CSC 4710/6710 - HOMEWORK ASSIGNMENT 1

*Please upload your answers to the designated homework folder (**Homework1**) iCollege. Use a designated drawing tool (such as MS Visio, Dia, LucidChart (education account available), Draw.io, yEd). Hand-drawn (or scanned) diagrams will not be accepted. Do not forget to add min-max cardinality information and do not use alternative notations for cardinalities and subclass relationships.*

Question 1 (20 pts)

Beatlesque Records (BR) is a recording company and its executives have decided to store information about musicians who perform on its albums (as well as other company data) in a database. They want you to create a database and your first job is to listen to their requirements and create a conceptual schema. Following are their requirements:

- Each musician that records at BR has an SSN, a name (first name, middle initial, last name, and one or more stage names), an address, and a phone number. Poorly paid musicians often share the same address, and no address has more than one phone.
- Each instrument that is used in songs recorded at BR has a name (e.g., guitar, synthesizer, flute) and a musical key (e.g., C, B-flat, E-flat).
- Each album that is recorded on the BR label has a title, a copyright date, a format (e.g., CD or MC), and an album identifier.
- Each song recorded at BR has a title and an author.
- Musicians may play many instruments, and a given instrument may be played by more than one musicians.
- Each album has a number of songs on it, but no song may appear on more than one album.
- Each song is performed by one or more musicians, and a musician may perform a number of songs.
- Each album has exactly one musician who acts as its producer. A musician can of course produce several albums.

Design a conceptual schema for BR and draw an ER (or EER) diagram for your schema. Indicate all key and cardinality constraints and any assumptions that you make. Identify any constraints that you are unable to capture in the ER diagram and briefly explain why you could not express them.

Question 2 (20 pts)

A local organization has several parking lots, which are used by staff. One of your high school friends, Taylor, was assigned to create the conceptual schema for the organization's parking lots. But apparently, Taylor did not think conceptual schema design was important, missed the classes, and now needs your help. Below are the requirements provided by the organization:

- Each parking lot has a unique name, location, capacity, and number of floors (where appropriate).
- Each parking lot has parking spaces, which are uniquely identified using a space number.
- Members of staff can request the sole use of a single parking space. Each member of staff has a unique number, name, telephone extension number, and vehicle license number.
- The majority of parking spaces are under cover and each can be allocated for use by a member of staff for a monthly rate.
- Parking spaces that are not under cover are free to use and each can be allocated for use by a member of staff.
- Up to twenty covered parking spaces are available for use by visitors to the company. However, only members of staff are able to book out a space for the day of the visit. There is no charge for this type of booking, but the member of staff must provide the visitor's vehicle license number.

Help your friend by designing a conceptual schema for the parking lots and draw an EER diagram for your schema. Indicate all key and cardinality constraints, specialization or generalizations, and any assumptions that you make.