

# Revised Database Project Plan

The objective of this project is to design and implement a database-driven application with a .NET-based frontend and Microsoft SQL Server backend. The project will demonstrate two implementations of the Business Logic Layer, LINQ Queries and Stored Procedures, at runtime. The application should be able to dynamically switch between the two approaches using the Factory Design pattern during runtime.

## Phase 0: Project guidelines

- **Team Structure**
  - Up to 4 students. Can work with fewer.
  - Cross section grouping is allowed.
- **Tech Stack**
  - **Frontend:** C# (.NET framework)
  - **Backend:** Microsoft SQL Server
  - **ORM:** Entity Framework
  - **Design Pattern:** Factory Pattern
- **Rules**
  - Submissions after the deadline for any phase will result in a 20% reduction. A 5% reduction will be applied for every late day one day after the deadline has passed.
  - In case of any plagiarism, you will be awarded a 0 for your efforts.
  - All group members should be present during project vivas. If a member is not present, they will receive 0 for that phase.
  - Failure to effectively explain your contributions/efforts in the group will result in 0 in that phase.
  - All submissions will be made in LMS

## **Phase 1: Project Proposal & ER Diagram (10%)**

**Deadline:** *November 4, 2025 (11:55 PM)*

### **Objective:**

The purpose of this phase is to establish the conceptual and structural foundation of your application. Students are required to identify a well-defined problem domain, formulate a project proposal, and design the database schema through an Entity-Relationship (ER) diagram. This stage emphasizes your analytical planning and logical design of your application to ensure clarity, feasibility, and scalability of your application moving forward.

### **Instructions:**

#### **1. Environment Setup:**

Each group must install and configure Microsoft SQL Server Management Studio (SSMS) on Windows to design and visualize the ER diagram. If you're using a Mac, use a Windows Virtual Machine (VM) and then install SSMS. You can use smartdraw to create your ER diagram.

#### **2. Template Adherence:**

A formal submission template is provided on LMS -> Assignments -> Project - Phase 1

### **Deliverables:**

Each group must submit the following documents:

#### **1. Project Proposal Document:**

Each group must submit the following components as a single, well-formatted document.

##### **a. Title and Description (1 - 2 paragraphs):**

Provide a concise and descriptive title of your project. The project's description should summarize the system's purpose, primary domain (healthcare, education, retail), and its overall structure and functionality.

##### **b. Problem Statement Motivation:**

Clearly define the real-world problem your system aims to address. Describe how you aim to solve this and explain why your proposed application is necessary.

##### **c. Objective and Major System Features:**

List key objectives of your system, what it is designed to achieve, and how it will achieve it. Outline the system's major features, operations, and outcomes. Each feature should align with the objectives and contribute to solving the identified problem.

#### **2. Entity-Relationship Diagram:**

Each group must design an ER diagram that illustrates the database architecture supporting your application. The diagram must:

- Include all entities, their attributes, and relationships
- Properly identify one-to-one, one-to-many, and many-to-many relationships.
- Be logically consistent with the system's functional requirements.

**Submission Instructions:**

- Submit the final document (PDF) on LMS.
- File name format: *groupX\_p1.pdf*
- Make sure all group members' names and roll numbers are written.
- Only one submission per group is allowed.