

# COMPUTER SCIENCE

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| <p><b>Paper 0478/11</b><br/><b>Paper 1</b></p> |
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## **Key messages**

This standard of candidate's work continues to improve for this syllabus. There is a continued move to provide questions where candidates have to apply their knowledge, rather than just show their ability to simply remember facts. There is strong evidence that this is producing candidates who are now exhibiting an improved understanding of many of the topics.

## **General comments**

Candidates and centres are reminded that written papers are now scanned in and marked on computer screens by examiners. Consequently, if a candidate writes the answer to a question on an additional page, they must indicate very clearly to the examiner where their revised answer is to be found. Also, if answers have been crossed out, the new answer must be written very clearly, so that examiners can easily read the text and award candidates the appropriate mark.

## **Comments on specific questions**

### **Question 1**

- (a) Most candidates were able to tick the correct box for the response of Base-2. The most common incorrect answer was Base-10. Candidates may have given this answer as they have confused the 1 and the 0 in the names Base-10 to be the values used by Binary.
- (b) Some candidates were able to provide all four correct values. Many candidates were able to provide a correct response for the first two values. Some candidates were able to provide a correct response for the last two values. The most common incorrect response was from candidates who provided a conversion to binary instead of a conversion to denary, as required by the question.

### **Question 2**

- (a) Most candidates were able to provide a suitable input device that could be used. Some candidates repeated the input device of touch screen, given in the question. The question required candidates to give another suitable input device. Candidates are reminded to read all the information given in a question before they provide their response.
- (b) Some candidates were able to provide the correct response of capacitive. The most common incorrect response given was resistive.
- (c) Few candidates were able to give the name of this type of signal. It would be beneficial for candidates to have a greater understanding of the need for interrupts, including a range of scenarios in which they are needed.

### **Question 3**

- (a) Few candidates were able to provide the correct ticks for each row. The most common correct answers were rows 1 and 4. It would be beneficial for candidates to have a greater understanding of the operation of different error detection and correction methods.

- (b) Most candidates were able to identify another error-checking method. Some candidates gave the response of echo check. Whilst this is not an error-checking method that is given in the syllabus, it was an acceptable response from candidates.

#### Question 4

- (a) Some candidates were able to provide a fully correct answer including correct working. The most common incorrect answers did not struggle with the mathematics of the calculation, but with the correct methodology for calculating the file size. It would be beneficial for candidates to have a greater understanding of calculating file sizes, including how data such as the colour depth is used in the calculation.
- (b) Many candidates gave the most suitable type of compression correctly. Many candidates explained how lossless compression operates instead of giving reasons why they chose lossless compression. It would be beneficial for candidates to understand that if they are asked to justify their choice in an answer, they should provide reasons for their choice.
- (c) Many candidates were able to provide the correct terms to complete the paragraph. The most common incorrect response was the use of binary in place of pixel for the final term.

#### Question 5

- (a) Most candidates were able to provide two suitable software methods. The most common correct answer was a firewall. Some candidates stated physical methods such as storing the computer in a locked room. However, the question asked for software methods. Candidates are reminded to make sure that their response is applied to any context they are given in a question.
- (b) Most candidates were able to provide two other functions of an operating system. The most common correct answers were providing a user interface and multitasking.

#### Question 6

- (a) Some candidates were able to provide the correct ticks for each row. The most common correct answer was the first row. The most common incorrect answers were rows 5 and 6.
- (b) Most candidates were able to identify the correct component that carries out calculations. Some learners gave the response of accumulator. It would be beneficial for candidates to understand that whilst this component temporarily stores the results of calculations, it does not carry out the calculation.

#### Question 7

- (a) Many learners correctly identified the type of storage. Some learners justified their choice by stating the features of the device that made them select secondary storage. Some learners gave the advantages of a Solid State Drive (SSD) instead of justifying their choice.
- (b) Few candidates were able to describe the operation of an SSD accurately and technically. It would be beneficial for candidates to have a greater technical understanding of the operation of the different types of storage.

#### Question 8

- (a) Many candidates were able to provide the correct type of programming language. The most common incorrect answers were from candidates who gave the brand name of a programming language, such as Python or Java.
- (b)(i) Many candidates were able to give a suitable translator. Few candidates provided accurate reasons for their choice.
- (ii) Many candidates were able to give a suitable translator. Few candidates provided accurate reasons for their choice. The most common correct response given for the choice is that an executable file is created. Some candidates chose the same translator for both section (i) and section (ii). However, the question stated that candidates were required to choose a different

translator for each. Candidates are reminded to read all the information given in a question before they write their response.

