

Fall 2022

Software Requirements Specification

AUTO QUOTES

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Executive Summary

Background

Mechanic shops deal with a lot of inefficiencies regarding the generation of quotes to customers.

When clients need a service or inspection done, they need to call a shop and negotiate a suitable time via the phone. If the job includes an actual repair to the vehicle, then the service advisor manually generates a quote and reaches out to different suppliers to acquire parts quotes and availabilities. After this, the advisor sends the assembled quote to the customer, at which point they again need to negotiate a time range acceptable for both parties.

This Manual Quoting process is extremely labor-intensive, and costly, and feels like a chore to both the customer and the mechanic shop.

Description

This document outlines a platform that serves multiple purposes to various kinds of mechanic shops and dealerships. Auto Quotes can work on every shop, without regard to the size, the number of franchises, and the business model.

Creating multiple quotes for different customers with diverse needs has been a hustle for service advisors through the years. Using an automated quote generation system, Auto Quotes makes this task easier for customers and employees.

Quotations are divided into two different sections.

1. Quotations with all required parts available in stock will be given immediately using our database data,
2. When some parts are not available or included in our database, Auto Quotes must contact multiple reserved suppliers and ask for parts availability and details. This task is done by sending emails to contracted suppliers with auto-generated links that lead them to a form on a website. This form includes customers' car specifications using user inputs and information on the asking part. Suppliers are responsible for entering the details, including sale price, retail price, warranty, manufacturer, and condition. Then customers get noticed through email to complete their quotation by choosing between the options.

Company Value Add

Auto Quotes allows our company to create a close relationship with many mechanic shops and builds valuable connections with part suppliers. With the first iteration of the software, a monthly or per-use fee is charged to the customer. The Auto Quotes can transcend the current SaaS setup with the next iteration up and offer an integrated payment system with POS terminals. Being directly tied into the payment process would allow for a cut from every sale the mechanics shop makes, making Auto Quotes a very lucrative business.

Customer Value Add

Auto Quotes will bring value to businesses in multiple ways.

- It helps the company's marketing since it helps to get customers' attention and build a list of clients for sending out promotions and seasonal deals.
- It pushes the customer into using the services after getting a quote. Customers can look up the shop schedule and book an appointment for service on quotes on the same webpage. This option will make services much easier for customers since they get informed of the time, price, and availability in advance.
- Another advantage of using this system would be reducing the workload of the service advisors.
- The system incorporates an internal UI, where staff members can update the inventory, register recalls, and keep track of parts inventory and catalog.

End-User Value Add

Auto Quotes will allow customers with zero to little knowledge of auto services to understand the various available services at the designated shop and do different actions based on their needs.

Getting immediate informative quotes for all the available services that include service details such as:

- Accurate labor cost estimation,
- Required parts prices with diverse options,
- Detailed information on parts, including the manufacturer, warranty, condition (New or Remanufactured), and wait time if applicable,
- And Service time estimation.

Scope

What is Included

The project includes the development of a Back-end system, run on a PaaS provider like Heroku. Its code is written in NodeJS, and it provides internal REST APIs for the front-end interfaces. It stores all relevant information in MongoDB (Atlas) and uses SendGrid as a complete email-sending solution.

Four separate Web GUIs are to be implemented, built on top of React:

- A customer-facing one, where the end-user can manage booking, view service information, manage quotes, etc.
- One for the parts suppliers, which they can use to enter their quotes based on the emails they receive,
- One, for the internal use of mechanic shops where they can do basic administration, add/remove users, manage stalls, view orders, customer contact information, etc.,

- ~~And one for configuring the licenses for the mechanic's shops themselves.~~

These interfaces can be hosted on any of the large CDN providers such as Netlify or Amazon S3.

What is Not Included

The project, in its MVP form, will not provide the following features, that the company can develop as an upgrade for subsequent releases later:

- An accounting/billing module, which offers POS integration, and would allow the company to take a cut from all sales
- A direct marketing/email campaign module, which could leverage the information collected from end-users
- A price lookup feature using a "specificity backoff" logic (try to look up the price for a service based on make, model year, then make model, then make, then fall back to a generic price)
- Integration to supplier APIs. As the platform drives increasing revenue, many suppliers will be interested in us using direct access to their databases.

Justification

Auto Quotes solves a real-world issue that many auto-repair shops face throughout the world. It provides a turn-key solution that single businesses or even franchises could adopt and use to manage and help their day-to-day operation, decrease the number of chores, and drive revenue. From a technical standpoint, it builds on a PaaS provider and provides a SaaS-like experience to our company's customers. In this project, the team includes the following pieces, as building blocks:

- Complete database design built on top of MongoDB,
- A modern, node 18-based Back-end application featuring database integration, authentication/authorization, session management, e-mail sending capabilities, Payment system integration, and more, providing a Restful API for our front-end interfaces to connect to,
- Internal API documentation, using Swagger and OAS3,
- Four separate front-end web applications, to be used by separate stakeholder groups, built using cutting-edge, React18 features,
- And a CI integrated End-to-End testing suite that makes sure every production deployment works as expected.

This project presents a true capstone to our journey with Seneca. It makes effective use of the knowledge provided in many different branches of study, like OOP (IPC144, OOP244, OOP345, JAC444), Communications (CPR101, DCF255), Database (DBS211, DBS311), Web (WEB222, WEB322, WEB 422), Project management (SYD366, SYD466) and other mandatory and optional courses.

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Section 1 – Introduction and Overview

1.1 Document Authors

- Arman Valaee Asr – Team Leader/Cheerleader
- Anam Abdul Rahim Maniar - Developer
- Denes Adam Dolhay – Developer/Architect
- Van Hoan Tran - Developer

1.2 Document Revision History

WEEK	DATE	Rewvisions
3	Sept 25, 2022	Initial revision, adding sections 1 – 2.2
4	Oct 2, 2022	Completed sections 2.2 to 2.4 (Stakeholders, Requirements, and Scope)
5	Oct 9, 2022	Completed Screen mock-ups and completed sections 2.5 to 2.7 (System Risks, Operating Environment, and UI/UX - Interface Mock-ups)
6	Oct 16, 2022	Completed the list of activity diagrams and added them to the document. All activity diagrams are stored in the AutoQuotes GitHub repository.
7	Oct 30, 2022	Completed use cases and business rules. The table of the use case, activity diagram, and business rules relationship has been added to the document
8	Nov 13, 2022	Update Mock-ups and added Finalized Mock-ups. Class Diagram Added.
9	Nov 20, 2022	Added Data Flow Diagrams. Completed Database Entity Relationship Diagram.
10	Nov 27, 2022	Created detailed work breakdown structure.
12	Dec 4, 2022	Added the Milestones, acceptance criteria, and Gantt chart.
13	Dec 11, 2022	Finalized the SRS project document and fixed minor formatting issues.

1.3 Document Purpose

This document serves as a proposal to the company's decision-makers regarding the Auto Quotes system such as software designers, developers, project sponsors, and system analysts. There are three main purposes of this document. Firstly, it is meant to specify the requirements of the Auto Quotes system including the functionalities, features, inner workings, basic design, and limitations. These requirements are broken down into small, detailed parts to keep the project on track. Secondly, it includes an agreement and work breakdown between members of the team. It keeps track of the project's progress and helps the development team record changes throughout the project. Finally, it also provides useful information, and a clear picture for a marketing team to get their job done.

1.4 Terminology

In Auto Quotes documentation a set of terms will be used to be specific and prevent any type of confusion for our audience. The exact purpose and definition of each term are listed below:

- Auto Quotes: This is the chosen name of the intended product and application.
- Business Owner: Auto Quotes targeted business owners. Individuals or companies that may use this product for their business, typically auto shops, dealerships, and mechanic shops.
- Mechanic Shop: The main businesses which will benefit from Auto Quotes.
- Mechanic Shop Admins: The mechanic shop's employees who are able and responsible for updating the website based on the business needs.
- Mechanic Shop Employees: The mechanic shop employees that use Auto Quote services throughout their work, but are not able to make any updates.
- End-User: Mechanic shops' customers that will use and benefit from Auto Quote Services.
- Third-Party Supplier: Companies providing aftermarket part supplies for mechanic shops.
- Part Supplier Rep: Third-party suppliers' employees who are responsible for giving information on the requested aftermarket parts.
- ~~Support staff: AutoQuotes developers' company's employees who are responsible for maintaining, licensing, and supporting AutoQuotes customers.~~

1.5 Audience

The intended audience breaks into two categories: intended document audience and intended application audience.

1.5.1 Intended Document Audience

This document serves multiple purposes. Firstly, it manages and tracks the different tasks throughout the design process. It records common interests, goals, and outlines the work breakdown through the course of this project.

This document is also the best way to get information and understand the details of Auto Quotes. Reading this document is recommended for every stakeholder of the project, such as investors, business owners, and marketing professionals.

1.5.2 Intended Application Audience

The application has a wide range of audiences & users. Individuals with small garages to large auto shops with multiple branches can equally benefit from this application to expand their network and improve their business workflow.

Employees of auto shops, from service technicians to managers, can use this application to help them with their daily tasks as it simplifies chores, simplifies, and automates processes. This drives revenue and enhances employee satisfaction and talent retention rates. It also improves the company's marketing abilities and reach.

Finally, anyone owning or operating a vehicle can use the services of this application to get more information about the services provided and get familiar with honest, transparent businesses.

1.6 Group Agreement – Team 2 (Cyan Crane)

Project Title

Auto Quotes

Project Time Frame

In two academic semesters, the first semester is dedicated to the project plan and design. The next semester is to implement the designed project.

Team Members

Arman Valaee Asr

~~Anam Abdul Rahim Maniar~~

Denes Adam Dolhay

Van Hoan Tran

Team Leadership

Arman Valaee Asr

Team Functions/Roles

~~Anam Abdul Rahim Maniar / Developer~~

Denes Adam Dolhay – Developer / Architect

Van Hoan Tran - Developer

Development Environment

- Information will be shared through MS Teams, OneDrive, email, and in-person/online meetings.
- GitHub: <https://github.com/Awrmani/AutoQuotes>
- Project Management Tools: GitHub PM

Team Meetings

- One meeting one-line – Mondays (time) with the professor's partial participation
- One meeting in-person – Thursday M416 with the professor's partial participation
- One meeting online – Sundays at 8:30 PM with team members' participation

Team Problems

In all projects, there is the possibility of disagreement between teammates. In cases such as this, the team agrees to hold a vote. Since there are an odd number of teammates, in case of a draw, the project manager is to be the deciding vote.

Team Commitment

The undersigned members agree to work together on the project as long as their obligations permit. They recognize that as a team and individually they are equally responsible for the quality of all deliverables.

Name	Date	Signature
Arman Valaee Asr	September 22, 2022	A.V.A
Anam Abdui Rahim Maniar	September 22, 2022	Anam Maniar
Denes Adam Dolhay	September 22, 2022	Denes Adam Dolhay
Van Hoan Tran	September 22, 2022	Van Hoan Tran

Section 2 – Project Overview

2.1 Project Proposal

2.1.1 Project Background

An automated quote system for mechanic shops that can be used to provide quotations for repairs of cars and book appointments for the said repair. The system targets all local mechanic shops that want to reach out to a wider customer base. The system also allows the business owner to keep track of inventory and notifies the owner when the inventory runs low.

2.1.2 Problem Statement

The lack of readily available tools online to get a quick quote when clients need a service or inspection done, they need to phone up the shop and negotiate a suitable time via the phone. If the job includes an actual repair to the vehicle, then the service advisor manually generates a quote, reaches out to different suppliers to acquire parts quotes and availabilities, and sends the assembled quote to the customer, at which point they again need to negotiate a time range which is good for both parties.

This process is extremely labor intensive, and costly, and feels like a chore to both the customer and the mechanic shop alike.

2.1.3 Product Vision

Auto quotes will provide a way for users to get a quick quote online for car repairs and maintenance simply by providing some basic information to the website, which will then generate a quote, based on the information provided. If the user agrees to the quote they can go ahead and book an appointment for the repair through the website.

The client side of the system will allow the mechanic shop to use the system to manage its inventory and notify the shop when the inventory runs low. Auto Quotes would reduce the labor required and save time for both the user and mechanic shop alike as it would be faster to get the quotes online than to call up a mechanic shop to get one.

2.2 Stakeholders and Users

The project recognizes the following stakeholders:

- Investor; the company responsible for developing, maintaining, and licensing the Auto Quotes system,
- Support staff; Employees of the Investor, responsible for maintaining the software, ~~supporting customers, and managing licenses~~,
- Mechanic shops; The companies the Investor is contracted by to provide the Auto Quotes system,
- Mechanic shop admins; Employees of the Mechanic shops, with elevated privileges,
- Mechanic shop employees; Employees of the Mechanic shops, who use the system during their daily work,
- And end-users; Individuals or companies who employ the services of Mechanic Shops through the Auto Quotes system.

2.3 Requirements

The following requirements tables list the requirements; sorted by each functional area of the system. Requirements are divided into a top level of classification: Functional and Non-Function Requirements.

Functional: Things the system must do, tasks the user can complete within the system

Non-Functional: Properties the system must have: Operational, Performance, & Security Requirements

2.3.3 Requirements Prioritization

Each requirement is classified under a level of priority within the scope of the project:

- (MH) MUST HAVE – the requirement must be present in the current version design
- (SH) SHOULD HAVE – the requirement should be present, but if time does not permit, then could be delayed to a future version
- (NH) NICE TO HAVE – the requirement would be nice to have, but is not mandatory, and could be pushed off to a future version if implemented at all. Most often these are the quality-of-life kind of features.

2.3.1 End-User Interface

Functional Requirements

Req. #	Requirement	Priority
R-EUI-F1	An end-user must be able to request an immediate quote without logging into the website.	MH
R-EUI-F2	An end-user must be able to register on the website.	MH
R-EUI-F3	The required registration fields are email, phone number, password, and Name.	MH
R-EUI-F4	A registered end-user must be able to log in to the website.	MH
R-EUI-F5	An end-user can register and later sign in using SSO.	NH
R-EUI-F6	An end-user logged into the website must be able to book an appointment.	MH
R-EUI-F7	An end-user should be able to log into the website by providing the correct email and password.	MH
R-EUI-F8	The end-user should only be able to provide a password that is at least eight characters long and includes at least one upper case and one lower case letter.	MH
R-EUI-F9	An end-user must be able to reset their password using the email address they signed up with.	MH
R-EUI-F10	Custom quotes and booking appointments are only available to registered end-users.	MH
R-EUI-F11	End-users who sign up with their email address should verify their email address before they can use the platform	MH

R-EUI-F12	An end-user should be able to get the parts required to fix their car delivered to them.	NH
R-EUI-F13	A list of the most popular cars along with the year and model should be available on the quoting page.	MH
R-EUI-F14	A list of services offered by the mechanic shop should be available on the quoting page.	MH
R-EUI-F15	An end-user should be able to change the appointment time of the booked service 24 hours before their appointment.	SH
R-EUI-F16	An end-user can only change the appointment time once.	SH
R-EUI-F17	An end-user should not be able to change the appointment time within 24 hours of the appointment.	SH
R-EUI-F18	A logged-in end-user should be able to view their upcoming appointments.	MH
R-EUI-F19	An end-user should be sent a reminder for the appointment 24 hours and 2 hours before their appointment.	NH
R-EUI-F20	Clicking the logo should redirect the user to the main quoting page.	MH
R-EUI-F21	The interface should allow the user to log out.	MH
R-EUI-F22	An end-user should be able to return to the site and check the status of their quotes.	MH
R-EUI-F22	End-users should be able to select from multiple suppliers' offers for each part that is required for the repairs.	SH
R-EUI-F23	End-Users should be able to schedule an appointment after their quote is completed.	MH
R-EUI-F24	End Users should be able to place a deposit for the parts needed for their repairs.	SH
R-EUI-F25	End-users should be able to filter the list of parts by the combination of make, model, year, and engine variant.	MH
R-EUI-F26	End-users should be able to filter the list of parts by product name.	MH
R-EUI-F27	The quoting page should show the number of matched parts when filtering.	SH
R-EUI-F28	The quoting page should allow the filtering and sorting of parts simultaneously.	NH
R-EUI-F29	End-users should be able to remove filters on the quoting page easily and intuitively.	SH

Non-Functional Requirements

Req. #	Requirement	Priority
R-EUI-NF1	End-users should be able to log in from any public page and register from the login page if not yet registered.	SH
R-EUI-NF2	Auto Quotes' Logo should be visible on the top of every page.	SH
R-EUI-NF3	Contact Information & Address of the mechanic shop should be visible at the bottom of every page.	SH
R-EUI-NF4	The web application should be able to work on different browsers including Google Chrome, Mozilla Firefox, Edge, and Safari. Internet Explorer is not supported.	MH
R-EUI-NF5	The loading time of a page should be no longer than 2 seconds	SH
R-EUI-NF6	The webpage should be responsive within a 360 to 1200 px logical screen width range.	SH
R-EUI-NF7	The “Powered By Auto Quotes” Trademark should be visible at the bottom of every page.	SH
R-EUI-NF8	Accepting a privacy policy should be required by the End-users to register.	MH
R-EUI-NF9	End-users should be shown the return policy before a payment.	MH
R-EUI-NF10	Links to Policies, Terms, and Conditions should be always visible in the footer of the webpage.	MH
R-EUI-NF11	An account should be suspended for 1 hour after 5 failed login attempts.	NH
R-EUI-NF12	The website should support internationalization (language, currencies, measurements, time zones).	NH
R-EUI-NF13	The services should be divided into three distinct categories: General, maintenance, and tire services.	MH
R-EUI-NF14	The service category should be listed in a drop-down list.	MH
R-EUI-NF15	End-user should be able to choose the service category first, and then the specific service in a second drop-down list based on the category.	SH

2.3.2 Internal Administrative Area

Functional Requirements

Req. #	Requirement	Priority
R-IUI-F1	The UI should be able to manage two distinct types of users, Shop admins, and mechanic shop employees.	MH
R-IUI-F2	Shop admins should be able to do all the tasks that a Shop employee can.	MH
R-IUI-F3	Shop employees should be able to view customers' appointments.	MH
R-IUI-F4	Shop employees should be able to modify or cancel customers' appointments.	SH
R-IUI-F5	Shop employees should be able to process a refund on the canceled orders.	SH
R-IUI-F6	Shop employees should be able to log in.	MH
R-IUI-F7	Shop employees should be able to modify their profiles, including their passwords.	MH
R-IUI-F8	Shop employees should be able to view order statuses.	NH
R-IUI-F9	Shop employees should be able to change inventory item availability.	SH
R-IUI-F10	Shop admins should be able to add or remove Shop Admins and Shop employees.	MH
R-IUI-F11	Shop admins should be able to modify service prices.	MH
R-IUI-F12	Shop admins should be able to modify branding visuals; And base data like address, phone number, email address, and opening hours.	SH
R-IUI-F13	Shop admins should be able to add or remove services from the list of available services.	MH
R-IUI-F14	Shop admins should be able to apply promotions to certain services.	NH
R-IUI-F15	Shop admins should be able to edit service stall availability for booking purposes.	SH
R-IUI-F16	Shop admins should be able to modify hourly labor pre-priced parts markup percentages which will affect all services costs.	MH
R-IUI-F17	Shop employees should be able to log out.	MH
R-IUI-F18	Shop employees should be able to view stall schedules.	MH
R-IUI-F19	Shop employees should be able to view order (work order) details for each appointment.	MH

Non-Functional Requirements

Req. #	Requirement	Priority
R-IUI-NF1	Auto Quotes service providers' contact details should be visible at the bottom of every page.	MH

2.3.3 3rd Party Supplier UI

Functional Requirements

Req. #	Requirement	Priority
R-SUI-F1	The system should send automated quote request emails containing a unique, one-time use URL that leads to the appropriate Web GUI (hereon UI).	MH
R-SUI-F2	The interface should not require authentication.	SH
R-SUI-F3	The interface should contain the details about the vehicle to which the quote request belongs.	MH
R-SUI-F4	The interface should contain the (generic) list of parts that need to be quoted.	MH
R-SUI-F5	The interface should allow the Part Supplier rep to enter multiple specific parts into a generic part quotation request.	SH
R-SUI-F6	The interface should allow entering each specific part's name, description, price, condition (new/remanufactured), source (OE/OEM /aftermarket), and warranty period.	MH
R-SUI-F7	The interface should allow the Part Supplier rep to mark each (generic) part as not available.	SH
R-SUI-F8	The part supplier rep should be able to submit a quote on the requested part.	MH
R-SUI-F9	After the quote is submitted, it should no longer be editable.	MH

Non-Functional Requirements

Req. #	Requirement	Priority
R-SUI-NF1	Auto Quotes support team contact information should be displayed on all page footers.	SH
R-SUI-NF2	Auto Quotes logo and link should be displayed on all page headers.	SH

2.3.4 Internal Licensing UI

Functional Requirements

Req. #	Requirement	Priority
R-ILUI-F1	The interface should allow the creation and deletion of licensing agents.	MH
R-ILUI-F2	The interface should allow for adding and deleting mechanic shops.	MH
R-ILUI-F3	The interface should only allow access for authenticated, "licensing agent" users.	MH
R-ILUI-F4	During the mechanic shop add process, licensing agents should provide the mechanic shop name and the initial administrator password of the shop.	MH
R-ILUI-F5	The interface should allow suspending and unsuspending mechanic shops.	SH
R-ILUI-F5	The interface should allow the user to log out.	MH

Non Functional Requirements

Req. #	Requirement	Priority
R-ILUI-NF1	The interface should display the Auto Quotes logo on the login page.	NH

2.3.5 Hosting Services

Functional Requirements

Req. #	Requirement	Priority
R-H-F1	The infrastructure should be able to serve a modern NodeJS (16 or 18) application.	MH
R-H-F2	The infrastructure should manage automated testing and deployment (CI/CD).	SH
R-H-F3	The infrastructure should manage automated database backups.	NH
R-H-F4	The infrastructure should function as a CDN for the React front-end interfaces' assets.	MH

Non-Functional Requirements

Req. #	Requirement	Priority
R-H-NF1	The infrastructure should have no upfront cost	MH

2.3.6 Database Services

Functional Requirements

Req. #	Requirement	Priority
R-DB-F1	The system should store data in a MongoDB database.	MH
R-DB-F2	The system should store the name and licensing information for all mechanic shops in the system database	MH
R-DB-F3	The system should store the routing information (domain – DB correlation) for each mechanic shop in the system database	MH
R-DB-F4	The system should store login credentials and user information for the licensing users (users who can add/remove and license mechanic shops) in the system database	MH
R-DB-F5	The system should store multiple shop databases, one for every mechanic shop. Each database should be identical in structure	MH
R-DB-F6	Each shop database should store the shop's general configuration: Logo, Slogan, email address, phone number, address, opening hours, price of a "person hour", parts markup percentage	MH
R-DB-F7	Each shop database should store information on popular vehicle makes, including model, year, engine, and body type.	MH
R-DB-F8	Each shop database should store information on the list of services provided by the shop services (time, cost, parts requirements).	MH
R-DB-F9	Each shop database should be able to store End-Users.	MH
R-DB-F10	Each shop database should be able to store business owners, support staff, and shop employees in the same collection.	MH
R-DB-F11	Each shop database should be able to store the parts catalog.	MH
R-DB-F12	Each shop database should store the shop's inventory.	MH
R-DB-F13	Each shop database should store the list and properties of the shop's stalls.	MH
R-DB-F14	Each shop database should store the work orders (including stall reservation), and to which stall it is assigned.	MH
R-DB-F15	Each shop database should store the quotes without regard to status (pending/declined/fulfilled).	MH

Non-Functional Requirements

Req. #	Requirement	Priority
R-DB-NF1	The database service should have no upfront cost.	MH

2.3.7 Reporting System

Functional Requirements

Req. #	Requirement	Priority
R-RE-F1	There should be a reporting section on the business owner and support staff accounts.	MH
R-RE-F2	The business owner should be able to view everything that support staff can view.	MH
R-RE-F3	The total amount of deposit paid by the end-users on a daily, weekly, and monthly basis. It should be visible to the business owner.	SH
R-RE-F4	The number of quotes generated by the end user should be reported to the support staff.	NH
R-RE-F5	The number of booked appointments should be reported to the support staff.	NH
R-RE-F6	By having the number of generated quotes and booked appointments in a certain time, the percentage of booked appointments to all quotes should be reported to the support staff.	NH

Non-Functional Requirements

Req. #	Requirement	Priority
R-RE-NF1	The business logo should be visible on the reporting section page.	SH
R-RE-NF2	The data should be presented in chart format	NH

2.4 Project Scope

The scope of this project is to create an MVP (Minimum viable product) of the Auto Quotes system. It should contain all the functionality that is needed to provide useful service to Mechanic Shops. The length of the implementation part of the project is one term (14 weeks). The cost of implementing the software is estimated to be 115 000 CAD, calculated with the median wage of four full-time software developers (NOC 2173). The application to be delivered will allow the users to:

For end-users:

- Request a quote of labor and parts for servicing or mechanically repairing a specific make/model/year/variant vehicle
- Book an appointment with a mechanic shop employing the Auto Quotes platform
- Manage/cancel booked appointments
- Select between offered parts
- Place a deposit on the parts selected
- Register, log in / out with the system

For Mechanic Shops:

- Log in/out (both admins and non-privileged users)
- Add and remove accounts (both admins and non-privileged users)
- For admins, to manage the settings of the mechanic shop (contact details, opening hours, branding, stalls, price of labor, markup percentage of parts)
- For admins to manage the services offered by the shop
- Manage their inventory
- View and manage their bookings

For 3rd party parts suppliers

- Get notified about requests for quotes
- Provide their parts offers/quotes

~~For the support staff:~~

- ~~Add/remove/suspend/Unsuspend Mechanic shops~~

The current version of the application will include the following features:

- Authentication/authorization system for support staff, mechanic shops, and end-users.
- Registration for end-users, using email or SSO system.
- Allow admins to create new admins to add new shop employee accounts.
- ~~Payment system to allow placing deposit~~
- Automated email sending for email confirmations, and notifications
- A basic inventory management system.
- A booking and booking-management system that takes available stalls into account
- An automated quoting system that takes quote requests from end-users, collects quotes from 3rd party parts suppliers, marks the prices up, and presents the information back to the end-user

The following features will **not be included** in the current version, but may be considered in a future version of the software:

- The system may include invoice generation to create an invoice for the end-users including end-user information, parts' prices, and dates. End-users will be able to download the invoice as a PDF file. Followed by this update, the system will be upgraded with an invoice management tool that allows support staff to access past invoices and payment history.
- After having rich end-user data, the system may include an automatic marketing campaign through email that sends commercial messages to the registered end-users. This will help the mechanic shops to grow their business, build loyalty, and attain customers' trust and brand awareness.
- As the platform drives increasing revenue, many suppliers would be interested in Mechanic Shops and want to reduce their workload for them. The system will develop an integration to supplier APIS that will synchronously update price and data to Mechanic Shops. It will reduce the workload for both sides.
- The infrastructure may provide a way to create automated database backups for mechanic shops for export and disaster-recovery purposes.

