Crips Aqua plants Exporting System
Final Project Report

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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.

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Abstract

The Crips Aqua Plants Exporting System is a comprehensive web-based platform developed to modernize the operational framework of Ruvini Aqua Plants Lanka (Private) Limited, a leading aquatic plant exporter in Sri Lanka. Designed to replace inefficient Excel-based management, Crips integrates cultivation, inventory, sales, and transport operations into a centralized system, enhancing efficiency, accuracy, and scalability. Built using the MERN stack (MongoDB, Express.js, React.js, Node.js) with JWT-based authentication, the system supports diverse user roles, including System Managers, Customers, Grower Handlers, Inventory Managers, Sales Managers, Cutters, and Transport Managers. Key features include real-time environmental monitoring, dynamic stock and task management, automated notifications, and advanced analytics for data-driven decision-making. The project adopts an Agile methodology, ensuring iterative development, rigorous testing and seamless integration. Commercialization strategies leverage a SaaS model targeting global aqua plant exporters, with innovative elements like dynamic support ticketing, role-based user management, and real-time shipment tracking. Despite pending features such as GPS integration and advanced reporting, Crips significantly improves operational coordination, reduces manual errors and positions the client for sustained growth in the competitive aquatic plant export industry.

Acknowledgement

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1. Introduction

1.1 <u>Background</u>

Crips is a modern web-based application designed to revolutionize the aquatic plant export industry by replacing traditional, error-prone Excel-based management systems with a centralized, real-time platform. This innovative system streamlines operations such as cultivation, inventory tracking, order processing and logistics coordination, thereby enhancing overall efficiency and accuracy across the entire export process.

This project is developed for Ruvini Aqua Plants Lanka (Private) Limited, a pioneering aquatic plant propagation company in Sri Lanka with a rich history spanning over 35 years. Founded by Erwin J. Fernando, the company originally made its mark in the agriculture sector by introducing the "Mud Pond Culture" method in 1966, which was widely adopted in freshwater fish breeding. In 1992, the business expanded its focus to provide unique, value-added aquarium plants under the Aqua Plants Lanka brand, solidifying its reputation in the export market. In 2009, the company further advanced its production capabilities by adopting tissue culture propagation techniques, ensuring the highest quality and consistency in its products.

Currently, the company is under the leadership of Mr. Sanjaya A. Fernando, our client. Mr. Fernando continues to build on the legacy of his father by steering the company towards sustained growth and innovation. His vision is to modernize the industry by leveraging technology to enhance operational efficiency, reduce manual errors, and improve overall customer experience.

Crips is tailored to meet these objectives by providing a scalable, integrated platform that supports the company's diverse operations—from cultivation and stock management to order fulfillment and transport logistics. This digital transformation initiative is expected to not only streamline administrative processes but also empower the company to expand its market reach and reinforce its position as a trusted leader in the global aquatic plant industry.

The client's company specializes in aquatic plant exports, as seen in the images sourced from their information website.

Figure 1.1 - Images of Ruvini Aqua Plants Lanka (Private) Limited

1.2 Problems and Motivation

1.2.1 Problems

The current system relies on manual Excel-based data management, which leads   to inefficiencies, human errors and a lack of real-time monitoring. Additionally,   poor coordination between processes creates delays and miscommunication,   making it difficult to scale operations effectively.

Current Problem & Process:

1. Inefficient Data Management – Plant records, inventory and customers are tracked manually using Excel, increasing the chances of errors   and duplication.

2. Lack of Real-Time Monitoring – Environmental conditions such as temperature, pH, and humidity are not monitored in real-time, leading   to delays in addressing critical issues.

3. Poor Coordination Between Teams – Different roles such as handlers, cutters, and inventory managers, lack a centralized system to   communicate   and track tasks efficiently.

4. Limited Scalability – As the business grows, the current system becomes harder to manage, making expansion difficult.

1.2.2 Motivations

This project aims to replace inefficient manual processes with an automated   system that enhances accuracy, improves coordination and supports business   growth simultaneously. Our motivation is to provide the client with a modern yet   scalable system

1. Improved Accuracy & Efficiency – Automating data entry and management reduces errors and improves reliability.

2. Real-Time Monitoring – A centralized dashboard enables real-time tracking of environmental conditions and inventory levels.

3. Seamless Process Integration – Different teams can collaborate smoothly, reducing delays and improving overall workflow.

1.3. Literature Review

The export of aquatic plants is a rapidly growing global industry fueled by increasing demand for environmental restoration and ornamental aquariums. However, exporters face significant challenges including inefficient inventory management, lack of automation, compliance with trade regulations, plant health monitoring, and poor customer engagement. This review examines the limitations of current systems and introduces a proposed digital solution aimed at modernizing the aqua plant export process. The proposed **web-based system** integrates six key management modules to address industry needs:

1. **Plant Management System**: Automates plant health tracking using IoT sensors and diagnostic tools, enabling real-time updates on plant condition, task assignments, and minimizing wastage.
2. **Customer Service Management System**: Enhances customer experience through digital order tracking, feedback management, registration, and support ticket processing—replacing outdated manual communication methods.
3. **Administrative Management System**: Centralizes control over supplier orders, employee registrations, customer interactions, and notifications, improving overall stakeholder management.
4. **Stock and Inventory Management System**: Replaces inefficient paper-based inventory tracking with a digital database that supports real-time stock updates, transaction recording, and order automation.
5. **Sales and Report Management System**: Automates report generation on sales, customer behavior, and product performance to support data-driven decision-making and operational efficiency.
6. **Transport Management System**: Ensures quality control during delivery through real-time logistics monitoring and vehicle management, addressing issues with plant spoilage due to poor transport conditions.

Existing businesses in Sri Lanka often rely on outdated manual systems, leading to inefficiencies and missed opportunities in international trade. The proposed system leverages automation, digitization, and IoT technology to create a smart, scalable, and efficient platform tailored for the aqua plant export industry.

Conclusion: Transitioning to a digital platform is essential for competitive advantage in the aqua plant export market. By integrating modern management tools, this system aims to streamline operations, enhance customer satisfaction, and boost export quality—positioning businesses for sustainable growth in a global marketplace.

1.4 Aims and Objectives

1.4.1. Aim
The aim of this project is to design and develop "Crips – Aqua Plants Export System", a web-based platform that integrates multiple business processes into a centralized system to streamline plant cultivation, inventory management, sales and transport operations. The system will enhance the coordination of Admin, Customers, Sales Managers, Grower Handlers, Cutters, Inventory and Stock Managers and the Transport Team to improve business operations while enhancing overall customer satisfaction

1.4.2. Objectives
• Develop an Admin Management compartment to manage user roles, permissions, and system customization.

• Implement an easy pathway for customers to select plants and buy them using a payment gateway.

• Implementing a secure payment process with correct authentication. • Implement an Inventory and Stock Management System to track stock levels, monitor required culture media and generate alerts for low stock.

• Create a functional notification system

• Integrate Sales, Reporting and Analytics into a visual dashboard to provide data driven insights for better decision-making.

• Implement a Customer Service Management System to enable seamless interaction with both customers and wholesale dealers.

• Design a User-Friendly Interface to ensure easy navigation and better experience for all system users.

