



National
Qualifications
2018

2018 Computing Science

National 5

Finalised Marking Instructions

© Scottish Qualifications Authority 2018

The information in this publication may be reproduced to support SQA qualifications only on a non-commercial basis. If it is reproduced, SQA should be clearly acknowledged as the source. If it is to be used for any other purpose, written permission must be obtained from permissions@sqa.org.uk.

Where the publication includes materials from sources other than SQA (secondary copyright), this material should only be reproduced for the purposes of examination or assessment. If it needs to be reproduced for any other purpose it is the centre's responsibility to obtain the necessary copyright clearance. SQA's NQ Assessment team may be able to direct you to the secondary sources.

These marking instructions have been prepared by examination teams for use by SQA appointed markers when marking external course assessments. This publication must not be reproduced for commercial or trade purposes.



General marking principles for National 5 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) Marking should always be positive. This means that, for each candidate response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.

Marking instructions for each question

SECTION 1

Question			Expected response	Max mark	Additional guidance
1.			GIF PNG	1	Any other file type used to store animations.
2.			Any two from: <ul style="list-style-type: none"> • (“Steam Train”) text too small to read • image not displaying/loading • can’t buy one jigsaw • price missing from one of the jigsaws. 	2	No mark for discussion of consistency.
3.			Any one from: <ul style="list-style-type: none"> • reduce sampling rate • compress file • change file type to one with smaller files size. 	1	No mark for “save as MP3” or other file type as the question does not indicate the current file type. Allow examples of compression techniques.
4.	(a)		765·2	1	
	(b)		Mantissa - 7652 Exponent - 3	2	
5.			To uniquely identify a record/row in a table.	1	
6.			Encryption	1	
7.			One mark each for: <ul style="list-style-type: none"> • round • 2 or 2 decimal places or runnerAverage 	2	Accept programming language specific versions of round, for example VB = math.round Do not accept parameter answers given as an example for second bullet point.
8.			Any one from: <ul style="list-style-type: none"> • text size or font is consistent (across similar elements) • graphics are the same size • position of content/ navigation bar is consistent across different pages/ objects aligned • colour scheme consistent throughout. 	1	
9.			Type of Coding - Javascript Event - (On)MouseOver	2	Accept alternative implementations, for example using CSS and hover.

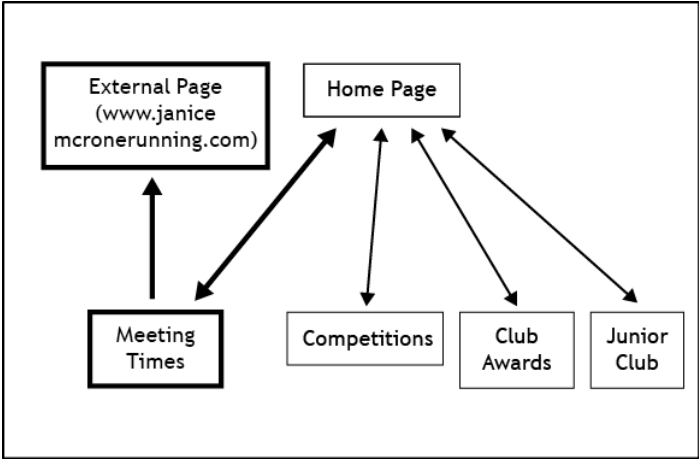
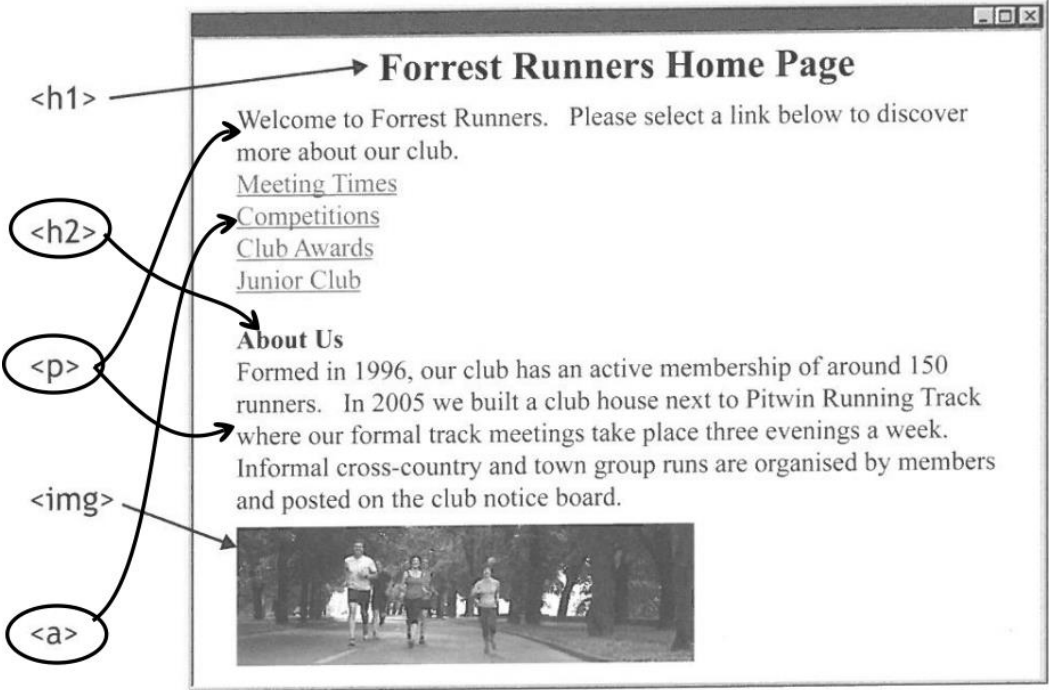
Question			Expected response	Max mark	Additional guidance
10.	(a)		The price of other records would update.	1	Answers may refer to: <ul style="list-style-type: none">• other 45p records• the DVD• not just the books
	(b)		(UPDATE Stock SET price = 0.50) WHERE type = "Book"; (1) (1)	2	SQL accepts single and double quotes.
11.				1	If candidate has completed an electronic paper or has typed answer accept "is dog over 18 months old?"

```
graph TD; Start(( )) --> Display1[/display "Enter the age of your dog in months"/]; Display1 --> Input[/get age from keyboard/]; Input --> Decision{is dog over 18 months old?}; Decision -- Yes --> Display2[/display "Walk your dog for at least 90 minutes each day"/]; Decision -- No --> Display3[/display "Walk your dog for age*5 minutes each day"/]; Display2 --> End(( )); Display3 --> End;
```

