COMPX223-24A Project Deliverable 2

For this deliverable, you will build a small desktop database application for your client, EquipEase Rentals, a company that provides a wide range of tools and equipment for short-term rental. This deliverable is to be done individually, not as part of a group. This deliverable consists of two parts.

Part 1: Starter guide (20 points)
In the Project Resources on Moodle you can find a starter guide pdf, a series of pre-recorded tutorials, the starter guide Template Project. Following this guide will show you how to connect to the database, read data, write data, and set up a simple user interface for your application.

Task 1: Complete these tutorials.

Task 2: Show the completed starter guide project to a tutor during the lab times to get it marked off. Note that this should be done **before 31th May**.

Part 2: EquipEase Rentals Application (80 points)

You will begin by creating a new database using the provided SQL on Moodle. This SQL creates a simplified version of the database you created for D1 and fills it with mock data. Then, you will create an application using C# in Visual Studio .NET that connects to the database and implements the functionalities described in this document. You will give a live demonstration of your application to a tutor or lecturer, and a schedule for demonstrations will be made available on Moodle. The application you are developing for EquipEase Rentals will facilitate equipment booking and rental processes, enabling staff to efficiently record equipment returns. Additionally, it will provide comprehensive rental data, including statistics and summarized information.

Task 1: EquipEase Rentals Database (5 points)
Create a new database and use the provided SQL file to create new tables and insert mock data. You may add additional data or modify the mock data when testing your application but be prepared to briefly explain what your dataset includes when presenting.

Task 3: Display Rental Records (20 points)
Task 3.1: Your application should display a list of rental records, enabling users to view important information such as equipment type, start time, return time, the branch name where the equipment was hired, the branch name where it was returned, and the email addresses of the customers who rented the equipment.
Task 3.2: Users should be able to filter the list of records to display only upcoming rentals (i.e., those with start times later than the current time), ongoing rentals, or past rentals.

Task 4: Book/hire equipment (15 points)
Task 4.1: Allow users to create a new equipment booking or hire. Users should be able to input relevant information such as the equipment name, start time, pick-up branch, and other necessary details. The application should validate the input and store the information in the database.
Task 4.2: Allow users to select equipment based on the most recently purchased date.

Task 5: Return equipment (15 points)
Task 5.1: Allow staff to record equipment return. Users should be able to
input relevant information such as the equipment ID, return time, and the branch to return to.
Task 5.2: Implement a trigger to automatically update the availability of equipment and the
branch name in the Equipment table once the equipment is returned.

Task 6: Summary Report (10 points)
Allow users to view statistics and summarised information about rental records.
Create a summary report. This report should show a variety of aggregated data including:
- The number of unique customers who rented equipment in each branch in 2023.
- Average rental duration per equipment type in 2023.
- Most popular equipment type rented in each branch in 2023.
- The total number of rentals per month in 2023.
- Total income generated by each equipment type in 2023.

The summary report should be part of the application, not a separate document.

User interface and error handling (15 points)
Error handling (5 points). For a passing grade, your application must be able to be
demonstrated to the marker without errors. To receive a high grade, you must be able to
demonstrate that your application has error handling,

Resistance to SQL injection attacks (5 points). For To demonstrate SQL injection resistance
you should be prepared to show your code to the marker.

Good interface (5 points). User friendly interface to avoid data errors such as invalid date
format, or number format. Allow users select input data from a list.

Do not use any data grids for displaying or requesting any information.

Bonus mark
A bonus mark will be awarded to any student who can demonstrate any of the following
features:
- When renting equipment, staff can select equipment from a list of available
  equipment at each branch, sorted by purchase date (2 points).
- When returning equipment, staff can select a branch from a list of the branches where
  the equipment can be returned (2 points).
- Use chart showing a greater variety of useful statistics information and allow users to
  filter the data interactively. For example, users should be able to select specific
  equipment, branch, time period, etc. See C# Chart Demo code for some code to get
  you started (5 points).

Appendix: marking rubrics (100 points)

Task 1: Starter Guide (20 points)

Complete application, including login, register, browsing user sessions, and error handling. **20 points**	Login, register, and browsing user sessions working **15 points**	Login and register pages working **10 points**	Login page working **5 points**	No application **0 points**

Task 2: EquipEase Rentals Database (5 points)

Database and dummy data are complete. Any additional test data in the database is explained during presentation. **5 points**	Dummy data is complete, but additional test data is included and not explained **4 points**	Dummy data is incomplete **3 points**	Incomplete or incorrect database **2 points**	No EquipEase Rentals database **0 points**

Task 3: Display Rental Records (20 points)

Displays rental records (including the equipment type, start time, due time, return time, the branch name hired from, and the branch name returned to, and the email of the customers) and no errors. Can filter the rental data to show only past/current/future rentals. **20 points**	Displays rental records and no errors. filter missing. **15 points**	Displays rental records. Errors, or missing data, or filter missing. **10 points**	Displays rental records, some data missing. **5 points**	Cannot display rental data. **0 points**

Task 4: Book/hire equipment (15 points)

A new booking/hire can be created. Allow users to choose equipment based on the most recently purchased date. Data inserted into table. **15 points**	A new booking/hire can be created. Data inserted into table. **10 points**	A new booking/hire can be created with some errors. **5 points**	A new booking/hire cannot be created. Data not inserted into table. **0 points**

Task 5: Return Equipment (15 points)

Equipment can be returned. Data inserted into table. A trigger to update availability and the branch name in the Equipment table. **15 points**	Equipment can be returned. Data inserted into table. **10 points**	Equipment can be returned with some errors. **5 points**	Equipment cannot be returned. Data not inserted into table. **0 points**

Task 6: Summary Report (10 points)

Complete summary report. No errors, and can explain SQL query used. **10 points**	Summary report missing one query, no errors. **8 points**	Summary report missing two queries, no errors. **6 points**	Has partial summary report with some errors. **4 points**	No report **0 points**

User interface and error handling (15 points):

Error handling. **(5 points)**	Resistance to SQL injection attacks. **(5 points)**	User friendly interface. **(5 points)**

Bonus Mark (One of the following):

When renting equipment, staff can select equipment from a list of available equipment at each branch, sorted by purchase date. **(3 points)**	When returning equipment, staff can select a branch from a list the branches where the equipment can be returned. **(2 points)**	Interactively produce and visualise statistics about the rentals using charts. **(5 points)**