Given the ER schema for the MOVIES database in Figure 3.24, draw an instance diagram using three movies that have been released recently. Draw instances of each entity type: MOVIES, ACTORS, PRODUCERS, DIRECTORS involved; make up instances of the relationships as they exist in reality for those movies.

Illustrate the UML Diagram for Exercise 3.16. Your UML design should observe the following requirements:

a. A student should have the ability to compute his/her GPA and add or drop majors and minors.

b. Each department should be to able add or delete courses and hire or terminate faculty.

c. Each instructor should be able to assign or change a student's grade for a course.

*Note:* Some of these functions may be spread over multiple classes.

Hw1: Solve problems 3.32, 3.33, and 3.34. Use Dia tool to draw the ER diagrams; Input the design into DBDesigner4.

Due: Monday, Jan 28, 2008

## Laboratory Exercises

3.32. Consider the UNIVERSITY database described in Exercise 3.16. Build the ER schema for this database using a data modeling tool such as ERWin or Rational Rose.

3.33. Consider a MAIL_ORDER database in which employees take orders for parts from customers. The data requirements are summarized as follows:

The mail order company has employees, each identified by a unique employee number, first and last name, and ZIP code.

Each customer of the company is identified by a unique customer number, first and last name, and ZIP code.

Each part sold by the company is identified by a unique part number, a part name, price, and quantity in stock.

Each order placed by a customer is taken by an employee and is given a unique order number. Each order contains specified quantities of one or more parts. Each order has a date of receipt as well as an expected ship date. The actual ship date is also recorded.

Design an Entity-Relationship diagram for the mail order database and build the design using a data modeling tool such as ERWin or Rational Rose.

3.34. Consider a MOVIE database in which data is recorded about the movie industry. The data requirements are summarized as follows:

Each movie is identified by title and year of release. Each movie has a length in minutes. Each has a production company, and each is classified under one or more genres (such as horror, action, drama, and so forth). Each movie has one or more directors and one or more actors appear in it. Each movie also has a plot outline. Finally, each movie has zero or

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more quotable quotes, each of which is spoken by a particular actor appearing in the movie.

- Actors are identified by name and date of birth and appear in one or more movies. Each actor has a role in the movie.
- Directors are also identified by name and date of birth and direct one or more movies. It is possible for a director to act in a movie (including one that he or she may also direct).
- Production companies are identified by name and each has an address. A production company produces one or more movies.

Design an Entity-Relationship diagram for the movie database and enter the design using a data modeling tool such as ERWin or Rational Rose.

3.24 Consider a CONFERENCE_REVIEW database in which researchers submit their research papers for consideration. Reviews by reviewers are recorded for use in the paper selection process. The database system caters primarily to reviewers who record answers to evaluation questions for each paper they review and make recommendations regarding whether to accept or reject the paper. The data requirements are summarized as follows:

- Authors of papers are uniquely identified by email id. First and last names are also recorded.
- Each paper is assigned a unique identifier by the system and is described by a title, abstract, and the name of the electronic file containing the paper.
- A paper may have multiple authors, but one of the authors is designated as the contact author.
- Reviewers of papers are uniquely identified by email address. Each reviewer's first name, last name, phone number, affiliation, and topics of interest are also recorded.
- Each paper is assigned between two and four reviewers. A reviewer rates each paper assigned to him or her on a scale of 1 to 10 in four categories: technical merit, readability, originality, and relevance to the conference. Finally, each reviewer provides an overall recommendation regarding each paper.
- Each review contains two types of written comments: one to be seen by the review committee only and the other as feedback to the author(s).

Design an Entity-Relationship diagram for the CONFERENCE_REVIEW database and build the design using a data modeling tool such as ERWin or Rational Rose. or DB4Designer

Consider the ER diagram for the AIRLINE database shown in Figure 3.20. Build this design using a data modeling tool such as ERWin or Rational Rose.