

Problem Statement and Goals

Software Engineering

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Table 1: Revision History

Date	Developer(s)	Change
September 20, 2022	Joy Xiao	Problem statement and stakeholders
September 23, 2022	Leon So	Update problem
September 23, 2022	Joy Xiao	Add stretch goals and update stakeholders
September 23, 2022	Leon So	Add inputs and outputs
September 25, 2022	Leon So	Add hardware and software environment
September 25, 2022	Joy Xiao	Add project goals
September 25, 2022	Leon So	Add problem statement section outline
September 26, 2022	Leon So	Update inputs, outputs, goals

1 Problem Statement

This section outlines the problem, inputs and outputs, stakeholders, and environment.

1.1 Problem

Independent auto repair shops do not have an efficient way of reaching and interacting with new customers. Currently, many independent shop owners rely on word-of-mouth referrals as a main channel to acquiring new customers. Independent auto repair shops are also spending a significant amount of their time on administrative work such as managing appointments and providing quotes. As a result, independent auto repair shops have a difficult time competing with larger repair shops which have dedicated systems and services in place.

On the other hand, customers do not have an effective way to find and compare auto repair shops. Currently, one of the only ways to compare repair shops is by manually searching or reaching out to repair shops one-by-one. This process can often be repetitive and time-consuming.

1.2 Inputs and Outputs

1.2.1 Inputs

1. Auto repair shop account details including shop name, shop owner first and last name, address, phone number, email, password, and hours of operation
2. Auto repair shop employee accounts including employee first and last name, phone number, email, password
3. Invitation details from auto repair shop account to employee account including a list of one or more employee emails

4. Customer information including full name, phone number, email, and password
5. List of available services for each auto repair shop, along with details for each service such as service type, type of parts used (i.e., OEM, used, etc)
6. Schedule of availability for auto repair shops
7. Quote request details including car make and model, problem description, images
8. Selected time slot for service appointments
9. Estimate information including price and estimated time
10. Work order information including assigned employee, estimated time, progress, parts used, cost of labour and parts, digital vehicle inspection (DVI) reports, warranty information, and odometer reading
11. Chat messages between auto repair shop and customers
12. Search keywords for filtering service providers
13. Customer's location for searching and filtering for nearby auto repair shops
14. [Stretch Goal] Payment options for auto repair shop account subscriptions

1.2.2 Outputs

1. Profile view for auto repair shop and employee accounts
2. View of appointments booked for shop owners and employees
3. View of quote request for shop owners and employees
4. View of appointments booked for customers
5. View of quote request submitted for customers
6. List of auto repair shops based on search keywords and filters inputted by customers
7. View of work orders and corresponding details for shop owners and employees
8. View of work orders, corresponding details, and progress updates for customer
9. Chat view for both auto repair shops, employees and customers
10. [Stretch Goal] Notifications to auto repair shops when a quote request is received
11. [Stretch Goal] Notifications to vehicle owners when a quote is received, work is completed/assigned, or an appointment has been created or updated
12. [Stretch Goal] View of added payment options for auto repair shop subscription

1.3 Stakeholders

- Vehicle owners
- Auto repair shop owner
- Auto repair shop employees
- Sayyara (the company)
- Nabeel Ibrahim (project supervisor)
- Tiny Coders (developers of the project)

1.4 Environment

1.4.1 Hardware

- The application will be supported for desktops, laptops, tablets and mobile devices.

1.4.2 Software

- The application will be supported on Google Chrome, Firefox, and Microsoft Edge.
- The application will be supported on Windows and MacOS.
- The application will be supported on Android and iOS mobile devices and tablets.

2 Goals

2.1 Shop Management

- Allow shop owner to manage list of employees.
- Allow shop owner to manage shop details such as list of services, service appointment availability, location, and contact details.

2.2 Work Orders

- Allow shop owners to easily create, update, view, filter, and search work orders. Work orders will include any details such as estimated time, parts used, and costs related to the work order and the technician assigned. This will allow shop owners and technicians to see details related to the work orders and update any information if needed.

2.3 Quotes

- Allow shop owners to give efficiently quotes to customer requests. The shop owners will be able to chat with the vehicle owners and respond to requests easily through the application asynchronously.
- Allow vehicle owners to request a quote on their job to various auto shops at once. This will allow vehicle owners to easily get quotes from multiple mechanics and compare prices to find the most suitable shop.

2.4 Appointments

- Allow shop owners to create, view, and edit appointments details. They can set their availability on their calendar and view their scheduled appointments. This will make the booking appointment process automated and reduce the amount of admin work on their end.
- Allow vehicle owners to search for auto shops and book an appointment at available auto shops. They can select the time and date when they are available and schedule a time with an auto shop that is available during that time. This will enable customers to book appointments at the selected auto shop asynchronously.

3 Stretch Goals

- Deploy application and server to the cloud.
- Have a notification system to notify when a quote has been requested, when appointments are created or updated, and when a service job is completed/assigned to a technician.
- Include a reviews component to create reviews and view auto shop reviews. This way customers can see past reviews before determining if they want to book an appointment with a specific shop.
- Include payment options for auto repair shop subscriptions. For the initial version of the application, auto repair shops will not be required to enter a payment options as the application will be under a free trial period.