• Perform comprehensive testing and debugging to ensure the system meets the client's expectations and operates without errors.

• Ensure easy transition for all users from manual processes to automated operations.

1.5 Solution Overview

Crips will replace manual, Excel-based processes with a centralized, user-friendly web platform that streamlines plant cultivation, inventory, sales, and transport operations.

- For   Managers
  Managers can assign user roles, manage permissions, and monitor operations in real-time. Visual dashboards and reports will provide insights, helping scale the business efficiently.

- For   Grower   Handlers,   Cutters,   and   Inventory   Managers
  Able to coordinate tasks seamlessly, reducing delays. Real-time stock tracking and environmental monitoring will improve accuracy and ensure optimal plant conditions. Automated alerts will help maintain stock and environmental levels.

- For   Sales   Managers   and   Customers
  Sales managers can track orders and inventory easily, while customers can browse plants, check availability and make secure online purchases. Notifications and email report generation will boost employee and customer satisfaction.

- For   the   Entire   Business
  Crips will unify all processes, enabling real-time monitoring, smoother workflows, and scalability for future growth. Moving from manual to automated operations will enhance efficiency, accuracy, and customer experience.

1.6 Methodology

Our project's development process is outlined in the methodology, which guarantees correctness, efficiency, and smooth component integration. It includes the following essential components:

1.6.1. Requirement Engineering Methods
• Client Discussions: Define project goals by comprehending client requirements and expectations.

• User case Diagrams and User Stories: To improve requirements, a visual depiction of user interactions and system functionality is used.

1.6.2. Design Methods
 • Wireframing (Figma): establishing preliminary graphic layouts for mapping user experience (UX) and user interface (UI).

• Database Design (MongoDB): Arranging the database to facilitate effective data retrieval and storage.

1.6.3. Testing Methods
• Unit Testing: confirming the functionality of the application by checking its separate components.

• API Testing (Postman): To verify data flow and system interactions, test API endpoints.

1.6.4. Integration Method
• Version Control (GitHub): utilizing GitHub for version control, change tracking, and collaborative development.

1.6.5. Development Tools and Technologies
• MongoDB: NoSQL database store data in a flexible and scalable way.

• Express.js: backend framework for managing server-side logic and API requests.

• React.js: A front-end framework for developing interactive and dynamic user interfaces.

 • Node.js: Backend operations are conducted in a JavaScript runtime environment.

1.6.6. Authentication
• JWT-based Authentication: User identification is verified by a secure authentication method that uses JSON Web Tokens (JWT).

1.7 Git-Hub Repository Link

1.8 Structure of the Report

This report is structured into five main chapters to provide a comprehensive view of the Crips Aqua Plants Export System development.

Chapter 1, *Introduction*, covers the background of the project, highlights the existing problems and motivations, and presents the aim and objectives of the system. It also provides a summary of the literature review, an overview of the solution and the methodology followed. A clickable link to the GitHub repository is included for easy access to the project source code.

Chapter 2, *Requirements*, details the stakeholder analysis and captures both functional and non-functional requirements.

Chapter 3, *Design and Development*, explains the system's architecture and components. This section is supported with diagrams of workflows, processes, databases and the overall system design.

Chapter 4, *Testing*, presents the testing approach, including acceptance criteria, main test cases, and the results obtained to verify the system's performance and correctness.

Chapter 5, *Evaluation and Conclusion*, evaluates the outcomes based on testing. It concludes by summarizing how the project's objectives were achieved and how the system fulfills its intended aim.

Finally, a *References* section lists all the sources and tools used, following IEEE citation format.

2.0 Requirements

2.1 Stakeholder Analysis

Stakeholder analysis is an essential step in the development of any system or project. It involves knowing and understanding the individuals, groups, or organizations who are interested in business activities. End-users, customers, management, employees, government agencies, and other relevant parties are examples of stakeholders.

1. Customers/Wholesale Dealers

2. Cutters

3. System Manager

4. Grower Handlers

5. Inventory & Stock Managers

6. Sales Manager

7. Media Operators

8. Transport Team

9. Government and Regulatory Bodies

10. Suppliers
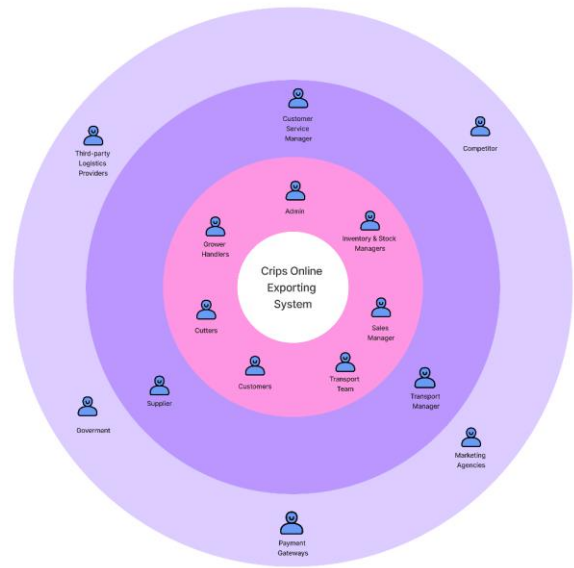
2.2 Requirements Analysis

2.2.1 Functional Requirements

- User Management
- Financial Management
- Plant Ordering System

- Support Tickets
- Payment management
- Customer Management
- Reports & Analytics
- Transports and Tracking Orders

2.2.2 <u>Non- functional Requirements</u>
- Usability
- Accessibility
- Security
- Performance
- Reliability
- Scalability
- Maintainability

2.2.3 <u>Technical Requirements</u>
- **Frontend**: React.js
- **Backend**: Node.js with Express.js
- **Database**: MongoDB
- **Hosting**: Cloud-based (AWS/GCP/Azure)
- **Authentication**: JWT-based authentication
- **APIs**: RESTful services for communication
- **Version Control**: GitHub

2.3 Requirements Modeling
- Use Case Diagram: Interactions between actors and the system.
- Class Diagram: Represent the static structure of the system, including the classes, their attributes, relationships, and methods
- Entity –Relationship Diagram: logical structure of the system's data entities and their relationships

