

# **Garbage Management System**

## **Final Project Report**



**Sri Lanka Institute of Information Technology**

Information technology project - IT2080

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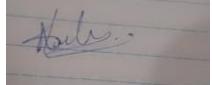
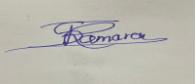
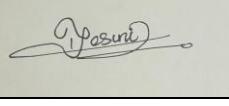
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## **DECLARATION**

This project report is our original work and the content is not plagiarized from any other resource. References for all the content taken from external resources are correctly cited. To the best of our knowledge, this report does not contain any material published or written by third parties, except as acknowledged in the text.

Project Title	Garbage Management System
Project ID	ITP24_B2_W03
GitHub Repository	<a href="https://github.com/DCF2001/MERN-project/branches">https://github.com/DCF2001/MERN-project/branches</a>

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## **Abstract**

An organization concerned in trash management is presented with a comprehensive solution in this abstract to alleviate inefficiencies in managing garbage disposal activities. Ineffective staff management, customer engagement, and vehicle deployment are caused by the organization's problems with real-time monitoring, staff coordination, and customer interactions. In order to address these problems, a user-friendly online application that makes use of the MERN stack—MongoDB, Express, React, and Node is suggested.

The online application that is being suggested includes capabilities that facilitate faster operations and improved customer satisfaction. These functions include vehicle, task, staff, customer, payment, and route management. The system also has the ability to publish research articles on collected garbage, which promotes industry advancement and knowledge sharing. Real-time tracking, transparent financial transactions, dynamic work distribution, and efficient route planning are some of the system's key characteristics.

Through cutting-edge technology and user-centric design, the suggested solution seeks to enhance customer engagement, optimize waste management operations, and increase staff coordination.

## **Acknowledgement**

Each member of our group has contributed tremendously to the success of our project with their unshakable dedication and support. We have been able to collaborate effectively in order to accomplish our project's goals and realize its full potential thanks to their unwavering efforts and dedication to their individual tasks. Our team's ability to work well together and the variety of skills and knowledge that each member brings to the table have proven crucial in overcoming obstacles and providing a solid waste management solution.

My sincere gratitude goes out to our distinguished lecturer, Mr. Samantha Rajapaksha, as well as the other members of our team, for his essential assistance and mentorship during this endeavor. His extensive knowledge, wise counsel, and supportive nature have greatly impacted our comprehension of the subject and molded our strategy for dealing with waste management issues.

Our team's cooperative efforts, led by Mr. Samantha Rajapaksha, have resulted in the creation of an all-encompassing and workable solution that successfully handles the difficulties associated with waste management. I would want to sincerely thank everyone who has helped make this project a success by lending their knowledge, commitment, and support.

## **Chapter 01**

### Introduction

#### **Background**

The Green Bin Garbage Management company was established to reduce the garbage problems of the citizens as it has been managed by the government with many issues. The company has determined to provide personalized services to the customers. But the company has faced many problems such as operational issues and maintaining its reputation via online platforms as well. The system functions range from user task management vehicle management, staff management, and many more.

Innovative green bin have been created through garbage management system that is intended to overcome all the waste problems of citizens. Customers can easily get rid of their domestic garbage with the use of green bin garbage management system. It provides a series of services. Furthermore, waste collection is done regularly every week, instead of customers can make immediate requests to get the services they need for the specific events. Customers should be able to request garbage collection with just a click of a button. Green bin garbage management system provides them all to the customers, they can track their dump vehicle, easy and friendly payment methods, the system provides the company branches and their details, and many more.

Through green bin garbage management system, system admins can manage their tasks easily. Admin can manage the vehicle for specific tasks with the use of the system and can manage the staff members by assigning tasks for them using green bin garbage management system. There are some other adequate features such as managing the route of the vehicles, managing the payments, waste management which indicates how much the company has earned by disposing of the garbage, promotion and research management which helps to uplift and promote the company by advertising.

## **Problem and Motivation**

### **Problems**

- Failure to provide a convenient service for the community to easily inquire about waste disposal conditions.
- Manual storage is a waste of data storage time.
- Lack of proper waste collection and disposal infrastructure hampers effective waste management.
- There is a lack of awareness among people about the importance of proper waste disposal and recycling.
- Inefficient garbage collection due to a lack of financial provision.
- Without a proper monitoring and reporting mechanism, it has become a challenge for authorities to identify and address issues related to waste management.
- The occurrence of environmental problems due to improper disposal of waste, including illegal dumping

### **Solutions**

- Maintaining a database to store data at all times can easily save time.
- Building interactions between vendors to increase company wealth to manage staff and introduce new recycling products.
- Using Google Maps to find the shortest, best route and update the service recipient with travel information provided by the service.
- Facilitate community use of the system to make inquiries and avail services by providing an online form for submission to the system.
- Users are informed about proper waste disposal and recycling through research and notices.

## **Literature Review**

If we consider the urban garbage management service it's a very essential and very important service to specially urban population. In daily routine large number of customers consume this service. because of that, this kind of service provider can obtain a lot of benefits via using online platforms. If we consider the traditional garbage management system that they currently in use, the things our client mainly highlighted weak points are inefficiency of the daily operations, lack of real-time monitoring, lack of staff coordination, unnecessary use of resources and unable to get customer interactions properly. So the existing system may not adequately address the client's problem due to the above reasons.

So developing an new online system with the integrated sub-systems offers a comprehensive solution to address these challenges able to manage customer requests efficiently and provide efficient service. As well as by maintaining an event like a customer helpdesk or system rating facility the service provider can always keep close to their customers and interact with them. So through that the service provider can get to know how their operations should be expanded according the customers usage and be aware of the changes that need to be made in the current situation of the system to provide a better and smoother service to their customers. So in the main system it will be implemented several sub systems such as staff management system, financial management system, customer management system and vehicle management system. If we consider the pros and cons of the new online garbage management system, main advantages are improved efficiency and effectiveness, enhanced customer satisfaction and engagement through online platforms, better monitoring, analysis, and decision making capabilities with real-time data. As well as there are some disadvantages of the online garbage management system such as resistance to change from staff accustomed to traditional methods, potential technical challenges and integration issues with existing system.

## **Aims and Objectives**

This project aims to design and implement an efficient garbage management system that tackles the challenges associated with waste disposal and promoting sustainable waste management practices. This platform covers all the function such as Vehicle management, Waste management, staff management, Task management, Customer management payment management, route management, and research &development management. The primary goals of each of these categories are to fulfill client requests for services and to boost business revenue so that all of the previously listed categories can continue.

## **Objectives**

- Develop an integrated platform for the whole system.
- Provide an interface that is easy for users to utilize.
- Boost efficiency and user experience.
- Red time monitoring and reporting
- Integrate IOT solutions
- Optimize waste collection routes

By achieving these objectives, the proposed garbage management system aims to contribute towards building cleaner, healthier and more sustainable communities while mitigating the environmental impacts associated with waste generation and disposal.

## **Methodology**

In here we discuss all the methods, tools, and technologies we use for this project. We categorize the methods into requirements engineering methods, design methods, development tools and technologies, testing methods, integration methods, etc. As well as including the project plan and work breakdown structure in this section.

### **Tools and Technologies**

#### **Requirements Engineering Methods**

##### **1. Design Method**

Agile methodology in project management prioritizes adaptability over preplanning. It involves short, fixed-length cycles known as sprints, focusing on collaborative team dynamics and continuous delivery of functional software. Agile allows for quick updates based on stakeholder feedback, leading to faster time-to-market, improved quality by early testing, flexibility to changing needs, and higher teamfriendliness due to clear priorities and decision-making.

Importance:

Individuals and interactions over processes and tools: The success of the team is determined by the ability to communicate effectively and efficiently.

Working software over large.Feasibility Study: This analysis estimates the benefits of developing the software product, helping to determine its importance for the business.

**2.Requirement Elicitation and Analysis:** This process involves systematically gathering, documenting, and evaluating stakeholders' requirements and expectations to define the system's objectives and conditions for the development process.

**3.Software Requirement Specification:** The SRS document specifies the functionality and performance requirements of the web application, explaining the project's expectations, design, and standards, ensuring it meets all stakeholders' needs.

**4.Software Requirement Validation:** This process ensures that the requirements in the SRS document are accurate and complete, meeting the stakeholder's expectations.

5. Software Requirement Management: This is used to ensure that the objectives of product development are effectively achieved, managing changes and keeping stakeholders informed about the web application documentation: The conventional methods for software development require very large documentation before any code is written. Focusing more on documentation and not executing codes will lead to never getting feedback from the real users.

Customer involvement over contract negotiation: In this approach, clients provide detailed requirements, but their involvement in the development process is limited from beginning to end.

Responding to change over following a plan: with its short sprints, it allows to change it quality according to the evolving requirements.

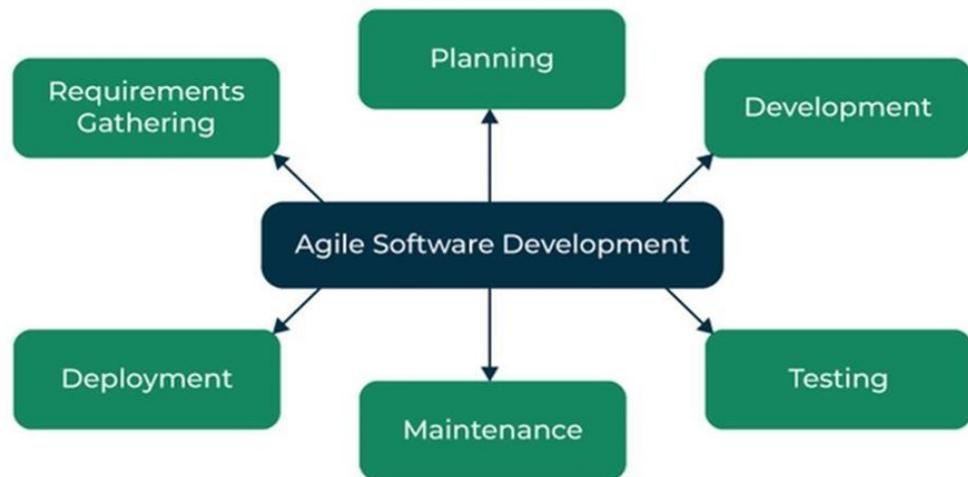


Figure 1.1

Although framework Scrum provides various ways to implement Agile, its features such as prioritizing quick responses, promoting collaboration, and people involvement to project execution. Agile's success is high due to its adaptability and focus on continuous improvement. With this way the product achieves benefits such as agility, self-organization, simplicity, and improved teamwork for the success of the project.

## Technologies

### M.E.R.N Stack

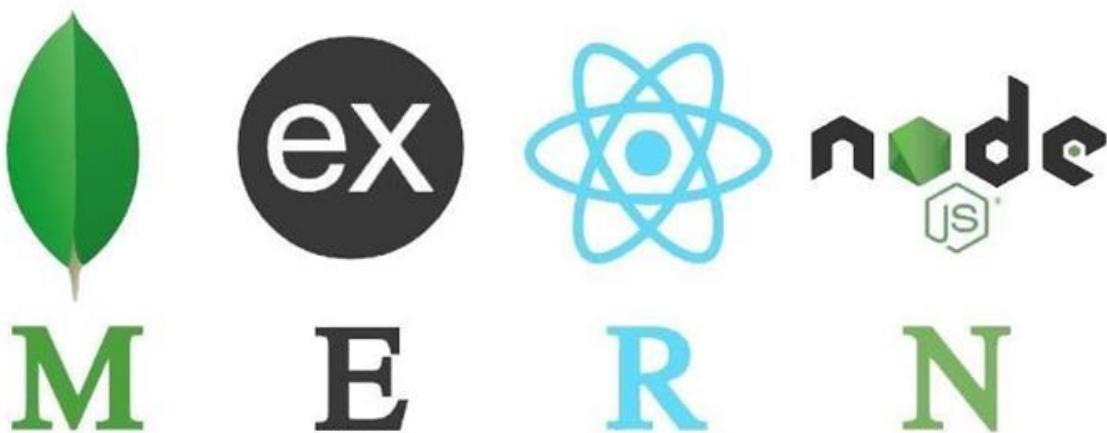


Figure 1.2

#### **MongoDB [1]**

MongoDB, the most popular NoSQL database, is an open-source document-oriented database. The term

‘NoSQL’ means ‘non-relational.’ It means that MongoDB is not based on the table-like relational database structure but provides an altogether different mechanism for storage and retrieval of data (document based).

#### **Express Js [2]**

Express is a small framework that sits on top of Node.js’s web server functionality to simplify its APIs and add helpful new features. It makes it easier to organize our application’s functionality with middle ware and routing. It adds helpful utilities to Node.js’s HTTP objects. It facilitates the rendering of dynamic HTTP objects.

### **React JSX [3]**

React JSX is a syntax extension of JavaScript for writing React Code in an effortless way. Using JSX it is easier to create reusable UI components with fewer lines of code in a template-type language with the power of JavaScript. JSX stands for JavaScript XML. JSX is a syntax extension of JavaScript. It helps us to write HTML in JavaScript and forms the basis of React Development. It act as the front-end base of our web application.

### **Node Js [4]**

Node JS is an open-source and cross-platform runtime environment for executing JavaScript code outside a browser. Node.js is used to build back-end services like APIs like Web Application. Node accepts the request from the clients and sends the response, while working with the request node.js handles them with a single thread. It can handle concurrent requests with a single thread without blocking it for one request. NodeJs is capable of the following,

- Generate dynamic page content.
- Can create, open, read, write, delete, and close files on the server. (CRUD)
- Can collect form data from users.
- Allows working with the database

## Vite [5]



Figure 1.3

Vite provides a faster development experience for modern web projects. Vite is also highly extensible via its Plugin API and JavaScript API with full typing support. Also, Vite helps to reduce project size because it uses plugins.

## Tailwind CSS [6]



Figure 1.4

For the web application we use tailwind CSS which is a popular CSS framework used in modern day web development.

## Tools [7]

Figma for wireframing



Figure 1.5

For wireframing our web application and to get an early idea how the system looks the team use Figma.

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### **Visual Studio Code [8]**

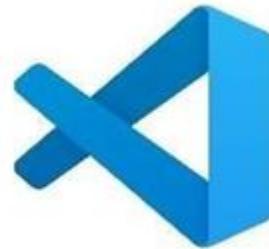


Figure 1.6

For writing all of our code we use Visual Studio Code which is easy and customizable with various extensions as we need.

### **GitHub [9]**



Figure 1.7

GitHub is used for the version control of the web application. Components made by different teammates are pushed and changes applied through this environment which makes it easier to manage and undo the changes made suiting to relevant occasion.

### **Postman [10]**



Figure 1.8

Used to test and modify the web application at the development phase. It can make various types of HTTP (GET, POST, PUT, PATCH) requests which helps to check whether the data is transferred and regain from relevant database.

## Trello [11]



Figure 1.9

Project management is done using this online free available platform, Trello.

## **Chapter 2**

### **Requirements**

#### **Stakeholder Analysis**

A wide variety of organizations are included in the waste management project's stakeholder study. Leading the charge are our clients, the waste management company, who have a strong commitment to improving customer satisfaction and operational effectiveness. We are responsible for implementing the technical components of the project. Overseeing the entire project, the task manager makes sure that resources are managed, goals are met, and deliveries are made on schedule. End users provide important insights on usability and functionality preferences since they interact with the waste management system on behalf of customers. Regulatory agencies are essential in guaranteeing adherence to trash disposal laws and environmental requirements. Colleagues and associates, such as waste management firms and ecological associations, offer the knowledge and assets necessary for the accomplishment of the project.

#### **Functional Requirements**

##### **Task Management (IT22341518)**

- Task creation - Whether it is for the collection, sorting, or disposal of waste, our technology makes job creation easy. Users can generate jobs with precise specifications and requirements using user-friendly interfaces.
- Resource allocation - By allocating the appropriate people, vehicles, and equipment to each work in accordance with variables like location, urgency, and resource availability, our task manager maximizes the use of available resources.
- Coordinate with other sub-systems - Coordination and communication between various operational areas are made easier with integration with other subsystems like inventory management, route optimization, and vehicle tracking.
- Task status update - Updates on task status in real time give stakeholders important information about how current operations are proceeding. Users are able to monitor every step of the task assignment process and take appropriate action when needed.
- Task deletion upon its completion - Our method automatically eliminates a task from the list of current tasks after it is successfully finished, simplifying the interface and cutting down on clutter.
- This guarantees that consumers won't be distracted from their present or prospective duties while they are concentrating on them.
- Search logged jobs via the reference number which is unique to the job.

### **Staff Management (IT22321022)**

- The system can add, update, and delete staff members in the system. They can also view the complete list of staff members, allowing for effective management of the workforce and system integrity.
- Staff members are assigned tasks based on their experience and skills requested by task management
- The system calculates all the salaries of the staff members by considering their working hours and OT hours.
- The system can generate reports to evaluate performance and make informed decisions.

### **Finance Management (IT22052988)**

- The finance manager can search and view requested payments sent by the staff manager, vehicle manager and product manager such as staff salary requests, vehicle fund requests and product fund requests.
- Then check those requests and approve or reject them. If the request is rejected, then the finance manager will create a reject report, including the reject date and reason, and send it to the relevant management.
- After the customer makes the payment, like buying recycling products and services, the finance manager will create a receipt for the payment summary and send it to the customer.
- The finance manager must update and maintain the daily financial report and create a monthly financial report.

### **Research and Development Team (IT22304506)**

#### **1. Research Publication Management**

- Allow research team members to publish articles in various areas of study.
- Enable updating of published research articles.
- Enable deletion of published research articles.

#### **2. Customer Access and Viewing**

- Provide customers with access to view published research article

#### **3. Search Functionality**

- Implement a search feature allowing users to find research articles based on keywords or

Categories.

4. Feedback Mechanism:

- Enable customers to provide feedback on published research articles.

5. Suggestions Submission:

- Allow customers to offer suggestions for improving research methodologies, approaches, or outcomes.

6. Generate Report on Suggestion Submission:

- This functionality automatically generates a report summarizing the suggestions provided by customers

**Vehicle Management (IT22369574)**

- The system can register new vehicles in the system by providing all the essential details.
- The system can review the list of tasks and assign the most suitable vehicles for each one.
- Under the admin's purview lies the ability to effortlessly modify vehicle details and delete them if required, in addition to this, the system also possesses the authority to delete task lists once the designated tasks have been completed.
- The system can easily create detailed reports for each vehicle, including essential information like its name, identification number, assigned task, curb weight, fuel type, and fuel capacity.
- The system can get an update about the maintenance of the vehicle such as by checking the engine, suspensions, brake system, transmission, tires, and fuel capacity before assigning a task.
- The system can search for suitable vehicles for the relevant tasks according to their availability.

## **Customer Management System (ITIT22338334)**

### 1. Customer Registration

- If the customer is new to the system, they can use a new account by providing their personal information during the signup process.
- After the registration, customers can log in to the system by providing their own login credentials. And the system allows users to view their registration details and account information.
- Users have the ability to update their profile information if there are any changes.
- If the users want to delete their account, they can delete their account or remove their information from the system.

### 2. Search for services and buy the services.

- Customers can create new garbage collection requests by submitting details such as location, type of waste, contact numbers and preferred collection time.
- Users can view the details of their submitted requests, including the status and scheduled collection time.
- Customers may update the details of their requests or change the time if needed.
- Users can cancel submitted requests if they no longer require junk collection.

### 3. Search products and buy products.

- Customers can search and buy products which they are preferred

### 4. Payment

- When a payment is initiated by the user for a waste collection services or products

### 5. Generate reports by summarizing the customers' requests.

### 6. Customers can edit or delete their personal information through their profiles.

## **Route Management (IT22032942)**

- Creating a path that includes daily and event schedules independently.
- The route manager can construct a regular route for an event schedule.
- The route manager gathers approximate customer locations for the daily schedule and gradually creates a single route for these areas.
- The customer locations were read by the route manager using provided tasks.
- By including new customer locations in the generated route, route management can make updates to the route.
- The route manager has the option to remove the route once the garbage collection is complete.

- When garbage collection is complete, the route manager can use the Route ID to search option for determine whether the job was completed or not.

## **Non Functional Requirements**

The set of specifications known as nonfunctional requirements, or NFRs, outline the limitations and operational capabilities of the system. These are essentially the specifications that define how effectively it works; these include features like data integrity, speed, security, and dependability.

Because NFRs specify several aspects of the product's operation, they are sometimes referred to as quality attributes or software quality requirements. However, NFRs are merely one kind of software engineering need. Let's talk briefly about functional requirements, the other significant group you'll probably have to deal with before we go into a more in-depth conversation.

- **Performance**

Performance should be very high because the system should be updated in real-time and numerous people should be able to access it simultaneously. User requests should be handled by the system promptly.

- **Security**

One crucial non-functional necessity for the system is security. The system database should only be directly accessible by the administrator because financial, personal, and inventory information is private. Reports must be generated by the management alone, if necessary. The data that each user can view and access is determined by their unique user authentication process.

- **Privacy**

We manage user data in accordance with system privacy and policy. A third party cannot access a user's personal information without the user's consent. We place a great importance on user privacy.

- **Reliability**

The system will have very high dependability and a very low mean time to failure.

- **Availability**

The system ought to function around-the-clock. Early notification of any downtime period is recommended to reduce uncomfortable circumstances.

- **Manageability**

The ease with which administrators can use the system's monitoring features to verify its critical health state is referred to as the system's manageability.

- **Usability**

Because of the system's ease of use, even recently registered users can use it without hesitation. The functions of the system are operated by fairly simple processes.