Question			Expected response	Max mark	Additional guidance
12.			Any one from: <ul style="list-style-type: none"> gives potential end users of the finished product an indication of how the product will look allows navigation structure to be tested confirm the position of page objects are acceptable to the user. 	1	
13.			Eduardo is the owner of the photographs.	1	
14.	(a)		The variable used in line 16 has been incorrectly named/spelt.	1	
	(b)		Any one from: <ul style="list-style-type: none"> AND NOT 	1	
	(c)		(£)5.00 or 5	1	
15.			Any one from: <ul style="list-style-type: none"> don't know how often the loop will execute keeps looping until conditions are met. 	1	
16.			Any one from: <ul style="list-style-type: none"> the record/row for K. Willis (the third row) would be removed from the table any record/row with an average score less than 92 would be removed from the table. 	1	

SECTION 2

Question			Expected response	Max mark	Additional guidance
17.	(a)	(i)	One mark each for: <ul style="list-style-type: none"> • stores multiple values • each value is either True or False. 	2	Description of a Boolean values and arrays will be answered in a variety of ways.
		(ii)	One mark each for: <ul style="list-style-type: none"> • Loop 10 times • IF • Condition indicating answer is correct • Increment score by 5 	4	<p>Allow for language variations of fixed loop with 10 iterations. For example:</p> <ul style="list-style-type: none"> • 0 to 9 • 1 to 10 • range(10) <p>A condition loop may be awarded a mark if the answer indicates the loop will repeat for each question</p> <p>Allow for language variations of increment. For example:</p> <ul style="list-style-type: none"> • Total += 5
	(b)		Any one from: <ul style="list-style-type: none"> • translator does not need to be present when executing • program would not need to be translated again • program runs/executes faster as it does not require further translation • program needs to be converted to binary to run • to identify a list of errors in the code • compiled version of the program requires less memory (RAM). 	1	No mark for “runs faster” on its own with no explanation.

