GCE AS MARKING SCHEME

SUMMER 2023

AS
COMPUTER SCIENCE - COMPONENT 2
B500U20-1

INTRODUCTION

This marking scheme was used by WJEC for the 2023 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

Guidance for examiners

Positive marking

It should be remembered that learners are writing under examination conditions and credit should be given for what the learner writes, rather than adopting the approach of penalising him/her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

For questions that are objective or points-based the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision made.

For band marked questions in **Component 2** the assessment grid advises the marks to allocate to responses which demonstrate the qualities needed in AO2 and AO3. There is limited indicative content as learner response will vary significantly, as the choice of solution will differ based on a variety of factors (e.g. IDE used, interface type chosen, file handling routine used). Where a response is not credit worthy or not attempted it is indicated on the grid as mark band zero.

Banded mark schemes

Banded mark schemes are divided so that each band has a relevant descriptor. The descriptor for the band provides a description of the performance level for that band. Each band contains marks.

Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. Once the annotation is complete, the mark scheme can be applied.

This is done as a two-stage process.

Stage 1 – Deciding on the band

When deciding on a band, the answer should be viewed holistically. Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptor for that band. Examiners should look at the descriptor for that band and see if it matches the qualities shown in the learner's answer. If the descriptor at the lowest band is satisfied, examiners should move up to the next band and repeat this process for each band until the descriptor matches the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content. Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

Stage 2 – Deciding on the mark

Once the band has been decided, examiners can then assign a mark. During standardising (marking conference), detailed advice from the Principal Examiner on the qualities of each mark band will be given. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

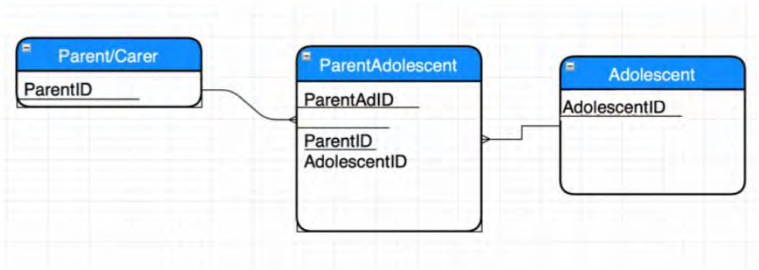
When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Indicative content is also provided for banded mark schemes. Indicative content is not exhaustive, and any other valid points must be credited. In order to reach the highest bands of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that is contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

EDUQAS GCE AS COMPUTER SCIENCE

COMPONENT 2: PRACTICAL PROGRAMMING TO SOLVE PROBLEMS

SUMMER 2023 MARK SCHEME

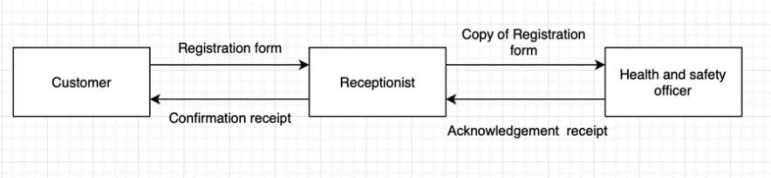
Question	Answer	Mark	AO1	AO2	AO3	Total
1.	**Indicative content:** **Accept** other valid table names  Award 1 mark for each bullet bellow: • Adult table name • Child table name • Linking table name • one to many from adult to linking • one to many from child to linking table • foreign key from adult in linking table • foreign key from child in linking table • primary key in linking table or clearly shown as joint key	 1 1 1 1 1 1 1 1		All 2.1b		8

<table>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>AO1</th><th>AO2</th><th>AO3</th><th>Total</th></tr>
<tr><td>2.</td><td>Indicative content:

<table>
<tr><th>Fieldname</th><th>Key field (Yes/No)</th><th>Data Type</th><th>Field Length</th><th>Validation</th></tr>
<tr><td>AdultID</td><td>Yes</td><td>Integer</td><td>5</td><td>Range >0</td></tr>
<tr><td>FirstName</td><td></td><td>String</td><td>30</td><td>Type</td></tr>
<tr><td>Surname</td><td></td><td>String</td><td>30</td><td>Presence</td></tr>
<tr><td>ContactNumber</td><td></td><td>String</td><td>12</td><td>Length</td></tr>
<tr><td>etc</td><td></td><td></td><td></td><td></td></tr>
</table>

