Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMPUTER SCIENCE **0478/22**

Paper 2 **March 2019**

MARK SCHEME

Maximum Mark: 50

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Question	Answer	Marks
	Section A	
1(a)	Many correct answers, they must be meaningful. The names are examples only. Constant name `Max_Extra_Top` Value 3 Use Storing the number of extra toppings a pizza can have Variable name `NextOrderNo` Data type integer Use storing the next order number available	**6**
1(b)	Any **two** from Store an extra type of base Display another option Change the if statement/validation check to include the third option//extra crispy	**2**

Question	Answer	Marks

1(c)(i)	Any **five** from:
	Enter Number of toppings
	Check number of toppings chosen
	Display toppings available
	Provide method of selection
	Only accept correct selections
	Error message if topping not found
	Finish selection
	There are many possible correct answers, this is an example only.
	Sample answer
	`PRINT "Pepperoni 1"`
	`PRINT "Chicken 2"`
	`PRINT "Extra cheese 3"`
	`PRINT "Mushrooms 4"`
	`PRINT "Spinach 5"`
	`PRINT "Olives 6"`
	`REPEAT`
	`  PRINT "How many extra toppings do you want"`
	`  INPUT NoTopping`
	`UNTIL NoTopping >= 0 and NoTopping <=3`
	`WHILE NoTopping >0 DO`
	`  PRINT "Enter Topping ", NoTopping`
	`  INPUT ToppingType`
	`  CASE OF ToppingType`
	`  1: Pepperoni ← Pepperoni + 1`
	`  2: Chicken ← Chicken + 1`
	`  3: ExtraCheese ← ExtraCheese + 1`
	`  4: Mushrooms ← Mushrooms + 1`
	`  5: Spinach ← Spinach + 1`
	`  6: Olives ← Olives + 1`
	`  OTHERWISE: PRINT "Error"`
	`  ENDCASE`
		5

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Question	Answer	Marks

1(c)(i)	`  IF ToppingType >=1 AND ToppingType <=6`
	`    THEN`
	`    PizzaTop[NoTopping] ← ToppingType`
	`    NoTopping ← NoTopping - 1`
	`  ENDIF`
	`ENDWHILE`	

1(c)(ii)	Answers must relate to the algorithm provided for (c)(i) Any **three** from: Display the valid toppings e.g. choose from a menu Check input for each topping is valid … method e.g. using a CASE statement / range check Provide a suitable error message for invalid toppings Provide a method to re-input a topping e.g. use of REPEAT…UNTIL	**3**
1(d)	Explanation Any **four** from: How the total of each additional pizza toppings was checked How the largest value was selected How the smallest value was selected How the topping descriptions were recorded for largest/smallest Method used to calculate percentages … … calculation relates to the total number of additional toppings ordered Display results including suitable messages	**4**

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Question	Answer	Marks
	Section B	

2(a)	`Total ← Count` should be `Total ← 0`
	
	`Number <> 0` should be `Number > 0`
	
	`Total ← Total + Count` should be `Total ← Total + Number`
	
	`UNTIL Count < 50` should be
	`UNTIL Count > 50, UNTIL Count >= 51, UNTIL Count = 51`
	
	1 mark for each error identified + suggested correction
		4

2(b)	The test should be `IF Number > 0 AND Number <20` One mark for both ends of the range and one mark for the **AND.**	**2**

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Question	Answer	Marks
3		**5**

Senior	Adult	Child	Type	OUTPUT
0	0	0		
			S	
1			S	
2			S	
3			A	
	1		C	
		1	C	
		2	C	
		3	A	
	2		A	
	3		A	
	4		A	
	5		W	
			S	
4			S	
5			D	
			C	
		4	Z	Seniors 5
				Adults 5
				Children 4

One mark for each correct column.

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>4</td><td>
<table>
<tr><th>Statements</th><th>Selection</th><th>Repetition</th></tr>
<tr><td>FOR X ← 1 TO 10
  SUM ← SUM + 1
NEXT X</td><td></td><td>✓</td></tr>
<tr><td>WHILE X > 10 DO
  SUM ← SUM + 1
  X ← X - 1
ENDWHILE</td><td></td><td>✓</td></tr>
<tr><td>IF X > 10
THEN
  SUM ← SUM + 1
  X ← X - 1
ENDIF</td><td>✓</td><td></td></tr>
<tr><td>REPEAT
  SUM ← SUM + 1
  X ← X - 1
UNTIL X > 10</td><td></td><td>✓</td></tr>
</table>
</td><td>4</td></tr>
</table>

Question	Answer	Marks
5(a)	Validation Range check	2

Question	Answer	Marks
5(b)	For each of **three** different data types Data type - 1 mark, Example - 1 mark, Reason - 1 mark There are many possible correct answers, this is an example only. Normal data (1 mark) 65 (1 mark) to show that the program accepts this value (1 mark) Erroneous data (1 mark) seventy (1 mark) to show that the program rejects this value (1 mark) Extreme data (1 mark) 89 (1 mark) to show that the program accepts this value (1 mark)	**9**

Question	Answer					Marks
6	Field:	Tyre Code	Stock Level	Width	Terrain	**4**
	Table:	BIKETYRES	BIKETYRES	BIKETYRES	BIKETYRES	
	Sort:		Ascending			
	Show:	☑	☑	☐	☐	
	Criteria:			= 24	= 'Asphalt'	
	or:					
	One mark for each correct column					