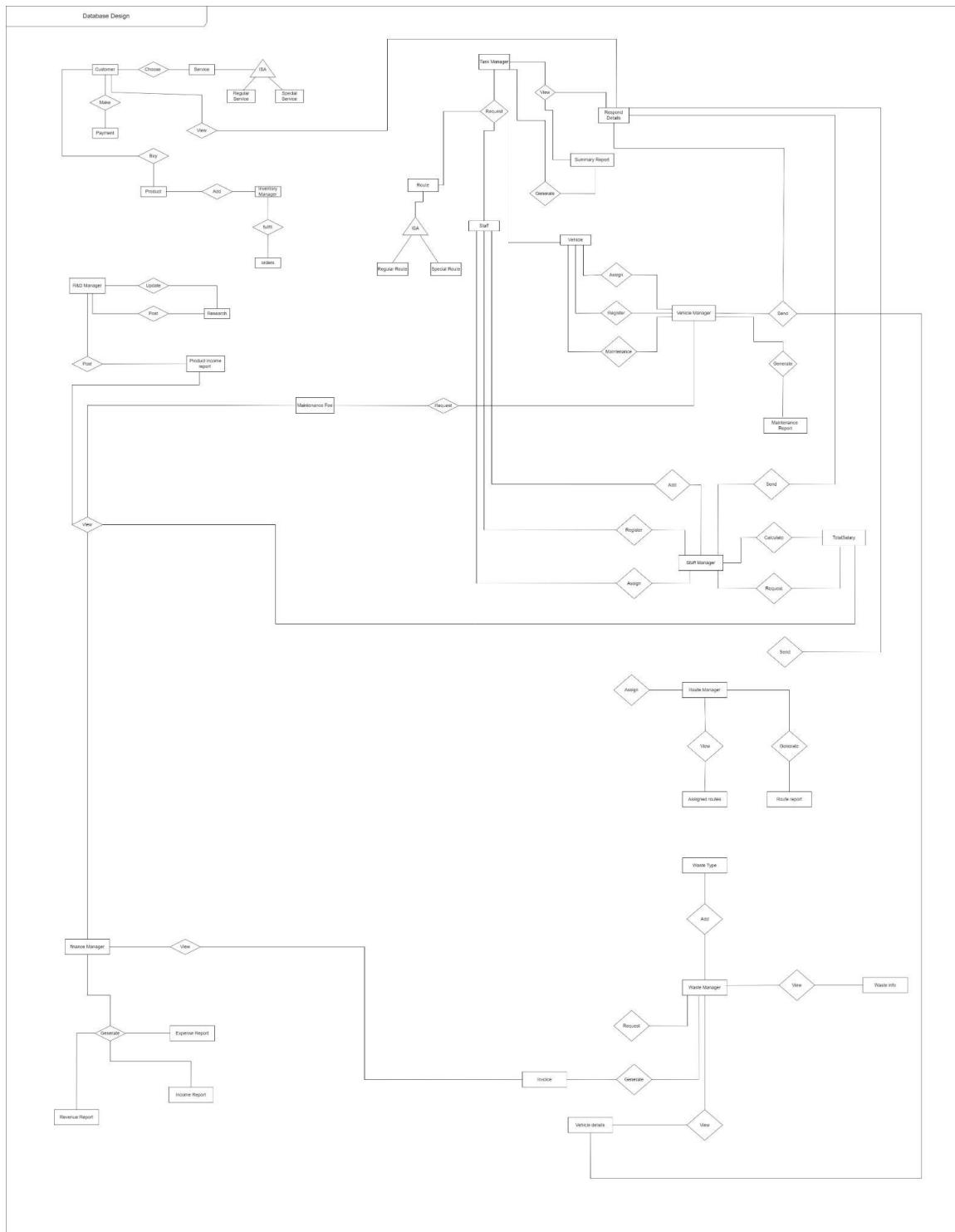
- **Scalability**

Scalability refers to the capability of the system to manage a growing workload or traffic without a significant deterioration in reliability or performance.

