CS/DSA 4513 – Section 001 - Fall 2016 - Dr. Le Gruenwald

GROUP PROJECT 1

Assigned: 9/12/2016; Due: 9/19/2016 at 1:30 PM

(BOTH a Hard copy and Soft copy of your solutions need to be submitted; a hard copy is submitted in class AND a soft copy is submitted to the class website; late submission will not be accepted; read the "Group Project Grading Policy" posted on the class website).

Problem 1:

Professional Sports League Database: Upon noticing a trend of misinformation and mistakes in the field of sports reporting, a company decides to pull together some publicly available information in the interest of becoming the "go-to" resource for quick and reliable fact-checking in the field. The company wishes to begin by organizing the basic structure of a professional sports league into a database. Initial research produces the following design parameters:

- Much of the information contained in the database relates to various categories and groups of people. A person is uniquely identified by an ID number. Each person also has a name, a date of birth, and an age.
- Every person modeled in the database is an official, a coach, a player, or an agent. No person can take on more than one of these roles.
- Officials are the enforcers of the rules of the sport. An official is a person and has a crew number and position that describes their specific role. Each official must have one and only one associated replacement official who can fill in should they not be able to perform their duties.
- Teams are the organizations that compete against each other. A team has an associated city, name, primary color, and secondary color. A team can be uniquely identified by the combination of its city and its name.
- Teams also have an associated stadium that they most often play in. A stadium has a unique name, a capacity, latitude, longitude, and an elevation. Multiple teams may share the same stadium, but a team is only associated with a single stadium.
- Stadiums also have sections. A section has a section ID and a capacity. Multiple stadiums may use the same section IDs.
- Coaches are teaching/leadership figures on a team. A coach is a person and has a title that describes his/her duties. Coaches can coach only one team, while teams can have any number of coaches.
- Players are the athletes that compete directly in the relevant sport. A player is a person and has a position and jersey number. Players can play for only one team, while teams can have multiple players. Additionally, players can hire agents.
- Agents are hired by players to protect their financial interests. An agent is a person and has an agency and phone number(s). An agent can be hired by multiple players.

Answer the following questions for Problem 1:

a) Draw an ER diagram for Problem 1. Underline all primary keys.

b) Assume that the following information is added to the above problem description: "When an official is replaced by another official, the reason for the replacement must be recorded." How would you express this requirement in the ER diagram? If you cannot express it or do not believe it changes your earlier design, provide detailed explanations.

c) Assume that the following information is added to the above problem description: "Sometimes, when a team plays in a stadium there is one contract agreed to by both parties that defines the terms of their relationship. A stadium contract has a unique contract ID, a start date, an end date, and a value. A stadium contract can only be associated with one team-stadium relationship." How would you express this additional information in the ER diagram? If you cannot express it or do not believe it changes your earlier design, provide detailed explanations.

d) Assume that the following information is added to the above problem description: "Copies of the official stadium contract documents can be found on official team websites and are accessible to the public." How would you express this additional information in the ER diagram? If you cannot express it or do not believe it changes your earlier design, provide detailed explanations.

Problem 2:

Provide a detailed description and an ER diagram for a database application of your choice that is different from the one given in Problem 1 (a database application that is a modification of the one given in Problem 1 will not be accepted). The design must include at least 5 entity sets and cover all features: strong entity sets, weak entity sets, different kinds of relationship sets, total participation and partial participation, aggregation, role indicators, and generalization and/or specialization. The database application must not come from the textbooks/lecture notes/ homework assignments/class projects/exams/examples/qualifying exams used for CS/DSA-4513 at the University of Oklahoma. If you have obtained the application from some other sources, you must provide the sources' complete reference information in your answer. Turn in your detailed description and ER diagram.

Notes for submission:

- Except for ER diagrams which you can choose to draw by computer or hand, all other parts of your solutions must be typed (i.e., except for ER diagram solutions, no hand-written solutions will be accepted). Make sure that your submitted answers are readable; otherwise they will not be graded and you will get a zero credit for this homework assignment.
- For soft copy submission: submit your solutions for both Problems 1 and 2 in ONE SINGLE PDF FILE to the class website (file name convention: "Group" followed by your group number followed by "-Group Project 1"; Example: "Group10-Group Project 1")
- Attach to your group project a cover page that contains the following information:

COURSE:	CS/DSA-4513 - DATABASE MANAGEMENT
SECTION:	001
SEMESTER:	FALL 2016
INSTRUCTOR:	DR. LE GRUENWALD
GROUP PROJECT NUMBER:	<write your group number here>
GROUP MEMBERS	<list the names of all members here>
SCORE:	

- Within 24 hours after the due time, you must submit the grades you give to your group members to the Dropbox of Group Project 1 (do not use Email). The information you enter in the Dropbox must include your group number, the names of your group members and the grades you give to them. If you do not submit your member grades by that time, we will assume that you give equal points to all your group members (i.e. 10 points to each of your group members). **Read the "Group Project Grading Policy" posted on the class website.**