CSC 370 – Assignment 1

Ex. 1 (10 pts)

The following narrative describes a simplified version of the organization of Olympic facilities.

The Olympic facilities are divided into multisport sport complexes. Such complexes have areas of the complex designated for each sport with a location indicator (e.g., center, NE corner, and so on). A complex has a location, chief organizing individual, total occupied area, and so on. Each complex holds events. For each event, there is a description, a planned date, duration, and number of participants. Officials involved with the event should also be recorded. Different equipment is needed for the events (e.g., goal posts, poles, parallel bars). Information about each piece of equipment should be recorded.

(5 pts) **Draw an E/R diagram** capturing the above description.
(5 pts) **Translate your E/R diagram** into a relational schema using the E/R approach and write the SQL statements for the table creation. Specify primary keys and foreign keys.

Hint. Use surrogate keys to simplify your design in terms of keys, e.g. cid (complex id), eventid, etc.

Ex. 2 (15 pts)

Consider a database system for a baseball organization. The data requirements are summarized as follows:

The personnel involved include players, coaches, managers, and umpires. Each is identified by a unique personnel id. They are also described by their first and last names along with the date and place of birth.

Players are further described by other attributes such as their batting orientation (left, right, or switch) and have a lifetime batting average (BA).

Within the players group is a subset of players called pitchers. Pitchers have a lifetime ERA (earned run average) associated with them.

Teams are uniquely identified by their names. Teams are also described by the city in which they are located and the division and league in which they play.

Teams have one manager, a number of coaches, and a number of players. It is assumed that each manager cannot manage more than one team and each coach cannot coach for more than one team.

Games are played between two teams with one designated as the home team and the other the visiting team on a particular date. The score (runs, hits, and errors) is recorded for each team. The team with the most runs is declared the winner of the game.

With each finished game, a winning pitcher and a losing pitcher are recorded. In case there is a save awarded, the save pitcher is also recorded.

With each finished game, the number of hits (singles, doubles, triples, and home runs) obtained by each player is also recorded.

(7.5 pts) **Draw an E/R diagram** capturing the above description.
(7.5 pts) **Translate your E/R diagram** into a relational schema using the E/R approach and write the SQL statements for the table creation. Specify primary keys and foreign keys.

Ex. 3 (15 pts) Suppose we have two kinds of doctors: hospital doctors and family physicians. In addition to the doctor's id number, name, specialty, and years of experience, we want to record the hospital name for the hospital doctors, and the office address for the family physicians. There can be doctors that are working in a hospital who are at the same time family physicians in their free time. Also there can be doctors for whom we don't know whether they are working in a hospital and/or whether they are family physicians or whether they are not working at all.

(5 pts) **Draw an E/R diagram** capturing the above description.
(5 pts) **Translate your E/R diagram** into a relational schema using the E/R approach and write the SQL statements for the table creation. Specify primary keys and foreign keys.
(5 pts) **Write SQL INSERT statements** to insert at least one tuple (that you create) into each table.