Cambridge Assessment International Education

Cambridge IGCSE™

COMPUTER SCIENCE **0478/21**

Paper 2 **October/November 2020**

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.

Cambridge International is publishing the mark schemes for the October/November 2020 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

© UCLES 2020

[Turn over

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.

© UCLES 2020

Question	Answer	Marks
Section A		
1(a)	For **one** array **One** mark for naming of an array with a suitable data type and **one** mark for its use Array `yearsWithoutClaim` Data type integer Use to store the % discount Many correct answers, this is an example only.	**3**
1(b)	For **each** validation check **One** mark for identification of a check and **one** mark for the reason **max 4** Check presence check Reason need to enter age to calculate price Check type check Reason need to check age is a positive integer Many correct answers, these are examples only.	**4**

1(c)	Any **six** from:
	MP1 Input with prompt if new customer
	MP2 Check age greater than or equal 26
	MP3 Check age less than or equal 70
	MP4 Check number of years without a claim greater than or equal to 2 …
	MP5 … discount 10%
	MP6 Otherwise discount 0%
	MP7 Calculate new price and value of extra discount
	MP8 Output new price and value of extra discount, with suitable message
	
	Sample answer
	`PRINT "Are you a new customer Y/N?"`
	`INPUT new`
	`discount ← 0`
	`IF new = "Y" DO`
	`  IF age >= 26 AND age <= 70`
	`  THEN`
	`  IF yearsWithoutClaim >=2`
	`  THEN`
	`  discount ← price * 0.1`
	`  price ← price * 0.9`
	`  ENDIF`
	`  ENDIF`
	`  PRINT "New price", price`
	`  PRINT "Extra discount for new customer", discount`
	`ENDIF`
		6

Question	Answer	Marks
1(d)(i)	Explanation Any **four** from: MP1 Provide a prompt and input to check if additional driver required MP2 Check response with `IF/REPEAT/WHILE/CASE` statement for yes MP3 … input age of additional driver MP4 … Use of `IF / REPEAT` etc. to validate age MP5 … use the age input to find / look up appropriate price increase MP6 … description of how the price to pay now is calculated MP7 … description of how the price to pay now is displayed including the use of a suitable message For no MP8 … no output required or suitable message output Programming statements can be used but must be explained.	**4**
1(d)(ii)	Description Any **three** from: MP1 Use a variable (quotes) to keep a running total of the number of quotes provided MP2 Ask, using prompt with input, customers if they are going to purchase the insurance MP3 Use another variable (policies) to keep a running total of the number of insurances bought / not bought MP4 Use these to calculate the percentage policies/quotes*100	**3**

Question	Answer	Marks
Section B		
2	**One** mark for description of variable **One** mark for description of constant **One** mark for inclusion of an example variable **One** mark for inclusion of an example constant Example answer: A value that can change during the execution of a program A named value that cannot change during the execution of a program Variable example - using a counter for example `counter ← counter + 1` Constant example – a static value that can be used for checking for example `< maxAge`	**4**

Question	Answer	Marks
3(a)	Line 1/2/3/4/8/9 Lines 5–11 Line 9 Line 8	**4**

Question	Answer	Marks
3(b)	**One** mark for error and correction Line 1 `TotalWeight ← 0` Line 10 **move** `OUTPUT "Number of bags in the load is ", BagCount` **to end / after line 11** Line 11 `UNTIL TotalWeight > MaxWeight` **OR** `BagCount >= MaxBag` Line 12 `OUTPUT "Total weight of the load is ", TotalWeight`	**4**
3(c)	Any **four** from: After line 11 Divide `TotalWeight` by … `BagCount` Assign a new variable `AverageWeight ← TotalWeight / BagCount` Output the result `OUTPUT AverageWeight` With a message `"Average weight of a bag of firewood is "`	**4**

Question	Answer	Marks
4(a)	**One** mark for correct input columns (V, W, X, Y, Z) **One** mark for correct calculation column A **One** mark for correct calculation column B **One** mark for correct output column	**4**
4(b)	• (Use first four digits input to) calculate a check digit • Check if the check digit input is valid	**2**

V	W	X	Y	Z	A	B	OUTPUT
5	4	6	2	1	56	1	Valid
9	3	2	1	6	40	7	Invalid
7	6	1	5	1	61	6	Invalid
0	0	0	0	0			

Question	Answer	Marks
5(a)	6 fields 9 records	**2**
5(b)	Either mark by row or by column but not both **One** each correct row or **one** mark for each correct column max **two** Koala3 Australia SkyKing Europe	**2**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>5(c)</td><td>
<table>
<tr><td>Field:</td><td>Airline name</td><td>Number of countries</td><td>Head office</td><td></td></tr>
<tr><td>Table:</td><td>AIRLINE</td><td>AIRLINE</td><td>AIRLINE</td><td></td></tr>
<tr><td>Sort:</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Show:</td><td>☑</td><td>☑</td><td>☐</td><td>☐</td></tr>
<tr><td>Criteria:</td><td></td><td>> 4</td><td>="Asia"</td><td></td></tr>
<tr><td>or:</td><td></td><td>> 4</td><td>="Africa"</td><td></td></tr>
</table>
one mark for correct fields and correct table names, must have the three columns required, ignore another column provided the show row is not ticked and there are no criteria set for that column
one mark for correct show row
one mark for correct number of countries criteria
one mark for correct head office criteria
</td><td>4</td></tr>
</table>

© UCLES 2020