

CAMBRIDGE INTERNATIONAL EXAMINATIONS**Cambridge International General Certificate of Secondary Education****MARK SCHEME for the May/June 2015 series****0478 COMPUTER SCIENCE****0478/21**

Paper 2 (Written), maximum raw mark 50

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Section A

1 (a) (i) Many correct answers, they must be meaningful. These are examples only.

- MiddayTemperature[1:30]
- or MiddayTemperature[0:29]
- or MiddayTemperature[30]
- or MiddayTemperature[29]
- or MiddayTemperature[] (1 mark)
- MidnightTemperature[1:30]
- or MidnightTemperature[0:29]
- or MidnightTemperature[30]
- or MidnightTemperature[29]
- or MidnightTemperature[] (1 mark)

[2]

(ii) Answers, must match above and the upper bound should have been changed from 30 to 7 or 29 to 6 or no change if not used. These are examples only.

- MiddayTemperature[1:7] MidnightTemperature[1:7]
- or MiddayTemperature[7] MidnightTemperature[7]

[1]

(iii) Any **two** variables with matching reasons, 1 mark for the variable and 1 mark for the matching reason. The variables and the matching reasons must relate to the tasks in the pre-release. There are many possible correct answers these are examples only.

- Variable – Counter: (Integer)
- Reason – to use as a loop counter when entering the temperature
- Variable – HighNoon: (Real)
- Reason – to store the highest midday temperature

[4]

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(b) If loop used

- initialisation before loop
- loop
- running total inside loop
- calculation of average outside loop
- output of average with message outside loop

(Max 4 marks)

- completion of at least 3 of initialisation, running total, calculation of average and output of average with message for **both** midday and midnight
(1 mark)

[5]

sample algorithm:

```

MiddayTotal ← 0; MidnightTotal ← 0
FOR Count ← 1 TO 7
    MiddayTotal ← MiddayTotal + MiddayTemperature[Count]
    MidnightTotal ← MidnightTotal + MidnightTemperature[Count]
NEXT Count
MiddayAverage ← MiddayTotal/7
MidnightAverage ← MidnightTotal/7
PRINT 'The average midday temperature is ', MiddayAverage
PRINT 'The average midnight temperature is ', MidnightAverage

```

If loop not used

- total of 7 midday temperatures
- calculation of midday average (*Note could be combined as one calculation, see example below*)
- total of 7 midnight temperatures
- calculation of midnight average (*Note could be combined as one calculation, see example below*)
- output of both averages with suitable messages

[5]

sample algorithm:

```

MiddayAverage ← (MiddayTemperature[1]+ MiddayTemperature[2]+
MiddayTemperature[3]+ MiddayTemperature[4]+
MiddayTemperature[5]+ MiddayTemperature[6]+
MiddayTemperature[7])/7
MidnightAverage ← (MidnightTemperature[1]+
MidnightTemperature[2]+ MidnightTemperature[3]+ Midnight[4]+
Midnight[5]+ Midnight[6]+ MidnightTemperature[7])/7

PRINT 'The average midday temperature is ', MiddayAverage
PRINT 'The average midnight temperature is ', MidnightAverage

```

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(c) 1 mark for the data set and 1 mark for the matching reason.

There are many possible correct answers, these are examples only.

Data set – 30, 29, 28, 31.5, 32.3, 33, 29.7

Reason – normal data that should be accepted

Data set – twenty, 23.99, seventeen, 501, –273, @#@, seventy seven

Reason – abnormal data that should be rejected

[2]

(d) Maximum 6 marks in total for question part

Explanation (max 6)

- set variable called HighestMidday to a large minus number
- loop (30 or 7) times to check each midday temperature in turn
- check midday temperature against HighestMidday / midday temperature > HighestMidday
- ...replace value in HighestMidday by midday temperature
- ...store array index in MiddayMonthDay/MiddayWeekday
- output HighestMidday outside the loop
- output MiddayMonthDay/MiddayWeekday outside the loop

Sample algorithm (max 4):

HighestMidday ← -999

FOR Count ← 1 TO 7

 IF MiddayTemperature [Count] > HighestMidday

 THEN HighestMidday ← MiddayTemperature[Count]

