

**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]

**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

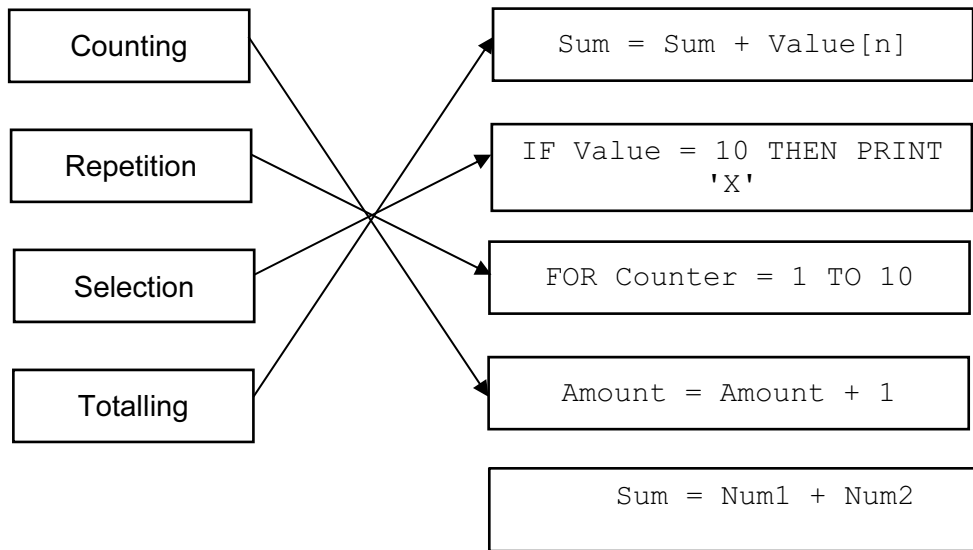
**Solution** – check Z for X as a final digit

– 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]

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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]