Course Report 2016

Subject	Computing Science
Level	Higher

The statistics used in this report are prior to the outcome of any Post Results Services requests

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 question papers and marking instructions for the examination.

Section 1: Comments on the Assessment

Component 1: question paper

Feedback indicated that the 2016 question paper was fair, balanced and accessible. The full range of marks was awarded in all questions, and the paper appropriately sampled the course content as outlined in the Course Assessment Specification.

Analysis of the item performance and feedback from the markers showed that the question paper was set at a similar standard to the previous exams.

There are some significant improvements in some aspects of the exam, particularly in content that has been sampled before either in the 2015 paper or the specimen/exemplar papers. However, any new content not previously sampled in these papers or in the predecessor qualification proved to be very challenging for many candidates. This is particularly true in relation to the use of the record data structure in this paper.

Component 2: assignment

The marks gained in the assignment were higher than would be expected when compared with the performance in the question paper, but were similar to those of the predecessor Higher Computing/ Information Systems courses.

Section 2: Comments on candidate performance

Areas in which candidates performed well

Component 1: question paper

Question 1: Many candidates knew the relationship of the bits allocated to the mantissa and exponent to that of precision and range.

Question 2: Most candidates performed the calculation well.

Question 5: Many candidates had a good understanding of usability.

Question 7(b): This question was answered well by the majority of candidates. Most were familiar with the different column headings for a data dictionary.

Question 11(a): The majority of candidates could express the counting occurrences algorithm in context.

Question 11(c) (ii): Many candidates had a good understanding of the benefits of using an external style sheet.

Question 13(a): The majority of candidates found the trace straightforward.

Question 14 (c): The majority of candidates could tackle entity relationship diagrams and answered this question well.

Question 15(c): Most candidates gained credit for using the find minimum algorithm to find the fastest time. However, some candidates did write an algorithm to find a faster time than 0 or used find maximum.

Question 15(d)(i) & (ii): The majority of candidates knew the purpose of these lines.

Question 15(e): The majority of candidates could describe a method of locating errors in code.

Component 2: assignment

The assignments were well attempted by the majority of candidates. Most candidates produced excellent codes, databases and web pages.

Areas which candidates found demanding

Component 1: question paper

Question 3: Few candidates understood the key characteristics of object-oriented programming, and most could not express how classes and subclasses are used in software development.

Question 4: Most candidates had a poor understanding of RAD, and seldom used prototyping, feedback, concurrency etc with any clarity of expression.

Question 6: Many candidates restated what was in the question stem and failed to develop their answer using access rights or their types.

Question 8(a): Few candidates knew that you cannot format within the <title> </title> tags, and a significant number incorrectly thought that <p align should have been <p>.

Question 10(c): An ‘A’ discriminator question which most candidates found challenging.

Question 11(a): A number of candidates did not give an answer that resulted in a more hierarchical structure for the website.

Question 11(b): Several candidates focused on how to implement such a feature rather than how the code is executed.

Question 11(e): Many candidates gave vague answers that were only able to gain the mark for encryption.

Question 12(b): Candidates should improve their understanding of the appropriate use of a virtual machine — the response from many candidates was ‘emulator’.

Question 12(d): The purpose of address and data buses was often well answered in the old Higher but the lack of accuracy of language in expressing the concept was evident for this paper.

Question 13(c): Most candidates knew how cache is used but often they did not relate their answer to the code as required by the question.

Question 14(b): Many candidates did not provide sufficient technical detail in their response.

Question 15(a): Although candidates often understood that an array was required, many did not understand how to use the data type of ‘athleteData’.

Question 15(b): Candidates struggled to answer this question using their variable from question 15(a).

Component 2: assignment

Many candidates did not give enough detail in the analysis of the task. Candidates who had successfully designed their information system did not always implement what they had designed.

Program design was poor at times. Candidates often used large amounts of code, and there was evidence that the design was done after the code had been written.

Candidates can be confused regarding data flow in programming design. They tend to confuse it with the requirements for their programming language or with inputs and outputs to the program. Candidates should understand that data flow simply shows which variables are passed into the sub program and those that are required to be passed out of the sub program.

Section 3: Advice for the preparation of future candidates

Component 1: question paper

Centres should give more consideration to the preparation of candidates for the content now in the Higher Computing Science course which was previously in the Advanced Higher of the predecessor qualification, such as question 15 of this year’s paper.

In particular, the use of records and also the key characteristics of languages, particularly object-oriented languages, were areas where candidates need to improve their understanding and problem solving.

Component 2: assignment

It is important that candidates are able to evidence each part of the assignment. Assessors should support the candidates by ensuring that they use the checklists in the assignments.

It should be noted that program designs cannot be written in SQA reference language as this is not a contemporary design notation but a language that is used in the exam paper to test understanding of coding.

Centres should ensure that they are using the most up-to-date version of the assignment.

Grade Boundary and Statistical information:

Statistical information: update on Courses

Number of resulted entries in 2015	1182

Number of resulted entries in 2016	4454

Statistical information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark -				
A	19.9%	19.9%	886	107
B	23.5%	43.4%	1045	92
C	27.1%	70.5%	1207	77
D	12.1%	82.6%	541	69
No award	17.4%	-	775	0

Decision Making Record statement

The overall demand of the course assessment was lower than intended and so all grade boundaries were set higher than intended.

General commentary on grade boundaries

- While SQA aims to set examinations and create marking instructions which will allow a competent candidate to score a minimum of 50% of the available marks (the notional C boundary) and a well prepared, very competent candidate to score at least 70% of the available marks (the notional A boundary), it is very challenging to get the standard on target every year, in every subject at every level.

- Each year, SQA therefore holds a grade boundary meeting for each subject at each level where it brings together all the information available (statistical and judgemental). The Principal Assessor and SQA Qualifications Manager meet with the relevant SQA Business Manager and Statistician to discuss the evidence and make decisions. The meetings are chaired by members of the management team at SQA.

- The grade boundaries can be adjusted downwards if there is evidence that the exam is more challenging than usual, allowing the pass rate to be unaffected by this circumstance.

- The grade boundaries can be adjusted upwards if there is evidence that the exam is less challenging than usual, allowing the pass rate to be unaffected by this circumstance.

- Where standards are comparable to previous years, similar grade boundaries are maintained.

- An exam paper at a particular level in a subject in one year tends to have a marginally different set of grade boundaries from exam papers in that subject at that level in other years. This is because the particular questions, and the mix of questions, are different. This is also the case for exams set in centres. If SQA has already altered a boundary in a particular year in, say, Higher Chemistry, this does not mean that centres should necessarily alter boundaries in their prelim exam in Higher Chemistry. The two are not that closely related, as they do not contain identical questions.

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