 MiddayMonthDay/MiddayWeekday ← Count

 ENDIF

NEXT Count

PRINT 'The highest midday temperature was ', HighestMidday, ' on day ', Count

If pseudocode or programming only and no explanation, then maximum 4 marks

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Section B

2 1 mark for each error identified + suggested correction

Line 1 or `Small = 0`: this should read `Small = 999`

line 5 or `IF...:` this should read `IF Num < Small THEN Small = Num`

line 8 or `UNTIL:` this should read `UNTIL Counter = 10` or
`UNTIL Counter > = 10` or
`UNTIL Counter > 9`

line 7 or `PRINT...:` `PRINT Small` should come after the end of the repeat loop
or

line 8 or `UNTIL:` this should come before line 7

[4]

3

Total	Reject	Weight	Output
0	0		
1.8		1.8	
	1	26.0	
8.8		7.0	
20.1		11.3	
30.1		10.0	
32.6		2.5	
	2	25.2	
37.6		5.0	
57.4		19.8	
	3	29.3	
		–1	57.4, 3

(2 marks)
(–1 for each error)
(then follow though)

(1 mark)

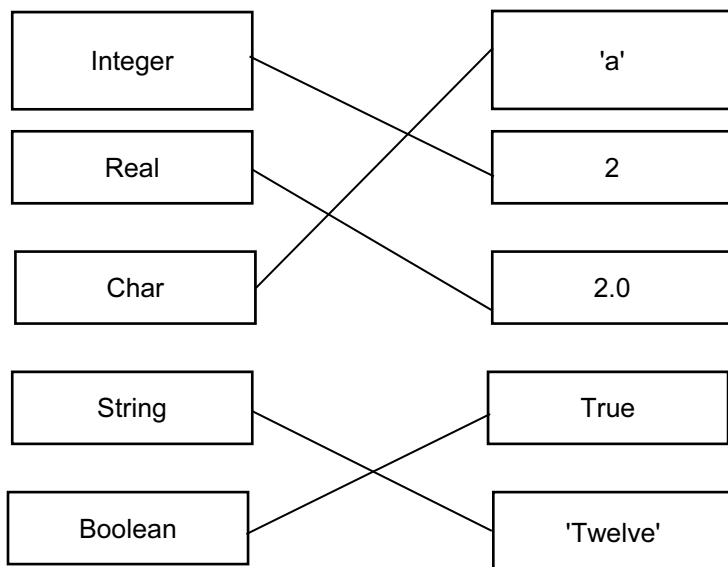
1 mark)

(1 mark)
(allow follow through)
(from Total and Reject)

[5]

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4 1 mark for each correct link, up to maximum of 4 marks



[4]

5 Any **two** points from

- a variable is used to store data that can change during the running of a program
- a constant is used to store data that will not be changed during the running of a program

[2]

- 6
- FOR (... TO ... NEXT)
 - REPEAT (... UNTIL)
 - WHILE (... DO ... ENDWHILE)

[3]

7 (a) – 7

[1]

- (b)
- Brochure No
 - Uniquely identifies each property

[2]

- (c)
- | | |
|--------------------|-------------------------------|
| Garage | – Boolean |
| Number of Bedrooms | – Number/Integer/Single |
| Price in \$ | – Number/Single/Real/Currency |

[3]

- (d)
- | | |
|--------|-----|
| 399000 | H13 |
| 450000 | H10 |

[2]

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(e)

Field:	Property Type	Garage	Price in \$	Brochure No
Table:	PROPERTY	PROPERTY	PROPERTY	PROPERTY
Sort:				
Show:	☒	☐	☒	☒
Criteria:		True	< 200000	
or:				

or

Field:	Property Type	Garage	Price in \$	Brochure No
Table:	PROPERTY	PROPERTY	PROPERTY	PROPERTY
Sort:				
Show:	☒	☐	☒	☒
Criteria:		Yes	< 200000	
or:				

or

Field:	Property Type	Garage	Price in \$	Brochure No
Table:	PROPERTY	PROPERTY	PROPERTY	PROPERTY
Sort:				
Show:	☒	☐	☒	☒
Criteria:		=Yes	< 200000	
or:				

or

Field:	Property Type	Garage	Price in \$	Brochure No
Table:	PROPERTY	PROPERTY	PROPERTY	PROPERTY
Sort:				
Show:	☒	☐	☒	☒
Criteria:		=-1	< 200000	
or:				

(1 mark)

(1 mark)

(1 mark)

(1 mark)

[4]