Car Dealership Management System

Introduction to Database Systems - **(DBS211)**

**Milestone 1 – Project Idea and Proposal**

**Group 3**

**Pouya Rad,** Seyed Hossein Sajedi

**Professor:** Tiruchengode Vijayalakshmi

**July 19, 2024**

**Introduction:**   
The automotive industry, particularly car dealerships, requires efficient management of vehicle inventory, customer information, and service records. Our involvement with the automotive sector has highlighted the need for an integrated system to streamline operations and enhance customer service. Therefore, our group has chosen to design a database for a car dealership management system.

**Problem statement:**  
Car dealerships need a centralized database to manage vehicle inventory, track sales transactions, and maintain service records to improve operational efficiency and customer service.

**Solution:**  
Our team will develop a database to support a car dealership management application. This system will enable the dealership to manage its inventory, track sales and service records, and generate insightful business reports.

**Requirements**

1. User Login/Registration:
   * Secure user authentication.
   * Role-based access control.
2. Vehicle Inventory Management:
   * Vehicle details (make, model, year, VIN, color, price).
   * Vehicle status (available, sold, under maintenance).
3. Customer Management:
   * Customer profiles (contact information, purchase history, service history).
4. Sales Management:
   * Sales transactions (vehicle sold, sales date, sales representative, price, payment method).
5. Service Records:
   * Service appointments and history (vehicle, customer, service details, date, cost).
6. Reporting:
   * Inventory reports (current inventory, sold vehicles).
   * Sales reports (monthly sales, sales by representative).
   * Customer reports (demographics, purchase history).
   * Service reports (service activity, revenue from services).

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**Milestone 2 – Project ERD and Data Dictionary**

**Group 3**

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**July 25, 2024**

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TABLE: **Sales**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Column** | **Data Type** | **Size, Precision** | **Default** | **PK/FK** | **Required** | **Range** | **Sample Data** | **Notes** |
| saleID | NUMBER | 4 |  | PK | Y | 1-9999 | 1234 | Autonumbered identity |
| saleDate | DATE |  |  |  | Y |  | |  | | --- | | 2024/07/01 |  |  | | --- | |  | | Sale Date  (YYYY/MM/DD) |
| customerID | NUMBER | 4 |  | FK | Y | 1-9999 | 5678 | Foreign key from customer |
| VIN | STRING | 17 |  | FK | Y |  | 1HGCM82633A123456 | Foreign key from vehicle |
| salesRepNumber | NUMBER | 4 |  | FK | Y | 1-9999 | 7890 | Foreign key from employees |
| totalPrice | NUMBER | 9,2 | 0.0 |  | Y | 0.00 – 1000000.00 | 34565.75 | Total price in monetary value |
| paymentMethod | STRING | 20 |  |  | Y |  | “Credit Card” | Payment method used |

TABLE: **Employees**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Column** | **Data Type** | **Size, Precision** | **Default** | **PK/FK** | **Required** | **Range** | **Sample Data** | **Notes** |
| employeeID | NUMBER | 4 |  | PK | Y | 1-9999 | 1234 | Autonumbered identity |
| employeeName | STRING | 50 |  |  | Y |  | |  | | --- | | “John Doe” |  |  | | --- | |  | | Full name of the employee |
| empEmail | STRING | 50 |  |  | Y |  | “john.doe@example.com” | Email of the employee |
| empPhone | NUMBER | 11 |  |  | Y | 20000000000-99999999999 | 9055551212 | Phone number assuming North America format |
| jobTitle | STRING | 30 |  |  | Y |  | “Sales Representative” | Job title of the employee |
| supervisorID | NUMBER | 4 |  | FK | N | 1-9999 | 4321 | Foreign key from employees |

