COMPUTER SCIENCE

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Paper 0478/11
Paper 1
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Key messages

Candidates continue to demonstrate a good level of knowledge about the fundamental aspects of computer science. It would be beneficial for candidates to consider the context that is given in some questions. Candidates should look to reflect the application of this context in the knowledge and understanding they are required to demonstrate. This would allow candidates to demonstrate a greater level of understanding, beyond a general response, about the topic in question.

General comments

Candidates are reminded to make sure that they do not write outside the given writing space in a question. If additional writing space is required, candidates should use the additional pages available. They should make sure they clearly indicate the question for which they are providing a further response.

Comments on specific questions

Question 1

Many candidates were able to correctly identify whether each device was an input, output or storage device. The most common errors were students identifying a 3D cutter as an input device and a microphone as an output device.

Question 2

(a)   Many candidates were able to correctly convert the hexadecimal numbers to binary and denary values. The most common error was from candidates who did not include leading zeros in their binary values to represent them as 12-bit binary values.

(b)   Some candidates gave an answer relating to all aspects of the question. Many candidates only referred to one part of it. For example, some candidates just wrote about how the QR code is read and some just wrote about how the system would count how many people has entered. It would be beneficial for candidates to breakdown the elements of a question to make sure that they address each part in their response.

Question 3

(a)   Some candidates were able to correctly identify the two layers in the TLS protocol.

(b)   Some candidates were able to correctly complete the paragraph about the TLS protocol. It would be beneficial for candidates to have a more in depth understanding of the TLS protocol.

(c)   Many candidates were able to provide another protocol that can be used to securely transfer data. The most common answer was HTTPS.

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Question 4

(a) Many candidates were able to draw the correct logic circuit for the logic statement. The most common error was by candidates who put a NOT gate on both A and B, before they drew their NAND gate.

(b) Many candidates were able to correctly complete the truth table.

(c) Many candidates were able to identify and complete a correct truth table for two other logic gates.

Question 5

(a) (i) Some candidates were able to provide two examples of HTML structure. Many candidates tried to define what is meant by HTML structure, rather than providing an example. It would be beneficial for candidates to have a greater understanding of a range of examples of HTML structure.

(ii) Many candidates were able to provide two examples of HTML presentation. It was clear candidates were more secure in their knowledge of HTML presentation than HTML structure. Some candidates did try and explain what is meant by HTML presentation, rather than providing examples.

(b) Many candidates were able to provide two security examples. Some candidates gave examples such as anti-virus software. It would be beneficial for candidates to understand that not all security methods are suitable for all security threats. It would improve their understanding to know that antivirus software is not a suitable security method to prevent hacking or a DoS attack.

Question 6

(a) (i) Many candidates were able to provide a description of how data is transmitted using parallel transmission. It would be beneficial for some candidates to provide more detail in their answer. For example, some candidates stated that multiple bits of data are sent in parallel transmission. Candidates need to state that this happens at the same time, to provide enough detail. Multiple bits are sent in serial, they are just not sent at the same time, therefore this detail is essential.

(ii) Many candidates were able to provide a benefit of parallel transmission. It would be beneficial for some candidates to provide more detail in their answer. For example, some candidates stated, '*it is faster*' as their benefit. Candidates need to provide more detail about what is done faster, by saying it is the transmission speed that is faster.

(b) (i) Most candidates were able to provide the correct bus. The most common error given was data bus.

(ii) Most candidates were able to give the name of the register built into the CPU. The most common error given was the memory data register.

(iii) Some candidates were able to provide four correct responses about the statements. It would be beneficial for candidates to have a greater understating of the operation of the Von Neumann model in terms of its management of data and instructions.

Question 7

Many candidates were confident in providing a description of an MP3 format. It would be beneficial for candidates to have the same level of understanding of a MIDI format. Some candidates demonstrated understanding that it stores commands about how the sounds are played but did not demonstrate further knowledge beyond this understanding.

Question 8

(a) Most candidates were able to state that LED technology is light emitting diode technology. Many candidates then began to describe benefits and drawbacks of LED technology, rather than the operation of the technology. It would be beneficial for candidates to understand when a question requires them to provide benefits or drawbacks. It will normally state this in the question if they are required.

(b) Many candidates were able to give three benefits of LED technology.

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(c)   Many candidates were able to provide an alternative technology. LCD was the most common response.

Question 9

(a)   Most candidates were able to add the correct parity bit.

