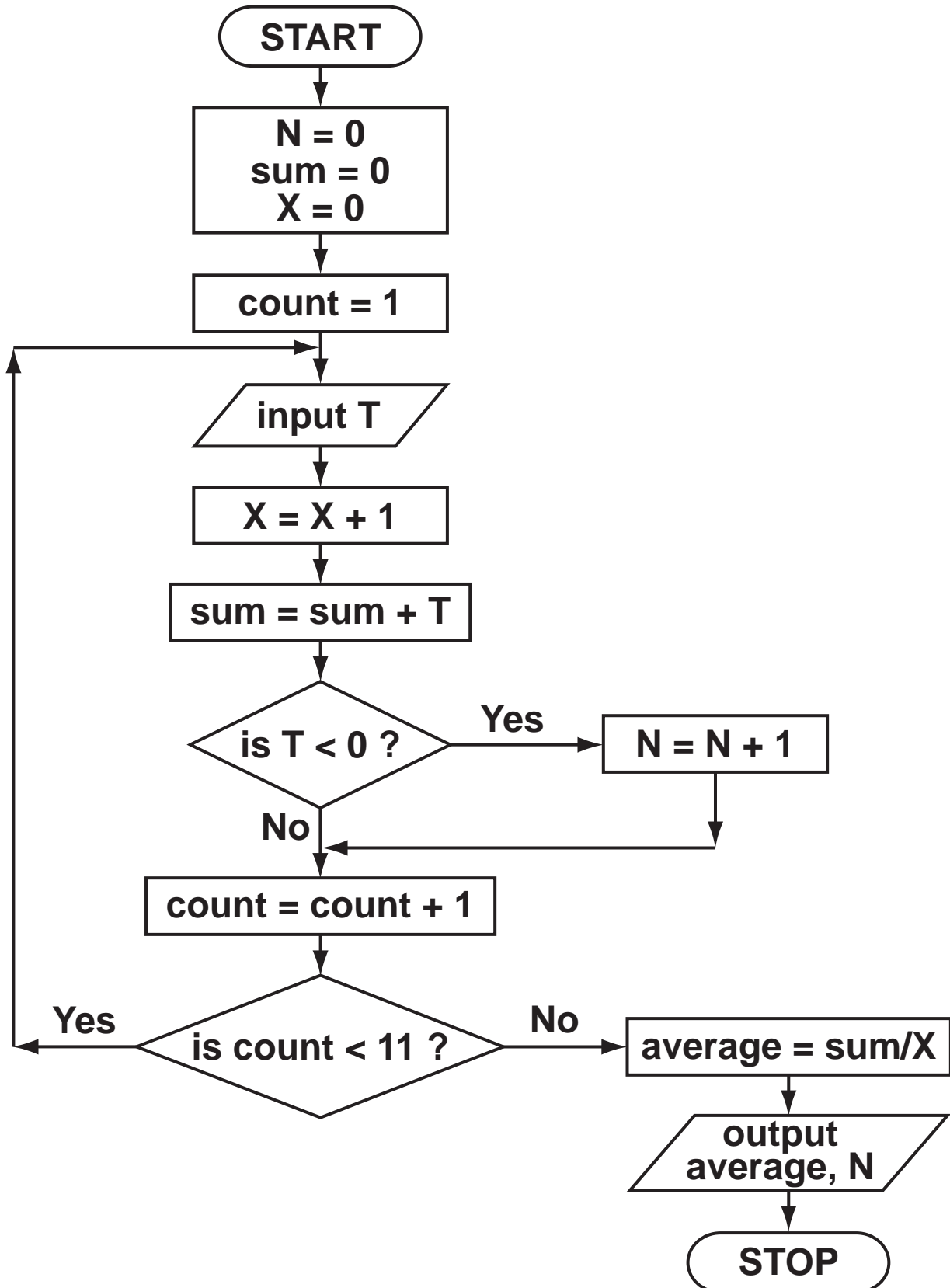
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**[2]**

