Project

Your programming project will be to build a substantial database applicationfor a real-world scenario of your choosing. You will design a schema for the database, and youwill create an actual database using a relational database management system. You will populate thedatabase with sample data, write interactive queries and modifications on the database, create programsthat manipulate the database, and develop user-friendly tools for interacting with the database.You areresponsible for:

**First, write the project proposal by June 8, 2013**

This proposal should include:

* + A narrative description of the field chosen for the application being created. This should also include a description of the problem and addressing the weaknesses to be solved by the database.
  + Identification of the information needs - what information is needed to help solve the problem.
  + Initial list of entities (tables) that have been identified. This should come naturally from the above discussions.
  + Roles and Responsibilities of each member for the project. List the names of each group member and what their primary role will be (e.g., systems analyst, application developer, documentation writer).

The following is due June 18, 2013

1. **Systems Analysis**  
   The next step is for the students to take the requirements from the "users" and draw an [Entity Relationship](http://cisnet.baruch.cuny.edu/holowczak/classes/3400/week3.html) diagram.  
   The E-R Diagram should then be submitted to the instructor for approval before proceeding.   
   Students may use a specific [ER modeling tool](http://cisnet.baruch.cuny.edu/holowczak/classes/3400/resource.html).

**Note:** The "Relationship View" in MS Access *is not an ER modeling tool.*

1. **Logical and Physical Modeling**  
   Given the ER diagram and sets of attributes for each entity, the next step is to convert the ER model into a [relational model](http://cisnet.baruch.cuny.edu/holowczak/classes/3400/week4.html) and go through the process of [normalization](http://cisnet.baruch.cuny.edu/holowczak/classes/3400/week5.html). This step will require the student to list all of the functional dependencies.

1. **Database Implementation**  
   students should then implement the database tables from the normalized set of relations created in the previous step. Data should be supplied for each table. The amount of data should be such that the need for a database is clear. In other words, provide enough examples to demonstrate why a database was required in the first place.
2. **Application Implementation**  
   The application (forms, reports, queries, menus) can then be created on top of the tables. For Queries, provide the associated SQL statements.

1. **Write Up Final Report**  
   The final step is to prepare a formal report and brief presentation. This report should include:
   * A separate cover page.
   * An introduction section similar to the [proposal](http://cisnet.baruch.cuny.edu/holowczak/classes/3400/projects.html#proposal).
   * Two ER diagrams: One showing just entities and relationships on a single page, and a second ER with attributes and identifiers included.
   * The collection of normalized relations and functional dependencies, and a brief discussion as to the normal form(s) achieved, the methods used to achieve these normal forms, and reasons why any [de-normalization](http://cisnet.baruch.cuny.edu/holowczak/classes/3400/week6.html) was done.
   * A listing of the metadata for each table in the database.
   * An example printout of each of the forms, reports and queries accompanied by a description of the function of each.
   * A [Menu Tree](http://cisnet.baruch.cuny.edu/holowczak/classes/3400/menutree.gif) showing the organization of the menu items and a brief description of why you chose this layout of menu items. The "Organization Chart" feature of MS Powerpoint can be useful for this step.
   * A narrative conclusion section that describes:  
     a) the student's experience with the project (which steps were the most difficult? Which were the easiest? What did you learn that you did not imagine you would have? if you had to do it all over again, what would you have done differently?)  
     b) if the proposed benefits can be realized by the new system  
     c) any final comments and conclusions

Do the following in a separate folder and submit it by June 16, 2013

First, write the project ER or EER diagram.

Second, Map it into a schema.

Third, normalize and show your final your schema.

**Project Ideas**

You are encouraged to come up with a project idea of your own. The project ideas listed below can serve as a guide or as inspiration for a slightly different project.

1. **Tennis Players:**The database you will be designing here contains information concerning the Association of Tennis Professionals. It contains information about male players only, matches and tournaments concerning the ATP. If you are unfamiliar with tennis terminology (especially concerning scoring), a quick description can be found on Wikipedia at http://en.wikipedia.org/wiki/Tennis#Manner of play.

For each player, you may store his name, date of birth, country and ranking. Each player plays matches with one or more other players. For each match played between two players, we store the name of stadium and the score. For each player, we also store his ideal player. Each player has at most one ideal player.

1. **Supply Cabinet** - A company centrally maintains supplies for each of its branch offices. They need a database to keep track of what they have in stock, requests from branch offices for supplies and purchasing of supplies from vendors. Should keep track of the vendor with the best price for a particular supply. They would also like to minimize shipping costs by shipping several supplies at one time to a given branch office. Queries might include:
   * When should supply X be replenished
   * How many shipments, on average, go out to the branch offices per week?
2. **Classic Car Rentals, Healthcare Information System or University Registration System**