# INTRODUCTION TO DATABASES

## COURSEWORK 2 - Supplementary Design Document and Video Screencast Guidelines

The total duration of the recording should not exceed **ten minutes,** while the Supplementary Design Document should not exceed 3 pages.

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

- A review of the SQL code base written in a SQL Server/MySQL/Azure Data Studio.
- Execution of your code to build and populate the database in SQL Server/MySQL or Azure Data Studio.
- Execution of the SQL code SQL Server/MySQL/Azure Data Studio 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.

## Part 1: Supplementary Design Document

## Database Design: Overview of design process

This section of the **Supplementary Design Document** should demonstrate the correctness, completeness, and depth of understanding of the design process required to implement the database. The document should be concise (maximum three pages) and include the following components:

1. **Entity–Relationship Diagram**

   Present and explain the ER diagram. Cardinality ratios and participation constraints should be evident from the diagram itself. The diagram may be created using any suitable online tool or software. Recommended tools are practiced in Labs.

2. **Cardinality Ratios**

   Discuss and justify all cardinality ratios defined in your diagram, explaining how they reflect the requirements of the business scenario.

3. **Participation Constraints**

   Discuss and justify all participation constraints defined in your diagram, ensuring they are aligned with the business processes described.

4. **Relational Schema**

Present the relational schema that supports your database design. Primary keys and foreign keys must be indicated, and their placement within tables justified. The schema should follow the style demonstrated in lectures, and all tables must be in **Third Normal Form (3NF)**.

5. **Data Types**

   Discuss the data types chosen for each attribute. Justify the choice of data types and lengths where relevant. You do not need to repeat justifications for data types that appear multiple times.

6. **Normalization**
   Explain how you ensured that the database schema is fully normalized to 3NF, with examples where appropriate.

7. **Limitations and Assumptions**

   State any limitations/assumptions made during the design process, clarifying how these limitations/assumptions shaped your model.

## Part 2: Video Screencast Part

## 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 SQL Server/MySQL/Azure Data Studio, explain the structure and demonstrate the execution of each query implemented to support the given business processes. If a live demonstration of the SQL Server/MySQL/Azure Data Studio 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 SQL Server/MySQL/Azure Data Studio code 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.