3.0 Design and Development

3.1 Diagram of Components

3.1.1 Use Case Diagrams
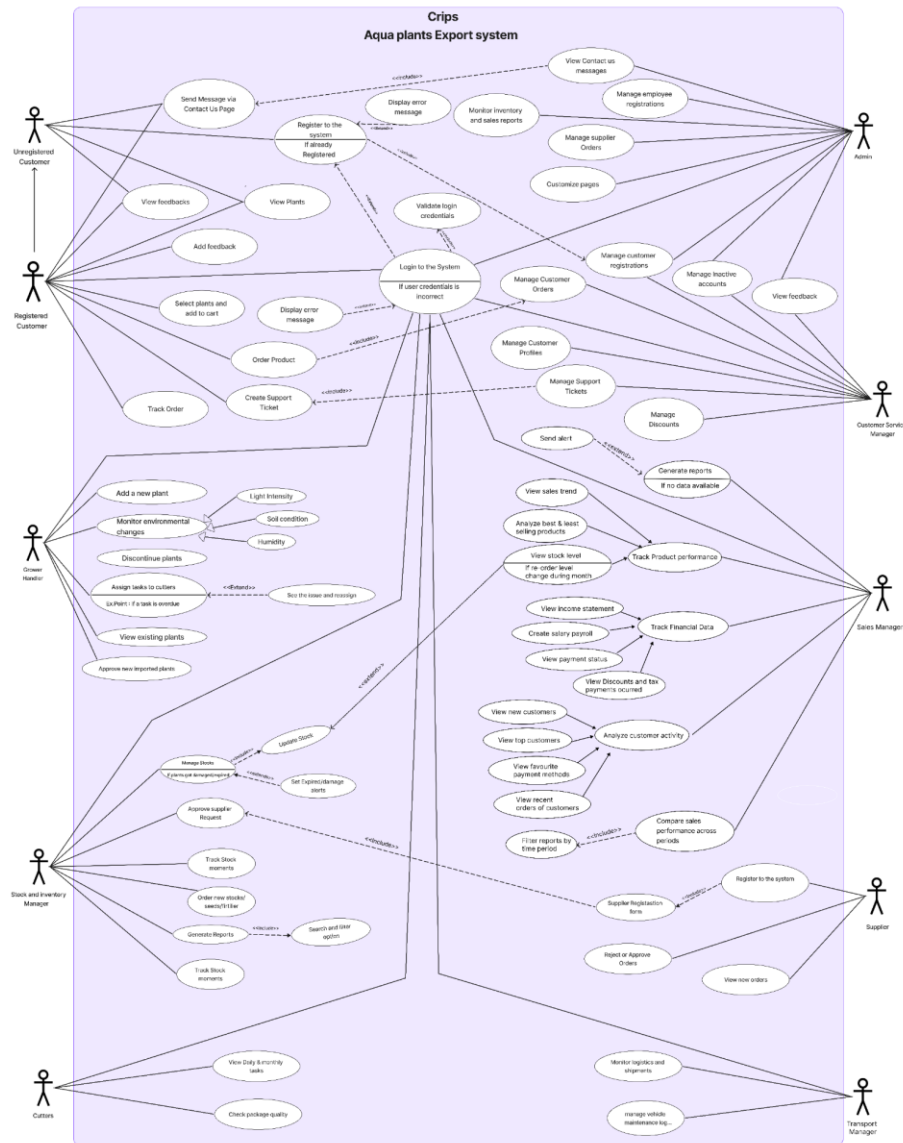
Drive link for diagram:

https://drive.google.com/file/d/1Re_hVkCUV1o8ShlsnTvS9XG4Yg82GQX4/view?usp=sharing

3.2 Diagram of Process

3.2.1 Data Flow Diagram

Drive link for diagram:

https://drive.google.com/file/d/1qsc29TNBxmjYRZkPnbxOW-3fHt16sCU2/view?usp=sharing
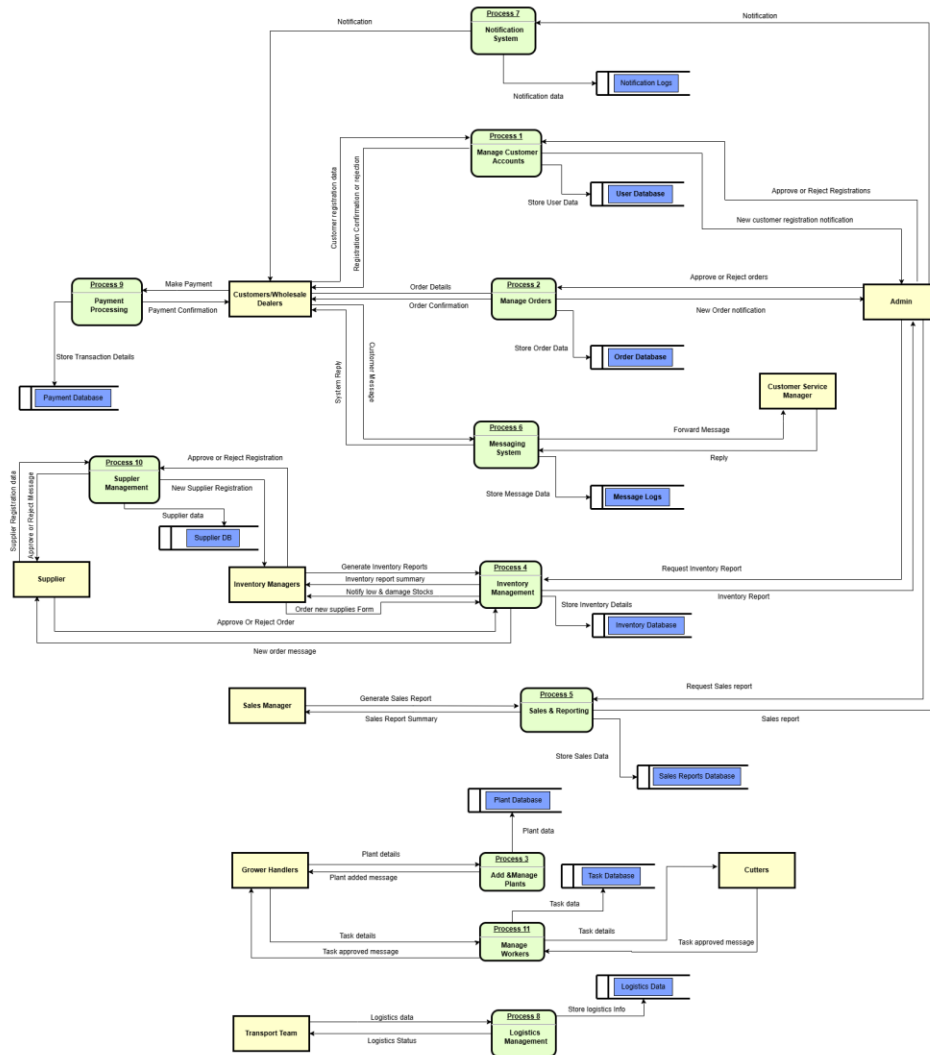
3.3 Diagram of Database