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**

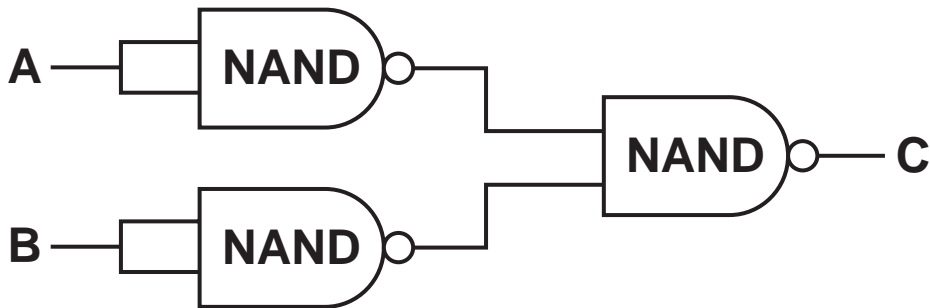
<b>N</b>	<b>sum</b>	<b>X</b>	<b>count</b>	<b>T</b>	<b>average</b>

**[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:



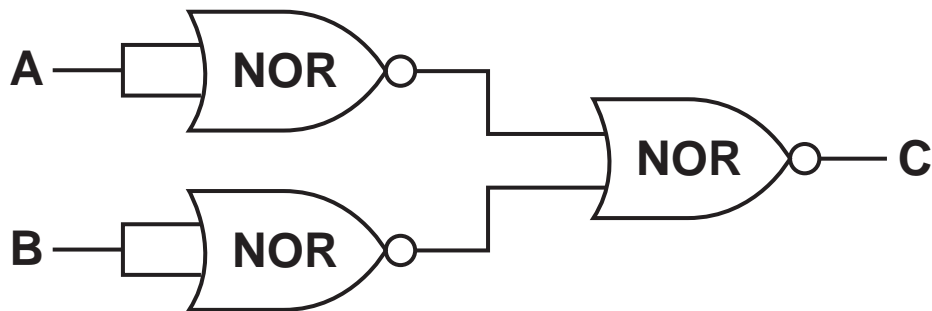
A	B	C
0	0	
0	1	
1	0	
1	1	

[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?

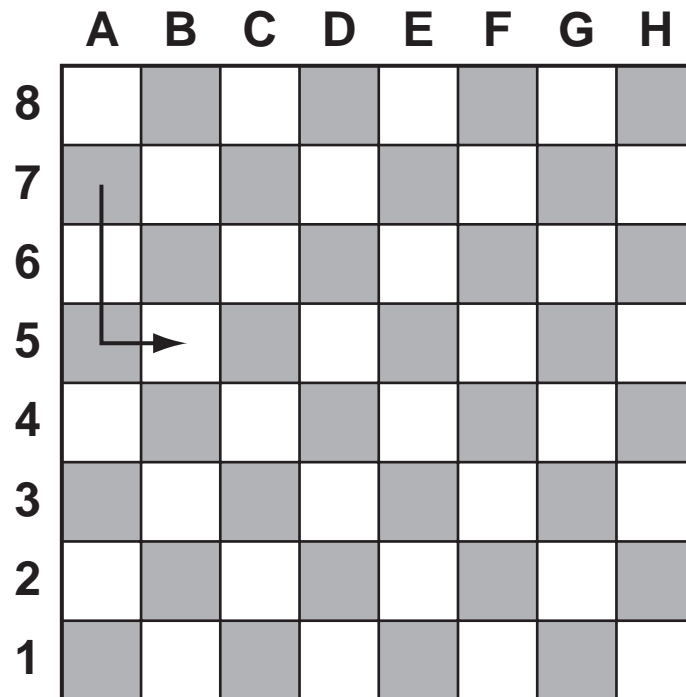
[1]

**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.**

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**[3]**

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

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**[2]**

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

**[1]**

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**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

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2

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[5]

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

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

**(a) What formulas must be in column D?**

	<b>D</b>
<b>1</b>	<b>SCALE LENGTH (M)</b>
<b>2</b>	
<b>3</b>	
<b>4</b>	
<b>5</b>	
<b>6</b>	
<b>7</b>	
<b>8</b>	

**[2]**

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

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

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**[2]**

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

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**[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:**

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

**(i) Which is the key field?**

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**(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 YYYYMMDD (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**

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[5]

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

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[2]

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