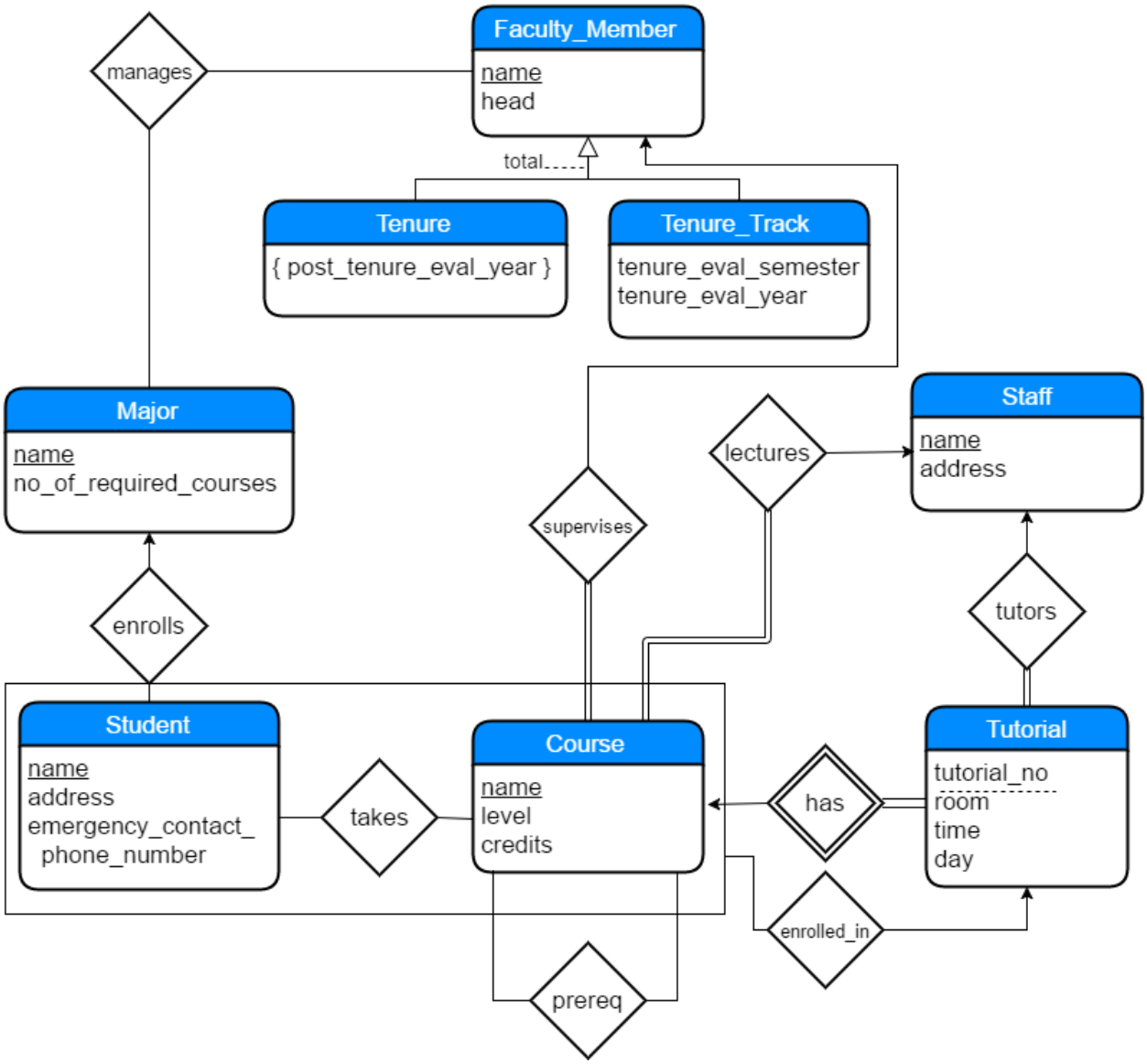
CS/DSA 4513
Dr. Le Gruenwald
Practice Homework 1 Solutions

Problem 1



Problem 2

6.1

Answer:

One possible E-R diagram is shown in Figure 6.101. Payments are modeled as weak entities since they are related to a specific policy.

Note that the participation of accident in the relationship *participated* is not total, since it is possible that there is an accident report where the participating car is unknown.