**Question 9**

- (a) Many candidates were able to provide three suitable sensors.
- (b) Few candidates were able to provide an accurate and technical response about how the sensor and the microprocessor operate in the scenario given. Many candidates gave a generic response about the operation of a sensor and a microprocessor in a system but did not apply this to the context given in the question. Candidates are reminded that they are to apply any context given in a question to their response. If they are given specific values in a question, they should look to use these values in their response.

**Question 10**

- (a) Many candidates were able to provide a correct logic circuit.
- (b) Many candidates were able to provide the correct name and symbol for the logic gate.
- (c) Many candidates were able to provide a correct truth table.

**Question 11**

Many candidates were able to provide the correct terms for the given descriptions.

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| <p><b>Paper 0478/12</b><br/><b>Paper 1</b></p> |
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## **Key messages**

This standard of candidate's work continues to improve for this syllabus. There is a continued move to provide questions where candidates have to apply their knowledge, rather than just show their ability to simply remember facts. There is strong evidence that this is producing candidates who are now exhibiting an improved understanding of many of the topics.

## **General comments**

Candidates and centres are reminded that written papers are now scanned in and marked on computer screens by examiners. Consequently, if a candidate writes the answer to a question on an additional page, they must indicate very clearly to the examiner where their revised answer is to be found. Also, if answers have been crossed out, the new answer must be written very clearly, so that examiners can easily read the text and award candidates the appropriate mark.

## **Comments on specific questions**

### **Question 1**

- (a) Most candidates were able to tick the correct box for the response of Base-10.
- (b) Some candidates were able to provide all four correct values. Many candidates were able to provide a correct response for the first two values. Some candidates were able to provide a correct response for the last two values. The most common incorrect response was from candidates who provided a conversion to binary instead of a conversion to denary, as required by the question.
- (c) (i) Most candidates were able to tick the correct box for the correct binary response.  
(ii) Most candidates were able to tick the correct box for the correct binary response.
- (d) (i) Many candidates were able to provide a correct example. The most common correct answer was in HTML colour code. Some candidates did not have a high enough level of accuracy in their response and gave more vague answers such as just HTML or in messages. Candidates are reminded to be technically accurate in their responses.  
(ii) Many candidates were able to provide a correct example. The most common correct response was in assembly code.

### **Question 2**

- (a) Most candidates were able to provide a suitable output device. The most common correct response was printer.
- (b) Most candidates were able to provide a suitable input device. The most common correct responses were touchscreen and microphone.

### Question 3

- (a) Some candidates were able to provide the correct ticks in all rows. The most common incorrect responses were from candidates ticking Parallel Simplex in rows 1 and 4. It is possible that candidates have confused the operation of simplex data transmission with the operation of serial data transmission. It would be beneficial for candidates to have a clearer understanding of simplex and serial data transmission.
- (b) Many candidates were able to provide three benefits of the USB connection. Some candidates gave benefits of a USB memory device instead of a USB connection.

### Question 4

Many candidates were able to provide the correct missing terms to complete the paragraph. The most common incorrect responses were from candidates who confused the operation of resistive and capacitive touch screens.

### Question 5

- (a) Many candidates were able to provide three suitable methods. Some candidates stated that they could use a firewall. However, the question stated that the laptop would not be connected to any networks. Therefore this would be unnecessary. Candidates are reminded to apply the context they are given in a question to their response.
- (b)(i) Some candidates were able to provide three correct points about lossy compression. The most common correct responses were the removal of sounds and the reduction of colour depth. Some candidates gave the benefits or drawbacks of lossy compression instead of stating how the compression method would reduce the file size.
  - (ii) Many candidates were able to provide a suitable drawback.
- (c)(i) Many candidates were able to provide a suitable reason. The most common correct answer was that it would maintain the quality.
  - (ii) Some candidates were able to provide two suitable disadvantages. Many candidates did not provide a full disadvantage, stating that the file size would be larger, not stating why this would be a disadvantage. Candidates are reminded that when they are asked to provide advantages and disadvantages as an answer, they should look to do this in full by stating why their point is an advantage or a disadvantage in the given context.

### Question 6

- (a) Many candidates were able to give a correct similarity. The most common correct response was that they both translate high-level languages into machine code.
- (b) Some candidates were able to provide two correct differences. Many candidates just gave several points of knowledge about the operation of either or both translators but did not relate these as differences between the two.
- (c) Most candidates were able to give another type of translator.

### Question 7

Some candidates were able to provide correct ticks in all rows. The most common correct rows were rows 2, 3, and 4.

### Question 8

Few candidates were able to provide an accurate and technical response about how the sensors and the microprocessor operate in the scenario given. Many candidates gave a generic response about the operation of a sensor and a microprocessor in a system but did not apply this to the context given in the question. Candidates are reminded that they are to apply any context given in a question to their response.

**Question 9**

- (a) Many candidates were able to give three correct examples of when an interrupt would be generated. Nearly all of the examples were related to the printing process. It would be beneficial for candidates to have a wider understanding of the use of interrupts beyond the printing process.
- (b) Many candidates gave responses that demonstrated an understanding that the computer would not operate efficiently in some way. The most common reason given being it would not be able to multitask.

**Question 10**

- (a) Most candidates were able to demonstrate an understanding that data would be encrypted.
- (b) Many candidates identified the Transport Layer Security (TLS) protocol.
- (c) Most candidates were able to identify two ways the website is secure.

**Question 11**

- (a) Many candidates were able to provide a correct logic circuit.
- (b) Many candidates were able to provide a correct truth table.
- (c) Many candidates were able to provide two further logic gates.

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| <p><b>Paper 0478/13</b><br/><b>Paper 1</b></p> |
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## **Key messages**

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## **General comments**

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## **Comments on specific questions**

### **Question 1**

- (a) Most candidates were able to tick the correct box to show the largest file size. The most common incorrect answer was 850 000 bytes.
- (b) Most candidates were able to tick the correct box to show the smallest file size. The most common incorrect answer was 2 500 000 kB.

### **Question 2**

- (a) Many candidates were able to provide a correct binary value. Some candidates did not provide a 16-bit binary value as required in the question. Candidates are reminded to read all information given in a question and apply these requirements to their response.
- (b) Many candidates were able to provide a correct binary value. Some candidates did not provide a 16-bit binary value as required in the question. Candidates are reminded to read all information given in a question and apply these requirements to their response.
- (c) Many candidates were able to provide the correct denary value that would be displayed. Some candidates did not provide the value in full, leaving off the leading zero value. It had been displayed to candidates throughout the question that the leading 0 value was required. Candidates are reminded to look at all the information given in a question and use this when producing their answer. Some candidates also separated the value into four separate 4-bit values and gave the response 0204 as a result. This was an incorrect method for this question.
- (d)(i) Most candidates were able to provide two suitable sensors.
- (ii) Most candidates were able to identify that a sensor is an example of an input device.

### Question 3

- (a) Some candidates were able to provide the correct ticks in all rows. The most common correct answers were rows 2 and 3. The most common incorrect answers were rows 1 and 5.
- (b) Most candidates were able to identify another error-checking method. Some candidates gave the response of echo check. Whilst this is not an error-checking method that is given in the syllabus, it was an acceptable response from candidates.

### Question 4

- (a) Few candidates were able to provide a response that gained full marks for this question. The most common point of knowledge that candidates were able to provide was that the printer generates an interrupt. It would be beneficial for candidates to have a greater understanding of the need for interrupts, including a range of scenarios in which they are needed and used.
- (b) Many candidates were able to give two correct examples of when an interrupt would be generated. Nearly all of the examples were related to the printing process. It would be beneficial for candidates to have a wider understanding of the use of interrupts beyond the printing process.
- (c) (i) Many candidates were able to give an accurate and technical description of the data transmission method.
  - (ii) Some candidates were able to give an accurate answer as to why the data transmission method is used. Many candidates recognised that data would need to be sent both ways between the devices but did not provide the detail that a simplex connection would not allow for this.

### Question 5

Few candidates were able to provide a fully correct set of terms and descriptions. The most common correct answers were Memory Data Register (MDR) and address bus. It would be beneficial for candidates to have a greater understanding of the role of the components in the Central Processing Unit (CPU).

### Question 6

Many candidates were able to provide a full set of correct terms to complete the paragraph.