- The system may provide a tracking order system that helps shop employees on getting order information.
- The system may support multi-language content for end-users who come from different countries.

2.5 System Risks

All systems design and implementation processes have risks associated with them. The following is a list of risks that could potentially impact the ability of the application to be delivered on time, within scope, and on budget.

RISK	RESPONSE
The PaaS provider (I.e., Heroku) may become unavailable for a prolonged period (I.e., Datacenter damage, hack, or DoS attack) or increase prices dramatically	The team will have to move to an alternate provider, (I.e., Amazon AWS Elastic Beanstalk) redeploy the code there, and change the DNS records to point to the new infrastructure
The MongoDB (I.e., Atlas) provider may become unavailable for a prolonged period (I.e., Datacenter damage, hack, or DoS attack) or increase prices dramatically	The team will have to migrate the application database to an alternate MongoDB provider (like Amazon AWS), either by restoring the DB from a fresh export or, if not available, from a periodic backup.
The Email sending provider (I.e., SendGrid) may become unavailable for a prolonged period (I.e., Datacenter damage, hack, or DoS attack) or increase prices dramatically	The team will have to switch to a competing solution (I.e., Postmark)
The back end may go down because of a faulty version release	The team will have to roll the application back to a previous, working version (Heroku has a one-click solution for this)
The database may become corrupted because of a faulty application release	The team will have to roll the application back to a previous, working version and either manually fixes the database or restore a periodic backup
Our application may encounter a DoS attack	The team will have to employ the services of a DoS mitigation company (like Cloudflare), increase the server size (like larger Heroku Dynos), scale horizontally (add more nodes), or deploy the application in a serverless manner (like AWS Lambda)
An NPM library may undergo major breaking changes	The team will have to either pin the version of the dependency or if this is not possible for security or compatibility reasons, would have to alter the code and adapt to the signature change.
An NPM library may become unmaintained	The team can keep using the latest version or will have to replace the library with a competing or superseding alternative

An NPM library may get hacked or get maliciously altered by the owner	The team can pin a previous version of the library, or will have to replace the library with a competing solution
Member(s) of the development team may become unavailable	The team will have to ask for a replacement or will have to cut from the scope to deliver on time
The project may prove to be more difficult to implement than originally anticipated	The team will have to cut from the scope
There might be a disagreement between team members about the implementation	The team can hold a majority vote. In case of a tie, the tiebreaker is the project manager's vote.
A developer's machine is lost or stolen	All source codes and connection secrets should be encrypted (I.e., BitLocker) so that no sensitive information can be obtained. For safety, passwords and API keys should be rotated. The source code can be re-cloned from a Git remote (I.e., GitHub) and the work is to be continued
Database leak / successful hacking attack	The system should be brought offline. The source of the intrusion was determined and fixed. All passwords and keys are to be rotated; the database should be restored/merged with the last known safe backup. Sensitive pieces of information are stored in a hashed (preferably salted) manner. Relevant agencies are to be notified about the possible leak, and the system can be brought back up

2.6 Operating Environment

- The back-end code leverages a PaaS provider like Heroku or AWS Elastic Beanstalk, which provides a turn-key solution for running modern NodeJS applications
- The backend code connects to a MongoDB database provider Like MongoDB Atlas
- The front-end code is either hosted in an S3 bucket or is served by the back-end application in the MVP version
- Notification and confirmation emails are sent out with the use of a specialized provider like SendGrid
- The front-end code requires only a modern browser to function (I.e., "Last two major" policy)
- The source code is hosted on a remote git provider like GitHub
- CI/CD functions are served using a provider like GitHub actions or Semaphore.ci
- A modern IDE (I.e., Visual Studio Code) is needed for the development
- Code integrity and formatting are enforced on the developers' machines using Prettier and Eslint. Centralized Editor, lint, and formatting configs are coupled with the source code
- Modern JavaScript code is used (ES6+) in both the back-end and front-end. Node 16+ will natively handle the required language elements, while the front-end bundle is transpiled to ES5 using the Create-React-App / React-scripts pre-assembled toolset.
- Secrets, like API keys and passwords, are injected build-time from the CI/CD provider's per-repo storage
- The application is end-to-end tested using Cypress.io, integrated into the CI/CD process

- Client-side caching is handled by correctly setting up the HTTP response headers striking a balance between caching and deployment speed
- In the MVP version, the system does not use public domains but rather takes advantage of the operating system's HOSTS file to point to the back-end server's IP(v4) address
- Performance monitoring happens through the PaaS provider's built-in tools. For later versions, adding extra monitoring and error reporting solutions is advised (I.e., DataDog, Honeybadger, etc.)
- The system in its MVP version does not require any on-premises hardware that the company would need to provide, but for later versions, providing Stripe's POS terminals may be required for complete payment flow integration

2.7 UI/UX Interface Mock-ups

The following screenshots are an initial mock-up of the screens to be provided within the application. They are initially created using wireframes and a content review and later created with more defined graphics, look and feel, in addition to other user experience considerations.

End-User Interfaces

EU-UI-1 Log-In Page

The wireframe illustrates the layout of the Log-In Page:

- Header:** Shows a placeholder for "Text" and a URL bar containing "https://www.Example.com/login".
- Mechanic Shop Logo:** A placeholder for the shop's logo.
- Login Form:** A central box titled "Login" with fields for "Email" (containing "example@gmail.com") and "Password". Below the password field is a red error message box stating "Incorrect Email or Password". At the bottom are links for "Don't have an account?" and "Register", and a green "Login" button.
- Contact Details:** Includes email ("someEmail@gmail.com"), phone number ("(437) 975-6985"), address ("517 Maple Road, North York, Ontario"), and opening hours ("Monday to Friday - 8 to 5 Weekends - 9 to 5").
- Navigation:** Links to "Get a Quote" and "About us".
- Terms of Service:** Links to "Privacy Policy", "Return Policy", and "Terms and Conditions".
- Footer:** Features the "Auto Quotes Logo" (an octagon with the text "Auto Quotes Logo") and the text "Powered By: Auto Quotes Co."

EU-UI-2 Registration Page

The wireframe illustrates the EU-UI-2 Registration Page. At the top, there's a browser header with a 'Text' input field, a refresh/circular arrow icon, and a URL field containing 'https://www.Example.com/registration'. To the right of the URL field is a user icon. Below the header is the 'Mechanic Shop Logo'. The main content area features a registration form titled 'Registration'. The form includes fields for First Name, Last Name, Phone Number, Email, Password, and Repeat Password. A message 'Passwords should match.' is displayed in a pink box below the repeat password field. A blue 'Register' button is at the bottom of the form. Below the form, a link 'Already have an account? Login' is visible. The footer is divided into four sections: 'Contact Details' (with address, phone, and opening hours), 'Navigation' (links to Get a Quote and About us), 'Terms of Service' (links to Privacy Policy, Return Policy, and Terms and Conditions), and a logo section featuring the 'Auto Quotes Logo' (an octagon) and the text 'Powered By: Auto Quotes Co.'

Contact Details	Navigation	Terms of Service	Auto Quotes Logo Powered By: Auto Quotes Co.
Email Address: someEmail@gmail.com Phone Number: (437) 975-6985 Address: 517 Maple Road, North York, Ontario Opening Hours: Monday to Friday - 8 to 5 Weekends - 9 to 5	Get a Quote About us	Privacy Policy Return Policy Terms and Conditions	

EU-UI-3 Reset Password Page

Text

https://www.Example.com/login

Mechanic Shop Logo

Request password reset

Email

example@gmail.com

If a user with the given address exists, an email has been sent.

Request password reset

Contact Details Email Address: someEmail@gmail.com Phone Number: (437) 975-6985 Address: 517 Maple Road, North York, Ontario Opening Hours: Monday to Friday - 8 to 5 Weekends - 9 to 5	Navigation Get a Quote About us	Terms of Service Privacy Policy Return Policy Terms and Conditions	 Powered By: Auto Quotes Co.
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EU-UI-4 Immediate Quoting Page

Page 1
○ ○ ○

◀ ▶ C
https://www.AutoQuotes.com

Mechanic Shop Logo
User Name

Vehicle Specifications

Make
Model
Year
Engine
Body

Custom Quotes Immediate Quotes

#	Service/Item Description	Unit Price	Quantity	Discount	Final Price
1	Front Brake Pads - OE+ Series	\$80.69	1	\$0.00	\$80.69
	Front Brake Rotors - Economic Series	\$120.69	2	\$20.69	\$100.00
	Front Brakes Replacement	\$125.00	2	\$0.00	\$125.00
2					

Price \$305.69
Tax \$40
Total Price \$345.69

Service Category
Service Sub-Category
Options

Book an Appointment

Contact Details

Email Address: someEmail@gmail.com
 Phone Number: (437) 975-6985
 Address: 517 Maple Road, North York, Ontario
 Opening Hours:
 Monday to Friday - 8 to 5
 Weekends - 9 to 5

Navigation

[Get a Quote](#)
[About us](#)

Terms of Service

[Privacy Policy](#)
[Return Policy](#)
[Terms and Conditions](#)

Auto Quotes
Logo

Powered By: Auto Quotes Co.

EU-UI-5 Custom Quoting Page

Page 1
○ ○ ○

◀ ▶ C
https://www.AutoQuotes.com

Mechanic Shop Logo
User Name

Vehicle Specifications

Make
Model
Year
Engine
Body

Custom Quotes
Immediate Quotes

#	Service/Item Description	Unit Price	Quantity	Discount	Final Price
1	Front Brakes Pads	TBD	1	TBD	TBD
	Front Brakes Rotors	TBD	2	TBD	TBD
	Front Brakes Replacement	\$125.00	2	\$0.00	\$125.00
2					Delete

Price TBD
 Tax TBD
 Total Price TBD

Service Category
Service Sub-Category
Options

Request Quote

Contact Details

Email Address: someEmail@gmail.com
Phone Number: (437) 975-6985
Address: 517 Maple Road, North York, Ontario
Opening Hours:
Monday to Friday - 8 to 5
Weekends - 9 to 5

Navigation

Get a Quote
About us

Terms of Service

Privacy Policy
Return Policy
Terms and Conditions

Auto Quotes
Logo

Powered By: Auto Quotes Co.

EU-UI-6 Booking Appointment Page

Page 1

https://www.AutoQuotes.com

Mechanic Shop Logo

Active Link Link

UserName

Book an Appointment

Email address
name@example.com

Select The Suitable Time Slot

1
2
3
4

Example textarea

First Product
Short Desc

Second Product
Short Desc

Third Product
Short Desc

Book Appointment

Contact Details Email Address: someEmail@gmail.com Phone Number: (437) 975-6985 Address: 517 Maple Road, North York, Ontario Opening Hours: Monday to Friday - 8 to 5 Weekends - 9 to 5	Navigation Get a Quote About us	Terms of Service Privacy Policy Return Policy Terms and Conditions	 Powered By: Auto Quotes Co.
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------	------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------

EU UI 7 Paying Deposit Page

Deposit
Link
Link
Link

Mechanic Shop Logo
Active
Link
Link
Link

UserName
@
Link

Your Cart
3

First Product	\$0.0
Short Desc	
Second Product	\$0.0
Short Desc	
Third Product	\$0.0
Short Desc	
Total (Before Tax): \$0.00	
Tax: \$0.00	
Total: \$0.00	

Billing Details

Payment Details

[Continue to Checkout](#)

Contact Details

Email Address: someEmail@gmail.com
Phone Number: (437) 975-6985
Address: 517 Maple Road, North York, Ontario
Opening Hours:
Monday to Friday - 8 to 5
Weekends - 9 to 5

Navigation

[Get a Quote](#)
[About us](#)

Terms of Service

[Privacy Policy](#)
[Return Policy](#)
[Terms and Conditions](#)

Powered By: Auto Quotes Co.

Mechanic Shop's Internal Interface

I-UI-1 Creating New Admin Page

The screenshot shows a web browser window with the following details:

- Header:** Page 1 of 3, three circular icons (blue, green, red), back, forward, and refresh buttons, URL https://www.AutoQuotes.com.
- Title Bar:** Mechanic Shop's Logo, UserName, and a user icon.
- Left Sidebar:** A vertical menu with three items: Menu item one, Menu item two, and Menu item three, each with a dropdown arrow.
- Main Content:** The title "Admin: Create a new User" is centered above a registration form. The form is titled "Registration" and contains fields for First Name, Last Name, Phone Number, Email, Password, and Repeat Password. It also includes radio buttons for Shop-Customer, Shop-Employee, and Shop-Admin roles, and a "Register" button.
- Bottom Left:** A "Need help?" button with contact information: someEmail@gmail.com, (437) 975-6985, 517 Maple Road, North York, Ontario.
- Bottom Right:** Text indicating "Already have an account? Login".

I-UI-2 Entity List Page (Inventory Items, End-Users, ...)

The screenshot shows a web-based application interface for managing inventory items. At the top, there is a header bar with a search input field containing 'Page 1', three circular icons (blue, orange, green), and a URL bar showing 'https://www.AutoQuotes.com'. Below the header, the title 'Mechanic Shop's Logo' is displayed, along with a user profile icon labeled 'UserName' and a back arrow.

On the left, a sidebar contains a navigation menu with three items: 'Menu item one', 'Menu item two' (which is currently selected, indicated by a blue arrow), and 'Menu item three'. The main content area displays a table of inventory items with columns for Name, Details, Created at, and Action. The table data is as follows:

Name	Details	Created at	Action
Item 1	Details 1	28 minutes ago	Edit Delete
Item 2	Details 2	5 minutes ago	Edit Delete
Item 3	Details 3	5 minutes ago	Edit Delete
Item 4	Details 4	25 minutes ago	Edit Delete
Item 5	Details 5	29 minutes ago	Edit Delete

A large blue button labeled 'Add new' is located at the bottom right of the table area. In the bottom-left corner of the main content area, there is a 'Need help?' button with contact information: 'someEmail@gmail.com', '(437) 975-6985', '517 Maple Road, North York, Ontario'.

I-UI-3 Adding New Entity

The screenshot shows a web page titled "Mechanic Shop's Logo". At the top right, there is a user interface element labeled "UserName" with a person icon and a back arrow. At the top left, there is a navigation bar with "Page 1" and three circular icons. Below the title, there is a sidebar on the left containing a menu with "Menu item one", "Menu item two" (which is bolded), and "Menu item three". The main content area contains several input fields and a list box:

- Name: A text input field labeled "Entity name".
- Property 1: A text input field containing the value "1".
- Property 2: A list box containing the values "1", "2", "3", and "4".
- Property 3: A large text input field.

At the bottom left of the main content area, there is a "Need help?" button. At the bottom right, there is a blue "Add" button. In the bottom left corner of the entire screenshot, there is a footer with contact information: "someEmail@gmail.com", "(437) 975-6985", "517 Maple Road, North York, Ontario".

I-UI-4 Mechanic Shop Base Setting Page

The screenshot shows a web-based application interface for managing a mechanic shop's information. At the top, there is a header bar with a back arrow, forward arrow, refresh icon, and a URL field containing "https://www.AutoQuotes.com". On the right side of the header is a user profile icon labeled "UserName" and a sign-out button.

The main content area is titled "Mechanic Shop's Logo". To the left, a sidebar menu lists "Menu item one", "Menu item two" (which is currently selected, indicated by a blue border), and "Menu item three".

The central part of the page is titled "Update Shop Info" and contains the following fields:

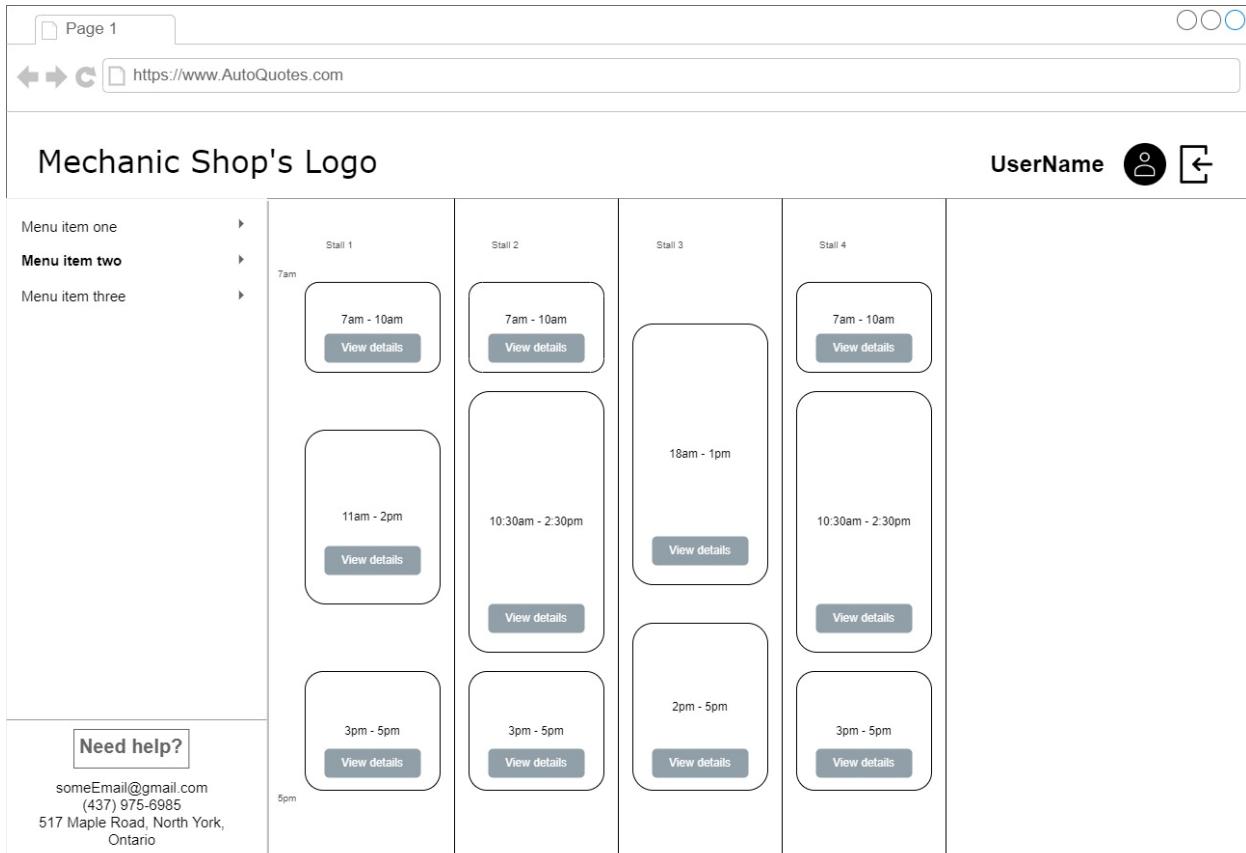
- Shop Name: [Text input field]
- Shop Number: [Text input field]
- Shop Alternative Number: [Text input field]
- Shop Email: [Text input field]
- Shop Address: [Text input field]
- Shop Unit Rate: [Text input field with a dollar sign prefix]
- Parts Price Markup: [Text input field]

Below these fields, there is a section for "Shop Logo" with a "Preview:" label and a large empty rectangular area for logo preview. To the left of this area is an "Upload" button and the text "Accepted Formats: PNG, JPG, WEB".

On the far left, there is a "Need help?" button and contact information: "someEmail@gmail.com", "(437) 975-5985", "517 Maple Road, North York, Ontario".

At the bottom right of the central form is a blue "Update" button.

I-UI-5 Mechanic Shop Schedule Page



The mockup shows a web browser interface for a mechanic shop schedule. At the top left is a page number input field containing "Page 1". At the top right are three circular icons: a blue one with a dot, a red one with a dot, and a green one with a dot. Below the header is a navigation bar with back, forward, and search/copy/paste buttons, and a URL field showing "https://www.AutoQuotes.com".

The main content area has a header "Mechanic Shop's Logo" and a user profile icon labeled "UserName". On the left, there is a sidebar menu with "Menu item one", "Menu item two" (which is bolded), and "Menu item three".

The central part of the page displays a grid of service times for four stalls:

	Stall 1	Stall 2	Stall 3	Stall 4
7am	7am - 10am View details	7am - 10am View details	18am - 1pm View details	7am - 10am View details
11am - 2pm		10:30am - 2:30pm View details		10:30am - 2:30pm View details
3pm - 5pm	View details	3pm - 5pm View details	2pm - 5pm View details	View details

A vertical timeline on the left indicates service times from 7am to 5pm. A "Need help?" button is located on the far left.

At the bottom left, contact information is provided: "someEmail@gmail.com", "(437) 975-6985", and "517 Maple Road, North York, Ontario".

3rd Party Part Supplier Interface

S-UI-1 Providing Requested Part Page

Support Staff .. OOO

Mechanic Shop's Logo **Parts Quotes Requested** 1/2

Vehicle: 2011 Honda Accord 2.4L - 2 Door

Part: Rear Driver Shock Not Available

Manufacturer:

price:

Core Price:

Warranty:

Description:

This Item can be returned if unused.

Submit

Contact Details

Email Address: someEmail@gmail.com
Phone Number: (437) 975-6985
Address: 517 Maple Road, North York, Ontario
Opening Hours:
Monday to Friday - 8 to 5
Weekends - 9 to 5

Auto Quotes
Logo

Powered By: Auto Quotes Co.