Question	Expected response	Max mark	Additional guidance
18. (a)	<p>One mark each for:</p> <ul style="list-style-type: none"> meeting times page added with double-headed arrow from home to meeting times page external page added single headed arrow to external page. 	3	
(b)	<p>One mark each for:</p> <ul style="list-style-type: none"> <h2> arrow to “About Us” heading <p> arrow to either paragraph of text <a> arrow to any one of the four hyperlinks 	3	

Question			Expected response	Max mark	Additional guidance
18.	(c)		Any two from: <ul style="list-style-type: none"> • high colour depth • compressed format/smaller file size • popular format understood by browsers • downloads quicker 	2	
	(d)		One mark each for: <ul style="list-style-type: none"> • a class has been used • to style part of the page white. 	2	
	(e)		One mark each for: <ul style="list-style-type: none"> • new style assigned to <code>ul{ }</code> or <code>li{ }</code> • <code>font-size:12px;</code> (or 12pt) or <ul style="list-style-type: none"> • <code>font:12px;</code> (or 12pt) 	2	For example: <code>ul {font-size:12px;}</code> If candidate changes the font size of the list to match the paragraph by styling the third <code><div></code> element assign: <ul style="list-style-type: none"> • one mark for class or ID • one mark for <code>font-size:12px</code>
	(f)	(i)	Internal	1	
		(ii)	Relative	1	
	(g)		Any two from: <ul style="list-style-type: none"> • matches design • links/navigation works • text displays correctly • images display correctly • video plays correctly • audio plays correctly • animations display correctly • scripts execute correctly • search facility works • browser compatibility 	2	

Question			Expected response	Max mark	Additional guidance									
19.	(a)		One mark each for: <ul style="list-style-type: none">all three inputs:<ul style="list-style-type: none">users namepasswordmoney to be addedone processes from:<ul style="list-style-type: none">money added to balancevalidate passwordretrieve pupil balanceone outputs:<ul style="list-style-type: none">(new) balance	3	Allow additional inputs, processes and outputs that candidates may interpret from the given problem.									
	(b)		Text or graphical design showing the following for one mark each: <ul style="list-style-type: none">entry of name, password and moneymessage showing updated balancebutton	3										
	(c)	(i)	Length or LEN	1										
		(ii)	Any one from: <ul style="list-style-type: none">no need to write codeerror free (no need to test)re-useable	1	Explanation must explain how a pre-defined function shortens code (time reduced in development of code as function prewritten/tested).									
	(d)		One mark each for design of input validation showing: <ul style="list-style-type: none">conditional loop usedcorrect loop condition for valid datainput of readingerror message	4	Condition will change depending on whether While or Until loop used: While password is not 8 characters Until password is 8 characters Award 1 mark for input not implemented within loop. Allow for language variations. For example: input and error message may be combined in a single statement.									
	(e)		One mark for each correct row: <table><tr><th>Type of test</th><th>Input</th><th>Expected Result</th></tr><tr><td>Normal</td><td>Any 8 character string. For example: K458fd23</td><td>Program continues</td></tr><tr><td>Exceptional</td><td>Jaj8up</td><td>Error message Or User asked to re-enter password</td></tr></table>	Type of test	Input	Expected Result	Normal	Any 8 character string. For example: K458fd23	Program continues	Exceptional	Jaj8up	Error message Or User asked to re-enter password	3	
Type of test	Input	Expected Result												
Normal	Any 8 character string. For example: K458fd23	Program continues												
Exceptional	Jaj8up	Error message Or User asked to re-enter password												

Question			Expected response	Max mark	Additional guidance												
20.	(a)		One mark for each correct row: <table><tr><td></td><td>Table</td><td>Field</td></tr><tr><td>Primary Key</td><td>Route</td><td>routeID</td></tr><tr><td>Primary Key</td><td>Walk</td><td>walkNumber</td></tr><tr><td>Foreign Key</td><td>Walk</td><td>routeID</td></tr></table>		Table	Field	Primary Key	Route	routeID	Primary Key	Walk	walkNumber	Foreign Key	Walk	routeID	3	Order of first two rows is not important.
		Table	Field														
	Primary Key	Route	routeID														
	Primary Key	Walk	walkNumber														
Foreign Key	Walk	routeID															
	(b)		One mark each for: <ul style="list-style-type: none">datenumber/numeric	2													
	(c)		<table><tr><td>Field(s)</td><td>routeID (1)</td></tr><tr><td>Table(s)</td><td>Route (1)</td></tr><tr><td>Search criteria</td><td>routeType = Mountain (1) AND (1) rating >= 3 (1)</td></tr></table>	Field(s)	routeID (1)	Table(s)	Route (1)	Search criteria	routeType = Mountain (1) AND (1) rating >= 3 (1)	5	Accept search criteria rating > 2						
Field(s)	routeID (1)																
Table(s)	Route (1)																
Search criteria	routeType = Mountain (1) AND (1) rating >= 3 (1)																
	(d)	(i)	One mark for each correct row: <table><tr><td>start</td><td>routeType</td><td>minutesTaken</td></tr><tr><td>Rackwick</td><td>Coastal</td><td>213</td></tr><tr><td>Rackwick</td><td>Coastal</td><td>167</td></tr><tr><td>Pitlochry</td><td>Forest</td><td>180</td></tr></table>	start	routeType	minutesTaken	Rackwick	Coastal	213	Rackwick	Coastal	167	Pitlochry	Forest	180	3	Order of rows is not important.
start	routeType	minutesTaken															
Rackwick	Coastal	213															
Rackwick	Coastal	167															
Pitlochry	Forest	180															
		(ii)	The SQL statement could be run and the output compared to what was expected.	1													
	(e)		Any one from: <ul style="list-style-type: none">a walk could be added to the table that does not have a matching route ID so the data would not be linked with the route tableadding a new record to the Walk table which does not link to any existing record in the Routes tabledata could be added that would potentially affect the results of future queries.	1													

