INTRODUCTION TO DATABASES

COURSEWORK 2 - VIDEO SCREENCAST GUIDELINES

The total duration of the recording should not exceed **eighteen minutes.**

The video screencast must include a screencast showing a walkthrough demonstration of:

- Your database design accompanied by a review of the SQL code base written in a Jupyter Notebook.
- Execution of your code to build and populate the database in SQL Server (or MySQL or Azure Data Studio).
- Execution of the Python and SQL code in the connected Jupyter Notebook to demonstrate that your database supports each of the business processes.

Ideally, the video screencast should show a **live view of the presenter**, positioned in the bottom right hand corner of the recording.

Please use **Panopto Capture** to record your video screencast - accessed by clicking the **'Panopto'** link from the menu on the left of the Blackboard site. While **Panopto Capture** is preferred, several free tools are available to support the dual recording feature – computer screen and presenter - (e.g., https://screencast-o-matic.com/).

Please refer to the University's Panopto support pages for information on Using Panopto Capture and Submitting to a Panopto Student Video Assignment.

Database Design: Overview of design process

Correctness, completeness and evidence of understanding of the design process required to implement the database.

1. Present and explain the Entity Relationship diagram. Cardinality ratios and participation constraints should be clear from the diagram alone. This diagram can be created using any relevant online tool or downloaded software. Recommended tools can be found on Blackboard.

2. Discuss and justify the all cardinality ratios defined in your diagram.

3. Discuss and justify the all participation constraints defined in your diagram.

4. Present your relational schema used to aid the design of the database. Primary keys and foreign keys should be clear from the diagram alone and their location within the database should be justified. The schema can be presented in a word document and must follow the style presented in lectures. The tables in the schema should all be in 3rd normal form.

5. Discuss the various data types chosen for the attributes in your database. Justifications should be given for each different data type used. You do not need to justify a data type more than once.

6. Discuss how you ensured your database is fully normalised.

7. Discuss any assumptions made during the design process.

Database Implementation: SQL Code Overview and SQL Code Execution Walkthrough

Correctness and completeness of SQL including appropriate use of datatypes, constraints, etc and evidence of understanding of any measures taken in the construction of the database necessary to support the given business processes.

1. Open the software you used to create your database and present an overview of the SQL code, in which you should discuss the approach adopted to ensure the code is well organised and structured.

2. Evidence the use of comments in the code.

3. With reference to your code, present the structure and linkage of each table in your database and discuss the use of constraints, default values, ON DELETE clauses, stored procedures, triggers, etc as appropriate for the business scenario.

4. Discuss any measures taken in the construction of the database necessary to support the given business processes.

5. Execute your code to construct and populate the database. If demonstrating the construction and/or the population of the database is not possible, explain why this is the case.

6. Show the contents of each table.

7. If appropriate, demonstrate any known issues/bugs that exist within your code and indicate whether these were due to technical complexity, lack of time or some other reason.

Business Processes: Query Execution Walkthrough

Correctness, completeness and evidence of understanding of SQL queries to support the given business processes, including awareness of any limitations and/or assumptions made.

1. With reference to the code in your Jupyter Notebook, explain the structure and demonstrate the execution of each query implemented to support the given business processes. If a live demonstration of the Jupyter Notebook's code execution is not possible, explain why this is the case and, instead, demonstrate the code and its output in another manner e.g. screenshots of the Jupyter Notebook cells and their outputs.

2. Clearly state any assumptions made and briefly discuss your approach to implementing each of the given business processes.

3. If appropriate, demonstrate any known issues/bugs that exist within your code and indicate whether these were due to technical complexity, lack of time or some other reason.