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Class: Database Development I

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Project: Car Dealership Database Phase I, 2nd Iteration

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Introduction

The Car Dealership Database is a database management system that keeps track of a new car dealership inventory, the database allows customers to get information on vehicles, such as year, models, trims and specific packages that comes with the specific vehicle.

Project Description

This database will make it possible to track the inventory of different vehicles in the system. First, customers will go to the website, choose a class or body type of vehicle and look through a list of different models, then they will be able to choose a model, look through the trims. The trims will allow them to see the options that come with it and finally they will have an option to either purchase or request a test drive.

Problem Statement:

Not having an organized database may lead to the loss of data, physical inventory and customers. Our database model increases accessibility, organizes data, and helps keep track of inventory.

Objective

This database is designed to manage the inventory of the dealership. To see what cars are available and what cars are already sold. It Allows customers to see their options, before they even buy the car.

Mission Statement

The mission statement for our database is to create a database that allows customers and employees to look up for specific information on vehicles using our Mobile app or Website. This

will allow them to look through our collection of vehicles and get more details on models, trims, engine type, colors, drivetrain, price and classes. Customers will also be able to look up inventory.

Mission Objective

In designing this database, we realized that, depending on its organization and circumstances, the database of an automobile dealership should be organized in a certain way. In this particular case, the employee entity is considered as a super type, which contains two subtypes, the ISA (Internet Sales Assistance) entity, that stores the information that is only matchable with an ISA employee. And also we have the driver entity, which also has its own specificities.
Simplify the buying process by allowing customers to order exactly what they need on the website and get it delivered to them. Reduces business expenses by automating tasks that would normally have to be done by employees.

Business Rules

1. Exclusive Volkswagen Dealership.
2. A customer must place at least one order.
3. One order must only be placed by one customer.
4. Order must include one car.
5. One car must be in one order.
6. One ISA (internet sales Assistance) may assist one or many customers.
7. A customer must be Assisted by only 1 ISA (Internet Sales Assistant).
8. If Customer has many orders It must be assigned to one ISA.
9. One driver may deliver one or many cars.
10. One car must only be delivered by one driver.
11. An ISA may manage many orders.
12. One order must only be managed by one ISA.
13. The inventory may contain one or many cars.
14. One car must be contained in the inventory.

ENTITIES

1. Car Entity

The car entity stores information about the car. This entity is connected to the order entity with a binary mandatory one to many relationship. The car entity is also connected to the driver entity with a binary mandatory one to many relationship. Below is a list of attributes that a car must have:

a. **Car ID** - This attribute is a simple identifier.
b. **Body Type** - A simple attribute, can only be one single value, for instance body type can either be SUV, Sedan, Wagon or Hatchback.
c. **Year** - A simple attribute of just a numerical value.
d. **Model** - A simple attribute with just one value.
e. **(Trim)** - A composite attribute, can be composed of more than one component - exp (SEL R-line, 2.0L Turbo, 8-Speed Auto).
f. **{Color}**- A multi-value attribute. A car can have more than one color.
g. Price - A simple value attribute.
h. Tota Unit- A derived attribute that tracks the total units of a car based on models and trim
i. Status - A derived attribute that tracks whether a car is available or not based on the model and trim

2. Customer Entity

The customer entity stores information about the customer. This entity is connected to the order by a binary mandatory one to many relationship; but a customer will also be assigned to the ISA entity and they share an optional one to many, where one customer must be assigned to one ISA.

The attributes are as listed:

a. **Customer id** - This attribute is a simple identifier that requires nine digits.
b. **Customer fullname (...)** - A composite attribute, It requires first and last name.
c. **Customer Phone Number -** A simple attribute that requires ten digits.
d. Customer Email address - A simple attribute that requires a valid email address.
e. **Customer address (...)** - A composite attribute that requires Number, Street, City, State, Zip.
f. **Order date** - A simple attribute that requires six digits, exp (09/12/2022)

3. Inventory Entity

The inventory entity stores the information for the inventory. This entity shares a relationship of mandatory one to optional many with the car entity; where inventory may contain 1 or many cars and a car must be included in the inventory.

The attributes for the inventory entity is.

a. Inventory id - The ID of the inventory
b. Iventory_total - This attributed keep tracks of total of inventory

4. Employees Entity

The employee entity stores the information for the employees. It is a super entity with two subtypes; the **Driver** entity and the **ISA** (Inter Sales Assistant) entity. This entity's constraint is partial specialization because the employee entity can have more than the two listed subtypes.

It's attributes are:

a. **Employee id** - This attribute is a simple identifier.
b. Employee full name (...) - A composite attribute that requires first and last name.
c. Employee SSN - A simple attribute.
d. Employee address (...) - A composite attribute that requires Number, Street, City, State, Zip.
e. **Title** - A simple attribute, that tells the current position of the employee.
f. **Start date** - A simple attribute.
g. **Salary** - A simple attribute.

5. ISA (Internet Sales Assistant)

ISA is a sub-entity of employees, it stores information about the ISA. It has a one to many relationship with the Customer entity, and a mandatory one to many relation with the Order entity.

Its attributes are:

a. **Sales number** - A simple attribute that attaches a sale to the ISA.
b. **Commission** - A simple attribute.

