

# NEA Exemplar Project: Commentary

Project title:

**'RED (Reverse Engineering Database)'**

GCE A-level Computer Science (7517)

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## Introduction

This NEA exemplar project commentary is provided to give teachers an indication of the assessment of the project. This A-level specification is for first assessment in June 2017

This exemplar project commentary should only be used to enable teachers to gain a level of understanding of the marking requirements for the NEA. As a result teachers should use this only as a guide to the forthcoming live assessments.

This project and commentary is provided as an example only. It cannot be used to accurately determine standards in the future.

Teacher Standardisation events will be used to prepare teachers for the first NEA assessment. At these meetings teachers will be made aware of the standard.

## Note

This is an exemplar project that has been produced from a project that was entered for the previous specification. Sections from the old specification that are no longer required have been removed. The subsections left might contain elements that are not fully required by the new specification but give a good idea as to what the contents of a project might be. As this project has been adapted from the old specification and not standardised we have indicated which level it would be marked in for each section of the NEA.

## General Comments

This new specification has a greater requirement for a student to provide a well-developed list of objectives in the analysis section. This particular student develops a list of broad objectives that could be improved by splitting them up further and making them more defined.

The project is clearly suitable for an A-level and offers up the possibility of developing some complex algorithms for creating the ER diagram (which this student does not fully complete). The objectives are therefore appropriate to test for completeness when assessing the technical solution.

Section	Commentary	Level
<b>Analysis</b> <i>(Project pages 4 to 11)</i>	<p>The student has provided good background information for the project. There is evidence of research by the inclusion of web links visited and analysis of an interview. It is also clear that the student has an appreciation as to the requirements of the problem and how it might be solved.</p> <p>A need has been identified and investigated alongside gathering information from the end-user.</p> <p>The list of objectives is appropriate for the project but could be developed further.</p> <p>To improve this section the student could have:</p> <ul style="list-style-type: none"> <li>developed the objectives further by breaking them down so that they have more detail</li> <li>researched further in the analysis stage the requirement to add some thought to the drawing of the diagram and how this could be linked to the number of relations</li> </ul>	Level 2
<b>Documented Design</b> <i>(Project pages 12 to 26)</i>	<p>The design section gives a nice overview of the proposed working of the solution by breaking it down into stages and describing what happens in each stage. There is evidence of pseudo-code that explains the extraction of metadata and also the creation of the ER diagram. It can be seen from the design section that the final objective of refining the diagram will not be met and therefore only describes how most of the key aspects are to be structured.</p> <p>The student has chosen to demonstrate the design by explaining a run through with an example database. Whilst this is not a required part of the design section it is a method of describing how the system works.</p> <p>Marks are awarded for documenting the design of the technical solution so this can happen before and/or after the implementation.</p>	Level 3

	<p>To improve this design the student could have:</p> <ul style="list-style-type: none"> <li>spent some time thinking about how the diagram could be adapted with reference to the number of tables and the number of connections between each table</li> <li>explained in more detail how the queries for extracting data actually work and perhaps tested them inside a SQL server and shown the resulting set of data</li> </ul>	
<p><b>Technical Solution</b></p> <p><i>(Project pages 27 to 41)</i></p>	<p>The technical solution is definitely of an A-level standard but is not developed far enough to put this project into the top level for technical solution. The last objective, to refine the diagram, would have offered opportunity to develop the technical solution further and include some variety of optimisation algorithms to arrange the diagram.</p> <p>In terms of completeness the system does not meet the last objective which was to organise the ER diagram in an effective way. If the student had missed this objective out of the analysis then the project should still go in level 2 as the core requirement of the system was to produce an ER diagram and it would be expected that a student would consider how this could be drawn effectively. A quick look at the evidence for test 11 shows the current problems facing the solution.</p> <p>When marking for completeness we are looking at both the objectives set by the student and also an understanding of what might be appropriate of an A-level student for satisfying the requirements of the initial problem definition.</p> <p>There are some aspects to the technical solution that match the requirement for a complex technical solution:</p> <ul style="list-style-type: none"> <li>cross table parameterised SQL query to extract the metadata (but this has come from a source)</li> <li>creation of local tables in C# whilst the program runs to store the extracted metadata (generated DDL code)</li> <li>dynamic creation of a ER diagram</li> <li>there is evidence of defensive programming and exception handling (try catch statements )</li> </ul> <p>To improve this technical solution, the student could have:</p> <ul style="list-style-type: none"> <li>developed an algorithm to control the layout of the ER diagram in a more effective way</li> <li>named their elements, such as <i>Form 2</i>, to reflect what they are and make the code more understandable</li> </ul>	<p><b>Technical Solution:</b> Level 2 (top part of level)</p> <p><b>Completeness:</b> Level 2 (top part of level)</p>

<p><b>Testing</b></p> <p><i>(Project pages 42 to 58)</i></p>	<p>As testing can take place as part of the design and development we can look at the design section where the student shows how the project works by running through connecting to a test database.</p> <p>There is a good introduction and overview that refers to testing during development and also how the system was tested for robustness.</p> <p>The actual representative testing section is rather brief and does not fully demonstrate that all requirements have been tested. If the teacher can authenticate that extensive testing has been carried out throughout the project then this project, as is the case here, can be marked at level 3.</p> <p>To improve this section the student could have:</p> <ul style="list-style-type: none"> <li>• provided more testing to show how the ER diagrams produced actually reflect what was in the SQL database</li> <li>• provided evidence of the contents of the saved images to show that they actually do store an image of the ER diagram</li> </ul>	<p>Level 3</p>
<p><b>Evaluation</b></p> <p><i>(Project pages 59 to end)</i></p>	<p>The evaluation against the objectives has been performed with a comment against each. As the initial objectives were broad this has limited the amount of critical appraisal that can be completed in this section. We have an overview as to how the objective was met but little consideration about whether the method chosen was suitable or how it could be improved.</p> <p>The user feedback did come from an end-user and does pick out elements of the solution that could indeed be improved upon. Perhaps if the end-user had been involved across more of the project the issues with the user interface could have been corrected.</p> <p>The reflection on the user feedback is present but perhaps does not take up the opportunity to actually reflect on the issues presented by the user and consider how these could be rectified.</p> <p>The consideration of possible extensions is done well and does show an appreciation from the student as to the areas of the solution that could be developed further to bring improvements.</p> <p>Whilst this evaluation has been marked in level 4 it might have been clearer if the project did have a more detailed list of objectives as has already been noted.</p>	<p>Level 4</p>