COP 4710 – Database Systems – Fall 2012

Term Project Overview

Overview

In this project you will design a database and implement a practical application using the knowledge you will gain throughout this course. The project will be completed in phases, progressing from conceptual design, logical design, normalization, and implementation. Your database will be implemented using MySQL (Oracle and MS SQL Server also may be used but you're on your own as far as setting them up is concerned). Completion of the project requires submission of different components at various due dates throughout the semester as well as the submission of a final report and system demonstration. This is an individual project. This document is intended to be an overview only. Additional details will be presented in class and subsequent documents.

The Project

Phase	Description	Due Date	Points
1	Identification of "real-world scenario"	October 11th	5
2	Conceptual design	October 25th	25
3	Logical Design with Normalization	November 1st	20
4	Implementation	November 29th	35
5	Demonstrations and Final report	demos – begin December 3rd report due - December 6th	15

Phase 1

Identify the "real-world scenario" that you wish to model in your database. This can be any real or imaginary scenario that you wish to model. The project will probably be easiest to visualize if you restrict yourselves to a business environment or something that you are quite familiar with, but this is not required.

Think about what products/services your business will sell. The business constraints and requirements. Identify the information you will need to collect to support your database system.

Example scenario: You are hired to design a database system for a small grocery store. Your job is to design, construct, and maintain a database that will keep track of inventory, do billing, generate reports, etc. The relevant information would include products, services, inventory, employees, suppliers. Reports might include invoices in, invoices out, purchase orders, catering orders, customers, etc.

Your report for this phase should include the following:

1. A description of the database application that you have selected for the project. This should include the nature of the business (i.e., manufacturing, services, …).
2. A brief explanation of why you chose this real-world situation to model.
3. An analysis of the data requirements of the business. This should describe all of the relevant information that needs to be collected.
4. The types of applications that need to be supported (loads, updates, retrievals, reports, …).
5. A high-level ERD might also be useful for this phase so that I might better understand your real-world scenario. By high-level, I mean showing the entities and their relationships without attribute details or constraint details.

If you aren't sure of your idea or have a couple of different ideas you can submit more than one scenario and I might be able to indicate which would produce the better project in the end.

Phase 2

In this phase of the project you will construct your E-R diagram according to the techniques discussed in class. Completion of this phase requires the submission of a neat, readable, and complete E-R diagram depicting your conceptual design. The ERD must capture all of the constraints that are possible using the E-R modeling concepts and notations. Any constraints or requirements of the business that cannot be modeled by the E-R notation should be clearly stated in English.

Restrictions:

1. The schema of your database should have at least 5 entity types and four different relationships. This is a minimum requirement …more can be done if you wish. If possible, a weak entity type, a superclass/subclass relationship, and a ternary relationship would also be nice, but again, not all scenarios would warrant all of these types.

Phase 3

This phase involves the conversion of the ERD into a set of relational schemas to produce the database schema. This phase also includes the normalization of the relational schemas. Successful completion of this phase requires the submission of the resulting normalized relational database schema. All functional dependencies (non-trivial only) that apply to each schema should be included.

Phase 4

This phase deals with the implementation of the database using MySQL. The database will be populated with sufficient amount of data to generate meaningful results for the various queries and applications that are also constructed during this phase.

Successful completion of this phase requires the submission of your entire database implementation. All data files and applications should be included with this submission. You should create scripts (more on this later) for (a) creating your database, (b) populating your database, and (c) operations on the database.

Phase 5

During this phase you will schedule a time to meet with me and demonstrate your system. I will put a schedule of times on the course web page at a later time for you to select. This phase of the project also consists of completing a written report describing the details of your project. It will be a compilation of the reports you've submitted during the earlier phases of the project, plus descriptions of additional features and a "how-to-use" your database manual. I will provide more details on this phase later in the term.

Grading

The term project is 20% of your overall grade in the course. Each phase will be graded separately with all five phases contributing to the overall score. The points awarded for each phase are shown in the table above.