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Course Code: MCA-108 Course Name: Database Management Systems

Assignment 1

(Based on Unit-I & II)

Q 1. Assume you are to compose database requirements of a wholesale dealer for audio, video consumer equipment from different manufacturers (brands).Customers are the various retail outlets (retailers). Wholesaler extends credit to old customer and special discounts are offered to new customers (retailers). You have to generate an E-R model for the above DBMS application with the scope restricted to details (queries on) of customers (retailers), products stocked and their price discounts and credits offered etc.

Q 2. Bob and Martin opened a CD Company, Inc., a family-owned business that sells audio CDs of classic and best-selling children's stories. The Company has a number of distributors from whom they purchase the CDs for resale. For selling purposes, the CDs are classified by appropriate age groups: 4–6; 7–10; and 11–14. Roughly 30% of total sales occur within their single retail store; the remaining 70% are through mail order. Sales are particularly strong during the summer vacation months and Christmas shopping season. CD, Inc. has hired you to design a relational database to manage all their data.

The ERD should reflect the following:

- The Company offers its customers a purchasing incentive: all CDs are always discounted 40% from the retail price.
- The Company likes to store the names of "potential" customers, even if they've never done business with them.
- 3 times each year, the Company sends out 5–6 page brochures to advertise their top-selling and latest-release CDs, including general descriptions of each CD.

Q 3. The railway reservation system facilitates the passengers to enquire about the trains available on the basis of source and destination, booking and cancellation of tickets, enquire about the status of the booked ticket, etc. The aim of case study is to design and develop a database maintaining the records of different trains, train status, and passengers. The record of train includes its number, name, source, destination, and days on which it is available, whereas record of train status includes dates for which tickets can be booked, total number of seats available, and number of seats already booked. You have to prepare an ERD for railway reservation system.

Description:

Passengers can book their tickets for the train in which seats are available. For

this, passenger has to provide the desired train number and the date for which ticket is to be booked. Before booking a ticket for a passenger, the validity of train number and booking date is checked. Once the train number and booking date are validated, it is checked whether the seat is available. If yes, the ticket is booked with confirm status and corresponding ticket ID is generated which is stored along with other details of the passenger. After all the available tickets are booked, certain numbers of tickets are booked with waiting status. If waiting lot is also finished, then tickets are not booked and a message of non-availability of seats is displayed. The ticket once booked can be cancelled at any time. For this, the passenger has to provide the ticket ID (the unique key). The ticket ID is searched and the corresponding record is deleted. With this, the first ticket with waiting status also gets confirmed.

List of Assumption

Since the reservation system is very large in reality, it is not feasible to develop the case study to that extent and prepare documentation at that level. Therefore, a small sample case study has been created to demonstrate the working of the reservation system. To implement this sample case study, some assumptions have been made, which are as follows:

1. The number of trains has been restricted to 5.
2. The booking is open only for next seven days from the current date.
3. Only two categories of tickets can be booked, namely, *AC* and *General*.
4. Total number of tickets that can be booked in each category (AC and General) is 10.
5. The total number of tickets that can be given the status of waiting is 2.
6. The in-between stoppage stations and their bookings are not considered.

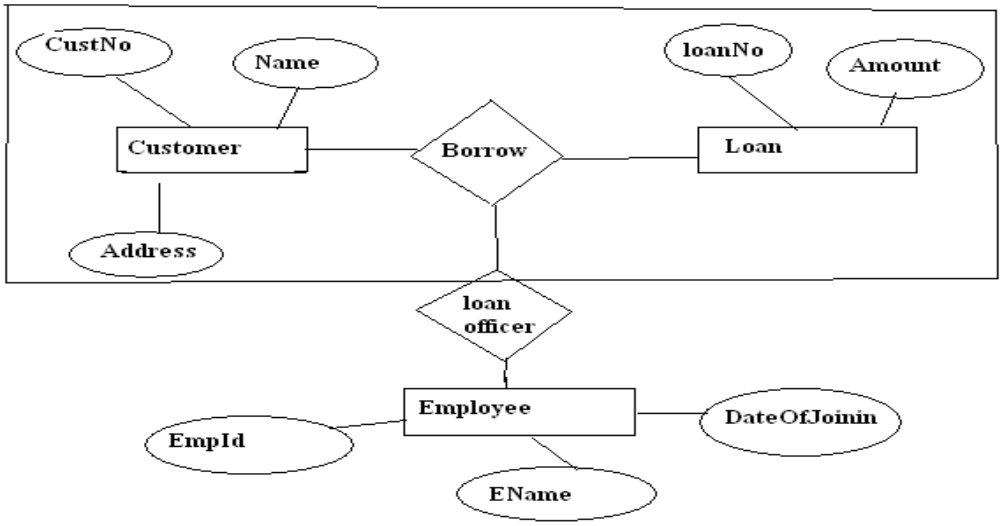
Q 4. Consider the following three relations:

Student (Roll, Name, Course, DateOf Reg)
Book (Bcode, Bname, Publisher, Author, Price)
Issue (Roll,Bcode, DateOfIssue, DateOfRet)

Now write queries for the following in relational algebra as well as in SQL:

1. Find the names of books issued to 'Manoj'.
2. Find the price of the books issued to roll no. 20
3. Find the names of students with their course who issued books on 23rd February 2016.
4. Display the names and publisher of books issued to MCA students.
5. Display the names of books issued to Sonali and Monika both.

Q 5. How will you form tables out of the following ERD that shows the aggregation concept?



Write down the table definition for the given ERD.