Course report 2024

National 5 Computing Science

This report provides information on candidates' performance. Teachers, lecturers and assessors may find it useful when preparing candidates for future assessment. The report is intended to be constructive and informative, and to promote better understanding. You should read the report with the published assessment documents and marking instructions.

We compiled the statistics in this report before we completed the 2024 appeals process.

Grade boundary and statistical information

Statistical information: update on courses

Number of resulted entries in 2023: 6,795

Number of resulted entries in 2024: 6,744

Statistical information: performance of candidates

Distribution of course awards including minimum mark to achieve each grade

A	Number of candidates	3,038	Percentage	45.0	Cumulative percentage	45.0	Minimum mark required	84
B	Number of candidates	1,233	Percentage	18.3	Cumulative percentage	63.3	Minimum mark required	72
C	Number of candidates	1,045	Percentage	15.5	Cumulative percentage	78.8	Minimum mark required	60
D	Number of candidates	735	Percentage	10.9	Cumulative percentage	89.7	Minimum mark required	48
No award	Number of candidates	693	Percentage	10.3	Cumulative percentage	100	Minimum mark required	N/A

We have not applied rounding to these statistics.

You can read the general commentary on grade boundaries in the appendix.

In this report:

- ‘most’ means greater than 70%
- ‘many’ means 50% to 69%
- ‘some’ means 25% to 49%
- ‘a few’ means less than 25%

You can find statistical reports on the statistics and information page of our website.

Section 1: comments on the assessment

The question paper performed as expected, with the higher tariff problem-solving questions proving to be effective in differentiating candidates, with full marks being accessed by A candidates and some marks being accessed by C candidates. This year, 56% of candidates completed the 'Database design and development' section, and 44% completed the 'Web design and development' section.

The assignment also performed as expected, with candidates achieving good marks in the implementation tasks, as is expected in an open-book assessment. In the assignment, 58% candidates completed the 'Database design and development' section, and 42% completed the 'Web design and development' section.

No adjustments to the grade boundaries were made in relation to the question paper or assignment.

Section 2: comments on candidate performance

Areas that candidates performed well in

Question paper

Software design and development, and computer systems

Question 1	Most candidates identified both types of variables that can be used for storage.
Question 2	Most candidates converted the given denary number into an 8-bit binary.
Question 3	Most candidates showed a good understanding of an iterative development process and explained why the implementation stage might be returned to after testing.
Question 4	Most candidates accessed marks for refining the calculation step of the design, but only some fully understood and solved the problem and accessed the maximum 3 marks.
Question 5(a)	Most candidates identified an array as a data structure for storing information.
Question 5(b)	Most candidates identified that random was the predefined function needed for the selection of information.
Question 6(a)	Most candidates identified both the mantissa and exponent.
Question 6(b)	Most candidates identified how to reduce energy use in a smartphone. The few candidates who did not achieve this mark tended not to demonstrate understanding that to track the journey, the smartphone could not be switched off.
Question 7(a)	Many candidates identified the logical operator being used in the code.
Question 8	Although this question was asked in a different way this year, most candidates still worked out how many text characters could be stored.
Question 9(a)	Most candidates identified the inputs and outputs from the scenario.
Question 9(b)	Many candidates understood the code, then used the correct variables to write the code to carry out the calculation.

Question 9(c)	Most candidates stated how information could be transferred securely.
Question 9(e)	Most candidates described how a graphic is stored in a computer system's memory.
Question 10(a)	Most candidates stated an alternative design technique.
Question 10(b)	Many candidates stated the type of loop being used in the structure diagram design.
Question 10(c)(i)	Many candidates followed the design to calculate a venue cost using the data given.
Question 10(c)(ii)	Most candidates could then use their answer from question 10(c)(i) to calculate the cost of the party.
Question 10(d)(i)	Most candidates produced a design for the code and accessed some marks. Only some candidates accessed the maximum 4 marks available.
Question 10(d)(ii)	Most candidates identified an object and the object's attribute.
Question 11(a)(ii)	Many candidates identified the type of testing being applied for the values input and the expected results.
Question 11(c)(i)	Many candidates identified the type of error in the code provided.
Question 11e(ii)	Many candidates wrote the code using the variable provided to produce the given output.

