

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

```

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- (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]

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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

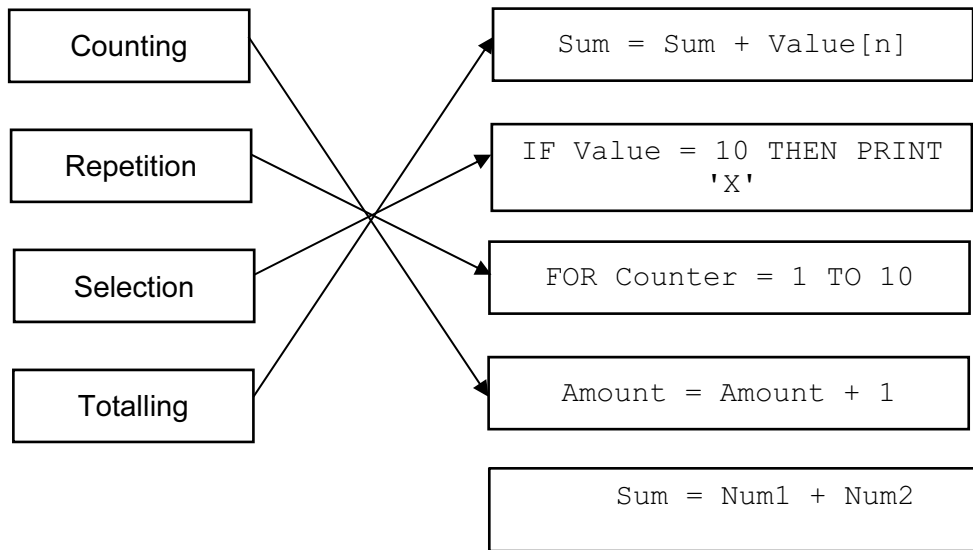
– have a special case where check = 10

– accept where Check = 10 and F = X

[3]

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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]

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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:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:		<40	<40
or:			

(1 mark)

(1 mark)

(1 mark)

[3]