Midterm Test 1

1. Give an ER Model for a grant review database.
   - Each grant has a proposal number, a title, an abstract, and an amount.
   - A researcher has a first and last name, and no two researchers have the same name. A researcher also has an institution and an email address.
   - A grant can be made by one or more researchers.
   - Some researchers are on the advisory board. Each proposal is managed by a member of the advisory board,
   - A proposal is reviewed by other researchers. (The reviewers would not have to be on the advisory board. The manager from the advisory board is in charge of choosing the reviewers and requesting reviews.)
   - Each review must answer a series of fixed questions. Each question has a question number, and a text.
   - A reviewer will answer each question about a grant proposal, and the score (a number from 1 to 10) must be recorded.

   [15 points]

2. Suppose we have a CINEMA database whose schema is as follows:
   - Movie (movieID, movieTitle, movieDate, movieDirector)
   - Actor (movieID, actName)
   - Theater (theaterName, theaterAddress, theaterPhone)
   - Playing (theatername, movieID, playingTime)

   Write SQL queries to answer the following questions against the CINEMA database.
   a) Find all actors cast in some movie by the director Akira Kurosawa.
   b) Find actors cast only in movies by Kurosawa.
   c) Give the theater names and playing times for all movies directed by Kurosawa.
   d) Find all pairs of (different) actors who have acted together in the same movie.
   e) Determine which actor has acted in the most movies.
   f) (CIS 551 only) List the theaters playing all movies, if any. (You can email this later, if necessary)

   [25 or 30 points]

3. Take the attached, hand-drawn ER diagram, and convert it to a relational schema. Indicate all the foreign keys and NOT NULL constraints.

   [15 points]

[total: 55 or 60 points]