(b)   Most candidates were able to identify two other error checking methods. The most common error was by candidates providing check digit as a response. It would be beneficial for candidates to understand that check digit is an error checking method used on data entry and not for checking data after transmission.

(c)   Some candidates were able to provide a fully correct response. Many candidates described a checksum rather than a check digit. It would be beneficial for candidates to understand the difference between the two and that they operate differently.

COMPUTER SCIENCE

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Paper 0478/12
Paper 1
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Key messages

Candidates continue to demonstrate a good level of knowledge about the fundamental aspects of computer science. It would be beneficial for candidates to consider the context that is given in some questions. Candidates should look to reflect the application of this context in the knowledge and understanding they are required to demonstrate. This would allow candidates to demonstrate a greater level of understanding, beyond a general response, about the topic in question.

General comments

Candidates are reminded to make sure that they do not write outside the given writing space in a question. If additional writing space is required, candidates should use the additional pages available. They should make sure they clearly indicate the question for which they are providing a further response.

Comments on specific questions

Question 1

(a) Most candidates were able to provide a correct response about the meaning of HTML. The most common correct response was the expansion of the acronym HTML.

(b)(i) Many candidates correctly identified that background colour is an example of presentation.

(ii) Many candidates were able to correctly convert the hexadecimal values to binary. Some candidates treated 43 as a denary value, rather than a binary value. This meant their conversion was incorrect. It would be beneficial for candidates to understand that a hexadecimal value can be just made up of numeric values, for example 43. This is the hex values of 4 and 3, rather than the denary value of the number 43.

(c)(i) Many candidates were able to correctly identify a microphone is an input device.

(ii) Many candidates were able to correctly identify that lossy compression would be most suitable. In the description, many candidates were able to describe that lossy compression removes redundant data such as sounds that cannot be heard by the human ear. It would be beneficial for candidates to have a greater understanding of how lossy compression reduces the size of the file. Some candidates described how it reduced the size of an image file, rather than a sound file. Candidates are reminded to look at the context of the question and apply this to their answer.

(iii) Many candidates were able to provide two benefits for compressing the file. Some candidates gave a benefit that it reduces the size of the file. It would be beneficial for candidates to understand that this is what compression does and is not a benefit of it. It is the impact of this reduction that creates the benefits.

(d)(i) Many candidates were able to correctly identify the two payers in the TLS protocol.

(ii) Few candidates were able to describe the operation of the TLS protocol. The most common marks given was for data being encrypted. It would be beneficial for candidates to have a greater understanding of the TLS protocol.

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(e) (i)   Many candidates were able to provide three security threats to the web server. Some candidates gave responses such as phishing and pharming. Candidates are reminded to apply the context of the question to their response. It would be beneficial for candidates to understand that phishing and pharming are not threats to a web server.

(ii)   Some candidates understood that a proxy server would look to operate in a similar way to a firewall to protect the website. Many candidates gave a general description about the operation of a proxy server, which was not applied to the context. Candidates are reminded to apply the context of the question to their response.

Question 2

(a)   Many candidates were able to correctly identify whether the binary values had been sent using even or odd parity.

(b)   Some candidates were able to provide a full description on the operation of a checksum. It would be beneficial for candidates to have a greater understanding of how the checksum is generated, to provide a suitable level of detail in their response.

Question 3

(a) (i)   Some candidates were able to provide three correct ways that data could be accidentally damaged. It would be beneficial for candidates to understand the difference between accidental damage of data and malicious damage of data. Many candidates incorrectly gave methods of how data is maliciously damaged, such as hacking and viruses.

(ii)   Most candidates correctly stated that a back-up could be created.

(b)   Few candidates were able to provide knowledge of both what an SSD is and how it operates to store data. Most candidates demonstrated knowledge of what an SSD is; few candidates were also able to demonstrate an understanding of how it operates to store data. It would be beneficial for candidates to have a greater understanding of how an SSD operates to store data.

(c)   Some candidates were able to provide a correct response for all statements. It would be beneficial for candidates to understand that all three storage examples store data in a spiral track and to understand that both DVD and Blu-ray can be dual layer.

Question 4

(a)   Many candidates were able to draw a correct logic circuit for the logic statements. The most common error came from candidates that switched the position of the NOR gate and the OR gate. It would be beneficial for candidates to understand that the Boolean operator in the centre of the statements will not always be the end logic gate in the logic circuit.

(b)   Many candidates were able to correctly complete the truth table.

Question 5

(a)   Many candidates were able to provide five correct responses to the statements. The most common error came from candidates that thought an LED display was a front-lit display.

