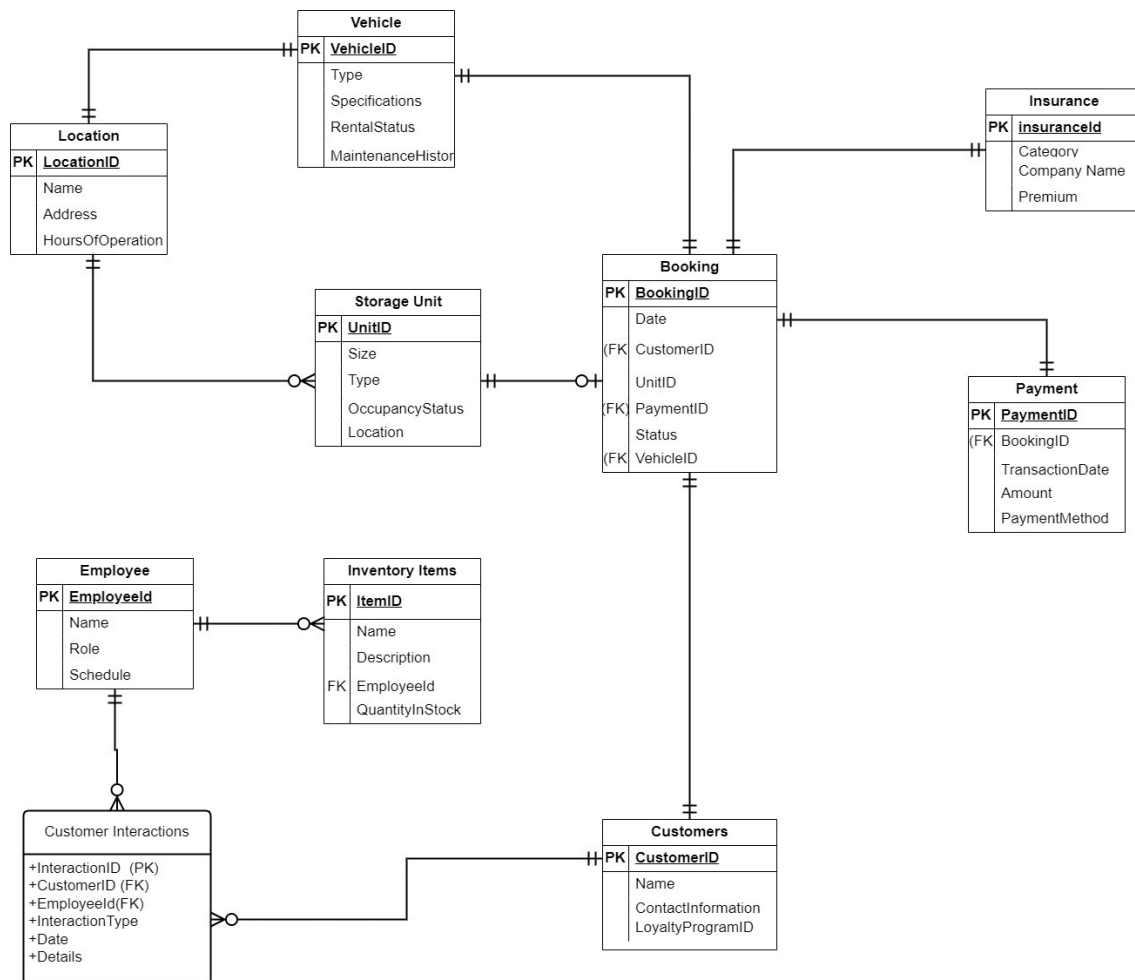


P2. Database Design, Initial ERD

Moving and Storage Rental Services

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Initial ERD:



Entities and Attributes:

1. Vehicle

- **Attributes:**
 - VehicleID (PK)
 - Type
 - Specifications
 - RentalStatus
 - MaintenanceHistory

2. Location

- **Attributes:**
 - LocationID (PK)
 - Name
 - Address
 - HoursOfOperation

3. Storage Unit

- **Attributes:**
 - UnitID (PK)
 - Size
 - Type
 - OccupancyStatus
 - Location (FK, referencing LocationID)

4. Booking

- **Attributes:**
 - BookingID (PK)
 - Date
 - Status
 - CustomerID (FK)
 - UnitID (FK, referencing UnitID)
 - PaymentID (FK)
 - VehicleID (FK, optional, referencing VehicleID)

5. Employee

- **Attributes:**
 - EmployeeID (PK)
 - Name
 - Role
 - Schedule

6. Inventory Items

- **Attributes:**
 - ItemID (PK)
 - Description
 - QuantityInStock
 - EmployeeID (FK, referencing EmployeeID)

7. Customers

- **Attributes:**
 - CustomerID (PK)
 - Name
 - Contact Information
 - Loyalty Program ID

8. Customer Interactions

- **Attributes:**
 - InteractionID (PK)
 - InteractionType
 - Date
 - Details
 - CustomerID (FK, referencing CustomerID)
 - EmployeeID (FK, referencing EmployeeID)

9. Insurance

- **Attributes:**
 - InsuranceID (PK)
 - Category
 - Company Name
 - Premium

10. Payment

- **Attributes:**
 - PaymentID (PK)
 - TransactionDate
 - Amount
 - PaymentMethod
 - BookingID (FK, referencing BookingID)

Definition :

1. Vehicle

- **Entity Definition:** Represents the various vehicles available for rental.
- **Attributes:**
 - **VehicleID (PK):** A unique identifier for each vehicle.
 - **Type:** The category or model of the vehicle.
 - **Specifications:** Detailed specifications of the vehicle, including size, capacity, etc.
 - **RentalStatus:** The current rental status of the vehicle, e.g., available, rented, under maintenance.
 - **MaintenanceHistory:** Records of the vehicle's maintenance activities and history.

