## Computer Science Project

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### Analysis

Students are expected to:

• Produce a clear statement that describes the problem area and specific problem that is being solved or investigated.

• Outline how they researched the problem

• State for whom the problem is being solved/investigated

• Provide background in sufficient detail for a third party to understand the problem being solved/ investigated

• Produce a numbered list of measurable, "appropriate" specific objectives, covering all required functionality of the solution or areas of investigation (Appropriate means that the specific objectives are single purpose and at a level of detail that is without ambiguity)

• Report any modelling of the problem that will inform the Design stage, for example a graph/network model of Facebook connections or an E-R model. A fully scoped analysis is one that has:

• Researched the problem thoroughly

• Has clearly defined the problem being solved/investigated

• statements of objectives which clearly and unambiguously identify the scope of the project

• modelled the problem for the Design stage where this is possible and necessary.

### Design

Students are expected to articulate their design in a manner appropriate to the task and with sufficient clarity for a third party to understand how the key aspects of the solution/investigation are structured and on what the design will rely, eg use of numerical and scientific package libraries, data visualisation package library, particular relational database and/or web design framework.

The emphasis is on communicating the design; therefore it is acceptable to provide a description of the design in a combination of diagrams and prose as appropriate, as well as a description of algorithms, SQL, data structures, database relations as appropriate, and using relevant technical description languages, such as pseudo-code.

Where design of a user interface is relevant, screen shots of actual screens are acceptable.

### Technical Solution

Students should provide program listing(s) that demonstrate their technical skill.

The program listing(s) should be appropriately annotated and self-documenting (an approach that uses meaningful identifiers, with well-structured code that minimises instances where program comments are necessary). Students should present their work in a way that will enable a third party to discern the quality and purpose of the coding.

This could take the form of:

• an overview guide which amongst other things includes the names of entities such as executables, data filenames/urls, database names, pathnames so that a third party can, if they so desire, run the solution/investigation

• explanations of particularly difficult-to-understand code sections; a careful division of the presentation of the code listing into appropriately labelled sections to make navigation as easy as possible for a third party reading the code listing.

Achievement of the latter, to an extent, is linked to the skill in applying a structured approach during the course of developing the solution or carrying out the investigation.

### Testing

Students must provide and present in a structured way for example in tabular form, clear evidence of testing.

This should take the form of carefully selected and representative samples, which demonstrate the robustness of the complete, or nearly complete, solution/thoroughness of investigation and which demonstrate that the requirements of the solution/investigation have been achieved.

The emphasis should be on producing a representative sample in a balanced way and not on recording every possible test and test outcome.

Students should explain the tests carried out alongside the evidence for them.

This could take the form of:

• an introduction and overview

• the test performed

• its purpose if not self-evident

• the test data

• the expected test outcome

• the actual outcome with a sample of the evidence, for example screen shots of before and after the test, etc, sampled in order to limit volume.

### Evaluation

Students should consider and assess how well the outcome meets its requirements.

Students should obtain independent feedback on how well the outcome meets its requirements and discuss this feedback.

Some of this feedback could be generated during prototyping. If so, this feedback, and how/ why it was taken account must be presented and referenced so it can be found easily.

Students should also consider and discuss how the outcome could be improved more realistically if the problem/investigation were to be revisited.