

Revised Database Project Plan

Phase 2: Application Development (30%)

Deadline: December 7th, 2025 (11:55 PM)

Objective:

In this phase, students will implement a complete .NET application that interacts with the SQL Server database designed in Phase 2. The application must support dynamic selection of the business logic implementation (LINQ-based vs Stored Procedure-based) at runtime using the Factory Design Pattern. The front-end must be built using the .NET Framework.

Instructions:

1. Business Logic Layer (BLL):

Two independent, interchangeable BLL implementations are required:

- **LINQ / Entity Framework (EF) BLL:** Implement business operations using EF + LINQ queries.
- **Stored-Procedure (SP) BLL:** Implement equivalent business operations using stored procedures.

Both BLLs must implement the same interface(s) so that they are interchangeable.

2. Front-End:

- Create a simple, minimal, functional frontend implemented in .NET Framework UI technology of your choice.
- Must provide clean navigation and user-friendly forms/pages for all major entities.
- All forms **must** implement input validation (type checks, required fields, ranges).

3. Factory Pattern:

- Implement the factory design pattern where either LINQ-based or the SP-based BLL is instantiated at runtime.
- The user must be able to switch between both BLL implementations.

4. Use of Data Features (Mandatory):

Your application must actively leverage the SQL Server features that have been taught.

Your project must implement your use cases through the following:

- Stored Procedures
- User-Defined Functions
- Triggers (AFTER and INSTEAD OF)
- Common Table Expressions (CTEs)
- Views
- Indexes (various types)
- Table Partitioning

Your application must meaningfully interact with these features.

Deliverables:

1. Application:

- Zip the project into: groupX_p3.zip
- Submit the folder via LMS

2. SQL Feature Summary:

- A one-page document listing all sql features implemented. Provide details and their purpose in 1-2 lines each. Be specific.

Submission Instructions:

- Submit the application and summary document (PDF) in one folder.
- Folder name format: *groupX_p3.zip*
- Only one submission per group is allowed.