



COMPUTER SCIENCE

0478/22

Paper 2

October/November 2017

MARK SCHEME

Maximum Mark: 50

Published

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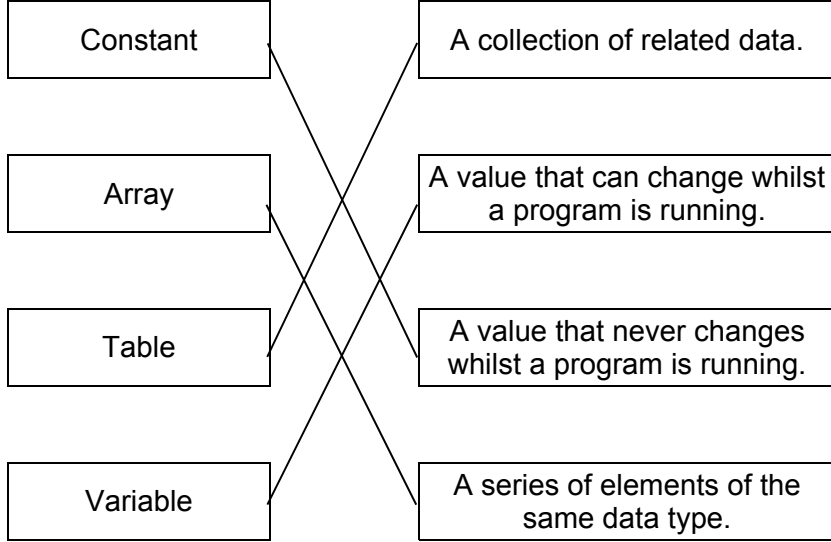
This document consists of **8** printed pages.

Question	Answer	Marks
1(a)(i)	<p>1 mark for appropriate variable name, 1 mark for appropriate data type, 1 mark for appropriate use.</p> <p>Many correct answers, they must be meaningful. These are examples only.</p> <ul style="list-style-type: none"> - 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)	<p>1 mark for appropriate constant name, 1 mark for appropriate value.</p> <p>Many correct answers, they must be meaningful. These are examples only.</p> <ul style="list-style-type: none"> - HourPrice, 20.00 - HalfHourPrice 12.00 	2
1(b)	<p>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.</p> <p>There are many possible correct answers these are examples only.</p> <p>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</p>	6

Question	Answer	Marks
1(c)	<p>– any loop for 10 boats</p> <p>(1 mark)</p> <p>Four from:</p> <ul style="list-style-type: none"> – 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). <p style="text-align: right;">Max 4 marks</p> <p>Example:</p> <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)	<p>Maximum 4 marks in total for question part</p> <p>e.g.</p> <p>Explanation (may include reference to program statements)</p> <ul style="list-style-type: none"> – 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 <p>Example:</p> <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	<p>1 mark for each, there may be other solutions, award full marks for any working solution</p> <p>any six from:</p> <ul style="list-style-type: none">initialise total (outside loop)Input number of numbers (outside loop with validation)Loop using input valueInput number (inside loop)Update Total (inside loop)Calculate averagePrint average and total (outside loop) <p>Sample algorithm:</p> <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	<p>1 mark for each correct line, max 3 marks.</p> <table border="0" style="width: 100%; text-align: center;"> <thead> <tr> <th>Data Structure</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Constant</td> <td>A collection of related data.</td> </tr> <tr> <td>Array</td> <td>A value that can change whilst a program is running.</td> </tr> <tr> <td>Table</td> <td>A value that never changes whilst a program is running.</td> </tr> <tr> <td>Variable</td> <td>A series of elements of the same data type.</td> </tr> </tbody> </table> 	Data Structure	Description	Constant	A collection of related data.	Array	A value that can change whilst a program is running.	Table	A value that never changes whilst a program is running.	Variable	A series of elements of the same data type.	3
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Question	Answer	Marks
4	<p>2 marks for identification, 1 mark for description, 1 mark for reason.</p> <p>Identification:</p> <pre> CASE OF ... OTHERWISE ... (ENDCASE) or ... OF ... (OTHERWISE) ... ENDCASE </pre> <p>Description:</p> <ul style="list-style-type: none"> – a statement that allows for multiple selections // not any of the above <p>Reason:</p> <ul style="list-style-type: none"> – 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 <code>Is Count = 50?</code> – remove <code>IS Sack > 50.5?</code>					2

Question	Answer	Marks																																			
6(a)	<p>– 1 mark for each field suitable name, 1 mark for appropriate data type and appropriate data sample</p> <p>The following are examples there are many different correct answers.</p> <ul style="list-style-type: none"> – 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 border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Field:</td> <td style="width: 25%;">Engine Number</td> <td style="width: 25%;">Class</td> <td style="width: 25%;">Service Date</td> <td style="width: 10%;"></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 style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></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> <tr> <td></td> <td style="text-align: center;">(1 mark)</td> <td style="text-align: center;">(1 mark)</td> <td style="text-align: center;">(1 mark)</td> <td></td> </tr> </table>	Field:	Engine Number	Class	Service Date		Table:	TRAIN	TRAIN	TRAIN		Sort:					Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Criteria:		Like 'P*' // Like 'P?'	<10/11/2016		or:						(1 mark)	(1 mark)	(1 mark)		3
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