Support Team Interface

IL-UI-1 Adding New License Page

The screenshot shows a web browser window for 'Auto Quotes'. The address bar displays 'https://www.AutoQuotes.com'. The page title is 'Auto Quote Logo'. On the right, there is a user profile section with 'UserName' and a log-out icon. The main content area is titled 'Licensing' and contains fields for Company name, administrator name, administrator password, Address, Email address, and Expiry warning period days. A 'Submit' button is at the bottom of the form.

Support Staff..

Auto Quote Logo

Active Link Link

UserName

Admin: Add a new licensing page

Licensing

Company name

administrator name

administrator password

Address

Email address

Expiry warning period days

Submit

IL-UI-2 Editing License Page

The screenshot shows a web-based application interface for managing license information. At the top, there is a header bar with a 'Support Staff' link, a URL field containing 'https://www.AutoQuotes.com', and three blue circular icons. Below the header, the page title is 'Auto Quote Logo' with status indicators: 'Active' (blue button), 'Link' (light blue button), 'Link' (light blue button), and 'Link' (light blue button). To the right of the logo is a user profile section labeled 'UserName' with a person icon and a back arrow.

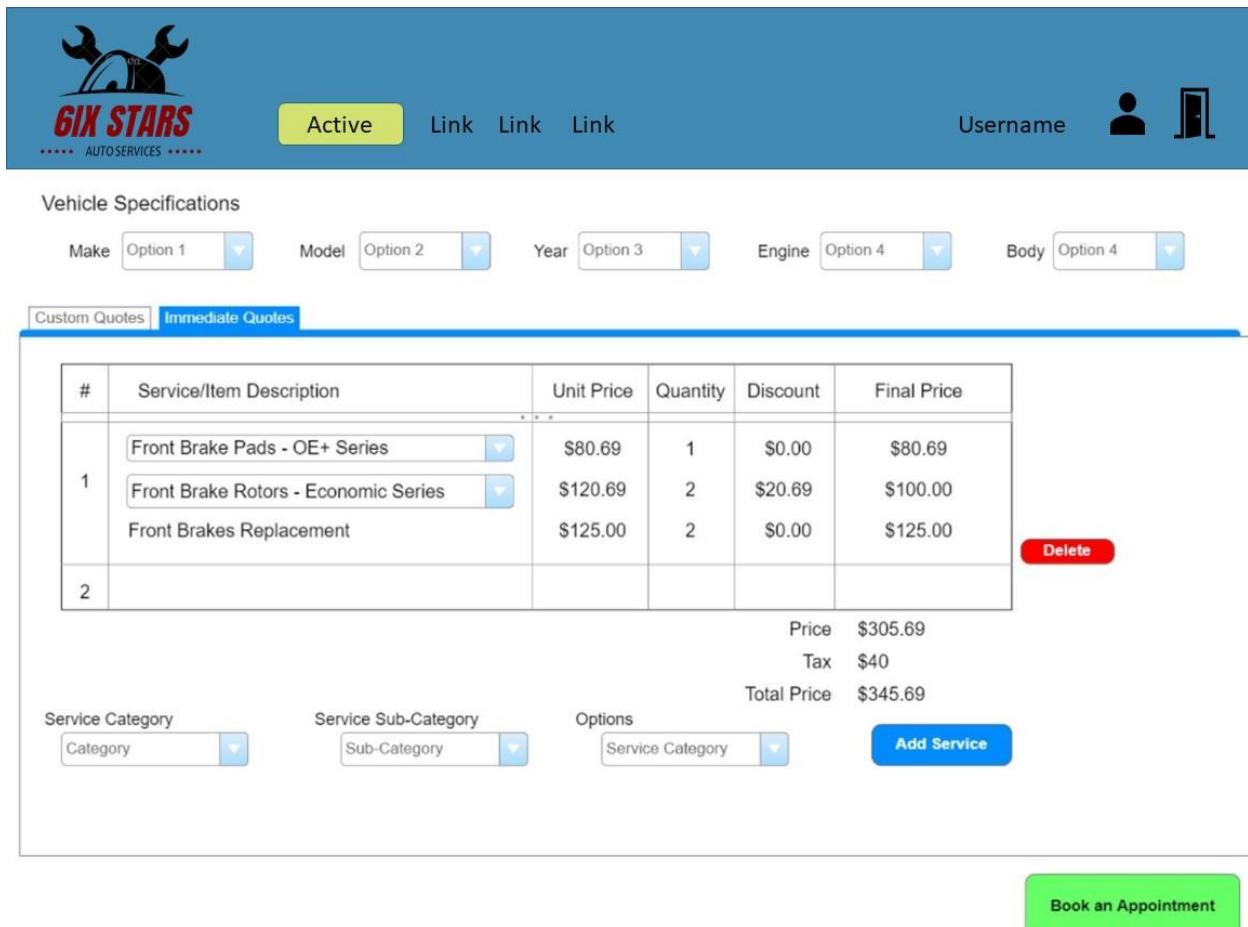
The main content area is titled 'Admin: Edit Licensing Page'. It features a large rounded rectangular form for editing a 'Mechanic Shop Name'. The form has two columns: 'Title' and 'Value'. The 'Title' column contains fields for 'Customer number', 'Address', 'Email address', 'Phone', 'Date generated', 'Expiry day', 'Domain', and 'Status'. The 'Value' column contains corresponding input fields for each title. At the bottom of the form are three buttons: 'Suspend', 'Unsuspend', and 'Remove'.

Section 3 – Process and Data Modelling

3.1 Workflow Diagrams

3.1.1 End User Workflow

End-User Immediate Quote



The screenshot shows a web-based service quote system. At the top, there's a logo for "GIX STARS AUTO SERVICES" featuring a cartoon crab. To the right of the logo are buttons for "Active", "Link", "Link", and "Link". On the far right, there are icons for "Username" and a user profile. Below the header, the title "Vehicle Specifications" is displayed, followed by dropdown menus for "Make" (Option 1), "Model" (Option 2), "Year" (Option 3), "Engine" (Option 4), and "Body" (Option 4). A navigation bar at the top includes "Custom Quotes" and "Immediate Quotes", with "Immediate Quotes" being the active tab.

#	Service/Item Description	Unit Price	Quantity	Discount	Final Price
1	Front Brake Pads - OE+ Series	\$80.69	1	\$0.00	\$80.69
	Front Brake Rotors - Economic Series	\$120.69	2	\$20.69	\$100.00
	Front Brakes Replacement	\$125.00	2	\$0.00	\$125.00
2					

Below the table, the total price breakdown is shown:

- Price: \$305.69
- Tax: \$40
- Total Price: \$345.69

At the bottom left, there are dropdown menus for "Service Category" (Category) and "Service Sub-Category" (Sub-Category). To the right of these are "Options" and a "Service Category" dropdown. A blue "Add Service" button is located to the right of the options. A red "Delete" button is positioned to the right of the table. At the bottom right, a green button says "Book an Appointment".



The footer of the website contains several sections:

- Contact Details:** Email: someEmail@gmail.com, Phone: (999) 999 - 9999, Address: SomeAddress, Working Hours: SomeHours.
- Navigation:** Get a Quote, About Us.
- Terms of Service:** Privacy Policy, Return Policy, Terms and Conditions.
- Auto Quotes Logo:** A stylized car icon above the text "AUTO QUOTES".
- Powered By:** Auto Quotes.

End-User Registration Prompt

Please Sign Up / Sign In before submitting a quote request

User Name: Delete

Password:

SIGN IN

[Forgot Password?](#)

New User

SIGN UP



End-User registration



Registration

First Name

Last Name

Phone Number

+1 (647) - 777 - 7777

Email

example@gmail.com

Password

Repeat Password

Register

Already have an account? [Login](#)



Contact Details

Email: someEmail@gmail.com
Phone: (999) 999 - 9999
Address: SomeAddress
Working Hours: SomeHours

Navigation

Get a Quote
About Us

Terms of Service

Privacy Policy
Return Policy
Terms and Conditions

AUTO QUOTES

Powered By: Auto Quotes

End-User Final Custom Quote Preview



Active Link Link Link

Username  

2011 Honda Accord 2.4L - 2 Door

[Custom Quotes](#) [Immediate Quotes](#)

#	Service/Item Description	Unit Price	Quantity	Discount	Final Price
1	Front Brake Pads - OE+ Series	\$80.69	1	\$0.00	\$80.69
	Front Brake Rotors - Economic Series	\$120.69	2	\$20.69	\$100.00
	Front Brakes Replacement	\$125.00	2	\$0.00	\$125.00
2					

Price \$305.69

Tax \$40

Total Price \$345.69

[Book an Appointment](#)

Contact Details

Email: someEmail@gmail.com
 Phone: (999) 999 - 9999
 Address: SomeAddressss
 Working Hours: SomeHours

Navigation

[Get a Quote](#)
[About Us](#)

Terms of Service

[Privacy Policy](#)
[Return Policy](#)
[Terms and Conditions](#)



Powered By: Auto Quotes

End-User Book an appointment

The screenshot shows the 'Book an Appointment' page. At the top, there is a header bar with the '6IX STARS AUTO SERVICES' logo, three 'Link' buttons, and a user profile section with 'Username' and a person icon. Below the header, the main form has fields for 'Email address' (containing 'name@example.com'), 'Select The Suitable Time Slot' (a dropdown menu showing options 1, 2, 3, and 4), and an 'Example textarea'. The form is divided into three sections: 'First Product', 'Second Product', and 'Third Product', each with a 'Short Desc' placeholder. A large blue 'Book Appointment' button is at the bottom. The footer contains 'Contact Details', 'Navigation', and 'Terms of Service' sections, along with the 'AUTO QUOTES' logo and a 'Powered By: Auto Quotes' link.

Active Link Link Link

Username

6IX STARS
***** AUTO SERVICES *****

Book an Appointment

Email address
name@example.com

Select The Suitable Time Slot

1
2
3
4

Example textarea

First Product
Short Desc

Second Product
Short Desc

Third Product
Short Desc

Book Appointment

Contact Details

Email: someEmail@gmail.com
Phone: (999) 999 - 9999
Address: SomeAddresss
Working Hours: SomeHours

Navigation

Get a Quote
About Us

Terms of Service

Privacy Policy
Return Policy
Terms and Conditions

AUTO QUOTES

Powered By: Auto Quotes

~~End User Place Deposit~~


Active Link Link Link

Username  

Billing Details

First Name <input type="text"/>	Last Name <input type="text"/>		
Address <input type="text"/> 1234 Main St			
Address 2 <input type="text"/> Apartment, studio or floor			
City <input type="text"/>	Country <input type="button" value="Choose..."/>	Province <input type="button" value="Choose..."/>	Postal Code <input type="text"/>

Payment Details

Cardholder Name <input type="text"/>	Card Number <input type="text"/>
Expiration(MMYY) <input type="text"/>	CVV <input type="text"/>

Continue to Checkout

Your Cart

First Product	\$0.0
Short Desc	
Second Product	\$0.0
Short Desc	
Third Product	\$0.0
Short Desc	
Total (Before Tax):	\$0.00
Tax:	\$0.00
Total:	\$0.00

Contact Details

Email: someEmail@gmail.com
 Phone: (999) 999 - 9999
 Address: SomeAddressss
 Working Hours: SomeHours

Navigation

Get a Quote
[About Us](#)

Terms of Service

[Privacy Policy](#)
[Return Policy](#)
[Terms and Conditions](#)



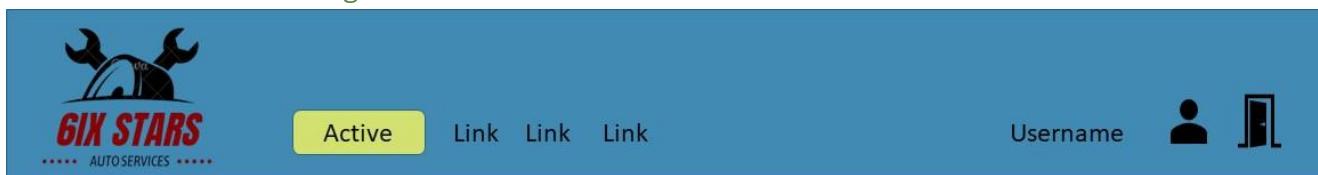
Powered By: Auto Quotes

End-User View Appointment Details

The screenshot shows a web-based application interface. At the top left is the logo for "6IX STARS AUTO SERVICES" featuring a stylized wrench and star. To the right of the logo are three blue rectangular buttons labeled "Active", "Link", "Link", and "Link". Further to the right is a "Username" field with a user icon and a lock icon. Below this header is a large green-bordered box containing the message "Successfully Booked an appointment with 6IX Stars". Underneath this message is a section titled "Appointment Details:" followed by four lines of placeholder text: "Appointment Details Here", "Appointment Details Here", "Appointment Details Here", and "Appointment Details Here".

The screenshot shows the footer area of the application. It is divided into three columns: "Contact Details", "Navigation", and "Terms of Service". The "Contact Details" column contains links for Email, Phone, Address, and Working Hours. The "Navigation" column contains links for Get a Quote and About Us. The "Terms of Service" column contains links for Privacy Policy, Return Policy, and Terms and Conditions. To the right of these columns is the "AUTO QUOTES" logo, which includes a stylized car icon above the text. Below the logo is the text "Powered By: Auto Quotes".

End-User User Login



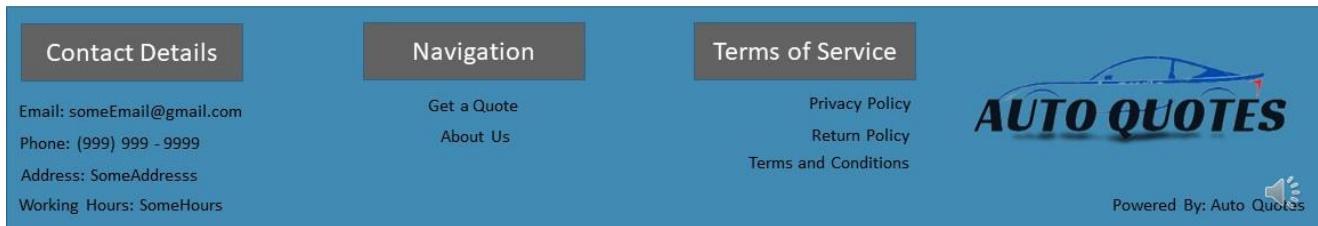
Login

Email

Password

Don't have an account? [Register](#)

[Login](#)



3.1.2 Administration Workflow

Internal User Interface Dashboard

The screenshot shows a dashboard interface for '6IX STARS AUTO SERVICES'. The top header is blue with the company logo on the left and the user name 'Mechanic_staff_01' along with a profile icon and a door icon on the right. The main content area has a light blue background. On the left, there is a vertical sidebar with three menu items: 'Appointments >', 'Menu Item Two >', and 'Menu Item Three >'. At the bottom of this sidebar is a dark blue button labeled 'Need Help?'. Below the sidebar is a light blue footer section containing contact information: 'someEmail@gmail.com', '(999) 999 - 9999', and 'Address Here'. To the right of the contact information is a small speaker icon.

Internal UI View the Schedule

The screenshot shows a mobile application interface for 'Six Stars AUTO SERVICES'. At the top, there's a logo with a cartoon crab and the text 'SIX STARS' and 'AUTO SERVICES'. On the right side of the header, there are icons for a user profile ('Mechanic_staff_01') and a search function.

The main content area is titled 'Internal UI View the Schedule'. It features a sidebar on the left with three menu items: 'Appointments >', 'Menu Item Two >', and 'Menu Item Three >'. Below this is a button labeled 'Need Help?'.

The main area displays a grid of four stalls (Stall 1, Stall 2, Stall 3, Stall 4) over a 5-hour period from 7am to 5pm. Each stall has a 2-hour slot available every hour. Each slot contains a 'View details' button.

Stall	Time Period	Action
Stall 1	7am - 9am	View details
Stall 1	10am - 12pm	View details
Stall 1	1pm - 3pm	View details
Stall 1	4pm - 6pm	View details
Stall 2	7am - 9am	View details
Stall 2	10am - 12pm	View details
Stall 2	1pm - 3pm	View details
Stall 2	4pm - 6pm	View details
Stall 3	1pm - 3pm	View details
Stall 4	7am - 9am	View details
Stall 4	10am - 12pm	View details
Stall 4	1pm - 3pm	View details
Stall 4	4pm - 6pm	View details

At the bottom right of the main screen, there is a speaker icon indicating that the app has audio functionality.

Internal UI View Appointment Details



Mechanic_staff_01  

Appointments > Date: Nov 13, 2022 From : 7 am To: 10 am Stall: 01

Menu Item Two >

Menu Item Three >

Customer Detail

Title	Value
Customer number	Customer01
Address	5576 Yonge St, North York, ON M2N 5S2
Email address	Customer01@gmail.com
Phone	647 999 9999

Services

#	Service/Item Description	Unit Price	Quantity	Discount	Final Price
1	Front Brakes Pads	\$50.00	1	\$0.00	\$50.00
	Front Brakes Rotors	\$45.99	2	\$0.00	\$91.98
	Front Brakes Replacement	\$125.00	2	\$0.00	\$125.00
2					

Need Help?

someEmail@gmail.com
(999) 999 - 9999
Address Here



3.1.3 3rd-Party Supplier User Interface3rd Party Supplier Quote Submission Form

Vehicle: 2011 Honda Accord 2.4L - 2 Door

Part: Front Brakes Pads

Not Available

Manufacturer:	TrueDrive
price:	\$80.69
Core Price:	\$50.00
Warranty:	1 year
Description	

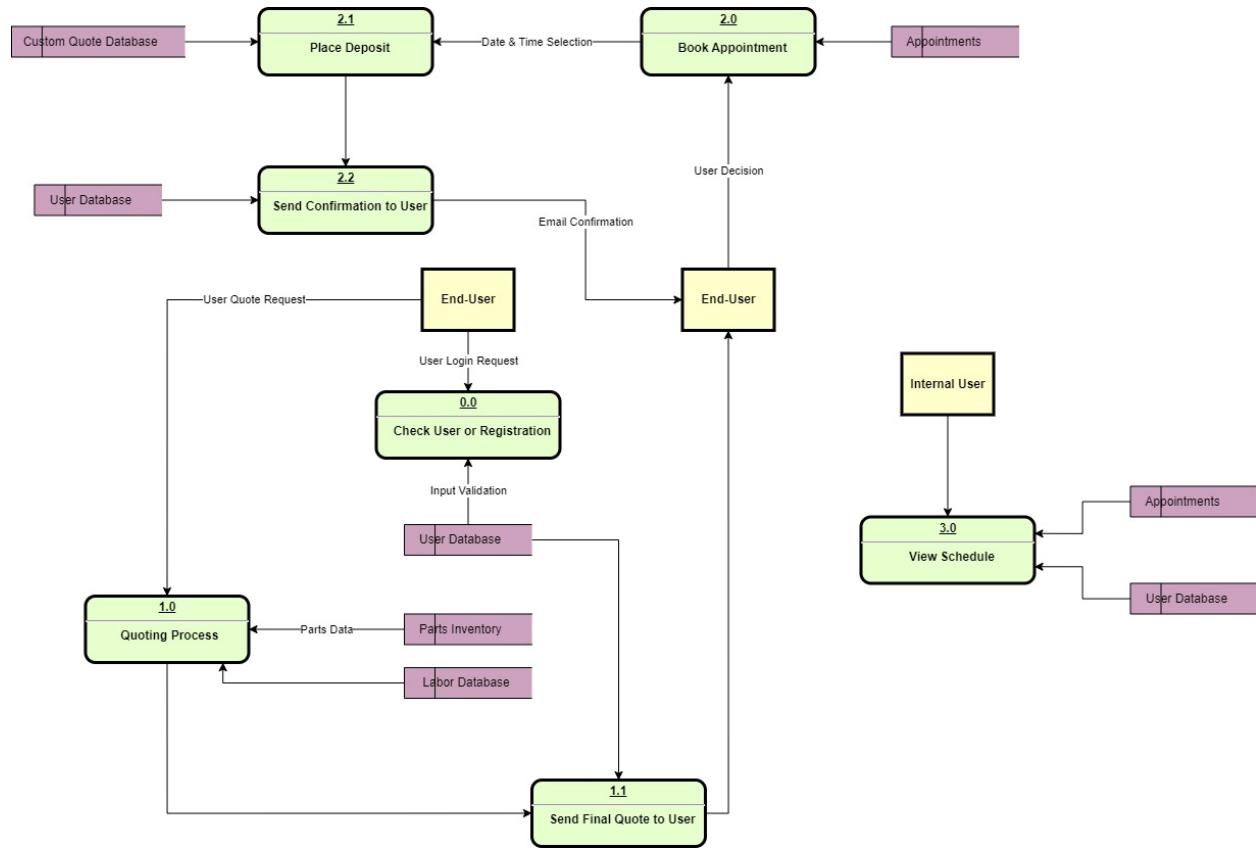
This Item can be returned if unused.