3.3.1 ER Diagram
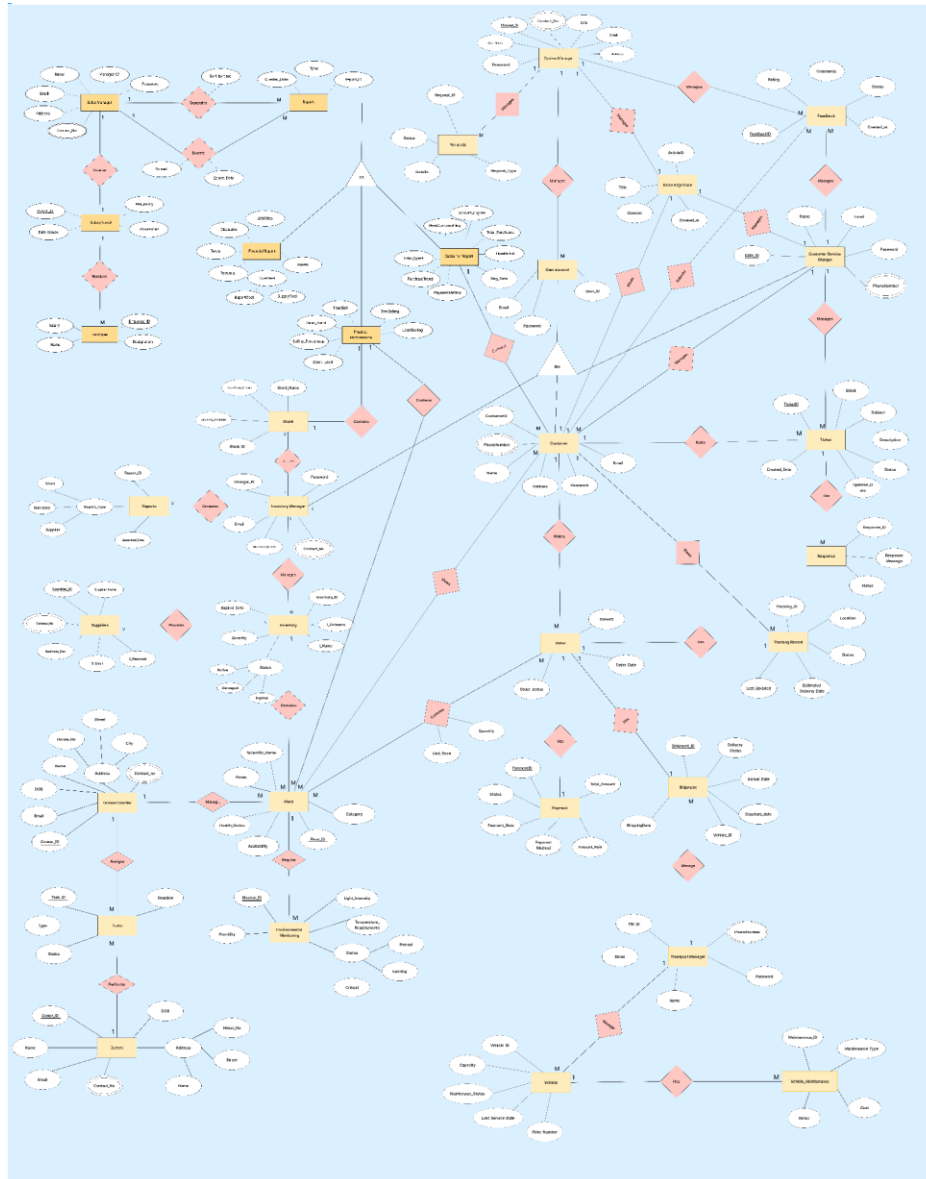
Drive link for diagram:

https://drive.google.com/file/d/1bpndPNv1ykqPOFftaVIGbr_1_E0JGevE/view?usp=sharing

3.4 Diagram of Development Aspect

3.4.1 Class Diagram

Drive link for diagram:

https://drive.google.com/file/d/10pqNPYRE6xdPCZHUgUx1351PaFYax6QB/view?usp=sharing
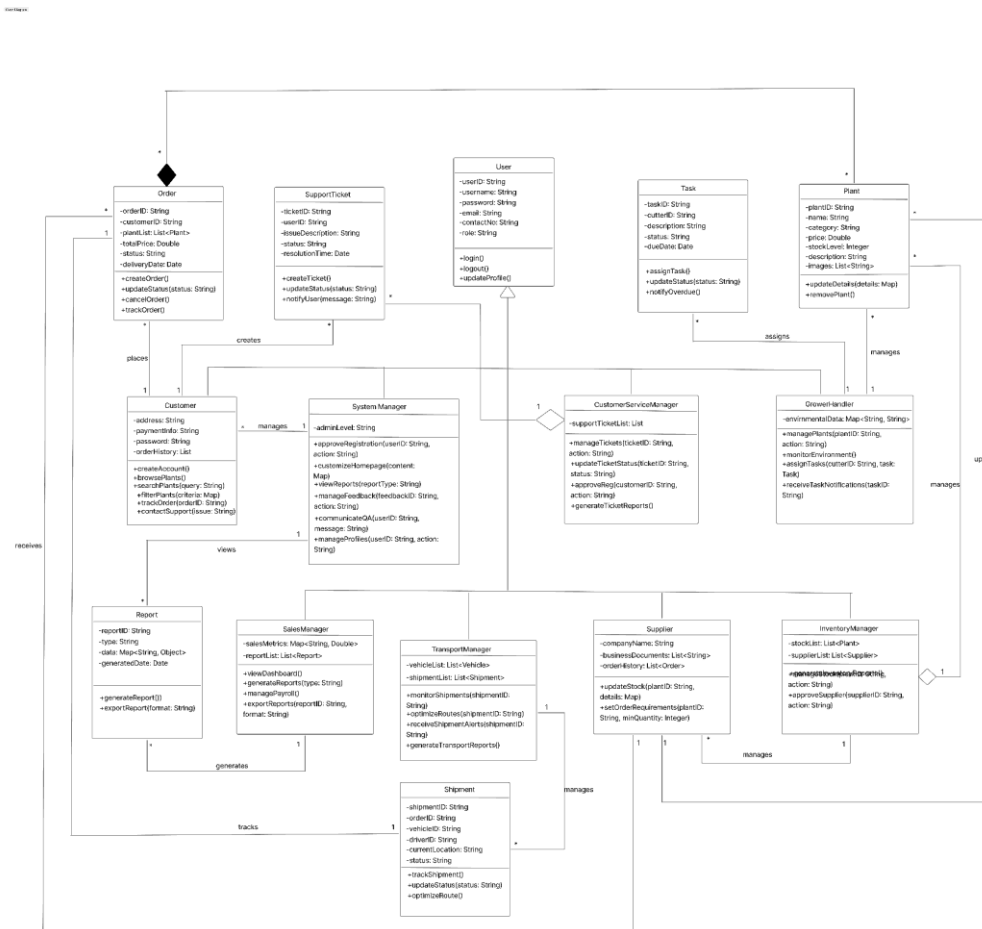
3.5 Diagram of Workflow

　　　3.5.1 Flow Chart

Drive link for diagram:

https://drive.google.com/file/d/1A0AC2ASpDaidIPHC50t8lOq3DLN2sVoo/view?usp=sharing
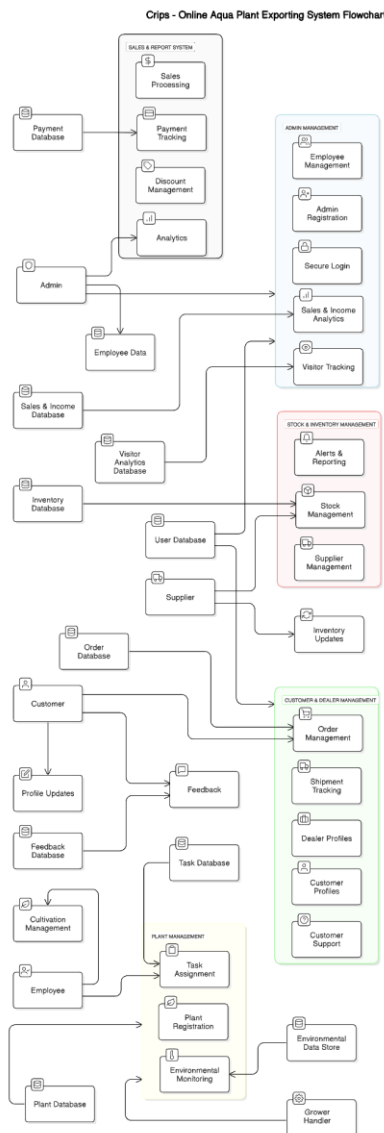
4. Testing