(b)   Most candidates were able to correctly complete the paragraph. The most common errors were media access computer address and a network device has a similar MAC address.

(c)   Most candidates were able to correctly describe the role of a browser.

COMPUTER SCIENCE

Paper 0478/13
Paper 1

Key messages

Candidates continue to demonstrate a good level of knowledge about the fundamental aspects of computer science. It would be beneficial for candidates to consider the context that is given in some questions. Candidates should look to reflect the application of this context in the knowledge and understanding they are required to demonstrate. This would allow candidates to demonstrate a greater level of understanding, beyond a general response, about the topic in question.

General comments

Candidates are reminded to make sure that they do not write outside the given writing space in a question. If additional writing space is required, candidates should use the additional pages available. They should make sure they clearly indicate the question for which they are providing a further response.

Comments on specific questions

Question 1

Many candidates were able to correctly identify whether each device was an example of an input, output or storage device. The most common errors came from candidates who identified a 2D cutter as an input device and a microphone as an output device.

Question 2

(a)   Many candidates correctly identified the component as the control unit. Some candidates incorrectly gave the response of control bus, rather than control unit.

(b)   Most candidates correctly identified that component as the arithmetic logic unit.

(c)   Many candidates gave the correct response of program counter. Some candidates also gave the accepted response of the memory address register. This was awarded as the program counter sends the address of the next instruction to the memory address before it is obtained from memory. Therefore, it is still the address of the next instruction at this point in the process.

(d)   Many candidates gave the accepted response of current instruction register. The instruction will first come to the memory data register, a response also given by some candidates, and will then be passed to the current instruction register. In both parts of the process, the instruction is the one that has been fetched from memory.

(e)   Many candidates gave the correct response of the memory data register.

Candidates are reminded that in questions where they are asked to identify, for example, a component, it is only the first answer they have given that is considered for marking. Any subsequent responses written after their first answer cannot be considered. Therefore, if they do not want a response at the beginning of the line to be considered, this must be clearly crossed out, which will allow the examiner to consider the next response given.

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Question 3

(a) Most candidates were able to correctly convert each denary value to binary and identify whether if the answer given was correct or incorrect.

(b) Most candidates were able to correctly convert the 12-bit binary number to hexadecimal. Candidates are reminded that even if a value is converted to 0, they are expected to demonstrate the value is 0.

Question 4

(a) Some candidates were able to provide a full and detailed explanation of how the webpages are requested and displayed. The most common parts of the process that could be identified is that the web browser sends a request to the web server to request the webpages and that the web browser renders the HTML to display the webpages. It would be beneficial for candidates to understand that the web browser sends the request to the web server and not the website. The website is a collection of files, but the web server is the component that receives the request and sends the website files to the web browser.

(b) Many candidates were able to provide three security threats to the web server. Some candidates gave responses such as phishing and pharming. Candidates are reminded to apply the context of the question to their response. It would be beneficial for candidates to understand that phishing and pharming are not threats to a web server.

Question 5

(a) Many candidates correctly identified the data transmission type as serial and were able to provide a suitable description of how data is sent using serial transmission. Some candidates gave the benefits of serial transmission, but the question did not require this.

(b) Many candidates were able to provide three benefits of a USB connection. Some candidates gave benefits of a USB storage device, rather than a USB connection. It would be beneficial for candidates to understand the difference between a USB connection and a USB storage device.

(c) Many candidates were able to give two protocols to secure transmit data. The most common correct answers were HTTPS and SSL.

Question 6

Many candidates were able to correctly complete the paragraph. The most common error given was from candidates that gave the first missing term as a padlock. It would be beneficial for candidates to understand that the padlock is not what encrypts the data, it is a symbol that identifies that data sent using the connection will be encrypted. The encryption is done through the use of a key.

Question 7

(a) Most candidates were able to correctly identify whether even or odd parity had been used.

(b) Many candidates were able to identify that the bits could have been transposed. It would be beneficial for candidates to be clear and accurate in their answer. For example, some candidates stated that more than one bit could have changed. This would be true if it was two bits that had been changed, but not true is it was three bits that had been changed, as this would then add up to a different parity. Therefore, candidates need to be accurate in stating that it is an even number of bits that have changed.

(c) Most candidates were able to give one other error checking method. The most common error was by candidates providing check digit as a response. It would be beneficial for candidates to understand that check digit is an error checking method used on data entry and not for checking data after transmission.

