

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0478 COMPUTER SCIENCE

0478/21

Paper 2, maximum raw mark 50

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Section A

- 1 (a) (i) Any **two** variables with matching uses, **one** mark for the variable name and **one** mark for the matching use. The variables and the matching uses must relate to the tasks on the exam paper. There are many possible correct answers these are examples only.
- Variable 1 – Counter(: INTEGER)
Use – to use as a loop counter when entering the temperatures
- Variable 2 – BabyTemperature(: REAL)
Use – to store the baby’s temperature [4]
- (ii) Any **two** constants with matching uses, **one** mark for the constant (name and value) and **one** mark for the matching use. The constants and the matching uses must relate to the tasks on the exam paper. There are several possible correct answers these are examples only.
- Constant 1 – MinBabyTemperature = 36.0
Use – to keep the lowest acceptable baby temperature
- Constant 2 – MaxBabyTemperature = 37.5
Use – to keep the highest acceptable baby temperature [4]
- (b) Any **five** from
- prompt for baby’s temperature
 - input baby’s temperature
 - test for > 37.5
 - ... then output suitable message if this is the case
 - test for < 36.0
 - ... then output suitable message if this is the case
 - output suitable message if temperature between those values [5]

Sample algorithm:

```

PRINT 'Please enter temperature of baby '
INPUT BabyTemperature
IF BabyTemperature > MaxBabyTemperature or 37.5
    THEN Print 'Temperature too high'
    ELSE
        IF BabyTemperature < MinBabyTemperature or 36.0
            THEN Print 'Temperature too low'
            ELSE Print 'Temperature OK'
        ENDIF
    ENDIF
ENDIF

```

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- (c) (i) Explanation
General marks award as seen
 Give **one** mark for a mention of any one of the **4** checks below
If a mark is given for a check then mark the corresponding action taken
 Maximum of **five** marks overall

General

- check all recorded temperatures (loop 18 times)
- update counter for those out of range
- output suitable message if counter ≥ 2

1 check if temperature range ≤ 1 and highest recorded not out of range and lowest recorded not out of range

– ... exit

2 check if temperature range > 1 ...

– ... output suitable message e.g. "Temperature range greater than one degree"

3 check if highest recorded temperature out of range...

– ... output a suitable message if at least two recorded temperatures out of range
 e.g. "Temperature too high on more than one occasion"

4 check if lowest recorded temperature out of range...

– ... output a suitable message if at least two recorded temperatures out of range
 e.g. "Temperature too low on more than one occasion" [5]

(ii) Any **two** from

- only checks necessary conditions
- uses results from task 2
- checks for normal values first [2]

Section B

2 One mark for each error identified + suggested correction

line 4 or $(Total =) Total + 1$: this should read $(Total =) Total + Num$

line 5 or $Counter = Counter + 1$: delete this line

line 6 or $(Average =)Total / Counter$: swap lines 6 and 7

line 6 or $(Average =)Total / Counter$: this should read $(Average =) Total / 50$

[4]

3 (a)

Number 1 Trace table

| X | Posn | New | T1 | T2 | Output |
|----------|-------------|------------|-----------|-----------|---------------|
| 5 | 1 | 0 | | | |
| | 10 | 1 | 2 | 1 | |
| 2 | 100 | 1 | 1 | 0 | |
| | | 101 | | | |
| | | | | | 101 |

← (1 mark) → ← (1 mark) → ← (1 mark) →

Number 2 Trace table

| X | Posn | New | T1 | T2 | Output |
|----------|-------------|------------|-----------|-----------|---------------|
| 12 | 1 | 0 | | | |
| | 10 | 0 | 6 | 0 | |
| 6 | 100 | 0 | 3 | 0 | |
| 3 | 1000 | 100 | 1 | 1 | |
| | | 1100 | | | |
| | | | | | 1100 |

← (1 mark) → ← (1 mark) → ← (1 mark) →

[6]

(b) Converts a (denary) number to binary

[1]

| | | | |
|---------------|--|-----------------|--------------|
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4 There are many possible correct answers this is an example only.
 Normal e.g. 1.7
 Extreme 0.5 or 2.0 only
 Abnormal e.g. one [3]

5 – IF (... THEN ... ELSE ... ENDIF)
 – CASE (... OF ... OTHERWISE ... ENDCASE) [2]

6 (a) (i) **One** mark for every **two** correct types
Title – text
Artist – text
Description – text/memo
Catalogue Number – text/(auto)number
Size – number
Price – currency/number
Arrived – date
Sold – “yes/no”/text/Boolean
 0, 1 no marks
 2, 3 one mark
 4, 5 two marks
 6, 7 three marks
 8 four marks [4]

(ii) Catalogue Number [1]

(b) **One** mark for each correct **different** check
Catalogue Number Format check/Presence Check/Check Digit/Length check/uniqueness check
Size Type check/Presence Check/Range Check
Price Type check/Presence Check/Range Check
Arrived Type check/Presence Check/Range Check/Format check/Select from calendar length check [4]

(c)

| | | | | | |
|-----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| Field: | Catalogue Number | Title | Price | Artist | Sold |
| Table: | PICTURE | PICTURE | PICTURE | PICTURE | PICTURE |
| Sort: | | | | | |
| Show: | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Criteria: | | | | = 'Twister' | False |
| or: | | | | | |

(1 mark) (1 mark) (1 mark) (1 mark) (1 mark)

[5]