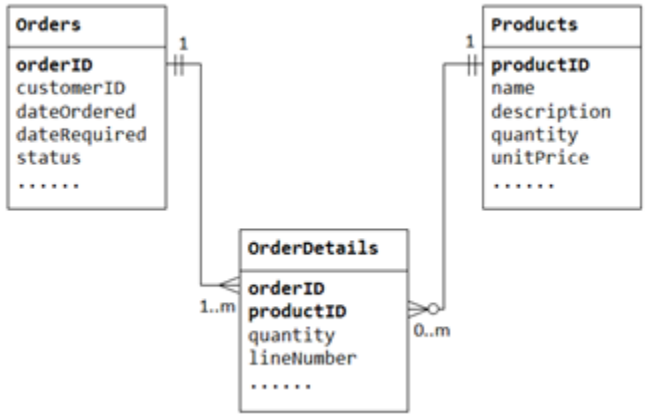


CMP 320L

Database Systems

Fall 2022 Course Project

Title: Car Rental System Database

Group members : Joseph Press (b00095348), Farah Watsy (g00084537), Kartavaya Bhargava (b00082755), Mariyam Ahmed (g00085178)

Description:

The database that we are creating is modeling a rental car agency. This system captures the data through the following entities: car, bike, vehicle, customer. The goal is to create a back-end user interface with separate permissions for various users so that they can view the available inventory of cars, see which customers rented which cars, etc.

Data Requirements:

We will create a database schema design with the following requirements for our Vehicle Rental Database System:

1. We have two types of vehicles: cars and bikes. Each of these vehicles has a unique identifying ID, Year, Acquisition date, and availability state.
2. Each car vehicle has a plate number, unique vehicle ID for identification, Model type, and Daily cost for renting.
3. Each bike also has a plate number, unique vehicle ID for identification, model type, and daily cost for renting.
4. Customers can rent vehicles by using a uniquely identifying customer ID. They must also input their license, email, phone number, first name, and last name.
5. Every rental instance is tracked by a unique transaction ID. The vehicle ID is also stored to identify which vehicle is being rented. Moreover, the customer ID is stored to identify who rented the corresponding vehicle.

Functional Requirements:

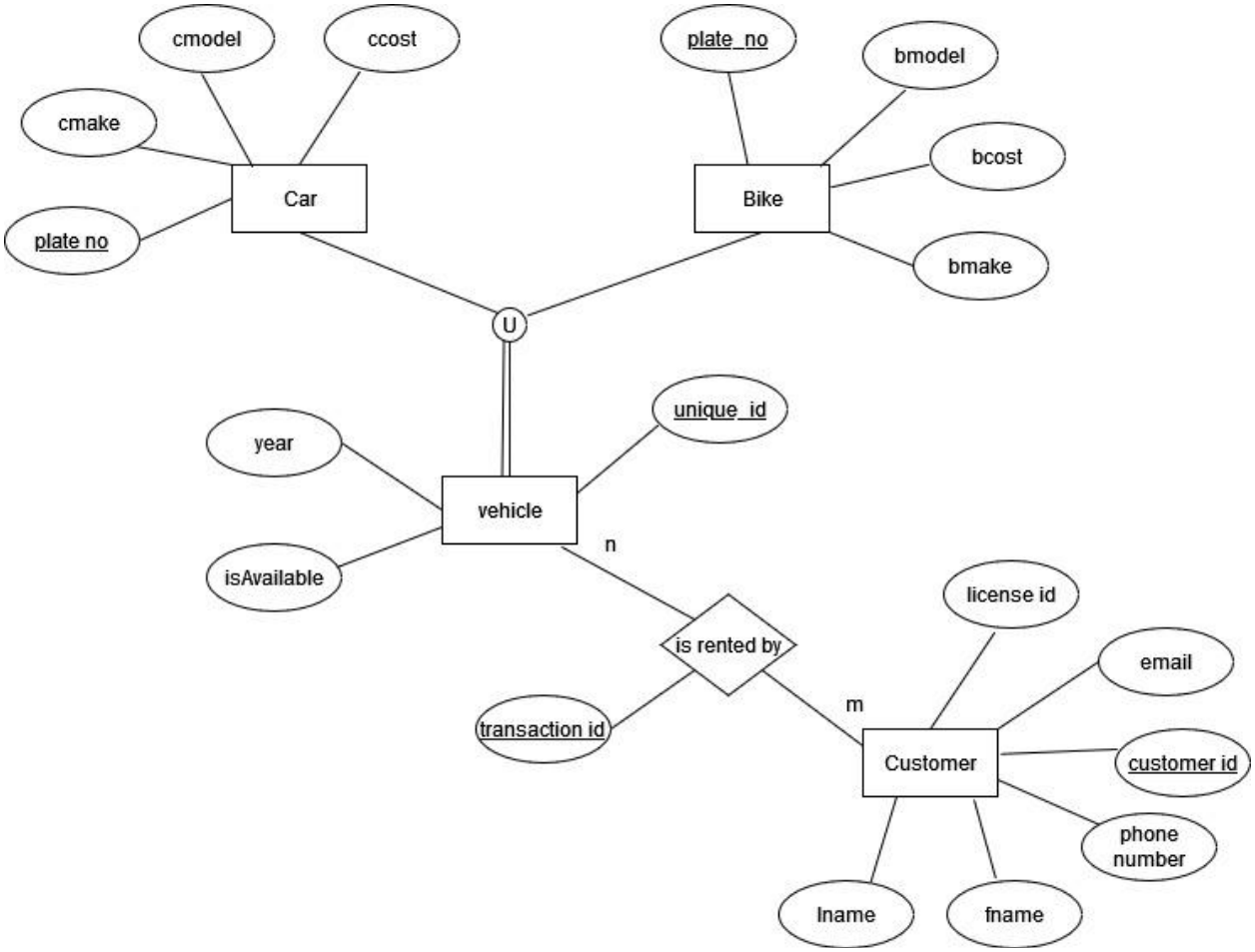
- The system will allow for two different user permissions: administrator and employee (normal). The only difference is that administrators are also able to register more customers and edit their information.
- The system generates an error message in case of unavailability of a vehicle.
- The system allows the employees to edit the vehicle inventory to alter availability based on various factors.
- The system generates an error message if the employee tries to rent a vehicle to a customer that does not already exist.