Question 8

(a) Many candidates understood that LCD referred to a liquid crystal display. Few candidates were able to demonstrate an understanding of the operation of an LCD. Some candidates gave benefits of the technology rather than explaining how it operates.

(b) Many candidates were able to provide three benefits of LCD technology.

Question 9

(a) Many candidates were able to give three correct similarities. The most common responses seen were they are optical storage, they are secondary storage and they both are read using a red laser.

(b) Many candidates were able to give one correct difference. The most common response was that DVD has a higher storage capacity than CD. Some candidates seemed to have a misconception that data on a DVD is stored in concentric tracks and on a CD is stored in a single spiral track. It would be beneficial for candidates to understand that both DVD and CD are stored in a spiral track. DVD RAM, which is different to DVD, stores data in concentric tracks.

Question 10

(a) Most candidates were able to draw a correct logic circuit. Candidates are reminded to make sure the drawing of their gates are very clear and accurate. Some candidates drew a circle at the right point of the XOR gate. This turns the gate into an XNOR gate, which is incorrect.

(b) Most candidates were able to correctly complete the truth table.

Question 11

Many candidates were able to describe how the microprocessor and the sensor interacted to make the game operate. Candidates are reminded to make sure that they apply their answer to the context given in the question. Some candidates gave a generic response that described how any system operated in using a sensor and a microprocessor, but without applying it to the context given. Some candidates applied it to a different context such as an automatic lighting system or a security system.

Question 12

Few candidates were able to correctly identify if the statements were true or false. It would be beneficial for candidates to have a greater understanding of the role of an Internet Service Provider (ISP).

Question 13

(a) Many candidates were able to correctly identify a similarity between phishing and pharming.

(b) Many candidates were able to correctly identify at least one difference between phishing and pharming.

COMPUTER SCIENCE

Key messages

Successful candidates showed evidence of practical experience in designing, programming and testing solutions to the three tasks from the pre-release (car insurance) 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. This is because 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 array declared in their response could be used consistently in a program. Array names must not contain spaces or other punctuation. Once an array 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 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

Nearly all candidates attempted all the questions on the paper.

Comments on specific questions

Section A

Question 1

(a)   Many candidates correctly identified an array with a meaningful name, suitable data type and a description of the use in **Task 1**. Common errors included incorrectly putting spaces in a variable name or stating an incorrect data type. A few candidates did not answer this part of **Question 1**.

(b)   Better responses included the names of two validation checks that were suitable for the age of the driver and a justification for choosing each one. An example of a correct answer is:

Validation check 1:   Range check
Justification: Program only accepts drivers aged 18 and over
Validation check 2:   Presence check
Justification: Program needs driver's age to calculate the price change.

(c)   Responses providing pseudocode or code for **Task 2** usually scored higher marks than responses providing a flowchart. A few candidates did not answer this part of **Question 1**.

(d)(i) Better responses correctly explained how their program completed **Task 3**. This response required an explanation of how the programming code included by the candidate would provide a solution. Responses seen without an explanation were not creditworthy. A few candidates did not answer this part of **Question 1**.

(ii) Many candidates explained that new variables needed to be included in the program to count the number of quotations provided and the number of policies bought. This response required an explanation of how the programming code included by the candidate would provide a solution. Responses seen without an explanation were not creditworthy.

Section B

Question 2

Most candidates correctly described the purpose of variables and constants. Better responses included suitable examples.

Question 3

(a) Many candidates gave the correct line numbers for most of the types of statement. A few candidates gave incorrect line numbers for assignment and/or totalling statements.

(b) Many candidates gave the correct line numbers for most of the errors. A few candidates did not identify the need to move line 10 to below the loop.

(c) Better responses correctly explained the changes required to the algorithm. An example of a correct answer is:

A new variable, `AverageWeight`, was assigned the value `TotalWeight` divided by `BagCount` after line 11 of algorithm. This value with a suitable message was output after the calculation.

Question 4

(a) Most candidates correctly completed the V, W, X, Y and Z columns. Better responses showed the correct values in the A and B columns. A common error was to include the word END in the OUTPUT column.

(b) Better responses showed understanding of the algorithm and identified that a check digit calculation was performed. An example of a correct answer is:

Use the first four digits input to calculate a check digit and if the check digit input, in Z matches this value it is valid.

Question 5

(a) Most candidates correctly stated the number of fields and records.

(b) Most candidates showed the required output. A common error was to describe the query shown.