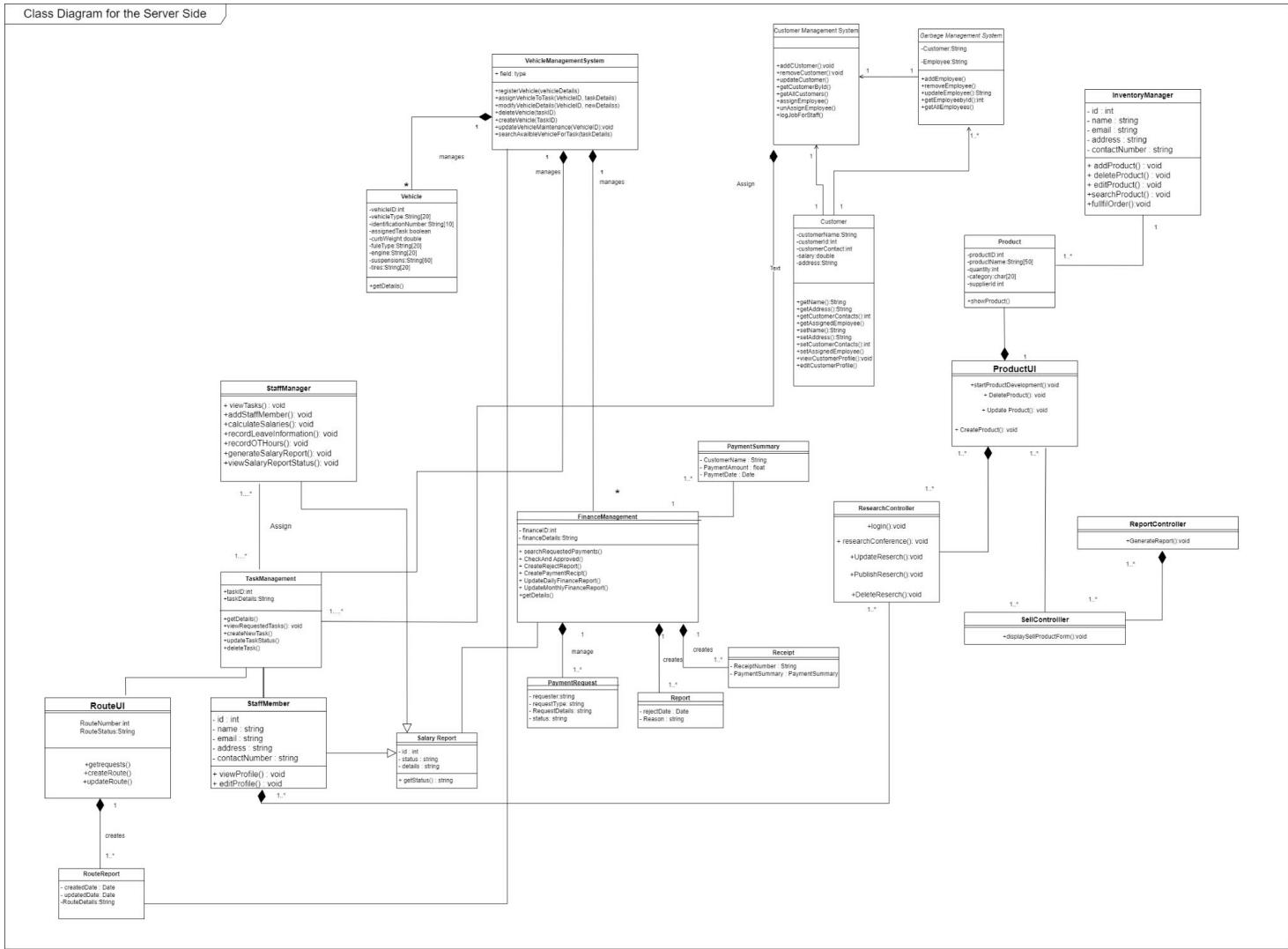
## Chapter 3

## **Design and Development**

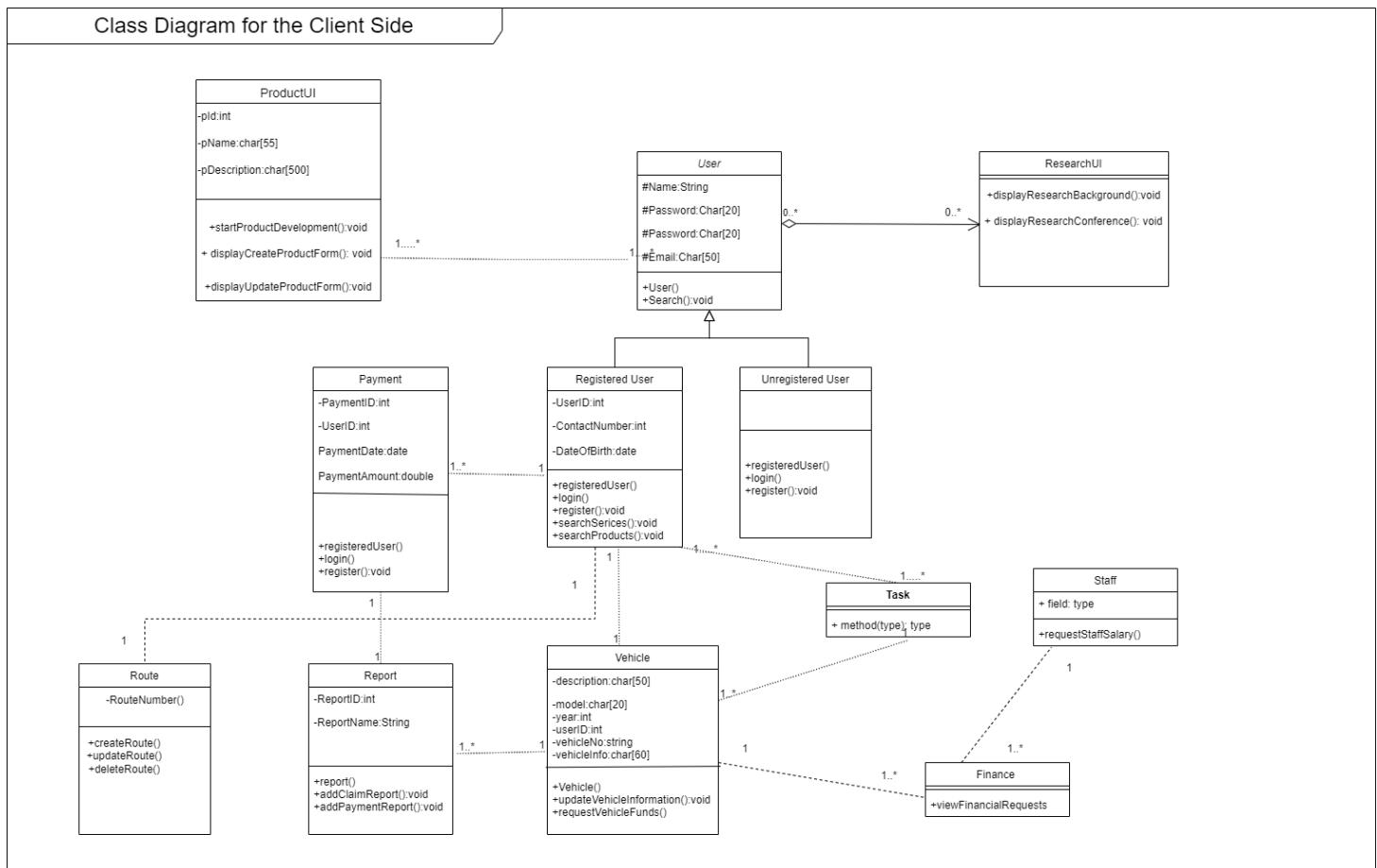
DATABASE



## Class Diagram for the Server Side

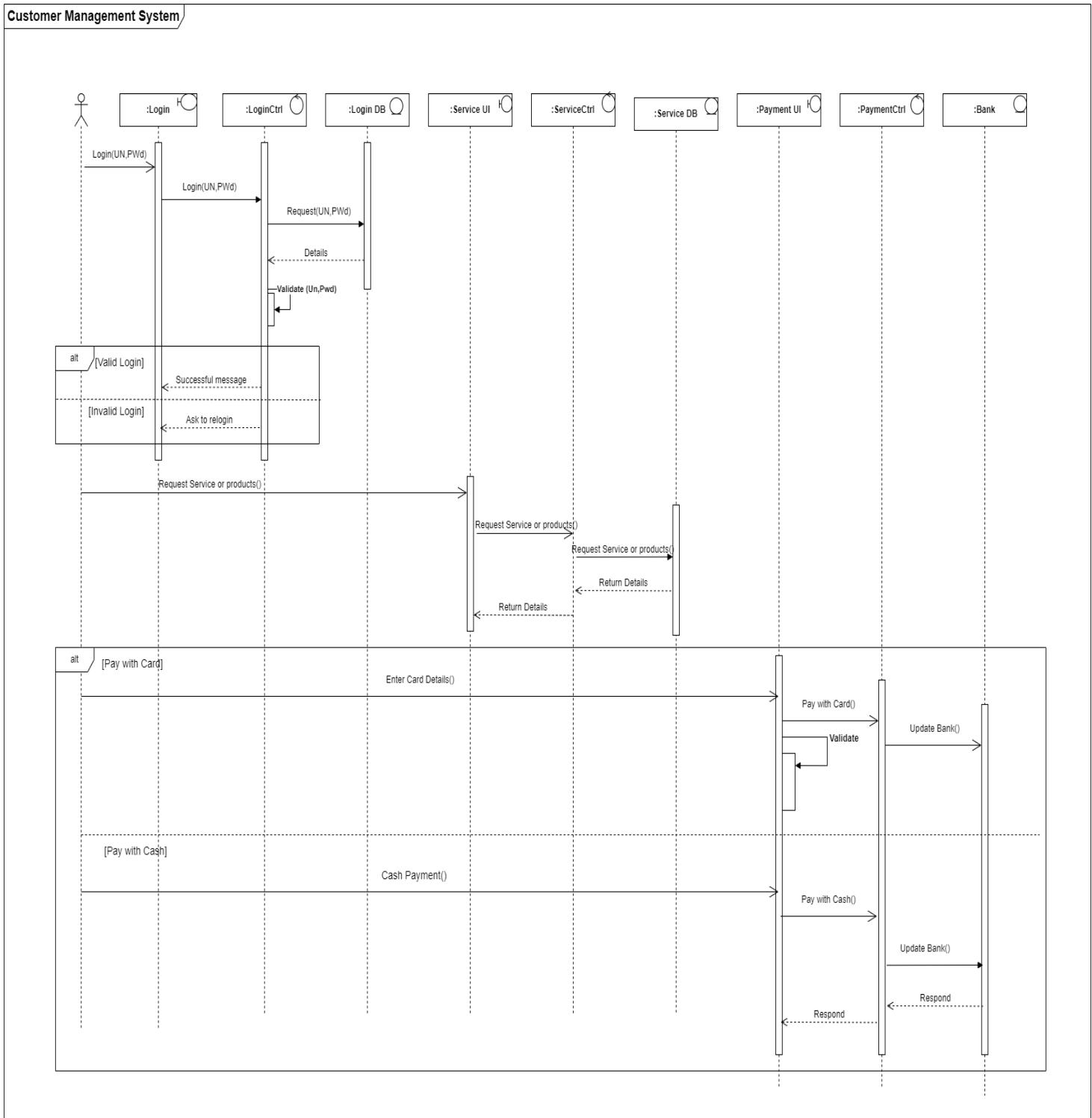


## Class Diagram for the Client Side

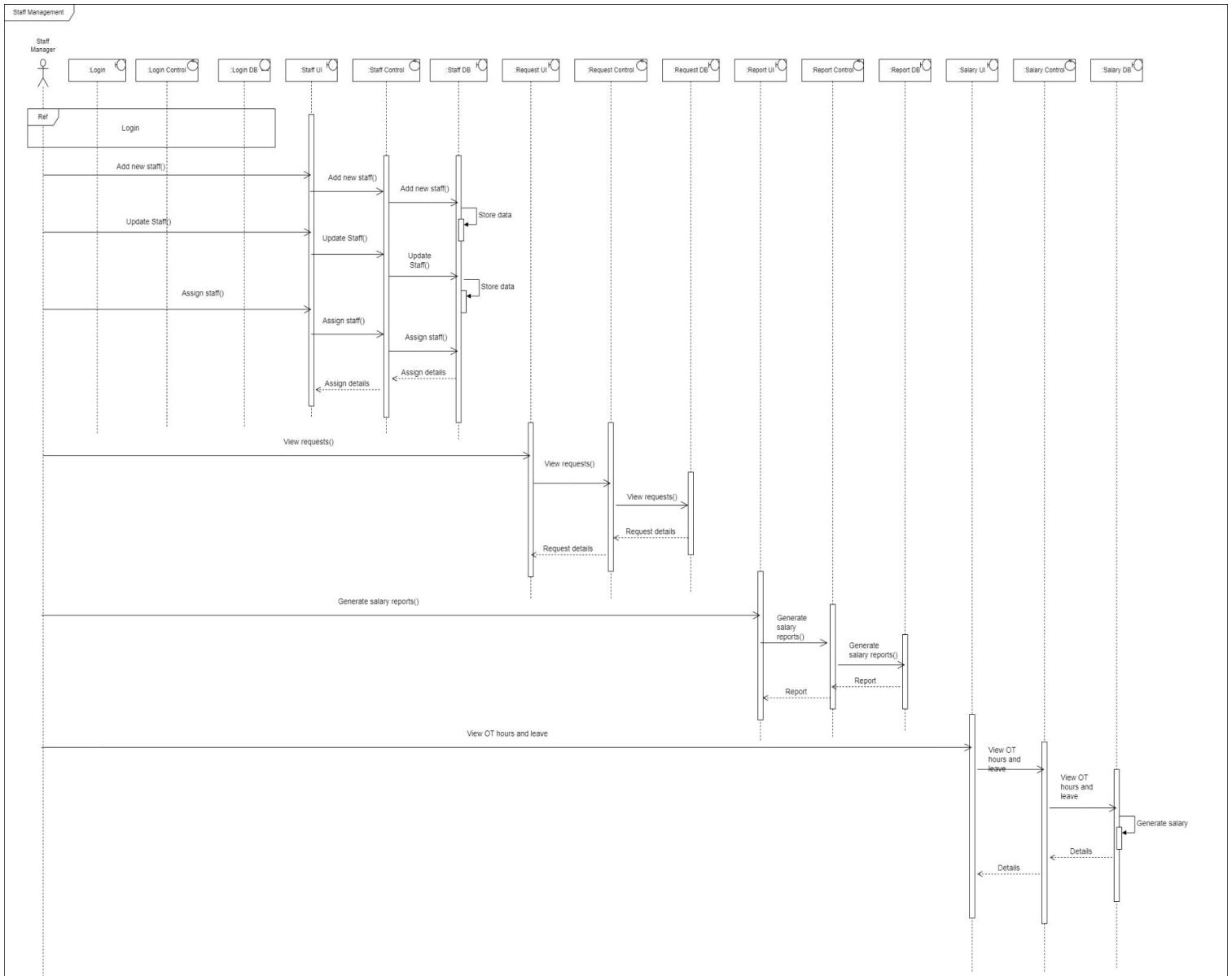


## Sequence Diagrams

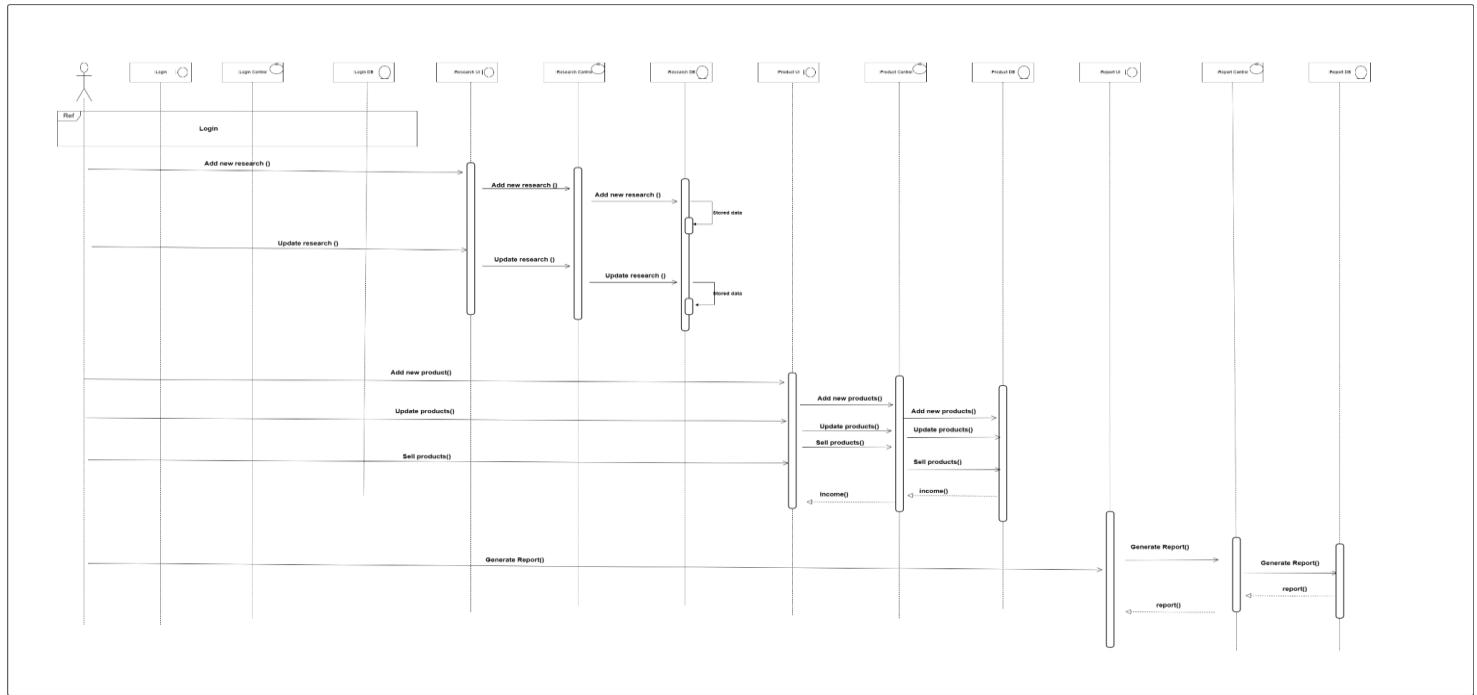
### Customer Management



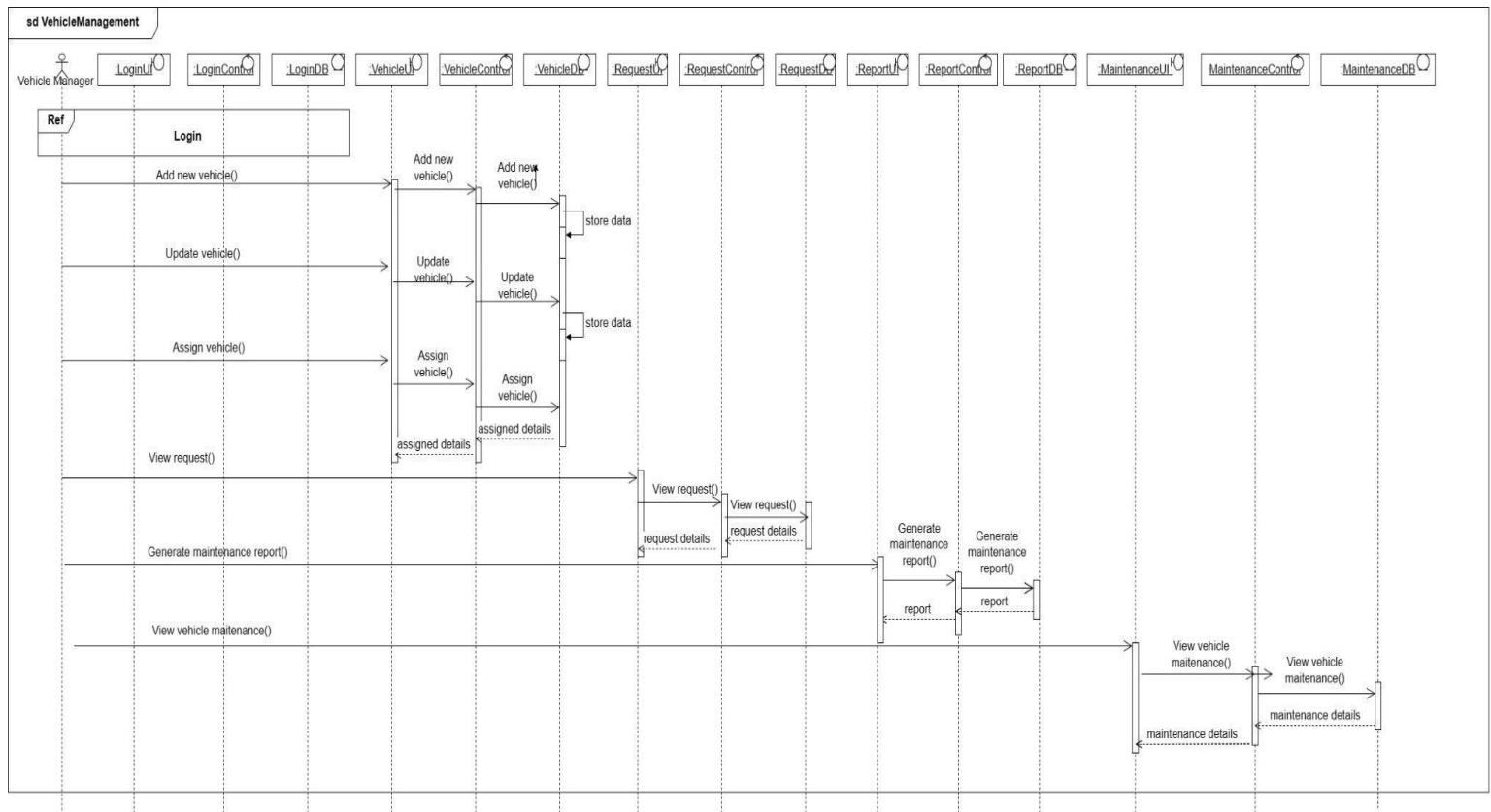
## Staff Management



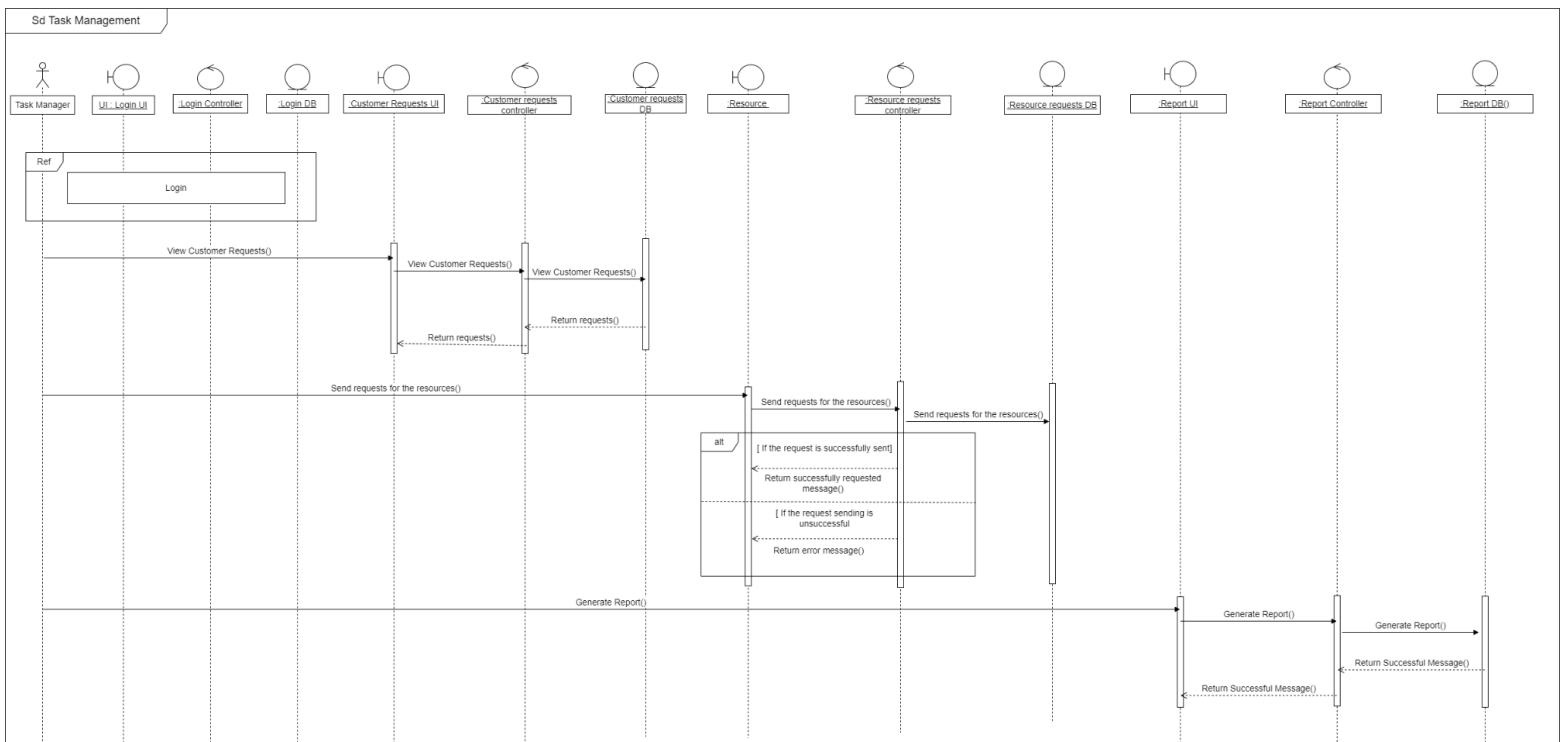
## Research And Development Management



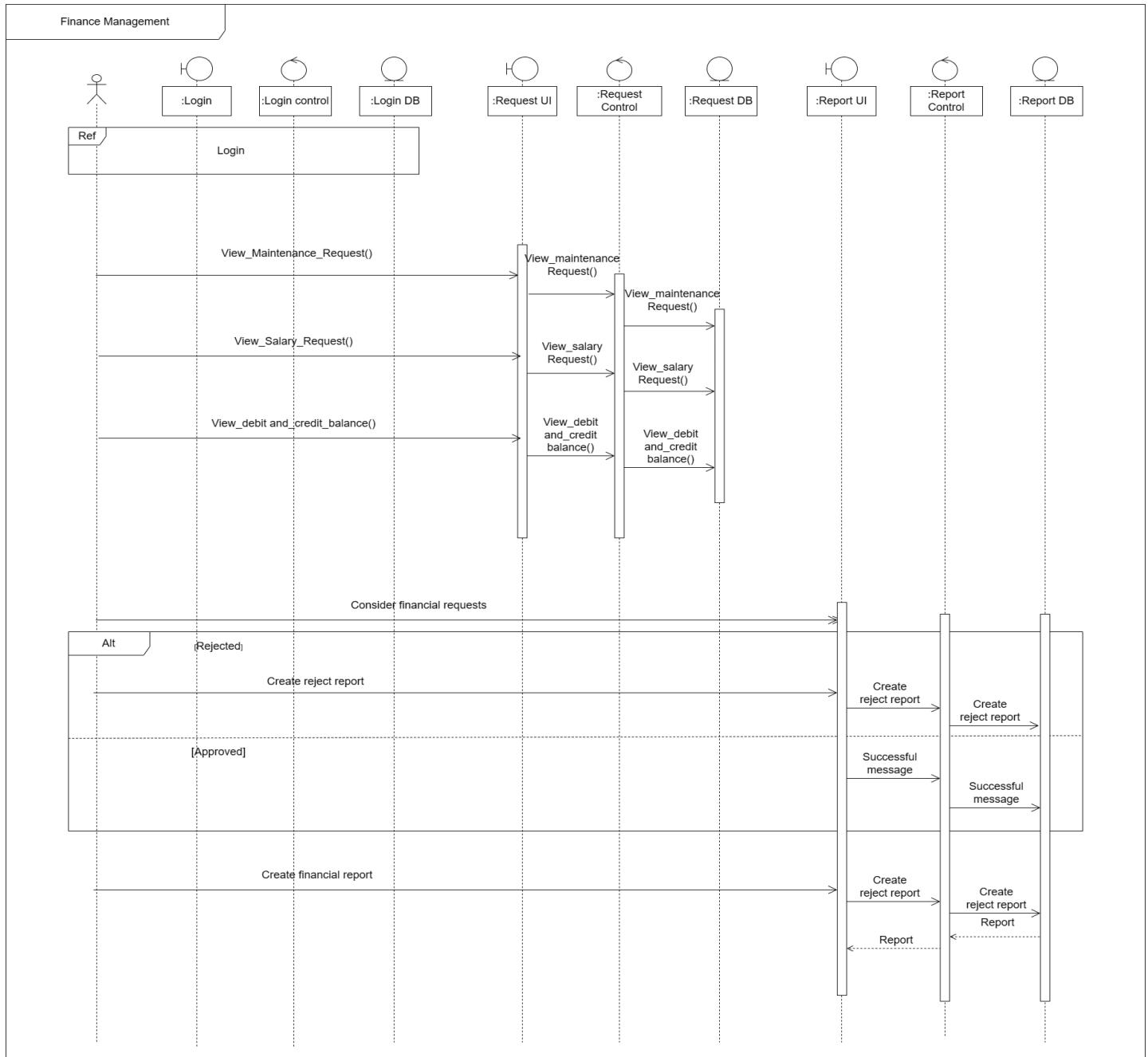
## Vehicle Management



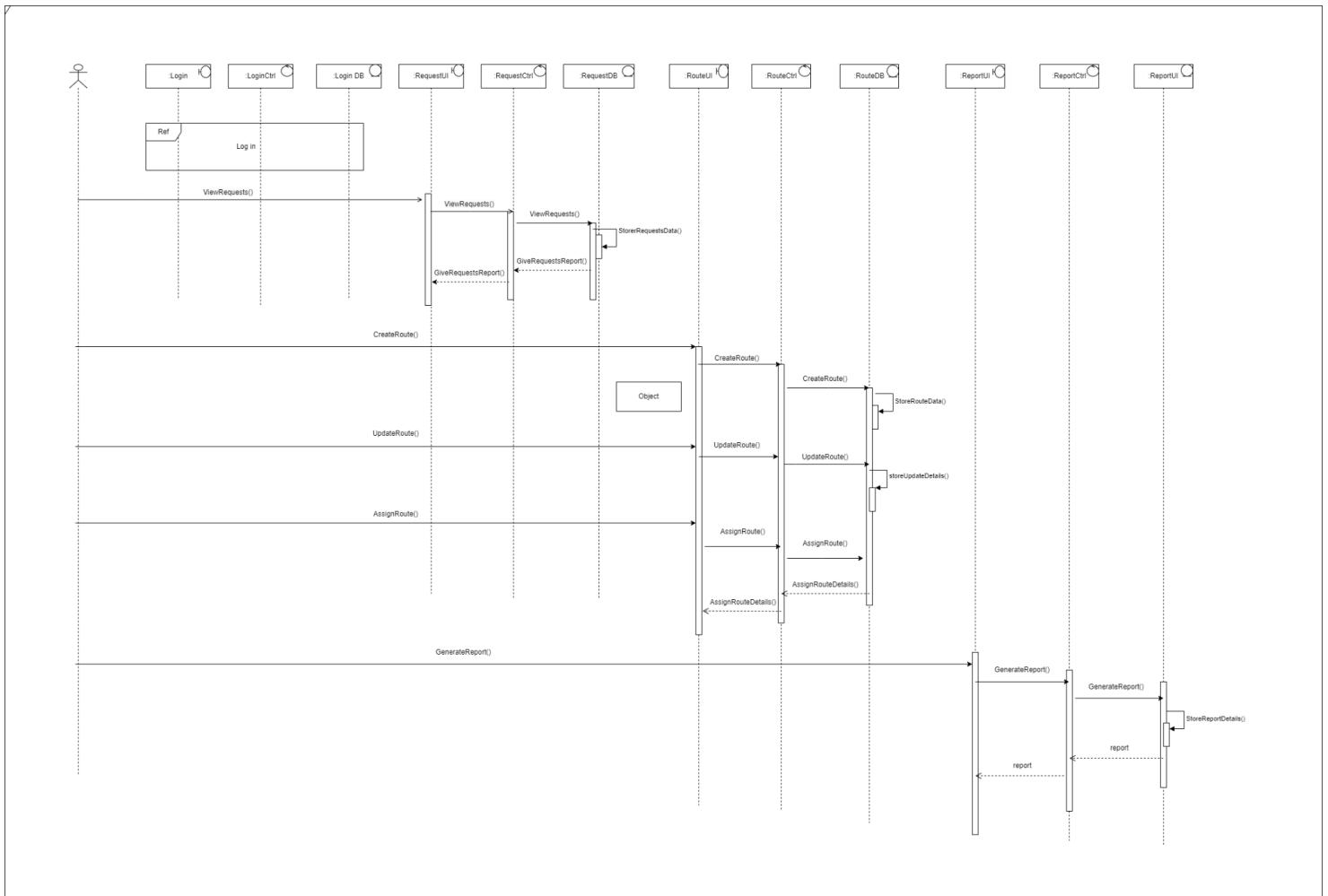
## Task Management



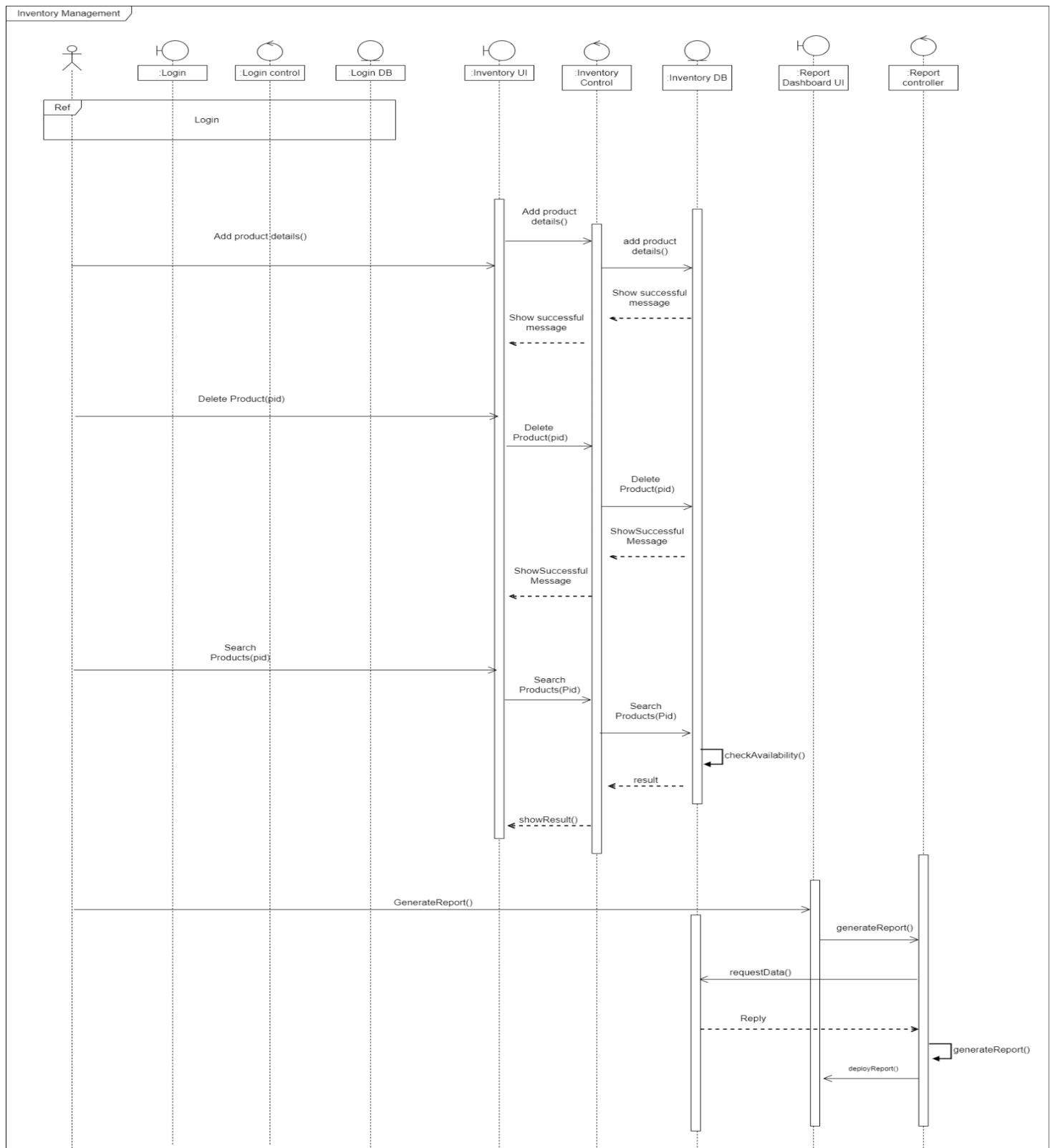
## Finance Management



## Route Management

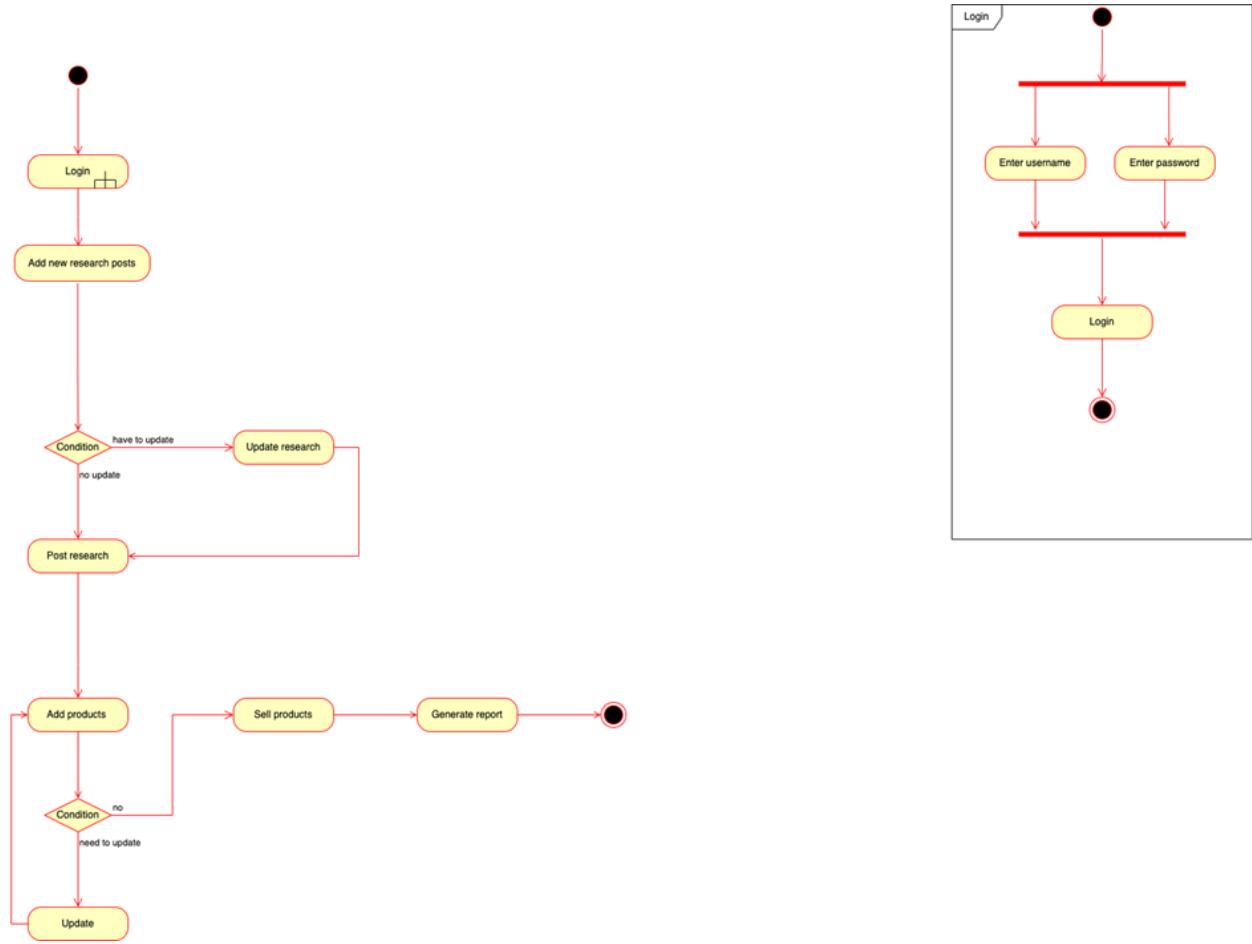


## Inventory Management

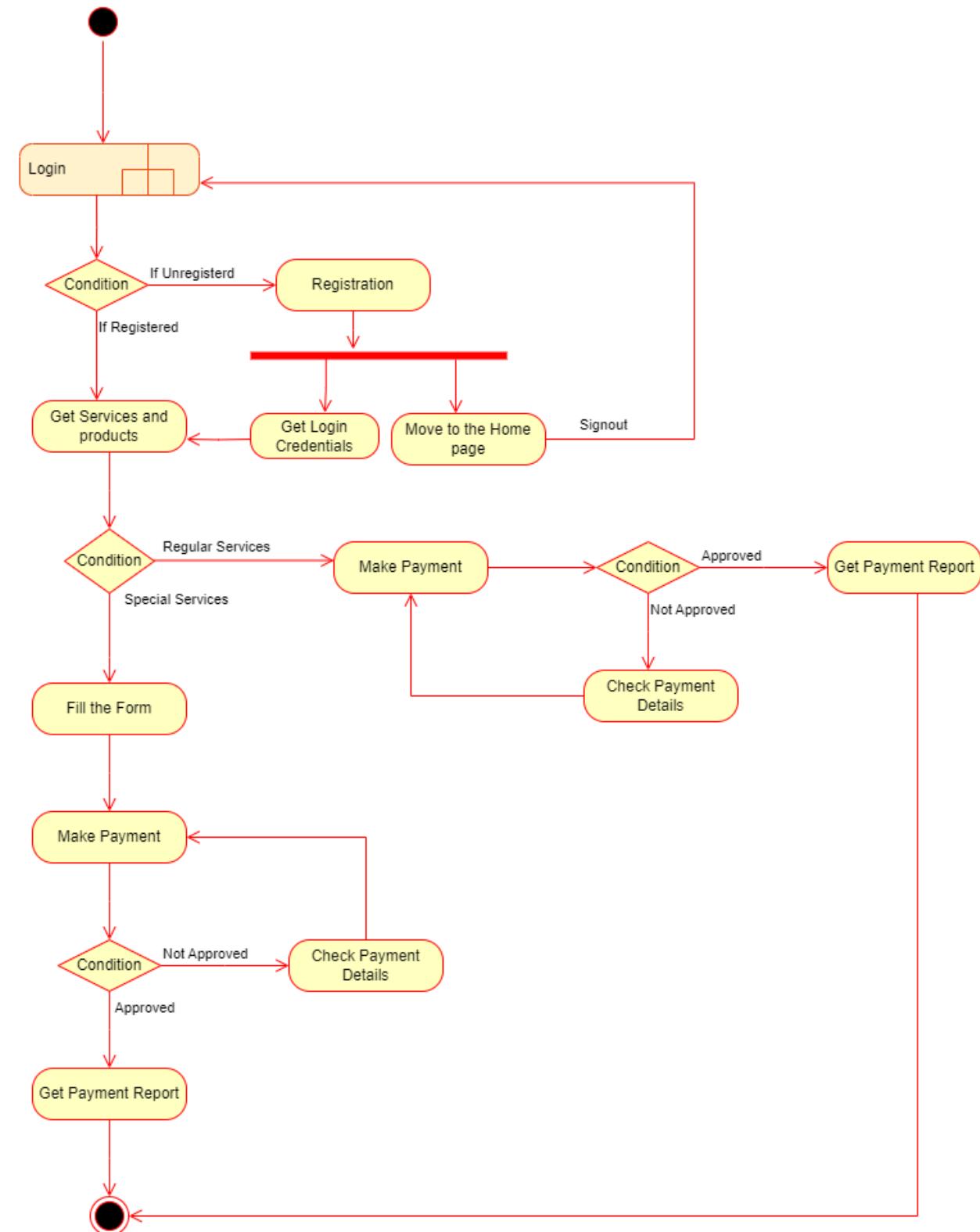


## Activity Diagrams

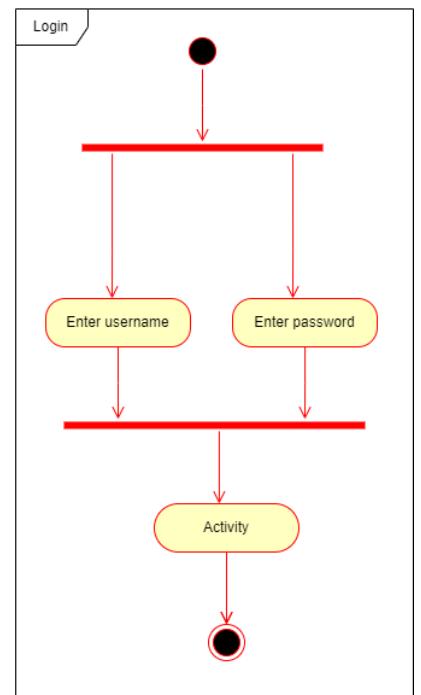
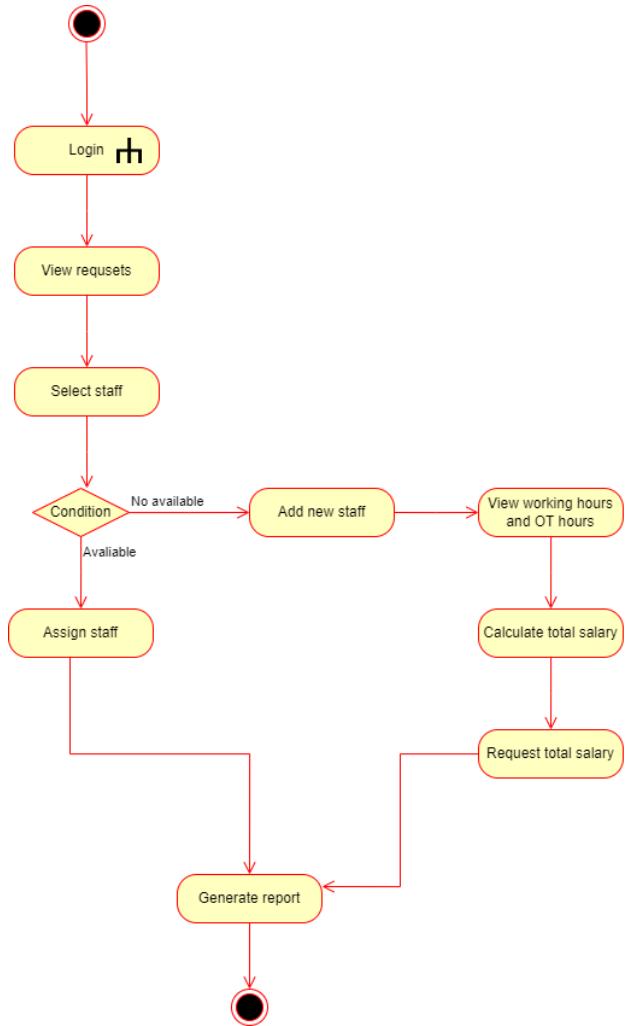
### Research And Development Management



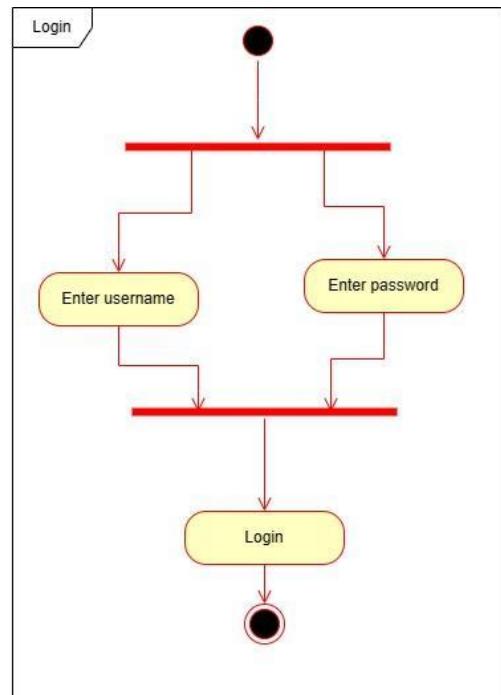
