

## **Database Project Guidelines**

### **Due April 14<sup>th</sup>, 2022**

### **Introduction**

This course requires a database design and implementation project that will be completed in two parts. For Part 1, you will work with a team to analyze, design, and load a SQL Server 2019 database using your Systems Analysis and Design project from CIS 3343. For Part 2, you will each individually create multiple SQL scripts and create the interface for a particular user view of this implemented database.

### **SQL Server 2019 Developer Database Project Requirements**

Your group will take the Final Normalized ERD and divide the tables equally among each of the team members.

Sequence of activities:

- 1) Each team member will develop the initial Create Table SQL scripts for their own tables. The Create Scripts **MUST** be done in Native SQL! Failure to do so can result in the failure of this assignment.
- 2) After success completion, the CREATE TABLE scripts are shared with the rest of the team.
- 3) Your database is loaded with some test data and then the database relationships are established by all the team members developing the appropriate ALTER TABLE scripts which are executed against the database.
- 4) Tables are loaded with the rest of the test data. **This database MUST be loaded with enough data to demonstrate all functionality within your application. Your core tables must have at least 50 or more rows of “realistic” data. Be especially careful that the loaded data adequately reflects the functionality of your database design. This will especially be apparent with the data placed in your associative tables. The loaded data must also follow of your client’s business rules.**
  - a. The project team must develop queries that address the organization’s mandatory requirements as reflected in your **Project’s Problems and Requirements List** that was used in the Systems Analysis class (CIS 3343). The project team also must develop reports/queries which illustrate the achievement of the overall project objective(s). These reports/queries must be divided among the team members resulting in **each team member developing at least four (4) Queries. All queries must join 2 or more tables. At least one query must join 3 or more tables.**
- 5) Each team member will also develop six (6) unique Update Scripts according to the following guidelines:
  - a. 2 Insert Scripts
  - b. 2 Delete Scripts
  - c. 2 Update Scripts

**NOTE: For each of these scripts, you must show a before and an after image of the table to illustrate the results of the scripts.**

- 6) Each team member will develop a minimum of **3** Forms/GUIs using Python/JavaScript/Java which pulls data from the SQL Server 2019 Database. Each group will need to have an overall Master GUI for the entire application so that it can be used for your Presentation Demo.
- 7) **It is imperative that your Database Application be a working Python/JavaScript/Java application that gives your users the ability to Add, Change and Delete any and all of the attributes within any of the tables.**
- 8) Your GUI must use dynamic loading of all drop-down lists so that the GUI dynamically loads the drop-down list based on the most recent contents of the corresponding lookup table with the database. Therefore, every drop-down list in your GUI MUST have a corresponding lookup table in your database.
- 9) Each database MUST have a Country table and a State/Province table. The Country table must have all valid countries as recognized by the United Nations. The State/Province table must have all valid states/provinces/territories used in the US, Mexico, and Canada. The State/Province table must also include all applicable diplomatic and military mailing codes that are used in the US instead of a state code.

## **Grading**

**See the Posted Project Rubric which appears on Blackboard Learn to get a detailed breakdown of grading.**

### **Project Grade (40% of overall Final Grade for course)**

Database Design Group Project	15%
Database Implementation Individual Project	15%
Individual Data and SQL Reports	10%

## **Required Team Status Reports**

**Starting on Feb 18, 2021**, each team must submit an electronic Weekly Team Status Report by 6 pm each Thursday. These Team Status Reports must show all the team activities broken down per deliverable. Each deliverable must also show the total number of hours that each team member worked on each specific deliverable. The Status Report should also state whether the deliverable is complete. If not complete, then the team needs to estimate the number of hours left for completion for that specific deliverable. The Status Report should not exceed 4 pages in length. These Weekly Team Status Reports need to be done during the entire length of the project, with the Final Status Report submitted on **Thursday, April 14<sup>th</sup>, 2022**.

**The Final Status Report must also include an Overall Total Number of Hours worked per Team Member as well as the Final Overall Number of Hours worked as a team.**

## **Presentation Requirements**

Each team delivers an oral and visually interactive project presentation of your proposed database design using appropriate visual aids and handouts. There will be a drawing to determine the time slot and date for your team's presentation.

Each presentation should last about 30 to 40 minutes. Setup for all presentations must be completed by the beginning of class. The team presentation grade is determined by the quality of each presentation including efficient use of time, clarity of presentation, completeness, and content. **Each member of the team has to actively participate in the presentation.**

Each presentation must be a compelling demonstration that the group's database and corresponding GUI application solves the mandatory requirements for their client. The overall database design must also be communicated to the class for the class to understand how the database design supports the client's business rules needed to achieve the client's overall system objectives.

