## AQA Logo

## 2017 Project log

## A-level Computer Science (7517)

## Computing Practical Project (7517/C)

Please attach a copy of this form securely to the front your candidate’s work.

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| **Centre number** |  | **Centre name** |
| 64395 |  | Godalming College |
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| **Candidate number** |  | **Candidate’s full name** |
| 4125 |  | Ciaren Quigley |
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**Section one - the project**

To be completed by the candidate and returned to the teacher for approval before the project is started

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| Project title | Gravitational Simulation and Assessment |
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| Project type | | problem  investigation |
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| **Outline description**  A javascript/html5 program that provides an onscreen assessment in gravitational physics problems alongside a “to scale” simulation using the data in the question. |

To be completed by the teacher:

From the given description the project is at a standard required for A-level Yes/~~No~~

**Section two – project assessment**

To be completed by the teacher

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| **Analysis** | | | |
| **Level** | **Criteria** | **Mark** | **Comments/evidence** |
| 3 | Fully or nearly fully scoped analysis of a real problem, presented in a way that a third party can understand.  Requirements fully documented in a set of measurable and appropriate specific objectives, covering all required functionality of the solution or areas of investigation.  Requirements arrived at by considering, through dialogue, the needs of the intended users of the system, or recipients of the outcomes for investigative projects.  Problem sufficiently well modelled to be of use in subsequent stages. | 7-9 | Sound investigation, looking in depth using several techniques from the main user’s perspective. Inclusion of the secondary users (students) views could have enhanced understanding. Inclusion of the analysed documents would help the reader when looking at specification sheets. The number of formal analysis techniques is limited, far more detail about current assessment and current simulations could have been included.  The dialogue is short but insightful and plausibly provides a link between the investigation and the requirements.  The requirements are mostly detailed, measurable and specific enough to be of use in the design.  With reference to the standardisation meeting and exemplar material, this is a much stronger analysis than “Project C” but realistically falls short of Level 3 due to the omissions. Top of Level 2 |
| 2 | Well scoped analysis (but with some omissions that are not serious enough to undermine later design) of a real problem.  Most, but not all, requirements documented in a set of, in the main, measurable and appropriate specific objectives that cover most of the required functionality of a solution or areas of investigation.  Requirements arrived at, in the main, by considering, through dialogue, the needs of the intended users of the system, or recipients of the outcomes for investigative projects.  Problem sufficiently well modelled to be of use in subsequent stages. | 4-6 |
| 1 | Partly scoped analysis of a problem.  Requirements partly documented in a set of specific objectives, not all of which are measurable or appropriate for developing a solution. The required functionality or areas of investigation are only partly addressed.  Some attempt to consider, through dialogue, the needs of the intended users of the system, or recipients of the outcomes for investigative projects.  Problem partly modelled and of some use in subsequent stages. | 1-3 |
|  | No evidence presented | 0 | **Mark awarded: 6** |

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| **Documented design** | | | |
| **Level** | **Criteria** | **Mark** | **Comments/evidence** |
| 4 | Fully or nearly fully articulated design for a real problem, that describes how all or almost all of the key aspects of the solution/investigation are to be structured/are structured. | 10-12 | Pages 13🡪19  Data (flow and storage), Code structure, Process all considered diagrammatically.  UI is clearly back designed, but annotated clearly and is a useful inclusion although lacks specific details.  No process for the simulation and there is little supporting text to explain the diagrams.  Overall the lack of detail limits this as a partial design but with strong elements. |
| 3 | Adequately articulated design for a real problem that describes how most of the key aspects of the solution/investigation are to be structured/are structured. | 7-9 |
| 2 | Partially articulated design for a real problem that describes how some aspects of the solution/investigation are to be structured/are structured. | 4-6 |
| 1 | Inadequate articulation of the design of the solution so that it is difficult to obtain a picture of how the solution/investigation is to be structured/is structured without resorting to looking directly at the programmed solution. | 1-3 |
|  | No evidence presented | 0 | **Mark awarded: 6** |

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| **Technical solution – completeness** | | | |
| **Level** | **Criteria** | **Mark** | **Comments/evidence** |
| 3 | A system that meets almost all of the requirements of a solution/an investigation (ignoring any requirements that go beyond the demands of A-level). | 11-15 | The requirements are very sensible for a system of this type and include all the elements I would expect. There are plenty of additions that could be made… but not essential to the requirements of this system. As the questions are generated at runtime there isn’t an absolute need for a question editor  Whilst there isn’t a standalone review of the objectives, the testing evidence covers most of the listed requirements, there are a few sensible changes (simulation speed) but these are reasonable and well executed. The obvious omission is the inclusion of teacher reports. This was handled very lightly in the objectives, but neither a report for this system or a plug-in to the colleges systems has been created. It is reasonable to expect some way to get the collected data from the system without accessing the database directly. As this could have been handled with 2-3 fairly straightforward reports the completeness stays at Level 3  (advice was very clear in the standardisation meeting about awarding for this section) |
| 2 | A system that achieves many of the requirements but not all. The marks at the top end of the band are for systems that include some of the most important requirements. | 6-10 |
| 1 | A system that tackles some aspects of the problem or investigation. | 1-5 |
|  | No evidence presented | 0 | **Mark awarded: 12** |

**NOTES:**

Completeness is not only about how well a solution meets the objectives set by the student but also what an expected technical solution might perform for this particular project.

