

## CSPB 3287: Lab #2

### Database Design

#### Overview

This assignment will provide you with practical (“hands on”) experience in Data Modeling create a key-based, fully attributed, 3 NF data model. Your assignment is to design a database, draw a data model to represent the design, and create a “physical model” of your design in the format of DDL (table create statements).

You will work with MySQL Workbench, phpMyAdmin, or a similar tool to create a database model for your 3NF results from the Data Normalization lab. You will also create an ER diagram for your final design.

#### Objectives

1. Become familiar with a professional, industrial-strength data modeling tool
2. Demonstrate ability to create a complete data model.
3. Use the data modeling software to generate the DDL to create the database you have designed.

#### Deliverables



1. A key-based, fully-attributed data model (ER diagram) depicting your database design using the output of data normalization lab as your input.

Your model should include:

- All tables with primary key attributes defined
- All attributes with data type, length, and constraints defined
- Proper table names, key names and attribute names
- All relationships between tables showing captions both ways, and proper optionality and cardinality

2. The DDL necessary to create the database you have designed. You can usually capture the SQL commands from the tool you used to create the ER diagram.

3. Documentation of any assumptions you made regarding unclear or missing requirements.

For example:

- If you create surrogate keys, name the key and explain why you are creating the surrogate.
- Note the fact that you are using auto-increment for any created surrogate keys.

## Design Input

For your data model drawing, please use the 3NF result from your data normalization lab. Come to office hours to talk about your normalization if you did not receive full points or complete the assignment.

## Submission

Use the submission link found in the **Lab # 2 Assignment** in Moodle. You will enter online text and submit a PDF file with your results. Your results can be captured in a document (such as a .txt file, MS Word or similar tool), but you must submit a **PDF** for submission. The final deliverable document you submit for this project must consist of **three** sections:

The **first** section is a picture (screenshot or exported image) of your complete data model.

The **second** section is text containing all DDL generated by your data modeling software tool necessary to create the database you have designed. You can copy the DDL as text from MySQL Workbench, and paste it into your document. The DDL must include **CREATE** statements for all tables in your database (including definition of all data columns.) Primary and foreign keys must be defined. DDL must include all constraints, including foreign key references. You can remove any extraneous DDL statements, such as the "SET" statements to capture and reset system variables and/or the parameter settings, such as "Engine=INNODB".

**Third** is a list (bullet points) of any assumptions you found necessary to support decisions you made about the process and/or database design.

## Tips

- Customer Name is a bad candidate key. Why?
- Think carefully about Entity Names. Make them clear and meaningful.
- Think carefully about Attribute Names. Make them clear and meaningful.
- Don't embed blanks in object names. Use the underscore (" \_ ") as the separator.

## Grading Rubric

- DDL (SQL commands) specify all entities and attributes with meaningful, clear names
- Primary keys are effectively designed and specified in the DDL
- Foreign Keys are defined and specified in the DDL
- ER Diagram has all relationship lines drawn
- ER Diagram has all cardinality & optionality indicated
- ER Diagram has captions going both ways for relationships