**CSCI 4333 Database Design and Implementation**

**Project Stage 2: Database Implementation**

Instructor: Dr. Xiang Lian

Due Date: See the course Web page

**Description**

Please use the E-R diagram in the first stage of the Project, and do the following tasks in the second stage of the Project:

1. Create two SQL scripts, oracle.sql for Oracle and mysql.sql for MySQL, that generate the database schema designed in the first stage of the Project. To enforce data integrity constraints, use PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL, and CHECK constructs within SQL’s CREATE TABLE statement.

2. Add at least two triggers in each SQL script to enforce additional data integrity constraints defined in the database design report (you may add new constraints to the report if needed).

3. Describe indexes that were automatically created (“side effects”) by Oracle and MySQL on table columns that were specified as primary keys in the CREATE TABLE statements. Add additional indexes to support efficient evaluation of queries that involve other table columns.

*For example, for the banking enterprise, a SSN can serve as a primary key of table CUSTOMER and will have the corresponding index (on the SSN column of the table). However, some queries will search customers based on their FirstName and LastName. For such queries, an index on the list of columns (FirstName, LastName) or (LastName, FirstName) may be helpful.*

*Are indexes on (FirstName, LastName) and (LastName, FirstName) different?*

4. Add INSERT statements to the SQL scripts to populate each table with a few rows.

5. Add comments to the SQL scripts to describe your implementation (e.g., how your indexes are helpful, how you tested triggers, etc.).

Execute and test your SQL scripts in Oracle and MySQL. Pay special attention to the triggers; make sure that they indeed enforce constraints (you may need to use INSERT, DELETE, UPDATE, and SELECT statements to check how they work).

**Submission**

Please submit an electronic copy of your project solution, including:

(1) student IDs and names of **ALL members in your team**,

(2) copies of your SQL scripts, and

(3) database implementation report (with screen captures of query results),

to the [Blackboard](https://mycourses.utpa.edu/). Note that, each team only needs to submit **ONE** version to the Blackboard by one of the team members.

**Grading**

Tasks 1, 2, 3, 4, and 5 receive 20 points each (100 total, if solved correctly).

If all tasks are accomplished without major errors or the design report is impressive, you can get **20 extra points**.