(c) Most candidates correctly completed of the query-by-example grid. A common error seen was incorrect criteria for selection of the number of countries. An example of a correct answer is:

Field:	Airline name	Number of countries	Head office
Table:	AIRLINE	AIRLINE	AIRLINE
Sort:			
Show:	☑	☑	☐
Criteria:		> 4	= 'Asia'
or:		> 4	= 'Africa'

COMPUTER SCIENCE

Key messages

Candidates who had previously worked through the pre-release material (Computer Shop) and who completed the tasks by producing their own programming code were able to demonstrate appropriate techniques for solving this problem. These candidates were able to reproduce segments of relevant code and provide appropriate answers to questions in *Section A* that demonstrated the programs they had written. In addition, they were able to describe how they had solved tasks, why they had used their chosen methods and how their program code was changed to implement additional functionality.

Candidates who took care to ensure they fully and specifically answered the question that was asked scored higher marks than those who gave generic responses. Examples included: candidates who described how their program achieved certain tasks, or who supplied detailed annotations to their program code, rather than simply stating what their program did or simply wrote program code with no explanation; candidates who took care to name or describe variables, constants and arrays appropriately to match their purpose, within the context or task required by the question.

Candidates are advised to answer algorithm questions in the manner stated in the question, so that pseudocode code 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 ensure that any flowcharts they construct make use of standard programming flowchart symbols and conventions, and that they are fully connected.

General comments

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

Candidates who continue their answers on additional sheets or on blank pages within the question paper are advised to indicate they have done this within the allotted space for the question they are continuing.

Comments on specific questions

Section A

Question 1

(a) (i) Most candidates scored some marks on this question. They were generally able to identify an appropriate array that could have been used in **Task 1** with many candidates also going on to correctly write the purpose of their array. Common errors included array names containing spaces or inappropriate punctuation marks, arrays that would not be used in **Task 1**, or purposes that did not give sufficient detail.

(ii) Most candidates scored some marks on this question. They were generally able to identify an appropriate variable that could have been used in **Task 2** with many candidates also going on to correctly write the purpose of their stated variable. Common errors included variable names containing spaces or inappropriate punctuation marks, variables that would not be used in **Task 2**, or purposes that did not give sufficient detail.

(iii) Candidates scored fewer marks for this question. Those who correctly answered the question were able to identify a constant that could have been used in **Task 3**. Some of these candidates were also able to correctly give the purpose of their constant. Common errors included names of constants containing spaces or inappropriate punctuation marks, constants that would not be used in **Task 3**, constants that would not work as constants, as the values identified were actually variables, or purposes that did not give sufficient detail.

(b) Most candidates were able to explain the benefits of storing Price as a real data price, generally by identifying that real numbers could contain decimal places and/or that real numbers could be used in calculations.

(c) The vast majority of candidates achieved some marks for this question with a high proportion achieving full or nearly full marks. Many candidates demonstrated good programming skills and gave solutions to show how they completed **Task 1**. A range of methods for inputting the required data to choose computer components, using this data to find the prices of the individual components and calculating the total cost of the system, were seen. Some candidates also demonstrated appropriate methods to validate their inputs.

(d) Most candidates gave good responses to explain how their program would complete **Task 3**. A wide range of answers were seen with most candidates explaining how their program checked the number of additional computer components that were purchased and which discount, if appropriate, would be applied to the final cost. Some candidates also discussed how the number of additional computer components was stored and/or how this value was incremented. Other candidates explained how the final price of the computer and money saved were calculated and/or output. Common errors included stating what the program did rather than how the task was done, or simply writing program code with no explanation.

(e) Most candidates were able to describe how they could alter their program to enable more than one computer to be purchased, by offering a prompt and input for the user to specify how many computers they wanted. Some candidates also described the use of a loop structure to repeat the whole program as many times as necessary to match the number of computers to be purchased.

Section B

Question 2

Most candidates provided a partially correct answer identifying true or false statements about subroutines. Some candidates identified all four correctly.

Question 3

Many candidates achieved high marks identifying different types of test data, giving examples of suitable test data and the reasons these data were chosen. Common errors included candidates giving answers that were too general in the reason for choice of test data; for example, 'checking if the number is in the correct range or not', or candidates naming types of validation checks, or different programming command words as types of test data. A small number of candidates gave an example of test data as the test data type.

Question 4

The vast majority of candidates provided good responses on this question, in which they were asked to add additional functionality to a given algorithm, using pseudocode. Candidates were expected to use the original given algorithm and variables in their answer. Common errors included the use of a different variable to the one specified to count how many numbers above 500 were input; not including the array index in the conditional statement to check if the number is greater than 500 and placing the output statement inside the loop rather than outside.

