Car Maintenance System

Project Summary

The chosen project is a car maintenance system that is designed to be used for a car servicing company. This system has many features that assist its users in tracking and scheduling car servicing. Customers are able to view the service history of their cars and schedule services with mechanics. Mechanics are able to view the service history of other cars and create a service log for a car that they are scheduled for.

Motivation

The purpose behind this project is to simplify the car servicing process for both customers and mechanics. It is easy to forget when to service your car when your servicing schedule is simply written in a logbook. This system aims to fix that problem, allowing customers to instead digitally record and schedule services, eliminating the need to remember your servicing schedule.

Development Approach

The car servicing company's development strategy involves harnessing the power of Microsoft SQL Client and Entity Framework Core SQL Server to establish the system's robust database foundation. The team employs an Agile methodology, breaking down tasks into short sprints to continuously assess progress in interface development. They utilise a combination of Windows Forms and user controls to create an interactive and user-friendly interface. These methods are employed interchangeably to enhance the user experience and optimise the management of information within the system.

Key features

Customers
- Registration with name, email, and password.
- Viewing and updating customers personal details.
- Adding and viewing owned cars.
- Accessing the service history for their cars.
- Add/Remove a secondary customer to a car
- Setting service intervals for cars to track when the next service is due (months/kms).
- Viewing upcoming services for specific cars and all cars they own
- View available service times
- Book service

Mechanics
- View/Update mechanics personal details
- View service history for any car in the system
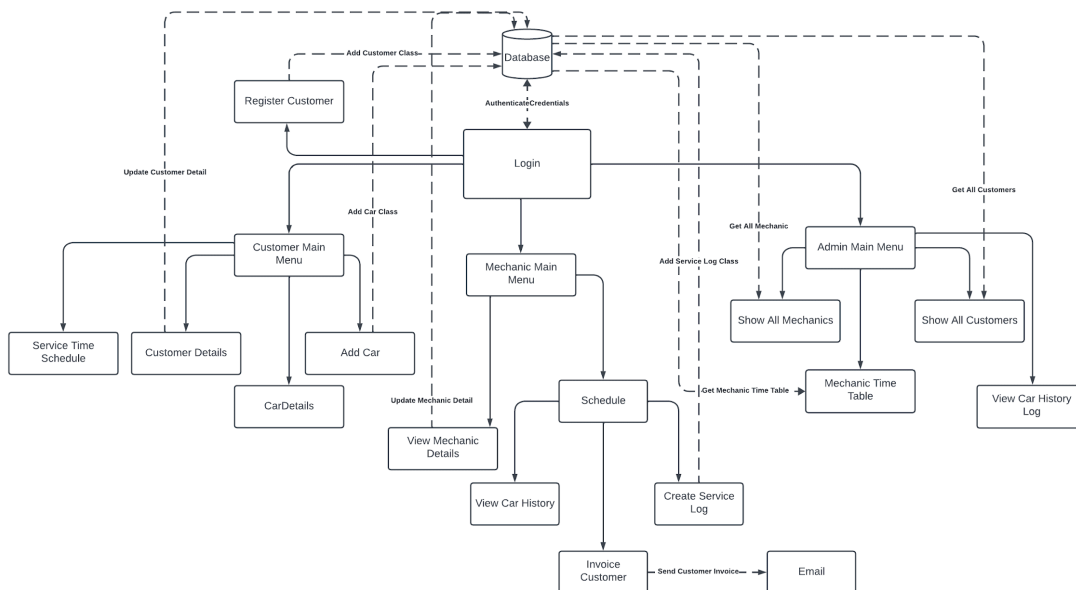- Add a service log to the history of any car

- Invoice customer
- View own schedule (upcoming services booked by customer)

Service Admin
- Viewing all customers and mechanics.
- Adding and deleting customers or mechanics.
- Showing all upcoming services with all mechanics

Flow Chart

https://lucid.app/lucidspark/86addd94-7f2f-4dc3-aeaa-355f7b28d629/edit?viewport_loc=-11%2C-11%2C1993%2C953%2C0_0&invitationId=inv_bd74a17c-476e-4eb8-99e0-ddc0bf9bbe81

Usage instructions

To begin using the system, you must first login with an email and a password. Depending on what role you login as, different features will be present in the system.

Customer:
- View personal details - Click the "Customer details" button. The customer can change their first and last name and click "Confirm" to change it.
- View cars - Click the "View All Cars" button. From there you can scroll through the various cars that the user has registered. Click on a car to view all of its details.
- Add car - Click the "add car" button. From here, input the required details for your car, then click "Confirm" to add the car to the system.
- View service schedule - Click the "View Scheduled Service" button. From here you can view your service schedule.
- Book service - Customers select a mechanic from the combo box, a date and time for the service. The user clicks on "Confirm Booking" to complete the transaction.

- Manage Secondary Owner - The owner of the car can only have one other customer to have access to the car's service history. The user enters their email and clicks the "Update Secondary Owner" button assigning the other person with the car's information.

Mechanic:
- View and update personal details - Click the "Personal Details" button. Edit any of the text fields and press save changes to update the database
- Check car service history - Click the "Lookup Car" button. Enter a licence number in the text box and press search to display the corresponding cars information and service history.
- Add a service log to a car - Click the "Add Service Log" button. Enter a licence number in the text box and press search. Select either the primary owner or secondary owner from the dropdown box. Enter a task description (optional) for notes about the service. Enter the car's current odometer and finally press add log.
- Invoicing customer for service - Once service log is added, enter the total cost for the service and click the "Send Invoice" button to send the invoice to the customer's email.
- View Schedule - Click the "View Schedule" button. If the mechanic has any upcoming services booked that will be displayed in tabular format.

Service Admin:
- View all customers - click the "Show all Customers" button. You will then be shown all the customers currently within the system. From this screen, you can select a customer and then choose to view their details. You can also select a customer and delete them from the system.
- View all mechanics - Click the "Show all Mechanics" button. You will then see a screen similar to the customer screen. This screen has the same features as the customer screen.
- Add/delete mechanic - While on the "Show all Mechanics" screen, you can select a mechanic then click "Delete" to delete them from the system. To add a mechanic, click the "Add" button then input valid information in order to add a mechanic to the system.
- View all cars - Click the "Show all Cars" screen. This screen functions the same way as both the customer and mechanic screens.
- View car service history - While on the "Show all Cars" screen, select a car, then click the "View Service History" button. A window will pop up outlining the service history of the car.
- View Mechanic Schedule - While in the "Show all Mechanics" menu, select a mechanic and then click the "View Schedule" button. A window will then pop up outlining all of the bookings for the selected mechanic.

Contribution

Michael	Mechanic Class AddServiceLog LoginMenu CustomerRegistration LookupCar MechanicDetails MechanicMainMenu EmailManager Report
Abhishek	Service Admin Class Report serviceAdminMainMenu showCustomers showMechanics showCars add/delete Mechanic Delete customer View car service history View mechanic schedule
Justin	Customer Class Add Car Customer Main Menu View Customer Car List Customer Book Service Customer Add Secondary Owner Customer Car Service Schedule Customer Car Service Log History Report