Database design and development

Question 13	Many candidates provided an implication of the UK General Data Protection Regulation on the company.
Question 14(a)	Most candidates accessed 1 or 2 marks for completing the ORDER BY line of the SQL.
Question 14(b)	Many candidates wrote the SQL to delete the record from the table.
Question 15(a)(i)	Many candidates completed the entity-relationship diagram to access 3 or 4 marks.
Question 15(a)(ii)	Most candidates correctly stated the validation to be applied to the 'Rating' attribute.
Question 15(b)	Most candidates read and understood the SQL code, and explained why it would give an unexpected result.
Question 16(a)	Most candidates explained that foreign key linked the two tables.
Question 16(b)	Most candidates accessed 3 or 4 marks for their design of a query.
Question 16(c)(i)	Many candidates accessed 2 or 3 marks for completing the SQL statement. Only a few accessed the maximum 4 marks.
Question 16(c)(ii)	Many candidates described how the query should be tested.

Web design and development

Question 17	Most candidates created a diagram to show the structure of the website.
Question 18	Most candidates completed the wireframe design of the web page described.
Question 19(a)	Many candidates identified that transparency was the reason why a PNG file format was more suitable than a JPEG for the web page shown.
Question 19(b)(i)	Most candidates accessed 2 or 3 marks for writing a single CSS rule to style the page as described.

Question 19(c)	Most candidates accessed some marks for their HTML code to add a video to the web page.
Question 19(d)	Many candidates identified a functional requirement for the website.
Question 20(a)	Many candidates read the code and described how it would look in a browser to access 3 or 4 marks.
Question 20(b)	Most candidates drew how the code would look in a browser when executed, with many accessing the maximum 3 marks.
Question 20(c)(i)	Most candidates correctly stated the language used to implement the feature.
Question 20(c)(ii)	Most candidates stated the correct type of event.
Question 20(d)	Most candidates stated what the company should do to comply with the Copyright, Designs and Patents Act.

Areas that candidates found demanding

Question paper

Software design and development and computer systems

Question 7(b)	Only some candidates explained the purpose of the Boolean variable in the code. Many incorrect responses related to the operation of the toothbrush rather than the code.
Question 9(d)	Few candidates achieved 2, 3 or 4 marks for writing the code to calculate a running total. This question had the highest no response rate in the question paper.
Question 10(e)	While many candidates achieved 1 mark by identifying the part of the processor that will calculate the cost, only a few identified the part of the processor for the transfer of instructions.
Question 11(a)(i)	Only some candidates designed the input validation standard algorithm correctly. Some incorrect responses used an IF statement instead of a conditional loop resulting in the input never being checked and re-entered more than once.
Question 11(b)	Only some candidates described the changes to code that would be required for the problem given.
Question 11(c)(ii)	Very few candidates were able to identify that else, else if or nested if were required to make the code more efficient and achieve maximum marks. Many candidates accessed 1 mark.
Question 11(d)	Only some candidates identified the type of translator used.
Question 11(e)(i)	Only some candidates correctly wrote the code to store the average to one decimal place.

Database design and development

Question 12	Only some candidates identified the attribute type from the diagram.
Question 15(c)	Having explained why the SQL did not produce the expected output in question 15(b), only some candidates wrote the correct SQL statement.
Question 16(d)	Very few candidates explained the role of referential integrity.

Web design and development

Question 19(b)(ii)	Only some candidates identified the type of addressing used in the hyperlink.
Question 20(e)	Only some candidates described another test that could be carried out on the website. Most incorrect responses repeated testing navigation and media from the question.

Areas that candidates performed well in or found demanding

Assignment

Software design and development

Task 1(a)	Most candidates correctly identified the inputs given in the analysis, however, only some candidates identified three processes required to achieve the second mark.
Task 1(b)	Many candidates designed a running total algorithm.
Task 1(c)	Most candidates identified the expected numerical output, however, only some candidates identified where the message would be displayed in the expected output.
Task 1(d)	Many candidates coded a running program that produced an output, however only some stored the song durations in an array and then used the array to produce the correct output.
Task 1(e)	Few candidates provided an evaluation of their own code, instead providing generic answers that did not access marks.

Database design and development

Task 2(a)	Most candidates correctly identified the fossil discovery inputs given in the analysis, however, only some candidates correctly identified that an additional unique input was required.
Task 2(b)	Most candidates completed the data dictionary successfully
Task 2(c)(i)	Most candidates correctly implemented the SQL insert statement.
Task 2(c)(ii)	Most candidates correctly implemented the required conditions in their SQL select statement. However, only some candidates achieved maximum marks. Most incorrect responses were where candidates did not successfully join the two tables in their select statement.
Task 2(c)(iii)	Most candidates correctly implemented the SQL update statement.
Task 2(d)	Many candidates correctly identified the errors in the SQL statement provided.

