GCSE MARKING SCHEME

SUMMER 2023

COMPUTER SCIENCE - COMPONENT 2
C500U20-1

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.

EDUQAS GCSE COMPUTER SCIENCE

COMPONENT 2: COMPUTER PROGRAMMING

SUMMER 2023 MARK 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 mark schemes are in two parts.

Part 1 is advice on the indicative content that suggests the range of computer science concepts, theory, issues and arguments which may be included in the learner's answers. These can be used to assess the quality of the learner's response.

Part 2 is an assessment grid advising bands and associated marks that should be given to responses which demonstrate the qualities needed in AO1, AO2 and AO3. 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.

Q	Answer	Mark	AO1	AO2	AO3	Total
1.	**Award marks where indicated for a screenshot showing:**					6
(a)	Failed login screen message (1) (incorrect username (1) & incorrect password (1))	3		3		
(b)	Correct login screen message (1) (correct username & password from provided file: i.e. admin DigiTech2023 (1))	3		3		
2.	**Award one mark for each code reference line in the ExamAnswers document:**					3
(a)	Button declaration or definition from Python	1		1		
(b)	Loop initiation line or line from Python eg: while flag and passvar !="":	1		1		
(c)	Any variable assignment (=) from Python	1		1		
3.	Award **one** mark for each correct location of annotation (1 line above, below or to the right of the line) up to a maximum of four.	4		4		8
	Award **one** mark for describing each example up to a maximum of four.	4		4		
	Indicative content for each example:					
(a)	#This if . . . does this					
(b)	#This takes the user back to the main menu					
(c)	#Repeats or Begins a loop to .					
(d)	#filebject is used to save . . . to file jobDetails.txt					

Q	Answer	Mark	AO1	AO2	AO3	Total
4.	Award **one** mark for each correct concept designed in pseudo-code (Pseudo-code syntax and examples are provided in the subject specification)					6
	• Declare variables	1			1	
	• Use of MID OR other string handling	1			1	
	• If statement (selection to look for numbers) OR ASCII lookup of number or list comparison	1			1	
	• Use of flag to prevent multiple messages	1			1	
	• Output message if string is invalid	1			1	
	• Fully correct algorithmic logic	1			1	
	Annotation is not required but provided for clarity.					
	Indicative content:					

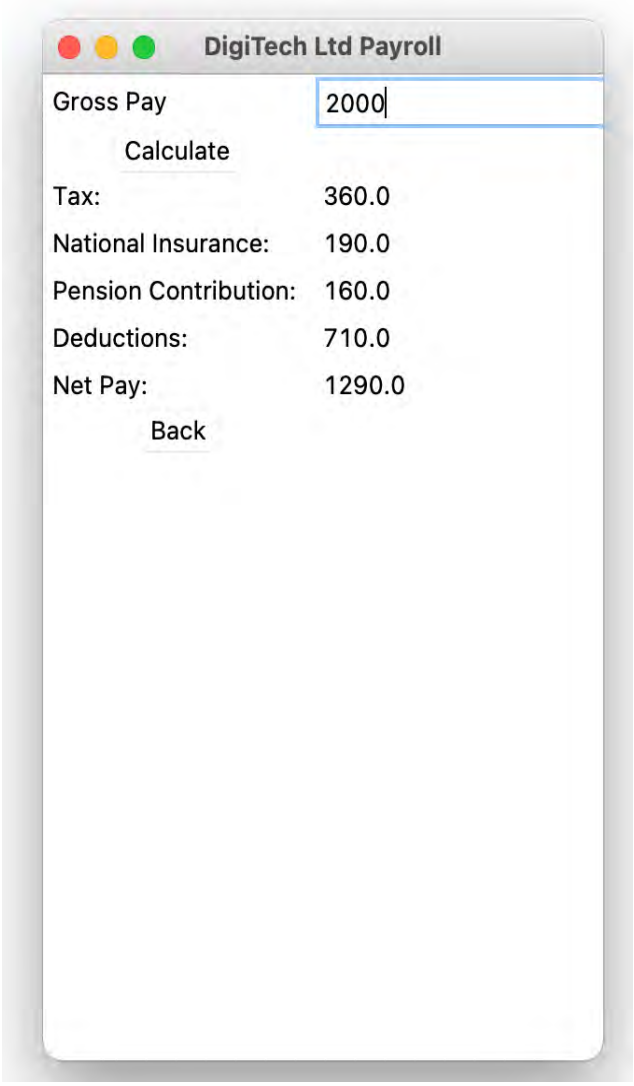
```
Surname is string
error is Boolean
set error = FALSE

output "Please enter Last name"
input Surname

for i = 1 to len(Surname)
        {get the length of the
string}
 for j = 0 to 9

  if VAL(MID(Surname,i,1)) = j then
   error = TRUE
  end if
 next j
next i

if error = TRUE then
 output "Numeric value found"
end if
```

Q	Answer	Mark	AO1	AO2	AO3	Total
5.	Award **one** mark for each correct concept designed in pseudo-code (Pseudo-code syntax and examples are provided in the subject specification)					6
	• declare variables	1			1	
	• output string literal	1			1	
	• input hours estimate	1			1	
	• calculate hourly fee (hours * 19.5)	1			1	
	• calculate new total (fee +insurance)	1			1	
	• correct outputs (total)	1			1	

