Department of Computer Science and Engineering

Faculty of Engineering

University of North Texas

Assignment 1 CSCE5350 Spring 2023

Due on or before 19th February

1. Let's design an Entity-Relationship (ER) model for a Car Rental System with ten entities, considering various relationships, attributes, and constraints:

This Car Rental System scenario involves entities representing customers, cars, car categories, rentals, employees, branches, insurance, payments, pickup locations, and drop-off locations. The relationships between these entities capture the complexities of a real-world car rental system, considering factors such as customer rentals, car categories, employee management, branch oversight, insurance coverage, and payment transactions.

Customer: Attributes: CustomerID (Primary Key), Name, ContactNumber, Email

Customer may have many rentals.

Car: Attributes: CarID (Primary Key), Model, Manufacturer, Year, RentalRate

One car can be rented many times by many customers in each instance.

Car belongs to a one car category and many cars can be in one car category.

CarCategory: Attributes: CategoryID (Primary Key), CategoryName

CarCategory can have many cars in it. Each rental has a car category.

Rental: Attributes: RentalID (Primary Key), RentalDate, ReturnDate, TotalCost

Customer may have many care rentals. Rental may have one or many cars.

Employee: Attributes: EmployeeID (Primary Key), Name, Position

Employee processes the rental. One employee may process many rentals. One employee manages several branches. Some employees do not manage any branch.

Branch: Attributes: BranchID (Primary Key), Location

One branch can store (park) many cars. In a branch, there can be many employees working for that branch.

Insurance: Attributes: InsuranceID (Primary Key), PolicyNumber, CoverageDetails

Insurance can cover many rentals.

Payment: Attributes: PaymentID (Primary Key), PaymentDate, Amount

Customer may have many payments. One rental can be made in many payments.

PickupLocation: Attributes: PickupLocationID (Primary Key), Location

Many rentals can be picked up from a single PickupLocation

DropoffLocation: Attributes: DropoffLocationID (Primary Key), Location

Many rentals can be returned to a DropoffLocation

1. Answer the following questions based on the above ER model.
   1. Write an SQL query to perform the following tasks.
      1. To create the table Customer-10
      2. To retrieve the rental history of a given customer (Customer Id is provided)-10
      3. To find the employee details with the branch he/she is working at and the rentals that he/she has processed so far. The employee Id is provided.-10
      4. The amount of money each customer spent on rentals for the past month. -15
2. Install and run your queries on MySQL -**5 Marks**

steps

1. Install MySQL server and MySQL Workbench.
2. Load the sample dataset from <https://www.db-book.com/>.
3. Run this SQL statement. **select \* from instructor**;
4. Submit the result table as a screenshot.

**You must state the assumptions that you made during the design process. But you must design all the requirements mentioned above.**

**Note**: Plagiarism is strictly enforced, and identical solutions get ZERO marks and no negotiations.

**You Must use a software (Lucid Chart or equivalent) to create ER diagram. Handwritten diagrams will not be graded.**

Please contact graders if you have any questions regarding the E-R diagrams, mapping into relations, or normalization.