OCR
Oxford Cambridge and RSA

A LEVEL

Moderators' report

COMPUTER SCIENCE

H446
For first teaching in 2015

H446/03/04 Summer 2022 series

Contents

Introduction

Our moderators' reports are produced to offer constructive feedback on centres' assessment of moderated work, based on what has been observed by our moderation team. These reports include a general commentary of accuracy of internal assessment judgements; identify good practice in relation to evidence collation and presentation and comments on the quality of centre assessment decisions against individual Learning Objectives. This report also highlights areas where requirements have been misinterpreted and provides guidance to centre assessors on requirements for accessing higher mark bands. Where appropriate, the report will also signpost to other sources of information that centre assessors will find helpful.

OCR completes moderation of centre-assessed work in order to quality assure the internal assessment judgements made by assessors within a centre. Where OCR cannot confirm the centre's marks, we may adjust them in order to align them to the national standard. Any adjustments to centre marks are detailed on the Moderation Adjustments report, which can be downloaded from Interchange when results are issued. Centres should also refer to their individual centre report provided after moderation has been completed. In combination, these centre-specific documents and this overall report should help to support centres' internal assessment and moderation practice for future series.

Advance Information for Summer 2022 assessments

To support student revision, advance information was published about the focus of exams for Summer 2022 assessments. Advance information was available for most GCSE, AS and A Level subjects, Core Maths, FSMQ, and Cambridge Nationals Information Technologies. You can find more information on our [website](#).

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General overview

The A Level Computer Science Programming Project is an extensive assignment that challenges candidates to undertake a significant software/app development project. This series has seen a large increase in the number of submissions and, as ever, there have been an exciting range of ideas attempted.

Many candidates have chosen to make games, database driven apps remain popular, there have been many successful web applications written and some more esoteric attempts including machine learning, mods for existing software and command line utilities.

Submissions have been made in all of the listed programming languages in the course specification plus many more. A huge range of language frameworks and development environments have been explored by candidates as well.

Most centres are submitting candidates' project reports as part of the sample for moderation through digital means now and this is hugely appreciated by the moderation team. It is reminded that centres can upload work digitally using the Repository or work can be posted using a USB stick or DVD.

Moderators are keen to agree with centres' marks where they can. Where rationale and page numbers of evidence are provided it makes it easy to see why a mark has been given and to see if it can be agreed with.

Some centres provided no comments or simply copied and pasted criteria from the mark scheme. This creates more of a challenge where it is not immediately obvious why a mark has been given or where evidence isn't in the obvious place.

There are still a few examples of candidates choosing projects that are not appropriate for study at this level. Candidates are best served by getting the project choice correct in the beginning. Help and guidance for project choice is available on the OCR website.

> **OCR support**
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> i   Should there be any doubt about a candidate's choice of project, please email ComputerScience@ocr.org.uk for review and feedback from the Subject Advisor Team. Please use 'project setting guidance document' downloadable from the subject webpage to find out how to submit for a review and feedback.

This specification has been operating for many series now and it is clear that centres that have been submitting from the beginning have formulated good habits with their candidates. It has been seen that some centres are even setting standards too high and submitting marks too harshly. A good reminder is to review the sample projects on the OCR website regularly to be reminded of the national standard.

Candidates who did well generally did the following:	Candidates who did less well generally did the following:
• chose a project that they had a deep interest in and challenged themselves with the scope of it. • understood the importance and relative mark weighting of the design section. • created an ongoing development journal showcasing the full development process and all testing. • allowed themselves plenty of time to complete a detailed and comprehensive evaluation section.	• documented the analysis section well but then provided fewer examples of evidence for later sections as motivation slipped. • coded large swathes of the solution and then retrospectively tried to document the process. • did not provide evidence of testing during development or post-development. • rushed the evaluation section and did not realise the importance of the number of marks available for it.

Most common causes of centres not passing

Here follows a breakdown of common issues arising from moderation for each marking section:

Analysis

This section has generally been well understood by the majority of centres and candidates often submit good evidence, especially as their motivation is often high during the initial stages of the project. It should be noted that a range of existing systems should be reviewed and the features from them reflected on and evaluated as potential features for the candidate's system. There is no need for candidates to have real life stakeholders for this project. Instead, they can describe a potential target audience and may choose to include interviews/questionnaires using a focus group from that audience.

Design

The algorithms section is often a weak point. To score the higher mark bands, the algorithms need to be explained and justified well so that a competent programmer can be reasonably assured they form a complete solution. Many candidates submit planned testing tables, and this is good evidence. Best practice is to plan for using valid, invalid and boundary data in the tests. This can apply to testing during development and post-development.

For usability features design, candidates should create screen designs before the development process. Some candidates included screenshots of the final solution in this section which is not the spirit intended.

