

# Car Dealership Database Project

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# The Database Requirement Specifications

Our project will be based on a car dealership company. This particular company may have several dealership locations, each with differing vehicle types, customers, and employees. The point of this project is to allow for a way to track which customers are buying which cars so that the dealership can see which cars are selling. It also creates a way for the customer to keep a record of which car they bought in case anything came up needing the proof of purchase in the future. It also creates a way for employees to track which one is selling the most cars because in every company a little competition is always healthy. For vehicle type, it will show which cars are selling so the company knows which cars they should have more in a stock of.

## **Entities:**

### **Model:**

A vehicle model consists of a string model name, model number and a model year. Since a specific model can be made multiple years, the primary key of the table is the number.

### **Vehicle:**

A vehicle is from a dealership and each vehicle is identified by its VIN number, this will be its primary key. Each vehicle will have a specific cost which could be different from any other vehicle as well as a color which also could be different from any other vehicle. They all come from different dealerships and they all have their own model number.

### **Dealership:**

A dealership is a place where it has vehicles to be bought and sold. In a given dealership business there could be anywhere from 1 to many dealership locations. Each dealership will be identified by its dID which will be its primary key. A dealership will also have a name which could be repeated throughout the other dealerships. A dealership also has an address. Finally, a dealership can have a phone number but dealerships can have multiple phone numbers, so this would be a multivalued attribute.

**Customer:**

A customer is who buys a vehicle. This customer will come into a dealership to buy a car of a specific model. Each customer will be identified by their social security number which will act as a primary key. Each customer also has a name as well as a phone number. After the customer has chosen a vehicle they will have a payment amount and the bill/receipt will be sent to them via email so we will need an email. Following up, each transaction has a contact date that is linked to the employee they worked with.

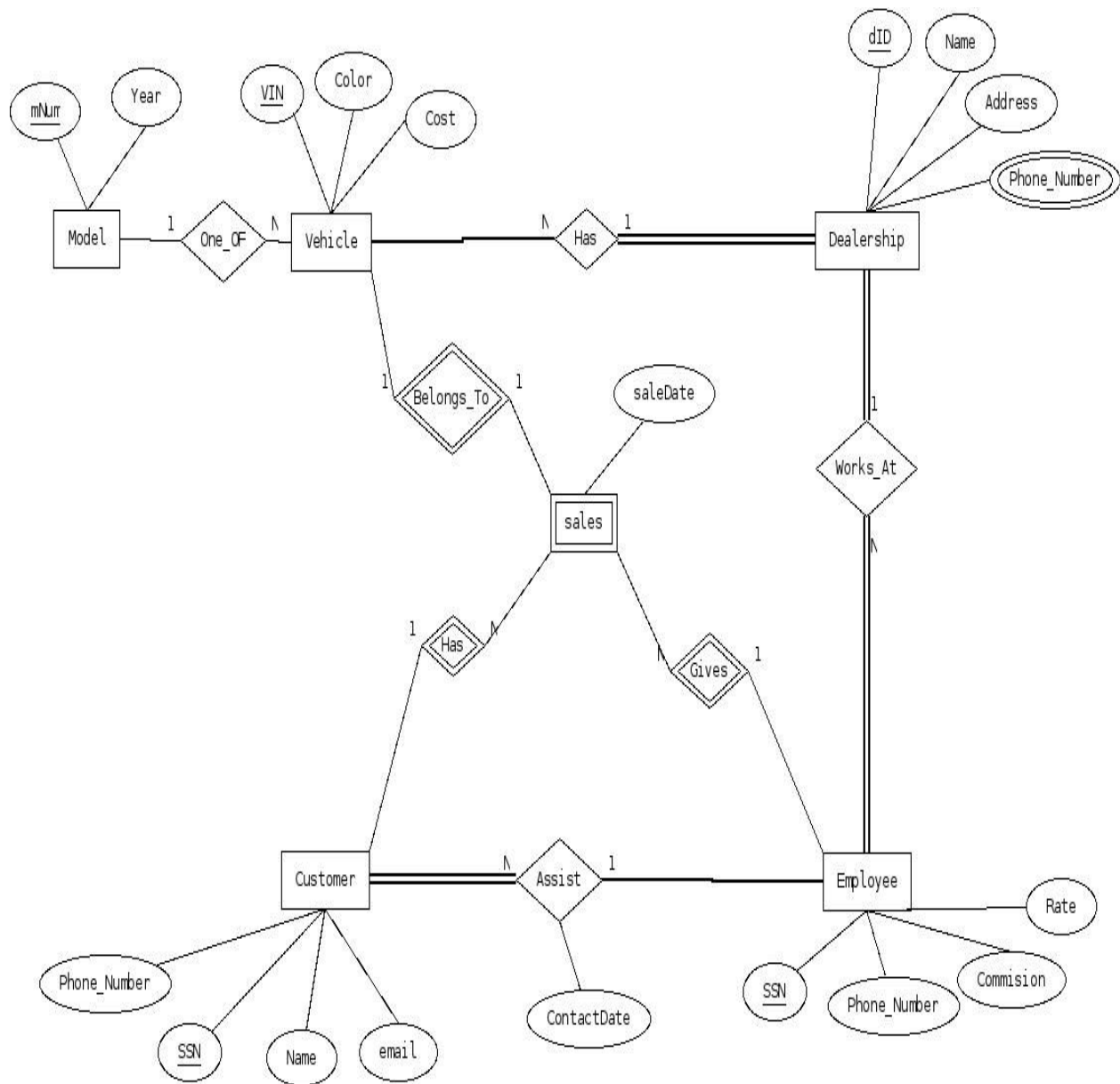
**Employee:**

An employee, like a customer, will be identified by their social security number. Each employee will have a phone number in which they can be reached as well as an hourly rate. On top of an hourly rate because this is a car salesperson they will receive commission which is based person by person and is a percent value on how much an employee will be paid based on the car they sell. Each employee will assist many customers.

**Sales:**

Each vehicle sale will have sales date between the employee-customer, and vehicle transaction. The receipt will have its own ID number (saleID), the employee's ID (eSSN), the customer's ID (cSSN), the vehicle's ID (VIN).

## ER Diagram



## Relational schema

employee(ssn, phoneNum, commish, rate, dID)

customer(ssn, phoneNum, name, email, eSSn, contactDate)

vehicle(VIN, cost, color, dID, mNum)

model(mNum, Year)

dealership(dID, name, address)

sale(SSN, eSSN, VIN, saleDate)

dealerPhoneNum(phoneNum, dId)

**BCNF Relational Schema is the same as above**

## Integrity constraint

| IC names and table                                  | IC type               | English statement   | Page # where implemented | Page # where tested |
|---|-----------------------|---|--------------------------|---------------------|
| dId in Dealership                                   | Key                   | A dealership will be identified by its dealership ID number.  | project.out<br>Page 2    | Page 5              |
| dId in employee and dId in the dealership           | Foreign key           | An employee can work for only a single dealership, but a dealership can have multiple employees working for it. | project.out<br>Page 2    | Page 5              |
| cost in vehicle                                     | 1-attribute           | A vehicles price cannot be below \$0  | project.out<br>Page 3    | Page 5              |
| Employee table using attributes commision and rate. | 2-attribute,<br>1-row | If an employee is making more than \$20.00/hour their commision cannot be greater than 10%                      | project.out<br>Page 4    | Page 5              |