LIS 751: iSchool @ University of Wisconsin-Madison

Relational Database Project Description

Professor Kristin Eschenfelder

# Overall Project Description

For the project, you will be developing your own database, based on some users’ needs and a collection of data to which you have access.

Generally students create one of two tables of databases: collections of things or events.

* **Examples of collections of things include**: book collections, song/music collections, art collections photograph/image collections, recipe collection, baseball cards, antiques, etc. are typical types of items for a database. This database can be work-related, or personal. Items with textual data will be easier to implement than simple digital-object-only items (e.g. a picture collection with annotations, like date the picture was taken, who the photographer was, etc.). Of course, some digital objects will have metadata connected to them (e.g. music collection) already. You will be demonstrating the database in class at the end of the course. More details are below.
* **Examples of events (including time) include**: registration for a social event, purchase of a product or service, performance over time (e.g., sports), satisfaction with a service over time, task assignments & completions.

**Your relational project must include** the following:

* you should have a **minimum** of **four** tables (not **including linking tables**);
* your project must include one or more linking table in addition to the 4 minimum tables.
* a minimum of **25 records/instances** for your **tables**. **If you are working on a real case and the data records are below the minimum number, this is acceptable**.
* at least **three tables** (most likely your main table) should **have 5 or more distinct attributes/fields** (this does not include the primary key field nor any foreign key fields);
* **other tables** **can have less than five attributes/fields** (e.g. a “subject” table will likely have only 2 fields);
* Attributes:
  + You should use each of the following 7 attribute types somewhere in your database: integer, character or string, (date, time, timestamp or date/time), autogenerated numbers, decimal, Boolean, set or enum
* Queries:
  + you must create a **minimum** of **7** queries (more queries are welcome!);
  + at least **4** queries (of the 7) should display of the results from **at least two tables**;
  + **at least one** of the queries you execute directly in *the MySQL sever* should include fields from **at least 3 tables**;
  + at least one query should employ the GROUP BY function.
  + all queries should be executed directly in *the MySQL server* – but also save the queries in a text or similar file, so you can copy and paste them into your report
* your database and its queries should address the mission and most of your objectives, as you stated them.
* You should have at least one view
* You should have at least two indexes

# Components of final project

The final product of this project should include the **design** and **implementation** process of your database. Additionally, you will be **presenting** your database project to your peers at the end of this semester.

## 2.1 Design (50 points total)

You are asked to submit either a MS Word or a pdf document introducing your design process of the project and save this as: **LIS464\_design\_mylastname.docx** (or .**pdf**). It should include the following sections:

1. **Introduction (3 points)**
   * Provide a brief introduction to the project (**no more than one page**)
2. **Mission Statement and Mission Objectives:** **(7 points)**

* The *Mission Statement* should be no more than a paragraph – usually, you only need a few sentences.
* The Objectives answer general questions, such as: What do you want your database to accomplish? How will information/data be entered, updated, searched, and reported? Who is going to use this database? I’m expecting **4-6 s**uch objectives, without going into any specifics regarding the technology, fields, etc. A bulleted list structure is fine for presenting these Objectives. If you wish to write **more than 4-6** objectives, that is fine, but note that I may ask you to focus on just a few of these for your final project.
* *You can find detailed instruction on how to write* ***Mission Statement and Mission Objectives*** *in the Hernandez book,* ***on pages 100-113*** *[Selected pages are available on* ***Canvas****].*

1. **Relational Design Basics (getting anyone of the below incorrect automatically leads to -10 points)**
   * **Creation of PKs for each table**
   * **Correct placement of FKs to create relationships between tables**
2. **Conceptual Design:** **(20 points)** 
   * E-R diagram, with the final table names and fields
   * Identifying primary and foreign keys
   * Use of crowsfoot notation to identify the relationships between tables
   * Label each relationship as optional or mandatory
   * Label degree of participation for each relationship (both directions) using both numbers (x,y) and the crowsfoot notation symbols.
3. **Logical design: (20 points)**
   * Identifying primary keys and any foreign keys
   * Data dictionary table (can be in Excel as appendix): For each field, list the table that the field belongs to, field name, data type, data length, null determination (nulls allowed?), index, key type, default value, range of value and description [All data documentation items]
   * Specify business rules (include a minimum of 3 business rules,
     1. at least one should be attribute oriented
     2. at least one should be relationship oriented.
   * Define views that would be helpful to your users (min 1 view with explanation about how it would help your users)

## 2.2 Implementation (50 points)

You will build the physical database running on Orson MySQL server in DB\_\_\_\_\_\_\_\_\_

Tables: You will implement each of your planned tables in MySQL

Relationships: You will implement each of the relationships between your tables in MySQL with correctly formed PK and FK relationships. The instructor will check for correct PK and FK implementation by using the DESC command for each table and checking the foreign key tab.

**Relational Design Basics (getting anyone of the below incorrect automatically leads to -15 points)**

* + **Creation of PKs for each table**
  + **Correct creation and placement of FKs to create relationships between tables**

Queries: As part of the Final Project, you will be creating required **SQL queries** (**requirements described above)**, all of which can be directly implemented in the MySQL database system. Please also submit your queries to Canvas. Please put the required queries in **a text document** named as “**LIS464\_query\_yourlastname**.txt”.

**You are required to create all tables of your final project under USER\*\*DB3 on Orson. Please remove any files unrelated to your project from DB3.**

# Project Submission

* **Canvas**: At the end of your project, you will be submitting all the documents mentioned above onto Canvas in **a compressed file (.zip file)** for evaluation [See Canvas for due dates]**.** It should include:
  + The design file: **LIS751\_design\_mylastname.docx (or .pdf)**
  + The 7-query file: **LIS751\_query\_mylastname.txt**
* **Orson server**: You will have created the database and saved the queries onto the Orson server. I will grade them from the server.

If you have any questions, please don’t hesitate to contact me.