Chapter 3 Review Questions
Due: October 8, 2020 @ 11.59pm

1. What is an entity type? What is an entity set? Explain the differences among an entity, an entity type, and an entity set.

2. When is the concept of a weak entity used in data modeling?

3. Composite and multivalued attributes can be nested to any number of levels. Suppose we want to design an attribute for a STUDENT entity type to keep track of previous college education. Such an attribute will have one entry for each college previously attended, and each such entry will be com- posed of college name, start and end dates, degree entries (degrees awarded at that college, if any), and transcript entries (courses completed at that college, if any). Each degree entry contains the degree name and the month and year the degree was awarded, and each transcript entry contains a course name, semester, year, and grade. Design an attribute to hold this information. Use the conventions in Figure 3.5.

{Address_phone({Phone(Area_code,Phone_number)},Address(Street_address (Number,Street,Apartment_number),City,State,Zip))}

Figure 3.5
A complex attribute: Address_phone.

4. Consider the ER diagram in Figure 3.21, which shows a simplified schema for an airline reservations system. Extract from the ER diagram the requirements and constraints that produced this schema. Try to be as precise as possible in your requirements and constraints specification.

5. Which combinations of attributes have to be unique for each individual SECTION entity in the UNIVERSITY database shown in Figure 3.20 to enforce each of the following miniworld constraints:
    a. During a particular semester and year, only one section can use a particular classroom at a particular DaysTime value.
    b. During a particular semester and year, an instructor can teach only one section at a particular DaysTime value.