- The employee can fill out a form to create in the system.
- The system generates a success message upon confirmation of rental

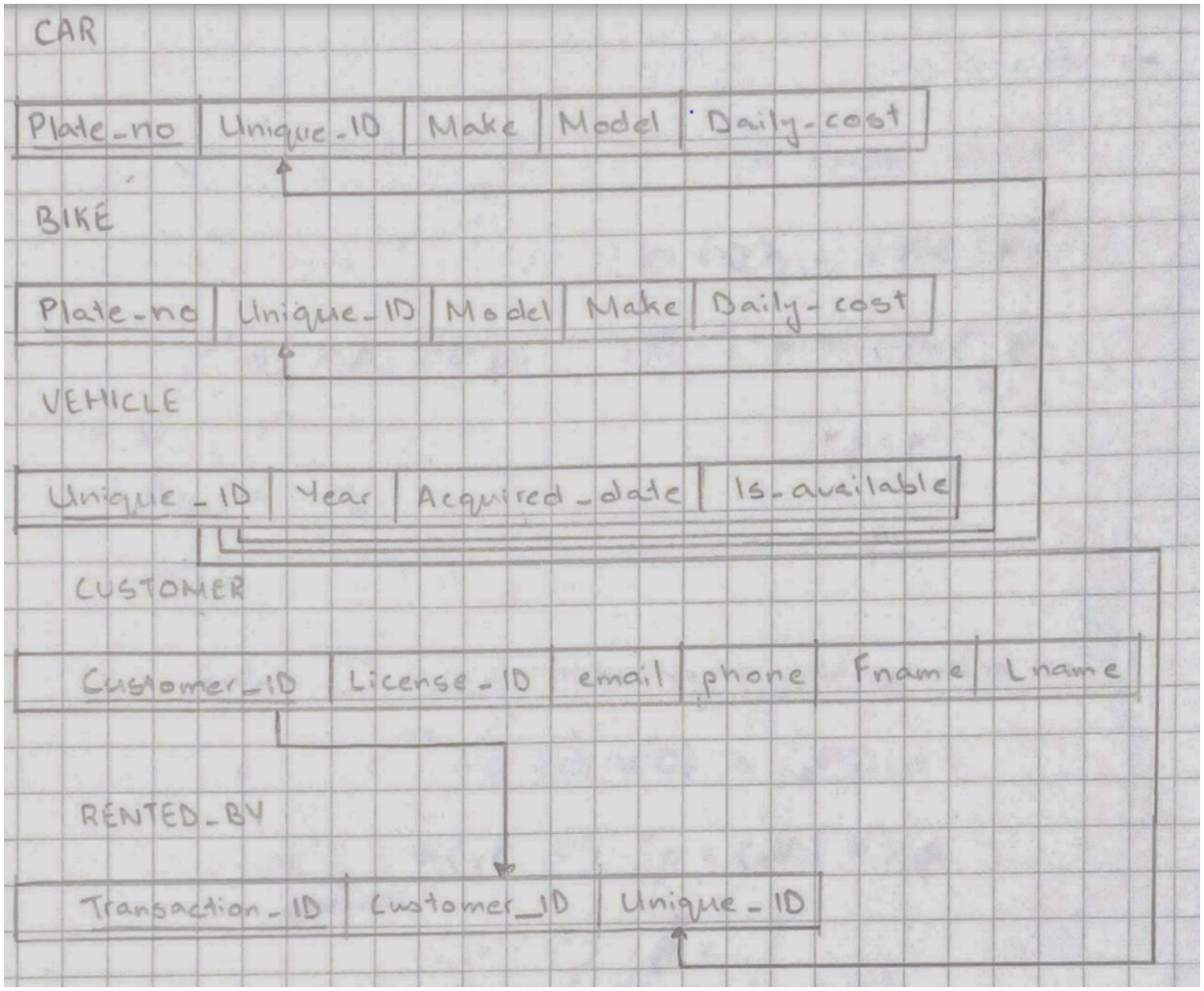
Non Functional Requirements:

- User friendly
- Easy to operate
- Secure
- Quick response times
- GUI is quick to learn

EER Model:



Database Schema:



Keys and Constraints (assumptions):

The car entity has primary key plate_no, and the bike entity has primary key vin. Together, the bike and car entities form a union for the vehicle entity.

- Assumption: a vehicle is either a bike or a car.

The customer entity has a composite primary key of customer_id and license_id.

- Assumption: a customer can rent several vehicles, and a vehicle can be rented by several customers.

Foreign Keys:

- Plate_No of the car table references vehicle (Plate_No)

- Plate_No of the bike table references vehicle (Plate_No)
- Customer_id of the is_rented_by table references Customer (Customer_id)
- Plate_no of the is_renetd_by table references Vehicle (vehicle_id)