IT23201200 – M.T.C PEIRIS

Test Function: Register User

Test Case Designed by: IT23201200

Test Priority(High/Medium/Low): High

Pre-Conditions(if there are any): No

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	• Customer • Profile Image • Thamidu Peiris • thamidu3c • 123 Green Lane, Colombo • 0771234567 • thamidu3c@gmail.com • Thamidu123 • Thamidu123	System saves the user details and displays: " Registration successful. Please wait for approval from the Customer Service Manager. " Redirects to login page.	System saves the user details and displays: " Registration successful. Please wait for approval from the Customer Service Manager. " Redirects to login page.	Pass	User navigates to the registration page, selects "Customer" role, optionally uploads an image, fills in all required fields, and clicks "Register." If successful, show message "Please wait for approval from the Customer Service Manager."

Test Function: Login User

Test Case Designed by: IT23201200

Test Priority(High/Medium/Low): High

Pre-Conditions(if there are any): User must register to the system.

Test Steps:

1. Fill in the login Form.
2. Click the Login Button.
3. If successful redirect to the home page.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
2	• thamidu3c@gmail.com or thamidu3c • Thamidu123	System validates credentials and redirects to the shop page.	System validates credentials and redirects to the shop page.	Pass	Registered user navigates to the login page, enters valid Email/Username and Password, clicks "Login," and is successfully redirected to the shop page.

Test Function: Browse Plant

Test Case Designed by: IT23201200

Test Priority(High/Medium/Low): Medium

Pre-Conditions(if there are any): Plants must be available in the Aqua Plants Export system inventory. User does not need to be logged in to browse.

Test Steps:

1. Navigate to the "Plants" section of the Aqua Plants Export system.
2. View the list of available plants.
3. Select a plant to view its details.
4. Verify that the plant details (e.g., name, price, description) are displayed correctly.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
3	• Navigate to Plants section. • Select Plant: Anubias Nana	System displays a list of plants. On selecting Anubias Nana, the details page shows name, price, and description correctly.	System displays plant list. Anubias Nana details page shows correct name, price, and description.	Pass	User navigates to the Plants section, views available plants, selects Anubias Nana, and sees accurate plant details.

Test Function: Add Quantity and Add to Cart

Test Case Designed by: IT23201200

Test Priority(High/Medium/Low): Medium

Pre-Conditions(if there are any): User must be logged into the Aqua Plants Export system. Selected plant must be available in the inventory.

Test Steps:

1. Navigate to the details page of a plant (e.g., Anubias Nana).
2. Specify the quantity
3. Click the "Add to Cart" button.
4. Verify that the plant is added to the cart with the correct quantity.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
4	• Plant: Anubias Nana • Quantity: 2	System adds 2 Anubias Nana plants to the cart. Cart reflects the correct plant and quantity.	System adds 2 Anubias Nana plants to the cart. Cart shows correct plant and quantity.	Pass	Logged-in user selects Anubias Nana, sets quantity to 2, clicks "Add to Cart," and verifies the cart updates correctly.

Test Function: Checkout with Shipping Information

Test Case Designed by: IT23201200

Test Priority(High/Medium/Low): High

Pre-Conditions(if there are any): User must be logged into the Aqua Plants Export system. Cart must contain at least one item (e.g., 2 Anubias Nana plants).

Test Steps:

1. Navigate to the cart and click "Proceed to Checkout."
2. Fill in the shipping information: First Name, Last Name, Email, Phone Number, Country, State, City, Zip Code, and Address.
3. Click the "Confirm Order" or "Place Order" button.
4. Verify that the system displays the confirmation page with the message "Payment completed successfully!" and a "View Orders" button.
5. Click the "View Orders" button to ensure redirection to the order history page.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
5	• Thamidu Peiris • thamidu3c@gmail.com • 0761021947 • Sri Lanka • Western • Colombo • 00300 • 123 Green Lane, colombo	System saves order and displays a confirmation page with: "Payment completed successfully!" and a "View Orders" button	System displays: "Payment completed successfully!" with a "View Orders" button.	Pass	User proceeds to checkout from cart, enters valid shipping information, places the order, sees the confirmation message "Payment completed successfully!" with a "View Orders" button, and is redirected to the order history page upon clicking the button.

Test Function: Create Support Ticket

Test Case Designed by: IT23201200

Test Priority(High/Medium/Low): High

Pre-Conditions(if there are any): User must be logged into the Aqua Plants Export system and have access to the Customer Support Page.

Test Steps:

1. Navigate to the Customer Support Page.
2. Click the "Create Support Ticket" button.
3. Verify navigation to the /dashboard/create-ticket page.
4. Fill in the form fields: Your Name, Your Email, Subject, and Message.
5. Click the "Submit Ticket" button.
6. Verify that the system displays the message "Support ticket submitted successfully!" and redirects to support page.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
6	• Thamidu Peiris • thamidu3c@gmail.com • Order Delay Inquiry • My order #1234 has not arrived yet. Please provide an update.	1. Clicking "Create Support Ticket" navigates to create-ticket page. 2. Form accepts input details. 3. After clicking "Submit Ticket," system displays: "Support ticket submitted successfully!"	1. Form saves input details. 2. System displays: "Support ticket submitted successfully!" and redirects to support page.	Pass	Logged-in user navigates to the Customer Support Page, clicks "Create Support Ticket," fills out the form with valid details, submits the ticket, sees the success message, and is redirected to support page.

Test Function: View Pending Tickets and Reply

Test Case Designed by: IT23201200

Test Priority(High/Medium/Low): High

Pre-Conditions(if there are any): User must be logged into the Aqua Plants Export system and have at least one support ticket in the system.

Test Steps:

1. Click the "View" button next to a pending ticket (e.g., Ticket #1234).
2. Enter a reply message in the reply field on the Ticket Details Page.
3. Click the "Send Reply" button.
4. Verify that the reply is submitted successfully

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
7	• Ticket: #1234 • Thank you for the update.	1. Clicking "View" on Ticket #1234 navigates to the Ticket Details Page showing ticket details. 2. Reply message is accepted and submitted. 3. Clicking "Back to Tickets" returns to the Customer Support Page.	1. Navigation to Ticket Details Page for #1234 successful, showing correct details. 2. System shows "Reply sent successfully!" and stays on Ticket Details Page. 3. "Back to Tickets" redirects to support page with ticket list.	Pass	Logged-in user navigates to the Customer Support Page, views tickets, clicks "View" on a ticket, sees ticket details, sends a reply, confirms submission, and can return to the ticket list using the "Back to Tickets" button.

