

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 ← 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

[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)

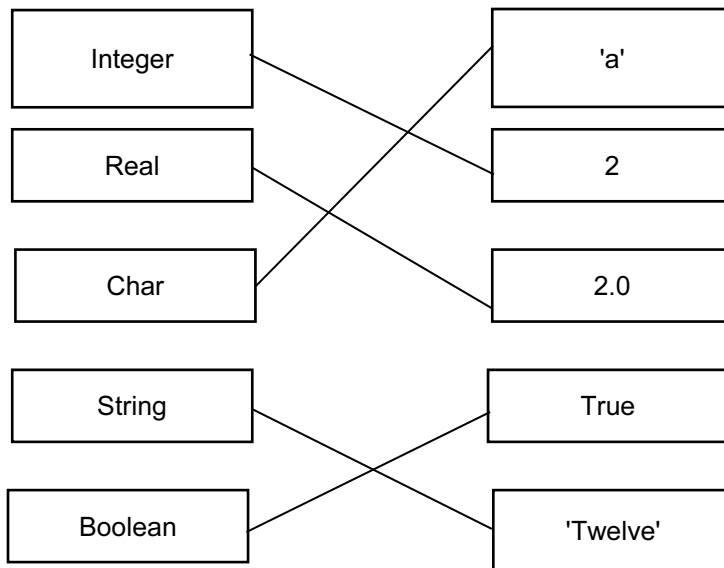
1 mark)

(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: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Criteria: | | True | < 200000 | |
| or: | | | | |

or

| | | | | |
|-----------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|
| Field: | Property Type | Garage | Price in \$ | Brochure No |
| Table: | PROPERTY | PROPERTY | PROPERTY | PROPERTY |
| Sort: | | | | |
| Show: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Criteria: | | Yes | < 200000 | |
| or: | | | | |

or

| | | | | |
|-----------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|
| Field: | Property Type | Garage | Price in \$ | Brochure No |
| Table: | PROPERTY | PROPERTY | PROPERTY | PROPERTY |
| Sort: | | | | |
| Show: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Criteria: | | =Yes | < 200000 | |
| or: | | | | |

or

| | | | | |
|-----------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|
| Field: | Property Type | Garage | Price in \$ | Brochure No |
| Table: | PROPERTY | PROPERTY | PROPERTY | PROPERTY |
| Sort: | | | | |
| Show: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Criteria: | | =-1 | < 200000 | |
| or: | | | | |

(1 mark)

(1 mark)

(1 mark)

(1 mark)

[4]