## **Group Database Implementation Project Report**

The group project report must include the following elements separated by tabs:

- **Overall Format:** the project documentation must be submitted as a single Word document with page numbers. The document **MUST** have 1.5 line spacing with standard margins. The chosen font must be readable; therefore, no font should be smaller than 10 pt. Points will be deducted for any grammatical or spelling errors. **Any tables presented must have clear column headings which do not wrap incorrectly. Column headings must repeat on all pages if the table is longer than one page.**
- **Title Page** with the client's name, the project name, team name, the team member names, and project submission date.
- **Table of contents** (using Word's TOC functionality)
- **Executive summary:** An overview of the objectives for the project, a listing of the current business problems and challenges, and a summary of your analysis which lead you to the presented solution.
- **Client Information:** Relevant client background information and discussion of the client's issues and requirements. Also include the overall project objective and project scope.
- **Benefits and Costs** – estimate the specific benefits and costs of creating and implementing this database for your client for a period spanning 5 years after implementation.
- **Project Approach** – document the database design and implementation process that you followed in the Analysis class and the work continued in this class.
- **Solution:** How does your solution satisfy the business needs/requirements?  
At minimum include the following:
  - A description of all required forms and reports (Samples of all Queries, Forms, and Reports are to be included as attachments)
  - Describe all key decisions made to your database design from the original group design at the beginning of the semester. You must show at least **5 sections** of your database ERD and discuss how your entity and relationship choices solved a particular aspect of your client's business rules.
- **Testing Process** – describe your team's protocol for testing the creation of data, usability of the database and the application. You should also discuss revisions made as a result of testing.
- **Project Improvements** – List useful **features and options that you did not implement** in your database application but could be implemented in a later release of the database. You must also state the priorities of the improvements.
- **Project Database Maintenance Issues** – list the ongoing maintenance procedures that should be conducted on an ongoing basis if this application were to be put into production status. Make sure you discuss issues such as: data cleanup, backup and recovery, maintenance of lookup tables and data archival.
- **Lessons Learned:** Discuss what you learned in this project, any unusual situations you encountered, and what you would do differently on the next project of this type. This must be in 3 sections: **What worked, what didn't work, and what your team would do differently.**
- **Project Summary** – brief recap of the project. Not to exceed one page.
- **References:** Cite **ALL** sources used.
- **Presentation Slides:** all slides that were part of your presentation.

- **Appendices:**

- ERD with primary keys and relationships only
- ERD with all attributes and relationships
- Data dictionary
  - Description of each table, what it represents, and the purpose it serves in the business
  - List of attributes for each table, identification of Primary and foreign keys
  - whether the attribute is required or optional
  - whether the attribute is null able
  - default values and domain (range of values for each attribute)
  - attribute constraints and/or validation rules
  - specifically identify whether cascade deletes, or updates are necessary.
- Final Updated Problems and Requirements List with results
- **A copy of all status reports with a Final Summary of Project Hours per person**

## Individual Database Implementation Project Report

The Individual Implementation Report will be submitted in two stages. The Individual SQL Scripts, Individual Queries/Reports and listing of Data Created will be submitted on **March 12, 2022**. Each team member will have their own submission.

By **April 14, 2022**, each team member will have updated their section of this report to show their contribution to the overall GUI. The Group's Individual Work Report will be submitted with the Group Project Report. Each team member must include their individual work so that all the individual work for all team members can be combined into one single Word document. There must be tabs to separate all the different individuals.

- Individual SQL Scripts per team member. List all your individual work.
  - Copies of all Create Scripts
  - Copies of all Alter Scripts
  - Copies of all Bulk Load Data Scripts
  - Copies of all Data created
  - Copies of all SQL Queries (**4** per team member)
  - Copies of all SQL Update Scripts (Insert, Update, Delete) plus a before and after image of the impacted table(s) (6 per team member)
- Individual Queries/Reports against a Join of 4 or more Tables
  - Each team member will develop at least **four (4)** Queries. Each query or report **must be against a Join of 2 or more tables. At least one query must join 3 or more tables.** For each Report or Query that you developed, you must describe the report and state the business problems that are being addressed via this Report/Query. **Specifically state WHY your client would want to use this Report/Query.** You also must show the results of each query by including a screen shot of the results.
  - Reports must be unique to the team and each team member.
  - **Relevant/working queries developed must also be a reporting option on the team's overall GUI.**
- Individual User Views created per team member
  - Image of all Forms/GUIs developed by the team member.