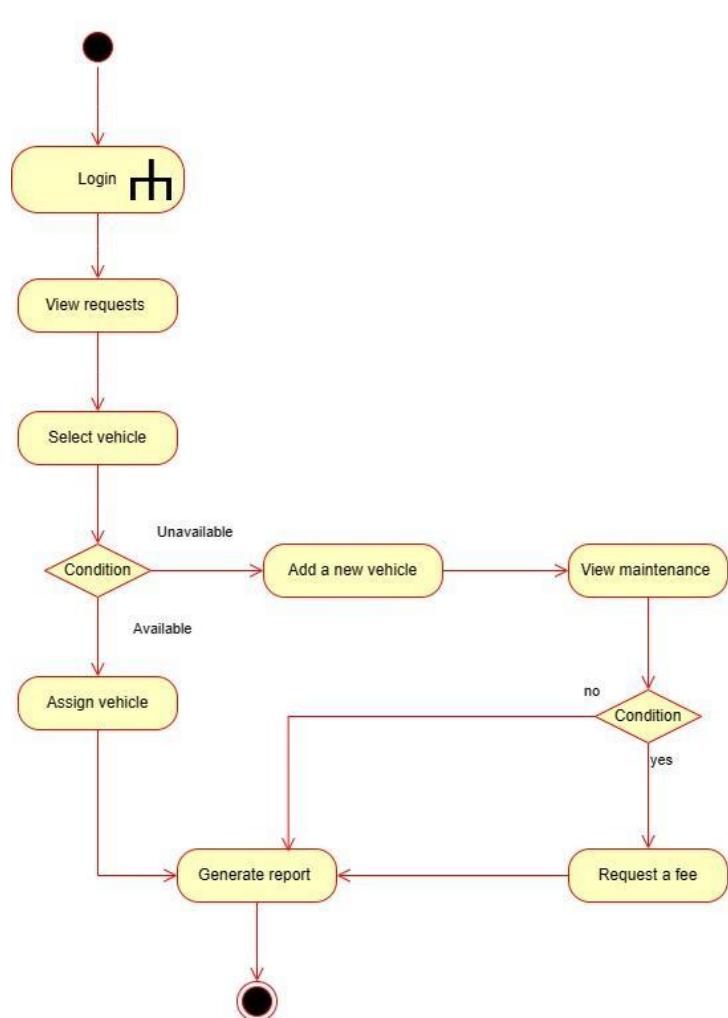
## Customer Management Activity Diagram



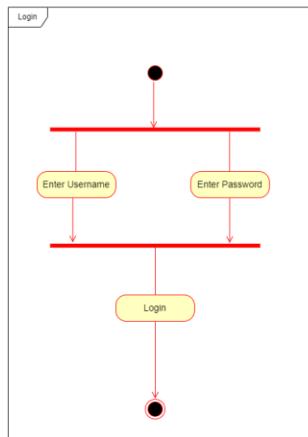
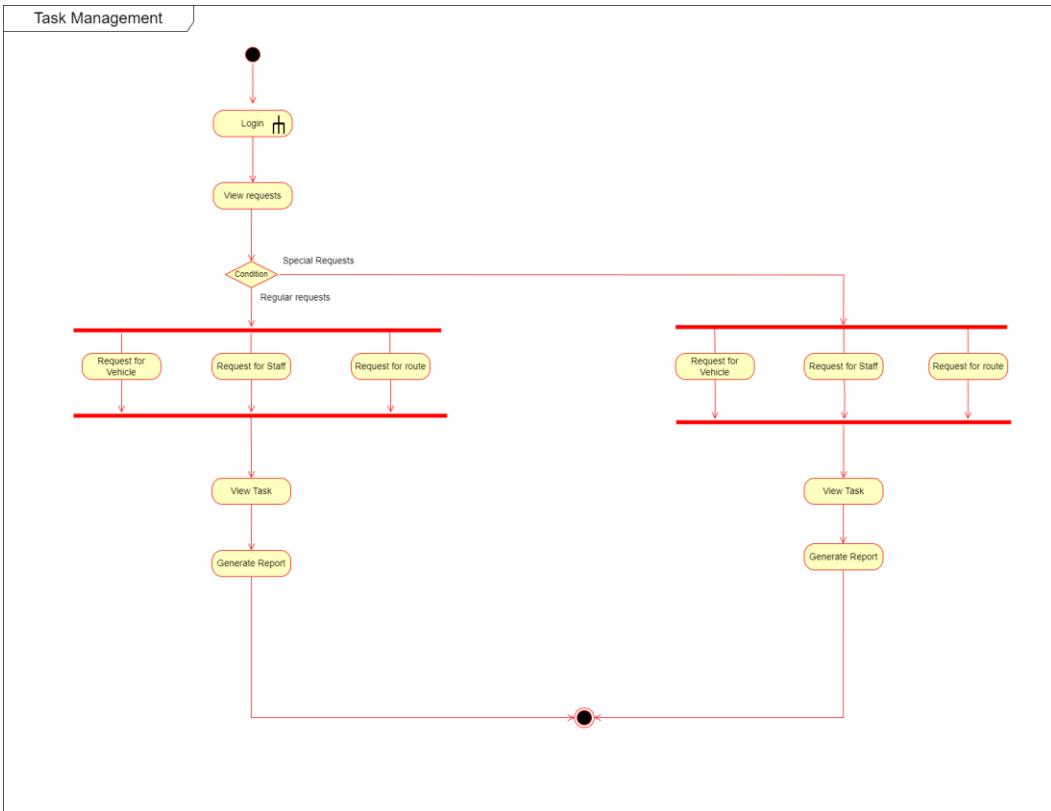
## Staff Management



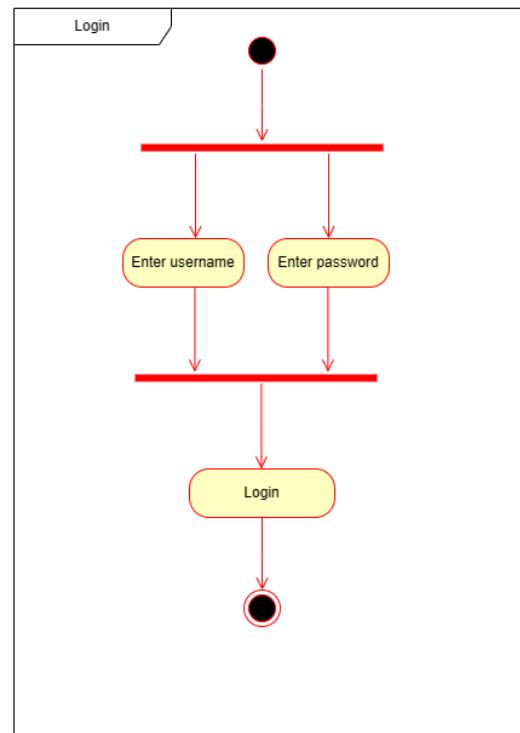
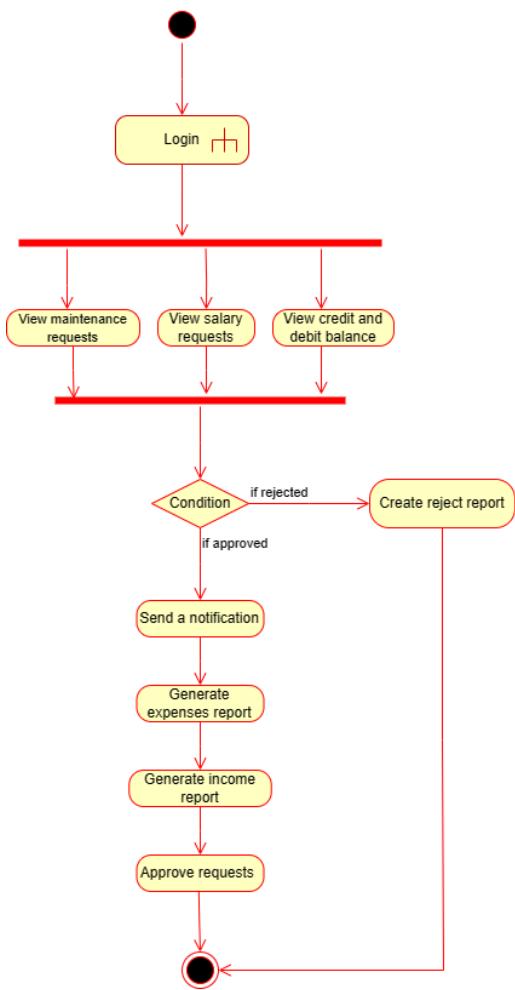
## Vehicle Management



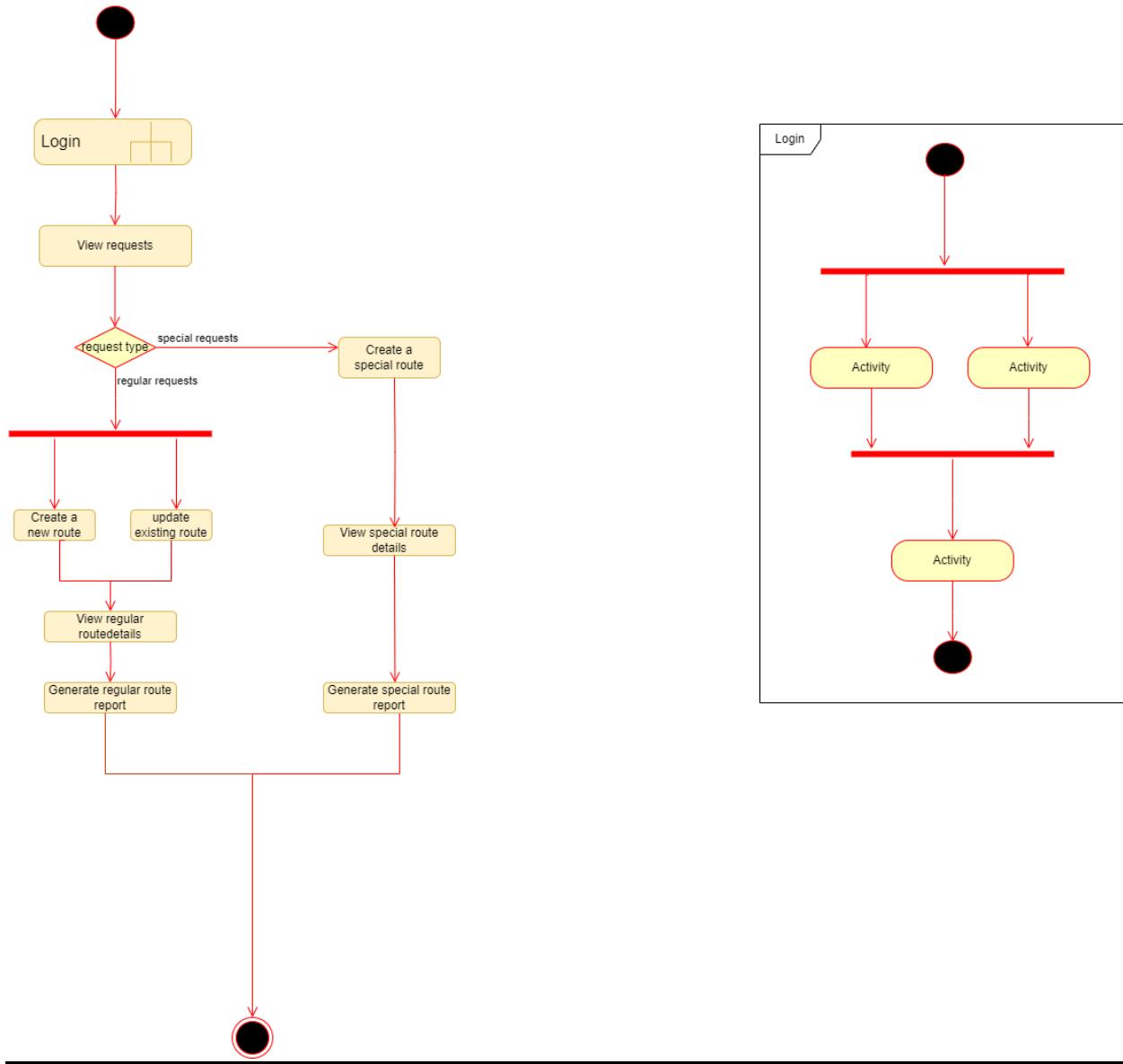
## Task Management



## Finance Management



## Route Management



## User Interfaces

### Route Management - IT22032942

The screenshot shows a web browser window titled "Vite + React" with the URL "localhost:5173". The page has a header with "Schedule", "Contact", and "My Account" links. A dark navigation bar at the top contains the text "Green Bin". Below it, a search bar with placeholder "search..." and a magnifying glass icon is followed by a green button with a plus sign. The main content area is titled "Route Records" and displays a table of route data. The columns are: No, RoadNumber, Start Location, End Location, No of Houses, House Addresses, Date, and Operations. The data rows are as follows:

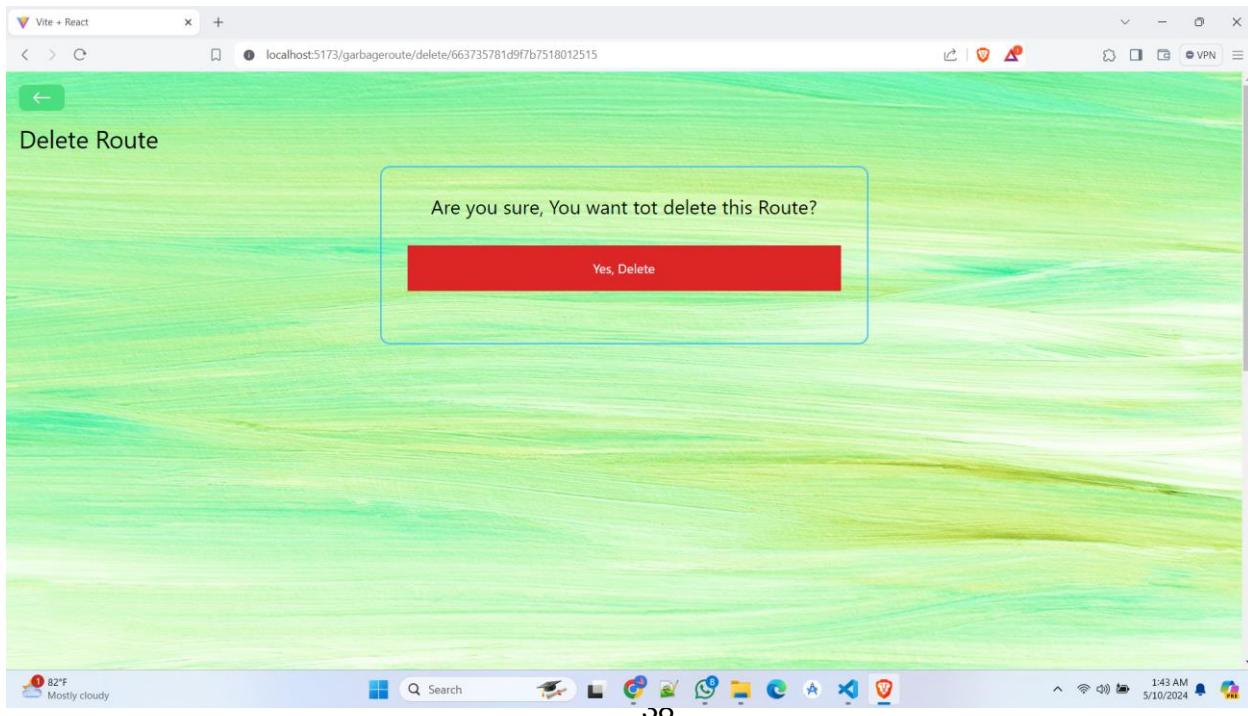
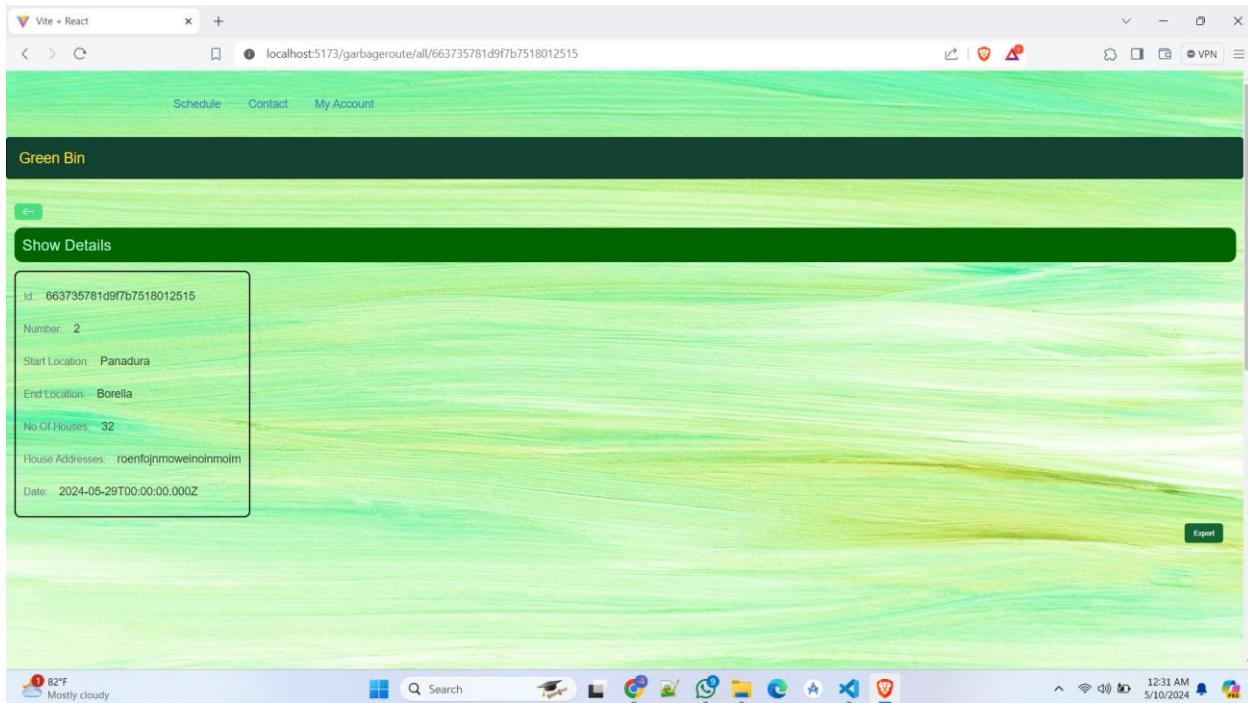
No	RoadNumber	Start Location	End Location	No of Houses	House Addresses	Date	Operations
1	2	Panadura	Borella	32	roenfjnmoweinoinmoim	2024-05-29T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>
2	3	Kottawa	Pitakotawa	50	omeoicomiomm	2024-05-22T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>
3	4	Batteramulla	Kaduwela	87	ijnjiuo	2024-05-15T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>
4	5	Angoda	Kottawa	45	kjbnijinjinjn	2024-05-22T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>
5	6	Rjhbbi	jonn	99	om	2024-05-02T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>
6	7	Biyagama	Kottawa	23	wickrama kottawa	2024-05-09T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>
7	8	Malabe	Batteramulla	5	jihvokikkjnjk	2024-05-15T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>
8	9	Kaduwela	Malabe	45	wickrama malabe.	2024-05-15T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>
9	10	Biyagama	Kaduwela	45	onmolmo	2024-05-30T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>
10	4	Kaduwela	Malabe	6	gvrfvrfv	2024-05-06T00:00:00.000Z	<span>①</span> <span>⠇</span> <span>⠼</span>

The status bar at the bottom shows "82°F Mostly cloudy", the date "5/10/2024", and the time "12:30 AM".

The screenshot shows a web browser window titled "Vite + React" with the URL "localhost:5173/garbageroute/edit/663735781d9f7b7518012515". The page has a header with "Schedule", "Contact", and "My Account" links. A back arrow is visible on the left. The main content area is titled "Update Route" and contains a form with the following fields:

- Number: 2
- Start Location: Panadura
- End Location: Borella
- No Of Houses: 32
- House Addresses: roenfjnmoweinoinmoim
- Date: 05/29/2024

The status bar at the bottom shows "Finance headline US weekly jobs...", the date "5/10/2024", and the time "10:08 AM".



Green Bin

localhost:5173

GreenBin

Search..

Home About Sign in

# Find your next perfect garbage collecting services with ease

Green Bin Company is your one-stop destination for efficient garbage collection and sustainable waste management solutions. Our mission is to make waste disposal hassle-free and environmentally responsible.

With a diverse range of services and innovative recycling products, we're dedicated to promoting a cleaner, greener planet. Whether you're a homeowner, business owner, or community organizer, we have tailored solutions to meet your specific needs.

**Our services include:**

- Residential garbage collection
- Recycling programs
- Organic waste composting

Join us in our commitment to preserving the environment and creating a sustainable future for generations to come.



83°F Cloudy 8:30 PM INTL 5/10/2024

Green Bin

localhost:5173

SaveFrom.net - 83°F... New Tab Computer Assisted... SLT Broadband Welcome to CA Sri... Inbox - rohinisunet... Gmail Maps YouTube Untitled Diagram -...

• Organic waste composting

Join us in our commitment to preserving the environment and creating a sustainable future for generations to come.



Embrace a journey into the future of waste management innovation with us. At Green Bin Company, we're not just collecting garbage; we're pioneering the next generation of sustainable solutions. Our team of researchers is dedicated to pushing the boundaries of what's possible, exploring cutting-edge technologies and methodologies to revolutionize how we handle waste. Join us as we delve deep into the science of garbage management, uncovering new insights and developing innovative strategies to minimize environmental impact. From advanced recycling programs to revolutionary composting techniques, our research is paving the way towards a cleaner, greener planet. With each discovery, we're inching closer to a world where waste is no longer a problem, but a valuable resource waiting to be reclaimed. Together, let's shape a future where sustainability isn't just a goal; it's a reality.

Let's see the Researches...

83°F Cloudy 8:30 PM INTL 5/10/2024

## About Green Bin Company

Welcome to Green Bin Company, your trusted partner in sustainable waste management solutions. At Green Bin, we are passionate about preserving the environment and making a positive impact on the world around us. With years of experience and expertise in the field of garbage management, we are committed to providing innovative and efficient solutions to meet the evolving needs of our clients.



## Our Mission

Our mission is simple: to make waste management easier and more accessible for everyone. We believe that by working together, we can create a cleaner, greener future for all.

Green Bin

localhost:5173/about

Our Mission

Our mission is simple: to revolutionize the way waste is managed and to promote a cleaner, greener planet for future generations. We believe that every action counts, and by implementing responsible waste disposal practices, we can significantly reduce our carbon footprint and mitigate environmental damage.

What Sets Us Apart

At Green Bin, we pride ourselves on our commitment to excellence, sustainability, and customer satisfaction. Unlike traditional waste management companies, we prioritize eco-friendly practices and strive to minimize the impact of waste on our environment. From residential garbage collection to commercial waste management services, we offer tailored solutions to meet the unique needs of each client.

Our Team

Behind every successful operation is a dedicated team of professionals. At Green Bin, our team is comprised of passionate individuals who share a common goal: to make a positive difference in the world. From waste management experts to environmental enthusiasts, each member of our team brings a unique set of skills and expertise to the table, ensuring that we deliver nothing but the best to our clients.

Join Us

Join us in our mission to create a cleaner, greener future. Whether you're a homeowner, business owner, or community leader, we invite you to partner with us in our journey towards sustainable waste management. Together, we can make a difference.

Being There When You Need Us

WM SEBASTIAN

83°F Cloudy 8:30 PM ENG INTL 5/10/2024

Green Bin

localhost:5173/sign-up

GreenBin

Search...

Home About Sign in

SignUp

username

email

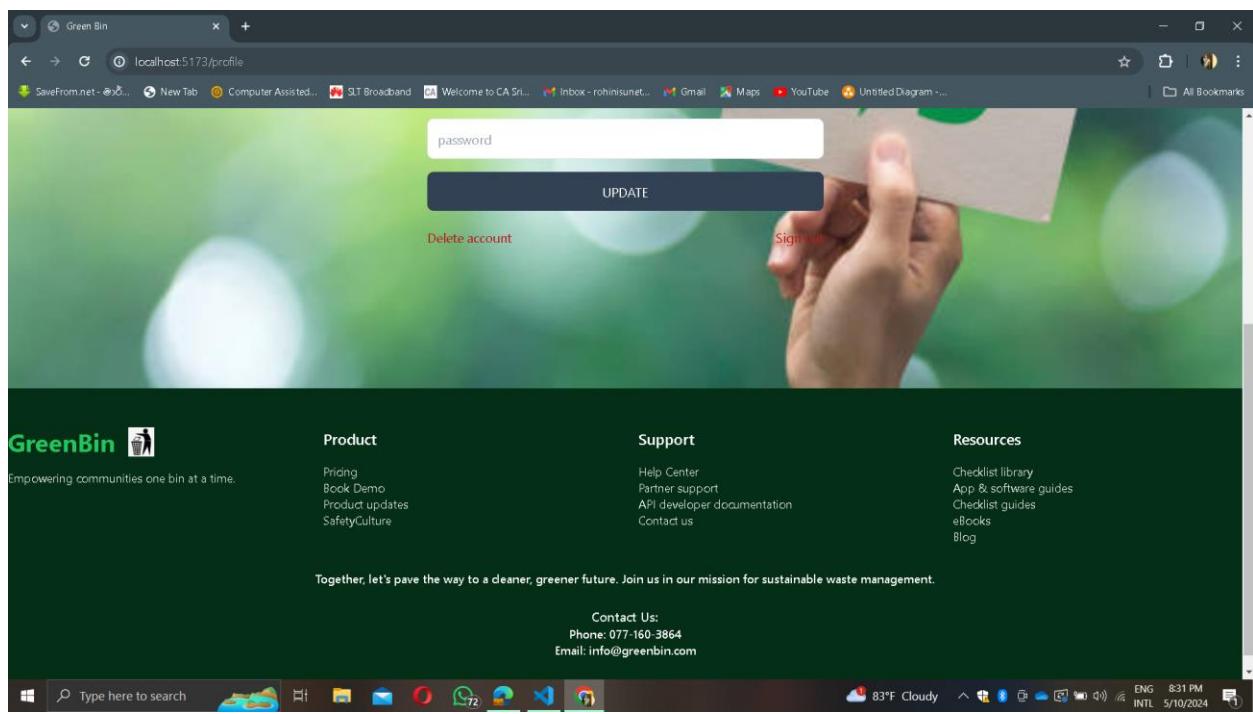
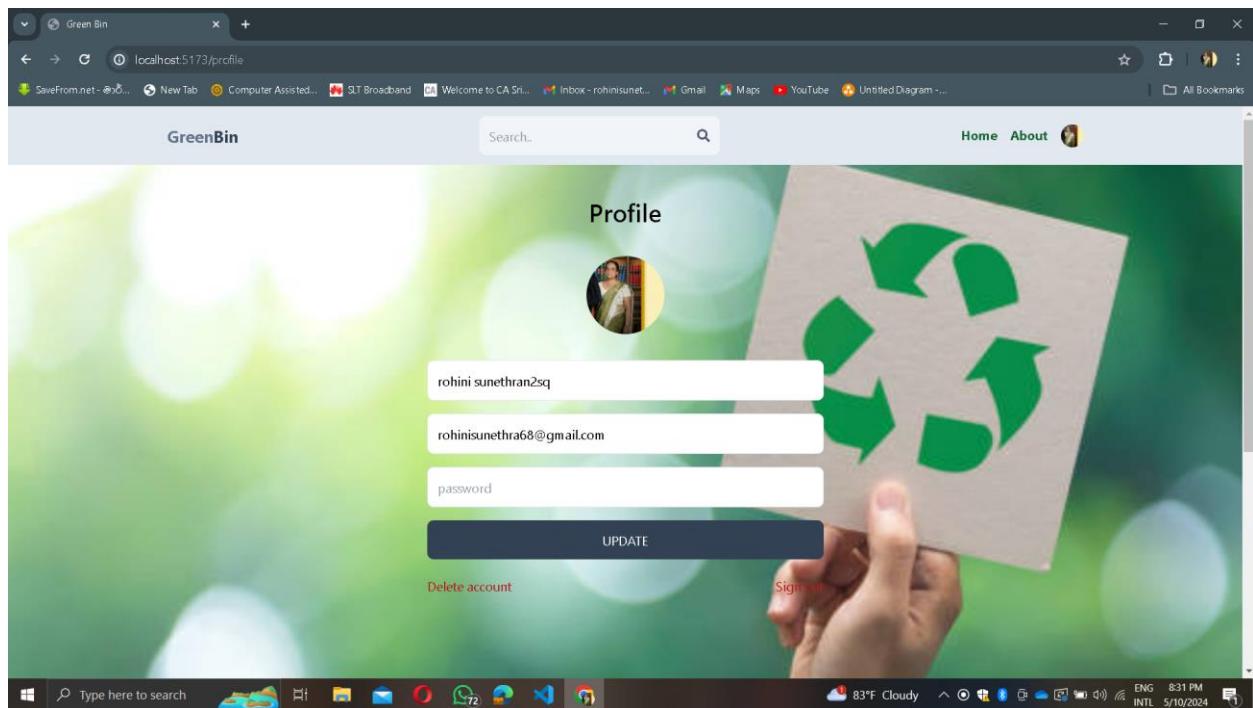
password

SIGN UP

CONTINUE WITH GOOGLE

Have an account? [Sign in](#)

83°F Cloudy 8:31 PM ENG INTL 5/10/2024



Our Residential Garbage Collection service ensures timely and efficient disposal of household waste. We offer customizable plans to meet your specific needs, whether you require weekly, bi-weekly, or monthly pickups.

[Buy Now](#)

Our Residential Garbage Collection service ensures timely and efficient disposal of household waste. We offer customizable plans to meet your specific needs, whether you require weekly, bi-weekly, or monthly pickups.

[Buy Now](#)

**GreenBin**

Empowering communities one bin at a time.

**Product**

- Pricing
- Book Demo
- Product updates
- SafetyCulture

**Support**

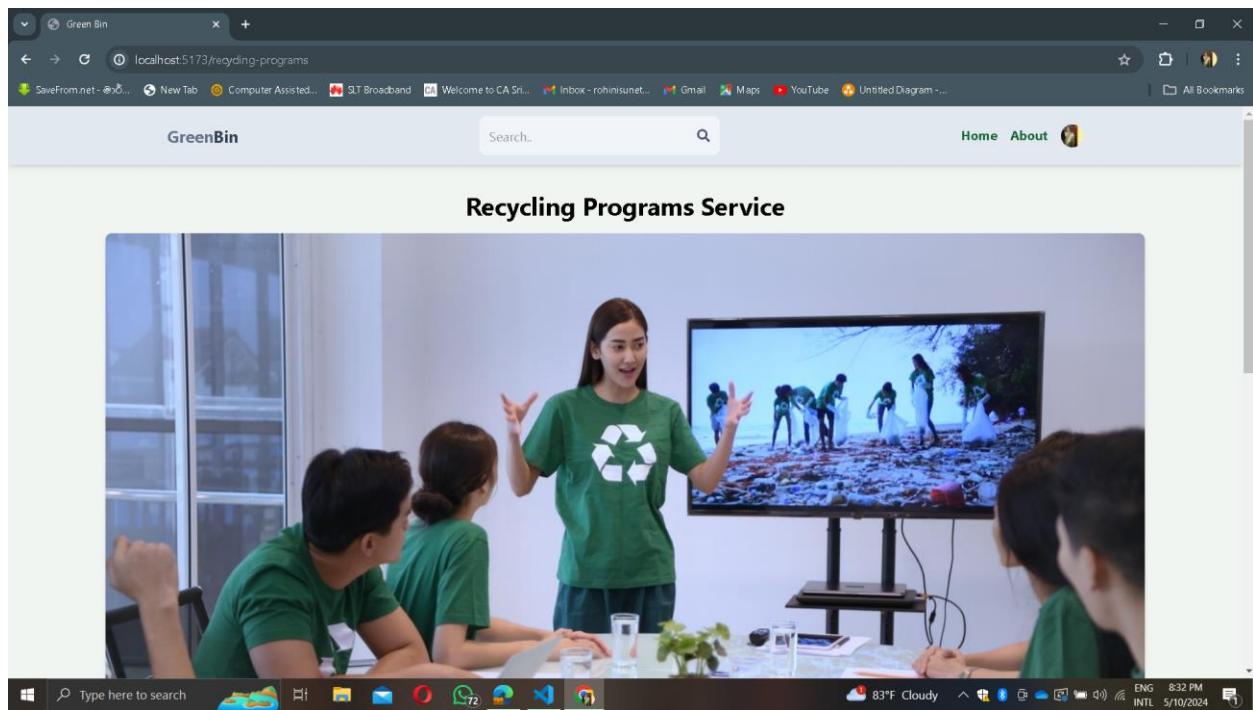
- Help Center
- Partner support
- API developer documentation
- Contact us

**Resources**

- Checklist library
- App & software guides
- Checklist guides
- eBooks
- Blog

Together, let's pave the way to a cleaner, greener future. Join us in our mission for sustainable waste management.