Implementation

Stronger projects will clearly show the full development process. This is best achieved in the form of a development journal which allows the candidate to discuss the solution as it is being made, show screenshots of the partially made system and the associated code.

Testing During Development

To justify high marks in this section, candidates need to provide extensive evidence of testing during the development process. This can be in the form of a written commentary as part of the development journal. Candidates can include discussion of errors found and the debugging journey undertaken to fix them. Showcasing code that is not working and the fix is helpful evidence. Candidates can also include a testing table at the end of each iteration. It should be noted that a table alone is not sufficient evidence of testing and should be backed up with screenshots and/or video evidence of the tests occurring.

Testing for Evaluation

Candidates should submit further evidence for testing that is distinct and different to that used during development. This could be final testing tables with valid, invalid and borderline data. Again, these should be backed up by screenshots and/or video evidence. To score the highest marks, candidates need to fully test the robustness of the system by showing it has been tested to destruction. They should also involve potential end users – this could take the form of an end user survey.

Evaluation

Many candidates did not use evidence from the tests when assessing success criteria. This is vital as it will allow the candidates to fully reflect on the measurable components of each success criteria. When attempted, the majority of the marking points were generally completed well, although this section often suffers from being the final part of a long project and candidates often appear pushed for time.

Common misconceptions

Misconception
?   The spirit of the unit is that candidates embark on a significant software/app development project. This should be conducted using a professional grade programming language and, therefore, markup code used for making user interfaces is not sufficient on its own.

Some examples that do not meet this requirement are:

- website projects that use front-end skills in HTML and CSS alone. HTML and CSS form markup code only and do not have the features of high-level programming languages. To make the project suitable for study at this level, the candidate should combine the front-end skills with JavaScript, calls to the server and suitable data processing with a server-side language such as PHP, Python or Perl
- mobile apps or Windows Desktop apps where the candidate has heavily focused on UI. Similar to the point above, no more than limited credit should be given for creating a user interface with XAML markup or Swift UI. To make it suitable for this level, candidates could include a local database or, again, connect to a server and make suitable asynchronous calls for data processing
- any block programming environment such as Scratch, App Inventor or Game Maker.

Avoiding potential malpractice

Understanding how best to incorporate online tutorials into student learning should be given top priority. There is nothing wrong with a student using a tutorial as a starting point for a section of code as long as the tutorial is referenced correctly. However, marks can only be submitted for work the candidate has completed themselves. It would be expected that once the initial starting point has been reached, the candidate then takes the learning into a new and original direction.

Projects that consist entirely of tutorials compiled together, even if referenced well, would therefore score zero for development.

Plagiarism of code
Projects that are found to be entirely followed from an online tutorial without referencing are effectively plagiarised and would be a malpractice concern. Centres should be vigilant that students understand this distinction before working on their projects.

Helpful resources

Centres are reminded that there are several exemplars provided by OCR that can be referred to when assessing candidates' coursework.

OCR offer a project checking service. Project ideas can be emailed to: ComputerScience@ocr.org.uk for review and feedback from the Subject Advisor Team.

Supporting you

Post-results services

If any of your students' results are not as expected, you may wish to consider one of our post-results services. For full information about the options available visit the OCR website.

Keep up-to-date

We send a weekly roundup to tell you about important updates. You can also sign up for your subject specific updates.
If you haven't already, sign up here.

OCR Professional Development

Attend one of our popular CPD courses to hear directly from a senior assessor or drop in to a Q&A session. Most of our courses are delivered live via an online platform, so you can attend from any location.

Please find details for all our courses on the relevant subject page on our website or visit OCR professional development.

Signed up for ExamBuilder?

ExamBuilder is the question builder platform for a range of our GCSE, A Level, Cambridge Nationals and Cambridge Technicals qualifications. Find out more.

ExamBuilder is **free for all OCR centres** with an Interchange account and gives you unlimited users per centre. We need an Interchange username to validate the identity of your centre's first user account for ExamBuilder.

If you do not have an Interchange account please contact your centre administrator (usually the Exams Officer) to request a username, or nominate an existing Interchange user in your department.

Active Results

Review students' exam performance with our free online results analysis tool. It is available for all GCSEs, AS and A Levels and Cambridge Nationals.

It allows you to:

- review and run analysis reports on exam performance
- analyse results at question and/or topic level
- compare your centre with OCR national averages
- identify trends across the centre
- facilitate effective planning and delivery of courses
- identify areas of the curriculum where students excel or struggle
- help pinpoint strengths and weaknesses of students and teaching departments.

Find out more.

Need to get in touch?

If you ever have any questions about OCR qualifications or services (including administration, logistics and teaching) please feel free to get in touch with our customer support centre.

Call us on
01223 553998

Alternatively, you can email us on
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