INFO 4707 Term Project Final Report  
Used Vehicle Dealership Management System (UVDMS)

Key Objectives

Objective 1: Effective Inventory Management

Real time inventory tracking, detailed vehicle data, status and price tracking. Keeping an up-to-date record of the vehicles in inventory, allowing easy access to see vehicle status (sellable, reserved). Detailed vehicle data shows make, model, year, color, VIN, odometer, health, transmission, and the base price. It also shows the tracker serial number, the last inspection date, stock number, availability of the car, and the name of the seller. Through health tracking, each vehicle has their condition and status logged. Keeping records status and conditions updated frequently allows for better well-managed records. By tracking prices through market monitoring, employees can view and adjust vehicle prices accordingly.

Objective 2: Customer Information Management

Document customer interaction details such as, first and last name, customer ID, phone number, email address, zip code, state, city, and their physical address. Having these unique customer profiles enables new opportunities for customers. By including these details, salesmen can better understand their preferences and purchase history. Knowing these details provides a more personal and engaging experience for customers.

Objective 3: Retail and Repair Transaction Management

Keep track of the cash flow within the dealership including the sale date, the ID of the customer and employee, the final price, the lienholder, extended warranty, the order ID, and the stock number of the car. Having a comprehensive record of these details provides a financial history that can be reviewed. Tracking repair and maintenance records help with ensuring that everything has been billed correctly. Details tracked include the repair order number, the stock number, repair cost, effective tax rate, and the status of the car. Tracking part expenses to analyzing gives insight on what to stock inventory on based on what sells. Having a record of labor costs displays financing and efficiency.

Objective 4: Test Drive Management

Maintain a log of customer test drives for security and personalized recommendations through customer ID, vehicle ID, date of test drive, duration of test drive, and tracker serial number. Keeping track of these logs allows customers to schedule test drives that avoid conflicting schedules. These test drives should document the customer’s ID, vehicle ID, date, duration, and tracker serial number. These logs provide further insight into what a customer might prefer or have an interest in. Employees will provide better, more personalized recommendations to customers through the information from these logs.

Objective 5: Employee Management

Set employee access levels depending on job title and manage employee data for labor and payroll. Managing employee access on the basis of their job roles, ensuring that they only access data relevant to their responsibilities. Keeping track of these logs allows employers to keep track of how long an employee works, and they earn hourly. It also logs their first and last name, their title, their ID, and who their manager is. These logs allow upper management to see their staff, and how much it costs to keep them hired, and how much time they dedicate to the company.

User Requirements

*Admin Users*

**Inventory Management**:

* + Ability to add, update, or remove vehicles in the inventory with details like make, model, color, transmission, and condition.
  + Track vehicle status (e.g., Available, Sold, Under Service).
  + Search and filter inventory based on attributes like make, model, year, and condition.
  + Price tracking through market monitoring

**Retail Transaction Management**:

* + Create, update, or cancel a retail transaction.
  + Assign a vehicle and customer to a transaction.
  + Record additional details such as final price, lienholder, and warranty.

**Service Records**:

* + Add new service records with repair details, costs, and estimated time to repair.
  + Update or close service records once completed.

**Test Drive Management**:

* + Schedule, reschedule, or cancel test drives.
  + Record test drive details like duration and date.
  + Document customer ID, vehicle ID, and tracker serial number

*Customers*

**Customer Management**:

* + Add or update customer profiles with personal details, such as name, contact information, and address.
  + View a history of appraisals, test drives, and purchases for each customer.
  + Unique customer profiles

**Test Drive Requests**:

* + Allow customers to request or schedule test drives.
  + Notify employees of new test drive requests or changes to scheduled drives.

**Notifications**:

* + Notify customers via email or SMS about scheduled test drives, service completions, or updates to their purchase.

*Management*

**Employee Management**:

* + Ability to add, update, or remove employee records, including hourly rate, job title, and working hours.
  + View work statistics for employees, such as the number of transactions handled.

**Reporting & Analytics**:

* + Generate reports on sales performance (e.g., transactions by employee, net sales).
  + Access vehicle status and inventory availability.
  + Analyze customer data, such as demographics and personal information.
  + View service record metrics, including repair times and costs.

Maintain logs of all transactions, test drives, disbursements, and updates to records.

*System Requirements*

**Integration**:

* + Ensure the system is up to date with financial software to handle pricing, repair costs, and revenue for tracking and marking.
  + Support notifications and reminders for scheduled test drives or service completion.

