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Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMPUTER SCIENCE

0478/22

Paper 2

March 2017

MARK SCHEME

Maximum Mark: 50

Published

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This document consists of **5** printed pages.

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[Turn over

Question	Answer	Marks										
1(a)(i)	Many correct answers, the identifier must be meaningful and appropriate size if present. These are examples only ReactionTime [1:650], ReactionTime [0:649], ReactionTime [650], ReactionTime[649], ReactionTime[]	1										
1(a)(ii)	Many correct answers, the identifier must be the same as part 1(a)(i) including appropriate size if present. These are examples only ReactionTime [1:50], ReactionTime [0:49], ReactionTime [50], ReactionTime[49], ReactionTime[]	1										
1(a)(iii)	Any two from: – can store multiple reaction times under a single identifier – reduces the number variables – arrays have an index which identifies each stored element – can use iteration to loop through an array – allows for more efficient programming – programs are easier to debug	2										
1(b)	Any three from: – an effective loop to accept 650 records – prompt for all three inputs – within the loop reads all three INPUT values – storing input values in appropriate arrays Sample Answer. FOR Counter ← 1 TO 650 OUTPUT ('Input House, Age and Reaction Time') INPUT HouseArray [Counter], AgeArray [Counter], ReactionTimeArray[Counter] NEXT	3										
1(c)	1 mark for correct type of test data (max 3) 1 mark for appropriate example (max 3) <table border="1"><tr><td>Normal / Valid</td><td>12 / 13 / 14 / 15 / 16</td></tr><tr><td>Erroneous / Abnormal / Invalid</td><td>13.5 / Twelve / 9</td></tr><tr><td>Boundary (accepted)</td><td>12 or 16</td></tr><tr><td>Boundary (rejected)</td><td>11 or 17</td></tr><tr><td>Extreme</td><td>12 or 16</td></tr></table>	Normal / Valid	12 / 13 / 14 / 15 / 16	Erroneous / Abnormal / Invalid	13.5 / Twelve / 9	Boundary (accepted)	12 or 16	Boundary (rejected)	11 or 17	Extreme	12 or 16	6
Normal / Valid	12 / 13 / 14 / 15 / 16											
Erroneous / Abnormal / Invalid	13.5 / Twelve / 9											
Boundary (accepted)	12 or 16											
Boundary (rejected)	11 or 17											
Extreme	12 or 16											
1(d)	Any five from following explanations: – user input for House and Age – loop through the arrays – use selection statements to identify the elements that meet <u>both</u> criteria – maintain counter of elements (that met criteria of House and Age input) – maintain a sum of reaction times (that match criteria of House and Age input) – calculate the average from element counter and sum of reaction times – create appropriate output message – output message and average outside of loop	5										

Question	Answer	Marks
1(e)	Any two from following explanations: – variable used to hold fastest time will have to initialised to a high value / variable used to hold fastest time will be given first record value – store array value in variable if reaction time less than current value in variable – store array value of age with the same index in a variable – Output age and fastest reaction time	2

Question	Answer	Marks																																				
Section B																																						
2	1 mark for each error identified with effective corrective action <pre>01 Num18 = 0 02 INPUT Age 03 WHILE Age >= 0 DO 04 IF Age >= 18 THEN 05 Num18 = Num18 + Age 06 END IF 07 END WHILE 08 PRINT Num18 - Age</pre> Error – Line 04 or IF Age >= 18 and Correction – IF Age >18 Error – Line 05 or Num18 =Num18 + Age and Correction – Num18 = Num18 + 1 Error – Line 08 or PRINT Num18 - Age and Correction – PRINT Num18 Error – INPUT Age missing inside loop and Correction – Include INPUT Age after test and before exiting loop	4																																				
3	1 mark for each correctly completed element of the grid <table><tr><th>Variable</th><th>Data Type</th><th>Appropriate Validation Check</th></tr><tr><td>EmployeeID</td><td>String</td><td>Length Check / Presence Check / Format Check / Type check</td></tr><tr><td>Manager</td><td>Boolean</td><td>Type Check / Presence Check</td></tr><tr><td>AnnualHoliday</td><td>Integer</td><td>Type Check / Range Check / Presence Check</td></tr><tr><td>PayGrade</td><td>Char</td><td>Presence Check / Length Check / Type Check</td></tr></table>	Variable	Data Type	Appropriate Validation Check	EmployeeID	String	Length Check / Presence Check / Format Check / Type check	Manager	Boolean	Type Check / Presence Check	AnnualHoliday	Integer	Type Check / Range Check / Presence Check	PayGrade	Char	Presence Check / Length Check / Type Check	8																					
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4	1 mark for each correct column <table><tr><th>A</th><th>B</th><th>C</th><th>Output</th></tr><tr><td>4</td><td>4</td><td>4</td><td></td></tr><tr><td></td><td>8</td><td>3</td><td></td></tr><tr><td></td><td>12</td><td>2</td><td></td></tr><tr><td></td><td>16</td><td>1</td><td>16</td></tr><tr><td>3</td><td>3</td><td>3</td><td></td></tr><tr><td></td><td>6</td><td>2</td><td></td></tr><tr><td></td><td>9</td><td>1</td><td>9</td></tr><tr><td>-1</td><td></td><td></td><td>Exit</td></tr></table>	A	B	C	Output	4	4	4			8	3			12	2			16	1	16	3	3	3			6	2			9	1	9	-1			Exit	4
A	B	C	Output																																			
4	4	4																																				
	8	3																																				
	12	2																																				
	16	1	16																																			
3	3	3																																				
	6	2																																				
	9	1	9																																			
-1			Exit																																			

Question	Answer	Marks																														
5(a)	– initialising counter outside the loop – updating counter inside loop – suitable exit value at start of loop – correct use of WHILE ... DO ... ENDWHILE Example: <pre>INPUT Num Counter ← 1 WHILE Counter <= 12 DO Num ← Num * Counter A [Counter] ← Num Counter ← Counter + 1 ENDWHILE</pre>	4																														
5(b)	– WHILE has criteria check at start / pre-test – may never run – REPEAT UNTIL has criteria check at end / post-test – will always run at least once	4																														
6(a)	Alan Swales Chantel Law Correct data Correct order	2																														
6(b)	<table><tr><td>Field:</td><td>Device ID</td><td>Device Type</td><td>Purchase Date</td><td>Purchase Price (\$)</td></tr><tr><td>Table:</td><td>DEVICE</td><td>DEVICE</td><td>DEVICE</td><td>DEVICE</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>Like 'Desktop'</td><td><#31/12/2016#</td><td></td></tr><tr><td>or:</td><td></td><td></td><td></td><td><1000</td></tr></table> 1 mark for each correct column	Field:	Device ID	Device Type	Purchase Date	Purchase Price (\$)	Table:	DEVICE	DEVICE	DEVICE	DEVICE	Sort:					Show:	☒	☒	☐	☐	Criteria:		Like 'Desktop'	<#31/12/2016#		or:				<1000	4
Field:	Device ID	Device Type	Purchase Date	Purchase Price (\$)																												
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