Submit

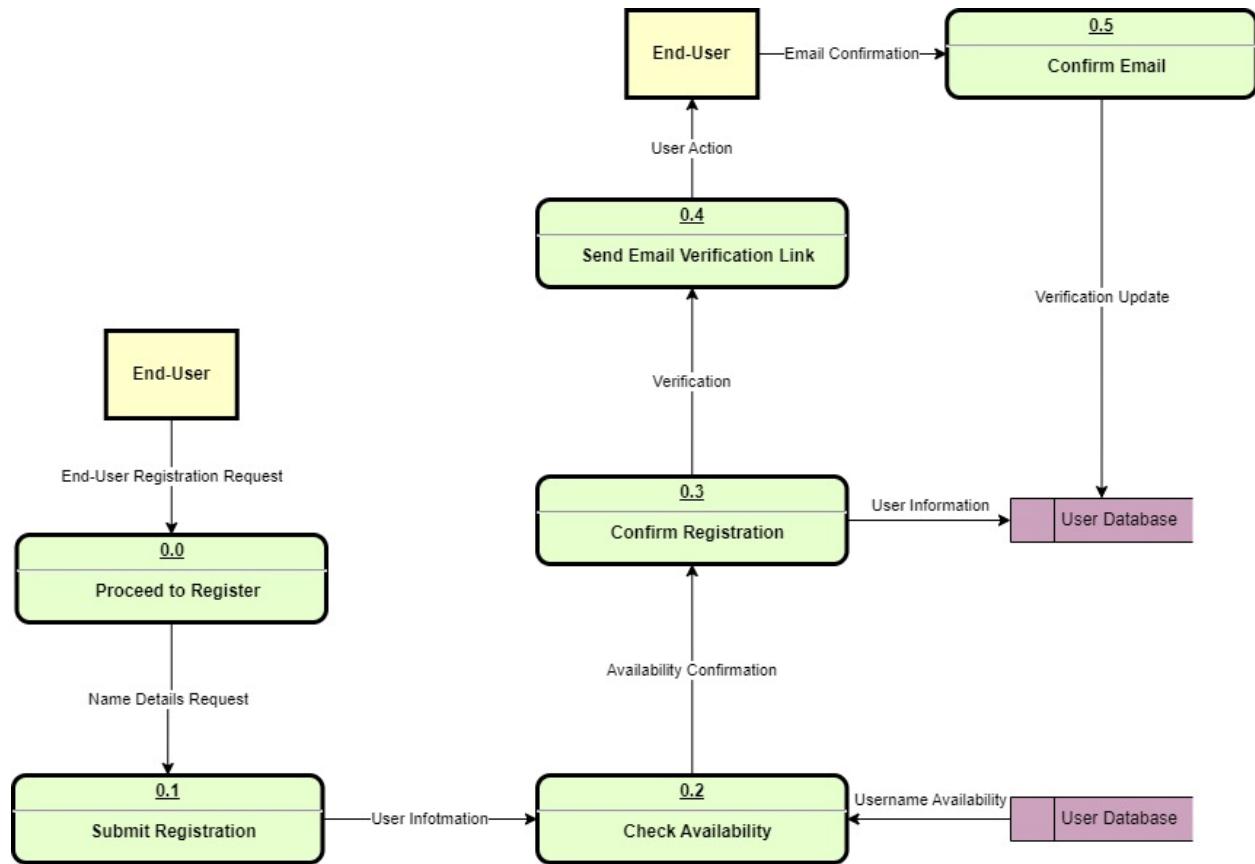


3.2 Data Modelling and Flow

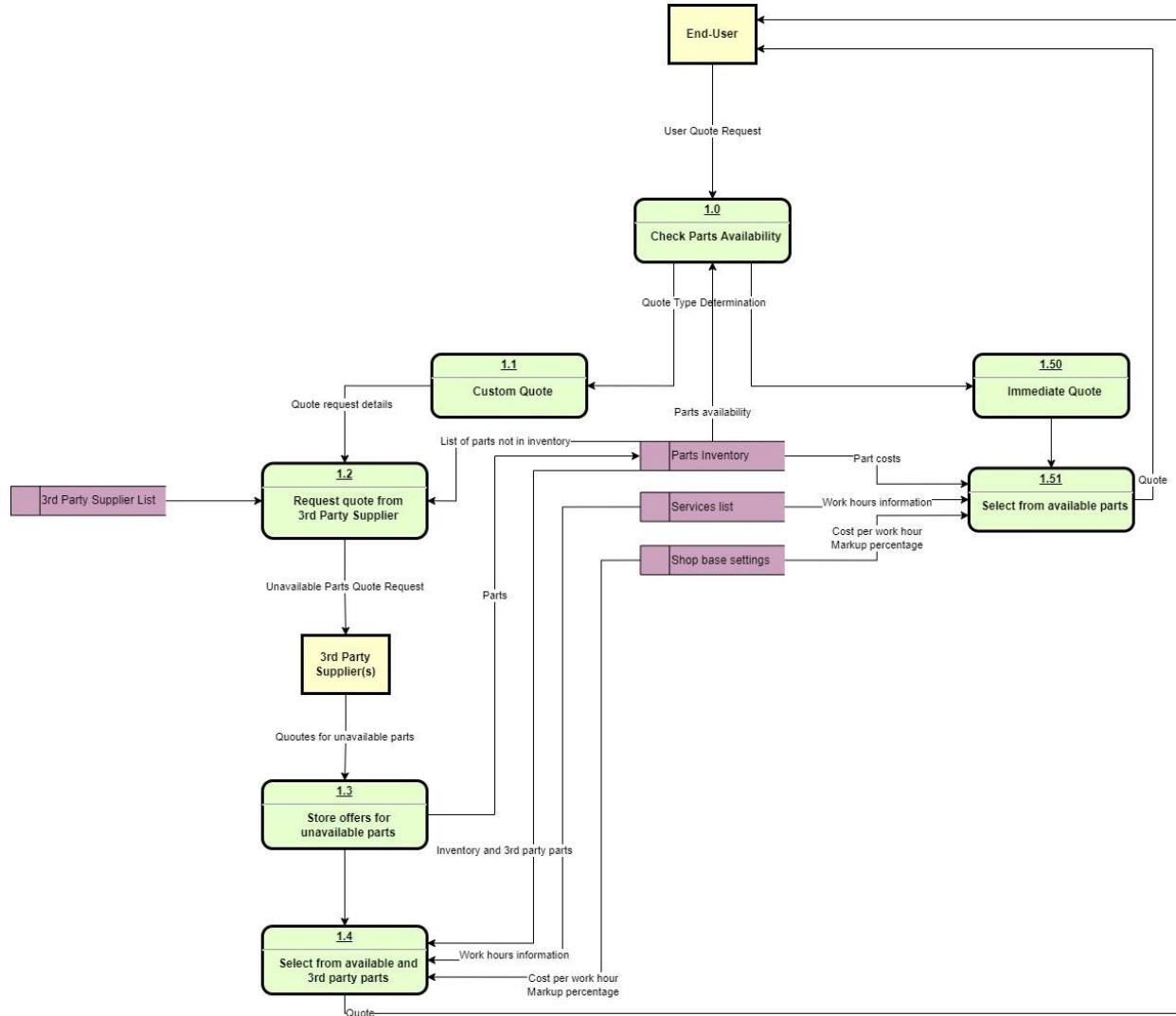
3.2.1 Overview DFD (Level 0)



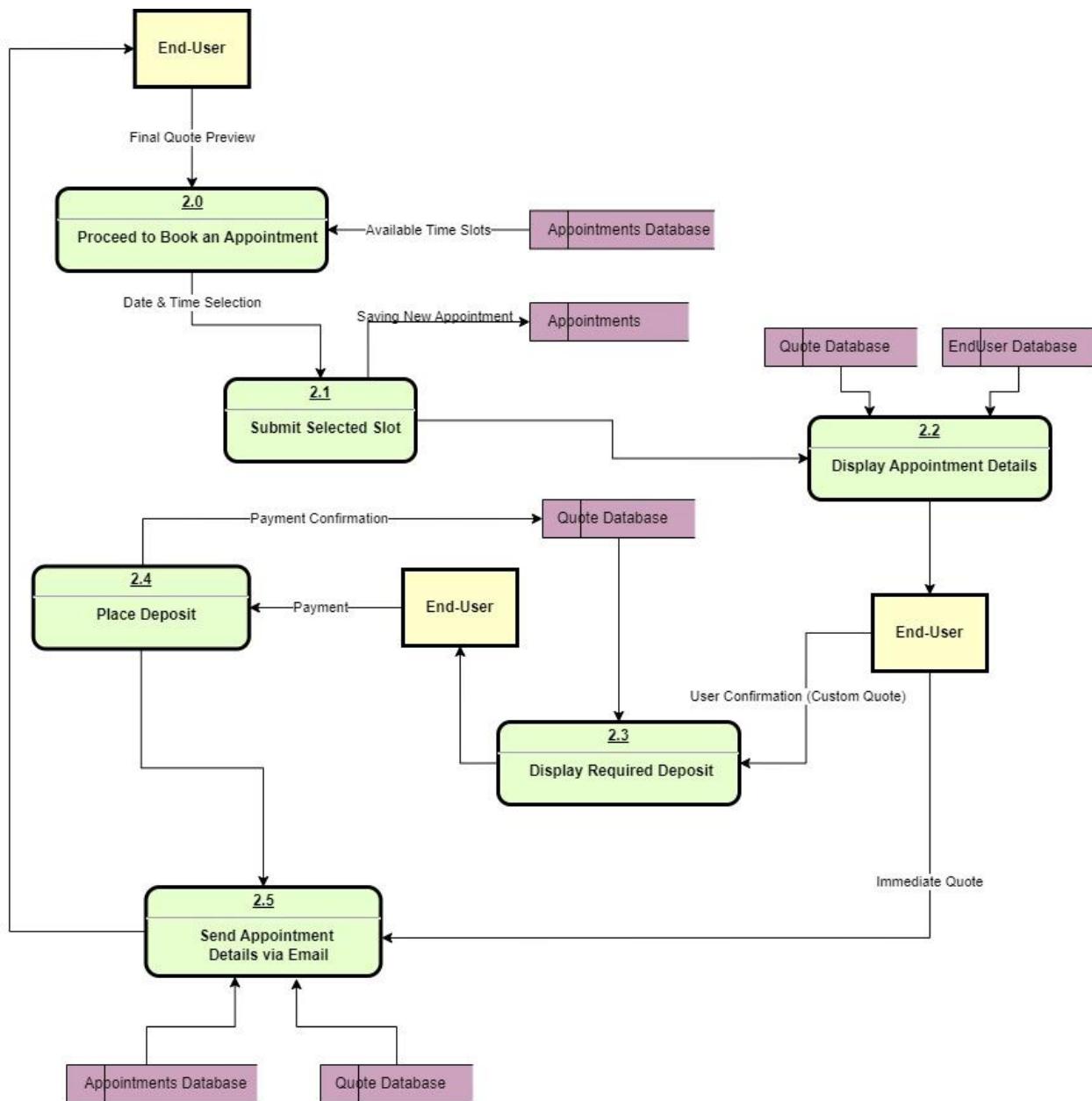
3.2.2 End-User Registration DFD (Level 1)



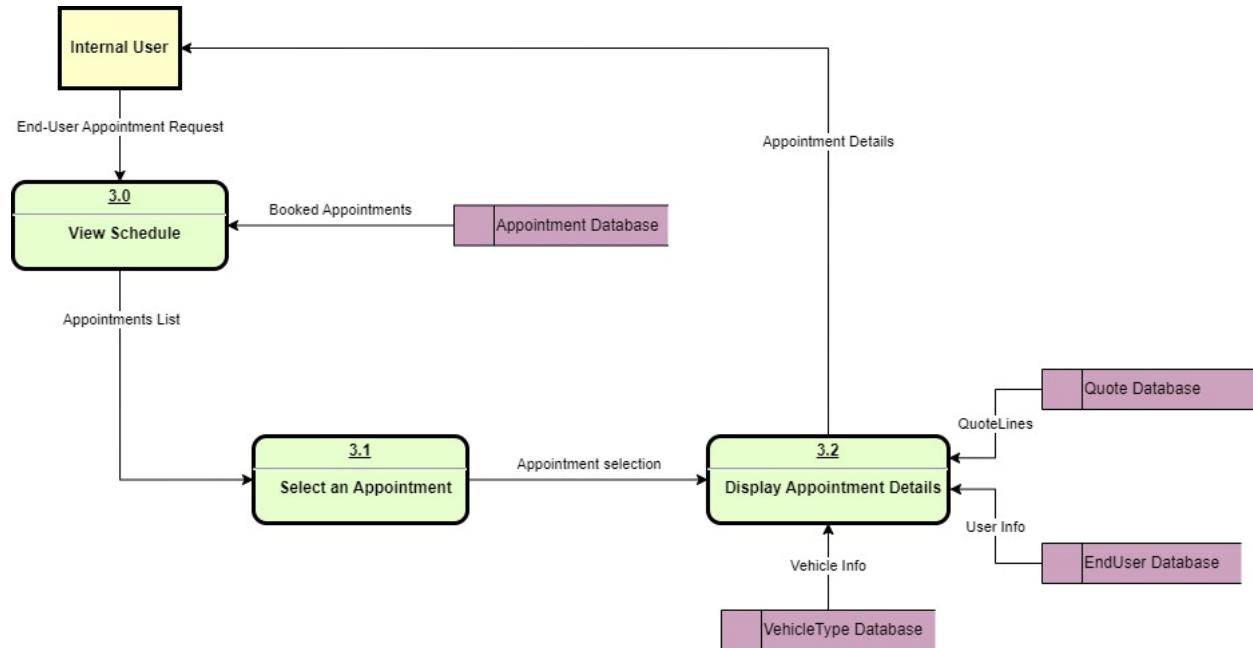
3.2.3 End-User Quote DFD (Level 1)



3.2.4 End-User Appointment & Deposit DFD (Level 1)



3.2.5 Internal View Schedule DFD (Level 1)



3.3 Use Case Scenarios

The following Use Case Scenarios (UCSs) have been identified. The following table is a summary of the Use Case Scenarios followed by detailed descriptions.

Use Case Scenario #	Description
UC-EU1	End-User Log-In
UC-EU2	End-user registration
UC-EU3	End-user forgotten password
UC-EU4	End-user quoting process
UC-EU5	End-user custom quoting process
UC-EU6	End-user books an appointment
UC-EU7	End user makes a deposit
UC-IU1	Shop employee adds entity
UC-IU2	Shop employee adds an inventory item
UC-IU3	Shop employee edits entity
UC-IU4	Shop employee deletes an entity
UC-IU5	Shop admin edits shop basic info
UC-SU1	3 rd party supplier rep provides a quote
UC-ILU1	Support staff member add new mechanic shop license
UC-ILU2	Support staff member removes mechanic shop license
UC-ILU3	Support staff member suspend mechanic shop license
UC-ILU4	Support staff member unsuspend mechanic shop license
UC-ILU5	Support staff delete Support Staff account

3.3.1 UC-EU1 – End-User Log-In

Scenario Name	End-User Log In		
Actors	End-User		
Stakeholders and Interests	End-User, Auto-Shop		
Description	Allows End-user to log into the web page		
Assumptions, Constraints, and/or Pre-Conditions	The end-user is on the login page.		
Trigger – Starting Point	End-user decides to log in		
Post condition	The user is logged in		
Related Use Cases	UC-EU1		
Normal Flow of Events	#	End-user	System
	1	Enters email and password and clicks the login button	Validates the data and if unsuccessful send back error messages.
	2	Repeat step 1 till the correct credentials are entered	Validates the data and redirects the end-user to the main quoting page.
Sub-Flows			
Alternate/Exceptional Flows	End-user chooses to cancel the login or exceeds the given tries to log in successfully.		

3.3.2 UC-EU2 - End-user registration

Scenario Name	End-User Registration		
Actors	End-User		
Stakeholders and Interests	End-User		
Description	Allows End-user to register for the web page		
Assumptions, Constraints, and/or Pre-Conditions	The end-user is on the registration page.		
Trigger – Starting Point	End-user decides to register		
Post condition	A new end-user is registered		
Related Use Cases	UC-EU2		
Normal Flow of Events	#	End-user	System
	1	End-User is on the registration page.	Prompts to enter the first name, last name, email, phone number, and password.
	2	End-user enters the first name, last name, email, phone number, and password	Validates the data and gives proper error messages if validation fails.
	3	Repeat the above steps till validation passes.	Validates the data and redirects the user to the main quoting page.
Sub-Flows			
Alternate/Exceptional Flows	End-user chooses to cancel the registration.		

3.3.3 UC-EU3 - End-user forgotten password

Scenario Name	End-user forgotten password		
Actors	End-User		
Stakeholders and Interests	End-User		
Description	The end user resets their password		
Assumptions, Constraints, and/or Pre-Conditions	End-User forgets their password		
Trigger – Starting Point	End-User cannot log in and clicks on the forget password option.		
Post condition	Password has been reset		
Related Use Cases	UC-EU1, UC-EU2		
Normal Flow of Events	#	End-user	System
	1	Clicks on forget password button	Display the reset password form
	2	Enters their registered email	Send an email with the reset password option to the user
	3	Click on the link received via email	Display the reset password form
	4	Enter a new password twice	Check for validation and Display “Password reset successfully” if it passed the validations
Sub-Flows			
Alternate/Exceptional Flows	The entered email is invalid or non-registered. The user decides to cancel the process.		

3.3.4 UC-EU4 - End-user quoting process

Scenario Name	End-user quoting process		
Actors	End-User		
Stakeholders and Interests	End-User, 3 rd party supplier rep (in case of a custom quote) Mechanic shop staff, Mechanic shop owners		
Description	The end user requests a quote		
Assumptions, Constraints, and/or Pre-Conditions	The end-user is on the main quoting page (the site's main landing page)		
Trigger – Starting Point	End-user decides to request a quote		
Post condition	A quote is generated, a time slot is booked, a deposit is placed		
Related Use Cases	UC-EU5		
Normal Flow of Events	#	End-user	System
	1	Visits the main quoting page	Displays the main quoting form
	2	Enters the vehicle specifications	waits
	3	Adds a package to the quote request	waits
	4	Repeats step 3 until all packages are added	waits
	5	Clicks submit button	Displays immediate quote for available items
	6	waits	If quote includes items not in stock goes to step 11
	7	waits	If user is logged in (previous session) goes to step 10
	8	If user has an account executes login flow (UC-EU1)	
	9	If user does not have an account executes registration flow (UC-EU2)	
	10	Executes custom quoting process (UC-EU5)	
	11	Executes deposit flow (UC-EU7)	
	12	Executes book a timeslot flow (UC-EU6)	
	13	waits	Displays summary
Sub-Flows	UC-EU1, UC-EU2, UC-EU5, UC-EU6, UC-EU7		
Alternate/Exceptional Flows	End-user decides to abort		

3.3.5 UC-EU5 - End-user custom quoting process

Scenario Name	End-user custom quoting process	
Actors	End-User	
Stakeholders and Interests	End-User, 3rd Party Supplier	
Description	End-User requesting quotes that include unavailable or out-of-stock parts.	
Assumptions, Constraints, and/or Pre-Conditions	End-User should be logged In. End-User is on the main quoting page.	
Trigger – Starting Point	End-User decides to get a quote	
Post condition	A complete quote which includes all the required parts is sent to the customer as an Email.	
Related Use Cases	UC-EU4, UC-SI1	
Normal Flow of Events	#	End-user
	1	Go to the main quoting Page
		Display the quoting form and options
	2	Enters the vehicle specifications
		waits
	3	Adds a package to the quote request
		waits
	4	Repeat step 3 until all requested packages are added
		Waits
	5	Clicks on submit button
		Check for unavailable/out-of-stock items and creates a list of unavailable items.
	6	
		Display “Quote request successful.”
	7	
		Send the list of Unavailable items to the 3 rd party suppliers including the vehicle specifications
	8	
		Receive the parts information from the 3 rd party suppliers
	9	
		Add the received parts information and details to the quote.
	10	
		Send the completed quote to the customer via email.
	11	Executes book a timeslot flow (UC-EU6)
	12	waits
Sub-Flows	Display Summary	
Alternate/Exceptional Flows	UC-EU1, UC-EU2, UC-EU5, UC-EU6, UC-EU7 3 rd Party Suppliers fail to submit info on the requested parts	

3.3.6 UC-EU6 - End-user book an appointment

Scenario Name	End-user book an appointment		
Actors	End-User		
Stakeholders and Interests	End-User		
Description	Allows a logged-in user to book an appointment for their desired service.		
Assumptions, Constraints, and/or Pre-Conditions	The end-user is on the appointment page.		
Trigger – Starting Point	The end-user decides to book an appointment		
Post condition	Successfully books an appointment for the end-user.		
Related Use Cases	UC-EU6		
Normal Flow of Events	#	End-user	System
	1	End-user is on the book an appointment page	Retrieves the list of available appointments and displays the list of appointments and prompts the user to select a time slot.
	2	Selects a time slot from the list and click the book the appointment button or the user chooses to cancel booking an appointment.	Books the appointment for the user and displays a success message or if the user chooses to cancel go to step 3.
	3	wait	Redirects the user to the main quoting page.
Sub-Flows			
Alternate/Exceptional Flows	The user chooses to cancel.		

~~3.3.7 UC EU7 End user makes a deposit~~

Scenario Name	End-user makes a deposit		
Actors	End-User		
Stakeholders and Interests	End-User		
Description	Allows a logged-in user to deposit the custom quote.		
Assumptions, Constraints, and/or Pre-Conditions	The end-user has chosen a time to book an appointment for a custom part and is on the deposit(checkout) page.		
Trigger – Starting Point	The end user has chosen a custom quote and needs to book an appointment.		
Post condition	Allows the user to book an appointment after a successful deposit.		
Related Use Cases	UC-EU7		
Normal Flow of Events	#	End-user	System
	1	End-user is on the deposit page.	Retrieves and displays the list of products/services in the cart Prompts the user to enter the first name, last name, address, city, country, province, and postal code.
	2	End-user fills in the first name, last name, address, city, country, province, and postal code.	Prompts to enter the cardholder's name, card number, expiration, and CVV.
	3	Enters cardholder name, card number, expiration, and CVV.	Validates the info and if successful charges the card for the total amount. Display a confirmation message saying the card has been charged. If unsuccessful, displays the error messages and repeat step 1.
Sub-Flows			
Alternate/Exceptional Flows	The end-user cancels or exits the deposit page.		

3.3.8 UC-IU1 - Shop employee adds entity

Scenario Name	Shop employee adds entity		
Actors	Shop employee		
Stakeholders and Interests	Mechanic shop owners and staff		
Description	Shop employee adds an entity of a specific type (service/inventory item, etc.)		
Assumptions, Constraints, and/or Pre-Conditions	An employee is on the entity-type-specific list page		
Trigger – Starting Point	The employee decides to add an entity (service/inventory item, etc.)		
Post condition	Entity is added		
Related Use Cases	UC-IU2, UC-IU3, UC-IU4		
Normal Flow of Events	#	Shop employee	System
	1	Clicks on the add button	Displays the entity-specific add page
	2	Fills out the form	waits
	3	Clicks submit	Creates entity
	4	waits	Displays success screen
Sub-Flows	UC-UI2		
Alternate/Exceptional Flows	The employee decides to cancel		

3.3.9 UC-IU2 - Shop employee adds an inventory item

Scenario Name	Shop employee adds an inventory item		
Actors	Shop employee		
Stakeholders and Interests	Mechanic shop owners and staff		
Description	A shop employee adds a new item to the inventory database		
Assumptions, Constraints, and/or Pre-Conditions	The shop employee is logged in as an employee.		
Trigger – Starting Point	A new inventory item is received in the shop.		
Post condition	A new inventory item with information is added to the inventory database.		
Related Use Cases	UC-IU1, UC-IU3, UC-IU4		
Normal Flow of Events	#	Shop employee	System
	1	Clicks on the add new inventory item button	Display the adding new inventory item form
	2	Complete the form	Waits
	3	Submits the form	Validate the form inputs
	4	Fix the inputs if there were any errors and click on submit button	Validate the inputs, if the item name already exists, prompt the user to update the existing item instead of adding it.
	5	Repeat step 4 until all inputs pass the validation or the user chooses to update the existing item.	
	6		Add the item to the inventory and Display “Item added successfully”
Sub-Flows			
Alternate/Exceptional Flows	The employee decides to cancel		

3.3.10 UC-IU3 - Shop employee edits entity

Scenario Name	Shop employee edits entity		
Actors	Shop employee		
Stakeholders and Interests	Mechanic shop owners and staff		
Description	Shop employee edits an entity of a specific type (service/inventory item, etc.)		
Assumptions, Constraints, and/or Pre-Conditions	An employee is on the entity-type-specific list page		
Trigger – Starting Point	The employee decides to edit an entity (service/inventory item, etc.)		
Post condition	Entity is updated		
Related Use Cases	UC-IU1, UC-IU2, UC-IU-4		
Normal Flow of Events	#	Shop employee	System
	1	Selects an entity from the list and click edit	Displays the prefilled form
	2	Edits the information	waits
	3	clicks submit	Updates entity
	4	waits	Displays success screen
Sub-Flows			
Alternate/Exceptional Flows	The employee decides to cancel		

3.3.11 UC-IU4 - Shop employee deletes an entity

Scenario Name	Shop employee deletes an entity		
Actors	Shop employee		
Stakeholders and Interests	Mechanic shop owners and staff		
Description	Shop employee deletes an entity of a specific type (service/inventory item, etc.)		
Assumptions, Constraints, and/or Pre-Conditions	An employee is on the entity-type-specific list page		
Trigger – Starting Point	The employee decides to delete an entity (service/inventory item, etc.)		
Post condition	Entity is removed		
Related Use Cases	UC-IUI2, UC-IUI3, UC-IUI3		
Normal Flow of Events	#	Shop employee	System
	1	Selects an entity from the list and click delete	Displays entity information and requests to confirm
	2	User confirms	Deletes the selected entity
	3		Displays success screen
Sub-Flows			
Alternate/Exceptional Flows	The employee decides to cancel		

3.3.12 UC-IU5 - Shop admin edit shop basic info

Scenario Name	Shop admin edits shop basic info		
Actors	Shop admin		
Stakeholders and Interests	Mechanic shop owners, staff, end-users		
Description	A shop admin edits the shop base information		
Assumptions, Constraints, and/or Pre-Conditions	Admin is on the shop info page		
Trigger – Starting Point	A shop admin decides to edit the shop base information		
Post condition	Base information is updated		
Related Use Cases			
Normal Flow of Events	#	Shop employee	System
	1	Clicks on the edit button	Displays the prefilled form
	2	Edits information	waits
	3	Clicks submit	Updates information
	4	waits	Displays success screen
Sub-Flows			
Alternate/Exceptional Flows	The employee decides to cancel		

3.3.12 UC-SU1 - 3rd party supplier rep provides a quote

Scenario Name	3rd party supplier rep provides a quote		
Actors	3 rd party supplier rep		
Stakeholders and Interests	Mechanic shop owners and staff, 3 rd party supplier, end-user		
Description	3 Rd party supplier rep provides a quote on a part		
Assumptions, Constraints, and/or Pre-Conditions	3 rd party supplier rep clicked on the link sent to them in an email		
Trigger – Starting Point	3 rd party rep received an email about a quote request		
Post condition	Quote is submitted		
Related Use Cases			
Normal Flow of Events	#	3 rd party supplier rep	System
	1	Opens page	Displays the vehicle details, and the part to be quoted
	2	Adds an offered line and enters offer information	waits
	3	Repeats step 2 as needed	waits
	4	Clicks submit offers	Saves offers for the part.
		waits	If there are more parts to be quoted, go to step 1
		waits	Shows success screen
Sub-Flows			
Alternate/Exceptional Flows	The supplier rep decides to cancel		