	Indicative content:
	
	`hours is real`
	`hoursfee is real`
	`insurance is real`
	`total is real`
	`const insurance = 20`
	
	`output "Please enter the estimated hour working time"`
	`input hours`
	
	`hoursfee = hours * 19.5`
	
	`total = hoursfee + insurance`
	
	`output "Total fee:" total`					

Q	Answer	Mark	AO1	AO2	AO3	Total
6.	Award **one** mark for each bulleted item listed below.					28
(a)	• New form exists (does not require title name or content.)	1			1	
(b)	• New form has a title or label	1			1	
	• Title on form reads “Add customer record” (not case sensitive)	1			1	
(c)	• Data entry or textbox allowing typing for the following: Customer ID First name Surname Address 1 Address 2 Postcode	6			6	
(d)	• label for each of above	6			6	
	• intuitive layout (not overlapping or at random on form)	1			1	
(e)	• Button on form	1			1	
	• Caption for “Save” any valid title/label e.g. “SAVE”	1			1	
	• Button initiates save routine	1			1	
	• Standard data saved from form into text file NB: examiner to enter standardised test data: 101 Alex Jones 80 High Street Cardiff CF5 2YX	1			1	
(f)	• Back button on form				1	
	• Main menu displayed when clicked.				1	
(g)	**One mark for each of the following up to a maximum of six.** Annotation within Python file for following:					
	• Creating new form code/GUI has annotation			1		
	• File handling code has annotation			1		
	• Presence check code if programmed has annotation			1		

Q	Answer	Mark	AO1	AO2	AO3	Total
	• Save code has annotation • Validation check other than presence if programmed has annotation • Back to main menu button/code has annotation • Message box annotation • Text box creation annotation **Any other suitable annotation**			1 1 1 1 1 1		
7.	Award **one** mark for each successfully carried out test below.					4
(a)	• Screenshot of Python form with details from QP filled.	1		1		
(b)	• Screenshot including confirmatory message.	1		1		
(c)	• Screenshot of text file (1) with details from QP saved (ignore other data present from testing) (1).	2		2		
8. (a) (i)	Award one mark for a correct change within the Python program (Payroll.py) of tax rate from 0.2 to 0.18 (OR percentage method).	1 1		1 1		8
(ii)	Award **one** mark for annotation around the tax calculation code. Must be line above, same line or line below.	1		1		
	Award **one** mark for suitable description of tax value Exemplar: #Tax rate changed from 0.2 to 0.18 as per client requirement	1		1		
(b) (i)	Award **one** mark for change within Python program (Payroll.py) of national insurance rate from 0.14 to 0.095 (OR percentage method)	1 1		1 1		
(ii)	Award **one** mark for annotation around the national insurance calculation code. Must be line above, same line or line below.	1		1		
	Award **one** mark for suitable description of tax value Exemplar: #Tax rate changed from 0.14 to 0.095 as per client requirement	1		1		

Q	Answer	Mark	AO1	AO2	AO3	Total
9.	Award **one** mark for each correct calculation result in the screenshots within the answer document with the following values:  	5		5		5

<table>
<tr><th>Q</th><th>Answer</th><th>Mark</th><th>AO1</th><th>AO2</th><th>AO3</th><th>Total</th></tr>
<tr><td>10.</td><td>
Award marks according to the band described below. Candidates should include the following:

Two refinements that the candidate states are successful:
• New tax rate
• New national insurance rate

Explanations of how the code achieves these refinements.
• An annotated line of code for tax change
• An annotated line of code for NI change

Consideration of how the final program could be improved upon, for example 1 mark for any:
• Validation added (to either above)
• User Interface (Percentage Tax or NI visible on screen)
• Extensibility (changeable value on screen not hard coded)

<table>
<tr><th>Band</th><th>AO3.2c
(Max 6 marks)</th></tr>
<tr><td>3</td><td>5-6 marks
The candidate has:
• shown strong understanding of the requirements of the question and a clear knowledge of the indicative content. Clear knowledge is defined as a response that provides five to six relevant detailed points from the indicative content
• shown a sustained line of reasoning which is coherent, relevant, substantiated and logically structured
• used appropriate terminology and accurate spelling, punctuation and grammar.</td></tr>
<tr><td>2</td><td>3-4 marks
The candidate has:
• shown some understanding of the requirements of the question and sound knowledge of the indicative content. Sound knowledge is defined as a response that provides three to four relevant detailed points from the indicative content
• shown a line of reasoning which is partially coherent, largely relevant, supported by some evidence and with some structure
• used mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</td></tr>
</table>
</td><td>6</td><td></td><td></td><td>6</td><td>6</td></tr>
</table>

Q	Answer	Mark	AO1	AO2	AO3	Total
	1	**1-2 marks** The candidate has: • shown limited understanding of the requirements of the question and superficial knowledge of the indicative content. Superficial knowledge is defined as a response that provides one to two relevant points from the indicative content • shown a basic line of reasoning which is not coherent, largely irrelevant with very little structure • used limited scientific terminology and inaccuracies in spelling, punctuation and grammar.					
	0	**0 marks** No attempt made or no response worthy of credit.					