**User Permissions**:

* + Role-based access control to restrict data and functionality:
    - Employees should only access data relevant to their roles.
    - Management should have full access to all data and functionality.
  + Sensitive information (e.g., customer details, employee hourly rates) must be viewable only by authorized users.

**Enhanced Searching**:

* + Implement advanced search options for employees to quickly locate vehicles, transactions, or service records.

Business Rules

Inventory

* *Each vehicle must have a unique VIN & STOCK\_NUM.*
* *Each vehicle’s AVAILABILITY must be assigned to “Available”, “Sold” or “Maintenance”.*
* *The “available” cars must be the only ones ready for purchase or test drives.*
* *A vehicle can have one or more service records.*

Retail Transactions

* *Every transaction must have a unique ORDER\_ID.*
* *The transactions must include the total price for the vehicle.*
* *The DATE\_OF\_SALE must be written in its correct format.*
* *A transaction must be associated with one EMP\_ID, one STOCK\_NUM, and one CUSTOMER\_ID.*

Customer Information

* *Every customer must have a unique CUSTOMER\_ID.*
* *Every purchase and test drive must always include CUSTOMER\_ID.*
* *CUSTOMER\_ID must be able to pull up all purchase and test drive histories.*
* *PHONE\_NUM and ZIP\_CODE of the customer must be always up to date.*
* *F\_NAME & L\_NAME must be accurate.*

Service Records

* *Every service record must have a unique REPAIR\_ORDER\_NUM.*
* *Every service record must show REPAIR\_COST, ETR, STATUS & RO\_NUM.*
* *REPAIR\_ORDER\_NUMBER must identify the STOCK\_NUM.*
* *Service records must be only shown to the service department.*

Test Drives

* *Each test drive must have a unique TD\_NUM.*
* *Each test drive record must be linked to a CUSTOMER\_ID and TRACKER\_SN.*
* *The DATE\_OF\_TD and TD\_DURATION must be written in the correct format for every test drive.*

Employee Management

* *Each employee must have a unique EMP\_ID.*
* *JOB\_TITLE must accurately identify the employee.*
* *DIRECT\_MNGR is the only one who can modify the HOURLY\_RATE.*
* *WEEKLY\_HRS\_WORKED must be updated every week for each employee.*
* *Employees can handle multiple retail transactions but, each transaction must be associated with one EMP\_ID.*

Entity-Relationship Diagram

**Figure 1**

*ERD of the Used Vehicle Dealership Database*

A diagram of a company

Description automatically generated with medium confidence

Data Dictionary

**Figure 2**

*Data Dictionary of the Used Vehicle Dealership Database*

A spreadsheet with numbers and letters

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Data Entry and Update

**Figure 3**

*Inventory Table Creation & Data Entry*

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**Figure 4**

*Inventory Table & Data Entry Output*

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**Figure 5**

*Customer Details Table Creation & Data Entry*

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**Figure 6**

*Customer Details Table & Data Entry Output*

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**Figure 7**

*Retail Transaction Table Creation & Data Entry*

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**Figure 8**

*Retail Transaction Table & Data Entry Output*

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**Figure 9**

*Service Records Table Creation & Data Entry*

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**Figure 10**

*Service Records Table & Data Entry Output*

A screenshot of a computer

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**Figure 11**

*Employee Table Creation & Data Entry*A screenshot of a computer screen

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**Figure 12**

*Employee Table & Data Entry Output*

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**Figure 13**

*Test Drive Table Creation & Data Entry*A screenshot of a computer

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**Figure 14**

*Test Drive Table & Data Entry Output*

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Data Retrieval and Simple Reports

**1. Query: Available Vehicles in Inventory**

Find the stock numbers, make, model, color, year, and base price of all available vehicles in the inventory.

**Figure 15**

*Available Inventory Retrieval*

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**2. Query: Total Sales Revenue by Date**

Display the net sales revenue generated by date.

**Figure 16**

*Net Sales Generated by Date*

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**3. Query: Employee Work Hours and Compensation**

Display every employee’s weekly hours worked and corresponding earnings.

**Figure 17**

*Weekly Hours and Earnings of the Dealership Employees*

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**4. Query: Vehicles in Bad Condition**

Retrieve the stock number, health, year, make, and model for all vehicles in ‘Poor’ health.

**Figure 18**

*Vehicles in Poor Condition*

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**5. Query: Extended Warranty on Sold Vehicles**

Report the vehicles that sold with the optional extended warranty.

**Figure 19**

*Vehicles Sold with Extended Warranty*

