CS/SE 4347

## Project Description

Goal – To create a data model and the associated database for a scoped organization or business. Approach the project as if your team has funding for an initial concept phase and will have a chance to demo for more funding. Teams of up to 4 students is allowed.

The project is made up of the following:

Project Proposal

- This is a write up of the "mini-world" that is the scope of your database project. The mini-world can be anything – examples include: a business offering space travel, a business for coding camps, an art gallery, or a non-profit for a food delivery service. Have fun with it!
- Your proposal must be reality based - you must create a set of business rules to govern your world and to be reflected in your data model. The scope must be complex enough to show the level of detail as given in the Hospital example on the last page.
- The Proposal Format will be in eLearning
- Maximum 3 pages single spaced
- Due Tuesday, January 29th

Part 1 – Data Model, and Schema

- Include a copy of your proposal - with any updates since approval marked in red
- Entity Relationship Diagram (ERD)
- Data dictionary of the Entity types with entity type descriptions, keys, relationships, and attributes of the ERD
- Supporting Schema Diagram
- Data Dictionary for the Schema with each table, table description, primary key, super keys, attributes on separate lines with data types and domains, foreign keys
- The names and sources of the tool(s) used for the ERD and the schema diagram
- Maximum 5 pages single spaced
- Due Tuesday, February 26th

Part 2 – Database and SQL

- Current ERD and ERD data dictionary and Schema and schema data dictionary with any changes noted in red

**Project Description**

- Screen shot of the Database tool work area
- Very specific screen shots of how the tool supports SQL:
    - CREATE
    - SELECT
    - INSERT
    - DELETE
    - UPDATE
    - DROP
- Implementation Log – either generated by MySQL or handwritten notes – the log must show the dates and times of the creation of all tables, columns, keys, and updates to the database
- Data Generation
    - Populate the database with meaningful data – data that supports the business rules – there are 2 steps to this:
        1. Estimate the number of rows/tuples for each table
        2. Enter the data – using scripts or other code or manually
    - Turn in a list showing each table and its planned size – be realistic - consider the relationships. For example, how many operations can be held in a year, then how many doctors, techs, and nurses working in those rooms are needed per year?
    - Turn in a list showing one row/tuple from *each table* with data
- Query Examples – turn in queries for the following:
    1. Show a count of the largest population – example - How many patients are in the hospital
    2. Show a listing of a key entity in the database – example – Who are the doctors in the hospital?
    3. Show a list of entities that must function together – example – Show all the doctors and technicians who work together (a join)
    4. Show the cost of an occurrence, derived using aggregate functions – example – How much will a hospital stay cost a patient - consider the doctor, nurse, technician, room, and insurance
    5. Show a schedule for multiple occurrences, sorted by date and time – example – what is the schedule for an operating room for a specific week?
- Maximum 7 pages.
- Due Thursday April 11th

**Project Description**

Demos - April 23rd, 25th and 30th – attendance is mandatory all days, score of 0 will be given if absent for any of the days under normal circumstances

- Each team will give a presentation and demo their project
- Approach the presentation as if you are demonstrating to investors for the next level of funding. "Sell" your approach and results – point out items such as what difficulties you overcame and how, and why your solution is worth further development
- Seven to ten minute time limit
- The presentation will include
    - Overview of the business
    - Overview of the data model
    - Demonstration of the database

**Project Description**

HealthCare Hospital

There is one HealthCare Hospital. The scope of this example includes patients, healthcare providers, and facilities. Out of scope are a day clinic, the morgue, the pharmacy, food services, and no changing of rooms/beds.

Business Rules

1. Each patient must have a name, a phone number, an address, and insurance. A patient may have a condition to be treated, a next of kin, and a living will.

2. The condition to be treated can have a length of time for a surgical procedure, the cost, and the specialty of the surgeon

3. Each insurance company is represented by an agent, each plan has a deductible, and a plan maximum allowance

4. Each surgeon will have a name, office address, and other information about their practice

5. Each technician will have information on their specialties, a name, cost and time for a surgical procedure

6. Each nurse will have a specialty, a name, a rank, and assignment.

7. The hospital will consist of wards, operating rooms, and recovery rooms.

8. Each ward is made up of patient rooms

9. Each patient room has a daily price, a room number, and the start date and end date of a patient's stay

10. The hospital has multiple operating rooms, each operating room has a schedule. This schedule coordinates operating room with surgeon, nurse, technician, and patient.

11. Each recovery room will serve a patient recovering from surgery and has the start date and time and the end date and time of patient's stay.