Car Rental Store

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CIS 353 (01): Database

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Overview / Requirements Specifications

Our database revolves around a car rental store. It will hold several different entities that emulate the average business day for a car rental business. One of the most important entities will be the customer, and it will hold several attributes that identify the given customer and relate that customer to the transactions he completes and the vehicles he rents. We will also include an employee as an entity, which will hold attributes identifying the employee and relate that employee to his or her job roles. In addition, the database will include vehicles. Attributes describing a vehicle will be added, and we will relate that vehicle to the booking and maintenance it receives, and the customer that rents it. To track the rental process, a booking entity will be included, which includes attributes associated with it, authorization, reserving a vehicle, and the billing. Finally, the financial aspects are stored in a billing entity. Details about the billing will be included as attributes, and the billing will get related back to the booking that occurred. Through the use of this database project, we believe we will display an appropriate representation of many car rental businesses.

Entities

Customer

Each customer will have their very own identification number which will be used to look up their records. Other attributes to a customer are their first names, last names, driver's license, date of birth, and multiple phone numbers. A customer can have several bookings, but a booking can only have one customer. In order for a person to be considered a customer, they have to book a vehicle and a booking will always have a customer.

Vehicle

The Vin number will be used to look up a specific vehicle on the lot since it is unique to each vehicle. A customer can only rent one vehicle since the renter will be the driver, but not all vehicles will be rented to a customer at any given time. Like the relationship with the customer, not all vehicles will be booked but there will always be a customer with a vehicle. A vehicle can only receive one booking at a time, and the booking will only have

one vehicle as a result. A vehicle will always be maintained by an employee and there could be multiple vehicles being maintained by multiple employees. Additional information kept on a vehicle include its make, model, year, rate, mileage, and color. The rental rate for a vehicle is decided upon by the type of vehicle that gets rented, and the mileage that it travels.

Booking

The customer's booking information will be on file and can be looked up using the booking identification number assigned. The booking always involves a vehicle and there is only one booking for a single vehicle. A booking doesn't always have a bill because the rental could be complementary with a business, or it can be free because of reward points. However, there can be multiple bills for multiple bookings because the customer could be on a payment plan and they could have more than one booking. An employee could authorize more than one booking and an employee must authorize a booking for it to be valid. Other information that is noted includes the starting date that the customer rented the date in which they return the vehicle.

