Database Setup

Database: Create and Populate Database Tables, SQL Select Statements

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1. Overview

In this homework, using MySQL Workbench, you will:

1. Create database tables:
   - web_user and user_role (exactly as prescribed) and
   - an “other” table named and designed as you propose (meeting the requirements of this document).
2. Populate all three tables with test data.
3. Generate several SQL select statements to extract data from the database.
4. Create a word document that shows your database work.

2. Before You Start

Before starting on this Homework, make sure that you have installed MySQL Workbench and tested that you can connect to your database (if you added this course late, you may have to email your instructor to request a database be created for you ASAP). From the course web page (for this assignment) you’ll find links to the following documents:

- How to install MySQLWorkbench
- How to connect to your Temple database (shows you how to find your database credentials, etc)
- MySQL Workbench Tutorial: How to create database tables and relationships (primary keys, foreign keys), enter data, and write SELECT statements

Create a word document to hold this week’s homework submission. Into this document put the following:

1. Your name and NetAccess user name
2. Your Web Site title
3. The (possibly updated) content of your home page (copy/pasted from your first Homework), where you specify the functionality of your web site and entice users to visit your site.
   - It is OK to change your mind (from last week’s homework) about the functionality that your web application will provide – as long as your database table meets the design requirements of this homework AND the web functionality you describe on your home page matches up with your database design. Basically, think of your web application as a place where users can contribute information (whatever info you designed in your “other” table) and browse information contributed by others.
4. In the next sections, you will be asked to copy/paste screens (into this word document) from MySQL Workbench – to show that you have done the prescribed database work.
   - To get a screen capture, click on Alt-PrtSc (copies active window into the clipboard), then paste into an image editor like MSPaint, then copy out just the part you want to show and paste that into the word document. If you paste from Alt-PrtSc directly into the word document, the screen capture shows too much, making things too small to read.
3. Database Requirements

a) Create Tables

*Design tables web_user and user_role exactly as shown below* (this is so that sample code will work against your database). Then add a foreign key from web_user.user_role_id to user_role.user_role_id. The MySQL Workbench tutorial (linked from this week’s homework) should provide you with everything you need to do this.

![User Role Table](image1)

Then *create your own unique table* (which I will often refer to as your “other” table). You’ll name this table and design its fields according to what you proposed in your last homework. Make sure that what you propose for your database table aligns with what you said your website will allow users to do. Also be sure to meet these additional requirements:

- Id: primary key, auto-increment, name this field with table name followed by “_id”
- Name or some kind of character identifier (require it to be unique, click on “UQ”)
- Image URL – a long varchar - perhaps varchar(200) since fully qualified URLs can be pretty long
- At least two nullable (user optional) non-character fields, e.g., integer, decimal (for money), date.
  - Note: having a “date_entered” field would not meet the requirement of “user optional” non-character field because we should not ask the user to tell us what date they entered the data (the system should know and provide it – if we wanted that). So, come up with something else besides this.
- Any other fields you like (but not too many because it will make extra work for you).
- “web_user_id”, a foreign key that points to the user who contributed this information.

Don’t use any SQL keywords as table names nor field names or else your web app will have trouble trying to run various SQL commands against your table. (Google to see list of SQL keywords, but you here are some examples that you cannot use: user, role, password, state, date.)

Note: If you are having trouble entering data due to foreign key violations, you can temporarily make your foreign keys be optional by unclicking the “Not Null” (NN) specification. But eventually, make the foreign keys required (click NN). Otherwise, when you join the data, null FKs will be excluded from the result set.

Paste a screen capture of the following table designs into your word document:

- Table design of user_role (right click the table, select “alter table”, click on the “columns” tab).
- Table design of web_user plus the “foreign keys” tab (with foreign key from web_user to user_role).
- Table design of your “other” table plus the “foreign keys” (with foreign key from your other table to web_user).
b) Add Data

Add realistic looking data into your three database tables.

- Add 3-4 records into your user_role table.
  - Since your web_user table references data from user_role, you’ll need to enter records into user_role first.
  - Try to add a record with a duplicate primary key and notice that the database management system will not let that record be inserted.

- Add 5-7 records into your web_user table.
  - At least one of these records shall have null for all nullable non character fields. At least one of these records shall have all of its fields populated.
  - Since this table has an auto-increment primary key, you do not provide web_user_id when you insert – you let the database management system do that for you.
  - Try to add a record that has an invalid (non-existent) user_role_id and notice that the database management system will not let that record be inserted.
  - Then try to delete a user_role record that has been referenced by a web_user record. Notice the DBMS will not allow you to do that either. It is the “job” of the DBMS to maintain the integrity of the DB at all times, allowing no invalid foreign key references.

- Add about 10 records into your “other” table.
  - At least one of these records shall have null for all nullable non character fields. At least one of these records shall have all of its fields populated.


c) Run SQL Select Statements

Execute each of the following SELECT statements (and paste screen captures into word doc). Each screen capture should show the Select Statement and the result set like this:

a. Run a SELECT statement that lists all the columns of all the records of your “other” table, selecting out each column and presenting them in an order that you think users would like to view the data (don’t use SELECT * ). Sort the data by whichever column you decided to show first.

b. The SELECT statement above but adding a WHERE clause so that you see some of the records but not all.

c. A SELECT statement that shows all the records from the web_user table joined with the user_role table. Show the role name first, then email address then all the other columns (from both tables) in an order you think users would like to see the data – except don’t list the role id twice. Order the records of the result set by the first columns (primary sort role name, secondary sort email address). Note: There should be as many rows in your result set as you have records in your user table. If you have a lot more (and see duplication), you have forgotten the WHERE clause that joins the two tables together.

If you don’t know how to do the above, go back and read the MySQL tutorials mentioned at the start of this document.
4. Submission Requirements

Submit your word document into canvas. It should contain the following:

- Your name and NetAccess user name
- Your Web Site title
- The content of your home page (copy/pasted from your first Homework), where you specify the functionality of your web site and entice users to visit your site. As mentioned previously, it’s OK to modify the web site functionality from the last homework as long as the functionality matches up with your database design.
- Table designs of three tables: user_role, web_user, and “other”. For web_user and “other”, also include screen captures of the foreign key tabs.
- Screen captures of the SELECT statements mentioned above (after you filled the tables with data).

The main homework document for this week asks you to publish a blog that talks about both parts (DB part and web site part). It also asks that you publish the DB document.