National Qualifications 2024

2024 Computing Science

National 5

Question Paper Finalised Marking Instructions

General marking principles for N5 Computing Science
This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this paper. These principles must be read in conjunction with the detailed marking instructions, which identify the key features required in candidate responses.

(a) Marks for each candidate response must **always** be assigned in line with these general marking principles and the detailed marking instructions for this assessment.

(b) Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted.

(c) If a candidate response is not covered by either the principles or detailed marking instructions, and you are uncertain how to assess it, you must seek guidance from your team leader.

(d) Award marks regardless of spelling, as long as the meaning is unambiguous. This applies to all responses, including code. Award marks as per the detailed marking instructions, regardless of syntax errors, if the intention of the coding is clear.

(e) For questions where candidates are asked to design or write code, a sample response is shown in the detailed marking instructions. This will not be the only valid response. You must use the detailed marking instructions and additional guidance to ensure that you consider alternative approaches and nuances of different programming languages. If in doubt you should refer to your Team Leader.

(f) A correct response can be negated if the candidate includes an extra, incorrect response which demonstrates they do not know the correct answer. For example, in a 'state' question where the only correct answer is 'white', if the candidate answers 'white orange', you should not award the mark.

(g) If a candidate puts a score through a response and makes a further attempt, you should only mark the further attempt. If no further attempt is made and the original is legible, you should mark the original response.

(h) Where an incorrect response is carried forward and used correctly in a following part of the question, you should give credit for subsequent responses that are correct with regard to the original error. Candidates should not be penalised more than once for the same error.

(i) Only award marks for a valid response to the question asked. Where candidates are asked to:
  - **Identify**, **name**, **give** or **state,** they need only name or present in brief form.
  - **describe**, they must provide a statement or structure of characteristics and/or features. This will be more than an outline or a list. It may refer to, for example, a concept, process, experiment, situation, or facts, in the context of and appropriate to the question. Candidates must make the same number of factual/appropriate points as there are marks available in the question.
  - **explain**, they must relate cause and/or effect and/or make relationships between things clear, in the context of the question or a specific area within the question.
  - **write code,** they must write recognisable code, not prose nor a diagram.
  - **design,** they must use a design technique appropriate to the problem. Award marks as per the detailed marking instructions, regardless of errors in the exemplification of the technique, if the intention of the design is clear.

(j) In the marking instructions, if a word is underlined then it is essential; if a word is in brackets() then it is not essential. Words separated by / are alternatives.

Marking instructions for each question

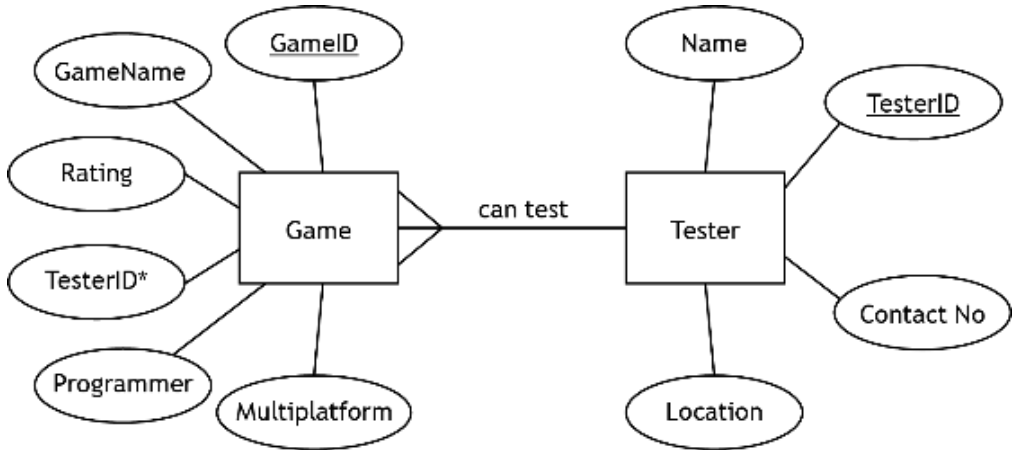**Section 1 — Software design and development, and Computer systems**