IT23154926 - PERERA R.P.N.D

Test Function: Inventory Management and Supplier Management
Test Cases Designed by: IT23154926

Inventory Management System Test Cases
Test Case 1: Add New Stock

Test Priority (High/Medium/Low): High
Pre-Conditions (if there are any): Inventory Manager must be logged into the Aqua Plants Export system. Valid stock details must be available.
Test Steps:

1. Log in as Inventory Manager using valid credentials.
2. Navigate to the "Add Stock" page via the dashboard or menu.
3. Enter stock details: Plant ID (e.g., PLT001), Plant Name (e.g., Anubias Nana), Quantity (e.g., 50), Supplier (e.g., Aqua Suppliers), and Expiration Date (e.g., 2025-12-31).
4. Click the "Submit" button to add the stock.
5. Verify that the system displays a success message and redirects to the Stock List page.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	- Inventory Manager - Plant ID: PLT001 - Plant Name: Anubias Nana - Quantity: 50 - Supplier: Aqua Suppliers - Expiration Date: 2025-12-31	System saves the stock details and displays: "Stock added successfully!" Redirects to Stock List page.	System saves the stock details and displays: "Stock added successfully!" Redirects to Stock List page.	Pass	Inventory Manager logs in, navigates to Add Stock page, enters valid stock details (Plant ID, Name, Quantity, Supplier, Expiration Date), submits the form, and sees a success message with redirection to the Stock List page.

Case 2: Update Stock Records

Test Priority (High/Medium/Low): High
Pre-Conditions (if there are any): Inventory Manager must be logged into the Aqua Plants Export system. A stock record (e.g., PLT001) must exist in the system.
Test Steps:

1. Log in as Inventory Manager using valid credentials.
2. Navigate to the "Stock List" page via the dashboard or menu.
3. Locate the stock record with Plant ID PLT001 and click "Edit" or select the record.
4. Update the stock details: change Quantity to 40 and Expiration Date to 2025-12-15.
5. Click the "Save" button to update the stock record.
6. Verify that the system displays a success message and the Stock List reflects the updated details.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
2	- Inventory Manager - Stock Record: PLT001 - Updated Quantity: 40 - Updated Expiration Date: 2025-12-15	System updates the stock details and displays: "Stock updated successfully!" Stock List reflects the updated quantity and expiration date.	System updates the stock details and displays: "Stock updated successfully!" Stock List reflects the updated quantity and expiration date.	Pass	Inventory Manager logs in, navigates to Stock List page, selects stock record PLT001, updates the quantity and expiration date, submits the changes, and confirms the update with the success message and updated stock list.

Test Case 3: Delete Stock Records

Test Priority (High/Medium/Low): High
Pre-Conditions (if there are any): Inventory Manager must be logged into the Aqua Plants Export system. A stock record (e.g., PLT001) must exist in the system.
Test Steps:

1. Log in as Inventory Manager using valid credentials.
2. Navigate to the "Stock List" page via the dashboard or menu.
3. Locate the stock record with Plant ID PLT001 and click "Delete."
4. Confirm the deletion in the prompt or dialog box.
5. Verify that the system displays a success message and the stock record is removed from the Stock List.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
3	- Inventory Manager - Stock Record: PLT001	System deletes the stock record and displays: "Stock deleted successfully!" Stock record PLT001 is no longer in the Stock List.	System deletes the stock record and displays: "Stock deleted successfully!" Stock record PLT001 is no longer in the Stock List.	Pass	Inventory Manager logs in, navigates to Stock List page, selects stock record PLT001, clicks Delete, confirms the action, and verifies the record is removed with a success message.

Test Case 4: Low Stock Alert Generation

Test Priority (High/Medium/Low): High
Pre-Conditions (if there are any): Inventory Manager must be logged into the Aqua Plants Export system. A stock record (e.g., PLT001) must exist with a threshold set (e.g., 10 units).
Test Steps:

1. Log in as Inventory Manager using valid credentials.
2. Navigate to the "Stock List" page via the dashboard or menu.
3. Locate the stock record with Plant ID PLT001 and click "Edit."
4. Update the stock quantity to 5 (below the threshold of 10 units).
5. Click the "Save" button to update the stock record.
6. Verify that the system displays a low stock alert notification in the dashboard.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
4	-Inventory Manager - Stock Record: PLT001 - Updated Quantity: 5 (below threshold of 10)	System updates the stock quantity and displays a notification: "Low stock alert: Anubias Nana (PLT001) below threshold!"	System updates the stock quantity and displays a notification: "Low stock alert: Anubias Nana (PLT001) below threshold!"	Pass	Inventory Manager logs in, navigates to Stock List page, updates stock PLT001 quantity to 5 (below threshold), submits the change, and sees a low stock alert notification in the dashboard.

Test Case 5: Showing Expired Stocks with Quantities

Test Priority (High/Medium/Low): Medium

Pre-Conditions (if there are any): Inventory Manager must be logged into the Aqua Plants Export system. A stock record (e.g., PLT002) must exist with an expiration date prior to the current date (current date: 2025-05-04).

Test Steps:

1. Log in as Inventory Manager using valid credentials.
2. Navigate to the "Stock List" page via the dashboard or menu.
3. Ensure a stock record (e.g., PLT002) exists with an expiration date of 2025-05-01 (expired as of current date 2025-05-04) and quantity of 20 units.
4. Verify that the system identifies PLT002 as expired and displays it in a separate "Expired Stocks" section or highlights it in the Stock List with a label: "Expired - Quantity: 20 units."

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
5	- Inventory Manager - Stock Record: PLT002 - Expiration Date: 2025-05-01 (expired as of 2025-05-04) - Quantity: 20 units	System identifies PLT002 as expired and displays it in an "Expired Stocks" section or highlights it in the Stock List with a label: "Expired - Quantity: 20 units."	System identifies PLT002 as expired and displays it in an "Expired Stocks" section or highlights it in the Stock List with a label: "Expired - Quantity: 20 units."	Pass	Inventory Manager logs in, navigates to Stock List page, and verifies that stock PLT002 with an expiration date of 2025-05-01 is identified as expired and displayed in an "Expired Stocks" section or highlighted with a label showing its quantity in the Stock List.

Supplier Management System Test Cases

Test Case 1: Supplier Self-Registration

Test Priority (High/Medium/Low): High
Pre-Conditions (if there are any): Supplier must not be registered in the Aqua Plants Export system.
Valid supplier details must be provided.
Test Steps:

1. Navigate to the CRIPS website (Aqua Plants Export system).
2. Go to the "Supplier Registration" page via the menu or link.
3. Fill in the registration form with details: First Name (John), Last Name (Doe), Username (johndoe), Address (45 Blue Road, Kandy), Phone Number (0712345678), Email (john.doe@gmail.com), Password (JohnDoe123), Confirm Password (JohnDoe123).
4. Click the "Register" button to submit the form.
5. Verify that the system displays a success message and redirects to the login page.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	- Supplier - First Name: John - Last Name: Doe - Username: johndoe - Address: 45 Blue Road, Kandy - Phone Number: 0712345678 - Email: john.doe@gmail.com - Password: JohnDoe123 - Confirm Password: JohnDoe123	System saves the supplier details and displays: "Registration successful. Please wait for approval from the Inventory Manager." Redirects to login page	System saves the supplier details and displays: "Registration successful. Please wait for approval from the Inventory Manager." Redirects to login page	Pass	Supplier navigates to the Supplier Registration page, fills in all required fields (Name, Username, Address, Phone, Email, Password), submits the form, and sees a success message with redirection to the login page.