Web design and development

Task 3(a)	Many candidates identified two functional requirements.
Task 3(b)	Most candidates completed their design with the required content, however, only some ensured that their design matched the other pages on the website to access maximum marks.
Task 3(c)	Most candidates correctly implemented the required HTML.
Task 3(d)	Most candidates correctly added the video code to their HTML.
Task 3(e)	Many candidates successfully implemented the changes to colours using CSS, however, only some candidates implemented the changes

	to the janPromotion webpage using CSS. Some candidates successfully changed the sale price text size using an ID, class or inline style.
Task 3(f)	Most candidates described two tests that should be carried out on their website.
Task 3(g)	Most candidates correctly evaluated the fitness for purpose of their implemented web page.

Section 3: preparing candidates for future assessment

Question paper

Teachers and lecturers should encourage candidates to read the questions carefully. Candidates must answer according to the command word; for example, 'identify', 'describe' or 'explain'. For 'describe' and 'explain' questions, the number of marks is a guide to how many points they need to make (usually either one or two).

In 'Software design and development', teachers and lecturers should aim to develop candidates' problem-solving skills and prepare them to apply the standard algorithms to unfamiliar contexts for both 'design' and 'write code' questions.

Candidates should read the questions carefully to:

- determine which standard algorithm they need to use in either design or implementation
- consider how they will adapt the standard algorithm they have learned to the context of the question

Where candidates are asked to answer using programming language of their choice, a response in the form of a graphical design will not be accepted.

Assignment

Many candidates still appear to struggle to implement arrays in their program solution. Candidates should ensure that they practise using arrays, particularly in the context of the standard algorithms. They can, of course, refer to these practice programs during the open-book assessment.

When evaluating their own code, candidates often respond with learned, rote answers. These marks are not accessible unless candidates make specific reference to their own code in their answers.

The SQL select statement in the assignments often makes use of fields from both tables of the database. While candidates are good at identifying the fields and WHERE conditions required, they often fail to join the two tables.

While candidates' ability to write functional requirements for web pages has improved, some still simply copy the web page contents without creating a functional requirement.

Some candidates struggle to identify where they are required to use IDs and classes in their CSS code. Candidates would benefit from further practice at changing the look of individual elements of their websites.

Appendix: general commentary on grade boundaries

SQA's main aim when setting grade boundaries is to be fair to candidates across all subjects and levels and maintain comparable standards across the years, even as arrangements evolve and change.

For most National Courses, SQA aims to set examinations and other external assessments and create marking instructions that allow:

- a competent candidate to score a minimum of 50% of the available marks (the notional grade C boundary)
- a well-prepared, very competent candidate to score at least 70% of the available marks (the notional grade A boundary)

It is very challenging to get the standard on target every year, in every subject, at every level. Therefore, SQA holds a grade boundary meeting for each course to bring together all the information available (statistical and qualitative) and to make final decisions on grade boundaries based on this information. Members of SQA's Executive Management Team normally chair these meetings.

Principal assessors utilise their subject expertise to evaluate the performance of the assessment and propose suitable grade boundaries based on the full range of evidence. SQA can adjust the grade boundaries as a result of the discussion at these meetings. This allows the pass rate to be unaffected in circumstances where there is evidence that the question paper or other assessment has been more, or less, difficult than usual.

- The grade boundaries can be adjusted downwards if there is evidence that the question paper or other assessment has been more difficult than usual.
- The grade boundaries can be adjusted upwards if there is evidence that the question paper or other assessment has been less difficult than usual.
- Where levels of difficulty are comparable to previous years, similar grade boundaries are maintained.

Every year, we evaluate the performance of our assessments in a fair way, while ensuring standards are maintained so that our qualifications remain credible. To do this, we measure evidence of candidates' knowledge and skills against the national standard.

During the pandemic, we modified National Qualifications course assessments, for example we removed elements of coursework. We kept these modifications in place until the 2022–23 session. The education community agreed that retaining the modifications for longer than this could have a detrimental impact on learning and progression to the next stage of education, employment or training. After discussions with candidates, teachers, lecturers, parents, carers and others, we returned to full course assessment for the 2023–24 session.

SQA's approach to awarding was announced in March 2024 and explained that any impact on candidates completing coursework for the first time, as part of their SQA assessments, would be considered in our grading decisions and incorporated into our well-established

grading processes. This provides fairness and safeguards for candidates and helps to provide assurances across the wider education community as we return to established awarding.

Our approach to awarding is broadly aligned to other nations of the UK that have returned to normal grading arrangements.

For full details of the approach, please refer to the National Qualifications 2024 Awarding — Methodology Report.