

Database Homework

[20 points/20% of final grade]

Description of Topic

This assignment will give you more experience in designing and implementing a relational database in MySQL.

Assignment Details

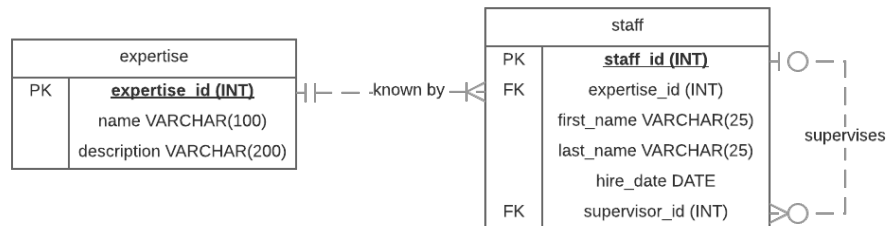
Due: See schedule in syllabus for specific date (submit on LMS by the start of class)

Length & Requirements: Submit ONE zip file containing: **1)** answers to all steps pasted in to this file and saved as one Word/PDF file and **2)** a dump of your final database from phpMyAdmin (as a .sql file), see Step 4 below for instructions

Step 1. Database Design

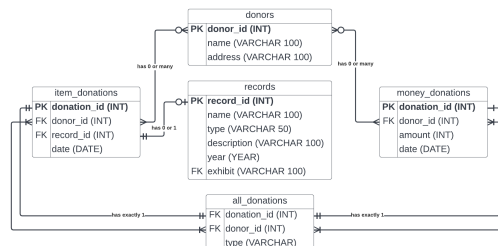
a. First, you will design a series of tables that fulfill the needs of the *museum* described below, then you will create an **ERD (entity relationship diagram) in Crow's Foot notation** to document your design. Remember to include the necessary *primary* and *foreign* keys, where appropriate, to create relations between your tables. You should include a *name* for your database and every table, as well as every *column's name* and *data type*. You may mock up your database tables in a word processing application, database design software (e.g. <https://www.lucidchart.com/> or <https://www.draw.io/>), or simply neatly sketch by hand and photograph/scan.

Example "human_resources"
database design snippet:



Museum database description:

A museum has a collection of 12,000 items. Each item has an identifier, a name, and a type. There may be descriptive information attached to each item. These may include information about the creator(s), year created, etc. The database must also store where the item is located within the museum. The museum has about 200 donors. Standard information like name and address should be stored of all donors. Donors may donate money or items to the museum's collection and a history of each donor's activity should be stored. When an item is donated to the museum, the donation date should be stored; when a monetary donation is made, the amount and date should be stored.



Step 2. Create Database in phpMyAdmin or via the command line

First, create your database, then create each of the required tables, including all the fields you have designed in the previous step with appropriate keys and foreign key constraints. Your tables, fields, and relationships should exactly match your design in the previous step. Remember to identify any fields that are primary keys, must be auto incremented, and/or can or cannot be null as you create your database. *Hint: You may want to add some test data to your database to experiment with your queries in the next step!*

Step 3. Write Queries

Based on your database design, write out the necessary queries to answer the following questions:

1. What is the name of the oldest item in the museum's collection?
`SELECT name FROM records
WHERE year = (SELECT MIN(year) FROM records);`
2. How much total money was donated to the museum in 2014?
`SELECT SUM(amount) FROM money_donations
WHERE YEAR(date) = 2014;`
3. How many items does the museum currently have of each type?
`SELECT type, COUNT(*) FROM records
GROUP BY type;`

Step 4. Submission

Finally, use phpMyAdmin or the command line to **export your full database**. In phpMyAdmin, the "Export" tab allows you to create a backup file of your database (hit "Export" -> leave the default "Quick" backup -> and hit "Go" to save your .sql file). Create **ONE zip file containing the resulting .sql file and this document (in pdf, doc, or docx format) with your answers filled in**, and then **submit the zip file on the LMS to the "Database HW" assignment link**.

Rubric for Database Homework

	A/Excellent [20-18pts]	B/Above Average [17.5-16pts]	C/Poor [15.5-0pts]
Database Design	The writer clearly describes the purpose of the database and data it will store. All tables and columns are described in thorough detail, following the assignment's instructions exactly.	The writer describes the purpose of the database and data it will store. All tables and columns are described, following most instructions exactly.	The writer somewhat describes the purpose of the database and data it will store. One or more tables and columns are not described and/or instructions are not followed.
Database Creation	MySQL database is created as designed with appropriate tables, columns and data types for every field, including all necessary foreign key constraints.	MySQL database is created as designed with appropriate tables, columns and data types for most fields and includes most foreign key constraints.	MySQL database is created but fails to follow design and/or is missing tables, columns, appropriate data types, or foreign key constraints.
Queries	Queries retrieve the desired data in an efficient and accurate manner.	Queries retrieve the desired data in a mostly efficient and accurate manner.	Queries fail to retrieve the desired data or are largely incorrect and inefficient.
Technical Requirements & Instructions	All project technical requirements are met in full, including submission process.	All project technical requirements are met in full, including submission process.	Some project technical requirements are met.