Course Report 2014

Subject	Computing Science
Level	National 5

The statistics used in this report have been compiled before the completion of any Post Results Services.

This report provides information on the performance of candidates which it is hoped will be useful to teachers/lecturers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding. It would be helpful to read this report in conjunction with the published assessment and marking instructions for the examination.

Section 1: Comments on the Assessment

Component 1: Question paper

The examination performed as expected. This examination was the first presentation following one specimen paper being available. Generally candidates had prepared well.

The paper was composed of Section 1(20 marks) and Section 2 (70 marks). Section 2 had seven questions, each worth 10 marks.

During the Grade Boundary meeting each question that indicated any performance issues was discussed in depth — full statistical information was available because this paper e-marked.

Component 2: Assignment

The assignments were well attempted by the majority of candidates. Their average mark was 72%, which is of a similar level to the 75% coursework mark achieved by the Intermediate 2 candidates.

Every centre who undertook National 5 certification was verified, with only twenty centres' marks being found to be outwith acceptable tolerances. These centres were given feedback, re-marked their assignments, and were then deemed to be within acceptable tolerances.

Section 2: Comments on candidate performance

Component 1: Question paper

Overall candidates responded well to the range of questions given in the paper.

In Section 1 candidates responded well to the majority of questions requiring subject recall.

In Section 2 candidates showed a good understanding of coding and could give good evidence of being able to apply understanding to problems.

Candidates found ISDD more challenging and found it more difficult to respond to the application of ISDD, eg linking ISDD to real life scenarios, why are interfaces designed in such a way, or what is actually happening when a user selects an object or clicks a link.

Component 2: Assignment

Overall the majority of candidates made an excellent attempt at the assignment. They were especially strong in the implementation of the information system and the computer program but were weaker in the design parts of the task.

Section 3: Areas in which candidates performed well

Component 1: Question paper

Section 1

- Question 1: well answered by candidates. They were confident in the difference between internal and external hyperlinks. The majority of candidates expressed their answer in clear terms.
- Question 3: well answered by candidates — the majority of candidates showed working.
- Question 5: candidates were confident in converting decimal values to binary, but a few did not give the answer using 8-bits as required in the question.
- Question 7: candidates showed that they have a strong knowledge in security precautions.
- Question 9: candidates showed that they had knowledge of testing websites.
- Question 10: several candidates had a clear understanding of the benefits of cloud storage.
- Question 13: most candidates could give an example of exceptional test data when applied to the scenario.
- Question 14: most candidates were clear about identifying the logic error and how this error should be corrected.

Section 2

- Question 15(b)(iii): most candidates had a good understanding as to how Javascript could be added to the webpage given in the question.
- Question 15(c): most candidates had a good understanding of mp4 and jpeg when applied to the website given in the question.
- Question 15(d): candidates were able to interpret the information given in the question to provide a clear explanation as to why Beach v2 should be used.
- Question 16(a): candidates could state the number of variables required to solve the scenario.
- Question 16(b): several candidates produced either code or pseudocode to correctly solve the problem. Others did not read the question clearly and missed out some of the stages required to create a solution to the problem.
- Question 16(c)(ii): most candidates could provide test data for the scenario.
- Question 17(a–d): most candidates provided clear answers to the webpage being used on a variety of devices and security.
- Question 17(f): most candidates were familiar with RAM.
- Question 18(a)(i-iii): most candidates could identify the required lines of code. Candidates were most confident with conditions then inputs but were weakest on arrays.
- Question 18(b): most candidates were confident in the use of syntax.
- Question 18(c)(i-ii): most candidates were confident in interpreting the code provided.
- Question 19(a)(i): most candidates were familiar with navigation structures.
- Question 19(b) (i): most candidates applied selection and repetition to the scenario.
- Question 19(b)(ii): most candidates could provide advice for the images.
- Question 19(b)(iii): most candidates could apply knowledge of the Copyright Designs and Patents Act.
- Question 20(a): most candidates could write the code to draw the hexagon following the guidelines given in the question stem.

- Question 20(b): most candidates were knowledgeable on readability of code.
- Question 20(f): most candidates could state another design notation, however many could not apply their knowledge of design notations to the scenario.
- Question 21(b): most candidates were confident in field types.
- Question 21(d)(i): most candidates could identify a feature from the interface provided.
- Question 21(e): most candidates could identify features and link to the scenario.

Component 2: Assignment

- The majority of candidates were able to demonstrate that they could create an appropriate information system.
- The majority of candidates demonstrated that they could write computer code to match the task, with appropriate internal commentary.
- Most candidates were able to create intelligent testing tables but did not always evidence their testing.

Section 4: Areas which candidates found demanding

Component 1: Question paper

Section 1

- Question 2: some candidates gave answers using trade names eg Firefox. Candidates should ensure they do not use trade names in answering questions.
- Question 4: candidates were unsure of the purpose of the parts of the processor, and many were unable to name the correct part for dealing with comparisons.
- Question 6: some candidates were unaware of the problems associated with storing data in a flat file database.
- Question 8: several candidates were unclear about the advantages of the type of user interface given in the question.
- Question 11: candidates were unclear about the differences between Client/Server and Peer-to-Peer.
- Question 12: some candidates had difficulty in being able to describe what was happening at each line of the pseudocode when the value 12 was entered.

Section 2

- Question 15(a): some candidates had difficulty in stating the URL of the web pages provided in the question paper.
- Question 15(b)(i): several candidates were unclear about HTML code.
- Question 15(b)(ii): a number of candidates were unclear about the purpose of absolute addressing.
- Question 15(e): several candidates had difficulty in identifying how the list had been sorted.
- Question 16(c): some candidates were unable to state the standard algorithm used to ensure data entered was acceptable.