2. Location

- **Entity Definition:** Represents the physical locations where the storage units are situated.
- **Attributes:**
 - **LocationID (PK):** A unique identifier for each location.
 - **Name:** The name of the location.
 - **Address:** The physical address of the location.
 - **HoursOfOperation:** The working hours of the location.

3. Storage Unit

- **Entity Definition:** Represents individual storage units available for rent.
- **Attributes:**
 - **UnitID (PK):** A unique identifier for each storage unit.
 - **Size:** The size dimensions or capacity of the storage unit.
 - **Type:** The type or category of the storage unit.
 - **OccupancyStatus:** The current occupancy status, e.g., occupied, available, under maintenance.
 - **Location (FK):** Refers to the location where the storage unit is situated.

4. Booking

- **Entity Definition:** Represents the bookings made by customers for vehicles and storage units.
- **Attributes:**
 - **BookingID (PK):** A unique identifier for each booking.
 - **Date:** The date when the booking was made.
 - **Status:** The current status of the booking, e.g., confirmed, pending, cancelled.
 - **CustomerID, UnitID, PaymentID, VehicleID (FKs):** Reference to the customer making the booking, the storage unit and vehicle booked, and the payment made.

5. Employee

- **Entity Definition:** Represents the employees working in the organization.
- **Attributes:**
 - **EmployeeID (PK):** A unique identifier for each employee.
 - **Name:** The name of the employee.
 - **Role:** The role or position held by the employee in the organization.
 - **Schedule:** The working schedule of the employee.

6. Inventory Items

- **Entity Definition:** Represents items in the inventory, such as packing materials.
- **Attributes:**
 - **ItemID (PK):** A unique identifier for each item.
 - **Description:** A description of the item.
 - **QuantityInStock:** The current quantity available in stock.
 - **EmployeeID (FK):** Reference to the employee responsible for the item.

7. Customers

- **Entity Definition:** Represents the customers availing the rental services.
- **Attributes:**
 - **CustomerID (PK):** A unique identifier for each customer.
 - **Name:** The name of the customer.
 - **Contact Information:** The contact details of the customer.
 - **Loyalty Program ID:** The ID associated with the customer's membership in the loyalty program.

8. Customer Interactions

- **Entity Definition:** Records of interactions between customers and employees.
- **Attributes:**
 - **InteractionID (PK):** A unique identifier for each interaction.
 - **InteractionType:** The type or nature of the interaction.
 - **Date:** The date of the interaction.
 - **Details:** Detailed information or notes about the interaction.
 - **CustomerID, EmployeeID (FKs):** References to the involved customer and employee.

9. Insurance

- **Entity Definition:** Represents the insurance options available for rentals.
- **Attributes:**
 - **InsuranceID (PK):** A unique identifier for each insurance option.
 - **Category:** The category or type of insurance.
 - **Company Name:** The name of the insurance company.
 - **Premium:** The premium cost associated with the insurance.

10. Payment

- **Entity Definition:** Represents the payment transactions made by customers for their bookings.
- **Attributes:**
 - **PaymentID (PK):** A unique identifier for each payment.
 - **TransactionDate:** The date when the payment transaction occurred.
 - **Amount:** The total amount of the payment.
 - **PaymentMethod:** The method used for the payment, e.g., credit card, cash, etc.
 - **BookingID (FK):** Reference to the associated booking.

Relationships and Cardinalities:

1. **Vehicle to Booking (Many-to-One, Optional)**
 - Each booking can be associated with zero or one vehicle, but a vehicle can be associated with many bookings.
2. **Storage Unit to Location (Many-to-One)**
 - Many storage units are associated with one location.
3. **Booking to Customer (Many-to-One)**
 - Many bookings are made by one customer.

4. **Booking to Storage Unit (Many-to-One)**
 - Many bookings can be associated with one storage unit over time (but not simultaneously).
5. **Booking to Payment (One-to-One)**
 - It's a one-to-one relationship Each booking is associated with one payment.
6. **Inventory Items to Employee (Many-to-One)**
 - Many inventory items are managed by one employee.
7. **Customer Interactions to Customer (Many-to-One)**
 - Many customer interactions are associated with one customer.
8. **Customer Interactions to Employee (Many-to-One)**
 - Many customer interactions are recorded by one employee.
9. **Booking to Insurance (Many-to-Many)**
 - (Note: It's a many-to-many relationship) Many bookings can have many insurance options, and vice versa.
10. **Booking to Employee (Many-to-Many)**
 - (Note: It's a many-to-many relationship, assuming multiple employees can handle different aspects of one booking and vice versa).