

University of Texas at El Paso
Department of Computer Science
CS4342: Database Management, Instructor: Dr. Natalia Villanueva Rosales
Assignment 3

Due Wednesday, May 6th by 9:59 pm.

Objective

This assignment will allow students to practice the use the PHP scripting languages to access MySQL server in a three-tier architecture and create reports.

Learning outcomes

After completing this assignment, you will be able to:

- Practice and reinforce the SQL data manipulation language.
- Practice the creation and use of views, stored procedures, triggers and queries for reporting.
- Use a scripting language to access a RDBMS and generate HTML.
- Practice and reinforce your team skills.

Tasks

1. Based on the feedback of Assignment 1 and 2, you will update your document and add the additional sections as follows:

1.1. Front page with your project name, team members and document version.

1.2. Table of contents and if applicable table of figures.

1.3. Database scope and requirements (Group integration)

- The purpose of your database system, including who will use it, etc.
- The domain you will describe, e.g., the “mini-world” modeled by your database system.
- The key entities and how they relate to each other in the database system domain.
- If applicable, information that will be out of scope of your project.

1.4. Requirements and assumptions (Group integration).

- List of functional requirements. Requirements should be correct, consistent, complete, feasible, verifiable and traceable.
- List of assumptions to avoid ambiguity in your database design. Your assumptions should not violate your requirements.

1.5. Entity-relationship model (Design).

Your model will be represented by an E/R diagram with the elements and notation introduced in class.

1.6. Relational schema (Design).

You will convert your E/R diagram to the relational model/database schema following the methodology introduced in class.

1.7. Normalized database schema (Design).

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- List all the functional dependencies (FDs) for each relation.
- Indicate the attributes or FDs that violate 1NF, 2NF or 3NF.
- Normalize your database schema/relational model in 3NF. Explain how the normalization process you carried out.
- List your final relations in 3NF.

1.8. Database schema in MySQL (Implementation).

- Create the MySQL statements required to create your tables in your team's database.
- List the CREATE TABLE statements in your document.

1.9. Database records (Implementation).

- Include a sample of database records (at least 3 per table) representative of the domain you are modeling in your team's database in the CS servers.
- List the INSERT statements in your document.

1.10. SQL Queries (Implementation).

- Include the MySQL queries required to satisfy your functional requirements. Trace back to each one of your functional requirements and show how you satisfy them. For example, you can create a list of requirements and indicate which feature (e.g., query, procedure, view) satisfies such requirement. Note that one query may satisfy more than one functional requirement. Make sure your queries also satisfy the reports needed in your system.
- List the MySQL queries in your document as well as their results.

1.11. Views (Implementation)

- Create at least two views in MySQL that are required in your project, e.g., for generating reports or display information in the interface.
- List the CREATE VIEW statements corresponding to the two views created in your document.

1.12. Procedures, triggers (Reports).

- Create at least two procedures that are appropriate for your implementation. Include in your document the definition of the procedure in the database and the results after running them. If applicable, trace back to the functional requirements they are contributing to.
- Create at least two triggers that are appropriate for your implementation. If applicable, trace back to the functional requirements they are contributing to. **Triggers will only be included in your document.**

1.13. Reports (Reports)

- For each one of the reports required in your system:
 - .1. Trace back to functional requirements.
 - .2. List the queries, functions, etc. required to generate the report.
 - .3. Include a screenshot of the data returned after running your report in MySQL.

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1.14. Graphical User Interface (Interface)

- Include a screenshot of your user interface and describe how you insert, retrieve, modify and delete data from your database.
- Include a screenshot of your user interface generating the reports required in your system.

1.15. References.

1.16. Appendix A. Attribution information (Integration)

You will include an appendix indicating the tasks that each one of the team members carried out for the Assignment 3. It should be signed by all the team members. **The signed or initialized Appendix A will be submitted along with your document.** The tasks included in this appendix and the discussions with the TA and professor will be taken into consideration when distributing the project grades.

2. You will create a Graphical User Interface to interact with your database using PHP. Refer to the PHP presentation and PHP handouts available at Blackboard **(Interface)**

2.1. The GUI lead will use the team's folder under the domain <http://cs4342.cs.utep.edu/>.

2.2. The GUI based on PHP scripts should be access through that link. Your team's scripts should be uploaded using sftp. Note that you can host the entire system on your laptop or PC, MySQL, PHP, Web server. However, **your final evaluation expects that your system runs on the Computer Science servers unless they are not available. Exceptions to review systems on local hosts can be made, email professor first.** If CS servers are unavailable, instructions for submission will be provided close to the submission date.

2.3. The GUI lead will create the appropriate PHP scripts to allow the access to your database. You should demonstrate that you are executing the queries described in 1.10 and using the views and procedures described in 1.11 and 1.12. You should also demonstrate the generation of reports in 1.13.

3. **Bonuses:**

3.1. Security, BLOB types for images, user friendly and admin friendly GUI, reusability of your code, reports formatting, saving data in different formats, using the organization colors and graphic guidelines.

Up to 10/100 points total.

Percentage

This assignment will contribute 20% to your final mark, including your presentation.

A bonus of up to 2 points will be considered based on your final deliveries and presentation.

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Deliverables

1. The Reports lead will **submit two documents using the Blackboard assignment module** by the due date as follows:
 - One PDF document per team. Your document should be named <your-team-name>-assignment3.pdf. It should contain all the sections previously described.
 - A PDF version of your Project final presentation. Presentations are 10 minutes per team, 10 minutes presentation and 2 minutes for Q/A. You should describe and demonstrate your project prototype, including the design process but with emphasis on the final implementation. Highlight how to insert, update and delete data, the use of triggers, views, reports and anything specific you want the instruction team to know. **If your presentation is not submitted by the deadline, you will not be able to use it during your final presentation.**
2. Your team's GUI should be created in the CS IIS server under folder described in 2.1 by the due date. Access to the servers will be changed to read-only by midnight.
3. **Final presentation will take place on May 7th**, if a team cannot present that day, exceptions will be made to present on May 8th. The order of the presentations will be assigned first-come, first-served. All the team members should be present for all the presentations. A **report of progress** should be done during office hours to Dr. Villanueva during the previous week as part of your grade.

No late submissions are allowed. Refer to the course website for policies on plagiarism.

Tips

Start TODAY!

Review the rubric attached to the assignment submission link that explains the sections for each one of the team member roles plus integration – color coded.

Review with the TA or the instructor any questions about Assignment 2 evaluation.

Ask question early by visiting the TA and Instructor during office hours!

References

[1] MySQL create table grammar available at <http://dev.mysql.com/doc/refman/5.5/en/create-table.html>. Accessed on 11/16/2012.

[2] PHP presentation available at <http://www.cs.utep.edu/nvillanuevarosales/CS4342/files/PHP.pdf>. Accessed on 11/16/2012.

[3] PHP handouts available at <http://www.cs.utep.edu/nvillanuevarosales/CS4342/files/PHPHandout.pdf>. Accessed on 11/16/2012.