Accept ParentID or CarerID or GuardianID or joint names etc

Award 1 mark for each column completed with sensible data.
(Note field length must be reasonable, validation and data type also need to be reasonable)</td><td>5</td><td></td><td>all 2.1b</td><td></td><td>5</td></tr>
</table>

Question	Answer	Mark	AO1	AO2	AO3	Total
3.	**Indicative content:**  Award **one** mark for each bullet: Entities: • Customer • Receptionist • Health and safety officer Data flows: • Registration form • Confirmation Receipt • Copy of Registration form • Acknowledgement receipt **Condone**: Diagram may be top down Data flows may be in visible text boxes	1 1 1 1 1 1 1		All 2.1b		7

<table>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>AO1</th><th>AO2</th><th>AO3</th><th>Total</th></tr>
<tr><td>4. (a)</td><td>Either
<table>
<tr><th>Booking Length:</th><th>Discount:</th><th>Booking Price:</th></tr>
<tr><td>1</td><td>0.1</td><td>0.1</td></tr>
<tr><td>2</td><td>0.2</td><td>0.2</td></tr>
<tr><td>3</td><td>0.3</td><td>0.3</td></tr>
<tr><td>4</td><td>0.4</td><td>0.4</td></tr>
</table>
Or
<table>
<tr><th>Booking Length:</th><th>Discount:</th><th>Booking Price:</th></tr>
<tr><td>1</td><td>0.2</td><td>1.8</td></tr>
<tr><td>2</td><td>0.3</td><td>2.7</td></tr>
<tr><td>3</td><td>0.4</td><td>3.6</td></tr>
<tr><td>4</td><td>0.5</td><td>4.5</td></tr>
</table></td><td>1+1
1+1
1+1
1+1

1+1
1+1
1+1
1+1</td><td></td><td></td><td>3.1c
3.1c
3.1c
3.1c

3.1c
3.1c
3.1c
3.1c</td><td>8</td></tr>
<tr><td>(b)</td><td>Indicative content:

<pre>
1   Declare subroutine calculateDigit
2   currentNumber is integer
3   checkdigit is integer
4   total is integer
5
6   set total = 0
7
8   for i = 1 to 4
9   output "Please enter digit:" + i
10   input currentNumber
11
12   total = total + currentNumber
13
14 next i
15
16 checkdigit = total mod 10
17
18 output "Check digit:"
19 output checkdigit
20
21 End Subroutine
</pre>
One mark for each:
• initialise variables
• use of a loop
• input current number
• calculate by adding current number
• using mod 10 or other acceptable method
• correct string output
• correct variable output
• fully working algorithm

Marks awarded for concepts demonstrated above. Other solutions incorporating above concepts that provide exactly the same result are to be awarded the mark.</td><td></td><td></td><td></td><td>All
3.1a</td><td>8</td></tr>
</table>

Question	Answer	Mark	AO1	AO2	AO3	Total
5. (i)	**Indicative content:** • Button available to save data • Program create a file called adultdetails.txt Data saves to file: o AdultID o Firstname o Surname o Address o Postcode • Message appears on screen stating data saved.	8			3.1b	8

Band	AO3.1b
	Max 4 marks
3	**4 marks** **The candidate has:** • Implemented all the points required as stated in the indicative content • Used and fully exploited the programming facilities of the language • Demonstrated a sound understanding of the appropriate tools and techniques available to them
2	**2-3 marks** **The candidate has:** • Implemented the majority of the points required as stated in the indicative content. Majority is defined as a response that provides two or three items of the functionality signalled in the indicative content • Used and exploited the programming facilities of the language • Demonstrated an understanding of the tools and techniques available to them
1	**1 mark** **The candidate has:** • Implemented only one of the points required as stated in the indicative content • Used some of the programming facilities of the language • Demonstrated a limited understanding of the tools and techniques available to them
0	**0 marks** Response not credit worthy or not attempted.

