Database Purpose:

The purpose of the database is to maintain the data used to assist and enhance the car sales process, maintenance service, inventory management, and parts procurements. It will be exclusively used by sales and administrative staff in sales and operations.

Business Problems Addressed:

- Facilitating efficient scheduling and tracking of maintenance services for vehicles, ensuring timely service delivery and customer satisfaction.
- Providing real-time visibility into vehicle inventory levels, enabling better decision-making regarding stock replenishment, pricing strategies, and sales promotions.
- Generating reports and analytics to assess sales performance, identify trends, and make data-driven decisions to improve sales and operational efficiency.
- Customer Relationship Management. The database stores customer data for personalized communication and targeted marketing, fostering stronger relationships.
- Inventory Optimization. Tracking inventory and supplier information enables proactive replenishment and cost-effective procurement decisions, minimizing costs.

Business Rules:

- **Employee** may have 0 or more **Quotes**, the salesperson may have many, but the service people will not have quotes.
- Each **Order** may only have and only one associated sales **Transaction** after each transaction has been finished, the order can be shipped.
- Each **Service** appointment may only be associated with one and only one **Vehicle**, customers who want to do service for more than one vehicle need to make other appointments.
- Each buyer's payments for one **Order** need to be under only one sales **Transaction**.
- One **Customer** can place many orders, and process many **Transactions**.
- **Vehicle Inventory** can be checked by the **MakeModelID**, people may check the inventory by Make and Model.
- **Employee** may proceed with 0 or more **Orders**, the salesperson may have many, but the service people will not.
- Each **Sale** has 0 or one **Shipment** record.
- **Suppliers** can supply both **Vehicles** and **Parts**
- **Procurement** to **PartInventory** (1 to 1): Each procurement record is associated with one part in inventory.

Entity Name	Why Entity Included	How Entity is Related to Other Entities
Vehicle	Vehicles are the primary products sold by us. Including this entity allows for the management of vehicle inventory and status, tracking important details such as make, model, year, and mileage.	At the core of our database, the "Vehicle" entity, identified by its unique "VIN," serves as a critical link to a range of keys aspects such as a one and only one to one and only one relationship with "Vehicle Information".
Vehicle Inventory	The "Vehicle Inventory" entity is vital for managing the dealership's stock of vehicles and their respective locations. This inclusion aids in optimizing inventory levels and ensures efficient tracking of available vehicles for sales.	Essential for smooth dealership operations, the "Vehicle Inventory" entity helps keep track of the available vehicles. It connects to one of the Vehicle Information's attributes "MakeModelID", which helps people to look up the inventory by both Make and Model.
Vehicle Information	The "Vehicle Information" entity is included to store detailed specifications about each vehicle, such as make, model, year, and other relevant information. This data is crucial for providing comprehensive details about the vehicles in the dealership's inventory.	Each "Vehicle Information: is connected to its "Vehicle" by one and only to one and only one, when you can see the mileage and the status of this car. Besides this, it is also connected to "Suppliers" and "PreviousOwner" entities, where you can see where the car come from. Since our "Supplier" could supply both vehicle and parts, the relationship to "Vehicle Information" is zero or one to zero or more. And the relationship between "PreviousOwners" to "Vehicle Information" is zero or one to one or more, since the previous owner must connect to a car, but not every car must be second-handed. "Vehicle Information" is connected to "Vehicle Inventory" by MakeModelID. We can easily track the inventory level by this, and for a certain type of vehicle, we might have zero or more in stock, if this type of vehicle is in stock, we can see the detailed information of this

