Evaluation of Final Project (Unit 11) vs. Initial Proposal (Unit 6)

1. Scope and Objective

- **Unit 6:** The focus of the team project was placed on the creation of a cloud-based database system for a retail store. The primary objectives were outlined as the migration of local data to the cloud and the design of a loyalty programme intended to improve customer retention. Emphasis was placed on foundational database design and high-level functionality.
- **Unit 11:** The work in the individual project was built upon the efforts of the team, with the database system being implemented and refined. The system's functionality was demonstrated through SQL code, while database modelling concepts were explored, and comparisons between SQL and NoSQL systems were provided. Compliance with legal and industry standards was also ensured.

2. Technical Depth

- **Unit 6:** A logical database design was presented in the team report, including an Entity-Relationship Diagram (ERD) that illustrated relationships between entities. Adherence to third normal form (3NF) ensured minimal data redundancy. MySQL Workbench and Snowflake were selected as the core tools for database implementation, and an ETL pipeline was proposed for data integration.
- **Unit 11:** Greater depth was provided in the individual project, where practical implementation was demonstrated. SQL code was included for table creation, data insertion, and query execution. The functionality of the loyalty programme was illustrated using test data, and insights were generated through analytical queries such as identifying best-selling products and evaluating customer engagement. The potential integration of NoSQL databases for future scalability and flexibility was discussed.

3. Security and Compliance

- **Unit 6:** Security was addressed as a general requirement, with encryption, role-based access control (RBAC), and GDPR compliance outlined. These measures were presented at a high level without specific implementation details.
- **Unit 11:** Security measures were explored in greater depth, with compliance with ISO/IEC 27001 standards being integrated. Auditing and monitoring were emphasised, and enhancements were proposed, such as:
    - Regular audits for GDPR compliance.
    - Robust encryption protocols.
    - Role-based access tailored to specific user roles.
    - Secure backup and recovery mechanisms.

4. Innovations and Recommendations

- **Unit 6:** Recommendations were focused on scalability and security. Horizontal and vertical scaling options were mentioned, and the benefits of Snowflake's elastic capabilities were discussed. However, future enhancements were not elaborated upon.
- **Unit 11:** A series of actionable improvements were proposed in the individual project, which included:
    - Optimisation of ETL processes to improve efficiency and reduce redundancy.
    - The introduction of a hybrid SQL-NoSQL approach to accommodate semi-structured data, such as customer interactions and metadata.
    - The delay of reward point allocations until the return period had ended, to minimise fraudulent behaviour.
    - The use of analytics to address underperforming stores and enhance loyalty programme strategies.

5. Analysis and Business Insights

- **Unit 6:** Analytical components were implied but not demonstrated. The focus remained on designing a robust database structure capable of supporting future analysis.
- **Unit 11:** Tangible analytical results were provided through the execution of SQL queries, generating business insights such as:
    - Identifying best-selling products.
    - Measuring customer retention rates.
    - Highlighting low-performing stores and suggesting actionable solutions. These outputs served to demonstrate the database's value in supporting decision-making and improving business operations.

6. Implementation and Realism

- **Unit 6:** The proposal was kept within the design phase, with no practical implementation. A foundation was laid for a functional database system, but the design was not validated.
- **Unit 11:** Validation of the design was carried out through practical execution. SQL scripts, test data, and query results were included to show that the proposed database could function effectively. This demonstrated a transition from theoretical planning to practical application.

Conclusion

The completed project in Unit 11 was successfully built upon the foundational work completed in Unit 6. Significant depth was added, with the database's practical functionality and analytical capabilities being demonstrated. Security, compliance, and scalability concerns were also

addressed. By providing tangible outputs and actionable recommendations, the final project not only validated the initial proposal but also positioned the system for future growth and adaptability.

Key Differences

Aspect	Unit 6 Initial Proposal	Unit 11 Final Project
Scope and Objective	Focused on foundational database design.	Implementation and refinement of the design.
Technical Depth	Logical design presented with ERD and 3NF.	Practical implementation with SQL code and analysis.
Security	General security requirements outlined.	Specific measures proposed with ISO/IEC 27001.
Innovations	Recommendations focused on scalability.	Actionable improvements suggested.
Analysis	Analysis implied but not demonstrated.	Analytical insights provided through SQL queries.
Implementation	Remained in the design phase.	Validated through practical execution.
Future-Proofing	Limited future enhancements suggested.	Explored hybrid SQL-NoSQL scalability.