Pick&GO

Online Pick Requesting and Delivery System

- REPORT -

Project Type: Build

Project Date: 20th February 2022

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Abstract

The following project is a software development task based on developing an online pick requesting and delivering system for Pick&GO package delivery service. Automated online-based management systems are vastly advantageous for businesses and companies as they automate daily tasks, saving time and expenses. As technology keeps developing, automated management systems are becoming an essential section of businesses to handle daily activities. These systems allow employees to avoid manual procedures which would be a time waste, and instead maintain automated systems for daily business tasks.

This project's online pick requesting and delivering system could be designed using a web application. Users would be able to access the web application remotely through the internet. The development would majorly include Java, HTML, CSS, JavaScript, Ajax with PHP languages. MySQL could be used as the application database management system to store system, user and cooperation data. Visual studio code could be used as the development environment.

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1.0 Overview

Pick&GO is a package delivery service provider establish in Sri Lanka where they provide goods delivery island wide. They have several operational service centres at all districts and number of staff employed vary according to the general capacity of business operations. Pick&GO wishes to introduce an online pick requesting and delivering system for the requirement of goods delivery. Customers are to be given facilities to request a pickup of an item and track the delivery to the destination. The pickup schedule starts with a request initiated through the system or a phone call query to the nearest centre from the customer. In the online system, the nearest operational centre will be selected based on the customer location. The pickup request is to be given a scheduled pickup time within one-hour duration from the request.

Pick&GO requires the pickup time to not exceed 12 hours from the request time which is a norm of the company. Once the picked items collected to each operational centre, those are distributed to nearest operational centre of the destination through regular delivery vehicles, which are happening during the night. The vehicle routes and coverage of centres by each vehicle is available for each centre. These vehicles take packages of own centre and the intermediate centres within the route. Each operational centre has to notify the packages to be loaded into each vehicle by 7PM. Some packages are delivered transits of intermediate operational centres based on the vehicle route coverages. Once the packages are received by the operational centres, those will be delivered to the receiver, within 12 hours after receiving it.

Pick&GO requires each customer and the receiver can track the package status and location through the web and mobile apps. The users to be able to indicate their availability for the pickup of the items and all the contact details are to be provided including the receiver. Both the sender and receiver will be issued with a tracking code once the item collection confirmed. The details of the items to be delivered with their weights and type of items which important for the quality of service required are entered during the pickup. The charges are applied based on the weight, size, and distance parameters where a tariff schedule is a common schedule for each centre. Once the item is delivered, task completion will be signed by the receiver and uploaded into the system with a receiver’s photograph.

2.0 Requirements Specification

PICK REQUESTING AND DELIVERY SYSTEM - COMPLETE REPORT

Pick&GO - Online Pick Requesting and Delivery System

2.1 Purpose

Pick&GO is a package delivery service which provides island wide goods delivery services. Pick&GO currently requires an online pick requesting and delivering system for the requirement of goods delivery. Their customers should be facilitated to request a pickup of an item and track the delivery to the destination.

The purpose of the current project is to develop an online pick requesting and delivering system for Pick&GO to enhance their service providing experience with customers.

Key Requirements:

1. Provide user roles for Pick&GO administrator, service member staff and customers.
2. User login for administrator, service member staff and customers, assigning login credentials.
3. Create and manage operational centre branches, based on centre location.
4. Add and manage operational centre staff members, based on centre branches.
5. Create and manage item pickup records, based on item dimensions and costs.
6. Create and manage item delivery records, based on item pickup status.
7. Allow customers to create system account and request item pickups.
8. Provide a unique tracking number for item pickup records, based on item information.
9. Allow administrators and staff members to update delivery tracking status.
10. Initiate item tracking system for item deliveries, based on unique tracking number.

Intended Audience Users:

- Pick&GO Administrator
- Pick&GO Operational Centre Staff
- Pick&GO Customer

2.2 Scope

Key Procedures:

- User login based in user permissions for admin, centre staff and customer.
- Create and manage operational centre branches based on centre location.
- Create and manage operational centre staff members based on centre branch.
- Create and manage pickup item records based on item dimensions and cost.
- Search and track item deliveries using unique pickup tracking number.