3.3.14 UC ILU1 Support staff member adds a new mechanic shop license

Scenario Name	Support staff member add new mechanic shop license		
Actors	Support staff member		
Stakeholders and Interests	Mechanic shop owners and staff, Auto Quotes owners and staff		
Description	Allow Support Staff to create a New Mechanic Shop profile		
Assumptions, Constraints, and/or Pre-Conditions	Have signed a contract with a New Mechanic Shop		
Trigger – Starting Point	Support Staff hit the Add New Mechanic Shop on the navigation bar		
Post condition	A New Mechanic Shop profile is created, and Mechanic Shop is licensed		
Related Use Cases			
Normal Flow of Events	#	Support Staff	System
	1	Request to add a new mechanic shop	Display a form and prompt to enter information
	2	Enter Company name, administrator name, passwords, address, email address, Expiry waning period days	Validate the input, and display validation messages.
	3	Hit the Submit button	Create a Mechanic Shop profile, and display a success message
Sub-Flows			
Alternate/Exceptional Flows	Staff member decides to cancel		

~~3.3.15 UC ILU2 Support staff member removes a mechanic shop license~~

Scenario Name	Support staff member removes mechanic shop license		
Actors	Support staff member		
Stakeholders and Interests	Mechanic shop owners and staff, Auto Quotes owners and staff		
Description	Allow Support Staff to remove a Mechanic shop profile		
Assumptions, Constraints, and/or Pre-Conditions	New Mechanic Shop Profile has been created		
Trigger – Starting Point	A list of mechanic shops has been retrieved		
Post condition	A New Mechanic Shop profile is removed, and Mechanic Shop is unlicensed		
Related Use Cases			
Normal Flow of Events	#	Support staff member	System
	1	Select a mechanic shop	Display the mechanic shop's detail including customer number, address, email address, phone number, date generated, expiry day, domain, and status.
	2	Request to remove the mechanic shop	Display confirmation window
	3	Accept to remove	Remove the mechanic shop, and display the success message
Sub-Flows			
Alternate/Exceptional Flows	Staff member decides to cancel		

~~3.3.16 UC ILU3 Support staff member suspends mechanic shop license~~

Scenario Name	Support staff member suspend mechanic shop license		
Actors	Support staff member		
Stakeholders and Interests	Mechanic shop owners and staff, Auto Quotes owners and staff		
Description	Allow Support Staff to suspend a Mechanic shop profile		
Assumptions, Constraints, and/or Pre-Conditions	New Mechanic Shop Profile has been created		
Trigger – Starting Point	A list of mechanic shops has been retrieved		
Post condition	Mechanic Shop is suspended		
Related Use Cases			
Normal Flow of Events	#	Support staff member	System
	1	Select a mechanic shop	Display the mechanic shop's detail including customer number, address, email address, phone number, date generated, expiry day, domain, and status.
	2	Request to suspend the mechanic shop	Display confirmation window
	3	Accept to suspend	suspend the mechanic shop, and display the success message
Sub-Flows			
Alternate/Exceptional Flows	Staff member decides to cancel		

~~3.3.17 UC ILU4 Support staff member unsuspends mechanic shop license~~

Scenario Name	Support staff member unsuspend mechanic shop license		
Actors	Support staff member		
Stakeholders and Interests	Mechanic shop owners and staff, Auto Quotes owners and staff		
Description	Allow Support Staff to unsuspend a Mechanic shop profile		
Assumptions, Constraints, and/or Pre-Conditions	New Mechanic Shop Profile has been created		
Trigger – Starting Point	A list of mechanic shops has been retrieved		
Post condition	Mechanic Shop is activated		
Related Use Cases			
Normal Flow of Events	#	Support staff member	System
	1	Select a mechanic shop	Display the mechanic shop's detail including customer number, address, email address, phone number, date generated, expiry day, domain, and status.
	2	Request to unsuspend the mechanic shop	Display confirmation window
	3	Accept to unsuspend	unsuspend the mechanic shop, and display the success message
Sub-Flows			
Alternate/Exceptional Flows	Staff member decides to cancel		

3.3.18 UC ILU5 – Support staff deletes support staff account

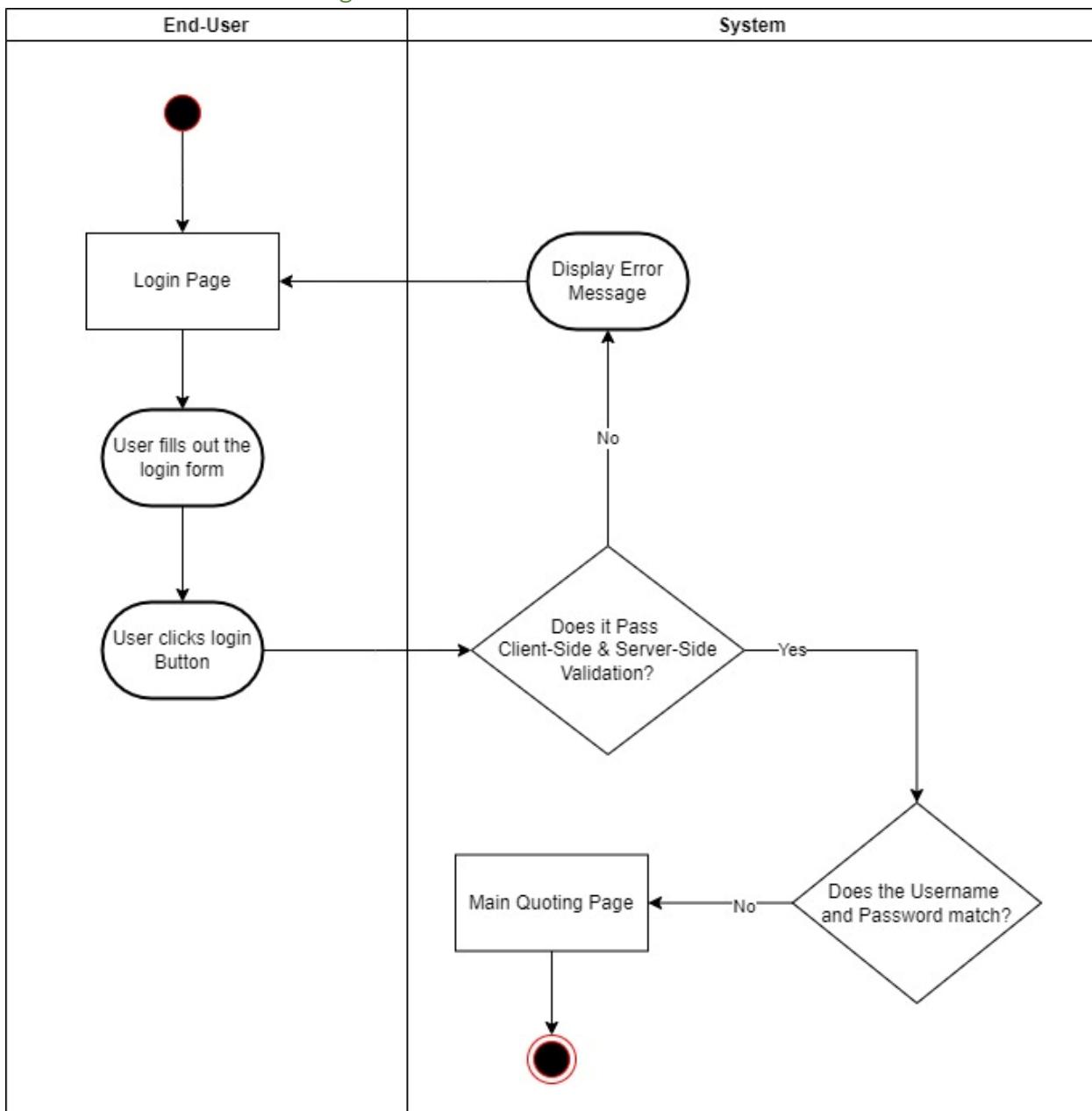
Scenario Name	Support staff admin deletes support staff account		
Actors	Support staff admin		
Stakeholders and Interests	Auto Quotes owners and staff		
Description	Allow Support Staff Admin to delete a Support Staff Account		
Assumptions, Constraints, and/or Pre-Conditions	A support Staff Account has been created		
Trigger – Starting Point	A list of Support Staff Accounts has been retrieved		
Post condition	The Support Staff account is removed		
Related Use Cases			
Normal Flow of Events	#	Support staff member	System
	1	Select a support staff account and request to delete the account	Display a confirmation window
	2	Accept to delete the account	Delete the support staff account and display the success message
Sub-Flows			
Alternate/Exceptional Flows	Support Staff member decides to cancel		

3.4 Activity Diagrams

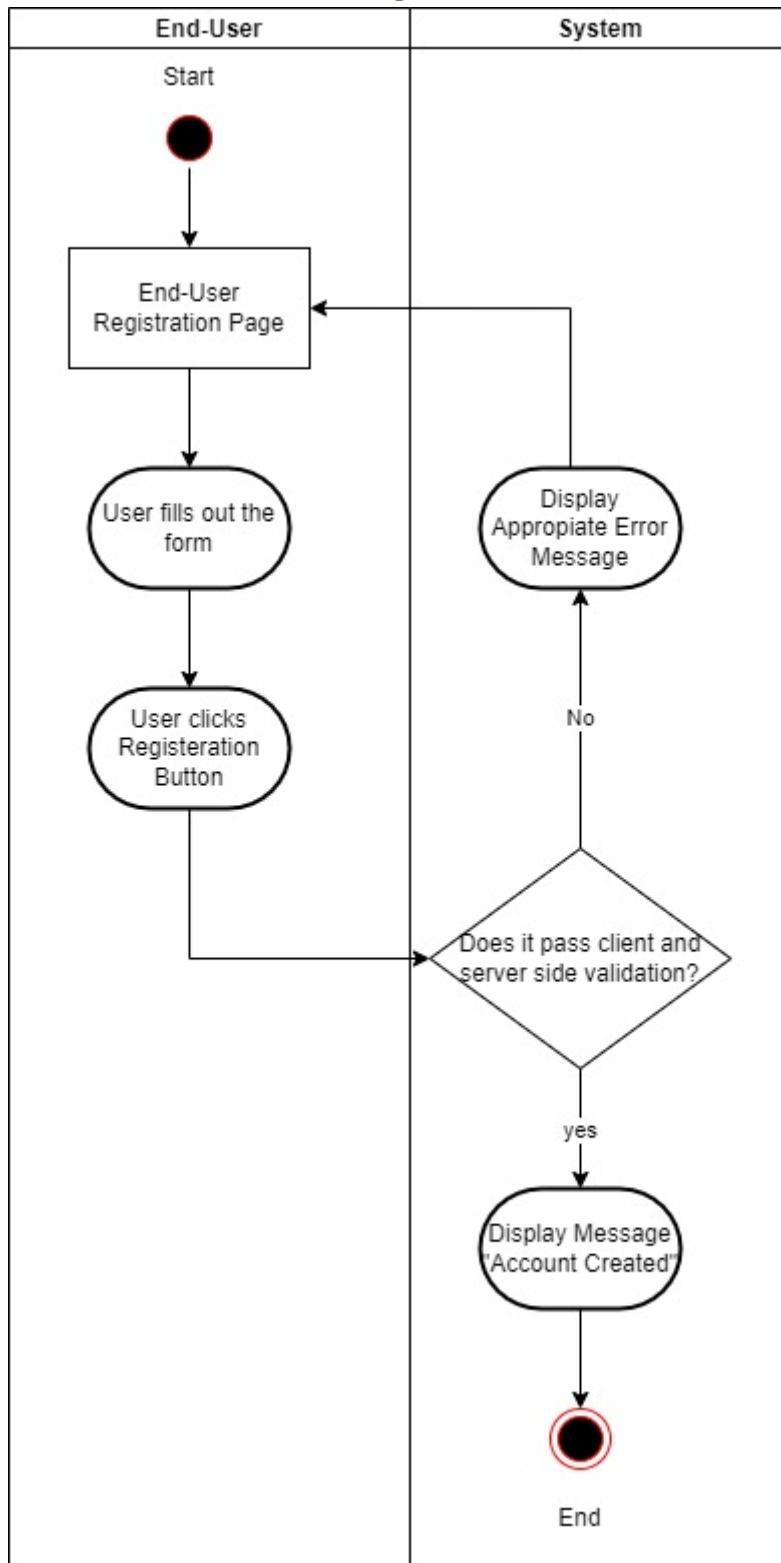
The following is a summary table of the Activity Diagrams provided followed by sub-sections of the actual diagrams.

Activity Diagram #	Description	Related UCS #
AD-EUI1	End-User Log In	UC-EU1
AD-EUI2	End-User Registration	UC-EU2
AD-EUI3	End-User Forget Password	UC-EU3
AD-EUI4	End-User Quoting Process	UC-EU4
AD-EUI5	End-User Custom Quoting Process	UC-EU5
AD-EUI6	End-User Appointment	UC-EU6
AD-EUI7	End-User Deposit	UC-EU7
AD-IUI1	Mechanic Shop Employee Add Entity	UC-IU1
AD-IUI2	Mechanic Shop Employee Add Inventory Item (AD-IUI1 Detailed)	UC-IU2
AD-IUI3	Mechanic Shop Employee Edit Entity	UC-IU3
AD-IUI4	Mechanic Shop Admin Delete Entity	UC-IU4
AD-IUI5	Mechanic Shop Admin Edit Mechanic Shop Basic Info	UC-IU5
AD-SUI1	3 rd Party Supplier Rep Providing Quote on Requested Parts	UC-SU1
AD-ILUI1	Support Staff Adding a New Mechanic Shop License	UC-ILU1
AD-ILUI2	Support Staff Removing a Mechanic Shop License	UC-ILU2
AD-ILUI3	Support Staff Suspending Mechanic Shop License	UC-ILU3
AD-ILUI4	Support Staff Unsuspending Mechanic Shop License	UC-ILU4
AD-ILUI5	Support Staff Deleting Support Staff Account	UC-ILU5

