Lab 3: Conceptual Design of the Database

Due date: Tuesday, January 19, midnight/ Wednesday, January 20, in-class

This is a **team lab**. Each team submits one set of deliverables. Each team member receives the same grade for the assignment.

Course Project Information

Lab Overview

In the course of this lab, you will prepare conceptual design for the database to be used in the project.

The overview of the lab structure is below.

January 11 (evening section)/January 13 (morning section) Initial database design. We will work on identifying major components of the database model and on discovering the key relationships between them. This will involve structured activities and full class discussion.

January 13 (evening section)/January 15 (morning section) (plus outside-of-class time for both sections): teams work on the full database design.

Assignment

Initial Design

We will build the database model in two stages. First, you will work out the overall database model, and will determine the most important components of the model. After that, you will refine the model to incorporate specific requirements that the customer placed on the identified components.

Assignment: Each team shall full participate in the model-building activities that occur during the January 11 (evening section)/January 13 (morning section) lab period. As the result of these activities, each team should come up with an initial draft of a (simplified) Entity-Relationship model for the project database.

Deliverables: The key deliverable of this stage is the simplified E-R model of the customer database. Each team will produce a draft of the model by the by the end of their section's respective lab period. Each team then has until their next lab period to submit the finalized model. The model shall be put on the csc366 wiki. The model description shall consist of the following:

1. List of entity sets. For each entity set specify its attributes, and the primary key. Identify weak (if any) entity sets, specify their owners.

2. List of relationship sets. For each relationship set, identify participating entity sets, list any attributes, identify its type (one-to-one, one-to-many, many-to-many), and whether it is the defining relationship set for a weak entity set.

3. An E-R diagram of the model.

The first two parts of the E-R model description should be a text document (plain text, Word, Postscript, PDF are all ok formats). The E-R diagram shall be drawn using some graphics editor or presentation program. I use `xfig` to create diagrams that are embedded into latex/PostScript files. I use MS PowerPoint to create diagrams taht are embedded into MS Word documents.

Feel free to embed the diagram with the rest of the model description, or to put as a standalone document.

Full Database Design

Assignment. The main task of this lab is for each team to prepare an initial full database design document. By the end of the end of the January 11 (evening section)/January 13 (morning section) lab session, each team shall have the completed simple design, and shall have an understanding of which parts of the simple design need to be revised, enhanced and extended.

The teams will then use the January 13 (evening section)/January 15 (morning section) lab meeting times to expand the conceptual model to encompass all requirements to the database. In particular, the teams will start working on detailing the conceptual database design for the parts of the database that were skimmed over in the initial (simplified design).

Deliverable. Each team is given time until **Tuesday, January 19, midnight** to finalize and submit the database model document.

The design document prepared and submitted by each team shall, at a minimum, contain the following information:

- List of entity sets for the proposed database.

- List of attributes for each proposed entity set.

- Identification of primary keys for each proposed entity set.

- Identification of all weak entity sets in the proposed database, and of their discriminating attributes.

- Identification of any other entity set constraints for the proposed entity sets.

- List of relationship sets for the proposed database. For each relationship set, the following must be indicated:

    - All participating enitity sets.
    - All clarifying relationship set attributes.
    - Type of the relationship set (one-to-one, one-to-many, many-to-many).
    - If the relationship set is an identifying one for a weak entity set.

- List of other relationship set constraints.

- List of any class hierarchies and/or aggregates in the database model.

- List of relationship sets (with all the information as above) associated with the aggregates.

- E-R diagram of the proposed database design.

The design document must be typeset (handwritten submissions will not be accepted). See comments above about the software to use to draw the E-R diagram. The E-R diagram shall contain all entity sets and relationship sets. It shall also contain all key attributes for all entity sets and all relationship set attributes. Other attributes can be omitted from the diagram for clarity. All constraints that can be shown on the diagram, shall be shown.

The design document shall begin with the name of the group, and the list of group members. Note, that in general, **all documents** submitted by each team during the course of the project must contain the team name and the list of students.

Submission Instructions

The lab has the following formal deliverables:

Initial Design.   Both hard-copy and soft-copy submissions are required. The deadlines are as follows:

Section	Softcopy Due	Hardcopy Due
Morning Section:	January 14, midnight	January 15, in-class
Evening Section:	January 12, midnight	January 13, in-class

Full Design.   Both hard-copy and soft-copy submissions are required. The deadlines are as follows:

Section	Softcopy Due	Hardcopy Due
Morning Section:	January 19, midnight	January 20, in-class
Evening Section:	January 19, midnight	January 20, in-class

Submission.   Softcopy submissions must appear on your team's wiki page by the due date/time. You can choose to attach an electronic document (in, for example, MS Word or PDF format) to the wiki, or to build the documents directly on the wiki.

Hardcopy submissions: bring the hardcopies to class on the due dates for the specific parts of the assignment. **Only one hardcopy per team is required.**

Please, keep the soft copies of all submitted documents. You will be working with them in the labs that follow.