Using an online pick requesting and delivering system, the potential advantages include;

- Real-time visibility of operational activities.
- Increased accessibility.
- Access to customer data to optimize business and operational procedures.
- Enhanced customer experience.
- Optimization of logistical operations and time-management.
- Eliminate duplication of orders.
- Maintain a systematic record of inventory.
- Eliminating the duplication of orders.

2.3 Project Risks

Below mentioned are certain risks to be considered while working on the current project;

- There's a chance that the system will fail or malfunction.
- The risk of damage due to weather, pests & other factors.
- Employees' technical capabilities being insufficient to handle the system.
- Internet & connectivity issue depending on the geographical locations of the centres.

2.4 Functional Requirements

01. User Roles and Permissions.

- Pick&GO administrator.
- Operational centre staff.

02. Operational Service Centre.

- Add new operational service centre branch record.
- View existing operational service centre branch records.
- Edit existing operational service centre branch record.
- Delete existing operational service branch centre record.

03. Operational Service Centre Staff.

- Add new operational service centre staff member record.
- View existing operational service centre staff records.
- Edit existing operational service centre staff record.
- Delete existing operational service centre staff record.

04. Item Pickup.

- Add new item pickup record.
- View existing item pickup records.
- Edit existing item pickup records.
- Delete existing item pickup record.

05. Item Delivery.

- View pickup item delivery status records.
- Update pickup item delivery record.
- Delete pickup item delivery record.

06. Item Delivery Tracking.

- View delivery item tracking status records.
- Update delivery item tracking status record.

2.5 Non-Functional Requirements

01. System Hardware Requirements:

- Intel (Pentium 4 or newer), MacOS (OS X El Capitan 10.11 or newer) or Linux (64-bit Ubuntu 18.04+ or newer).
- 4GB RAM minimum
- 250GB hard disk storage minimum.
- Internet connection.

02. System Software Requirements:

- Windows 7 operating system or later.
- Google Chrome internet browser.

03. Application Security:

The entire pick requesting and delivering system should be secured with a strong user login page. This way system users would only be able to access the functionalities using a unique password assigned to them. User role-based functions are also provided for the users to protect the system from vulnerabilities.

04. Data Safety:

All essential data related with the online pick requesting and delivering system is stored in the system database, which is based on MySQL. Pick&GO could store backups of the system database to store backups in case of a system data loss. This ensures that the customer and centre related data would be protected.

05. User Experience:

An efficient user experience for the application users is an essential requirement in application development. The current application also contains high user experience standards including straightforward functions, faster functional loading times and clean user interfaces.

2.6 Security Mechanisms

As a primary security mechanism, the entire online pick requesting and delivering system is secured with a user login page, where all system users are required to enter a unique password assigned to them. The users would not be able to access any functionalities of the system without logging in with an account. This mechanism ensures that only allowed parties are able to access the system data.

Moreover, the functionalities of the online pick requesting and delivering system would be categorised and utilized by the system users based on their application user role and permission. This concept has been considered for the application develop considering the security to system data. Only the system administrators should have access for Pick&GO crucial functionalities, in order to avoid vulnerabilities for the application. The user role-based functionalities for the application are mentioned below;

Table 1: Security Mechanism - User role-based functionalities

User	Allowed System Functionalities
Administrator	• Add/View/Edit/Delete operational service centre branch records. • Add/View/Edit/Delete operational service centre staff records. • Add/View/Edit/Delete customer item pickup records. • Add/View/Edit/Delete customer item delivery and status records. • Add/View/Edit/Delete delivery item tracking records.
Centre Staff	• Add/View/Edit/Delete customer item pickup records. • Add/View/Edit/Delete specific customer item delivery and status records. • Add/View/Edit/Delete specific delivery item tracking records.
Customer	• Create/Edit customer user account. • Add/View/Edit/Delete item pickup requests. • View delivery item tracking status.