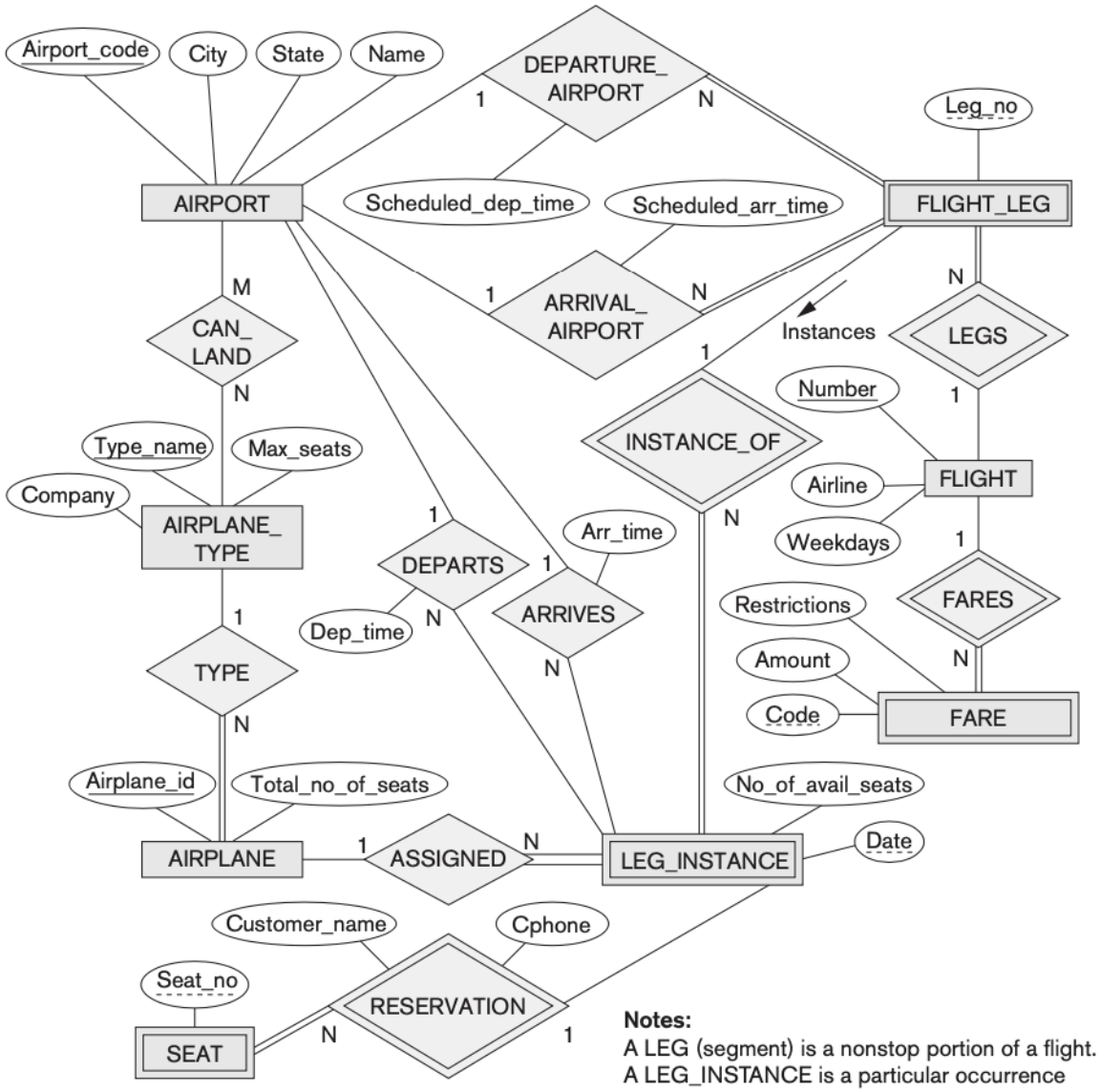

Figure 3.21
An ER diagram for an AIRLINE database schema.

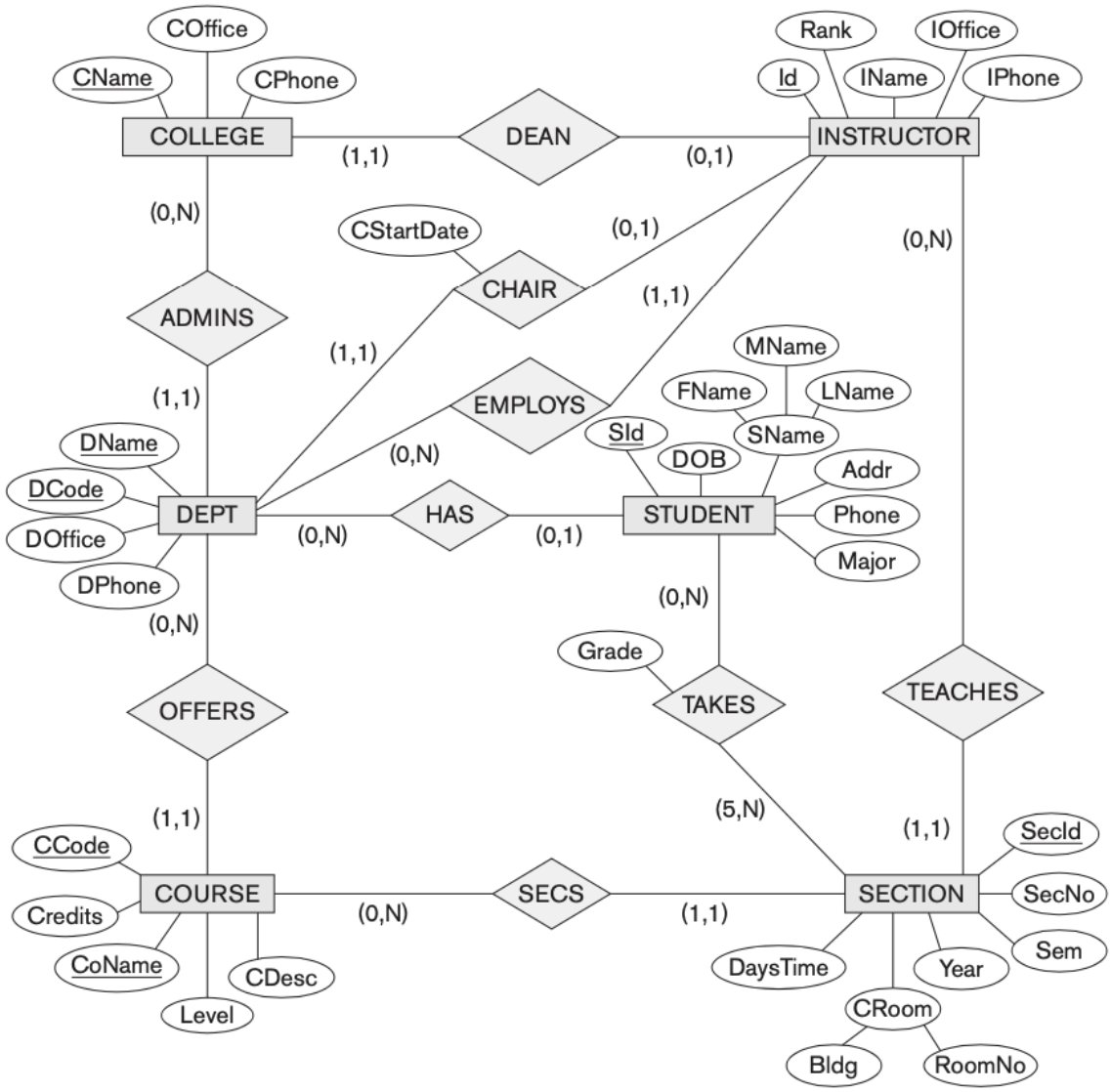

Figure 3.20
An ER diagram for a UNIVERSITY database schema.