

Simple Airline Management System (SAMS)

CS4400: Introduction to Database Systems
Course Project: Spring 2025 Semester

Project Purpose

In this project, you will analyze, specify, design, implement, and document an online system based on the provided scenario description. You are required to use the classical methodology for relational database development. The system will be implemented using a relational DBMS that supports standard SQL queries. You will use your localhost MySQL Server (Version 8.0 or above) to implement your database and the application. You cannot use any other software like Access or SQLite. Please ask the Instructors and TAs if you have questions.

Project Phases

Inputs (we provide to you...)

| | | |
|---|--|---|
| <ul style="list-style-type: none">• Scenario Description• Sample Data Elements | <ul style="list-style-type: none">• Enhanced ERD (EERD)• Initial Data Set (in a Non-Normalized Format) | <ul style="list-style-type: none">• Physical Database Schema with Initial Data Set• View & Stored Procedure Shells |
| Phase I | Phase II | Phase III |
| <ul style="list-style-type: none">• Enhanced Entity Relationship Diagram (EERD) | <ul style="list-style-type: none">• Relational Schema• Physical Database Schema with Initial Data Set• Unhandled Exceptions List | <ul style="list-style-type: none">• Implemented Views & Stored Procedures• Any Supporting Views and Related Structures |

Outputs (...you turn in to us)

Phase I Directions

In Phase I, your task is to review the scenario description we've provided and then translate the requirements that you've identified into an (Enhanced) Entity-Relationship Diagram (EERD). Your EERD must follow these specifications and guidelines:

[1] Your EERD must reflect the requirements presented in the scenario description as completely and reasonably possible using the EERD modeling features mentioned below.

[2] You may use any of the features described in Chapters 3 & 4 of the course textbook that were covered in class, to include, but are not limited to:

- strong entities
- candidate and partial keys
- weak entities & identifying relationships
- one-to-one, one-to-many and many-to-many binary relationships with combinations of total and partial participation
- attributes of varying types (i.e., simple, composite, multivalued, derived)

- superclass & subclass (i.e., overlapping, disjoint) relationships
- union relationships.

[3] You may not use EERD features drawn from other sources, textbooks, references, etc.

[4] There is NOT a single, "perfect/textbook" solution for this problem. You might have to make choices (i.e., "judgment calls") when selecting which modeling features to include in your diagram, and how you will structure and connect those features.

[5] We will assess the correctness of your EERD by examining three main aspects of your design:

- Completeness: Does your design allow you to store the entity and relationship information as required by the scenario description?
- Constraints: Does your design reflect the relationships and constraints between the entities as required by the scenario description?
- Conciseness: Does your design avoid unnecessary features such as (but not limited to) unused entities, relationships, and attributes?

[6] The final EERD **must** be produced digitally. In other words, it cannot be hand-written or drawn. This is to facilitate the grading of the final product to ensure that it is readable. We recommend using a variety of software that includes, but is not limited to the following:

- Draw.io
- PowerPoint

Submission Checklist

Each team needs **one of its members** to upload the deliverables to Gradescope. When submitting, ensure that all members are added to the submission. Failure to do so will result in a **2-point penalty** to their overall project score. The other team members should log in to their individual Gradescope accounts and check to ensure that all files have been uploaded correctly and are linked to their team's submission. Please include your team numbers in the file names.

Your submission should include the following deliverables compiled into **one pdf document**:

- A file named **cs4400_phase1_schema_team#.pdf** containing your Enhanced Entity-Relationship Diagram (EERD)

Version History

| Version | Date | Notes |
|---------|------------------|-----------------|
| 0 | January 15, 2025 | Initial Release |