Contact Us:  
Phone: 077-160-3864  
Email: info@greenbin.com



Green Bin

localhost:5173/recycling-programs

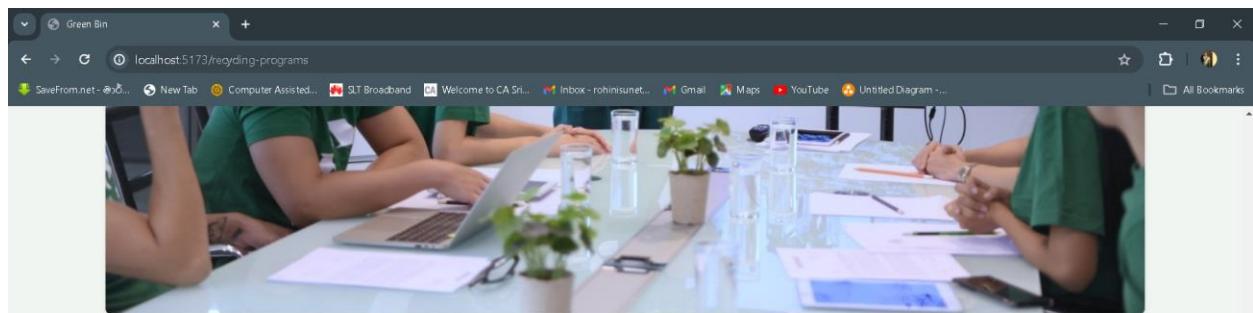
GreenBin

Search..

Home About

Recycling Programs Service

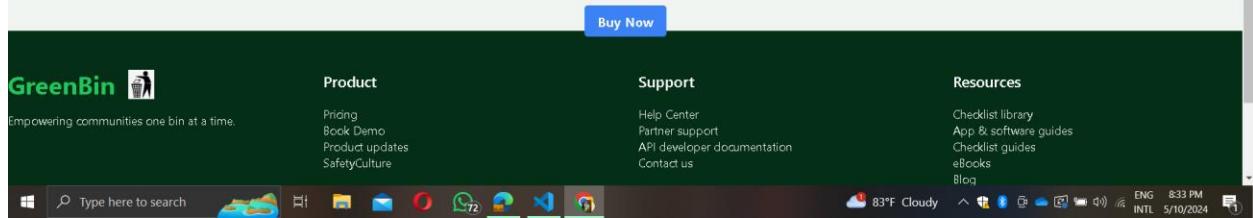
83°F Cloudy ENG 8:32 PM INTL 5/10/2024



Our Recycling Programs are meticulously designed to promote sustainable waste management practices. We offer a variety of initiatives, including single-stream recycling, e-waste recycling, and composting programs. These services provide convenient and eco-friendly solutions for individuals and businesses to reduce their environmental footprint and contribute to a healthier planet.

Single-stream recycling simplifies the process by allowing all recyclables to be placed in one bin, while our e-waste recycling ensures responsible disposal of electronic devices. Additionally, our composting programs transform organic waste into nutrient-rich compost, enriching soil and minimizing landfill waste. Join us in our commitment to a greener future through innovative recycling solutions.

Buy Now



GreenBin

Empowering communities one bin at a time.

Product

- Pricing
- Book Demo
- Product updates
- SafetyCulture

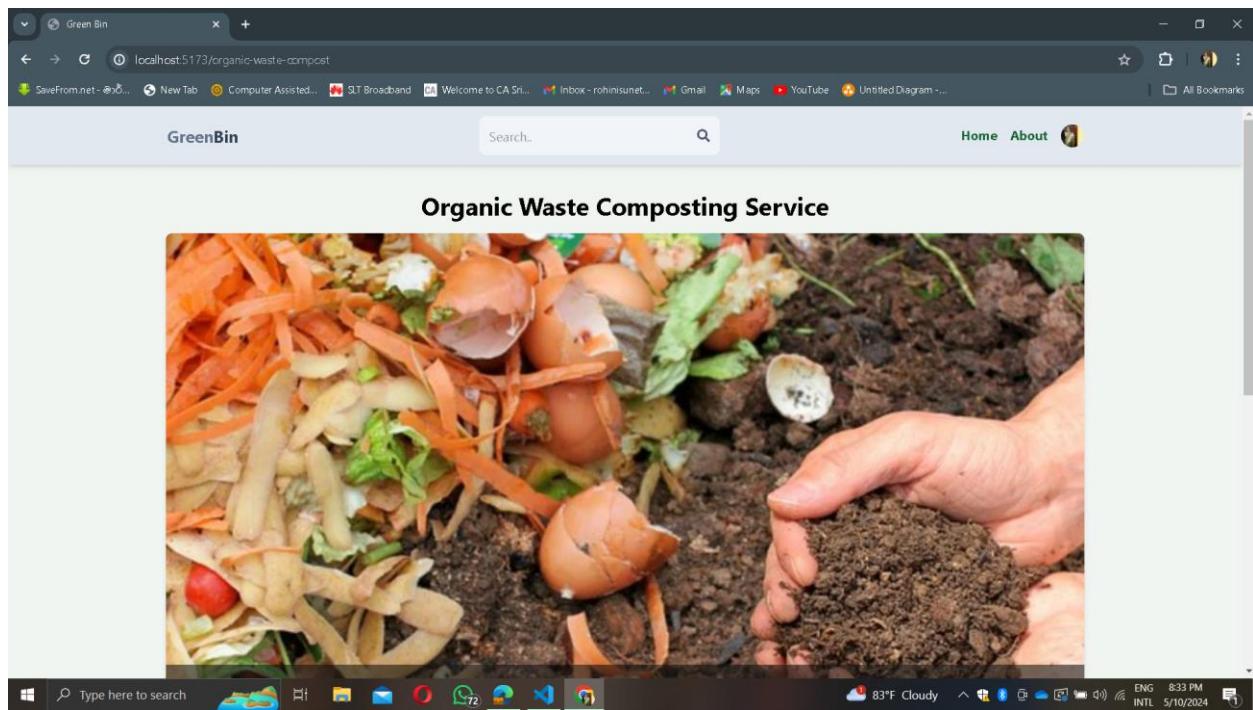
Support

- Help Center
- Partner support
- API developer documentation
- Contact us

Resources

- Checklist library
- App & software guides
- Checklist guides
- eBooks
- Blog

83°F Cloudy ENG 8:33 PM INTL 5/10/2024



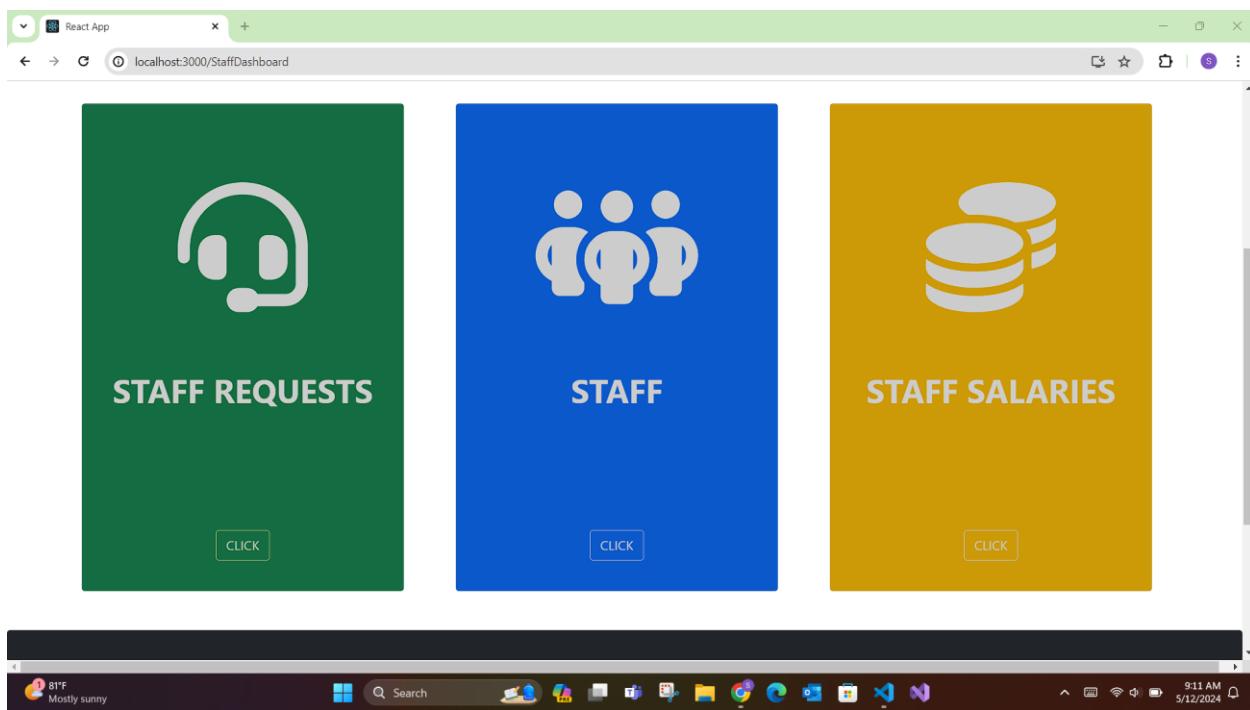
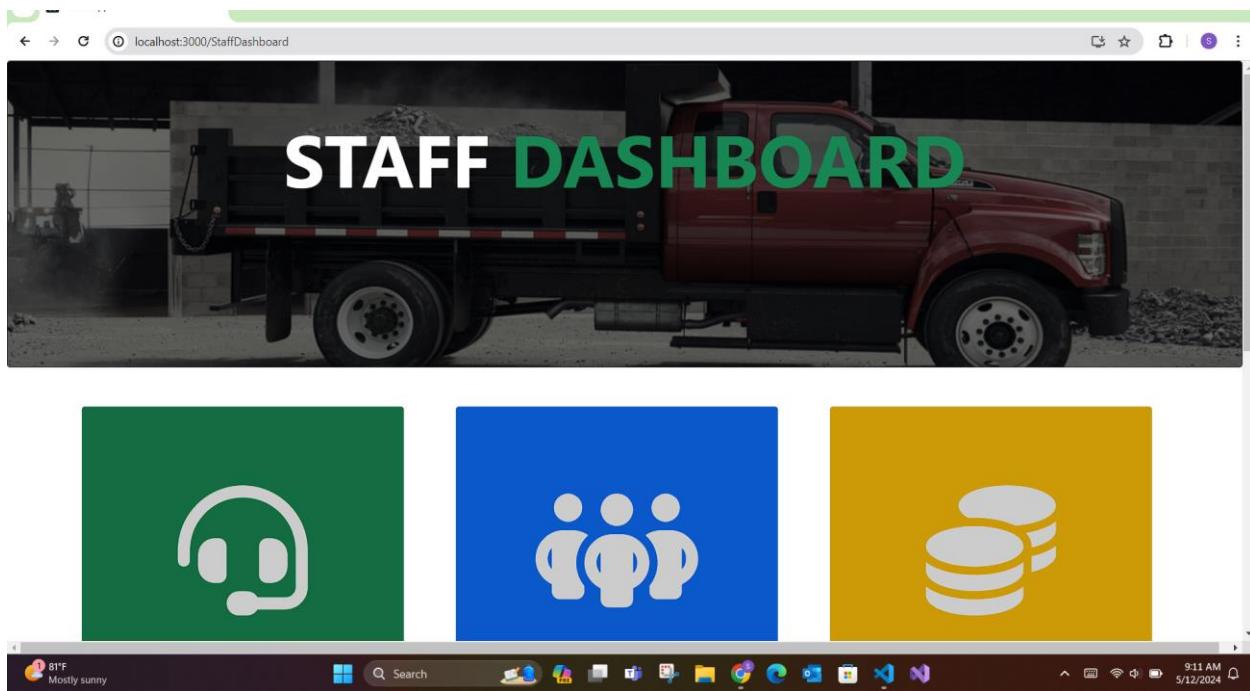
Organic waste composting is an eco-friendly method of recycling organic materials like food scraps, yard waste, and agricultural residues into nutrient-rich compost. By diverting organic waste from landfills and incinerators, composting helps reduce greenhouse gas emissions and enriches soil health. Our composting programs offer a convenient and sustainable solution for managing organic waste, turning it into a valuable resource for gardens, farms, and landscaping. Whether you're a homeowner, business owner, or community organization, our composting services provide an environmentally responsible way to dispose of organic waste while contributing to a greener future.

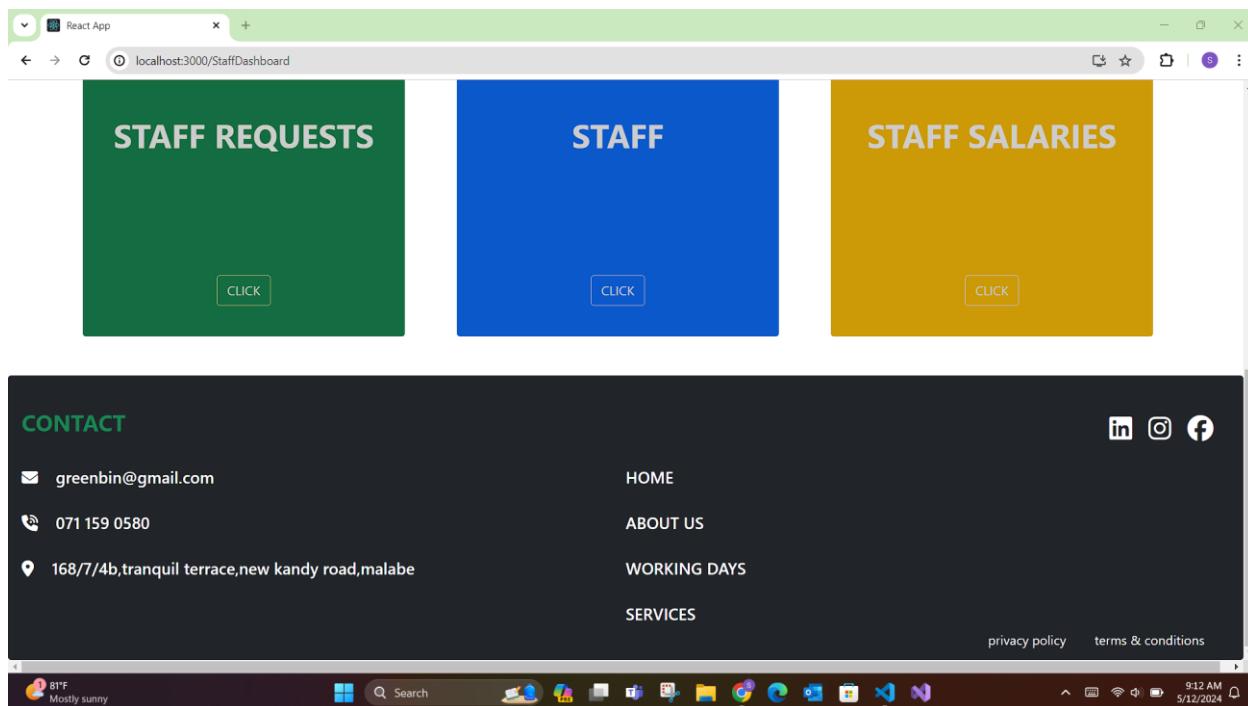
[Buy Now](#)

Product	Support	Resources
Pricing Book Demo Product updates SafetyCulture	Help Center Partner support API developer documentation Contact us	Checklist library App & software guides Checklist guides eBooks Blog

Together, let's pave the way to a cleaner, greener future. Join us in our mission for sustainable waste management.

Contact Us:  
Phone: 077-160-3864  
Email: info@greenbin.com





This screenshot shows a page titled 'VIEW STAFF REQUEST' with a background image of two people wearing high-visibility vests. Below the title is a table with columns: No, Number of Staff, Area of Work, Date, Contact No, and Status. A 'Download' button is located at the bottom of the table. The URL in the browser bar is 'localhost:3000/ViewStaffRequest'.

No	Number of Staff	Area of Work	Date	Contact No	Status
1	2	Office	2024-05-12	071 123 4567	Pending

**CONTACT** [privacy policy](#) [terms & conditions](#)

85°F Mostly sunny

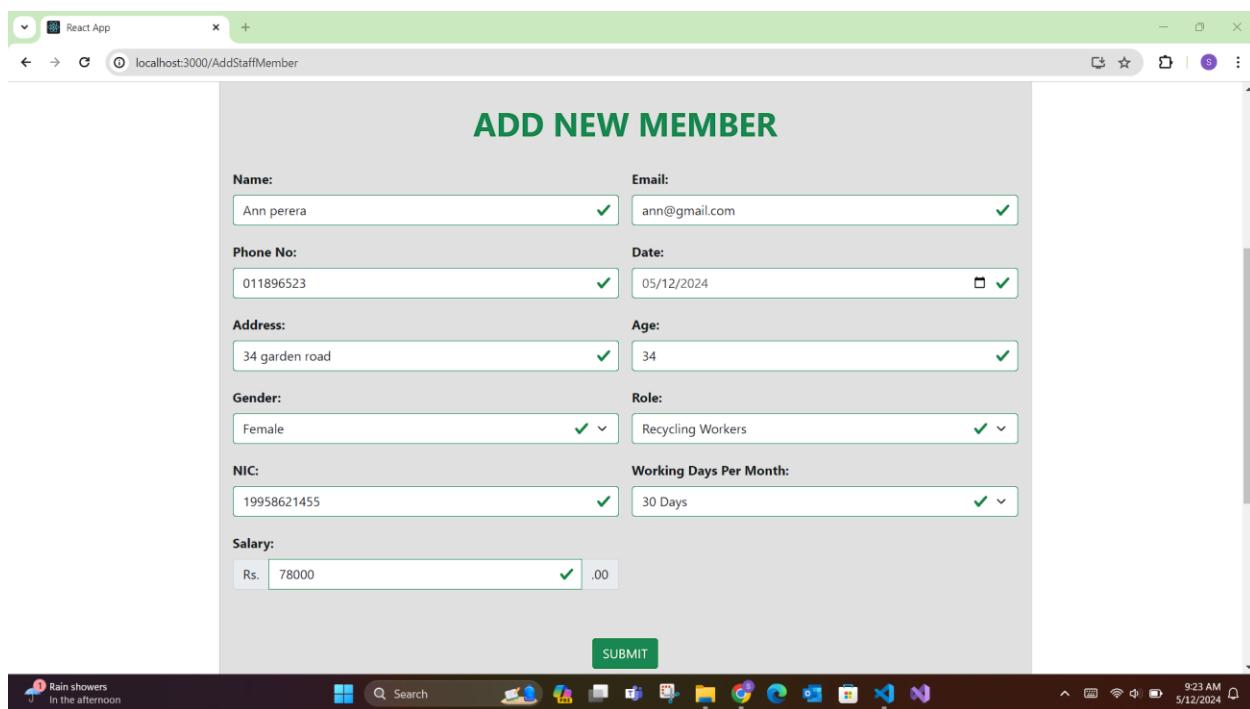
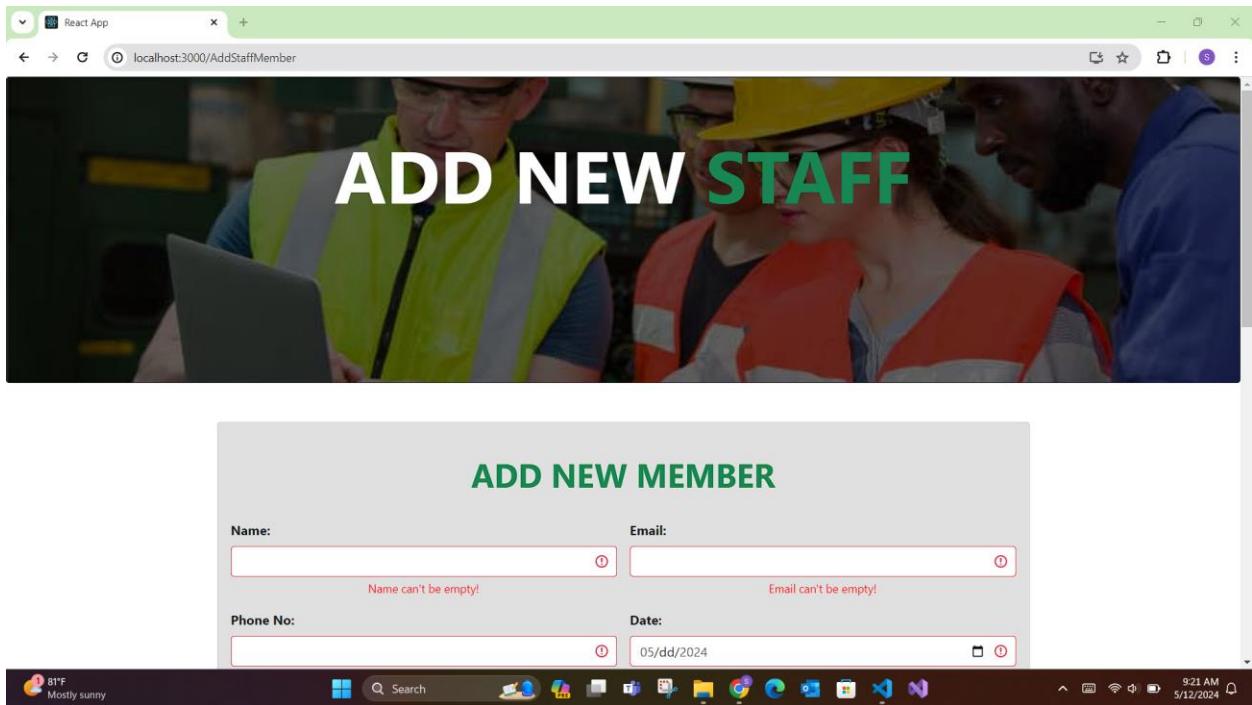
No	Name	Email	Phone	Date	Gender	NIC
1	ddd	dd@gmail.com	889	2024-04-20	Male	890
2	dev	dev@gmail.com	99	2024-04-25	Male	899
3	heshan	heshan@gmail.com	112856530	2024-05-13	Male	199656323215

