

CS/SE 157B

Section 3

# Database Management Systems II

Spring 2018

Instructor: Ron Mak

## Assignment #9

**Assigned:** Tuesday, April 17

**Due:** Monday, May 14 at 11:59 pm

Team assignment, 250 points max

### Final project

This assignment is the culmination of all the previous assignments and a chance to put together the tools and technologies you learned during the semester into a single coherent application. Use as many of the tools and technologies that are reasonable for your application, but you're not expected to use all of them.

Put your emphasis on **data management**. What will count most is how well you manage the data that you're using. A fancy client-side GUI is not required.

### Requirements

#### Data models

- Operational tables in MySQL and/or MongoDB
- Analytical tables in MySQL

#### Data operations

- Queries and updates of the operational tables.
- How the analytical tables are loaded (ETL).
- Queries of the analytical tables for data analysis (e.g., OLAP).

#### Application

- Create a front-end user application that invokes the data operations via a RESTful API.
- A fancy client-side GUI is not required.

## Tools and Technologies

- Use the tools and technologies you learned during the semester.
- Including: relational databases, data warehousing, XML, NoSQL and MongoDB, Express, REST, data virtualization with CIS. (For CIS, if we can't get the server ports opened, describe how you could have used it.)
- You don't have to use all the tools and technologies. But use as many as practicable for your application.

## Written report

- What is the application?
- What data did you use, and where did you get it? (It can be fake data.) What tools and technologies did you use?
- Overview (in words) of your data models.
- ER diagram
- Relational schema
- Star schema
- Screen shots of key user actions and their results (e.g. a table from a query).

## What to turn in

Create a zip file that contains:

- Your written report.
- Your source code directory. If it's an Express project, don't include the node\_modules subdirectory.
- Dumps of your databases. For a MongoDB database, provide a script that creates the collections.
- Instructions on how to run your application, including user names and passwords.

Submit to Canvas: **Assignment #9: Final Project**

## Rubrics

Criteria	Max points
<ul style="list-style-type: none"> <li>• <b>Project</b> <ul style="list-style-type: none"> <li>○ Operational tables</li> <li>○ Analytical tables</li> <li>○ ETL procedure</li> <li>○ Operational queries</li> <li>○ Analytical queries</li> <li>○ RESTful API</li> <li>○ Use of tools and technologies</li> </ul> </li> <li>• <b>Report</b> <ul style="list-style-type: none"> <li>○ Application description</li> <li>○ Data, tools, and technologies</li> <li>○ Data model overview</li> <li>○ ER diagram</li> <li>○ Relational schema</li> <li>○ Star schema</li> <li>○ Screen shots of key user actions and results</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>130</b> <ul style="list-style-type: none"> <li>○ 20</li> <li>○ 20</li> <li>○ 15</li> <li>○ 15</li> <li>○ 15</li> <li>○ 15</li> <li>○ 30</li> </ul> </li> <li>• <b>120</b> <ul style="list-style-type: none"> <li>○ 5</li> <li>○ 15</li> <li>○ 10</li> <li>○ 20</li> <li>○ 20</li> <li>○ 20</li> <li>○ 30</li> </ul> </li> </ul>