		or these vehicles.
Previous Owners	Including the "Previous Owners" entity allows dealership to track the ownership history of vehicles.	"Previous Owners" to be connected to "Vehicle Information" by the unique "VIN" number, one previous owner must be related to one or more cars. But not every car comes from the previous owner.
Customer	Under this database customers are the buyers of vehicles and the people who quote for the price of a certain vehicle. By including the customer entity, the dealership can maintain records of customer information, preferences, purchase history, and contact details, enabling personalized sales and marketing efforts and fostering long-term relationships.	The "Customer" entity is defined by a unique CustomerID, which is connected to the "Sales" entity one and only one to zero or many, each sale must connect to one customer, and the customer could make many orders or just quote for price rather than making the order.
Sales	The "Sales" entity captures information about each sale transaction, including the vehicles' order, the customer involved, and transaction details such as sale price, payment method, and billing information.	The "Sales" entity links to "Shipment" one and only one to zero or one. Since the shipment could be processed only after the transaction has been finalized. But no vehicle needs to be shipped, the customer may choose to pick it up as well. "Sales" is connected to "Order" one and only one to one and only one. And connected to "Customer" zero or more to one and only one. One customer could make zero or more orders, but each sale must be involved with a customer.
Employee	Employees play various roles within the dealership, including salespersons, managers, and administrative staff. Including the employee entity allows for the management of employee information, and roles, ensuring smooth operations and efficient customer service.	The "Employee" entity is connected to "Quote" by EmployeeID one and only one to zero or more. Each Quote must involve a salesperson, but other staff can be quoted with the customer, like the service people. Same situation when connecting to "Order". The service people from the "Employee" are taking care of the service, but other positions are not

		involved at all. So, the relationship is one or more to zero or more.
Supplier	Suppliers provide both vehicle and vehicle parts dealership operations. Including the Supplier the entity allows for the management of Suppliers' information.	The "Supplier" entity is linked to the "Part Information" entity, where each part is associated with exactly one supplier, illustrating a one and only one to zero or more relationship from the part to the supplier. Since the other suppliers might only supply vehicles. So, it is a zero or one to zero or more relationship connected to "Vehicle Information".
Service	After-sales service and maintenance are important aspects of the vehicle ownership experience. Including the service entity allows for the management of service appointments, tracking service history, scheduling maintenance tasks, and ensuring customer satisfaction, thereby enhancing the overall customer experience and loyalty.	Essential for post-sales support, the "Service" entity manages service appointments, tracks service history, and schedules maintenance tasks. With many-to-one connections to the "Part Information" entity through PartID and the "Employee" entity via EmployeeID, it ensures efficient service operations, contributing to overall customer satisfaction and loyalty.
Part Information	The "Part Information" entity is included to store information about vehicle parts, including details from suppliers. This data is crucial for managing inventory levels, tracking part details, and ensuring the availability of parts for service and repairs.	Stepping into the intricacies of inventory management, the "Part Information" entity plays a pivotal role in cataloging the dealership's stock of vehicle parts. Through a many-to-one relationship with the "Supplier" entity via SupplierID, it ensures traceability of each part to its specific supplier, enabling effective inventory management and streamlined procurement processes.
Quote	Including the "Quote" entity is necessary to capture information about sales quotes, including details about employees, customers, and vehicles. This data supports the quoting process and provides insights into potential sales transactions,	Crucial for sales communication, the "Quote" entity captures transaction details. With many-to-one ties to the "Employee" and "Customer" entities through EmployeeID and CustomerID, and a link to the "Vehicle" entity through VIN, it provides a

	facilitating effective communication between the dealership and customers.	comprehensive overview of each sales quote.
Address	The "Address" entity is included to manage information about shipping addresses related to shipments. This data is crucial for the logistics and delivery processes, ensuring accurate and timely deliveries to customers.	Managing shipping details, the "Address" entity ensures accurate deliveries. Linked many-to-one with the "Shipment" entity through ShipmentID, it contributes to efficient logistics and positive customer experiences.
Shipment	The "Shipment" entity is included to facilitate the management of shipments, including information about the shipment status, shipper details, and shipment dates. This data is vital for tracking the delivery process and ensuring timely and accurate deliveries to customers.	Many-to-One relationship with "Address" through ShipmentID for tracking shipping addresses related to shipments. - Many-to-One relationship with "Vehicle" through VIN for associating shipments with specific vehicles.