### Question 7

- (a) Some candidates were able to gain full marks for this question for an accurate and technical answer. Many candidates were able to provide the information that an executable file would be created. Many candidates then just gave further points about the operation of a compiler instead of explaining why the compiler was used for this purpose. Candidates are reminded to read all the information given in a question and apply any context to the response they give.
- (b) (i) Few candidates were able to describe how lossless would reduce the size of the video file. Most candidates described how lossy compression would do this. It would be beneficial for candidates to have a greater understanding of how lossless compression operates to reduce the file size of different types of files.
  - (ii) Most candidates were able to state why lossless may have been used.
- (c) (i) Some candidates were able to provide a fully correct response. The most common error was candidates confusing the two software licenses.
  - (ii) Many candidates were able to provide the correct software license that would be used.
- (d) Most candidates were able to provide two ways that could be used to see if the website is secure.

**Question 8**

- (a) Many candidates were able to provide a correct logic circuit.
- (b) Many candidates were able to provide a correct truth table.

**Question 9**

Many candidates were able to provide the correct type of parity used.

**Question 10**

- (a) Many candidates were able to identify the purpose of a denial of server attack.
- (b) Many candidates were able to identify the purpose of phishing and pharming.
- (c) Many candidates were able to provide three further internet security risks.

# COMPUTER SCIENCE

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| <p><b>Paper 0478/21</b><br/><b>Paper 2</b></p> |
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## Key messages

Successful candidates showed evidence of practical experience in designing, programming, and testing solutions to the three tasks from the pre-release (squash court booking) to provide answers for **Section A** that demonstrated problem-solving and programming skills. Candidates need to read each question carefully and answer the question as set on the paper as a question may only require a response that is a partial solution or an extension to a task set out in the pre-release material.

Successful candidates ensured that any identifier declared in their response could be used consistently in a program. Identifiers must not contain spaces or other punctuation. Once an identifier is declared or used it must remain the same throughout the response to the question. Candidates are advised to read through each written response to ensure that no changes or errors have been made.

Successful candidates showed an understanding of programming techniques including the use of counting, selection, and iteration.

Successful candidates ensured that questions, where an explanation was required, included an explanation for any programming or pseudocode statements used in their answer.

Successful candidates showed evidence of good examination technique by answering the question as set on the examination paper in the space provided for the answer or clearly signposting where the answer was to be found on the examination paper.

## General comments

Some candidates did not attempt all the questions on the paper.

## Comments on specific questions

### **Section A**

#### **Question 1**

Some candidates did not attempt parts of this question.

- (a) Many candidates correctly identified a constant with a meaningful name, suitable value and stated the use in **Task 1**. Common errors included naming an identifier where the value assigned to it could be changed during the execution of **Task 1**.
- (b) Most candidates identified several arrays used for **Task 1**. Better responses included descriptions, data types, length of arrays, and sample data.
- (c) Many candidates explained how a random number with 4-digits was generated or the use of a counter starting at 1000. Responses seen without an explanation were not creditworthy.
- (d) Responses providing pseudocode or code for checking if a squash court is available for **Task 2** usually scored higher marks than responses providing a flowchart. Many responses seen incorrectly included more than required by the question as they covered the whole of **Task 2**.

- (e) Responses providing the programming the statements required to total the number of squash court bookings, find and display the court(s) with the most bookings for **Task 3** with an explanation of the purpose of each statement scored high marks. Common errors included responses that were all code with no explanation or explanations without the code used.

## Section B

### Question 2

Some candidates did not attempt parts of this question.

- (a) Many candidates correctly identified most of the errors by giving the line number or writing the pseudocode that needed correction and also writing the corrected pseudocode.
- (b) Better responses showed a correctly rewritten algorithm using a `FOR ... NEXT` loop. Common errors included updating the loop counter within the loop and/or using incorrect commands, for example, `DO`, `ENDLOOP` or `RANGE`. An example of a correct answer is:

```
FOR Counter ← 1 TO 50
    NumRand[Counter] ← Rand(1,101)
NEXT Counter
```

- (c) Many candidates correctly identified a `WHILE ... DO ... ENDWHILE` loop. A common error was to identify an `IF` statement.

### Question 3

Some candidates did not attempt parts of this question.

- (a) (i) Many candidates correctly identified examples of normal and erroneous test data. Providing a reason for the choice proved more challenging for some candidates. An example of a correct answer is:
- |                          |                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------|
| Normal test data example | 4.915                                                                                |
| Reason                   | this is a positive number with three decimal places, so the data should be accepted. |
- (ii) Better responses identified that boundary data would be required to check that the number was positive and gave the examples of 0.001 that would be accepted and 0.000 that would be rejected.
- (b) Many candidates correctly identified why verification was required. Better responses included good descriptions of how verification checks could be performed. Common errors included identifying and describing validation checks.