Question	Answer	Mark	AO1	AO2	AO3	Total
5. (ii)	**Indicative content:** • Input (any **TWO** validation methods from): o Range check o Format check o Length check o Presence check o Lookup check o Drop down menu o Type check • Creates a data file called children.txt • Stores on disk in a text file called children.txt • Descriptive/useful feedback that file has been saved • Candidates may use custom data types / standard methods • Retrieves data from disk • Navigate to the adults form • Navigate to this form/program from previous program • Retrieves specific entry details from disk (Candidates may use random (direct), serial, or sequential file access) • HCI fit for purpose (Textual or GUI)	12			3.1b	12

Band	AO3.1b Max 12 marks
3	**9-12 marks** **The candidate has:** • Created a new program including all or the majority of the functionality as required in the question and stated in the indicative content. The majority of the functionality is defined as a response that provides nine to twelve items of the functionality signalled in the indicative content • Used and fully exploited the programming facilities of the language • Demonstrated a sound understanding of the appropriate tools and techniques available to them • Written code that is well structured • Provided evidence of a completed user interface which aids user interaction and is intuitive
2	**5-8 marks** **The candidate has:** • Created a new program including most of the functionality as required in the question and stated in the indicative content. Most of the functionality is defined as a response that provides five to eight items of the functionality signalled in the indicative content • Made use of an appropriate range of the programming facilities of the language • Demonstrated an understanding of the tools and techniques available to them • Provided evidence of a completed user interface which aids user interaction
1	**1-4 marks** **The candidate has:** • Created a new program with a limited range of the functionality as stated in the indicative content or improved the prototype provided by adding a limited range of the new functionality as stated in the indicative content. A limited range of functionality is defined as a response that provides one to four items of the functionality signalled in the indicative content • Used a limited range of the programming facilities of the language • Demonstrated a limited understanding of the tools and techniques available to them • Provided evidence of a user interface
0	**0 marks** Response not credit worthy or not attempted.

Question	Answer	Mark	AO1	AO2	AO3	Total
5. (iii)	**Indicative content:** Clear annotation of steps within the following routines: • Validation • Storage of data to file • Retrieving specified data from file • Use of self-documenting identifiers / explanation of variables	4			3.1a	4

Band	AO3.1a Max 4 marks
3	**4 marks** **The candidate has:** • Produced listings that are appropriately laid out and included sufficient annotation to demonstrate an understanding of **all** programming routines listed in the indicative content • Written code using self-documenting identifiers / explained variables • Used appropriate technical terminology referring to the indicative content confidently and accurately.
2	**2-3 marks** **Three** marks can be awarded if the candidate has: • Produced listings that are appropriately laid out and included sufficient annotation to demonstrate an understanding of **all** programming routines listed in the indicative content • Not written code using self-documenting identifiers / not explained variables • Used appropriate technical terminology referring to the indicative content. OR • Produced listings that are appropriately laid out and included sufficient annotation to demonstrate an understanding of **two** of the programming routines listed in the indicative content • Written code using self-documenting identifiers / explained variables • Used appropriate technical terminology referring to the indicative content. **Two** marks can be awarded if the candidate has: • Produced listings that are appropriately laid out and included sufficient annotation to demonstrate an understanding of **two** of the programming routines listed in the indicative content • Not written code using self-documenting identifiers / not explained variables • Used appropriate technical terminology referring to the indicative content. OR • Produced listings that are appropriately laid out and included sufficient annotation to demonstrate an understanding of **one** of the programming routines listed in the indicative content • Written code using self-documenting identifiers / explained variables • Used appropriate technical terminology referring to the indicative content.
1	**1 mark** **The candidate has:** • Produced listings that are appropriately laid out and include sufficient annotation to demonstrate an understanding of **one** programming routine listed in the indicative content • Used limited technical terminology referring to the indicative content. OR • Written code using self-documenting identifiers • Used limited technical terminology referring to the indicative content.
0	**0 marks** Response not credit worthy or not attempted.