

COMP 453

Homework #2: EER Diagrams

(Some of the problems will be done together in class. The rest will be assigned as homework.)

1. Subtype discriminators were left off the figures a, b and c, included on this homework assignment. Add subtype discriminators for each figure. If necessary, create a new attribute for the discriminator. For figure d the subtype discriminator is residential_or_outpatient. For Figure e, the subtype discriminator is mfg_or_purch. For d and e: do you think that there is a different set of circumstances that might require a different subtype discriminator?
2. A rental car agency classifies the vehicles it rents into four categories: compact, midsize, full-size and sport utility. The agency wants to record the following data for all vehicles: Vehicle ID, Make, Model, Year, and Color. There are no unique attributers for any of the four classes of vehicle. The entity type vehicle has a relationship (named Rents) with a customer entity type. None of the four vehicle classes has a unique relationship with an entity type. Would you consider creating a supertype/subtype relationship for this problem? Why or why not?
3. A bank has three types of accounts: checking, savings, and loan. Following are the attributes for each type of account:
 - Checking: Acct No, Date Opened, Balance, Service Charge
 - Savings; Acct no, Date Opened, Balance, Interest Rate
 - Loan: Acct No, Date Opened, Balance, Interest Rate, Payment

Assume that each bank account must be a member of exactly one of these subtypes. Using generalization, develop an EER model segment to represent this situation. Remember to include a subtype discriminator.

4. Draw an EER Diagram to capture the following scenario:
An international school of technology has hired you to create a database management system to assist in scheduling classes. After several interviews with the president, you have come up with the following list of entities, attributes, and initial business rules:
 - Room is identified by Building ID and Room No and also has a Capacity. A room can be either a lab or a classroom. If it is a classroom, it has an additional attribute called Board Type.
 - Media is identified by MType ID and has attributes of Media Type and Type Description. Note: Here we are tracking type of media (such as a VCR, projector, etc.), not the individual piece of equipment. Tracking of equipment is outside of the scope of this project.
 - Computer is identified by CType ID and has attributes Computer Type, Type Description, Disk Capacity, and Processor Speed. Please note: As with Media Type, we are tracking only the type of computer, not an individual computer. You can think of this as a class of computers (e.g., PIII 900MHZ).
 - Instructor has identifier Emp ID and has attributes Name, Rank, and Office Phone.
 - Timeslot has identifier TSIS and has attributes Day Of Week, Start Time, and End Time.
 - Course has identifier Course ID and has attributes Course Description and Credits. Courses can have one, none, or many prerequisites. Courses also have one or more sections.
 - Section has identifier Section ID and attribute Enrollment Limit

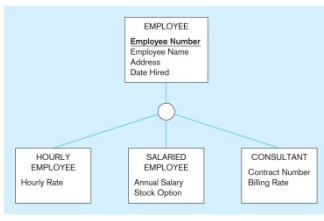
After some further discussions, you have come up with some additional business rules to help you create the initial design:

- An instructor teaches one, none, or many sections of a course in a given semester.
- An instructor specifies preferred time slots.

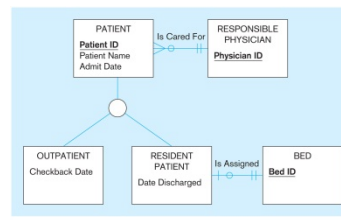
- Scheduling data are kept for each semester, uniquely identified by semester and year.
- A room can be scheduled for one section or no section during one time slot in a given semester of a given year. However, one room can participate in many schedules, one schedule, or no schedules; one time slot can participate in many schedules, one schedule, or no schedules; one section can participate in many schedules, one schedule, or no schedules. Hint: Can you associate this to anything that you have seen before?
- A room can have one type of media, several types of media, or no media.
- Instructors are trained to use one, none, or many types of media.
- A lab has one or more computer types. However, a classroom does not have any computers.
- A room cannot be both a classroom and a lab. There also are no other room types to be incorporated into the system.

5. Complete the MountainView Hospital EER Diagram (separate file)

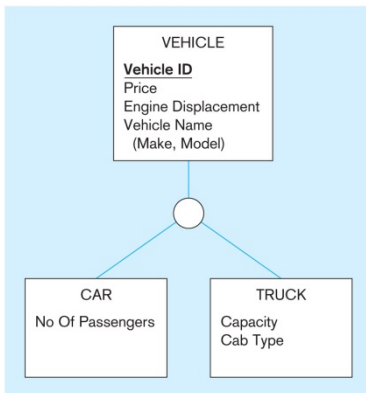
Problem 1-a



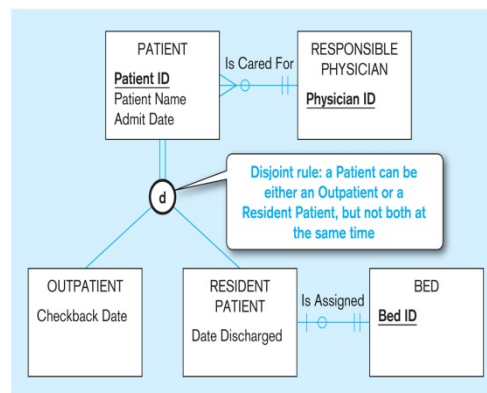
Problem 1-b:



Problem #1-c:



Problem 1-d:



Problem 1-e:

