CSCI UA.0060 — Spring 2026

Group Project — Database-Driven Information System

Overview

Organizations rely on databases and web interfaces to organize complex information, coordinate activity, and maintain shared records across many different roles. As systems grow in size and complexity, it becomes increasingly difficult for individuals to understand how resources are being used, how activities relate to one another, and how current actions affect future outcomes.

In this project, you will design and implement a **database-backed information system** based on a detailed organizational description. You will analyze the description, model the underlying system using an Entity Relationship Diagram (ERD), implement the database, and build a simple web interface that presents meaningful information derived from the data.

The focus of this project is **system modeling, data organization, and interpretation**, not branding, marketing, or visual polish. The web component exists to demonstrate how structured data can be queried, summarized, and presented in ways that support understanding, coordination, accountability, or planning within an organization.

Project Options

You will choose **one** of the provided organizational descriptions.
All project options are **equivalent in scope, complexity, and expectations**.

Each description represents a complex organization with shared resources, time-based usage, multiple roles, and layered responsibilities. The goal is not to model every detail perfectly, but to design a coherent and well-reasoned system that reflects the core structure of the organization.

Deliverables

Upload the following to your group GitHub repository:

1. A PDF of your Entity Relationship Diagram (ERD)
2. A data export of your database (as done in Assignment 5)
3. A written analysis report describing your design decisions
4. The complete project source code
5. A Team Evaluation document (optional)
6. A group presentation

Filenames should reflect your **Group Name**.
For example:
GroupName_ERD.pdf

Core Requirements

1. System Analysis and ERD

Carefully read your chosen organizational description and identify the key entities, relationships, and constraints that define the system.

Create an ERD that captures:

- the main entities involved
- the relationships between them
- appropriate primary keys and foreign keys
- any important constraints implied by the description

The description may contain ambiguity, conflicting requirements, or missing details. This reflects real-world system design.

You have two acceptable approaches:

- ask for clarification, or
- make a reasonable design decision and document it clearly in your analysis report

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2. Scope and Completeness

It is rarely practical to model every detail of a complex system. You must decide which aspects of the system are most important to model fully.

However, **all details in the description must be accounted for**, either:

- directly in your ERD and database design, or
- indirectly through explanation in your analysis report

To be considered **B-level work**, your ERD should include **at least 15 tables**.
To be considered **A-level work**, your ERD should include **at least 20 tables**.

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3. Database Implementation

After completing the ERD, implement the database and populate it with sufficient data to support meaningful queries.

- Minimal or trivial datasets are not sufficient.
- As a guideline for **B-level work**, your database should represent activity over **at least one quarter** of time.
- **A-level work** should demonstrate additional depth, realism, or complexity.

The appropriate number of records depends on your model. If you are unsure, ask.

All tables should be normalized to **Third Normal Form (3NF)**.

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4. Queries and Interpretation

You will design a set of queries that transform raw records into meaningful information.

Simply listing rows from a table does **not** meet this requirement. Queries should:

- involve aggregation, grouping, or joins across multiple tables
- answer questions that would be difficult to resolve without a database
- help make sense of activity, usage, relationships, or patterns in the system

Examples include:

- summaries over time
- comparisons across categories
- usage patterns
- resource allocation
- activity trends

To be considered **B-level work**, include **at least 5 distinct queries**.
A-level work should include **8 or more** well-chosen queries.

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5. Web Interface

You will create **one or two web pages** that display the results of your queries.

The web interface:

- does not need to be fully interactive
- does not need user authentication

- does not need to support data entry

Its purpose is to demonstrate how database-driven information can be surfaced for human use.

Results may be displayed as:

- numbers
- tables
- charts
- summaries

A **B-level interface** is functional and clear.
An **A-level interface** includes additional refinement, variation, or insight.

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6. Analysis Report

Your analysis report should explain:

- key design decisions
- assumptions you made
- tradeoffs or limitations in your model
- how ambiguities in the description were handled
- how work was divided among team members

Clarity and reasoning matter more than length.

Grading Breakdown

- ERD — 25%

- Database Implementation — 25%
- Queries — 25%
- Web Interface — 15%
- Analysis Report — 10%

B-level work (80–92%) demonstrates solid understanding and correct application of course concepts.
A-level work (92–100%) demonstrates depth, insight, and strong system design.

Exceptional work that meaningfully exceeds expectations may receive additional credit.

Project Milestones (Spring 2026)

Milestones are intended to support progress and provide feedback.
They are **not graded**, but missing a milestone deadline will result in a **5-point penalty**.

Prospective timeline: any changes will be announced in class:

Milestone 1 — Thursday, February 26

- ERD (PDF)
- Draft Analysis Report
- Clear evidence of system understanding and team planning

Milestone 2 — Thursday, March 26

- Proposed queries
- Initial database exports
- Wireframe or mockup of the web interface

Final Projects and Presentations Due — Thursday, April 30 - Tuesday, May 5th

All required files must be committed to GitHub by the deadline