CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0478 COMPUTER SCIENCE

0478/23 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 ← MiddayTotal/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 [6]

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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]

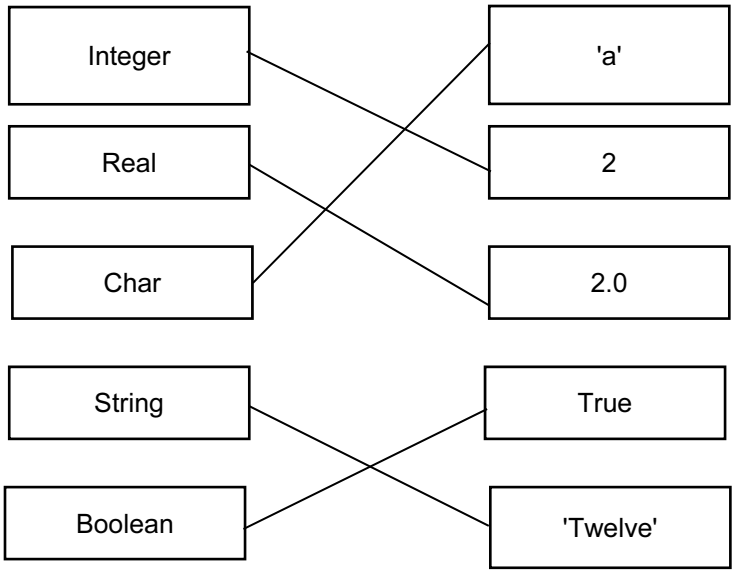
3

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]

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