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| **Technical solution – techniques used** | | | |
| **Level** | **Criteria** | **Mark** | **Comments/evidence** |
| 3 | The techniques used are appropriate and demonstrate a level of technical skill equivalent to those listed in Group A in **Table 1**.  Program(s) demonstrate(s) that the skill required for this level has been applied sufficiently to demonstrate proficiency. | 19-27 | Initial thoughts were that the simulation is a little weak in terms of functionality.. BUT referring to Table1 Group A and standardisation exemplars.  The execution of the projects includes:   * Complex OOP Model (composition and inheritance used well) * A-Level standard physics equations (using question templates and random (within set parameters) data * Webscripts (client and server-side) (Javascript/PHP/AJAX) * SQL (parameterised but simple)   The complexity of the object model and the handling of the physics are clearly Table1 Group A. Execution of the client/server model and SQL are very strong Table1 Group B. Overall safe to assess at level 3  In terms of Coding style almost everything from Table 2 is covered apart from the annoying use of hard-coded database connections. It’s hard to tell how effective the use of cookies would be if a database connection was lost… I can’t see a routine to re-upload when the connection is restored so this is a deficiency.. but standard validation is used throughout, so the program is reasonably defensively written.  It is just the overall effectiveness of the solution and breadth of Table A skills that are limiting the marks to be awarded with a very minor mark down for coding style. The quality of skills shown in terms of coding is high |
| 2 | The techniques used are appropriate and demonstrate a level of technical skill equivalent to those listed in Group B in **Table 1**.  Program(s) demonstrate(s) that the skill required for this level has been applied sufficiently to demonstrate proficiency. | 10-18 |
| 1 | The techniques used demonstrate a level of technical skill equivalent to those listed in Group C in **Table 1**.  Program(s) demonstrate(s) that the skill required for this level has been applied sufficiently to demonstrate proficiency. | 1-9 |
|  | No evidence presented | 0 | **Mark awarded: 22** |

**NOTES:**

The mark to be awarded, within the level, should be decided upon using these factors:

1. The extent to which the criteria for the level have been achieved
2. The quality of the coding style that the student has demonstrated
3. The effectiveness of the solution.

It would be beneficial for these to also be referred to in the comments/evidence section.

Table 1 referred to is on pages 95-96 of the specification (version 1.4 December 2016)

Continue on a separate sheet if necessary

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| **Testing** | | | |
| **Level** | **Criteria** | **Mark** | **Comments/evidence** |
| 4 | Clear evidence, in the form of carefully selected representative samples, that thorough testing has been carried out. This demonstrates the robustness of the complete or nearly complete solution/thoroughness of investigation and that the requirements of the solution/investigation have been achieved. | 7-8 | Video works as shows results as described in the table.  The tests cover all elements of the system demonstrating that they work. The tests include elements of white-box showing actual values and data stored. TEX testing has been carried out. (7:10)  It can be seen that the main requirements are met (excluding the ones that were not developed and penalised in completeness)  I would have like to have seen how the system coped with no connection but overall this is still Level 4 |
| 3 | Extensive testing has been carried out, but the evidence presented in the form of representative samples does not make clear that all of the core requirements of the solution/investigation have been achieved. This may be due to some key aspects not being tested or because the evidence is not always presented clearly. | 5-6 |
| 2 | Evidence in the form of representative samples of moderately extensive testing, but falling short of demonstrating that the requirements of the solution/investigation have been achieved and the solution is robust/investigation thorough.  The evidence presented is explained. | 3-4 |
| 1 | A small number of tests have been carried out, which demonstrate that some parts of the solution work/some outcomes of the investigation are achieved.  The evidence presented may not be entirely clear. | 1-2 |
|  | No evidence presented | 0 | **Mark awarded: 7** |

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| **Evaluation** | | | |
| **Level** | **Criteria** | **Mark** | **Comments/evidence** |
| 4 | Full consideration given to how well the outcome meets all of its requirements.  How the outcome could be improved if the problem was revisited is discussed and given detailed consideration.  Independent feedback obtained of a useful and realistic nature, evaluated and discussed in a meaningful way. | 4 | No overt consideration of the objectives!  User feedback is interesting and discussed including element for improvement and future improvement. |
| 3 | Full or nearly full consideration given to how well the outcome meets all of its requirements.  How the outcome could be improved if the problem was revisited is discussed but consideration given is limited.  Independent feedback obtained of a useful and realistic nature but is not evaluated and discussed in a meaningful way, if at all. | 3 |
| 2 | The outcome is discussed but not all aspects are fully addressed either by omission or because some of the requirements have not been met and those requirements not met have been ignored in the evaluation.  No independent feedback obtained or if obtained is not sufficiently useful or realistic to be evaluated in a meaningfully way even if attempted. | 2 |
| 1 | Some of the outcomes are assessed but only in a superficial way.  No independent feedback obtained or if obtained is so basic as to be not worthy of evaluation. | 1 |
|  | No evidence presented | 0 | **Mark awarded: 2** |

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| **Total mark 55 /75** |
| **Concluding comments:**  A real mix of quality which is no doubt down to time management. |
| **Signed: Date:** |