Database Systems 10127

Homework Problem 1

Due Date: November 4, 2021

1. Plan an E-R Diagram for a country club. The diagram must include all entity sets, their attributes, and the relation sets between the entity sets. You may add additional attributes or relationships beyond the specifications. Please do not mix ERD types. Do not forget to show the primary key(s) for each entity set and the cardinality of the relationships (one-to-one, one-to-many, etc.)

* The country club store information about each member
  + Customer number
  + Personal information (name, ID, address, phone(s), email(s))
  + Date of birth
  + Date joined the country club
  + Details of the annual membership
    - Membership card number (different from Customer number)
    - Membership category (adult, student, family)
    - Membership status (active, inactive)
    - Cost of the annual membership
    - Date membership expires
  + Adult members may have an individual or a family membership. A family membership includes all children under 16 in the household. If there are two adults in the same household, one gets the family membership with the children and the other gets an individual membership.
  + The membership has to be renewed every year, and the membership category can change. If the membership category changes, the member gets a new membership card with a new number.
* For an additional cost, customers can sign up for classes. For each class, the following data is stored:
  + Class number
  + Class name
  + Cost of class
  + Time of the class
  + Maximum class size
  + Number of people enrolled
* Each class can have several sections that meet at different times
  + Classes are taught by trainers who are part of the staff.
  + Sections may be taught by different trainers
  + Each section is taught by one trainer
* Members may borrow equipment (balls, etc.) from the office. Each item of equipment has
  + Number
  + Description
  + Condition (excellent, good, fair, needs replacing)
* The following information is stored when equipment is borrowed:
  + Which customer borrowed the equipment
  + What equipment was borrowed
  + Date and time taken
  + Date and time returned
* There is a restaurant at the country club for members. In addition to the general dining area, there are several rooms in the restaurant that can be reserved for private parties.
  + Each room has a capacity (how many people can fit in the room)
  + Reservations are made for a date and a time
  + Each reservation has an amount of time for which the room is reserved
* The country club has staff that includes trainers, restaurant workers, office staff and managers
  + Each employee has
    - Employee number
    - Personal data (name, ID, address, phone(s), email(s))
    - Hourly pay
  + Each trainer has one or more certifications
  + Each manager has a title
  + Every employee reports to exactly one manager

1. Below is an ERD for a bookstore. Transform it into tables. If you need to make any assumptions, please state them.

Book

Category

Customer

Author

Buys

Belongs in

writes

Likes