### Question 4

Some candidates did not attempt parts of this question.

Most candidates correctly completed the `Counter` and `Distinction` columns. Better responses showed the correct values in the other columns. Common errors included adding quotation marks to the `OUTPUT` column.

### Question 5

- (a) Most candidates correctly identified some of the data types. Better responses included reasons that were applied to the database table shown in the question.
- (b) Most candidates correctly completed the query-by-example grid. A common error seen was an incorrect criterion for selection of the economy rating.

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| <p><b>Paper 0478/22</b><br/><b>Paper 2</b></p> |
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## Key messages

Candidates who had previously worked through the pre-release material (Integrated Transport System) and who completed the tasks by producing their own programming code were able to demonstrate appropriate techniques for solving this problem.

Candidates who took care to ensure that they fully answered the questions that were asked, taking care to ensure their responses matched the context of the questions, scored higher marks than those who gave generic responses. Examples included: candidates who described how their program achieved certain tasks; candidates who supplied detailed annotations to their program code; candidates who took care to name or describe variables and arrays appropriately to match their purpose.

Candidates are advised to answer algorithm questions as stated in the question so that pseudocode questions are answered using pseudocode, program code questions are answered using program code and flowchart questions are answered using a flowchart.

Candidates are advised to make sure that any answers they provide are appropriate for the command word used in the question, such that questions beginning with explain will require more detail than those beginning with state. In addition, explain type questions usually require an explanation of how something was done, rather than a simple description of what was done.

## General comments

Candidates demonstrated a good overall understanding of the requirements of the paper with very few questions left unanswered.

Candidates demonstrated a good understanding of how arrays could be used within the context of the given pre-release task.

Candidates are reminded that they should avoid using punctuation marks and spaces in variable and array names.

## Comments on specific questions

### **Section A**

#### **Question 1**

- (a) (i) Candidates who identified a relevant variable for **Task 2** and stated its use achieved both marks. Marks were lost if the variable name contained spaces or if the stated use was too vague.
- (ii) Candidates who identified an array that could be used for **Task 1**, along with some additional data, such as the data type, a description of its use, and an example of sample data, achieved most of the marks for this question. Candidates who were able to repeat this for more than one array achieved full marks.

- (b) Candidates who described how the input of codes for the different stages of the journey, which could include appropriate types of validation checks or the process their program would follow to check that the data entered was valid, achieved marks for this question. Candidates who described how to validate other data entry, such as account numbers, did not achieve marks.
- (c) The vast majority of candidates achieved some marks for this question, which required a section of code to be written to solve **Task 3**. Candidates were allowed to write their responses using pseudocode, program code, or a flowchart. Candidates who wrote their responses using code generally performed better. The full range of marks was seen for this question, with the vast majority of candidates checking the departure time, then calculating and applying a discount, if appropriate.
- (d) This question required an explanation of how the program from the pre-release material could be changed to give an additional discount after a specific passenger had made at least ten bookings. Candidates who only wrote code did not achieve any marks, however, some very good responses were seen, with the best ones having written explanations that were supported by examples of code, for clarification. This demonstrated that the candidate understood how they could achieve the specified task. The full range of marks was seen for this question, with many high-scoring responses.

## Section B

### Question 2

Most candidates achieved at least one mark here, to demonstrate that they could identify statements related to validation, verification, or neither of these.

### Question 3

Candidates were expected to give examples of normal, extreme, and erroneous test data, along with a reason for why they had chosen the data, for a validation check with an input range of 1 to 100 inclusive. The vast majority of candidates correctly stated some or all of the examples of the test data. However, the reasons were not answered so well. One important reason for any test data is to see if the program will accept or reject it. This was often not stated in candidates' responses. Some candidates also incorrectly named a number of validation checks, which was not part of the question.

### Question 4

- (a) The vast majority of candidates were able to identify and give corrections for at least one of the errors in the pseudocode algorithm. The full range of marks was seen for this question.
- (b) Some candidates achieved high marks for this question, with the best responses including a validation check, usually with a `WHILE` loop, after the value for `Operator` had been input. The full range of marks was seen for the question, but candidates who simply wrote out a corrected version of the given pseudocode algorithm, with no additional functionality, did not achieve any marks.

