Problem Statement and Goals
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Table 1: Revision History

# Date	Date	Developer(s)	Change
	Sept. 24, 2022	Kai	Added problem section
	Sept. 24, 2022	Alyssa	Added inputs and outputs, stakeholders, environment
	Sept. 25, 2022	Ethan	Added goals and stretch goals
	Sept. 26, 2022	Chris	Differentiating inputs and outputs for automotive shop owners and employees
Rev 0	Sept. 26, 2022	All	Revision 0
Rev 1	March 30, 2023	Alyssa	Minor changes to Inputs and Outputs based on MVP, modification of goal content based on feedback
Rev 1	April 5, 2023	All	Revision 1

1 Problem Statement

1.1 Problem

Automobile maintenance and repairs are an unavoidable and recurring part of any car owner's experience. Despite its ubiquity, acquiring professional auto service remains a time-consuming and hassle-prone process. Without a systematic procedure, this process consists of a number of scattered and repetitive tasks,

beginning with finding local providers including mechanics, tire shops, and body shops through traditional means such as a search engine, with little assurance of the trustworthiness or service quality of the providers in the search results.

After obtaining a list of service providers, customers are required to contact each service professional separately, repeatedly describing the same problems in order to receive a quote. Furthermore, different providers may have different availability. Scheduling a time preferred by the customer at available auto service providers, therefore, require further communication with multiple providers through methods such as phone or in-person visits, costing additional time and effort.

1.2 Inputs and Outputs

1.2.1 Inputs of the automotive shop employees

1. Creating an account for the employee/signing into an account.

2. Creating a profile for the employee with their information.

3. Adding an automotive shop group to their account by accepting an invitation.

4. Adding the employee's availability to the appointments menu.

5. Creating an appointment and work order to service a vehicle.

6. Searching for pending quotes for vehicle servicing that have been requested by customers.

7. Adding an optional chat with a customer to discuss further details.

1.2.2 Outputs to the automotive shop employees

1. The employee will be able to access features specific to their associated automotive shop.

2. A list view of the shop's information.

3. A calendar view of the availability of the shop and its employees.

4. A searchable list of a shop's provided services.

5. An email notification confirming the creation of an appointment; removing the time slot from the calendar.

6. A list of quote requests received from customers looking to service their vehicle and a chat with them if initiated.

1.2.3 Inputs of the customers

1. Looking up a specific automotive shop.

2. Requesting a quote request to service a vehicle, what the issue is, further descriptions, etc.

3. Receiving a scheduled appointment confirmation once an automotive shop has approved and confirmed their quote request.

1.2.4 Outputs to the customers

1. A searchable list of automotive shops that are using the application.

2. A list showing the available automotive shops that can service the vehicle's issue.

3. An email notification confirming the creation of an appointment from the shop.

1.2.5 Inputs of the automotive shop owner

1. Creating an account for the shop owner/signing in.

2. Creating a profile for the shop owner containing their shop information.

3. Adding new employees that work at the automotive shop.

4. Adding the shop's availability to the appointments menu.

5. Adding the shop's services provided.

6. Creating an appointment and work order to service a vehicle.

7. Searching for pending quote requests for vehicle servicing that have been requested by customers.

8. Adding an optional chat with a customer to discuss further details.

1.2.6 Outputs to the automotive shop owner

1. An editable profile view of the shop owner's automotive shop information.

2. An editable, searchable list of the shop's employee accounts to manage.

3. A calendar view of the availability of the shop and its employees.

4. An email notification confirming the creation of an appointment; removing the time slot from the calendar.

5. An editable, searchable list of a shop's provided services.

6. A searchable list of quote requests received from customers looking to service their vehicle and a chat with them if initiated.

7. An editable, searchable list of a shop's current work orders.

1.3 Stakeholders

Stakeholders for this project include:

- Team 31, the developers of the application

- Project supervisor Nabil Ibrahim

- Dr. Spencer Smith

- SFWRENG 4G06 TAs

- Automotive shop owners

- Automotive shop employees

- Customers/vehicle owners

1.4 Environment

Because it is requested that the final product be a progressive web application, the application will be compatible with both mobile (cell phones and tablets) and desktop hardware devices. The application is also to be designed with the expectation that users may not be very tech savvy, so all popular and default browsers, including but not limited to Google Chrome, Mozilla FireFox, Microsoft Edge, and Safari, on both mobile and desktop devices, will support the application software.

For the deployment hardware, the app is expected to work on most modern computing platforms as it will be in a Docker container. Moreover, the Docker application will be scalable with the available computation resources in any given instance.

2 Goals

1. Provide a vehicle owner with a straightforward start to finish experience getting their car serviced. This would start with the account creation process and the application will guide the user on the steps they need to take to create quote requests with any desired automotive shop.

2. Allow automotive shop owners to more effectively use and manage their employee resources. The application should allow for shop owners to view their employees' availabilities as well as their current appointments booked.

3. Simplify administrative tasks for shops like work order management, invoice creation and appointment scheduling.

4. Streamline client-business communication and create flexible interactions between vehicle owners and automotive shops. This might include a chat feature so both parties can communicate before accepting a quote and booking an appointment, and a notification system to alert users when other parties have made updates to quote requests or appointments.

5. Provide vehicle owners with detailed information about the types of services available, in addition to the service providers who offer them. Vehicle owners should be able to view a detailed shop lookup page to navigate local automotive shops that offer the services they require on their vehicle.

3   Stretch Goals

1. Assist vehicle owners in self-diagnosing their car before going in for a service. If the vehicle owner provides a detailed description of what is wrong with their car, the application could suggest what might be wrong with the car and provide appropriate services. Having a chat feature to chat with potential automotive shops could assist in diagnosing the issue before booking an appointment with an automotive shop.

2. Help a vehicle owner maintain their car using periodic service reminders. This could either be in the form of the automotive shop they use sending them manual reminders, or the system could automatically send them these reminders based on when their last appointment occurred.

3. Allow shop owners to manage and service entire fleets of vehicles. The application will assist shop owners in keeping track of all quotes, appointments, and work orders as well as employees and their schedules to allow for better organization and maximum efficiency.