Test Case 2: Supplier Views Order History

Test Priority (High/Medium/Low): Medium

Pre-Conditions (if there are any): Supplier must be logged into the Aqua Plants Export system and approved by the Inventory Manager. Previous orders must exist in the system for the supplier.

Test Steps:

1. Log in as Supplier using valid credentials (e.g., john.doe@gmail.com).
2. Navigate to the "Order History" page via the dashboard or menu.
3. View the list of previous orders displayed with summary details (e.g., Order ID, Date, Items, Total).
4. Select an order from the list to view its full details.
5. Verify that the system displays the detailed order information correctly.

ID	Test Inputs Test	Expected Output	Actual Output	Result (Pass/Fail)	Description
2	- Supplier - Order History Request	System displays a list of previous orders with details (e.g., Order ID, Date, Items, Total). Selecting an order shows full details.	System displays a list of previous orders with details (e.g., Order ID, Date, Items, Total). Selecting an order shows full details.	Pass	Supplier logs in, navigates to Order History page, views the list of past orders, selects an order, and verifies the detailed order information is displayed correctly.

IT23163904 – W.V.A.D.K.Chamara

Testing Function: Update Order Location (Transport Manager)

Test Case Designed By: IT23163904

Test Priority (High / Medium / Low): High

Pre-condition (if there are any): Transport Manager must be logged into the system. An order with status "Shipped" or "Delivered" must exist in the system.

Test Steps:

1. Log in as Transport Manager.
2. Navigate to the "Customer Orders" page.
3. Select an order with status "Shipped" or "Delivered".
4. Click the "Update Location" button.
5. Enter the new location in the text field.
6. Click "Save".
7. Pop up "Order location updated successfully!" alert.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	- Order ID (e.g., "12345") - New Location (e.g., "Colombo Port")	Order location updated successfully alert. Table updates with new location.	Order location updated successfully alert. Table updates with new location.	Pass	Transport Manager logs in, navigates to "Customer Orders", selects an order, clicks "Update Location", enters "Colombo Port", and clicks "Save". The system shows a success alert and updates the tracking location in the table.

Testing Function: Add Fuel Log (Transport Manager)

Test Case Designed By: IT23163904

Test Priority (High / Medium / Low): Medium

Pre-condition (if there are any): Transport Manager must be logged into the system.

Test Steps:

1. Log in as Transport Manager.
2. Navigate to the "Fuel Consumption Tracker" page.
3. Enter Vehicle ID, Liters, Cost, and Distance in the form.
4. Click the "Add Log" button.
5. Verify the new log appears in the "All Fuel Logs" table.
6. Verify the "Fuel Summary (Per Vehicle)" table updates.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	- Vehicle ID (e.g., "V123") - Liters (e.g., 50) - Cost (e.g., 1000) - Distance (e.g., 200)	New fuel log added to "All Fuel Logs" table. "Fuel Summary" table updated with new totals.	New fuel log added to "All Fuel Logs" table. "Fuel Summary" table updated.	Pass	Transport Manager logs in, navigates to "Fuel Consumption Tracker", enters Vehicle ID "V123", Liters 50, Cost 1000, Distance 200, and clicks "Add Log". The new log appears in the table, and the summary updates accordingly.

Testing Function: Schedule Shipment (Transport Manager)

Test Case Designed By: IT23163904

Test Priority (High / Medium / Low): High

Pre-condition (if there are any): Transport Manager must be logged into the system.

Test Steps:

1. Log in as Transport Manager.
2. Navigate to the "Shipment Scheduling" page.
3. Enter Shipment ID, Vehicle ID, Driver ID, and Departure Date in the form.
4. Click the "Schedule" button.
5. Verify the new schedule appears in the table with status "Pending".

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	- Shipment ID (e.g., "SHP002") - Vehicle ID (e.g., "V124") - Driver ID (e.g., "D001") - Departure Date (e.g., "2025-04-01")	New schedule added to table with status "Pending".	New schedule added to table with status "Pending".	Pass	Transport Manager logs in, navigates to "Shipment Scheduling", enters Shipment ID "SHP002", Vehicle ID "V124", Driver ID "D001", Departure Date "2025-04-01", and clicks "Schedule". The new schedule appears in the table with status "Pending".

Testing Function: View Dashboard Stats (System Manager)

Test Case Designed By: IT23163904

Test Priority (High / Medium / Low): Medium

Pre-condition (if there are any): System Manager must be logged into the system.

Test Steps:

1. Log in as System Manager.
2. Navigate to the dashboard.
3. View the stats cards for Sales, Stock, and Visitors.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	None (stats fetched automatically)	Sales, Stock, and Visitors stats displayed correctly on the dashboard.	Sales, Stock, and Visitors stats displayed correctly on the dashboard.	Pass	System Manager logs in and navigates to the dashboard. The stats cards display the correct values for Sales, Stock, and Visitors as fetched from the database.

Testing Function: Update a Customer (System Manager)

Test Case Designed By: IT23163904

Test Priority (High / Medium / Low): High

Pre-condition (if there are any): System Manager must be logged into the system. At least one customer must exist in the system.

Test Steps:

4. Log in as System Manager.
5. Navigate to the "Manage Customers" page.
6. Click on a customer card to open the details modal.
7. Click the "Update" button to enter edit mode.
8. Update the customer's email field.
9. Click "Save Changes".
10. Pop up "Customer updated successfully!" alert.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	- Customer ID (e.g., "CUST001") - New Email (e.g., "newemail@example.com")	Customer updated successfully alert. Customer list updates with new email.	Customer updated successfully alert. Customer list updates with new email.	Pass	System Manager logs in, navigates to "Manage Customers", clicks on a customer, enters edit mode, updates the email to "newemail@example.com", and clicks "Save Changes". The system shows a success alert and updates the customer list.

Testing Function: Approve a Job Application (System Manager)

Test Case Designed By: IT23163904

Test Priority (High / Medium / Low): High

Pre-condition (if there are any): System Manager must be logged into the system. At least one pending job application must exist in the system.

Test Steps:

11. Log in as System Manager.
12. Navigate to the "Job Applications" page.
13. Select a pending job application.
14. Click the "Approve" button.
15. Confirm the approval action in the popup.
16. Pop up "Application approved successfully!" alert.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	- Application ID (e.g., "APP001") - Action: Approve (button click)	Application approved successfully alert. Status updates to "approved".	Application approved successfully alert. Status updates to "approved".	Pass	System Manager logs in, navigates to "Job Applications", selects a pending application, clicks "Approve", and confirms the action. The system shows a success alert and updates the application status to "approved".

MUNIDASA T. G. D. L. – IT23291546

Testing Function: Add New Plant
Test Case Designed By: IT23291546
Test Priority: High
Pre-conditions: Grower Handler must be logged into the system.
Test Steps:

1. Fill out the "Add Plant" form with plant details.
2. Click the "Add Plant" button.
3. See success alert and added plant appears in list

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/fail)	Description
01	- Plant Name - Scientific Name - Category - Temperature requirement - Light requirement - pH range - Image	"Plant added successfully" alert and new plant visible in plant list	"Plant added successfully" alert Plant visible in plant list	Pass	Grower Handler adds new plant details and sees plant in database list.