No	Name	Email	Phone	Date	Gender	NIC
1	ddd	dd@gmail.com	889	2024-04-20	Male	890
2	dev	dev@gmail.com	99	2024-04-25	Male	899
3	heshan	heshan@gmail.com	112856530	2024-05-13	Male	199656323215

**CONTACT**

✉ greenbin@gmail.com  
📞 071 159 0580  
📍 168/7/4b,tranquil terrace,new kandy road,malabe

HOME  
ABOUT US  
WORKING DAYS  
SERVICES



NIC: 19958621455 Working Days Per Month: 30 Days

Salary: Rs. 78000 .00

**SUBMIT**

## CONTACT

✉ greenbin@gmail.com [HOME](#)  
 ☎ 071 159 0580 [ABOUT US](#)  
 ⚡ 168/7/4b,tranquil terrace,new kandy road,malabe [WORKING DAYS](#)  
[SERVICES](#)

[privacy policy](#) [terms & conditions](#)

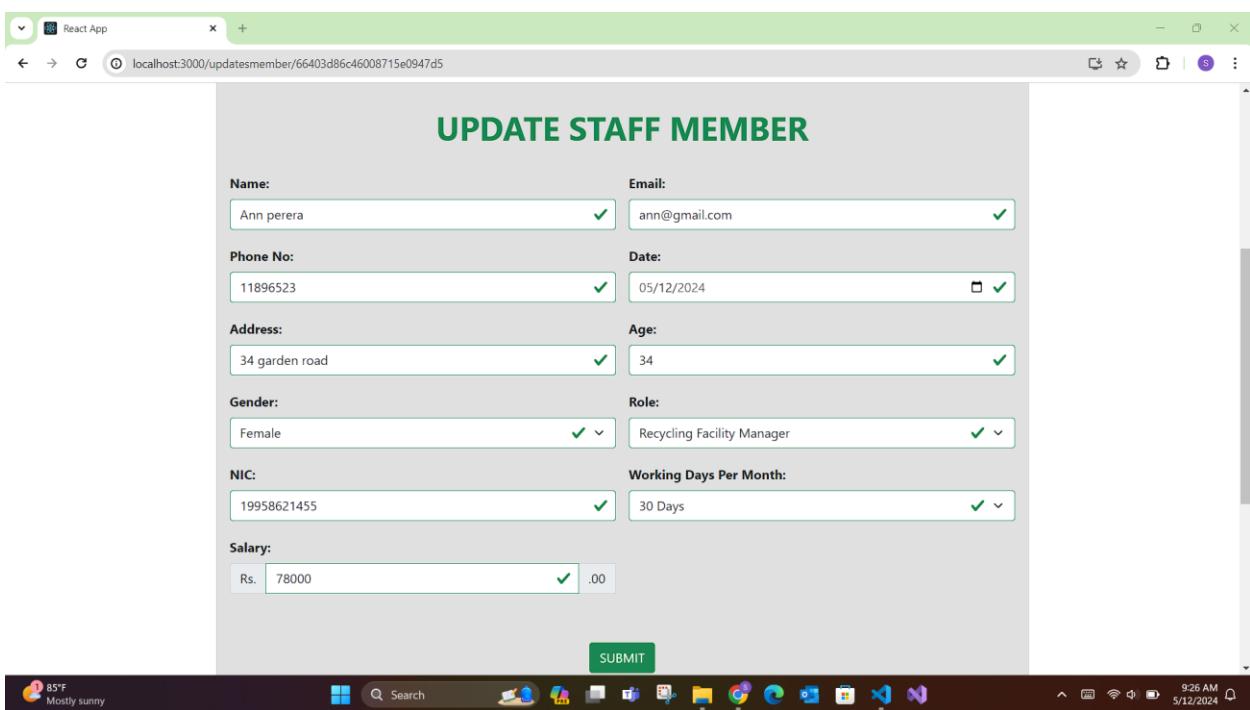
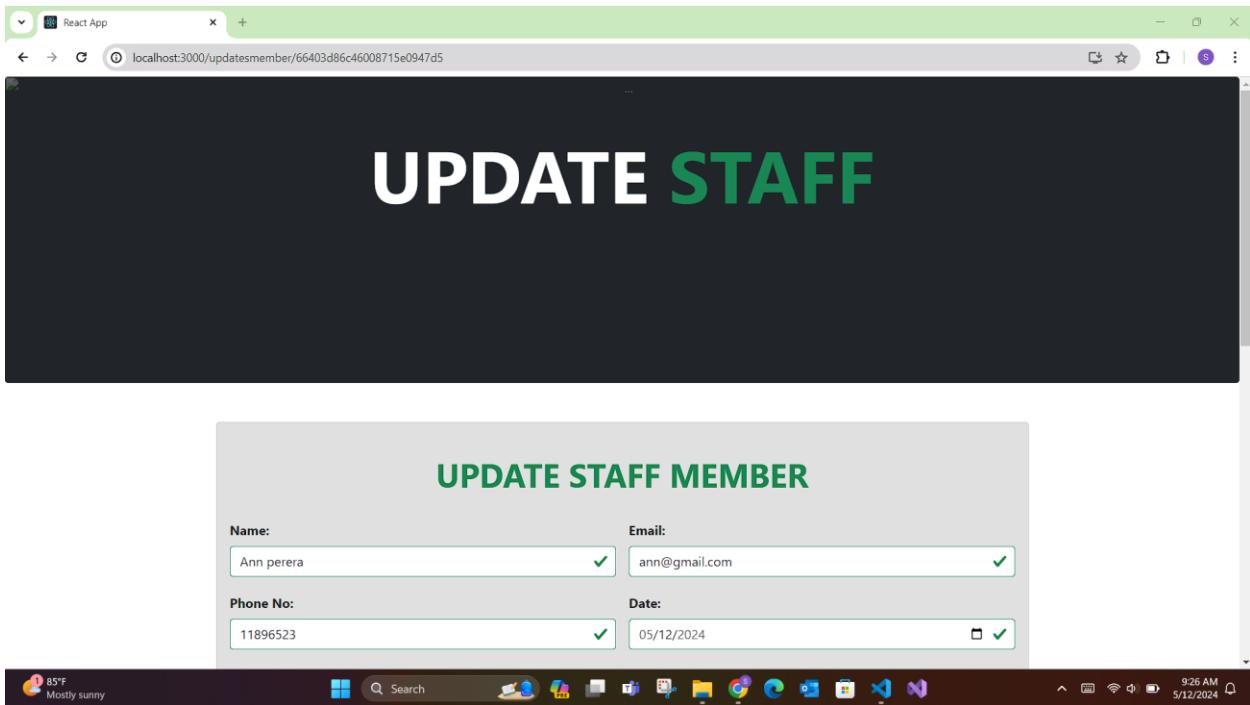
**ADD**

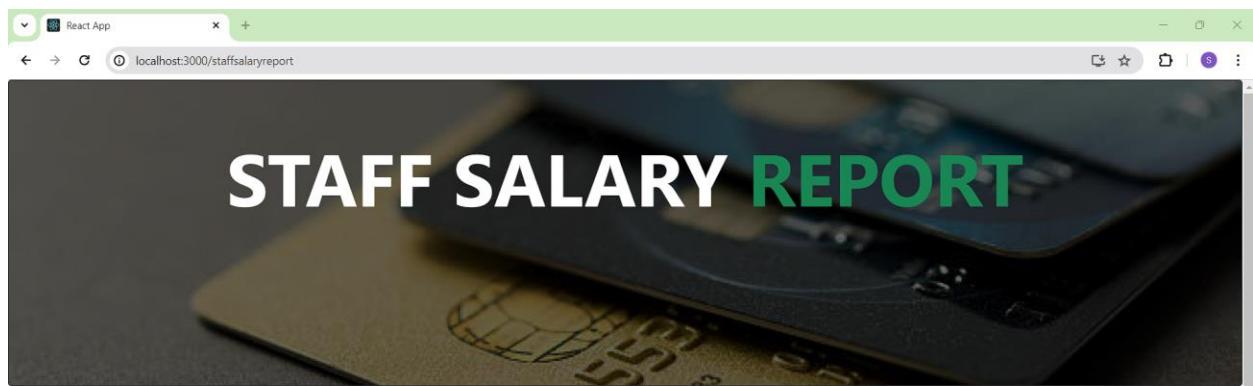
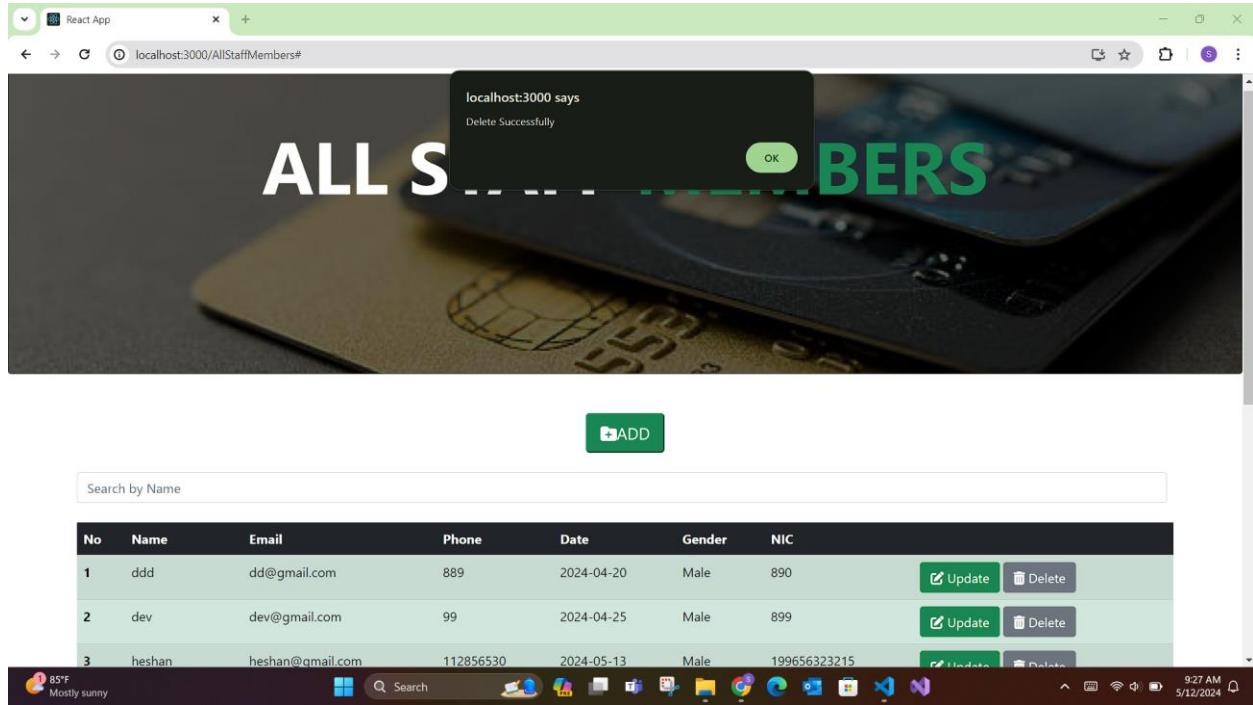
No	Name	Email	Phone	Date	Gender	NIC	Update	Delete
1	ddd	dd@gmail.com	889	2024-04-20	Male	890		
2	dev	dev@gmail.com	99	2024-04-25	Male	899		
3	heshan	heshan@gmail.com	112856530	2024-05-13	Male	199656323215		
4	Ann perera	ann@gmail.com	11896523	2024-05-12	Female	19958621455		

**Download**

## CONTACT

✉ greenbin@gmail.com [HOME](#)





React App

localhost:3000/staffsalaryreport

## STAFF SALARY REPORT

No	Name	Email	NIC	Date	Salary
1	ddd	dd@gmail.com	890	2024-04-20	8909
2	dev	dev@gmail.com	899	2024-04-25	78
3	heshan	heshan@gmail.com	199656323215	2024-05-13	80000
Total Staff Salary					Rs.88987

[Download](#)

CONTACT

✉️ greenbin@gmail.com

📞 071 159 0580

85°F Mostly sunny

LinkedIn Instagram Facebook

HOME ABOUT US

9:28 AM 5/12/2024

localhost:3000/staffsalaryreport#

No	Name	Email	NIC	Date	Salary
1	ddd	dd@gmail.com	890	2024-04-20	8909
2	dev	dev@gmail.com	899	2024-04-25	78
3	heshan	heshan@gmail.com	199656323215	2024-05-13	80000
Total Staff Salary					Rs.88987

Print 1 page

Destination: Save as PDF

Pages: All

Layout: Portrait

More settings

Save Cancel

3 heshan heshan@gmail.com 199656323215 2024-05-13 80000

85°F Mostly sunny

9:29 AM 5/12/2024

## Research & Development - IT22304506

### Research Hub

Welcome to the Research Hub: Where Ideas Flourish, Innovations Blossom, and Transformative Solutions Emerge for the Future of Garbage Management.

Research User Id : I--6YKH-yB

Name

Address

Title

Description

2024-05-12

Select the Garbage Management Research Categories

Select the checkboxes for waste reduction practices you have implemented for this research:

	Add Research	Update Research	Remove Research	View Research
<h3>Update Research</h3> <p>Research ID: Select Research ID <input type="button" value="▼"/></p> <p><input type="button" value="Update"/></p> <p>Title</p> <p>Name</p> <p>Address</p> <p>Description</p> <p>Date</p> <p>Environmental Science</p> <p><input type="checkbox"/> Composting   <input type="checkbox"/> Reducing   <input type="checkbox"/> Donating   <input type="checkbox"/> Energy   <input type="checkbox"/> Reuse   <input type="checkbox"/> Other</p>				

	Add Research	Update Research	Remove Research	View Research
<b>Research List</b>				
<b>Research ID: qRE5m-WSWo</b>				
Title: Promoting Sustainable Urban Development: Integrating Green Spaces into Urban Planning Strategies				
Category: Urban Planning				
Date: 2024-04-16T00:00:00.000Z				
<a href="#">Remove Research</a>				
<b>Research ID: xrQuK3c907</b>				
Title: Integrating Garbage Management Education into School Curricula: Fostering Environmental Awareness and Civic Responsibility				
Category: Education and Outreach				
Date: 2024-04-16T00:00:00.000Z				
<a href="#">Remove Research</a>				
<b>Research ID: FYi3en0HTo</b>				
Title: LeafEase: Redefining Sustainable Packaging with Banana Leaf Wraps				
Category: Environmental Science				
Date: 2024-04-16T00:00:00.000Z				
<a href="#">Remove Research</a>				

## Research Hub

Welcome to the Research Hub: Where Ideas Flourish, Innovations Blossom, and Transformative Solutions Emerge for the Future of Garbage Management.

Q

**Promoting Sustainable Urban Development: Integrating Green Spaces into Urban Planning Strategies**

Category: Urban Planning

Title: "Promoting Sustainable Urban Development: Integrating Green Spaces into Urban Planning Strategies" Name: Jane Smith Description: This research investigates the significance of incorporating green spaces into urban planning frameworks to foster sustainable urban development. It explores the multifaceted benefits of green infrastructure, including ecological, social, and economic advantages, and assesses its role in mitigating various urban challenges. The study examines case studies from diverse cities worldwide to analyze successful initiatives and strategies for integrating green spaces into urban planning. It investigates the impact of parks, urban forests, green roofs, and other green infrastructure elements on enhancing urban resilience, improving air quality, mitigating the urban heat island effect, and promoting social well-being." Status: Published Date: 2024-04-16T00:00:00.000Z



Research Hub Research Market Place

## Research Product Marketplace

Welcome to the Research Product Marketplace: Where innovative research findings are offered for sale to address challenges and advance various fields.

🔍



**LeafEase: Redefining Sustainable Packaging with Banana Leaf Wraps**

Price: \$250



**GreenWrap: Eco-Friendly Alternative to Bubble Wrap for Sustainable Packaging**

Price: \$500



**Biodegradable Alternative to Plastic Garbage Bags for Eco-Friendly Waste Management**

Price: \$150

[View Cart \(0\)](#)

Close



**LeafEase: Sustainable Banana Leaf Wraps**

Price: \$250

Imported from India, Leaf Ease is a step towards reducing waste and promoting sustainable packaging solutions.

1

[Add to Cart](#)



**GreenWrap: Eco-Friendly Alternative to Bubble Wrap for Sustainable Packaging**

Price: \$500

1

[Add to Cart](#)



**Biodegradable Alternative to Plastic Garbage Bags for Eco-Friendly Waste Management**

Price: \$150

1

[Add to Cart](#)

[View Cart \(2\)](#)



### Purchase Details

**Purchase Details****Name:** Biodegradable Alternative to Plastic Garbage Bags for Eco-Friendly Waste Management**Price:** \$150**Quantity:** 1**Total Price:** \$150 **Name:** GreenWrap: Eco-Friendly

Alternative to Bubble Wrap for Sustainable Packaging**Price:** \$500**Quantity:** 1**Total Price:** \$500 **Total:** \$650

[Download Report](#)

[Confirm](#)



## Product Management

The screenshot shows the 'Inventory' section of the GreenBin application. On the left, a sidebar menu includes 'Dashboard', 'Inventory', 'Create listing', and 'Orders'. The main area is titled 'Inventory' and contains a search bar with placeholder 'Search..'. Below the search bar is a table with columns: IMAGE, PRODUCT ID, NAME, EDIT, and DELETE. Three items are listed:

IMAGE	PRODUCT ID	NAME	EDIT	DELETE
	66247ff4abccb0db2e83fac2	Garbage Pedal Bin	EDIT	DELETE
	66248207abccb0db2e83fac5	Swing Lid Bin	EDIT	DELETE
	662482ababccb0db2e83fac8	Square Bin	EDIT	DELETE

The screenshot shows the 'Create a Listing' form. The sidebar menu on the left is identical to the previous screenshot. The main area is titled 'Create a Listing' and contains several input fields and instructions:

- Name:
- Description:
- Price:
- Quantity:
- Images: The first image will be the cover (max 6)  
Choose Files
-

**Green Bin**

**Dashboard**

- [Inventory](#)
- [Create listing](#)
- [Orders](#)

### Update The Listing

**Garbage Pedal Bin**

Size: (LxWxH) : 540x490 x720 mm

1269      Price

Images: The first image will be the cover (max 6)

 No file chosen

UPLOAD

DELETE

**Green Bin**

**Dashboard**

- [Inventory](#)
- [Create listing](#)
- [Orders](#)

Search by Customer Name:

ORDER ID	CUSTOMER DETAILS	DATE	PRODUCT	QUANTITY	STATUS	PRINT LABEL
66280e3b283d88a1fbff66e5	rasdidd asdasdada 715111582	24/04/2024	toranaga	5	<input type="button" value="Select..."/> <input type="button" value="Print Label"/>	
66280e58283d88a1fbff66e8	asdadasda 715111582	24/04/2024	toranag	5	<input type="button" value="Select..."/> <input type="button" value="Print Label"/>	
66375ae844dc331ae8a3e404	rasdidd 14817 colombo 0764362185	05/05/2024	Swing lid bin	3	<input type="button" value="Select..."/> <input type="button" value="Print Label"/>	

## Task Management - IT22341518

Schedule   Contact   My Account

**Green Bin Garbage Management**

Request for a Vehicle   Request for a route   Create a task

**Task Management**

	Task Name	Property Type	Service	Other Services	Actions
1	Nimal	home	municipalities	yt	<a href="#">Update Task</a> <a href="#">Delete Task</a>
2	Kamal	home	municipalitiesBusiness	No	<a href="#">Update Task</a> <a href="#">Delete Task</a>
3	Nimal	home	municipalitiesBusiness	No	<a href="#">Update Task</a> <a href="#">Delete Task</a>
4	Nimal	home	municipalitiesBusiness	No	<a href="#">Update Task</a> <a href="#">Delete Task</a>
5	Nimal	home	municipalitiesBusiness	No	<a href="#">Update Task</a> <a href="#">Delete Task</a>
6	Nimal	home	municipalitiesBusiness	No	<a href="#">Update Task</a> <a href="#">Delete Task</a>
7	Dinula	home	wasteRecycling	gyug	<a href="#">Update Task</a> <a href="#">Delete Task</a>

Activate Windows  
Go to Settings to activate Windows.

Schedule   Contact   My Account

**Green Bin Garbage Management**

Request for a Vehicle   Request for a route   Create a task

**Vehicle Requests**

**First Name**

**Last Name**

**Type of Service Requested**

**Frequency of Service**

**Preferred Collection Days or Schedule**

**Type and Amount of Waste**

**Notifications**

First Name: Kapila  
Last Name: Jayasundara  
Type of Service Requested: garbageCollection  
Frequency of Service: monthly  
Preferred collection Days or Schedule: Weekdays  
Type and Amount of Waste: E waste 5tons  
Special Instructions for Requests: Nothing  
Property Type: commercial

[Update Request](#) [Delete Request](#)

First Name: KAPILA

Activate Windows  
Go to Settings to activate Windows.

Schedule   Contact   My Account

Green Bin Garbage Management   Request for a Vehicle   Request for a route   Create a task

**Route Requests**

**Location Details**  
Address or location coordinates...

**Type and Amount of Waste**  
Type and amount of waste...

**Preferred Collection Time**  
Preferred collection time or schedule...

**Special Instructions**  
Special instructions or requests...

**Contact Information**  
Your contact information...

**Submit**

**Notifications**

Location Details: Colombo  
Type and Amount of Waste: E-Waste  
Preferred Collection Time: Evening  
Special Instructions: Nothing  
Contact Information: 1234@gmail.com

**Update Request**   **Delete Request**

Location Details: Colombo  
Type and Amount of Waste: E-Waste 5 tons  
Preferred Collection Time: Evening

Activate Windows  
Go to Settings to activate Windows.