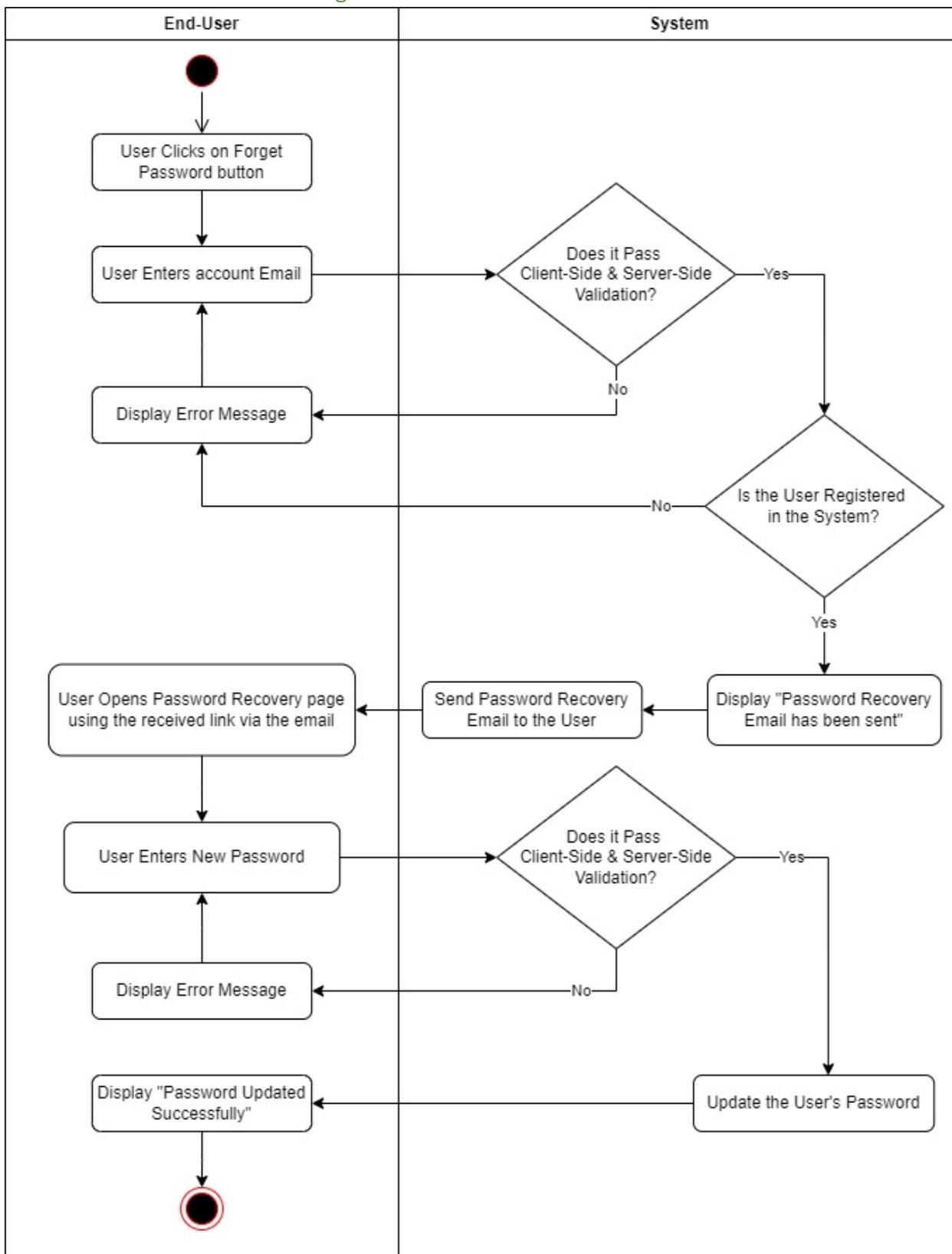
3.4.1 AD-EU1 - End-User Log In



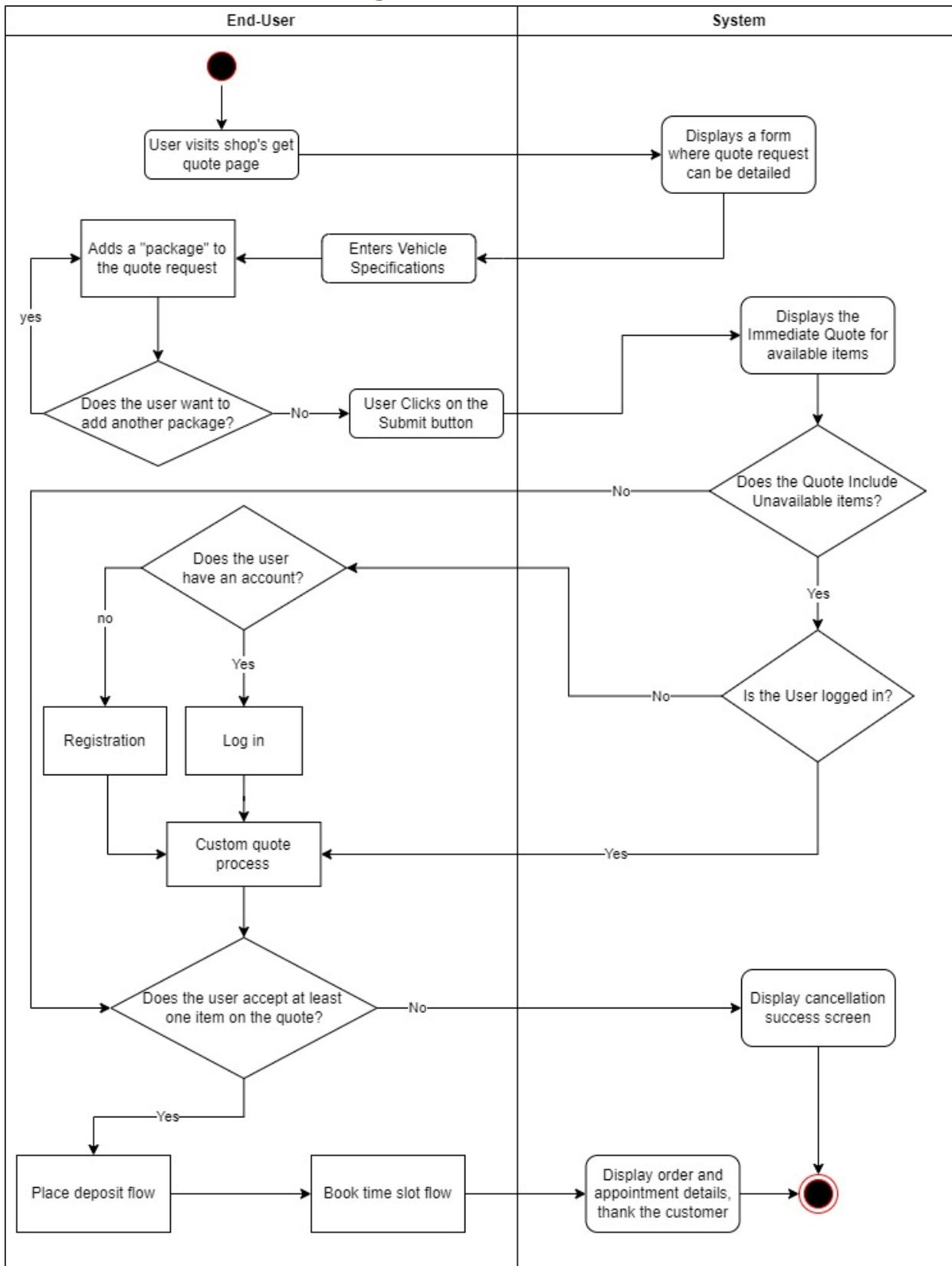
3.4.2 AD-EU2 - End-User Registration



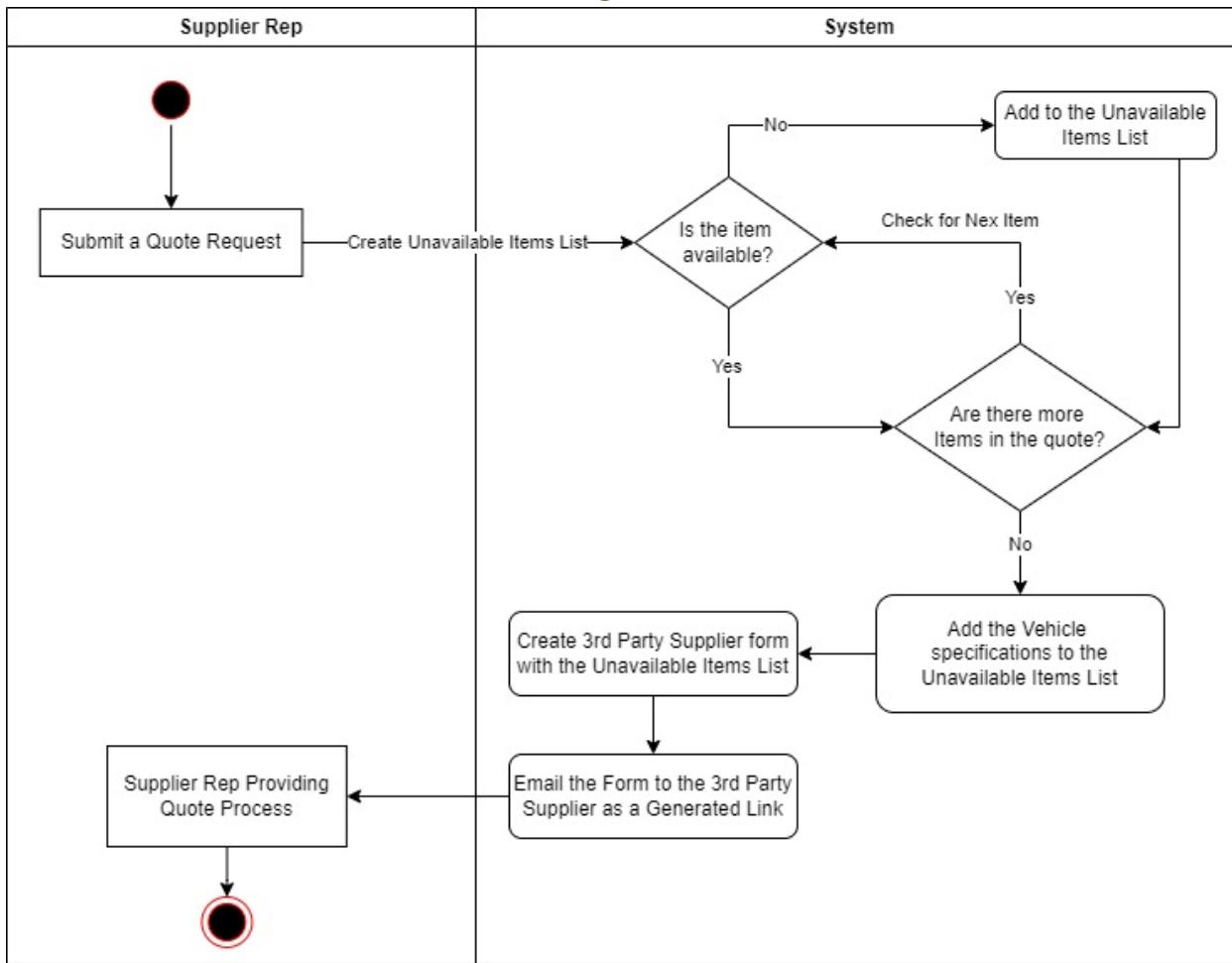
3.4.3 AD-EU3 - End-User Forget Password



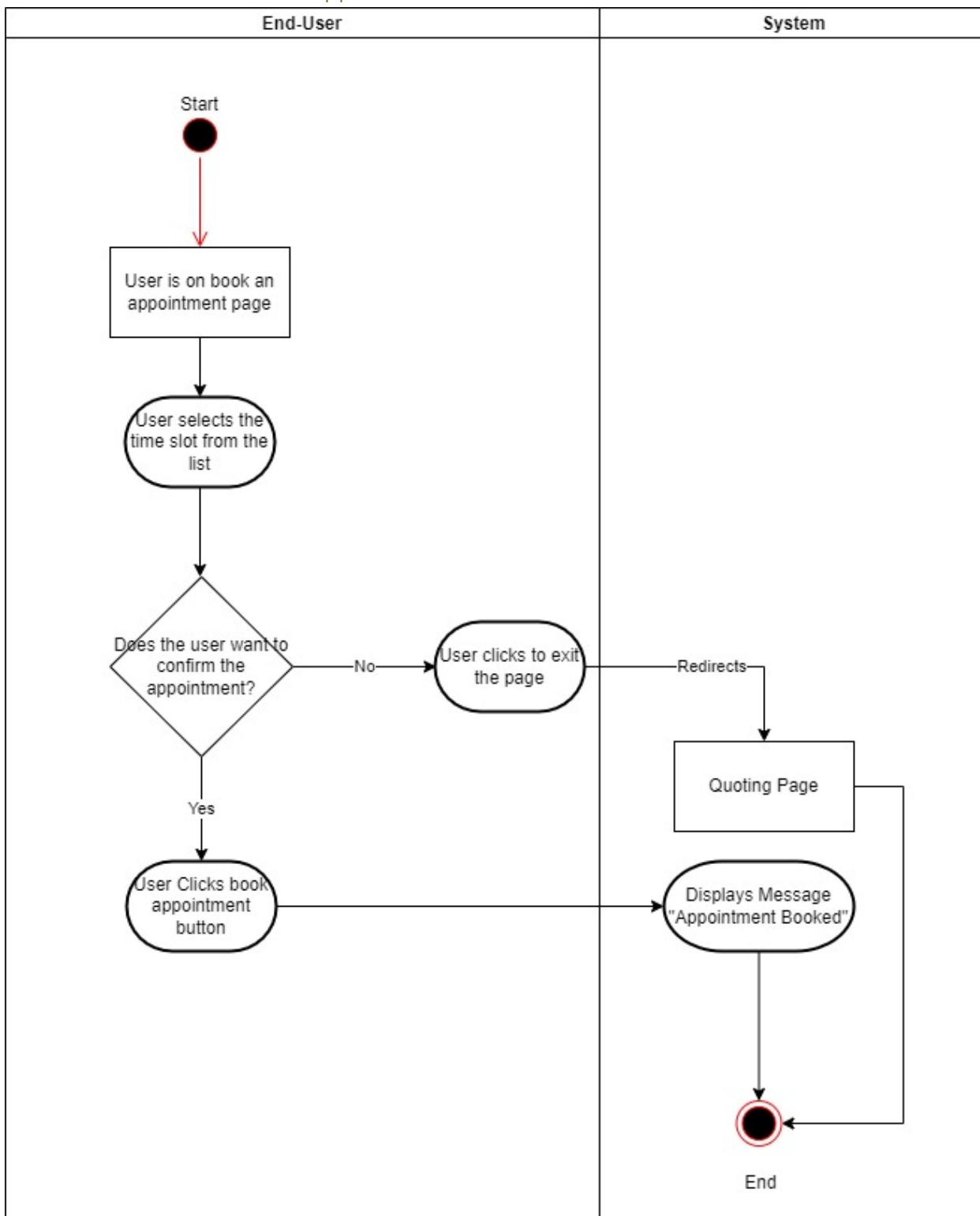
3.4.4 AD-EU4 - End-User Quoting Process

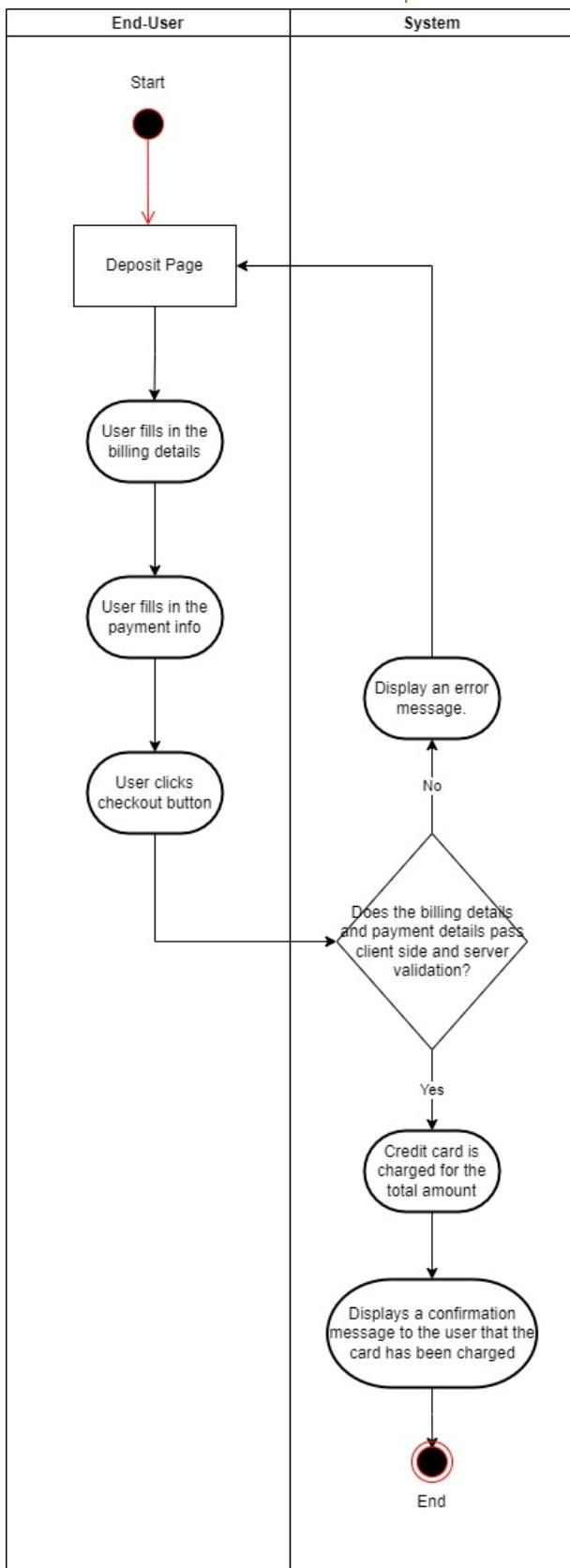


3.4.5 AD-EU5 - End-User Custom Quoting Process

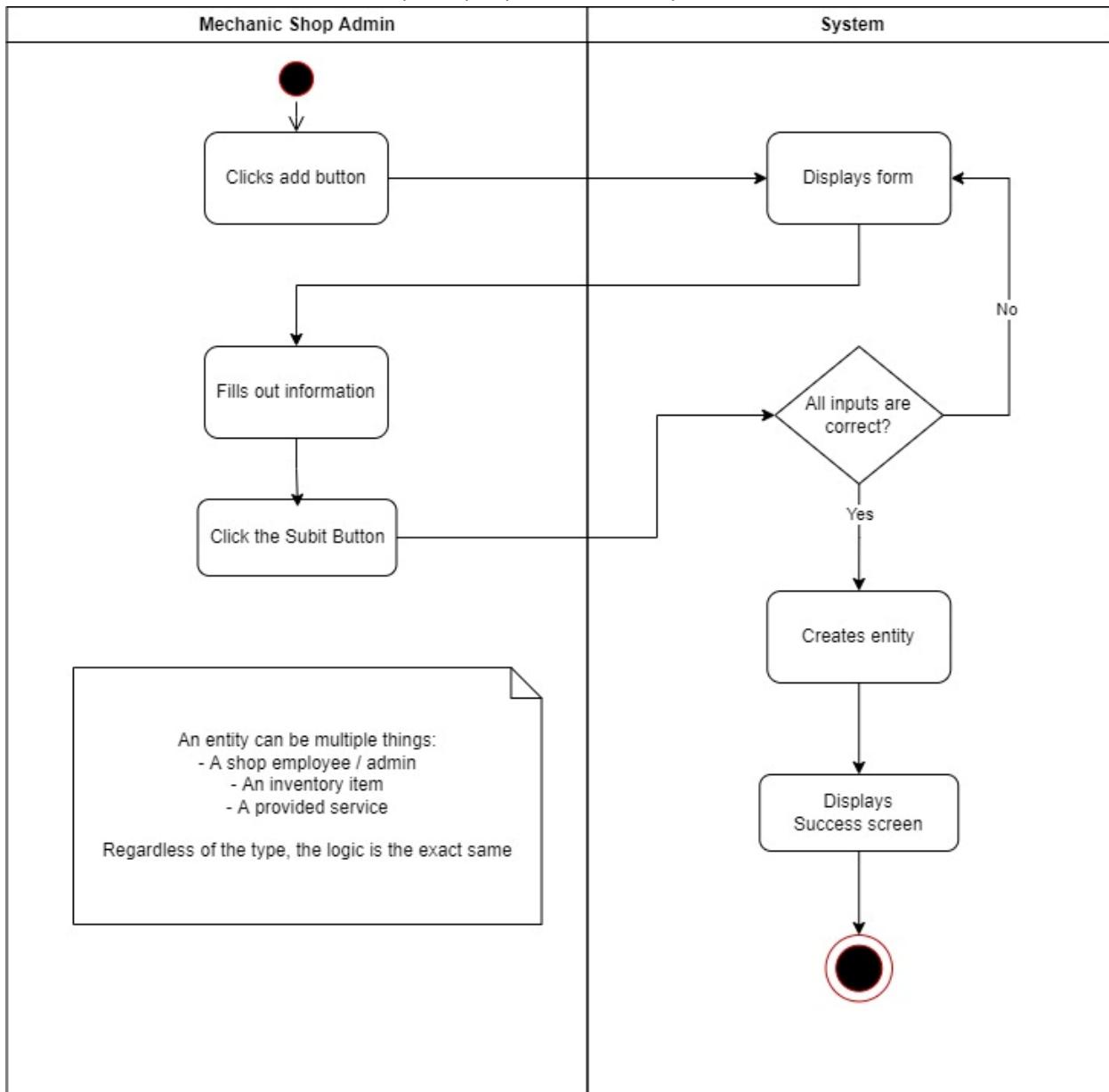


3.4.6 AD-EU6 - End-User Appointment

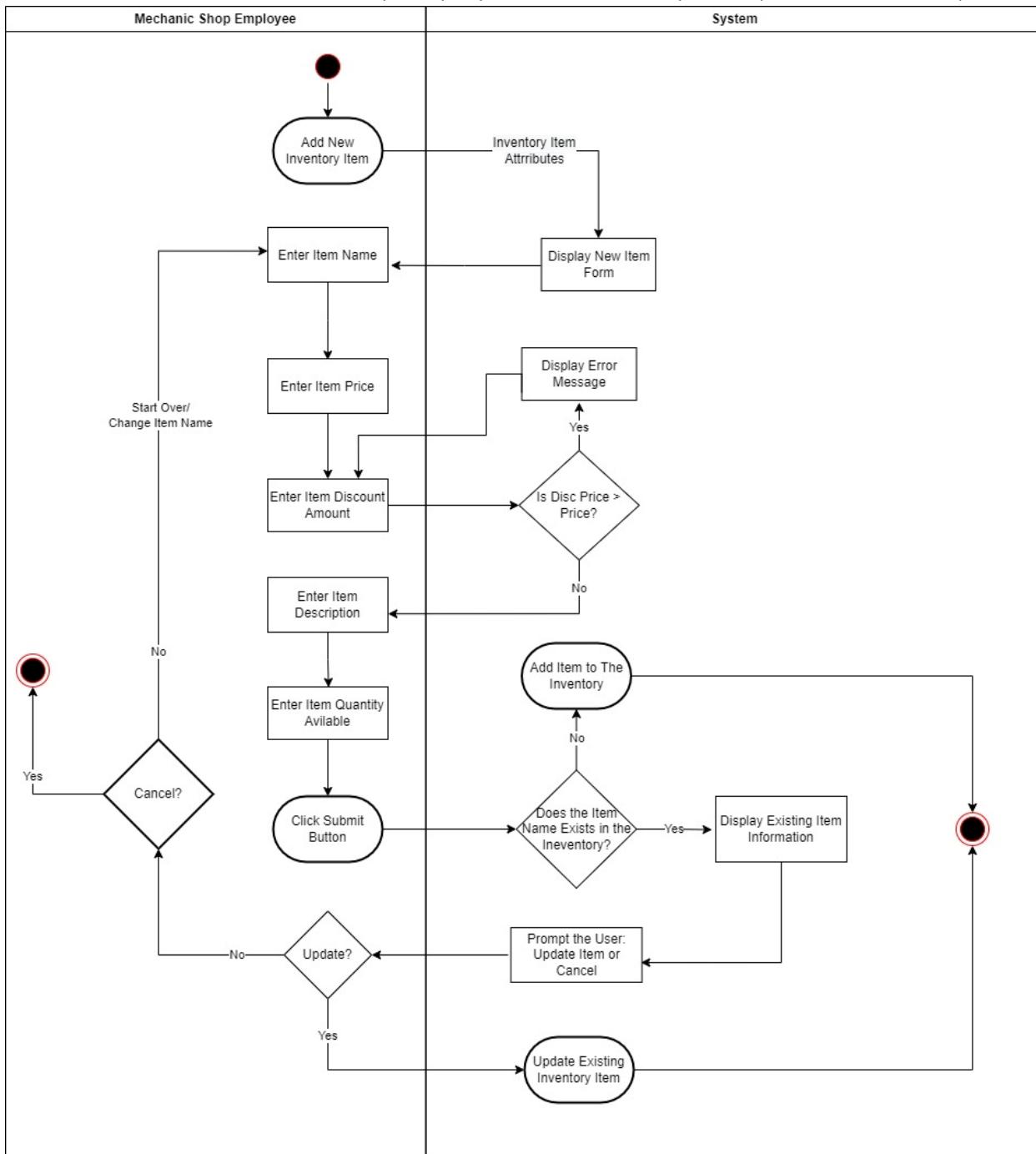


3.4.7 AD EU7 End User Deposit

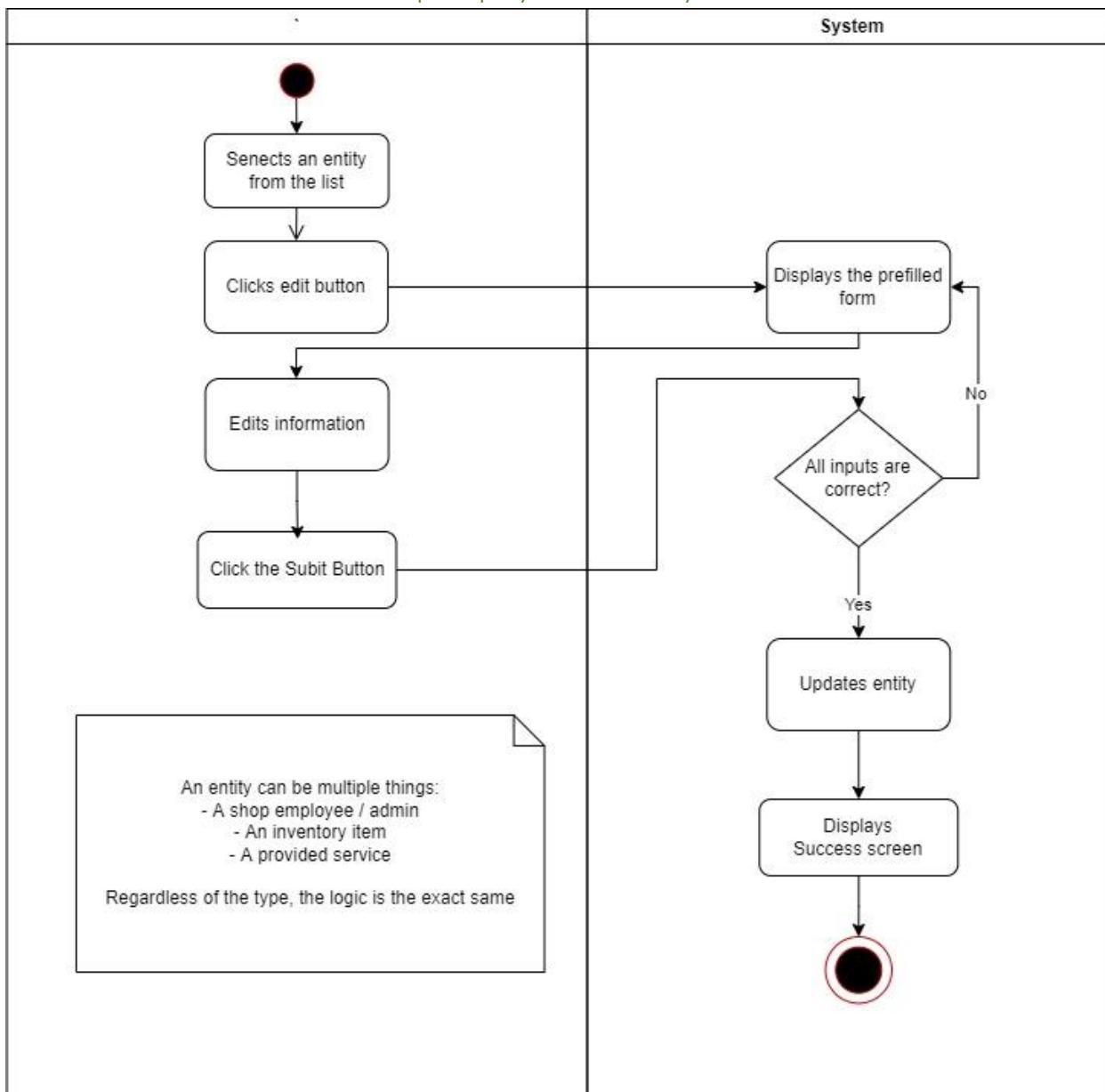
3.4.8 AD-IUI1 - Mechanic Shop Employee Add Entity



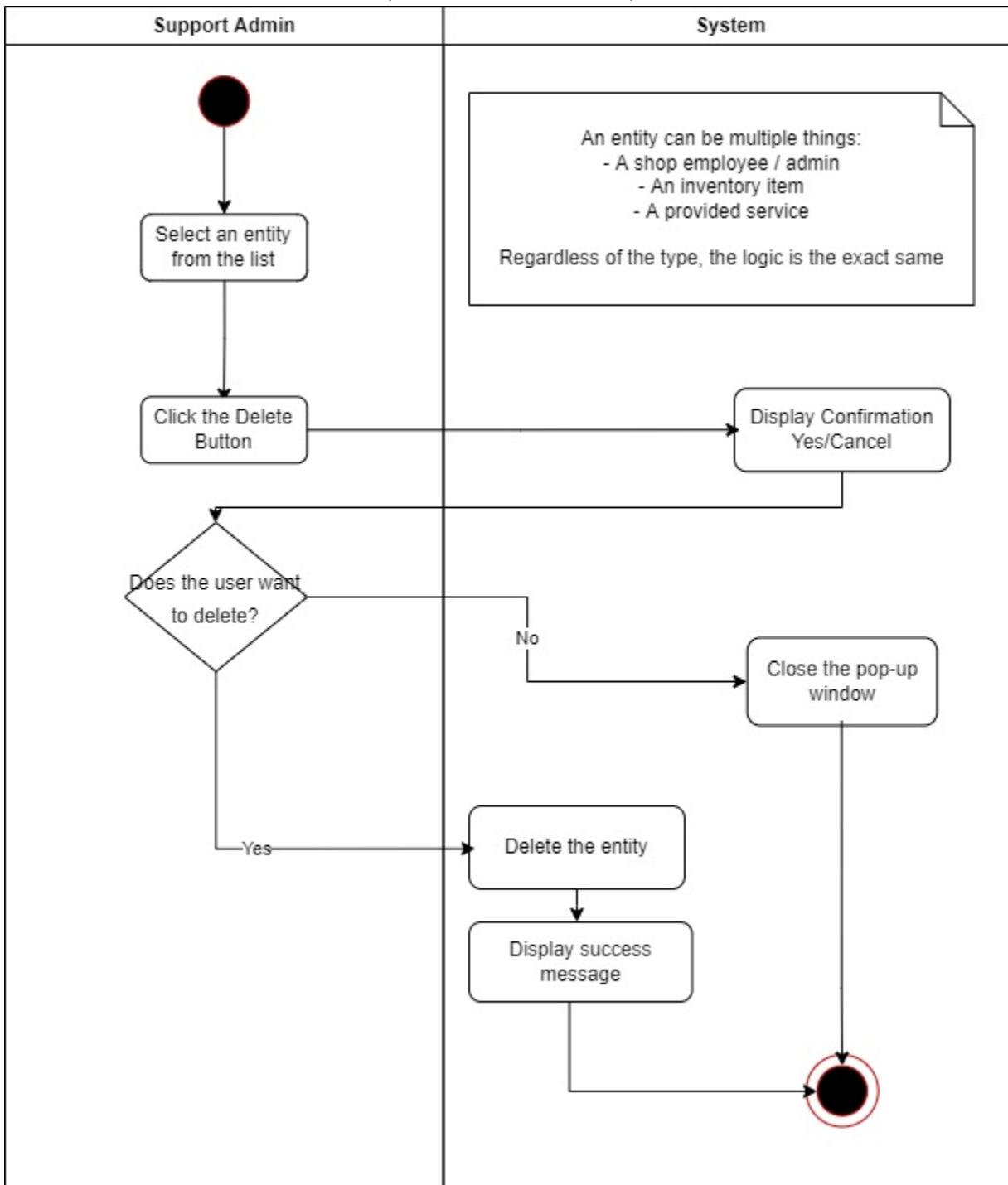
3.4.9 AD-IUI2 – Mechanic Shop Employee Add Inventory Item (AD-IUI1 Detailed)



