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Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

COMPUTER SCIENCE

0478/22

Paper 2

October/November 2017

MARK SCHEME

Maximum Mark: 50

Published

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This document consists of **8** printed pages.



Question	Answer	Marks												
1(a)(i)	1 mark for appropriate variable name, 1 mark for appropriate data type, 1 mark for appropriate use. Many correct answers, they must be meaningful. These are examples only. – HireTotal, integer, running total of money taken (for the day) – HoursHired, real, running total of hours hired for the day – Returned, real, hour and fraction of hour when next returned	3												
1(a)(ii)	1 mark for appropriate constant name, 1 mark for appropriate value. Many correct answers, they must be meaningful. These are examples only. – HourPrice, 20.00 – HalfHourPrice 12.00	2												
1(b)	1 mark for validation check, all checks must be different, 1 mark for the reason and 1 mark for the test data. The only inputs for task 1 can be length of hire, money taken, time of hire and time of return. There are many possible correct answers these are examples only. <table><tr><td>Validation check</td><td>– range check for time of hire</td></tr><tr><td>Reason</td><td>– cannot be hired before 10:00 returned after 17:00</td></tr><tr><td>Test data</td><td>– 12:00, 19:00</td></tr><tr><td>Validation check</td><td>– type check for money taken</td></tr><tr><td>Reason</td><td>– must be a numeric value</td></tr><tr><td>Test data</td><td>– 20.00, bob</td></tr></table>	Validation check	– range check for time of hire	Reason	– cannot be hired before 10:00 returned after 17:00	Test data	– 12:00, 19:00	Validation check	– type check for money taken	Reason	– must be a numeric value	Test data	– 20.00, bob	6
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Question	Answer	Marks
1(c)	– any loop for 10 boats (1 mark) Four from: – Initialisation – check HoursHired against MaxHoursHired store the BoatNumber – ... update MaxHoursHired if greater – check if HoursHired = 0 if so add 1 to NumberBoatsUnused – update daily totals (for hours and money) – output report with messages (including totals for hours and money, and number of boats unused and the most used boat). Max 4 marks Example: <pre> MaxHoursHired ← 0 TotalHoursHired ← 0 TotalMoney ← 0 NumberBoatsUnused ← 0 FOR BoatNumber ← 1 to 10 TotalMoney ← TotalMoney + Money(BoatNumber) TotalHoursHired ← TotalHoursHired + HoursHired(BoatNumber) IF HoursHired(BoatNumber) = 0 THEN NumberBoatsUnused ← NumberBoatsUnused + 1 ENDIF IF HoursHired(BoatNumber) > MaxHoursHired THEN MostUsed ← BoatNumber MaxHoursHired ← HoursHired(BoatNumber) ENDIF NEXT BoatNumber PRINT "Boats were hired for ", TotalHoursHired, " hours" PRINT "Total amount of money taken was ", TotalMoney PRINT NumberBoatsUnused, " boats were not used" Print "Boat number ", MostUsed, " was used most" </pre>	5

Question	Answer	Marks
1(d)	Maximum 4 marks in total for question part e.g. Explanation (may include reference to program statements) – check all boats for... – ... return time < current time // current booking slot available or return time > current time// current booking slot not available – keep a running total of those available – display number of boats Example: <pre> FOR BoatNumber ← 1 to 10 loop to check for all boats IF ReturnTime(BoatNumber) <= CurrentTime check return time against current time THEN BoatsAvailable ← BoatsAvailable + 1 keep a running total ENDIF NEXT BoatNumber PRINT "Number of boats available ", BoatsAvailable display number of boats </pre>	4

Question	Answer	Marks
2	1 mark for each, there may be other solutions, award full marks for any working solution any six from: - initialise total (outside loop) - Input number of numbers (outside loop with validation) - Loop using input value - Input number (inside loop) - Update Total (inside loop) - Calculate average - Print average and total (outside loop) Sample algorithm: <pre> INPUT NumberCount Total ← 0 FOR Count ← 1 TO NumberCount INPUT Number Total ← Total + Number NEXT Average ← Total/NumberCount PRINT Total, Average </pre>	6

Question	Answer	Marks
3	1 mark for each correct line, max 3 marks. Data Structure Constant Array Table Variable Description A collection of related data. A value that can change whilst a program is running. A value that never changes whilst a program is running. A series of elements of the same data type.	3

Question	Answer	Marks
4	2 marks for identification, 1 mark for description, 1 mark for reason. Identification: <pre> CASE OF ... OTHERWISE ... (ENDCASE) or ... OF ... (OTHERWISE) ... ENDCASE </pre> Description: – a statement that allows for multiple selections // not any of the above Reason: – to simplify pseudocode/ make pseudocode more understandable etc.	4

Question	Answer					Marks
5(a)	Accept	Reject	Count	Sack	OUTPUT	5
	0	0	0			
	1		1	50.4		
	2		2	50.3		
		1	3	49.1		
	3		4	50.3		
	4		5	50.0		
	5		6	49.5		
	6		7	50.2		
	7		8	50.3		
	8		9	50.5		
		2	10	50.6	8 2	
← (1 mark) →← (1 mark) →← (1 mark) →← (1 mark) →← (1 mark) →						
5(b)	- change to Is Count = 50? - remove IS Sack > 50.5?					2

Question	Answer	Marks																														
6(a)	– 1 mark for each field suitable name, 1 mark for appropriate data type and appropriate data sample The following are examples there are many different correct answers. – Engine Number, text, 21012 – Class, text, P6 – Service Date, date, 4/3/2017	6																														
6(b)	– Engine Number // Correct field number	1																														
6(c)	<table><tr><td>Field:</td><td>Engine Number</td><td>Class</td><td>Service Date</td><td></td></tr><tr><td>Table:</td><td>TRAIN</td><td>TRAIN</td><td>TRAIN</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>Like 'P*' // Like 'P?'</td><td><10/11/2016</td><td></td></tr><tr><td>or:</td><td></td><td></td><td></td><td></td></tr></table> (1 mark) (1 mark) (1 mark)	Field:	Engine Number	Class	Service Date		Table:	TRAIN	TRAIN	TRAIN		Sort:					Show:	☒	☐	☐	☐	Criteria:		Like 'P*' // Like 'P?'	<10/11/2016		or:					3
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