# **CSCI X370: Database Management**

## **Project 2: SQL Programming in Java (JDBC) and MySQL**

The Employees sample database was developed by Patrick Crews and Giuseppe Maxia and provides a combination of a large base of data (approximately 160MB) spread over six separate tables and consisting of 4 million records in total. The database schema is as follows:



You should follow instructions here to download and populate your MySQL database:

https://dev.mysql.com/doc/employee/en/

Secondly, you will need to implement a simple front-end (feel free to use any frameworks or **web** front-end technologies for 20 bonus points; regular text-based or graphical interface is also ok: no bonus points) to get user input for queries when necessary and display output data.

The list of predefined SQL queries to be implemented in the application are as follows (consider both past and current data when answering all queries):

* List department(s) with maximum ratio of average female salaries to average men salaries
* List manager(s) who holds office for the longest duration
* For each department, list number of employees born in each decade and their average salaries
* List employees, who are female, born before Jan 1, 1990, makes more than 80K annually and hold a manager position
* Find 1 degree of separation between 2 given employees E1 and E2:
  + 1 degree: E1 --> D1 <-- E2 (E1 and E2 work at department D1 at the same time)
* Find 2 degrees of separation between 2 given employees E1 and E2:
  + 2 degrees: E1 --> D1 <-- E3 --> D2 <-- E2 (E1 and E3 work at D1 at the same time; E3 and E2 work at D2 at the same time)

Your front-end can provide buttons for executing these predefined queries and display query results. Note that some queries may not return any tuples in the database. Print a simple message indicating this result.

If the result of a query exceeds 100 tuples, only display first 100 tuples.

**Programming language:** MySQL is required for database storage. Java (JDBC) is required for server-side programming.

**What to submit:** Please submit

* all source code
* a readme file
* other docs indicated by the project submission guidelines

The readme file should contain: your names, how to compile and run your code and other specifications you want to make (including your database access information for testing purposes). Please pack all your files in a zip package with the file name: project2\_ last names of your group members. For example: project2\_Miller\_Arpinar.zip

**How to Submit:**

Submit your ".zip" file using ELC. Only team leaders need to make a submission.

Do not place your solution on a public web site. Submit your own work and follow the course misconduct policy.