CS3431: Project Description
B-term, 2011

Project: Building a Database Application

General Instructions:

- One project during the term.
- The project is done in teams of three.
- The project is divided into phases over the term. Each phase has its own instructions and deliverables.
- Each student should have an Oracle account to build and run the final database project.

Project Description:

The project requires you to design and implement a database application from a domain of your choice, e.g., banking system, hospital database, library database, university-registration system, etc. The project involves collecting the application requirements, designing the database, specifying which operations will be supported on the data, and building the database along with an interface to perform the operations.

The project will be evaluated based on: (1) creativity of envisioning the database application, (2) your mastery of the course material and how to apply it to the project at hand, (3) the variety of requirements that you will collect about the project either design requirements, e.g., relationships and constraints among objects, or operational requirements, e.g., queries over the data, and (4) your comprehensive testing of your system. The instructor and/or TAs may extend the requirements if the proposed ones were not enough.

Submissions:

Report submissions can be in class or electronically on blackboard.wpi.edu

Project Phases:

Phase 0 (Form Teams/ Select Domain):

Due Date: Oct. 28, 2011 (8:00am)
Short description: Form teams of three, and select the database application you would like to design and build.
Detailed description/Instructions: phase0.pdf
Deliverables: Report

Phase 1 (Conceptual Design):

Due Date: Nov. 4, 2011 (8:00am)
Short description: Describe your application, define the design requirements, define the operational requirements, and create an ERD model.

Detailed description/Instructions: phase1.pdf
Deliverables: Report

Phase 2 (Logical & Relational Algebra):

Due Date: Nov. 11, 2011 (8:00am)
Short description: Refine/extend your initial design based on the new material you learn, and then create a logical design (relational tables). Express the queries using relational algebra.
Detailed description/Instructions: phase2.pdf
Deliverables: Report

Phase 3 (Normalized Design, SQL Queries, and Running System):

Due Date: Nov. 22, 2011 (8:00am)
Short description: Apply the normalization rules to create a final schema design. Then express the operational requirements (queries) using SQL queries. Finally, convert your design to a running system on Oracle.
Detailed description/Instructions: phase3.pdf
Deliverables: Report + Demonstration to TAs

Phase 4 (Updates/Triggers and Interface):

Due Date: Dec. 6, 2011 (8:00am)
Short description: Allow updates and inserts into the database, use triggers to propagate these updates to the derived data automatically, and build a user interface for querying the data.
Detailed description/Instructions: phase4.pdf
Deliverables: Full-project report + Demonstration