Question 5

(a) Candidates generally recognised what the algorithm was doing and were able to complete the trace table to achieve some of the marks. Candidates recognised that numbers were being moved in the array based on their relative value, and therefore correctly completed the parts of the trace table related to ordering the numbers. Candidates who followed the algorithm to its completion and

correctly completed the `Flag` and `Count` columns in the trace table were less common. A common error was to not initialise the `Flag` column and/or the `Count` column to zero.

(b) Many candidates identified that the algorithm was re-ordering the numbers with a significant proportion of them also going on to state that the numbers were being placed in descending order. Common errors included descriptions of what this algorithm was doing line by line, or general definitions of the purpose of algorithms.

Question 6

This question was answered very well with the vast majority of candidates able to draw flowchart symbols to represent Input/Output and Decision.

Question 7

(a) Most candidates were able to state the correct number of records that were given in the table AUDIOPARTS. A small number of candidates incorrectly identified the number of fields in the table, and others incorrectly included the title row in their count of records.

(b) The vast majority of candidates correctly identified the most suitable field in the given table to be the primary key and gave an appropriate reason for this to be the case.

(c) The vast majority of candidates answered this question well with very few errors. Some errors that were seen included: candidates who had not added all four columns to their grid, as required; candidates who added the sort criteria to the wrong field, or who gave additional punctuation such as quotes or = to the word **descending**; candidates who did not tick all of the fields in the show row; candidates who gave incorrect search criteria, including >10 rather than < 10, or = < 10, or no search criteria.

COMPUTER SCIENCE

Key messages

Successful candidates showed evidence of practical experience in designing, programming and testing solutions to the three tasks from the pre-release (baguette ordering) 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. This is because 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 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

Nearly all candidates attempted all the questions on the paper.

Comments on specific questions

Section A

Question 1

(a) Many candidates correctly identified a variable with a meaningful name, suitable data type and a description of the use in **Task 1**. Common errors included incorrectly putting spaces in a variable name or stating an incorrect data type. Identifying a constant was more challenging. Common errors included naming an identifier where the value assigned to it could be changed during the execution of **Task 1** or using a constant name that would not specifically identify a single value, for example `BaguetteSize` instead of `BaguetteSize 1`.

(b)(i) Responses providing pseudocode or code for choosing the filling and salad items for **Task 1** 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 1**.

(ii) Better responses provided an explanation of programming statements that were used to ensure that only valid choices were accepted for the filling. Common errors included explaining how another input was validated or only providing code in the answer when an explanation was required.

(c)   Most candidates explained that the selection statement needed to be changed to allow for another size of baguette. This response required an explanation of how the programming code included by the candidate would provide a solution. Responses seen without an explanation were not creditworthy.

(d)   Better responses correctly explained how their program completed **Task 3**. This response required an explanation of how the programming code included by the candidate would provide a solution. Responses seen without an explanation were not creditworthy. A few candidates did not answer this part of **Question 1**.

Section B

Question 2

(a)   Many candidates gave the correct line numbers for most of the types of statement. A few candidates gave incorrect line numbers for assignment and/or selection statements.

(b)   Many candidates gave the correct line numbers for most of the errors. A few candidates did not identify the incorrect condition and/or the incorrect counting statement.

(c)   Better responses correctly explained the changes required to the algorithm. An example of a correct answer is:

A new variable, `inRange`, was set to zero at start of algorithm. An extra `IF` statement was added after line 13 `IF temperature > = -25 AND temperature <= -18` and `inRange` was updated by 1 if the condition was true.

Question 3

Most candidates correctly identified the descriptions of verification and validation. A Common error was to incorrectly connect the description 'An overview of a program or subroutine.' with the programming concept procedure.

Question 4

(a)   Most candidates correctly completed the `Y` and `Z` columns. Better responses showed the correct values in the `A` column. Common errors included using subtract instead of `MOD` to find the values in the `A` column or adding quotation marks to the OUTPUT column.

(b)   Better responses showed understanding of the algorithm and identified that the remainder of zero when the larger number was divided by the smaller number indicated that the smaller number was a factor of the larger number.

Question 5

(a)   Most candidates correctly stated the number of fields and records.

(b)   Most candidates showed the required output. A common error was to describe the query shown.

(c)   Most candidates correctly completed of the query-by-example grid. Common errors seen included incorrect sort terminology or incorrect criteria for selection of the creatures that were ready for release.