Question			Expected response	Max mark	Additional guidance
21.	(a)		One mark each for: <ul style="list-style-type: none"> • basic calculation (adults * 25 + children * 10) • basic calculation stored • adults >=2 • AND, & • children >2 • subtraction of discount within condition (- 5) 	6	Condition for adults tickets (which is an integer) may also be: adults > 1
	(b)	(i) (A)	You have been awarded 2 food vouchers	1	
		(B)	You have been awarded 1 food voucher	1	
		(ii)	Any one from: <ul style="list-style-type: none"> • ensure only integers are accepted • input validation with appropriate explanation. 	1	Also accept: <ul style="list-style-type: none"> • no decimal places • whole numbers If candidate states round they must state to 0 decimal places.
		(iii)	Arithmetic Logic Unit (ALU)	1	
		(iv)	Data bus	1	

Question			Expected response	Max mark	Additional guidance
22.	(a)	(i)	0011 0110	1	
		(ii)	One mark each for: <ul style="list-style-type: none"> identifying 8 characters each ASCII character is 8 bits. 	2	<p>“8x8” would be awarded 2 marks for 8 characters and 8 bits as units are stated in the question.</p> <p>Should the candidates working shows that 1 character <> 8 bits this mark should not be awarded.</p> <p>If correct answer (64 bits) is given with no working award 2 marks.</p>
	(b)	(i)	Rectangle	1	
		(ii)	Any two from: <ul style="list-style-type: none"> x co-ordinate y co-ordinate length breadth fill colour line colour 	2	<p>Attributes should match the object given in answer 22bi.</p> <p>Allow other correct attributes.</p> <p>“Colour” not enough on its own. Candidate must specify what is being coloured.</p>
	(c)		Any one for one mark: <ul style="list-style-type: none"> brightness reduced sleep function standby when not used for a set period applications close automatically when not in use. 	1	Accept other answers that reduce energy consumption.

Question			Expected response	Max mark	Additional guidance
23.	(a)		<p>One mark each for:</p> <ul style="list-style-type: none"> Relationship: one-to-many Name of Relationship: employs (or similar) Shop attribute: telephoneNumber FK noted: branchID PK noted: employeeCode Staff attributes: surname, position, employeeCode, branchID 	6	
			<p>The diagram shows two entities: Shop and Staff. Shop has attributes: <u>branchID</u> (primary key), street, town, and telephoneNumber. Staff has attributes: forename, surname, position, <u>employeeCode</u> (primary key), dateOfBirth, salary, and branchID* (foreign key). A one-to-many relationship named 'employs' connects Shop (1) to Staff (2).</p>		
	(b)	(i)	Plan of how database is to be implemented.	1	
		(ii)	Restricted Choice	1	Accept a description of restricted choice.
	(c)	(i)	The link jumps to further down the same page (to the text about Sydney's family).	1	Links to option1 ID

Question			Expected response	Max mark	Additional guidance
23.	(c)	(ii)	<p>One mark each for:</p> <ul style="list-style-type: none"> • 'Sydney Bakers' aligned top-right • 'Baking Since 1935' centred on next line • each list item on a new line • numbered list • list items underlined (links) 	5	

Sydney Bakers

Baking Since 1935

Started over 70 years ago, Sydney's now employs over 100 staff.

- Sydney's Family
- Our Stores
- Our Products

The founders of our bakery were David and Davina Sydney.

[END OF MARKING INSTRUCTIONS]