



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**COMPUTER SCIENCE**

**0478/21**

Paper 2

**October/November 2016**

MARK SCHEME

Maximum Mark: 50

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**Published**

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

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## 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]

|               |  |                 |              |
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**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<br>..... |
| 20     |                  | ✓                 | Range less than 20, so 20 not included<br>.....    |

[4]

3

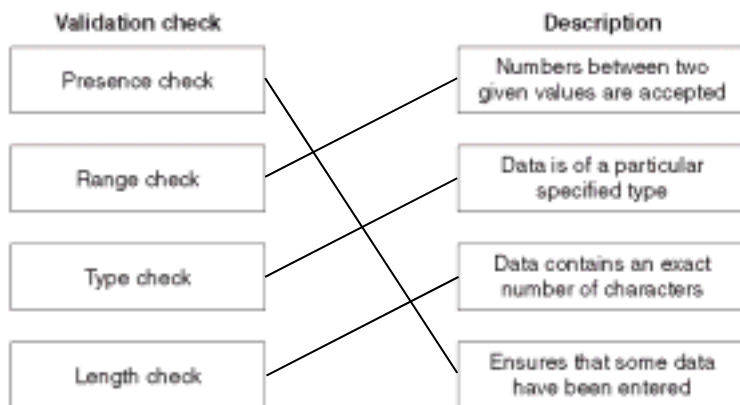
| Price | Change | Dollars | TenCents | OUTPUT           |
|-------|--------|---------|----------|------------------|
| 6.29  |        |         |          |                  |
|       | 3.71   |         |          |                  |
|       |        | 3       |          |                  |
|       | 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]

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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]

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(c)

|           |                                     |                                     |                                     |                          |
|-----------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Field:    | Town                                | Tour Date                           | Price Local<br>Currency             |                          |
| Table:    | THEATRETOURS                        | THEATRETOURS                        | THEATRETOURS                        |                          |
| Sort:     | Ascending                           |                                     |                                     |                          |
| Show:     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Criteria: |                                     |                                     |                                     |                          |
| or:       |                                     |                                     |                                     |                          |

1 mark for each column + 1 mark for correct fields only

[4]