TABLE: **Vehicle**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Column** | **Data Type** | **Size, Precision** | **Default** | **PK/FK** | **Required** | **Range** | **Sample Data** | **Notes** |
| VIN | STRING | 17 |  | PK | Y |  | 1HGCM82633A123456 | Vehicle Identification Number (VIN) |
| make | STRING | 30 |  |  | Y |  | “Honda” | Manufacturer of the vehicle |
| model | STRING | 30 |  |  | Y |  | “Civic” | Model of the vehicle |
| vehiclePrice | NUMBER | 9,2 | 0.00 |  | Y | 0.00 – 1000000.00 | 25000.00 | Price of the vehicle |
| color | STRING | 20 |  |  | Y |  | “Black” | Color of the vehicle |
| status | STRING | 20 |  |  | Y |  | “Available” | Status of the vehicle |

TABLE: **Customer**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Column** | **Data Type** | **Size, Precision** | **Default** | **PK/FK** | **Required** | **Range** | **Sample Data** | **Notes** |
| customerID | NUMBER | 4 |  | PK | Y | 1-9999 | 5684 | Autonumbered identity |
| customerName | STRING | 50 |  |  | Y |  | “Alice Johnson” | Full name of the customer |
| custPhone | NUMBER | 11 |  |  | Y | 20000000000-99999999999 | 9055551212 | Phone number of the customer |
| custEmail | STRING | 50 |  |  | Y |  | “jane.doe@example.com” | Email of the customer |
| custVin | STRING | 17 |  | FK | N |  | 1HGCM82633A123456 | Foreign key from Vehicle |

TABLE: **Customer Service**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Column** | **Data Type** | **Size, Precision** | **Default** | **PK/FK** | **Required** | **Range** | **Sample Data** | **Notes** |
| serviced | NUMBER | 4 |  | PK | Y | 1-9999 | 2234 | Autonumbered identity |
| serviceDescription | STRING | 255 |  |  | Y |  | “Oil change” | Description of the service |
| servicePrice | NUMBER | 9,2 | 0.00 |  | Y | 0.00 – 10000.00 | 49.99 | Price of the service |
| customerID | NUMBER | 4 |  | FK | Y | 1-9999 | 5678 | Foreign key from Customer |
| VIN | STRING | 17 |  | FK | Y |  | 1HGCM82633A123456 | Foreign key from vehicle |

TABLE: **Appointments**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Column** | **Data Type** | **Size, Precision** | **Default** | **PK/FK** | **Required** | **Range** | **Sample Data** | **Notes** |
| appointmentID | NUMBER | 4 |  | PK | Y | 1-9999 | 5684 | Autonumbered identity |
| appointmentDate | DATE |  |  |  | Y |  | 2024/07/24 | Appointment Date (YYYY/MM/DD) |
| customerID | NUMBER | 4 |  | FK | Y | 1-9999 | 5142 | Foreign key from customer |
| VIN | STRING | 17 |  | FK | Y |  | 1HGCM82633A123456 | Foreign key from Vehicle |
| serviced | NUMBER | 4 |  | FK | Y | 1-9999 | 2345 | Foreign key from customer service |

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**Milestone 3 – Project Script & Final ERD**

**Group 3**

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**August 2, 2024**

**A diagram of a company

Description automatically generated**Final ER Diagram:

\*\* to make the table creation between our group members possible we temporarily added “MS\_” before the name for the demonstration of the final ER diagram. The names of tables remain without a prefix in the .sql document and table definition \*\*

**Business Rules:**

A car dealership contains many vehicles. Each vehicle can be sold to a customer. A customer can purchase multiple vehicles, but each vehicle can be sold to only one customer.

The dealership employs many sales representatives. Each sales representative can handle multiple sales, but a sale is handled by only one sales representative. Sales representatives work for the dealership and do not belong to any specific department.

Customers can schedule service appointments for their vehicles. A customer can have multiple appointments, but an appointment is for only one customer. A vehicle can be serviced in multiple appointments, but each appointment is for only one vehicle.

The dealership offers many services. Each service can be part of many appointments, but an appointment involves only one service.

Employees of the dealership can have supervisors. A supervisor can supervise multiple employees, but each employee has only one supervisor.

Overall, the dealership maintains comprehensive records of all sales, customers, employees, vehicles, appointments, and services to ensure efficient operations and excellent customer service.

Creation Script, Sample Data Script and Business Report Script are all documented in a single SQL file attached with the submission folder of Milestone 3 names Milestone3.sql