Schedule   Contact   My Account

Green Bin Garbage Management   Request for a Vehicle   Request for a route   Create a task

**Garbage Collection Service Request Form**

**User Name:**

**Property Type:**  Select Property Type

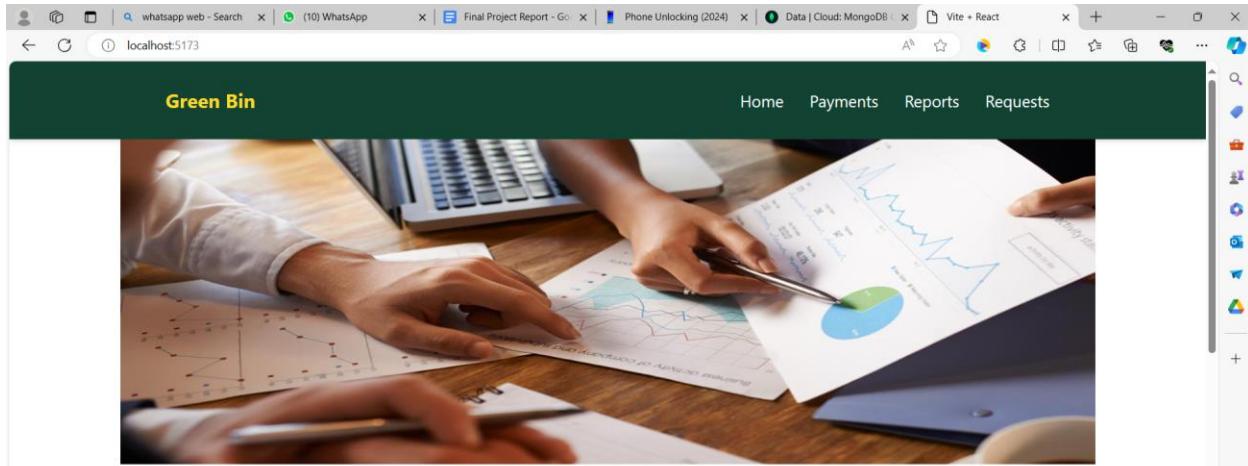
**Choose the Service:**  Select Service

**Enter Other Service:**

**Submit Request**

**Notifications**

Activate Windows  
Go to Settings to activate Windows.



## WHO WE ARE

We are Sri Lanka's first on-demand mobile platform that facilitates a sustainable waste management solution for the end-user. We aim to provide convenient waste management solutions while educating users on the benefits of recycling. Eco Friends by Neptune focuses on helping households, and enterprises with a better and sustainable waste management process while supporting the entire ecosystem and key stakeholders.

The Eco Friends app was launched in 2019 as a technology-enabled waste management concept designed, developed, and operated by a few eco-conscious founders. Identifying the gap in the existing waste management process, a solution was built to provide a convenient and efficient disposal service that perfectly suits the busy lifestyles of today's consumers. The process also ensures that there is no leakage of waste into the environment within operations. The end-to-end service starts from the collection to the disposal of waste in a sustainable manner and all collected recyclable material is segregated and redistributed for the recycling process. EcoFriends goes further from the traditional waste collection with its Collect – Recycle – Reward model.

## Our Team

Name	ID	Contact
Kavinga Aluwihare	FM3456	+1 123-456-7890
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**Green Bin**

Home Payments Reports Requests

**Payment Form**

Card Number:

Amount:  Enter amount...

Expiration Month:  Enter expiration month...

Expiration Year:  Enter expiration year...

CVN:  Enter CVN...

**Submit Payment**

**Notifications**

Card Number: 267984630966  
Amount: 17800  
Expiration Month: 06  
Expiration Year: 2030  
CVN: 876

**Update Payment** **Delete Payment**

Card Number: 076394250872  
Amount: 1000  
Expiration Month: 12  
Expiration Year: 2026  
CVN: 236

**Update Payment** **Delete Payment**

Card Number: 983200724439  
Amount: 1500  
Expiration Month: 09  
Expiration Year: 2028  
CVN: 234

**Update Payment** **Delete Payment**

Type here to search deer icon grid icon refresh icon home icon envelope icon circle icon star icon cross icon 7:29 PM 5/12/2024

**Green Bin**

Home Payments Reports Requests

**Financial Report**

Date:  mm/dd/yyyy

Income Amount:  Enter income amount...

Amount of Expenditure:  Enter amount of expenditure...

Special Notes:  Enter special notes...

**Submit**

**Notifications**

Date: 2024-05-30T00:00:00.000Z  
Income Amount: 1000  
Amount of Expenditure: 500  
Special Notes: updated amount

**Update** **Delete** **Download PDF**

Date: 2024-05-10T00:00:00.000Z  
Income Amount: 500  
Amount of Expenditure: 2000  
Special Notes: added to the financial report and send the pdf to administration

**Update** **Delete** **Download PDF**

Date: 2024-05-30T00:00:00.000Z  
Income Amount: 3000  
Amount of Expenditure: 1000  
Special Notes: its reported

**Update** **Delete** **Download PDF**

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## Chapter 4

### Testing

#### Customer Management (IT22338334)

**Test Case:** Test user authentication.

Test ID	Test Inputs	Comments	Actual Output
Test 01	User Name: hasini Password:123	Enter username and password that has not yet being registered	User not found!
Test 02	User Name: deshan Email: deshan@gmail.com Password:1234	Registered properly in the signup page and redirect in to the signin page after the registering	User registered successfully !
Test 03	User Name: deshan Email: deshan Password: 12345	User registered with incorrect email address	Please include an '@' in the email address.'des han' is missing an '@'
Test 04	User Name: deshanM Email: deshan@gmail.com Password: 123456	User registered with a unique username but not unique with the email address.	Error from the function
Test 05	User Name: deshan madawa Email: deshanmadawa@gmail.com Password: 1234	User registered with a unique username and the email address but not unique with the password	User registered successfully !

Test 06	User Name: deshan madawa12 Email: deshanmadawa34@gmail.com Password: 12345	User update the username,password and the email after registering successfully.	User is updated Successfully !
Test 07	Changed the profile image by adding image	Generate user files and upload images only.	Image Successfully uploaded!
Test 08	Changed the profile image by adding videos or files	Upload the video or file into the profile image	No Items match your search

## **Staff Management (IT22321022)**

**Test Case:** Test Staff members registration

<b>Test ID</b>	<b>Test Inputs</b>	<b>Comments</b>	<b>Actual Output</b>
Test 01	Name: Hasini Email: Phone No: Date: Address; Age: Gender: Role: NIC: Working days per month:	Email,Phone No,Date,Address,Age,Gender,Role,NIC, Working days per month can not be empty	Registration Unsuccessful!!
Test 02	Name: Hasini Email: Hasini Phone No:0111 Date:2023/02/02 Address;65 new road Age:23 Gender: Female Role: Cleaner NIC:199878827265 Working days per month: 21 days	Please include an '@' in the email address.'Hasini' is missing an '@'	Registration Unsuccessful!!
Test 03	Name: Hasith Email: hasini@gmail.com Phone No:0112211w Date:2024/03/10 Address;56 new road Age:34 Gender: male Role: driver NIC:20016756728 Working days per month: 7days	Phone number can not include letters	Registration Unsuccessful!!

Test 04	Name: john Email: john@gmail.com Phone No:07718181191 Date:2023/09/18 Address;67 new road Age:24 Gender: male Role: supervisor NIC:20022232112334 Working days per month: 7days	Date should be today or within week	Registration Unsuccessful!!
Test 05	Name: Hasini Email: Phone No: Date: Address; Age: Gender: Role: NIC:1998565444e Working days per month:	NIC can not include letters except 'v' or 'V'	Registration Unsuccessful!!
Test 06	Name: Hasini Email: hasini@gmail.com Phone No:011245561222111 Date:2024/03/09 Address; 45 new road Age:34 Gender: male Role:ccleaner NIC:19987383929382v Working days per month: 14days	Phone number can not exceed 10 digits	Registration Unsuccessful!!!

Test 07	Name: Hasini Email: hasini@gmail.com Phone No:0112567891 Date:2024/04/28 Address;56 new road Age:23 Gender: Female Role: cleaner NIC:96778628188v Working days per month:21 days		Registration successful!!!
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## **Finance Management**

**Test Case :** Create financial report

<b>Test ID</b>	<b>Test Inputs</b>	<b>Comments</b>	<b>Actual Output</b>
Test 01	Card Number: Valid 12-digit number Amount: Valid amount (e.g., 1000.50) Expiration Month: Valid month (e.g., 05) Expiration Year: Valid future year (e.g., 2025) CVN: Valid 3-digit number	Ensure all fields are filled correctly.	Form submission succeeds, and the console logs "Form submitted successfully".
Test 02	Card Number: Less than 12 digits or non-numeric Amount: Valid amount Expiration Month: Valid month Expiration Year: Valid future year CVN: Valid CVN	Card number fails validation.	Error message displayed next to the Card Number field.
Test 03	Card Number: Valid 12-digit number Amount: Invalid amount format (e.g., text instead of number)	Amount format does not match the required format	Error message displayed next to the Amount field.

	Expiration Month: Valid month Expiration Year: Valid future year CVN: Valid CVN		
Test 04	Card Number: Valid 12-digit number Amount: Valid amount Expiration Month: Month in the past (e.g., 04 for April) Expiration Year: Current or past year CVN: Valid CVN	Expiration date is invalid due to being in the past.	Error message displayed next to the Expiration Month or Year field.
Test 05	Card Number: Valid 12-digit number Amount: Valid amount Expiration Month: Valid month Expiration Year: Valid future year CVN: Less than 3 digits or non-numeric	CVN format does not match the required format	Error message displayed next to the CVN field.

## **Vehicle Management (IT22369574)**

**Test case :** Test Vehicle Registration

<b>Test ID</b>	<b>Test Inputs</b>	<b>Comments</b>	<b>Actual Output</b>
Test 01	Name: Side loader garbage truck VehicleID: Work: CurbWeight: FuelType: FuelCapacity:	VehicleID, Work, CurbWeight,FuelType, FuelCapacity can not be empty.	Registration unsuccessful!
Test 02	Name: Side loader garbage truck VehicleID: JK045 Work: Garbage Collection CurbWeight: thousand FuelType: FuelCapacity:	CurbWeight can not be a String it is an Integer number	
Test 03	Name: Side loader garbage truck VehicleID: JK045 Work: Garbage Collection CurbWeight: 1000 FuelType: Petrol FuelCapacity:Two Thousand	FuelCapacity can not be a String it is an Integer number	
Test 04	Name: Side loader garbage truck VehicleID: JK045 Work: Garbage Collection CurbWeight: 1000 FuelType: Petrol FuelCapacity:2000		Registration successful!

## **Route Management (IT22032942)**

**Test case :** Create the unique routes

Test ID	Test inputs	Comments	Actual Output
Test 01	Number:RN01 StartLocation:Kaduwela endLocation:Malabe noOfHouses:4 house Addresses:"Wickrama",Kaduwela,Colombo. "piyasa",Kaduwela,Colomb o. date:2022.04.23	In Number first two letters need to be capital english letters.	Registration unsuccessful!
Test 02	Number:RN01 StartLocation:Kaduwela endLocation:Malabe noOfHouses:4 house Addresses:"Wickrama",Kaduwela,Colombo. "piyasa",Kaduwela,Colomb o. date:2022.04.23	In Start location first letter must be a capital english letter.	Registration unsuccessful!
Test 03	Number:RN01 StartLocation:Kaduwela endLocation:Malabe noOfHouses:4 house Addresses:"Wickrama",Kaduwela,Colombo. "piyasa",Kaduwela,Colomb o. Date:2022.04.23	In End location fist letter must be a capital english letter.	Registration unsuccessful!

Test 04	Number:RN01 StartLocation:Kaduwela endLocation:Malabe noOfHouses:4 house Addresses:"Wickrama",Kaduwela,Colombo. "piyasa",Kaduwela,Colomb o. date:2022.04.23	In No of houses maximum limit is 40 and minimum limit is 10	Registration unsuccessful!
Test 05	Number:RN01 StartLocation:Kaduwela endLocation:Malabe noOfHouses:4 house Addresses:"Wickrama",Kaduwela,Colombo. "piyasa",Kaduwela,Colomb o. date:2022.04.23	In date, can only select the days after today cant select the days before the today.	Registration unsuccessful!

## **R & D Management**

**Test case : Test Research Publication**

<b>Test ID</b>	<b>Test Inputs</b>	<b>Expected Outputs</b>	<b>Actual Outputs</b>	<b>Result</b>	<b>Comenet</b>
1	Valid input data for all fields including image uploads	Form submission successful, no error messages	As expected	Pass	All inputs are valid, form submitted successfully
2	Missing required fields	Error message displayed for missing fields	As expected	Pass	Validation for checkboxes works properly
3	Selecting no checkboxes for waste reduction practices	Error message displayed prompting to select at least one checkbox	As expected	Pass	Validation for checkboxes works properly
4	Selecting a category from the dropdown	No error message displayed for category selection	As expected	Pass	Category selection validation works
5	Selecting "IS THIS RESEARCH ABOUT A PRODUCT?" checkbox without filling price and	Error message displayed prompting to fill both price and importance fields	As expected	Pass	Validation for product fields works

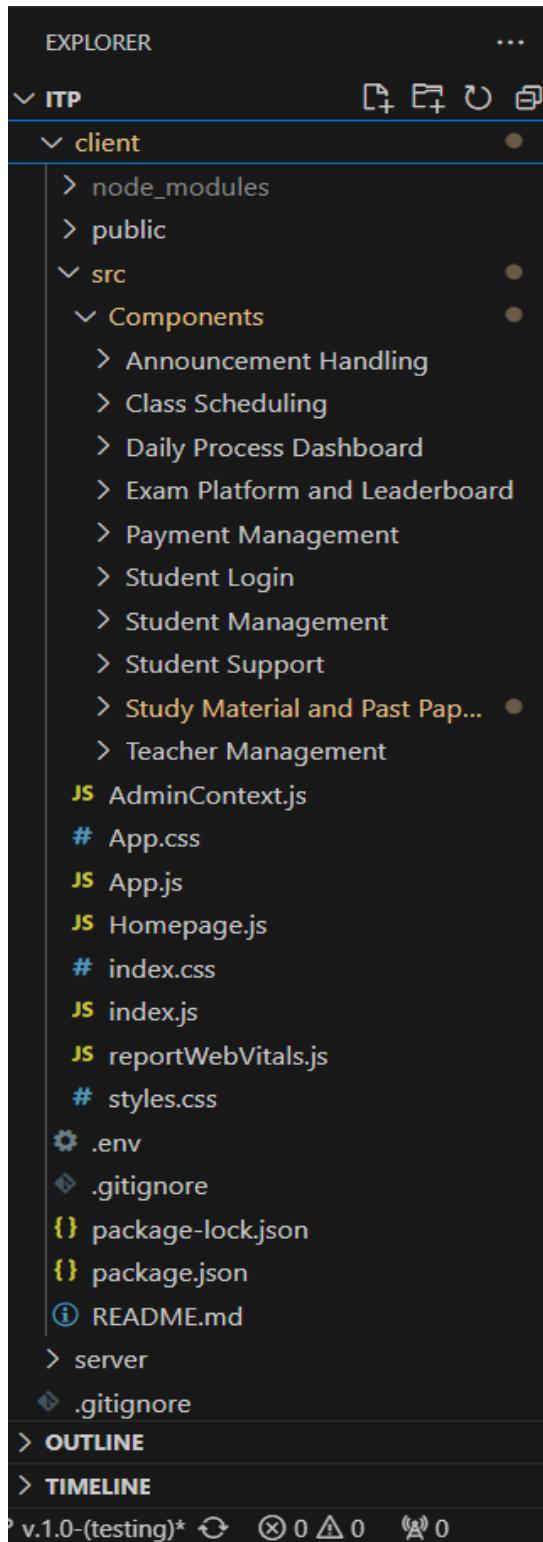
	importance				
6	Uploading more than 6 images	Error message displayed for maximum photo limit exceeded	As expected	Pass	Max photo limit validation works
7	Uploading no images	Error message displayed for at least one photo required	As expected	Pass	Min photo limit validation works
8	Submitting the form with valid inputs and images	Form submission successful with no error messages	As expected	Pass	Overall form validation works

## **Product Management (IT22584854)**

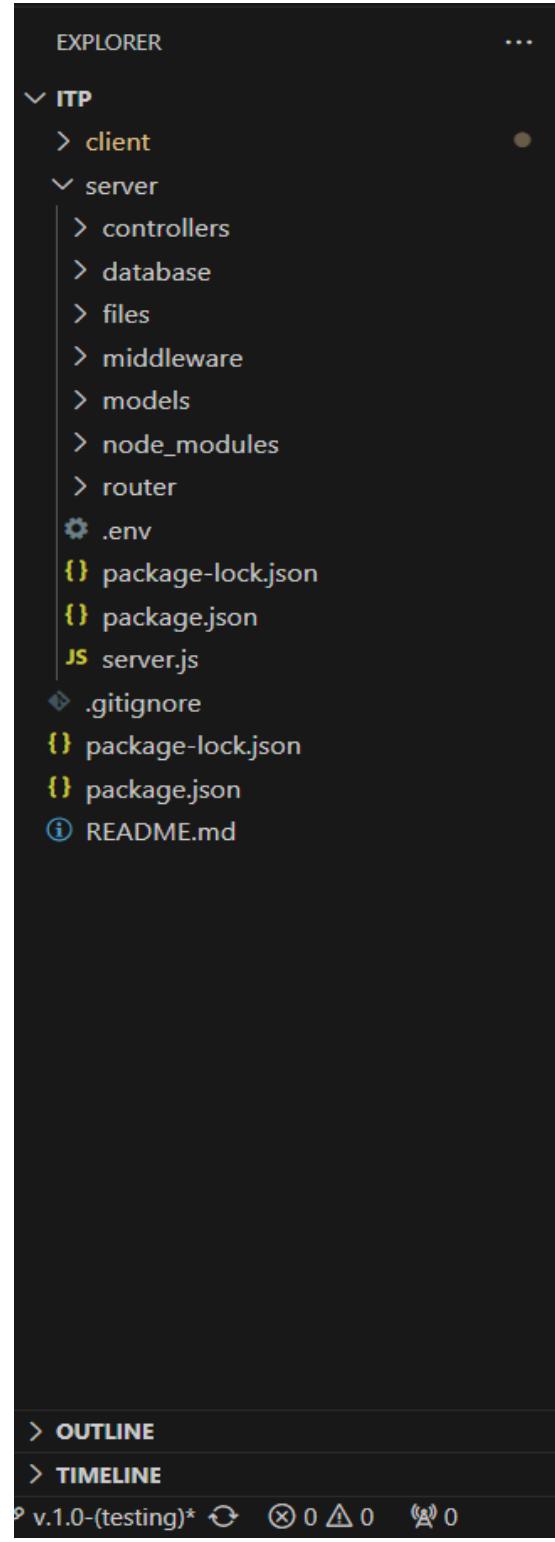
Test Id	Description	Pre-Condition	Steps	Expected Results	Pass/Fail
1	Verify that Inventory manager add product to inventory successfully .	<ul style="list-style-type: none"> <li>· User has access to the create listing functionality.</li> </ul>	<ol style="list-style-type: none"> <li>1. Login to the system as an Inventory manager.</li> <li>2. Add product details and create a listing.</li> </ol>	<p>Product details store in the database and show successful message</p> <p>The product visible on the customer product page.</p>	Pass
	Verify Inventory Manager can edit existing product information successfully .	<ul style="list-style-type: none"> <li>· An existing product in the inventory system.</li> </ul> <p>Inventory manager account with access to edit product listings exists.</p>	<ol style="list-style-type: none"> <li>1. Login to the system using the inventory manager account credentials.</li> <li>2. Navigate to the product management section of the system</li> <li>3. select the existing product to be edited.</li> <li>4. Edit specific product details (e.g., update product description, adjust price) and submit</li> </ol>	<p>The system successfully updates the product information in the database.</p> <p>The updated product information is reflected on the product page when accessed.</p>	Pass

## Code Structure

Client



Server



## Chapter 5

### **Evaluation and Conclusion**

#### **Evaluation**

The test findings paint a clear picture of the functionality and effectiveness of the waste management system. Strict testing throughout several modules reveals the robustness and dependability of the system. It exhibits a keen grasp of data validation in user authentication and registration, handling both accurate and inaccurate inputs with ease and guaranteeing a flawless registration procedure. Staff management tests probe the system's capacity to preserve data integrity, precisely identifying errors such as improper data types or invalid email formats. Evaluations of finance, vehicles, and route management highlight how well the system handles complicated data validations, ranging from logistical specifics to financial details. Tests conducted on the research and development module demonstrate a high level of attention to detail, especially when it comes to image uploads and form submissions, demonstrating the system's flexibility to.

#### **Conclusion**

The thorough assessment of the waste management system by means of extensive testing across several modules demonstrates its resilience and dependability in managing crucial functionalities. The system shows a strong ability to process a variety of data inputs, preserve data integrity, and offer a smooth user experience, from user authentication to product administration. Users may interact with the system with confidence and efficiency because of the comprehensive validation tests, efficient error management procedures, and understandable validation messages. The system's readiness for practical implementation is confirmed by these test findings, providing a solid solution for businesses looking to maximize waste management operations, boost operational effectiveness, and raise overall productivity. The system is a useful asset in the waste management industry because of its user-friendly interfaces, capacity to adapt to various data formats, and dedication to data accuracy.

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