



COMPUTER SCIENCE

0478/21

Paper 2

October/November 2017

MARK SCHEME

Maximum Mark: 50

Published

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This document consists of **7** printed pages.

Question	Answer	Marks
1(a)(i)	<p>1 mark per bullet:</p> <ul style="list-style-type: none"> • At least one array declaration • At least one array has an appropriate name • All arrays with appropriate names <p>Many correct answers, they must be meaningful. These are examples only.</p> <pre>Array_2Seater[] Array_4Seater[] Array_Historic[]</pre>	3
1(a)(ii)	<p>1 mark per bullet:</p> <ul style="list-style-type: none"> • Name of variable • Purpose of variable • Name of constant • Purpose of constant <p>Many correct answers, they must be meaningful. These are examples only.</p> <p>Variable NumFlights to store the number of flights in a day</p> <p>Constant FlightCost2Seat30 to store the cost of a 30 minute flight in a 2 seater plane</p>	4

Question	Answer	Marks
1(b)	<p>Any five from:</p> <ul style="list-style-type: none"> • Prompt for plane • Input plane • Prompt for another input length of flight along with the input. • Attempt at calculation of maximum number of flights in a day • Using correct values for maximum number of flights (from calculation or otherwise) • Calculation/determination of cost of a single flight for selected plane and duration • Calculation of income that can be generated for one combination of plane and flight • Output of total possible income for one combination of plane and flight with message(s) <p>Algorithm example:</p> <pre> OUTPUT "Please Enter Type of Plane" OUTPUT "1: 2 Seater" OUTPUT "2: 4 Seater" OUTPUT "3: Historic" INPUT PlaneType OUTPUT "Please Enter Length of Flight" INPUT FlightLength CASE FlightLength of 30: OUTPUT "Maximum number of flights is 10" 60: OUTPUT "Maximum number of flights is 6" OTHERWISE OUTPUT "Invalid length of flight" ENDCASE CASE PlaneType of 1: Price30 ← 100; Price60 ← 150 2: Price30 ← 120; Price60 ← 200 3: Price30 ← 120; Price60 ← 500 OTHERWISE OUTPUT "Invalid type of plane" ENDCASE CASE FlightLength of 30: OUTPUT "Total Possible Income is ", Price30 * 10 60: OUTPUT "Total Possible Income is ", Price60 * 6 ENDCASE </pre>	5
1(c)	<p>1 mark for each correct point related to the inputs for Task 1</p> <ul style="list-style-type: none"> • Description of how the program would validate the input • Description/identification of input(s) • Type of validation check • Checking inputs against stored data/maxima/correct data • Dry-running the program • Use of test data • Identification of types of test data • Example(s) of test data 	4

Question	Answer	Marks
1(d)	<p>Any four from:</p> <ul style="list-style-type: none"> • Input timeslot • Check 3 types of plane • Methodology for checking time slot • Identify any planes available • Output plane(s) available • Output if no planes available 	4

Question	Answer	Marks
2	<p>1 mark for each error identified plus suggested correction (the corrected lines must be written in full)</p> <p>Line 4 correct line WHILE Number <= 99 OR Number > 1000</p> <p>Line 7 correct line Num[Index] = Number</p> <p>Line 9 correct line NEXT (Index)</p> <p>Line 10 correct line PRINT Count</p>	4

Question	Answer	Marks
3(a)	<p>1 mark per bullet:</p> <ul style="list-style-type: none"> • Validation checks whether data to be entered is possible/sensible // computer check • Verification checks that data entered is the data that was intended to be entered // can be a human check // matches the source 	2
3(b)	<p>1 mark for each valid point</p> <p>Either</p> <ul style="list-style-type: none"> • Double Entry // suitable practical example • the data will be entered twice • compared by the computer or by a human • if a discrepancy is found, the data entry operator is asked to re-enter the data <p>Or</p> <ul style="list-style-type: none"> • Visual Verification // suitable practical example • the data will be compared to the source 'document' • compared by a human • if a discrepancy is found, the data is re-entered 	2

Question	Answer	Marks
3(c)	1 mark for explanation and 1 mark for an expansion <ul style="list-style-type: none"> • Library routine is a list of instructions // block of code // subroutine • ... that is used often ... • ... which is given a name • ... and which can be called from other programs • Library routines make writing programs easier and faster as the code is already written • Library routines make program testing easier as the code has already been tested and debugged 	2

Question	Answer	Marks												
4(a)	1 mark for each correct line <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; border: none;">Pseudocode description</th> <th style="text-align: left; border: none;">Pseudocode statement</th> </tr> </thead> <tbody> <tr> <td style="border: 1px solid black; padding: 5px;">A loop that will iterate at least once.</td> <td style="border: 1px solid black; padding: 5px;">FOR...TO...NEXT</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">A conditional statement to deal with many possible outcomes.</td> <td style="border: 1px solid black; padding: 5px;">IF...THEN...ELSE...ENDIF</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">A loop that will iterate a set number of times.</td> <td style="border: 1px solid black; padding: 5px;">WHILE...DO...ENDWHILE</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">A conditional statement with different outcomes for true and false.</td> <td style="border: 1px solid black; padding: 5px;">CASE...OF...OTHERWISE...ENDCASE</td> </tr> <tr> <td></td> <td style="border: 1px solid black; padding: 5px;">REPEAT...UNTIL</td> </tr> </tbody> </table>	Pseudocode description	Pseudocode statement	A loop that will iterate at least once.	FOR...TO...NEXT	A conditional statement to deal with many possible outcomes.	IF...THEN...ELSE...ENDIF	A loop that will iterate a set number of times.	WHILE...DO...ENDWHILE	A conditional statement with different outcomes for true and false.	CASE...OF...OTHERWISE...ENDCASE		REPEAT...UNTIL	4
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4(b)	1 mark per bullet: <ul style="list-style-type: none"> • Appropriate loop controls • Read from array • Print from array (the last two points can be in one statement) Note reading and printing MUST be within the same loop Example algorithm: <pre> Count ← 0 WHILE Count < 50 DO OUTPUT Name[Count] Count ← Count + 1 ENDWHILE </pre>	3												

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5(b)	<p>1 mark per bullet:</p> <ul style="list-style-type: none"> • Sorting the names • Ascending order / A to Z / lowest to highest / Alphabetic order 	2																																																																																											

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6(a)	<p>1 mark for any sensible appropriate field name 1 mark for data type, purpose + example data</p> <p>Example 1: Field Name: SPECIESID Data Type: Alphanumeric Purpose: Primary key Example Data: SP06583</p> <p>Example 2: Field name: NUMBER Data Type: Integer Purpose: To record how many of that species there are at the park Example Data: 30</p>	2

Question	Answer					Marks	
6(b)	4						
	Field:	Species	Classification	Diet	Legs		
	Table:	LIVESTOCK	LIVESTOCK	LIVESTOCK	LIVESTOCK		
	Sort:	Ascending/ Descending					
	Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
	Criteria:		"Mammal"	"Herbivore"	4		
	or:						
(1 Mark) (1 Mark) (1 Mark) (1 Mark)							
1 mark per completely correct column.							