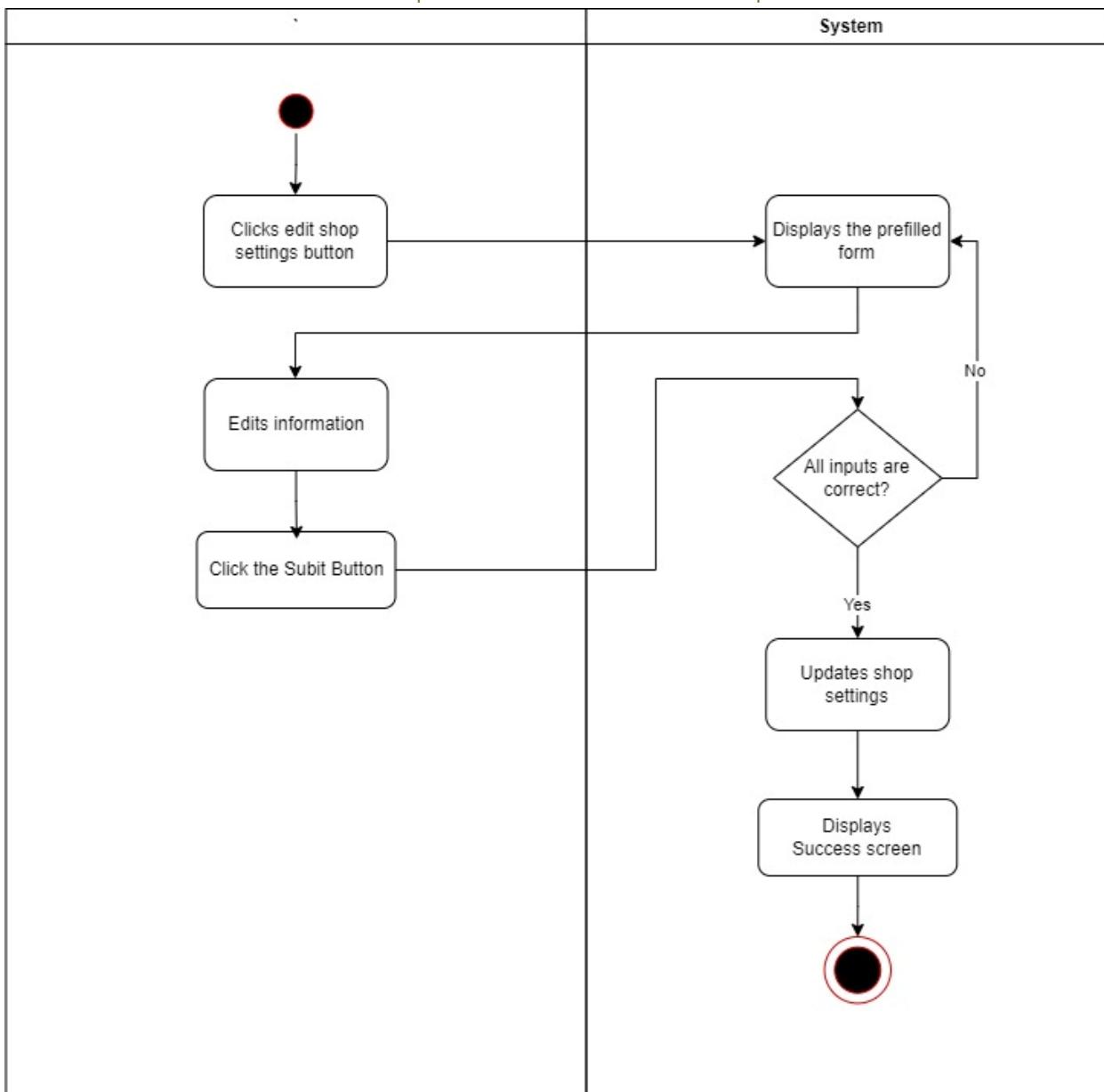
3.4.10 AD-IUI3 - Mechanic Shop Employee Edit Entity

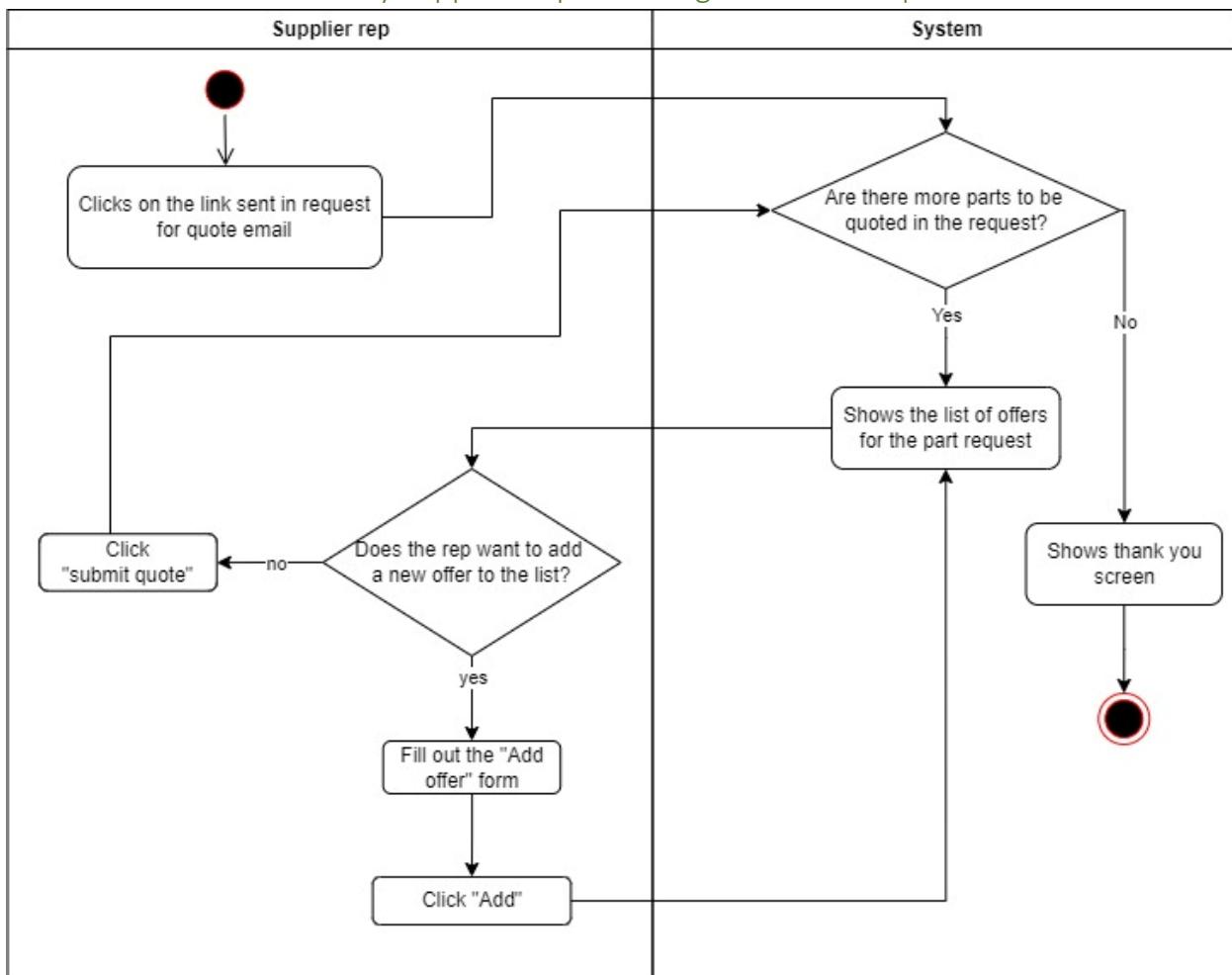


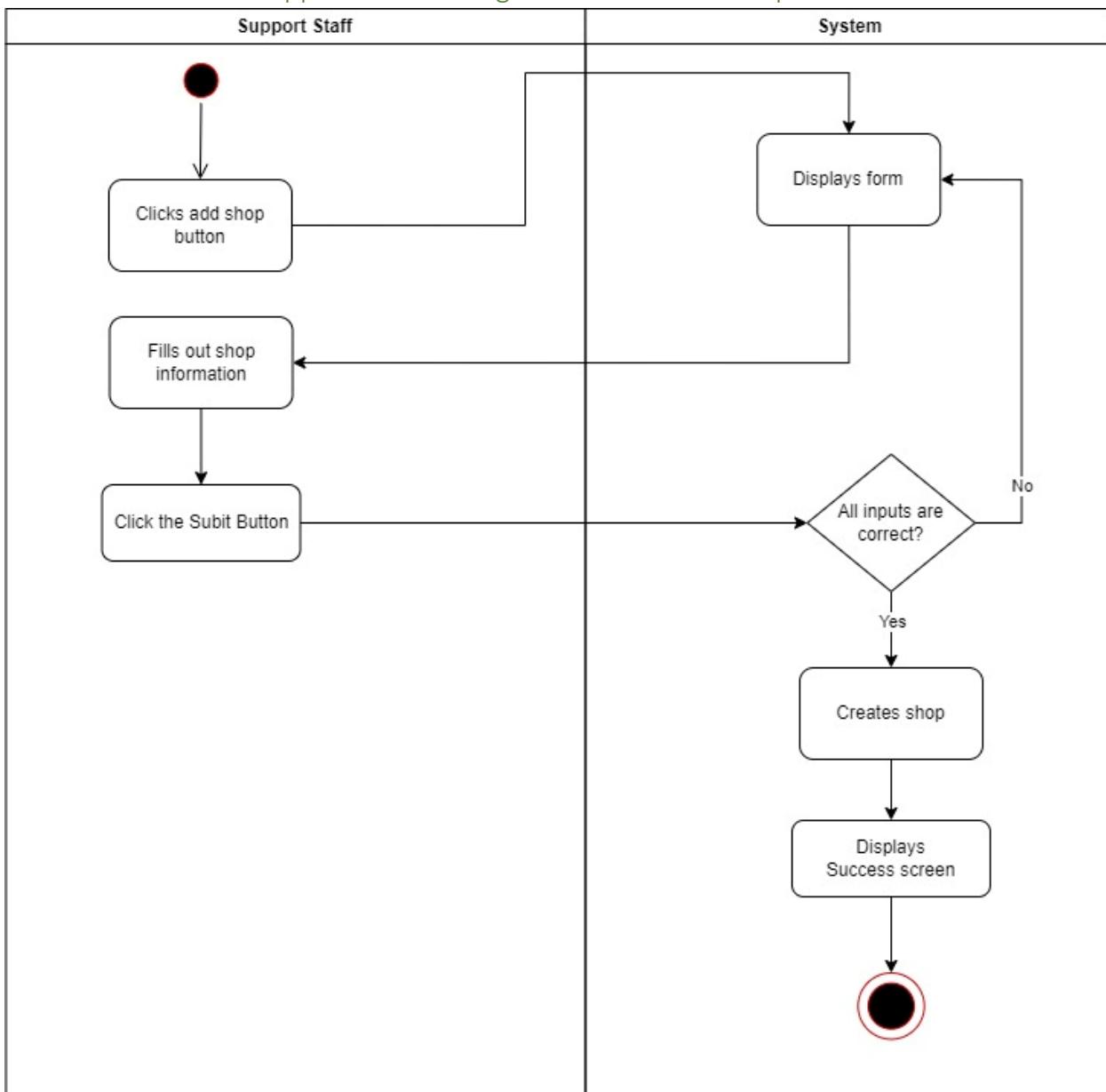
3.4.11 AD-IUI4 - Mechanic Shop Admin Delete Entity

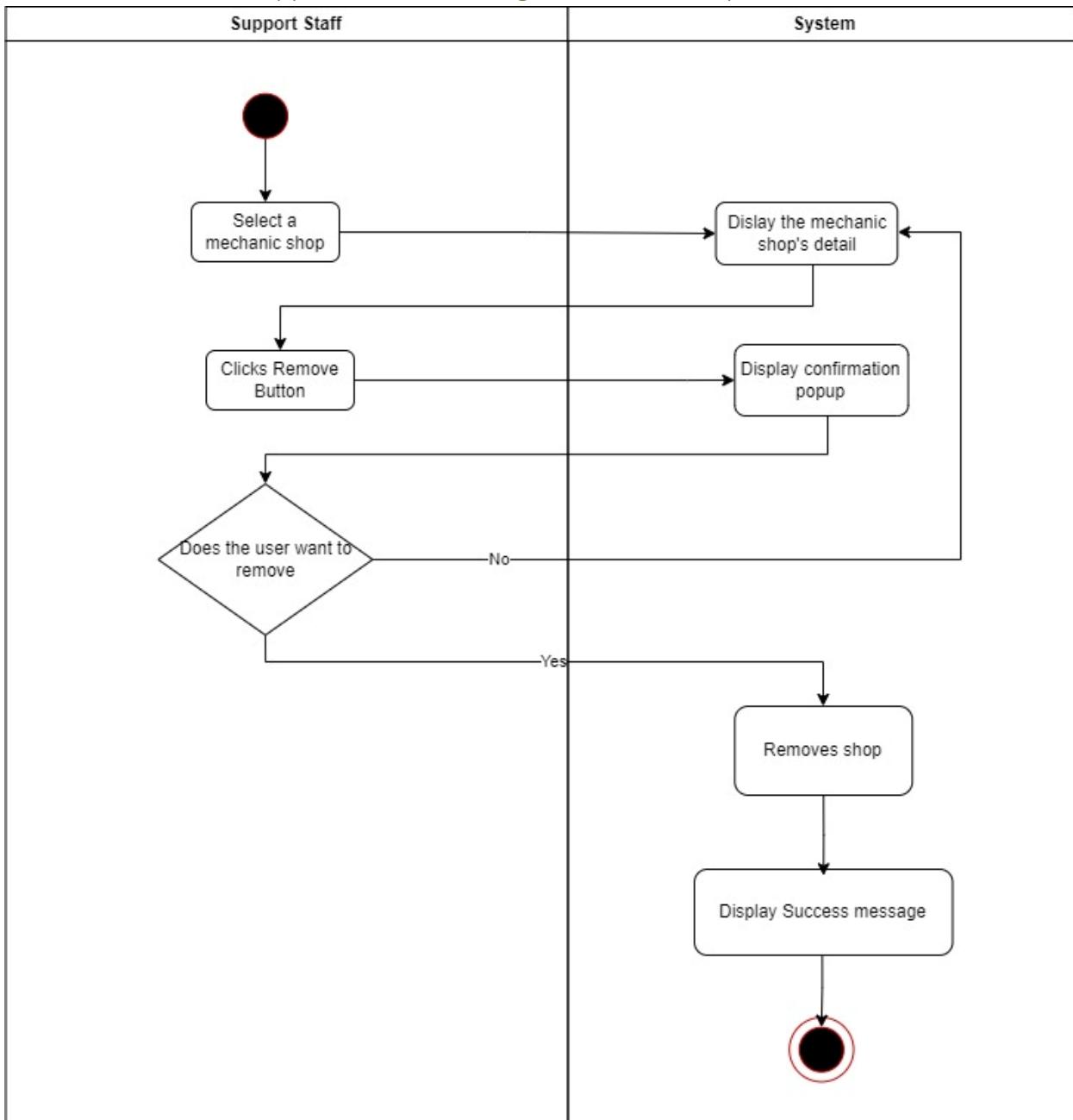


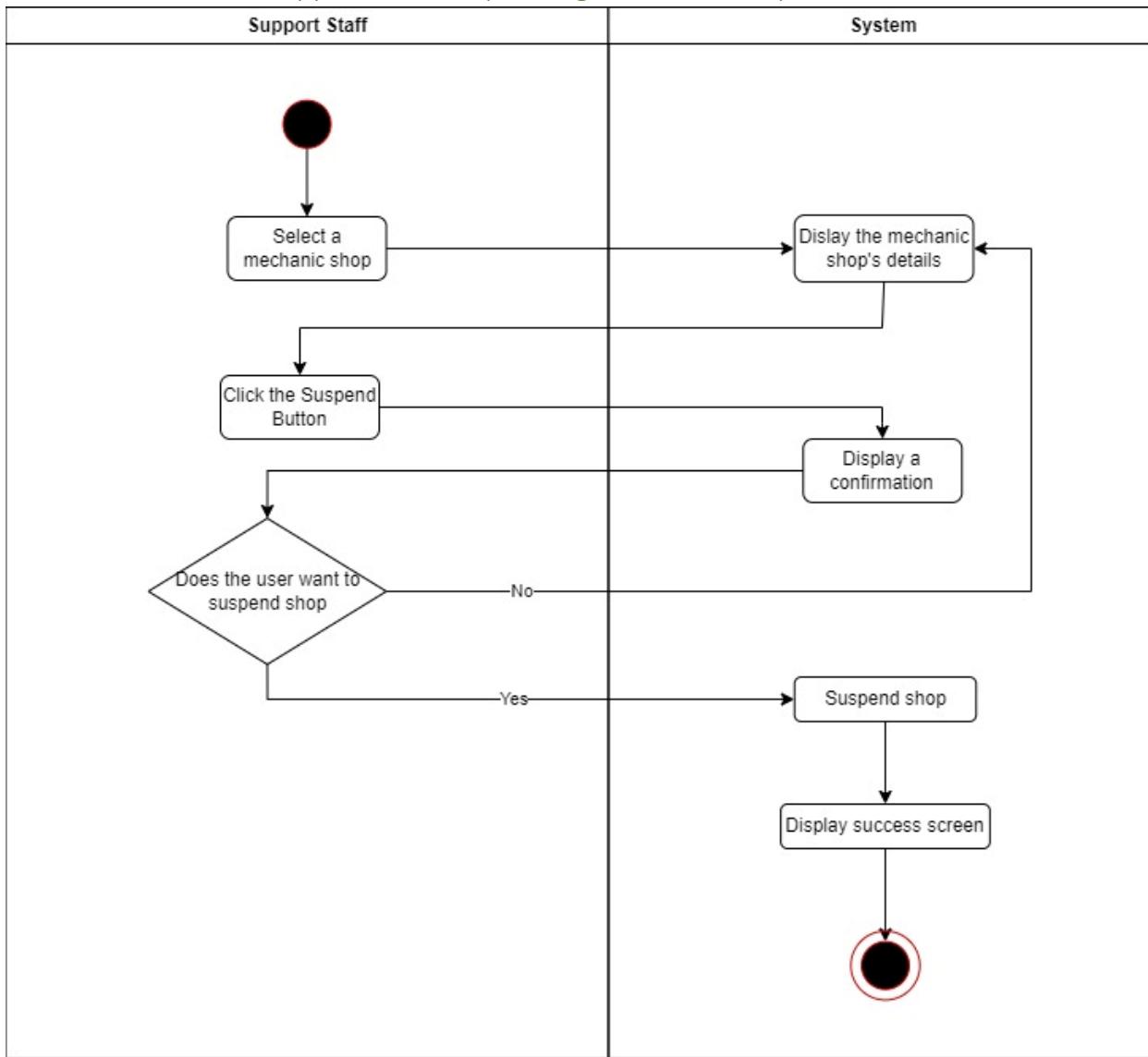
3.4.12 AD-IUI5 - Mechanic Shop Admin Edit Mechanic Shop Basic Info

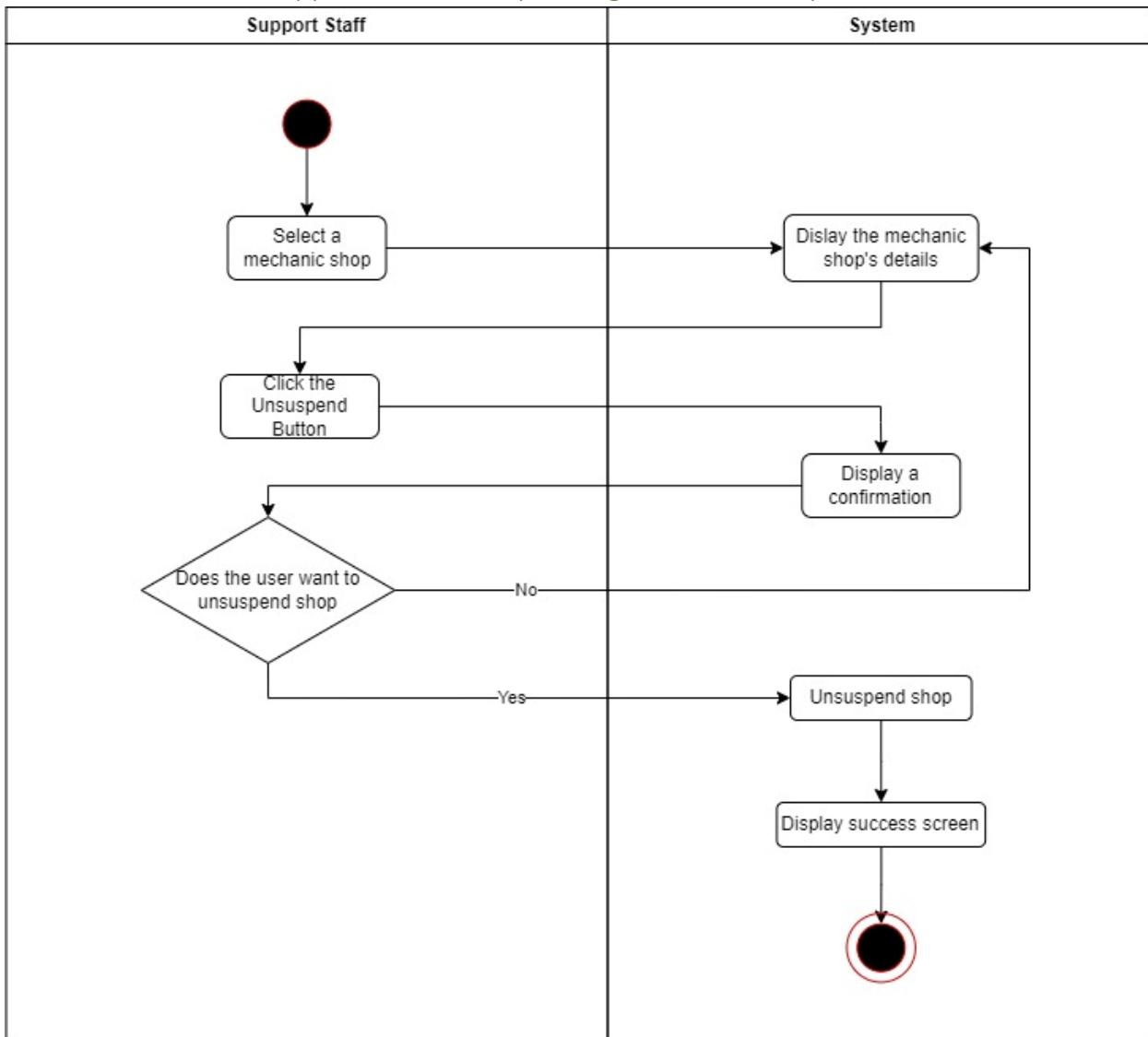


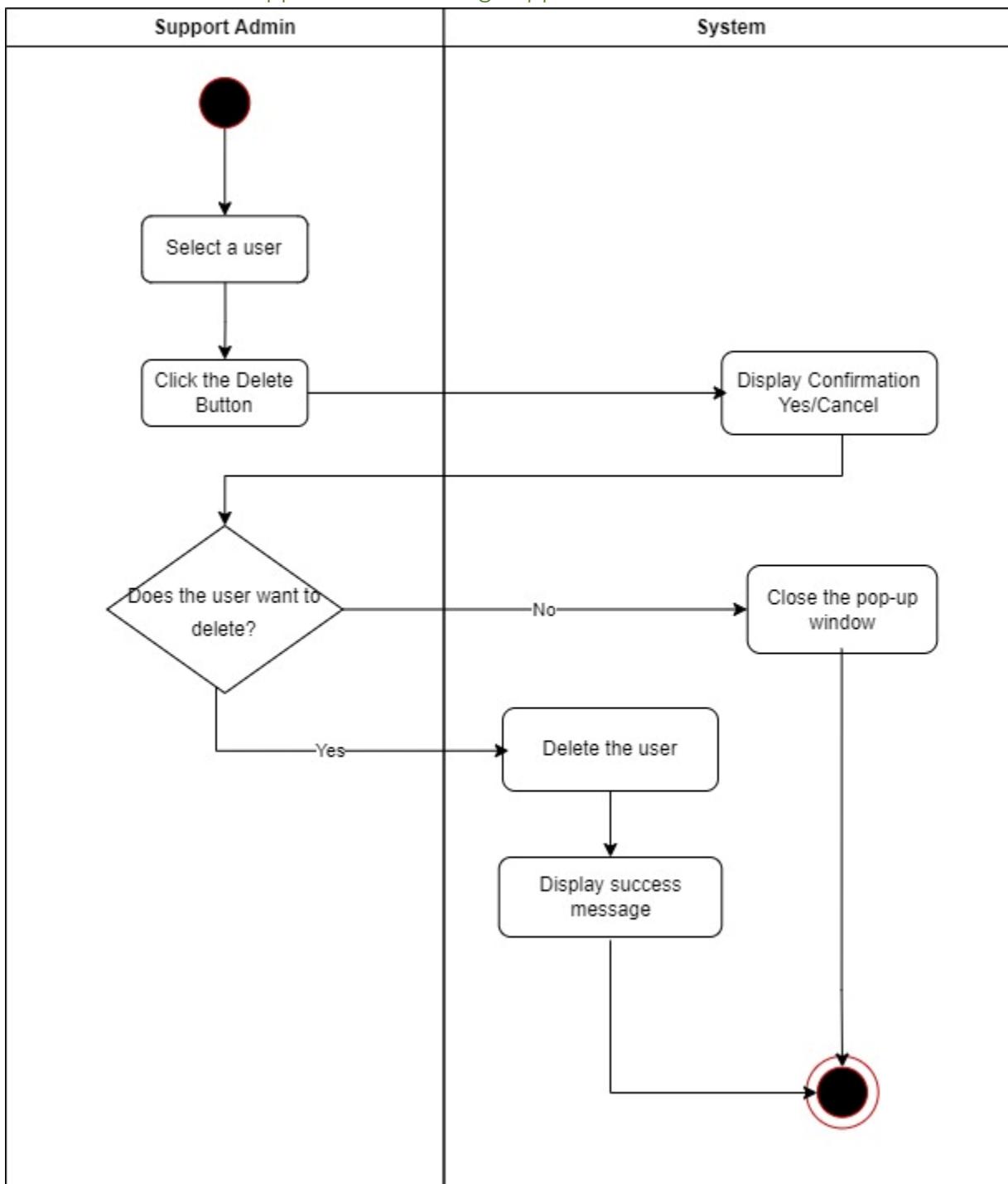
3.4.13 AD-SUI1 - 3rd Party Supplier Rep Providing Quote on Requested Parts

