

Group Research Project

CIS8040 Database Management Systems, spring 2010, Jack Zheng

Overview

In this project, each student group will be assigned a database topic that generally corresponds to the teaching schedule; then the group should study together and investigate the topic under the supervision of the instructor; finally the group will deliver an in-class presentation and demonstration to report their work. The purpose of the research project is to encourage students to explore one particular database topic in depth, through their own active work, and contribute their work to the overall class learning.

Administrative issues

- This is a group assignment. The group is the same as your database design project group.
- You should discuss your work plan with the instructor before starting your research; and you are encouraged to do so often during your research and preparation. I recommend you to start the work at least one month before your presentation date, and have the final (or near final) work for me to review at least 1 week before your presentation date.
- The presentations will be posted on my website; if you have privacy or intellectual property concerns, please let me know.

Presentation/Demonstration

For each presentation, generally there are three parts expected: 1) introducing concepts, theories, background information, practices, etc.; 2) demonstrating practical examples (using software tools or other ways); 3) leading class discussion. You don't have to go through these 3 parts sequentially but they should be in your presentation. It is a semi-formal presentation, but the PowerPoint slides are expected. Slides should be well designed and include abundant information for other people to follow after the class. Each presentation is expected to last about half an hour. Check the course website for the presentation schedule.

Topics

Each group will pick a different topic (some topics with brief descriptions are recommended below). Conduct a general reading on these topics and see if you are comfortable with any of them. Then list three topics in your preference order. Each group should meet with the instructor and discuss in detail on issues like research requirements, research plan, presentation format, etc. (at least one time, and one month before the presentation date).

1. Data modeling using other models and tools: study one of the other popular data models and notations (UML, IDEF1X, Semantic, etc.) and tools. Compare the chosen model to the ER model; demonstrate relevant software tools.
2. CASE Tools for database design: review CASE tools for database design; demo a real example using one CASE tool.
3. Database programmability: investigating one of the database's built-in application logic capabilities with a focus on SQL Server 2008 (stored procedure, function, trigger, etc.); demonstration of the chosen functionality.
4. Database administration: study one of the common database administration tasks (back/recovery, integration, concurrency control, etc.); demonstrate the task using SQL Server 2008 or other DBMS.

5. SQL Injection: study various ways of SQL injection and incidents; demonstrate real examples and their impact.
6. Business intelligence: study one of the BI or data mining applications (OLAP, cluster analysis, reporting, etc.); demonstration of a sample application using SQL Server 2008 Analysis Service.
7. XML database: review the concepts of XML database and demo one XML database product.
8. Oracle Implementation: an introduction of the Oracle database; demonstration of a database implemented using the Oracle database.
9. MySQL Implementation: an introduction of the MySQL database; demonstration of a database implemented using the MySQL database.
10. Distributed database: study the concepts of implementation of distributed database; demo of examples implemented on SQL Server 2008, or other DBMS products.
11. Database career path: an overview of major database jobs; find and report various market statistics; survey of major certifications; demo of certification exam questions.
12. Other interesting research topic: discuss with the instructor.

Submission

Email the following items (compressed in a ZIP file) to the instructor within one week after your presentation date. Each group submits only one copy.

- PowerPoint slides: for a fairly good research, you need to study as many references as needed. List these references at the end of the presentation slides. You are required to include at least 10 references. Briefly describe each reference. Slides without references will not be graded.
- Examples and other materials used in your presentation and demonstration.

Grading

Grading will be based on:

- Research quality: research plan, progress, content, presentation materials, references, etc.
- Presentation performance: time, style, discussion leading, slides quality, etc.