CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0478 COMPUTER SCIENCE

0478/22 Paper 2 (Written), maximum raw mark 50

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Section A

1 (a) (i) Many correct answers, they must be meaningful. This is an example only.

– `PupilName[1:30]`
or `PupilName[0:29]`
or `PupilName[30]`
or `PupilName[29]`
or `PupilName[]` [1]

(ii) Many correct answers, they must be meaningful. This is an example only.

– `StartWeight[1:30]`
or `StartWeight[0:29]`
or `StartWeight[30]`
or `StartWeight[29]`
or `StartWeight[]` [1]

(iii) Answers, must match (i) and (ii) above and the upper bound should have been changed from 30 to 600 or 29 to 599 or no change if not used.

– `StartWeight[1:600]` or `StartWeight[600]`
– `PupilName[1:600]` or `PupilName[600]` [1]

(b) any **four** from
– prompt for entry of final weight that includes pupil's name
– input final weight
– validation check for final weight
– calculation of difference in weight
– ……using the initial weight stored in the array
– store difference in weight

(Max 4 marks)

– loop for 600 pupils

(1 mark) [5]

sample algorithm:

```
FOR Count ← 1 TO 600
   REPEAT
      PRINT 'Please enter weight for ', PupilName[Count]
      INPUT FinalWeight
   UNTIL FinalWeight < 120 AND FinalWeight > 20
   WeightDifference[Count] ← FinalWeight - StartWeight[Count]
NEXT Count
```

(c) (i) any **two** from
– check that the weights are within a given range
– check that the weights are numeric
– check that the weights are given to one decimal point
– character/type check on name
– length check on name

[2]

(ii) **1** mark for the data and **1** mark for the matching reason.
There are many possible correct answers this is an example only.

Weight 1	– 35.2
Reason	– normal data that should be accepted
Weight 2	– twenty
Reason	– abnormal data that should be rejected

[4]

(d) Maximum 6 marks **in total** for question part
Explanation (max 6)
– loop 30 or 600 times to check each difference in weight
– check for a difference in weight
– less than -2.5 (final weight – start weight) or greater than 2.5 (start weight – final weight)
– …If so output pupil's name
– …if so output difference in weight
– …if so output message that it is a fall in weight

Sample algorithm (max 4)

```
FOR Count ← 1 TO 30
   IF WeightDifference [Count] < -2.5
    THEN PRINT PupilName[Count], 'The weight loss was ',
      WeightDifference [Count]
   ENDIF
NEXT Count
```

If pseudocode or programming only and no explanation, then maximum 4 marks [6]

Section B

2 1 mark for each error identified + suggested correction

Line 1 or `Large =9999`: this should read **`Large = 0`**

Line 3 or `WHILE`: this should read **`WHILE Counter < 30`**

line 6 or `IF`: this should read **`IF Num > Large THEN Large = Num`**

line 7 or `Counter =...`: this should read **`Counter = Counter + 1`** [4]

3 (a)

Trace table set 1

A	B	C	D	E	F	Total	Check	Output
5	2	4	3	1	5	38	5	Accept

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

Trace table set 2

A	B	C	D	E	F	Total	Check	Output
3	2	1	0	7	3	45	1	Reject

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

[4]

(b) – (modulo 11) check digit calculation [1]

(c) **1** mark for identifying the problem, **2** marks for the solution

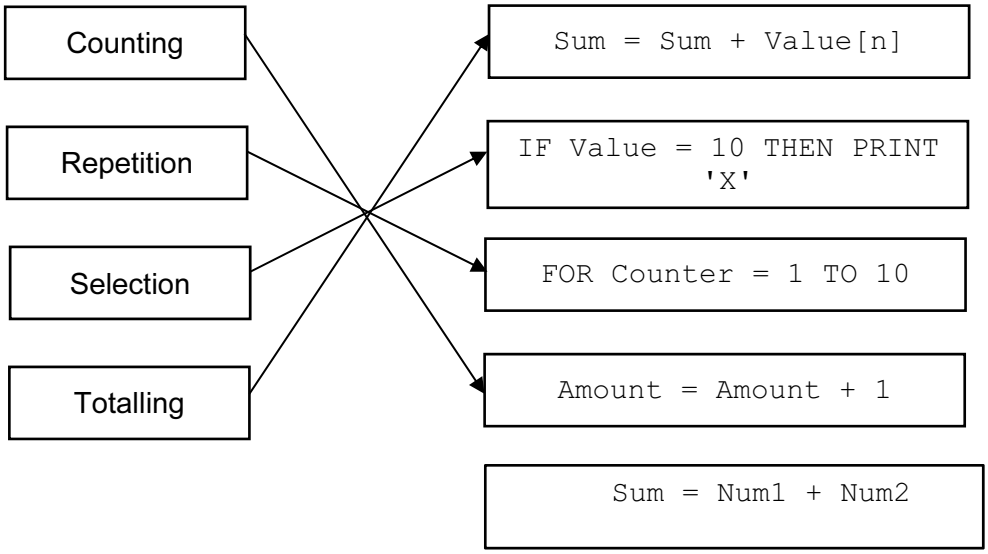
Problem – doesn't deal correctly with remainder 10/a check digit of X

Solution – check Z for X as a final digit

– have a special case where check = 10

– accept where `Check = 10` and F = X [3]

4 1 mark for each correct line, two lines from one box not allowed



[4]

5 **(a)** **1** mark for `FOR … TO … NEXT` **1** mark for `INPUT`

```
FOR Count ← 1 TO 1000
  INPUT A[Count]
NEXT (Count)
```

[2]

(b) 4 marks
– initialisation
– start of loop
– update loop counter
– end of loop

Example1

```
Count ← 1                          (1 mark)
REPEAT                             (1 mark)
  INPUT A[Count]
  Count ← Count + 1                (1 mark)
UNTIL Count > 1000                 (1 mark)
```

Example2

```
Count ← 0                          (1 mark)
WHILE Count < 1000                 (1 mark)
  DO
  Count ← Count + 1                (1 mark)
  INPUT A[Count]
ENDWHILE                           (1 mark)
```

[4]

6 **(a)** – 7 [1]

(b) – Class ID
– Uniquely identifies each student [2]

(c) Diana Abur, Paul Smith
– both names
– ……. correct order [2]

(d)

Field:	Student Name	Maths	English
Table:	MARKS	MARKS	MARKS
Sort:			
Show:	☑	☐	☐
Criteria:		<40	<40
or:			
	(1 mark)	(1 mark)	(1 mark)

[3]