6. Driver

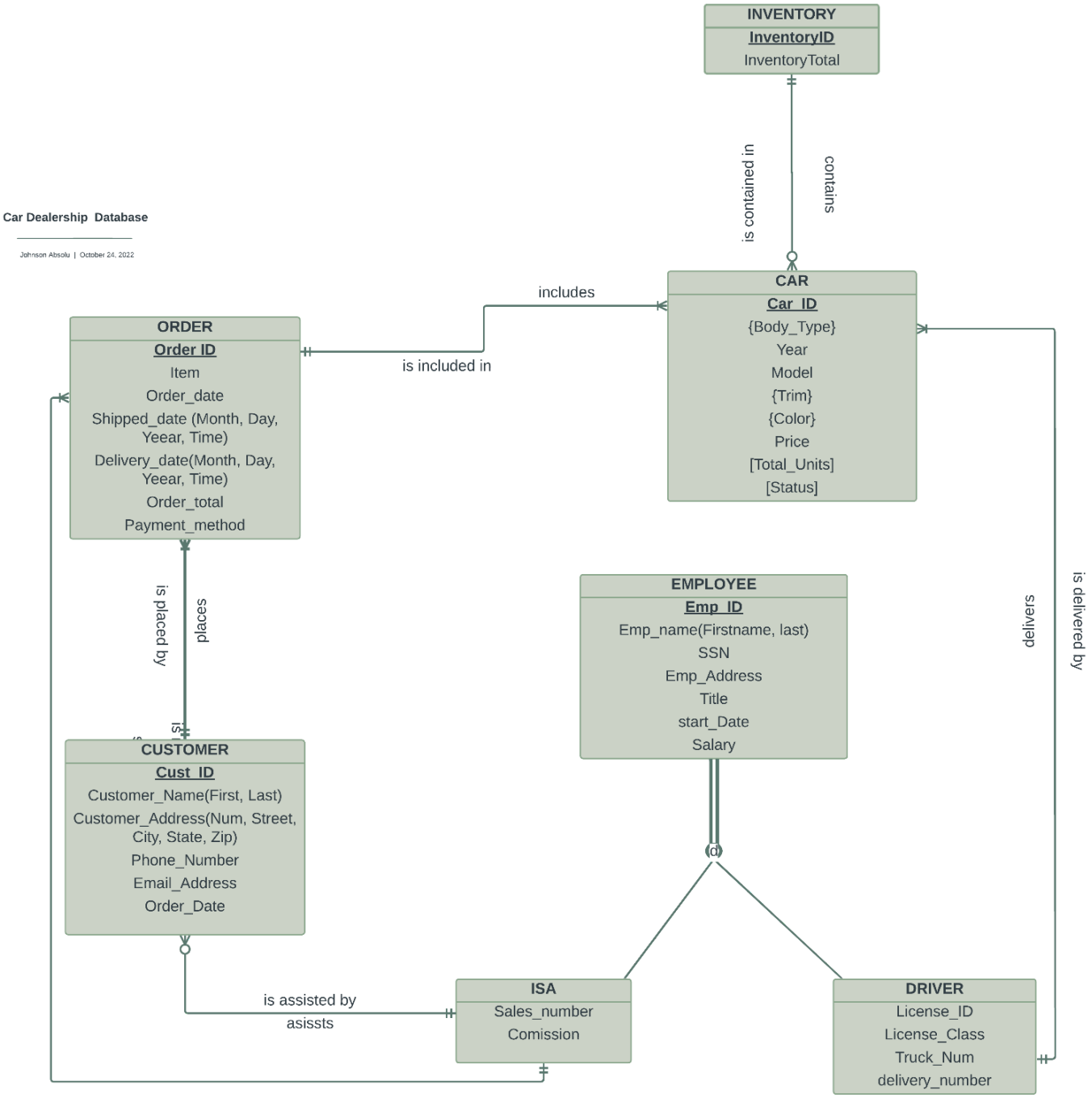
Driver is a sub-entity of employees, it stores information about the Driver. It has a mandatory one to many relationship with the Car entity. The attributes are listed below

a. **License ID** - A simple attribute.
b. **License class** - A simple attribute that tells the class of the driver's license and what type of trucks they can drive.
c. **Truck number** - A simple attribute.
d. **Delivery number** - A simple attribute

7. Order Entity

This entity stores information about the order. It has a mandatory one to many relationship with the Car entity, the Customer entity and the ISA entity. Below are the attributes:

a. **Order id** - A simple attribute and identifier.
b. **Item** - A simple attribute that describes what type of item is included in an order.
c. **Order date** - A simple attribute that shows the date an order was placed.
d. **(Shipped date)**- A composite attribute that shows the date an order was shipped. This attribute includes time and date.
e. **(Delivery date)** - A composite attribute that shows the date an order was delivered. This attribute includes time and date.
f. **Order total** - A simple attribute that shows total cost of all items in an order.
g. **Payment method** - A simple attribute that shows the type of payment was used to place the order.


Car Dealership Database
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INVENTORY
InventoryID
InventoryTotal
is contained in
contains
CAR
Car_ID
{Body_Type}
Year
Model
{Trim}
{Color}
Price
[Total_Units]
[Status]
includes
is included in
ORDER
Order ID
Item
Order_date
Shipped_date (Month, Day, Yeear, Time)
Delivery_date(Month, Day, Yeear, Time)
Order_total
Payment_method
is placed by
placed
EMPLOYEE
Emp_ID
Emp_name(Firstname, last)
SSN
Emp_Address
Title
start_Date
Salary
delivers
is delivered by
CUSTOMER
Cust_ID
Customer_Name(First, Last)
Customer_Address(Num, Street, City, State, Zip)
Phone_Number
Email_Address
Order_Date
d
is assisted by
asissts
ISA
Sales_number
Comission
DRIVER
License_ID
License_Class
Truck_Num
delivery_number