



COSC2081 GROUP ASSIGNMENT

AUTO136 MANAGEMENT SYSTEM

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Group 5

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2. Introduction

This report outlines the development and implementation of a software program designed to improve operational efficiency for Auto136. The dealership faced significant challenges in managing inventory, revenue tracking, customer data, and vehicle repair history using the existing system. The previous system led to internal inefficiencies, data management issues, and fragmented record-keeping, resulting in a lack of integration between departments. This project aims to address these problems by streamlining inventory management and improving data accuracy for Auto136.

a. Objective

The objective of this project was to implement a software system that would:

- Centralize data management to ensure consistency and accuracy.
- Reduce errors and inefficiencies associated with manual or outdated processes.
- Provide real-time visibility into inventory, revenue, and customer and employee data.
- Improve the tracking of repair and service history for both the dealership and its customers.

The main objective of the project is to create the best experience for the user with Car Dealership Management System. It will help track vehicle, revenue, client and employee. An object-oriented design will be implemented for this project. It will also have several key functions to help the operation more efficient and secure.

b. Scope

The scope of the project involved designing a comprehensive software solution that integrates multiple aspects of the dealership's operations. Key areas of focus include:

1. **Inventory Management**
2. **Revenue Tracking**
3. **Customer & Employee Data Management**
4. **Repair History**

The car dealership system has 3 types of users which include manager, client and employee. The employees will be divided into mechanics and salespersons. The manager will have access to all the database for clients, parts, cars and so on. They also have the

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authority to modify, delete or view the data. While the other employees will be able to access some designated areas. For the salesperson, they can look at the sale revenue while mechanics and look at car's services and parts for the vehicle. Finally, clients will be able to see their previous transition. The Car Dealership Management System helps users in managing their data more efficiently and more securely.

3. Project Description

Java is use as the programming language for Car Dealership Management System and Object- Oriented Programming concept

Car Dealership Management System is designed to be modular and extensible. It is made up of multiple key classes that each represent a different entity in the system. The following fundamental elements serve as the foundation for the system architecture:

1. Car class

The car class will have the most important of the project. It has some essential attributes such as ID, name, manufacture, brand, model, year, milage and more. It serves as the foundation for displaying vehicle details and enables the system to manage car data by interacting with the CarInventory class, allowing for storage and retrieval of vehicle information.

2. CarInventory class

The class allows the system to store a collection of cars, offering functionality for adding, modifying and searching for vehicles. It uses a List to store car objects and a Set to track unique car IDs. The class checks for duplicates before adding new items and uses a format which makes sure that the pattern starts at the beginning of car ID "C" followed by digits. To delete car objects, a method is used to validate the ID format and remove the object from both the list and set if found. The class also provides search capabilities based on car attributes such as brand, model, color, and ID.

3. User class:

The User class acts as the parent class for several subclasses, such as Employee, and Manager. It defines common attributes shared by all these roles, including ID, name, username, password, phone number, address, and date of birth. This class provides a foundational structure for employees, managers, and clients.

4. Employee class:

Employee class is a child of the user class. In addition, with inherent attributes from the user one, it also has some few attributes of its own like revenue and salary. Moreover, the employee class also has two more inherent classes call salesperson and mechanic. Salesperson can create, edit and delete sales, while mechanic class can also create, edit and delete car services.

5. Sale transaction class

Sale transaction include ID, transaction date, service type, purchased item, discount, total amount. it will help the user in managing transaction data

4. Implementation Details

Based on the assessment, the system will have 4 types of users which include manager, salesperson, mechanic, and client. When the user runs the program, they will choose their role then they will enter their given username and password.

For the manager, the first two functions are to get the revenue based on the month and day. The third function is to list all the employees that is in the dealership. The manager can also display all the vehicles' data, search for them based on some criteria and delete them. Moreover, the manager can change their data to suit the user needs. Last but not least, the manager can add more user.

For the function `inventory.displayCars()` it will take the for from `CarInventory.java` to read all the car detail in the system. Function `addNewCar()` will be taken from `CarInventory.java`. the function will, read and add user input to update the database. To change a car's information, the manager will use `updateCWarByld()` to change the data base on the id they have provided

5. Project Planning Report

All Team Members	Role and task given	Individual Contribution (%)
Pham Hieu Dat	Group leader-Create the system, write report, Tester	33%
Nguyen Huynh Gia Khang	Creating API functions, Tester	33%
Tran Quang Anh	Structuring, Tester, Report writing	33%

6. Conclusion

In conclusion, while the project ultimately failed to fully achieve its objectives, it was able to implement several improvements over Auto136's existing system. These enhancements addressed some operational inefficiencies and improved aspects of previous inventory management. However, due to mismanagement, sudden departure of a team member, poor communication, and a lack of clear directions, the team was unable to deliver key features such as revenue tracking, service logging for mechanics, and sales transaction recording on time. Moving forward, further development is necessary to ensure the system meets Auto136's core business needs and delivers the essential functionality required for success.