In this assignment you will work in groups of 2. The goal is to research and present a relational database technology or SQL extension that we have not discussed in class. Each group will turn in a 3–5 page report on the topic and give a short 15-minute presentation (similar to a “tutorial”) to the class on Nov. 17th.

PART I (Topic). Select a topic to research and discuss. Below is a list of possible topics. You can choose a topic other than one of the ones below, but please run it by me first.

1. **SQL Triggers and support in MySQL.** Triggers are standard in most DBMS systems. How do they work, what do they do, how are they supported in MySQL?

2. **SQL Views and support MySQL.** We briefly discussed views in class, however, there are many more details. What is a view, what are they used for, how are they defined and handled in MySQL?

3. **MySQL database engines.** MySQL supports a number of different database engines (InnoDB, MyISAM, etc.) What are these, how do they differ, and how are they used?

4. **Object-relational mappings.** Many tools have been developed to help integrate data management into object-oriented programming languages. The latest incarnation of these use mappings to/from objects and relational databases. For one of these technologies, e.g., Hibernate for Java, ADO.Net for .Net, and LiteSQL or Hiberlite for C++, and describe what it does and how it works.

5. **Stored procedures.** Many DBMSs supported stored procedures (popularized as “PL/SQL” in Oracle). What is a stored procedure, what can they be used for, How do they work in MySQL?

6. **The system catalog and support in MySQL.** A standard part of a DBMS is a catalog of the databases, tables, etc., of the DBMS instance. This information is typically stored in tables managed by the DBMS itself. In MySQL this is called the “information schema”. How does this work in MySQL, how is the catalog used, what information does it contain?

7. **Database security and support in MySQL.** What is the security model used in MySQL and how can it be used?

8. **Object Role Modeling (ORM).** This is an alternative modeling notation than the one we looked at it class. What is it and how does it differ from ER? Where is ORM used?

9. **Column-oriented DBMS.** A column-oriented DBMS stores data by column rather than by row. A number of systems support this approach (e.g., C-Store, MonetDB, LucidDB). How does it work, what are the advantages and disadvantages?

10. **BigTable-like DBMS.** These are similar to column-oriented databases, but are specialized for Map-Reduce types of applications. BigTable a google project. Others are HTable (for Hadoop), Hypertable, and Cassandra. For one of these technologies, describe what it does and how it works as well as advantages and disadvantages.

PART II (Presentation). Develop your 15-minute “tutorial”-style presentation, leaving a minute or two for questions (so it should be closer to 13 minutes than 15). As part of your presentation you should develop a set of power-point slides. Your slides (and thus your presentation) should cover at a minimum: (i) what the technology is that you looked at; (ii) the problem the technology is trying to address; (iii) how the technology works; (iv) how the technology is used; and (v) the advantages and disadvantages of the technology. You might also give a short demo of the technology (e.g., as part of iii/iv above).
PART III (Report). Write a 3–5 page report (full pages, single-spaced, 12-point font) based on your presentation. Your report should largely follow your presentation, i.e., it should describe the basic aspects of the technology, the problem it solves, how it works, how to use it, and advantages and disadvantages.