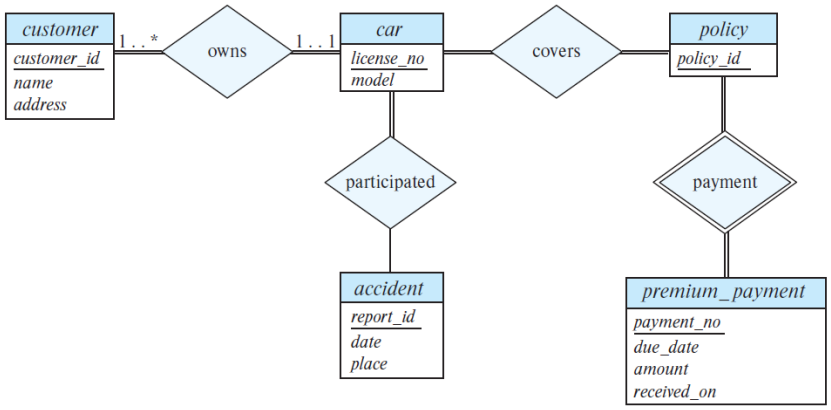


Figure 6.101 E-R diagram for a car insurance company.

Problem 3

6.2

Answer:

a. The E-R diagram is shown in Figure 6.102. Note that an alternative is to model examinations as weak entities related to a section, rather than as strong entities. The marks relationship would then be a binary relationship between *student* and *exam*, without directly involving *section*.

b. The E-R diagram is shown in Figure 6.103. Note that here we have not modeled the name, place, and time of the exam as part of the relationship attributes. Doing so would result in duplication of the information, once per student, and we would not be able to record this information without an associated student. If we wish to represent this information, we need to retain a separate entity corresponding to each exam.

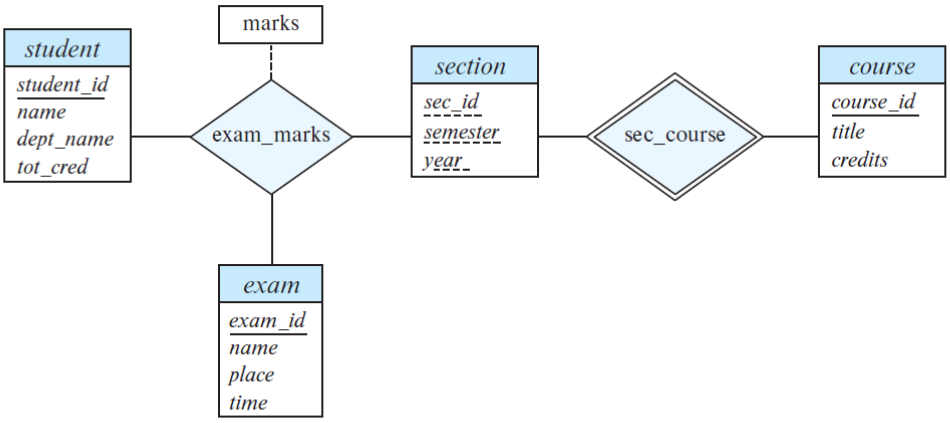


Figure 6.102 E-R diagram for marks database.

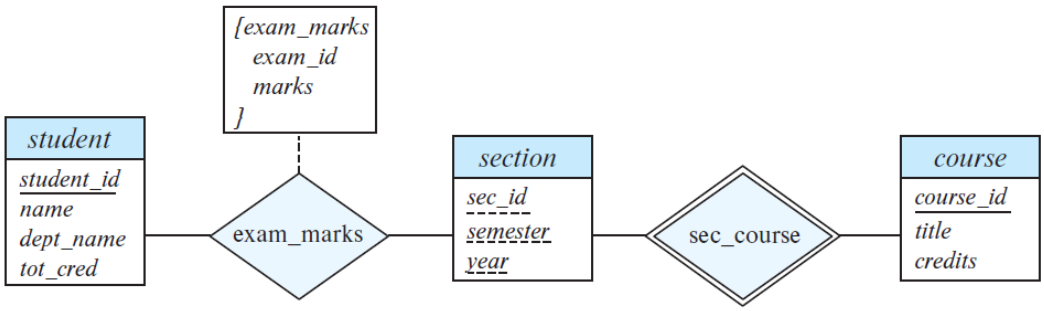


Figure 6.103 Another E-R diagram for marks database.

Problem 4

6.7

Answer:

The primary key of a weak entity set can be inferred from its relationship with the strong entity set. If we add primary-key attributes to the weak entity set, they will be present in both the entity set, and the relationship set and they have to be the same. Hence there will be redundancy.