

Cambridge IGCSE™

COMPUTER SCIENCE

Paper 2 MARK SCHEME Maximum Mark: 50 0478/22 October/November 2021

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 ٠
- 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 ٠ 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.

Question	Answer Section A					
1(a)(i)	 One mark per point Variable PassengerID// StartStage Use Storing the unique ID number of the passenger// Storing/inputting the start stage of the journey 	2				
1(a)(ii)	One mark per point MP1 Name of array MP2 Data type of array MP3 Sample data for array MP4 Use of array MP5 At least two complete arrays with all of the above Array name Data type JourneyStage1 string C1 PriceStage1 real 1.50 to store the price of first stage of the journey	5				
1(b)	One mark per bullet point MP1 Use of validation check, e.g. range check, type check, presence check, length check, format check MP2 Use of conditional statement to check if the validation fails MP3 a re-entry is requested MP4 Use of loop to repeat the process until an acceptable answer is input MP5 More than one appropriate validation check used / described.	3				
1(c)	Any six from: MP1 Conditional statement to check departure time against 10:00 MP2 calculate 40% discount // calculate 60% of the original price MP3 calculate discounted total price MP4 Output the discounted total price MP5 Output the booking details with suitable messages MP6 Input with prompt for passenger confirmation MP7 attempt at action following the confirmation input MP8 Repeating booking data entry if incorrect MP9 Re-checking journey details for correctness					

Question	Answer	Marks
1(c)	<pre>Example answer // Tasks 1 and 2 completed IF CollectedTime[Index] > 10:00 THEN JourneyCost[Index] ← JouneyCost[Index] * 0.6 ENDIF PRINT "Your journey cost is: ", JourneyCost[Index] PRINT "Your journey details are: ", PassengerID[Index], JourneyTime[Index], JourneyCodes[Index], JourneyID[Index] PRINT "Are these details correct? (Y or N) " INPUT Correct IF Correct = "N" WHILE Correct = "N" PRINT "Re-enter your journey details" PRINT "Correct journey time " INPUT JourneyTime[Index] PRINT "Correct journey time " INPUT JourneyTime[Index] PRINT "Correct journey time " INPUT JourneyTime[Index] PRINT "Your revised journey details are: ", PassengerID[Index], JourneyTime[Index] PRINT "Your revised journey details are: ", PassengerID[Index], JourneyTime[Index], JourneyCodes[Index] PRINT "Your revised journey details are: ", PassengerID[Index], JourneyTime[Index], JourneyCodes[Index] PRINT "Are these details correct? (Y or N)" INPUT Correct ENDUFF [NPUT Faster the test is the test of test</pre>	
1(d)	 Explanation of how each of the following could be done Any four from: MP1 Declaring/using a counter to store the number of bookings for each passenger MP2 Updating the counter for the number of bookings made by each passenger MP3 Attempt to check the number of bookings MP4 for the correct condition e.g. if the number of bookings is more than 10 / equal to 10 MP5 Apply the extra discount to the total price of future journeys 	4

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Question	Answer									
	Section B									
2	One mark for two correct rows Two marks for three correct rows Three marks for four correct rows.									
	Statement	Validation (✓)	Verification (✓)	Neither (✓)						
	a check where data is re-entered to make sure no errors have been introduced during data entry		~							
	an automatic check to make sure the data entered has the correct number of characters	\checkmark								
	a check to make sure the data entered is sensible	✓								
	a check to make sure the data entered is correct			\checkmark						

Question	Answer	Marks
3	One mark per bullet point	6
	 Normal test data Test data e.g. 50 (allow any number between 1 and 100 inclusive) Reason Data that is within range and should be accepted 	
	 Extreme test data Test data 100 / 1 Reason Data at the maximum / minimum end of the range and should be accepted 	
	 Erroneous test data Test data e.g. 300 (allow anything that isn't between 1 and 100 inclusive, including other data types) Reason Data outside the range that should be rejected 	

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Question	Answer	Marks
4(a)	One mark for error identified and suggested correction (Max three)	5
	Line 8 OUTPUT Value2 - should be INPUT Value2 Line 9 IF Operator - should be CASE OF Operator Line 15 OUTPUT "The answer is ", Value1 - should be Answer	
	The loop may be corrected using a number of alternative methods:	
	One mark for error identified and suggested correction (Max two)	
	<pre>Method 1 Line 1 Continue ← 1 should be Continue ← 0 Line 22 UNTIL Continue = 0 should be ENDWHILE // Line 2 WHILE Continue = 0 should be REPEAT and Line 22 UNTIL Continue = 0 should be Until Continue = 1</pre>	
	OR	
	<pre>Method 2 Line 2 WHILE Continue = 0 should be REPEAT Line 20 Continue ← 1 should be Continue ← 0 // Line 1 Continue ← 1 should be Continue ← 0 and Line 22 UNTIL Continue = 0 should be Until Continue = 1</pre>	
	OR	
	<pre>Method 3 Line 2 WHILE Continue = 0 should be WHILE Continue = 1 Line 20 Continue ← 1 should be Continue ← 0 and Line 22 UNTIL Continue = 0 should be ENDWHILE</pre>	

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Question	Answer	Marks								
4(a)	Corrected algorithm example 1									
	<mark>1 Continue ← 0</mark>									
	2 WHILE Continue = 0 (DO)									
	3 OUTPUT "Enter 1 for +, 2 for -, 3 for * or 4 for /"									
	4 INPUT Operator									
	5 OUTPUT "Enter the first value"									
	6 INPUT Value1									
	7 OUTPUT "Enter the second value"									
	8 INPUT Value2									
	9 CASE OF Operator									
	10 1: Answer \leftarrow Value1 + Value2									
	11 2: Answer \leftarrow Value1 - Value2									
	12 3: Answer \leftarrow Value1 * Value2									
	13 4: Answer \leftarrow Value1 / Value2									
	14 ENDCASE									
	15 OUTPUT "The answer is ", Answer									
	16 OUTPUT "Do you wish to enter more values (Yes or No)?"									
	17 INPUT MoreValues									
	18 IF MoreValues = "No"									
	19 THEN									
	20 Continue $\leftarrow 1$									
	21 ENDIF									
	22 ENDWHILE									

Question		Answer	Marks
4(a)	Corrected algo	orithm example 2	
	1 (Continue \leftarrow 1	
	<mark>2 F</mark>	REPEAT	
	3	OUTPUT "Enter 1 for +, 2 for -, 3 for * or 4 for /"	
	4	INPUT Operator	
	5	OUTPUT "Enter the first value"	
	6	INPUT Value1	
	7	OUTPUT "Enter the second value"	
	8	INPUT Value2	
	9	CASE OF Operator	
	10	1: Answer \leftarrow Value1 + Value2	
	11	2: Answer \leftarrow Value1 - Value2	
	12	3: Answer \leftarrow Value1 * Value2	
	13	4: Answer \leftarrow Value1 / Value2	
	14	ENDCASE	
	<mark>15</mark>	OUTPUT "The answer is ", Answer	
	16	OUTPUT "Do you wish to enter more values (Yes or No)?"	
	17	INPUT MoreValues	
	18	IF MoreValues = "No"	
	19	THEN	
	<mark>20</mark>	Continue — 0	
	21	ENDIF	
	22	UNTIL Continue = 0	

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Question	Answer	Marks
4(b)	One mark per bulletMP1Appropriate loop (begin and end) / otherwise selectionMP2Testing both ends of conditionMP3Suitable messageMP4Input/re-input	5
	WHILE Operator < 1 OR Operator > 4 (DO) OUTPUT "Enter 1, 2, 3 or 4" INPUT Operator ENDWHILE	
	Alternative answer REPEAT IF Operator < 1 OR Operator > 4 THEN OUTPUT "Enter 1, 2, 3 or 4" INPUT Operator ENDIF UNTIL Operator >= 1 AND Operator <= 4	
	One mark	
	After line 4 / between lines 2 and 5	

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Question					Answer	Marks			
5	One mark for each correct column								
	List	Value	List1	List2	OUTPUT				
			0	0					
	2								
		77		77					
	2								
		16		93					
	1								
		35	35						
	2								
		-7		86					
	5								

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Question					Answer
5	List	Value	List1	List2	OUTPUT
		18			Input Error
	1				
		11	46		
	1				
		12	58		
	2				
		20		106	
	-1				List 1 = 58
					List 2 = 106
					List 2 is greatest

Question		Answer										
6(a)(i)	InStock	InStock										
6(a)(ii)	ProductID							1				
6(b)	One mark for correct fieldnames One mark for correct table names and show fields One mark for correct sort One mark for correct search criteria in all columns											
	Field:	ProductID	ProductName	Animal	InStock							
	Table:	STOCK	STOCK	STOCK	STOCK							
	Sort:	Ascending										
	Show: 🗹 🗹 🗆 🗆											
	Criteria:			="cat"	=Yes							
	or:											