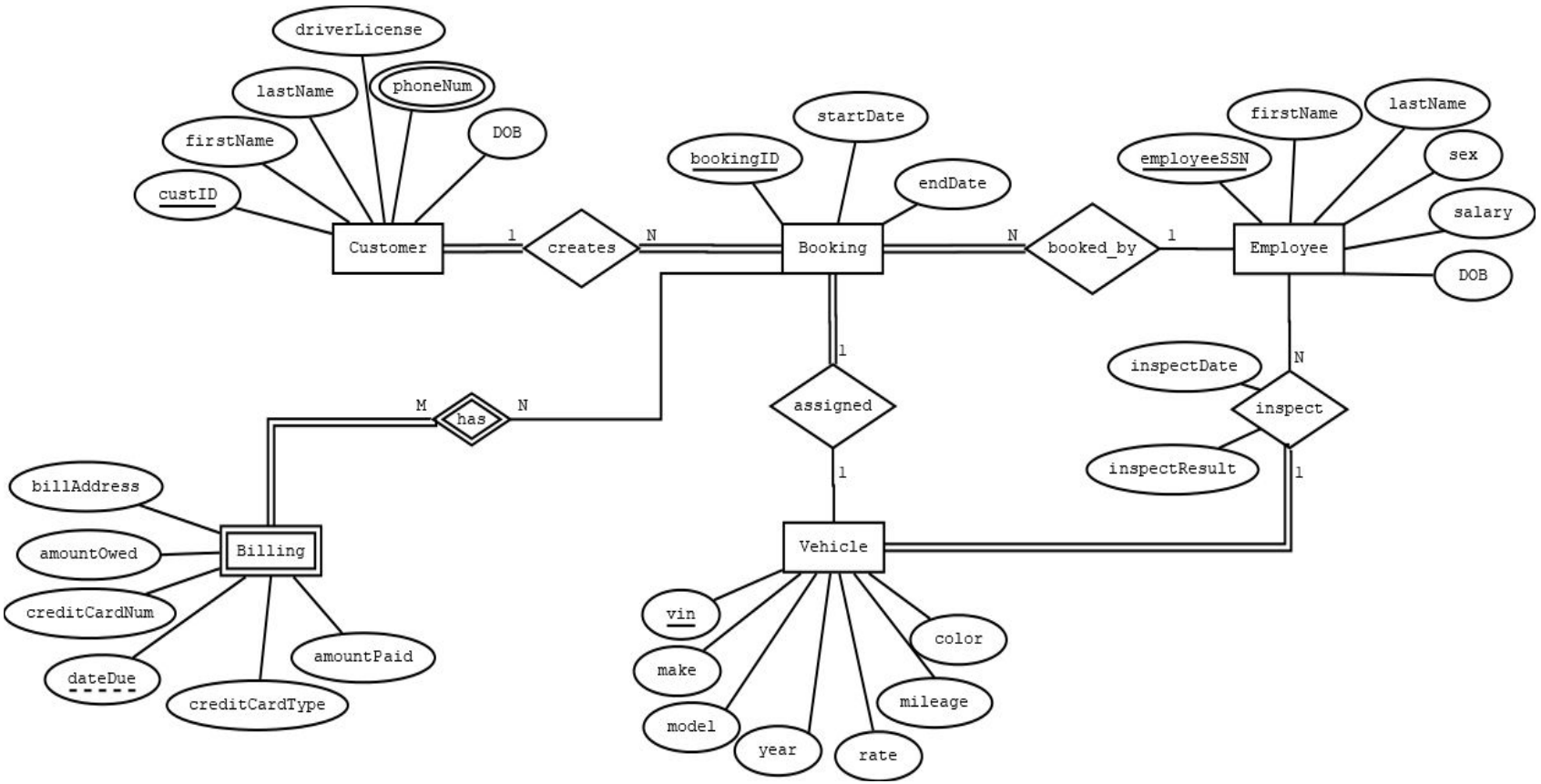
Billing (Weak Entity)

In order for a bill to exist, there has to be an employee authorized booking. The bills can be looked up using a date. A customer may make payments on different dates for the same booking up until the full amount owed for a rental has been paid, but a customer can't make multiple payments on the same day. Because of this, there can be multiple bills being made for the vehicle that was booked because a customer could be on a payment plan. A customer can also pay more than what is owed and have the extra money saved for another booking at a different time. The amount owed can be negative if there was a refund issued to the customer. Other important information that is kept track of is amount owed, amount paid, credit card type and number, and a billing address.

Employee

At this car rental store, an employee has two different jobs. An employee may be authorizing a booking but not always. They can authorize several bookings, but a booking can only be authorized by one employee. Another job an employee could have

is that he or she inspects or performs maintenance on a vehicle alone or with several other employees. There may not always be an employee performing maintenance, but maintenance will always be assigned for one or more employees upon a vehicle. The employee's social security number, first name, last name, sex, salary, and date of birth will be recorded when hired .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Basic Relational Schema:

Customer(custID, firstName, lastName, driverLicense, DOB)
Booking(bookingID, startDate, endDate, vehicleVIN, custID, employeeSSN)
Employee(employeeSSN, firstName, lastName, sex, salary, DOB,
vehicleMaintainedVIN, inspectDate, inspectResult)
Vehicle(vin, make, model, year, rate, mileage, color)
Billing(bookingID, dateDue, billAddress, amountOwed, creditCardNum, creditCardType,
amountPaid)
Customer_Phones(custID, phoneNum)

Integrity Constraints

IC Name & Tables	**IC Type**	**English Statement**	**Page # where implemented**	**Page # where tested**
cIC1_KEY , Customer	Key	custID is the key in the Customer table		
bIC2_FKEY Vehicle - Booking	Foreign Key	The Booking table's carVIN attribute must be an existing Vehicle table's VIN attribute		
biIC5_VALIDAMT, Billing	1 Attribute	The attribute "amountOwed" is amount owed for a rental. Its value can be less than zero dollars.		
vIC2_AUDIRATE, Vehicle	2 Attribute, 1 Row	If the make is "Audi", then the rate must be greater than 500.		