### Question 5

The vast majority of candidates achieved some marks for this trace table question, with the full range of marks seen. Candidates are reminded to ensure that the content of the `OUTPUT` column should represent what would actually be seen on the computer screen if this were a running program.

### Question 6

- (a) (i) The vast majority of candidates recognised that the field that could have a Boolean data type is `InStock`.
- (ii) The vast majority of candidates recognised that the field that should be used as a primary key is `ProductID`.

- (c) The majority of candidates achieved at least one mark for the query-by-example grid, with many achieving three or four marks. Some candidates lost marks because they had missed out one of the required fields, they had not completed the Table row, the sort method was missing or incorrect, or there was an error in the search criteria.

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| <p><b>Paper 0478/23</b><br/><b>Paper 2</b></p> |
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## Key messages

Successful candidates showed evidence of practical experience in designing, programming, and testing solutions to the three tasks from the pre-release (restaurant table booking) to provide answers for **Section A** that demonstrated problem-solving and programming skills. Candidates need to read each question carefully and answer the question as set on the paper as a question may only require a response that is a partial solution or an extension to a task set out in the pre-release material.

Successful candidates ensured that any identifier declared in their response could be used consistently in a program. Identifiers must not contain spaces or other punctuation. Once an identifier is declared or used it must remain the same throughout the response to the question. Candidates are advised to read through each written response to ensure that no changes or errors have been made.

Successful candidates showed an understanding of programming techniques including the use of counting, selection, and iteration.

Successful candidates ensured that questions, where an explanation was required, included an explanation for any programming or pseudocode statements used in their answer.

Successful candidates showed evidence of good examination technique by answering the question as set on the examination paper in the space provided for the answer or clearly signposting where the answer was to be found on the examination paper.

## General comments

Some candidates did not attempt all the questions on the paper.

## Comments on specific questions

### **Section A**

#### **Question 1**

Some candidates did not attempt parts of this question.

- (a) Many candidates correctly identified a constant with a meaningful name, suitable value and stated the use in **Task 1**. Common errors included naming an identifier where the value assigned to it could be changed during the execution of **Task 1**.
- (b) Most candidates identified several arrays used for **Task 1**. Better responses included descriptions, data types, length of arrays, and sample data.
- (c) Many candidates explained that the constant(s) storing the number of tables available at the start of the day needed to be changed to variables and values for these variables input at the start of each day. Responses seen without an explanation were not creditworthy.
- (d) Responses providing pseudocode or code for checking if a table is available for **Task 2** usually scored higher marks than responses providing a flowchart. Many responses incorrectly seen included more than required by the question as they covered the whole of **Task 2**.

- (e) Responses providing the programming statements required to change **Task 2** to **Task 3** with an explanation of the purpose of each statement scored high marks. Common errors included responses that were all code with no explanation or explanations without the code used.

## Section B

### Question 2

Some candidates did not attempt parts of this question.

- (a) Many candidates correctly identified most of the errors by giving the line number or writing the pseudocode that needed correction and also writing the corrected pseudocode.
- (b) Better responses showed a correctly rewritten algorithm using a **FOR ... NEXT** loop. Common errors included updating the loop counter within the loop and/or using incorrect commands, for example, **DO**, **ENDLOOP** or **RANGE**. An example of a correct answer is:

```
FOR Counter ← 1 TO 50
    NumRand[Counter] ← RandUp(0,100)
NEXT Counter
```

### Question 3

Some candidates did not attempt parts of this question.

- (a) (i) Many candidates correctly identified examples of normal and erroneous test data. Providing a reason for the choice proved more challenging for some candidates. An example of a correct answer is:
- |                          |                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------|
| Normal test data example | Hello123!                                                                                  |
| Reason                   | there are more than 8 characters with a special character, so the data should be accepted. |
- (ii) Better responses identified that boundary data would be required to check the length of a password and gave examples of a password of exactly eight characters that would be accepted and exactly seven characters that would be rejected.
- (b) Many candidates correctly identified at least one method of verification. Better responses included good descriptions. Common errors included identifying and describing validation checks.

### Question 4

Some candidates did not attempt this question.

Most candidates correctly completed the **Counter** and **Pass** columns. Better responses showed the correct values in the other columns. Common errors included adding quotation marks to the **OUTPUT** column.

### Question 5

- (a) Most candidates correctly identified some of the data types. Better responses included reasons that were applied to the database table shown in the question.
- (b) Most candidates correctly completed the query-by-example grid. A common error seen was an incorrect criterion for selection of the weight of the computers.