3.4.14 AD ILUI1 – Support Staff Adding a New Mechanic Shop License

3.4.15 AD ILUI2 – Support Staff Removing a Mechanic Shop License

3.4.16 AD ILUI3 – Support Staff Suspending Mechanic Shop License

3.4.17 AD ILUI4 – Support Staff Unsuspending Mechanic Shop License

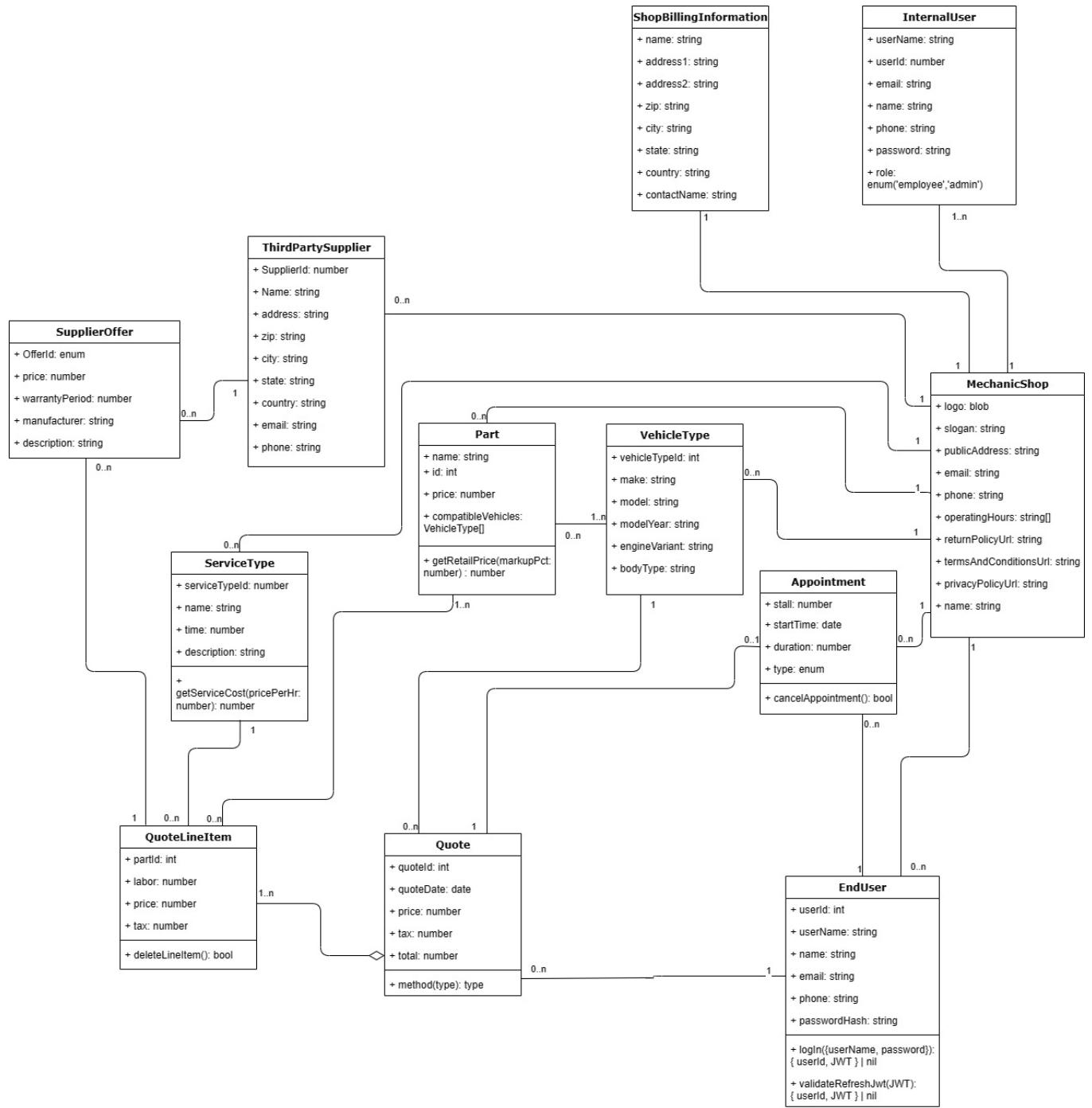
3.4.18 AD ILU15 – Support Staff Deleting Support Staff Account

3.5 Business Rules

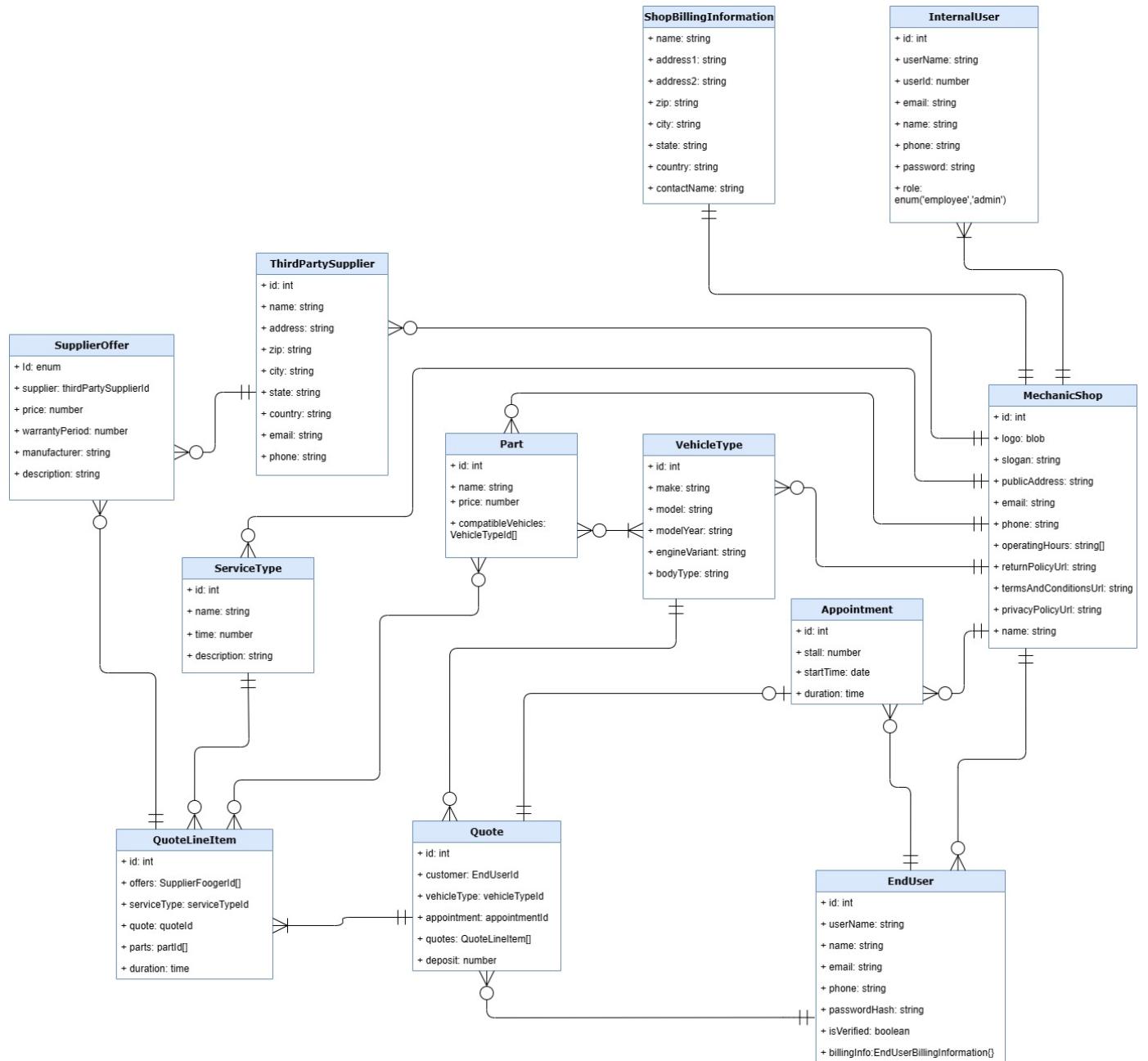
The following is a list of Business Rules that must be met through the design of Auto Quotes. Each rule is described below and associated with the corresponding Activity Diagrams, Use Case Scenarios, and User-Interface Mock-up.

Business Rule #	Description	Activity Diagram	Related UCS	UI Mockup
BR01	A mechanic shop cannot be overbooked	AD-EUI6	UC-EU6	EU-UI-6, I-UI-5
BR02	Immediate quotes do not require the user to log in until they agree to book a timeslot	AD-EUI4	UC-EU4	EU-UI-4
BR03	Only logged-in users can request custom quotes	AD-EUI4	UC-EU4	EU-UI-5
BR04	End-users must place a deposit to order parts, not in stock	AD-EUI4	UC-EU4	EU-UI-7
BR05	An appointment can be canceled only 24 hours before the appointment is due	AD-EUI6	UC-EU6	EU-UI6
BR06	Mechanic shop profile must be removed within 30 days from the termination date.	AD-ILU12	UC-ILU2	IL-UI-2
BR07	The mechanic shop must be suspended on the 7th day after failing to pay the bill.	AD-ILU13	UC-ILU3	IL-UI-2
BR08	The mechanic shop must be unsuspended within an hour after making a payment.	AD-ILU14	UC-ILU4	IL-UI-2
BR09	The 3 rd party part supplier will be given notice after 10 consecutive failures to submit a part request. After the next 10 failures, the part supplier will be terminated from the suppliers' list.	AD-SUI1	UC-SU1	
BR10	The quote prices are only valid for 7 days. After this period, the prices may be subject to change.	AD-EUI4, AD-EUI5	UC-EU4, UC-EU5	
BR11	Parts can be returned only if faulty and installed by the mechanic shop's licensed mechanics. Licensed mechanics should approve the deficiency of the installed part.			
BR12	Customers (End-Users) should be advised to be present 5-10 minutes before their appointment is due.	AD-EUI6	UC-EU6	I-UI-5
BR13	The appointment time will not be honored if the customer (End-User) is more than 10 minutes late. Their job may be accepted but not regarding the appointment details.	AD-EUI6	UC-EU6	I-UI-5

Section 4 – Domain Class



Section 5 – Database



Section 6 – Project Management

6.1 Work Breakdown Structure

1. Infra (31h) 7	
⌚ 1.1. Create GH repository, monorepo structure (4h)	4h
⌚ 1.2. Create / bootstrap each package in the monorepo (6h)	6h
⌚ 1.3. Create Heroku account and projects, set up automated deployment (4h)	4h
⌚ 1.4. Create and connect Mongodb atlas (2h)	2h
⌚ 1.5. Set up static code analysis and formatting tools (1h)	1h
⌚ 1.6. API Design and document REST API (8h)	8h
⌚ 1.7 create form and validation engine (6h)	6h

2. Backend / API (76h) 35	
⌚ 2.1 BE endpoint routing structure (Express) (3h)	3h
⌚ 2.2 Authentication (4h)	4h
⌚ 2.2.1 BE JWT issue and verify logic (2h)	
⌚ 2.2.2 Implement Authentication / authorization Express middleware (2h)	
⌚ 2.3 Create Mongoose schemas (3h)	3h
⌚ 2.4 End-user ui endpoints	36h
⌚ 2.4.1 end-user login endpoint (1h)	
⌚ 2.4.2 end-user registration endpoint (w/ email confirmation sending) (3h)	
⌚ 2.4.3 end-user email confirm endpoint (1h)	
⌚ 2.4.4 end-user vehicle suggestions endpoint (2h)	
⌚ 2.4.5 end-user packages autocomplete endpoint (2h)	
⌚ 2.4.6 end-user add package to quote endpoint (2h)	
⌚ 2.4.7 end-user get quote details endpoint (3h)	

⌚ 2.4.8 end-user select from offers endpoint (1h)	
⌚ 2.4.9 end-user remove package from quote endpoint (1h)	
⌚ 2.4.10 end user get appointment options endpoint (4h)	
⌚ 2.4.11 end-user book appointment endpoint (4h)	
⌚ 2.4.12 end-user place deposit endpoint (12h)	
⌚ 2.5 Internal UI	23h
⌚ 2.5.1 Internal user login endpoint (1h)	
⌚ 2.5.2 internal user - user CRUD endpoints (3h)	
⌚ 2.5.3 internal user service CRUD endpoints (3h)	
⌚ 2.5.4 Internal user shop base settings RU endpoints (3h)	
⌚ 2.5.5 internal user Part CRUD endpoints (3h)	
⌚ 2.5.6 Internal user, GET shop schedule (2h)	
⌚ 2.5.7 internal user GET appointment details (2h)	
⌚ 2.5.8 appointment cancel endpoint (4h)	
⌚ 2.5.9 internal user own profile RU endpoints (2h)	
⌚ 2.6 Licensing UI endpoints	3h
⌚ 2.6.1 Licensing agent login (1h)	
⌚ 2.6.2 Licensing agent license CRUD endpoints (1h)	
⌚ 2.6.3 Licensiing agent own profile RU endpoints (1h)	
⌚ 2.7 3rd party UI endpoints	4h
⌚ 2.7.1 3rd party, quote request GET (2h)	
⌚ 2.7.2 3rd party, quote option PUT (2h)	

3. Internal UI (50h) (22)	
⌚ 3.1 Internal UI dashboard (8h)	8h
⌚ 3.2 Appointment(10h)	10h
⌚ 3.2.1 Calendar with booked appointments(4h)	
⌚ 3.2.2 Display appointment Details(4h)	
⌚ 3.2.3 Update/Cancel appointment(2h)	
⌚ 3.3 Inventory (7h)	7h
⌚ 3.3.1 Create/Update an inventory item (3h)	
⌚ 3.3.2 Remove an inventory item (1h)	
⌚ 3.3.3 Display items (3h)	
⌚ 3.4 Service (7h)	7h
⌚ 3.4.1 Create/Update a service (3h)	
⌚ 3.4.2 Remove a service (1h)	
⌚ 3.4.3 Display services (3h)	
⌚ 3.5 Profile(3h)	3h
⌚ 3.5.1 Display profile (2h)	
⌚ 3.5.2 Update profile(1h)	
⌚ 3.6 Internal User Login (3h)	3h
⌚ 3.7 Shop Base Settings (6h)	6h
⌚ 3.8 Manager Users - Admin Role (6h)	6h
⌚ 3.8.1 Create/Edit user account (2h)	
⌚ 3.8.2 Remove user account (1h)	
⌚ 3.8.3 Display User List (3h)	

4. End-User UI (47h) 14	
⌚ 4.1 End User Login (6h)	6h
⌚ 4.2 End User Registration (6h)	6h
⌚ 4.3 Main Quoting Page (17h)	17h
⌚ 4.3.1 Create the quoting page (4h)	
⌚ 4.3.2 Vehicle selector (4h)	
⌚ 4.3.3 Service selector/editor (3h)	
⌚ 4.3.4 Getting the normal quote (3h)	
⌚ 4.3.5 Getting the custom quote (4h)	
⌚ 4.4 Appointment Booking Page (6h)	6h
⌚ 4.4.1 Create the appointment page (2h)	
⌚ 4.4.2 Connect to API to load the details (Available appointments and services chosen) (4h)	
⌚ 4.5 Deposit Page (12h)	12h
⌚ 4.5.1 Create the deposit page (4h)	
⌚ 4.5.2 handle transactions using Stripe (8h)	

5. 3rd Party UI (5h) 1	
⌚ 5.1 3rd party Form (5h)	5h

6. Licensing (16h) 5	
⌚ 6.1 Login page (4h)	4h
⌚ 6.2 Licensing agents list page (3h)	3h
⌚ 6.3 Licensing agents add/edit page (3h)	3h
⌚ 6.4 Licenses list page (3h)	3h
⌚ 6.5 License add/edit page (3h)	3h

6.2 Milestones

MS1	Register accounts, build monorepo structure, bootstrap packages, implement an automated deployment
MS2	Implement BE endpoints for Internal-UI, implement and tie internal UI
MS3	Implement BE endpoints for the end-user interface, Implement and tie end-user front-end
MS4	Implement licensing and 3rd party interface endpoints, and front-end interfaces

6.3 Acceptance Criteria

Milestone 1 - Infrastructure

- Register to the required services.
- Build monorepo structure.
- Install and create bootstrap packages.
- Implement an automated, CI/CD integrated testing and deployment.

Milestone 2 – Internal User

- Internal user successfully displays/creates/updates/removes inventory items/services.
- Internal user successfully displays/updates/cancels appointment details.
- Internal user successfully updates their account information.
- Internal Admin successfully sets up the mechanic shop's logo/information.
- Internal Admin successfully creates/removes internal accounts.
- Internal UI should work as expected.

Milestone 3 – End-User

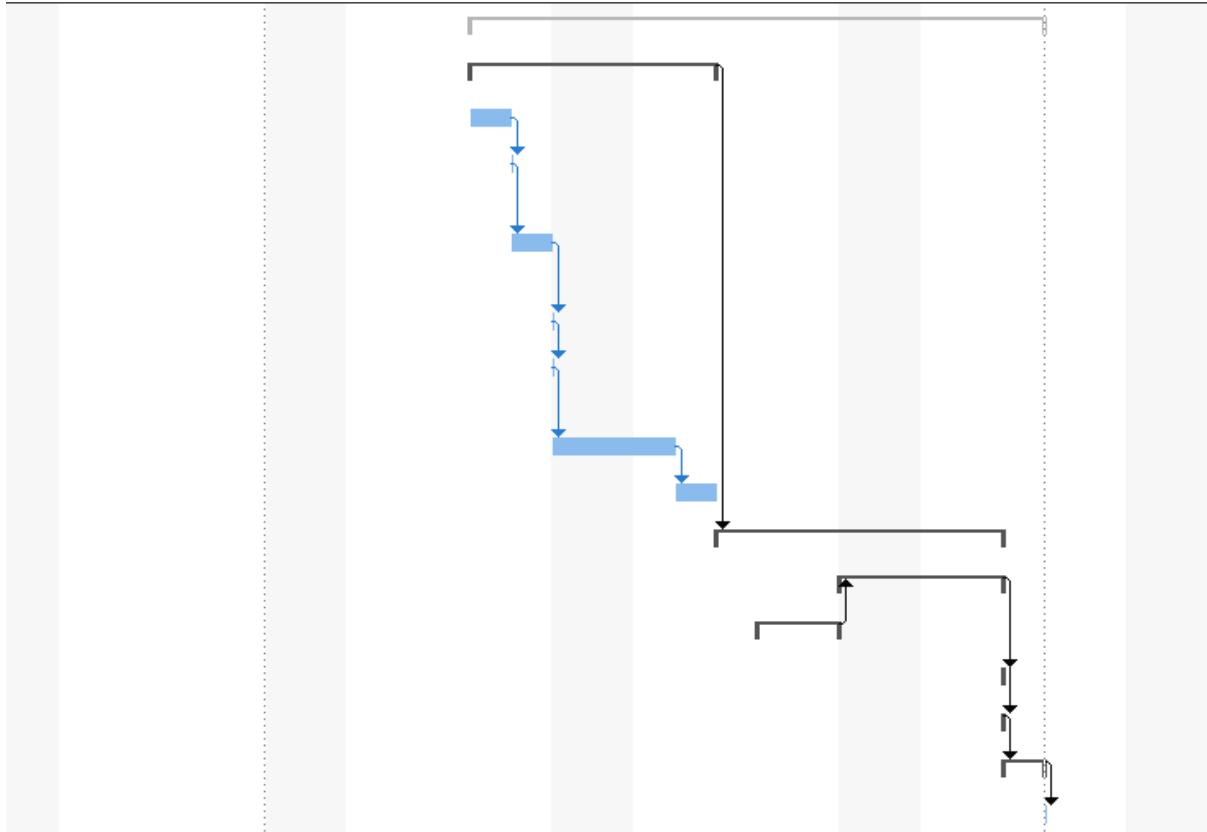
- End-User UI should work as expected.
- End user successfully registers their accounts with a verification email.
- End user successfully logs in and updates their information.
- End user successfully places and gets an immediate quote.
- End user successfully place a custom quote, not get the quote back.
- End user successfully book an appointment.
- ~~End user successfully places a deposit using Stripe~~

Milestone 4 – 3rd Party & Completion

- All UIs should work as expected.
- 3rd Party UI should work as expected.
- End user successfully gets a custom quote.
- ~~Auto Quote Support Staff member successfully gives a license to a mechanic shop~~
- All UI should work as expected.
- ~~Auto Quote User successfully displays/creates/updates mechanic shop~~

6.4 Implementation Schedule

	i	Task Mode	Task Name	Duration	Start	Finish	Predecessors
0			Software Development	41 days	Wed 1/11/23	Wed 1/25/23	
1			Infrastructure	15.5 days	Wed 1/11/23	Tue 1/17/23	
2			Create GH repository, monorepo structure	4 hrs	Wed 1/11/23	Thu 1/12/23	
3			Create / bootstrap each package in the monorepo	6 hrs	Thu 1/12/23	Thu 1/12/23	2
4			Create Heroku account and projects, set up automated deployment	4 hrs	Fri 1/13/23	Fri 1/13/23	3
5			Create and connect Mongodb Atlas	2 hrs	Fri 1/13/23	Fri 1/13/23	4
6			Set up static code analysis and formatting tools	1 hr	Fri 1/13/23	Fri 1/13/23	5
7			API Design and document REST API	8 hrs	Fri 1/13/23	Mon 1/16/23	6
8			Create form and validation engine	6 hrs	Mon 1/16/23	Tue 1/17/23	7
9			Backend / API	19.5 days	Tue 1/17/23	Tue 1/24/23	1
45			Internal UI	8 days	Fri 1/20/23	Tue 1/24/23	68
68			End-User UI	8 days	Wed 1/18/23	Fri 1/20/23	11
83			3rd Party UI	2.5 days	Tue 1/24/23	Tue 1/24/23	45
85			Licensing UI	2 days	Tue 1/24/23	Tue 1/24/23	45
91			Post Implementation Review	3 days	Tue 1/24/23	Wed 1/25/23	85
96			Software development template complete	4 hrs	Wed 1/25/23	Wed 1/25/23	91



Section 7 – Client/Faculty Sign-off