COMPUTER SCIENCE	**0478/21**
Paper 2	**October/November 2016**
MARK SCHEME	
Maximum Mark: 50	

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2016 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **5** printed pages.

Section A

1 (a) Many correct answers, the identifiers must be meaningful. These are examples only.
There are two marks available for each identifier:
  • 1 mark for suitable name
  • 1 mark for a suitable data structure, data type and use
  – `MaxVotes`, constant, integer, maximum number of votes that can be cast
  – `CandidateName`, array, string, name of candidate
  – `NoCandidates`, variable, integer, number of candidates
  – `TotalNoCandidateVotes`, array, integer, total number of votes cast   [8]

(b) Any **four** from:
  – prompt for input of candidate number
  – input of candidate number
  – check for candidate number of 1, 2 or 3
  – output 'invalid vote' if input not 1, 2, or 3
  – otherwise add 1 to appropriate total and …
  – … output name of candidate voted for   [4]

(c) **Description** (may include reference to programming statements) any **six** marks from
  – output total and …
  – … corresponding candidate name...
  – description of method for selecting descending order of totals
  – evidence that the method works
  – check if highest number of votes is a unique value
  – if unique output the candidate name and 'NEW CLASS CAPTAIN'
  – otherwise output 'NO OVERALL WINNER'   [6]

(d) Accept any reasonable suggestion(s), two marks can be awarded for either a suggestion with an accompanying description e.g.
  – re run the voting (1) without the least popular candidate (1)

  or accept two different suggestions e.g.
  – re run the voting
  – give the teacher the casting vote.   [2]

Section B

2 (a) 1 mark for each change
- Line 2: `OutRange = 0`
- Line 6: should be `OutRange = OutRange + 1`
- Line 7: not needed
- Line 8: `NEXT X` should be `NEXT Count` / Line 3: `FOR Count = 1 TO 10` should be `FOR X = 1 TO 10` [4]

(b)

Number	Within range (✓)	Outside range (✓)	Reason
10		✓	Range greater than 10, so 10 not included ………………………………………………………
20		✓	Range less than 20, so 20 not included ………………………………………………………

[4]

3

Price	Change	Dollars	TenCents	OUTPUT
6.29				
	3.71			
		3		
	0.71			3 dollars
	0.21			One 50 cent coin
			2	2 ten cent coins
				One 5 cent coin

(1 mark per correct column)

[5]

4 1 mark for each correct link up to maximum of 3 marks
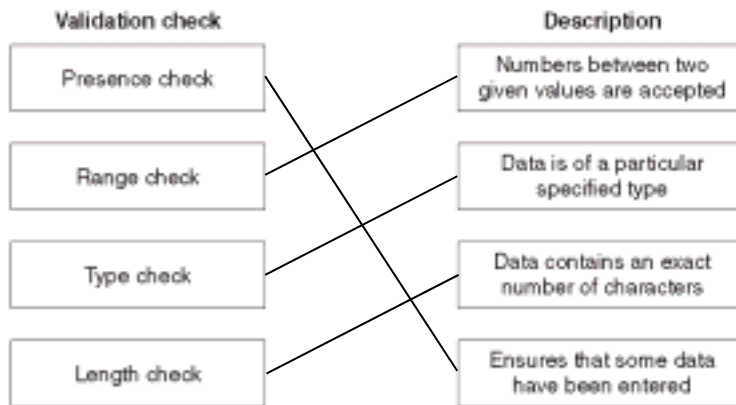
[3]

5 For each example **1 mark** for **correct structure**, **1 mark** for **appropriate content** inside loop and **1 mark** for **reason.** There are many correct answers these are only samples

```
REPEAT
..INPUT Number
   Total ← Total + Number
UNTIL Number = 0
```
– at least one repeat is required

```
WHILE Number <> -1 DO
..INPUT Number
   Total ← Total + Number
ENDWHILE
```
– the loop may never be executed   [6]

6 (a) – Town has duplicate entries/all fields can have duplicate entries
   – fields other than Town not suitable identifiers   [2]

(b) – Performance number …
   – … uniquely identifies each performance   [2]

(c)

Field:	Town	Tour Date	Price Local Currency	
Table:	THEATRETOURS	THEATRETOURS	THEATRETOURS	
Sort:	Ascending			
Show:	☑	☑	☑	☐
Criteria:				
or:				

1 mark for each column + 1 mark for correct fields only   [4]