Testing Function: Update a Plant
Test Case Designed By: IT23291546
Test Priority: High
Pre-conditions: Grower Handler is logged in and plant records exist.
Test Steps:

1. Choose "Update" next to plant → Edit fields → Save.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/fail)	Description
02	• Plant Name • Scientific Name • Category • Temperature requirement • Light requirement • pH range • Image	"Plant updated successfully" alert and updated plant data visible in plant list	"Plant updated successfully" alert updated plant data visible in plant list	Pass	Grower Handler updates plant details

Testing Function: Assign Task to Cutter

Test Case Designed By: IT23291546

Test Priority: High

Pre-conditions: Grower Handler and Cutter accounts exist.

Test Steps:

1. Grower Handler fills out 'Assign Task' form.
2. Click "Assign Task" → Success alert appears

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/fail)	Description
03	• Task Name • Cutter name • Deadline • Task status	"Task assigned successfully" alert and Task visible to the cutter in dashboard	"Task assigned successfully" alert Task visible to the cutter in dashboard	Pass	Grower Handler assigns a task to Cutter; task appears in Cutter dashboard.

Testing Function: Cutter View & Update Task
Test Case Designed By: IT23291546
Test Priority: High
Pre-conditions: Task assigned to Cutter must exist.
Test Steps:

1. Cutter logs in and views assigned tasks.
2. Updates task status as "Completed" after finishing work

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/fail)	Description
04	• Task status (Complete)	"Task updated successfully" alert and updated task visible to the Grower Handler in dashboard	"Task updated successfully" alert u Updated task visible to the Grower Handler in dashboard	Pass	Cutter updated task status after completion.

Testing Function: Monitor Environmental Conditions
Test Case Designed By: IT23291546
Test Priority: Medium
Pre-conditions: Plant Conditions should be entered previously
Test Steps:

1. Grower Handler views dashboard.
2. Checks environmental readings and critical alerts

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/fail)	Description
05	N/A (Inputs entered in add plant are analyzed)	Environmental conditions displayed graphically, Critical alerts displayed	Environmental conditions displayed graphically, Critical alerts displayed	Pass	Grower Handler monitors environmental conditions (eg-temp, pH)

Testing Function: Verify Income Statement Data Fetching and Display

Test Priority (High/Medium/Low): High
Test Case Designed By: IT23187146
Pre-Conditions (if there are any): Sales Manager Must be logged into the system and previous income data must be available to be displayed

Test Steps:

1. Log in as Sales Manager using valid credentials.
2. Navigate to the "Financial Reports" page via the dashboard or sidebar.
3. View the list of income and expenses details (e.g. Date, Description, Income, Expenses, Total Balance).
4. Verify that the system displays the statement information correctly.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
1	Navigate to Financial Reports section	Table renders with columns: Data, Description, Income, Expense, Total Balance.	Returns dynamic data. Table renders with correct columns.	Pass	Automated test fetches income statement data from the API, renders it in the table, and validates the structure and content dynamically.

Testing Function: Validate Total Revenue and Expenses Summary Data

Test Priority (High/Medium/Low): High

 Test Case Designed By: IT23187146

 Pre-Conditions (if there are any): Sales Manager Must be logged into the system and previous income data must be available to be displayed

Test Steps:

1. Navigate to the /Financial Report page using the automated test script.
2. Trigger a request to fetch summary data from the backend.
3. Verify that the "Total Revenue and Expenses Summary (Last 7 days)" card is rendered.
4. Verify that the card contains the expected fields: Total Income, Total Expenses, Discounts, Tax Payable.
5. Validate that the values are numeric, prefixed with "Rs.", and match the API response.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
2	Navigate to Financial Reports section	Card renders with fields: Total Income, Total Expenses, Discounts, Tax Payable. 3. Values are displayed as Rs. {value} and match API data.	1. Returns dynamic summary data. 2. Card renders with correct fields.	Pass	Automated test fetches summary data from the API, renders it in the card, and validates the fields and values dynamically.

Testing Function: Verify Product Performance Data Fetching and Display on Product Performance Page

Test Priority (High/Medium/Low): High

 Test Case Designed By: IT23187146

Pre-Conditions (if there are any): Product performance data (e.g., sales data for products) should already be available in the database, added by the Sales System.

Test Steps:

1. Navigate to the Product Performance page using the automated test script.
2. Trigger a request to fetch product performance data.
3. Verify that the "Product Performance Overview" section (e.g., a table or card) is rendered on the page.
4. Assert that the section displays at least one product entry with expected fields: Product Name, Total Sales, Total Orders, and Average Order Value.
5. Validate that the data matches the API response (e.g., Total Sales are a numeric value, formatted as Rs. {value}).

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
3	Add data into the Products (e.g., Product A with sales data)	"Product Performance Overview" section displays at least one product entry. The pie charts also displays data as a visual representation.	Section displays with product data.	Pass	Automated test fetches product performance data from the backend, renders it on the Product Performance Page

Testing Function: Verify Customer Statistics Data Fetching and Display on Customer Statistics Report

Test Priority (High/Medium/Low): High

Test Case Designed By: IT23187146

Pre-Conditions (if there are any): Customer statistics data (e.g., number of new

customers or total orders) should already be available in the database, added by the Sales or Customer Management System.

Test Steps:

1. Navigate to the Customer Reports page using the automated test script.
2. Trigger a request to fetch customer statistics data.
3. Verify that the "Customer Statistics Overview" section (e.g., a table, cards, pie chart) are rendered on the page.
4. **Validate that the data matches the API response (e.g., New Customers (Last 7 Days), Top Customers, Favorite Payment Method).**

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
4	Insert test data into the database (e.g., 10 new customers)	1. The Customer Statistics Overview" section displays at least one statistical entry. 2. Fields include New Customers (Last 7 Days), Total Orders, Customer Retention	1. Section displays statistic data. 2. All fields are present	Pass	Automated test fetches customer statistics data from the backend, renders it on the Customer Statistics Report Page, and validates and is displayed on the respective sections.

Testing Function: Verify Exporting Reports functionality

Test Priority (High/Medium/Low): High
Test Case Designed By: IT23187146
Pre-Conditions (if there are any): All the Sections (Customer Report, Product Reports,

Financial Report, Employee Salary Sheets) Should have data entered to their respective tables.

Test Steps:

1. Navigate to the Report Hub section and select any of the Report types.
2. Click on Export to CSV / Export to PDF buttons on the top center of the report hub page.
3. Verify that both buttons are functional and redirects user to download the respective formats (.csv file or .pdf file).
4. Verify that it shows an alert box if there is no data for the report that is selected.
5. If available, the file will be downloaded through the browser according to the selected format.
6. Check if the file has parsed all the column and row data into a table by opening it.

Test ID	Test Inputs	Expected Output	Actual Output	Result (Pass/Fail)	Description
5	Add data into each report type	1. Pressing the "Export to CSV" Should download a .csv file that shows the data as a table format. 2. Pressing the "Export to PDF" should download a .pdf file that displays data in a table format.	1. Download succeeds, and the data are shown as in the tables. 2. All fields are present	Pass	Fetches the data from the report selected and download into a csv or pdf file and shows the data which can be used for backup or future references and stored locally.