1. Practice the examples in the PowerPoint slides.

2. (50 pts.) A university database includes information about professors and courses. We record the social security number SSN to identify each professor. Each course is uniquely identified by a courseid. Draw an ER diagram to describe each of the following scenario concerns the Teaches relationship set (i.e., Professors teach courses), assuming no further constraints hold:
   - Professors can teach the same course in several semesters, and each offering must be recorded
   - Professors can teach the same course in several semesters, and only the most recent such offering needs to be recorded (Assume this condition applies in all subsequent questions.)
   - Every professor must teach some course.
   - Every professor teaches exactly one course
   - Every professor teaches exactly one course, and every course must be taught by some professor

3. (50 pts.) Use ER model (Chen notations) to do a conceptual design for a database for a company (state your assumptions if necessary):
   - Each employee is either an engineer or a researcher. Each employee is identified by the social security number SSN. We also record the employee name and phone number. Furthermore, we include information on rank for each engineer, and expertise for each researcher.
   - Each engineer works in one department. Each department is identified by a did (department ID). The dname (department name) and budget (department budget) are also recorded for each department. Each department is managed by a distinct engineer, with the starting date (m_since) of the current manager recorded.
   - Departments can collaborate on one or more projects, each identified by a pid (project ID). A project also has a name (pname). Each project must be associated with at least one department. The starting date (w_since) of each department working on a given project is also recorded.
   - Each department working on a project must have one researcher to provide technical consultation. The starting date (c_since) of the current consultant is recorded.

TURN IN YOUR HOMEWORKS IN CLASS