GCSE MARKING SCHEME

SUMMER 2023

COMPUTER SCIENCE - UNIT 2
3500U20-1

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.

WJEC GCSE COMPUTER SCIENCE

UNIT 2 - COMPUTATIONAL THINKING AND 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.

Question	Answer	Mark	AO1	AO2	AO3	Total
1.	**Award 1 mark** for each correct answer:		1.1a			5
(a)	italicise text /italic	1				
(b)	embolden text / bold	1				
(c)	draw a horizontal rule / horizontal bar	1				
(d)	indicate an area of quoted text / quote	1				
(e)	start a new paragraph / indicate a paragraph of text	1				
	No need for a command word (e.g. horizontal rule alone would gain the mark)	1				

Question	Answer	Mark	AO1	AO2	AO3	Total
2.	**Award 1 mark** for each correct **pair** in the correct location: **i.e.** ** ** ** ** ** ** **Accept either or (No need to close p)** ** (Note http:// is required or the link will not work correctly on many devices)** **Accept alternative tags e.g. instead of , etc** ** and count as a single item as both must be used together** **Accept alternative HTML (not CSS) solutions which work (only if the identical formatting would be achieved).**			2b		10
	<html> <head> <title> Electric Vehicle Information </title> </head> <body> Electric Vehicles Researching Electric Vehicles? Would you like to know more about: - Zero emissions - Low environmental impact - High Performance 	1 (html) 1 (head) 1 (title) 1 (body) 1 (center) 1 (h1) 1 (ul and lix3)				

Question	Answer	Mark	AO1	AO2	AO3	Total
	 Click the link below to find out more: www.EV.wjec.co.uk <img src="car.jpg"> </body> </html>	 1 (a href) 1 (http://) 1 (img)				

Question	Answer	Mark	AO1	AO2	AO3	Total
3. (a)	**Award 1 mark** for each correct (**bold**) answer: Output 1 — **4** Output 2 — **3** Output 3 — **4** Output 4 — **1**	 1 1 1 1		2b		4
(b)	**Indicative content:** INP STA first INP STA second INP STA third LDA third ADD first ADD second OUT HLT DAT first DAT second DAT third **ALTERNATIVE**: INP STA first INP STA second INP STA third LDA first ADD second ADD third OUT HLT DAT first DAT second DAT third **Award 1 mark** for a **single** correct use of: INP STA ADD OUT LDA HLT	 1 1 1 1 1 1				 6

<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>

```
1.    Declare Car
2.    currentNumber is integer
3.    maxNo is integer
4.    minNo is integer
5.    total is integer
6.    mean is real
7.    set currentNumber=0
8.    set maxNo =0
9.    set minNo=999
10.   set total = 0
11.   set mean =0
12.   for i = 1 to 24
13.   output "Enter a reading for this
      hour:"
14.   input currentNumber
15.   if currentNumber >maxNo then
16.   maxNo= currentNumber
17.   endif
18.   if currentNumber <minNo then
19.   minNo= currentNumber
20.   endif
21.   total = total+ currentNumber
22.   next i
23.   mean = total / 24
24.   output "Total:", total
25.   output "Mean:" , mean
26.   output "Largest:" , maxNo
27.   output "Smallest:" ,minNo
28.   End Subroutine
```

</td><td>1
1
1
1
1
1</td><td></td><td>2b</td><td></td><td>6</td></tr>
<tr><td>(b)</td><td>Award 1 mark for each point up to a max of 3 marks

• Make source code easier to read
• Make source code easier to understand
• Reduce the effort required to maintain legacy code
• Reduce the need for coders to consult secondary documentation
• uniformity of naming conventions
• consistency across programmers</td><td>3</td><td>1b</td><td></td><td></td><td>3</td></tr>
<tr><td>(c)</td><td>Award 1 mark for each correct tick. max 1 mark if 3 ticks. zero marks for 4 ticks.

<table>
<tr><th></th><th>Sorted Data</th><th>Unsorted Data</th></tr>
<tr><td>Linear Search</td><td></td><td>✓</td></tr>
<tr><td>Binary Search</td><td>✓</td><td></td></tr>
</table>
</td><td>1
1</td><td></td><td>2a</td><td></td><td>2</td></tr>
</table>

Question	Answer	Mark	AO1	AO2	AO3	Total

5.	**Brackets+Bold text indicate other accepted Pseudocode.**
	
	Accept any meaningful variable name.
	
	Amendments to check for zero entered or divide by zero error (and any further validation) accepted not expected.
	
	Line numbers not necessary. Ignore indentation or lack of it.
	
	Accept alternative solutions as long as they provide exactly the same result.
	
	Example:
	
	`Declare tesla`
	`currentNumber is integer`
	`minutes is real`
	
	`output "Input number of miles:"`
	`input currentNumber`
	
	`  minutes = currentNumber * 1.5`
	
	` output "Time in minutes:" + minutes`
	
	`  if minutes > 60 then`
	`    output "Warning the time calculated`
	`     is longer than one hour."`
	
	`  endif`
	
	`End Subroutine`
	
	Award 1 mark for each of:
	
	Output Text (String literal similar to example)
	Input value into a variable (must be obvious variable)
	multiply by 1.5
	Selection (comparison using if for > than 60)
	Output a valid variable
	The solution provides all correct outputs
		
		1
		1
		1
		1
		1
		1
					3b	6

Question	Answer	Mark	AO1	AO2	AO3	Total
6.	**Award 1 mark** per point below:				3b	5
(a)	New world class called **Advert** in Greenfoot environment with correct image. (accept grid of more than 9*9)	1				
(b)	Class called Van exist (on right) and has image of Van (given or built in).	1				
(c)	World is populated with **two** Vans on open.	1				
(d)	Van moves when on/added to world randomly.	1				
(e)	Greenfoot world saved correctly as `FinalVan` (ignore capital letters)	1				

Question	Answer	Mark	AO1	AO2	AO3	Total
7.	**Award 1 mark** per **bulleted** point below: World is pre-populated on load with:				3b	13
(a)	• one car only • two or more lightning bolts • two or more oil drops	1 1 1				
(b)	• lightning **and** oil move "randomly" around world.	1				
(c)	• car moves around world according to arrow keys. • car moves with appropriate relative speed to other objects	1 1				
(d)	• lightning is removed from world on collision with car.	1				
(e)	• sound plays when car and lightning collide	1				
(f)	• counter added to world. • counter increments when car and lightning collide.	1 1				
(g)	• counter decrements when oil and car collide. • implementation via parameter passing as opposed to wholly new method.	1 1				
(h)	• Greenfoot world saved correctly as `FinalWJECCars7` (ignore capitalization)	1				