Question			Expected response	Max mark	Additional guidance
1.			• string • integer	2	Accept str, int chocolateName: string numberOfChocolatesInBox: integer
2.			01101001	1	
3.			• to correct (logic, execution) errors • because an error has been found • program produces wrong output • program doesn't meet requirements	1	Award 1 mark for any one bullet. Not syntax errors
4.			• if with condition: days <=14 • calculation: fine/2 • assign calculated value to variable	3	Also accept <14. If no calculation the third bullet can be awarded for variable = 65 If candidate shows a calculation do not award third bullet if they assign 65 to fine, ignoring their calculation Calculation may be done other ways but must always use 'fine' Other variable names may change
5.	(a)		array	1	
	(b)		random	1	Accept language specific functions: eg randint, rnd
6.	(a)		• 18563 • 4	2	mantissa 18563 exponent 4
	(b)		• reduce brightness • low power mode/eco settings/dark mode • close other apps	1	Award 1 mark for any one bullet
7.	(a)		OR	1	
	(b)		• to control the loop • to switch the toothbrush off	1	Award 1 mark for any one bullet Do not award a mark for 'controlling whether the toothbrush is on or off
8.			10	1	

Question			Expected response	Max mark	Additional guidance
9.	(a)		- Input – name – number of people – date of arrival – length of stay - Process – calculate overall cost (of stay)	**2**	Award 1 mark for identifying all inputs and 1 mark for process Ignore 'confirm booking' if added as input
	(b)		`nightsStaying` * 35 * `numberOfPeople` - assignment of final calculation to `cost` variable	**3**	Calculation may be implemented over one or two lines Order of `numberOfPeople` and `nightsStaying` may change in bullets 1 and 2 35 could be replaced by a cost per night variable. `cost = numberOfPeople * nightsStaying * 35`
	(c)		encryption	**1**	

	(d)		- set running total to 0 - loop 365 times - running total adding `guests` to total in loop - use of incrementing array index in running total	**4**	If a collection loop is used award the last two bullets for use and increment of the array.eg
					
					`FOR EACH value FROM guests DO`
					`  SET total TO total + value`
					`END FOR`
					
					`for value in guests:`
					`  total = total + value`

	(e)		- each pixel - is stored as a binary value (bits)	**2**	Accept '1s and 0s' as binary

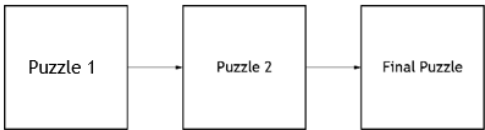| Question			Expected response	Max mark	Additional guidance
10.	(a)		pseudocode/flowchart	1	
	(b)		fixed	1	
	(c)	(i)	(£) 0	1	Accept 'free'
		(ii)	(£) 47	1	Accept an answer that is £47 more than part (i)
	(d)	(i)	• get message from user • indication of length function to find number of characters from user's message • calculation: characters * 0.25 + 12 • output cost	4	Bullet 2 could be replaced with a loop (e.g. for each character in message). In this case bullet 3 would be replaced with a running total A calculation, without units, may not mix pounds or pence eg characters * 25 + 12
		(ii)	Object • ellipse/circle • rectangle/rect • line Attribute • x coordinate • y coordinate • line colour • fill colour • line thickness • length of side • radius • layer • transparency/opacity	2	Award 1 mark for object and 1 mark for attribute matching the object given Second mark may still be awarded if attribute matches an incorrect object given: for example text, fill colour Do not allow 'oval' or 'square' as objects
	(e)		Calculate • ALU/Arithmetic Logic Unit Transfer • CU/Control Unit	2	

	Question		Expected response	Max mark	Additional guidance
11.	(a)	(i)	• conditional loop • correct loop condition for valid data from 5 to 75 • input within the loop • error message displayed within loop	**4**	Where candidate uses a post conditional loop the error message must be contained within an if statement Where candidate does not use a loop, one mark may be awarded for the error message where attached conditions are correct If the loop is missing the start/end of the loop assume that everything above or below the start/end is inside the loop Distances in the question are real values so conditions <=4, >=76 are not valid
		(ii)	• normal • exceptional	**2**	
	(b)		• ask user for number of stages • replace fixed loop value with input value	**2**	Alternative solution: • change to conditional loop • ask user if they wish to enter another stage
	(c)	(i)	logic	**1**	Accept logical

	(c)	(ii)	• change structure to
			  – if
			  – elseif
			  – else/elseif
			    OR
			  – nested ifs
			
