CS482/502 Database Management Systems I

Assignment: Entity-Relationship Model
Deadline: 11:59pm Apr. 15, 2018

Situation and application requirements:

You have been hired as a database designer to develop a system for the basketball team at NMSU. You are given the following requirements.

a. The system needs to manage three types of users: players, managers, and staff members. Each user has a unique ID, a name, a birthday, an email address, and one phone number.

b. A manager needs to have a login id and a password to the system. Each manager needs to have two or more certificates (e.g., basketball general manager and scouting course).

c. Each staff is assigned with one and only one title (e.g., secretary, receptionist).

d. Players have extra information which include their playing positions (e.g., backcourt, frontcourt) and age. For every player, the system also needs to keep his/her yearly statistical information which include (i) the *total points* that this player scored each year and (ii) the *average steals per game* which is the average number of steals in all the games in which this player played.

e. Players should have a monthly physical exam showing their medical test results. For each medical test, we need to record the player, the doctor who did the test, the test date, and the test result (a document). For each doctor, the system needs to manage his/her name, email, and the office phone number.

f. Each player in the team may still need to be trained before he can play in any official games. The system should record the training that each player is needed. Each training is designed to improve specific skills of players. For each training, the database should record the name of the training, the detailed instructions for the training, and the time that is needed. The training name can uniquely identify a training process. A manager decides the required training.

g. The database should keep track of the games that this team has played. For each game, the system needs to keep its date, its playing venue, the name of the opponent team, and the players who played in this game.

Tasks:

- (55%) Construct an E-R diagram to capture as much requirements as possible. Model all the constraints which can be expressed in E-R model. (When you construct your E-R diagram, state clearly any assumptions that you made and that do not violate the requirements.)
- (5%) State any constraints which can NOT be captured by the E-R model.
- (40%) Translate your E-R diagram into relational tables. For each relation, identify the primary key, any foreign keys, and the necessary constraints.

Hand-drawn submissions will not be accepted and will receive a 0.

You may use any tool you like to draw the diagram, this is a good one: https://www.draw.io/. You can also use any applications from the Microsoft or Libre Office suites if you are comfortable with those. The school machines have the program Dia, which is very useful for making all sorts of diagrams. **The only restriction is that you must ultimately submit your diagram as a PDF**.