- Question 17(e): several candidates struggled with having enough knowledge of the type of storage used by a variety of devices eg, candidates were not aware that smartphones used solid state storage and that DVDs used optical storage.
- Question 18(d): a number of candidates had difficulty in stating another design notation.
- Question 18(e): several candidates struggled to identify the type of translator required to solve the problem. Candidates who did identify the type of translator then had difficulty in explaining why this type of translator was used in this situation and gave a generic definition of an interpreter.
- Question 18(f): some candidates could not identify the component used in conversion of data.
- Question 19(a)(ii): several candidates were unclear about carbon footprints.
- Question 19(a)(iii): several candidates could not explain why the error was logical, linking to the scenario.
- Question 19(b)(iv): several candidates could not give a reason for selecting the wireless option.
- Question 20(c): a number of candidates could not apply knowledge of predefined functions to the programming language.
- Question 20(d): candidates had difficulty in completing both the boxes correctly; however the majority completed one of them correctly.
- Question 20(e): several candidates could not explain how vector graphics were stored using attributes such as: length, line colour, startx,y.
- Question 21(a)(i–ii): candidates struggled with the concept of linked tables, and the fields that would be found in each, to avoid data duplication. They struggled with their knowledge of identifying the foreign key.
- Question 21(c): candidates struggled with naming the type of validation used in databases and at times gave an SDD style answer.
- Question 21(c)(ii): several candidates did not apply the application of the event to this question and gave a generic answer.

Component 2: Assignment

Stage 1: Analysis

Some candidates were unsure that the analysis stage applied to the whole Assignment task.

Stage 2(a): Building a solution (data structure)

Some candidates found it difficult to understand the difference between design and development. A design is something that is done before implementation, so a database printed in design view cannot be part of a design as the database has to be implemented before this.

It is important that candidates realise that the design of the database and the design for the user interface are two separate items.

Candidates should carry out the relevant queries or validate relevant fields in their database. This is showing evidence of testing and if errors are spotted and then changed, this would be refinement. A completed and correct database is evidence of this.

Stage 2(b): Building a solution (program)

Many candidates did not create a design of the user interface — a sketch is more than adequate.

Candidates did not always evidence their ongoing testing. This can be as simple as a mention in a candidate's log/diary.

Candidates must show evidence of testing the program with normal, extreme and exceptional data. A test table with corresponding screen shots would suffice.

Stage 3: Reporting on the Solution

Some candidates did not complete all aspects of the report that was required.

Section 5: Advice to centres for preparation of future candidates

Component 1: Question paper

As this is the first year of presentation, we would like to remind centres of how the question paper is compiled. Following on from this we have given comments on how to apply this to work in the classroom.

The purpose of the question paper is to assess breadth of knowledge from across the Course, depth of understanding, and application of this knowledge and understanding to answer appropriately challenging questions.

This question paper will give learners an opportunity to demonstrate the following skills, knowledge and understanding:

- applying aspects of computational thinking across a range of contexts
- analysing problems within computing science across a range of contemporary
- contexts
- the ability to communicate how a program works
- communicating understanding of key concepts related to software
- design and development and information system design and development
- clearly and concisely using appropriate terminology
- understanding of the legal implications and environmental impact of contemporary information system technologies
- applying computing science concepts and techniques to create solutions across a range of contexts

Approximately 50% of the marks will be awarded for questions related to Software Design and Development

These will include questions sampling from the following areas

- computational constructs and concepts:

- explaining code
- writing code
- data types and structures

- software development:

  - design, testing, documentation:

- low level operations and computer architecture

Approximately 50% of the marks will be awarded for questions related to Information System Design and Development. These will include questions sampling from the following areas:

- database design, structures, links and operations
- website design, structures and links
- coding
- media types, including file size calculations
- information system development purpose, features, user interface, testing
- technical implementation (hardware, software, storage, networking/connectivity)
- security, legal and environmental issues

However, many concepts are relevant to both software and information system design and development, so some questions will relate to both of these broad areas.

Generally:

- Candidates should read questions with care, ensuring they do not provide a copy of the question in their answer.
- Candidates should answer questions linking to the scenario given — rather than regurgitating knowledge they should show the application of their knowledge.
- Candidates need to ensure they apply the correct computing terminology when answering questions. Candidates should also not provide brand names as their answer eg Apple, Explorer.
- When carrying out practical searches and sorts on databases, candidates should spend some time explaining what is actually happening when the search or sort is executed, both in terms of the programming and the action on the data.
- Candidates need to think about their everyday actions using technology, eg with question 19(b)(iv), and what events are actually taking place and why.

Component 2: Assignment

Candidates should ensure that they complete all parts of the task using the problem stages of the Assignment as a checklist.

Candidates should ensure that they have printed evidence for each part of the Assignment, and ensure that it is clearly labelled.

Candidates should ensure that they keep an accurate log of their progress. This can be extremely helpful to the assessors, and ensures that they are given credit for parts of the Assignment that are difficult to evidence, such as ongoing testing.

Statistical information: update on Courses

Number of resulted entries in 2013	0

Number of resulted entries in 2014	5853

Statistical information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark 150				
A	32.6%	32.6%	1911	105
B	27.7%	60.4%	1622	90
C	22.7%	83.1%	1329	75
D	7.1%	90.2%	415	67
No award	9.8%	-	576	-