Database Design and Development

# Objective:

In this project students learn:

* How to gather requirements for a project,
* How to translate these requirements into a database design,
* Finalize the design using both database modelling and normalization techniques,
* Populate the database with test data, and
* Document the database design with standardized documents.

# Submissions:

The project will be divided into an early milestone (25%) and the final submission (75%).

# Group Work

The project will be completed in groups of 3 students (some groups of 2 where numbers justify it only). No individual submission will be accepted. It will be each student’s responsibility to both contribute equally to the project as well as allowing their teammates to participate. (i.e.: no free loaders or control freaks)

## Periodic Meetings

Your professor will be meeting with your group as scheduled by your professor to discuss your project, check on progress, and provide formative feedback on your progress. During these meetings, each member must participate and be prepared to discuss their completed, current, and upcoming planned tasks working towards the final submission. These open discussion meetings are a great opportunity to discuss with your professor any questions, get any clarifications, and build the teamwork atmosphere leading towards the group’s best chance for a successful final submission.

# The Project

Each group will complete the project based on a topic of their choice. Reaching into their past experiences, current scenarios, or areas of interest each group must select a topic and solution on which to build the database portion of the full solution (we will only be doing the database for this project). The group will go through the requirements gathering, design, and development stages of the process and by the end of the project should have a much better understanding of how the database is built from start to finish.

Your project may not follow any of the ideas that we have covered already this term in class or in the textbook.

Some potential ideas may include:

* Library system
* Beauty Boutique
* Car Dealership / Auto sales
* Clothing Store
* Used Car Dealer
* IT Hardware Repair / Maintenance system
* Movie/Music/Show Database
* Movie Rental Store
* Machinery Maintenance Tracking
* Horse Riding center
* Rent a Ride Car Rentals
* Veterinarian’s clinic
* Daycare Center
* Pool Install and Service

Through the design process students will be asked to outline their potential project, create a problem statement, a solution statements, create a scenario where the database will be used, design, document, and develop the database and populate the database with test data.

## Minimum Scenario Requirements

Although each database will be different, there are a few minimums that must be observed to satisfy the scope, scale, and weighting of the project. Therefore, the project must include, at a minimum, the following (please add more if your project requires it, an incomplete project that meets all the minimums will get a lower mark that a project that is a complete solution for the problem statement.):

* A minimum of 6 tables, including at least one bridge/junction table
  + simple lookup list tables do not count towards the total   
    *example: countries would not be considered a counted table, unless your database was related to geography or other international subject matter*
* A minimum of 20 fields
* Inclusion of tables/fields for both data storage, as well as user interface requirements   
  examples: product ratings, my favorites, login credentials, etc. (do not worry about encrypted data at this time, that will be DBS710)
* A minimum of 3 views created to provide information to the software destination   
  *example: an employee list giving both the employees names and details as well as their office information (i.e. joining tables back together again or performing basic calculations)  
  example: a list of salesman and the customers that they service*

## Milestone 1

*Due Week 10*

The first milestone will be a general topic and requirements gathering process. You will be requested to submit a 2-to-3-page document including a cover page. The document must include the following:

* A paragraph briefly describing the topic and the providing a **problem statement**,
* A paragraph stating how the database will assist in providing the **solution**,
* A paragraph how the database will fit with other potential parts of the system architecture to provide a complete solution (i.e. the database will be accessed though a \_\_\_\_\_ to provide data to \_\_\_\_\_ for use in the \_\_\_\_\_\_\_.) It is expected that the database will be part of a complete software process, even though group’s will only be designing and developing the database only.
* A point form list, or table format, of the business requirements/rules for your project

## Final Submission

*Due Week 13*

The final submission will include all the necessary documents (**NO** ZIP files).

The submission will consist of a complete database design and test ready solution. The following must be included:

* An updated version of the milestone submission reflecting any changes made through the design process and including any design decisions that potentially impacts the business rules (example: we decided to add a bridge table between the \_\_\_ table and the \_\_\_ table, even though it is a 1-to-many relationship, such that we can add additional flexibility in the design for future scalability and potential business rules exceptions).
* A Data Dictionary
* A Completed ERD or Schema Diagram
* A single SQL file Table Creation Script including the creation of all tables and constraints in the database.
* A single SQL file Data Insertion Script for inserting sample test data.
* A single SQL file View Creation Script for creating the required views providing easy data presentation