			• rewrite conditions, without complex conditions, with correct assignment to race
				2	```IF totalDistance < 25 THEN SET race TO "beginner" ELSE IF totalDistance <=100 THEN SET race TO "intermediate" ELSE SET race TO "advanced" END IF```
					
					Note that candidates may change order of conditions and assignments

	(d)		interpreter	**1**	

	(e)	(i)	• round() function with brackets
			• with correct parameters:
			  – avgDistance
			  – 1
				2	

		(ii)	• display the correct text using quotes • avgDistance variable used between text with appropriate separators	**2**	Note that the question does not ask for concatenation If one piece of text is missing only one separator is required

Section 2 – Database Design and Development

	Question		Expected response	Max mark	Additional guidance
12.			Text	1	
13.			• company should delete data • company should not keep data longer than necessary	1	Award 1 mark for any one bullet
14.	(a)		• first sort: schoolID DESC • second sort: technology (ASC)	2	Do not award second sort if first sort is missing Second sort mark can still be awarded if first sort is incorrect Ignore syntax errors, for example using AND instead of a comma
	(b)		• DELETE from Team • WHERE teamID = "T46"	2	Also allow use of two fields: schoolID = 214 AND teamName = "Brainy Bunch" Quotes not required
15.	(a)	(i)	• location in Tester entity • M:1 Cardinality • relationship name • testerID FK and PK	4	Accept other versions of 'location' attribute (office, country etc) Ignore additional attributes unless candidate adds additional FK/PK attributes then bullet 4 should not be awarded See example answer below
		(ii)	restricted choice	1	
	(b)		Changes all CodeQueen games to 18	1	Answers may refer to the World Away game also being updated to 18
	(c)		WHERE gameID = "183B"	1	Quotes not required

Question			Expected response	Max mark	Additional guidance
16.	(a)		Creates a relationship/Links Club and Player tables	1	
	(b)		• fields – name, division • tables – Player, Club • position = Goal Keeper • age >30	4	Candidates may express answers differently in design eg age= >30. Field(s) • fields can be in any order • do not award a mark if additional fields have been included Table(s) • table names can be in any order Search Criteria • conditions can be in any order • Equi-join not required
	(c)	(i)	FROM • Club, Player WHERE • trainingVenue = Lanarkshire division = 2 • OR between two conditions • club.clubID = player.clubID with attached AND	4	FROM • table names can be in any order WHERE • order of search conditions could change Quotes and brackets not required
		(ii)	• find expected output. • compare to actual output	2	
	(d)		To ensure the player is linked to an existing team	1	

Section 3 – Web Design and Development

Question			Expected response	Max mark	Additional guidance
17.			• two sub-pages: Puzzle 2 and Final Puzzle • single arrow links to 2 pages	**2**	
18.			• (hyperlink to) homepage anywhere on design • club member photograph • results paragraph below member photograph	**3**	
19.	(a)		Transparent background	**1**	
	(b)	(i)	• .description selector • text-align:right • font-family:Arial (font-size:12px)	**3**	If candidate changes font size from 12 do not award bullet 3
		(ii)	absolute	**1**	
	(c)		• width="350" height="300" • (./)Media/ • naplesTour.mp4	**3**	Path should not include anything before (./)Media/ eg website `<video width="350" height="300" controls> <source src="Media/naplesTour.mp4" type="video/mp4"> </video>` Quotes not required in code
	(d)		(The website should..) • play sound/video of local phrases • add interactivity.. with an example • include hyperlink to.. an destination e.g. home page	**1**	Award 1 mark for any one bullet

Question			Expected response	Max mark	Additional guidance
20.	(a)		• font Helvetica • left aligned • font size 24pt • white background	**4**	
	(b)		• heading displayed above list • bulleted list with each item on a new line in the correct order • first list item underlined to indicate hyperlink	**3**	Do not penalise errors in the text. Focus on understanding shown of order, bullets and underline of hyperlink New Rides • <u>The Block Cars</u> • The Mystical Forest • The Lizard
	(c)	(i)	JavaScript	**1**	
		(ii)	(on)mouseOver	**1**	
	(d)		Gain permission to display the videos on their website	**1**	Could pay for a licence to use video
	(e)		• website matches the design • each webpage user interface is consistent • test (JavaScript) actions/events	**1**	Award 1 mark for any one bullet

[END OF MARKING INSTRUCTIONS]