2.7 User Story Maps

User stories illustrate how the end users of intended online pick requesting and delivery system would interact with its functionalities. This depicts on how useful the system would be for the end users.

The intended application user story map for Pick&GO administrator is shown below.

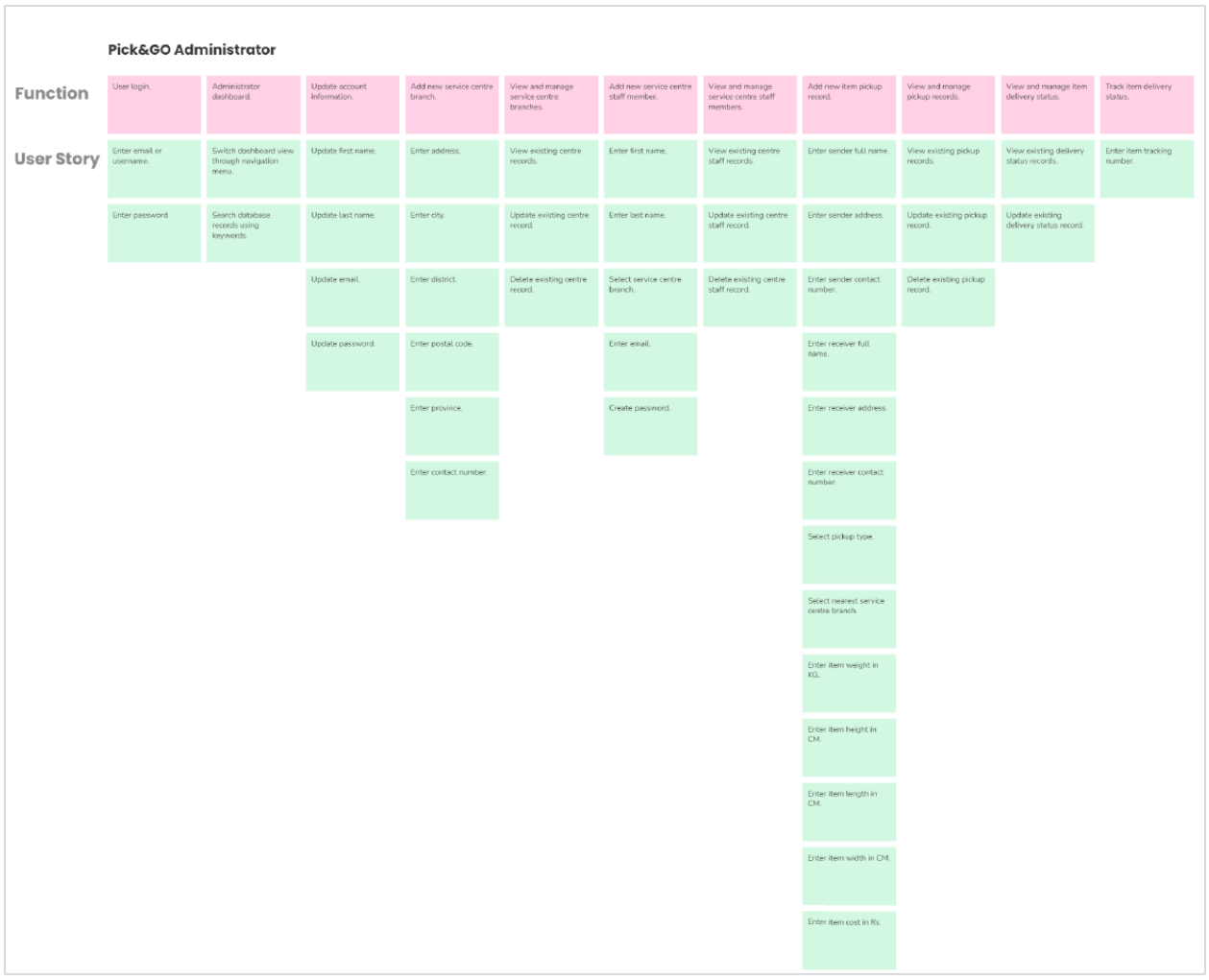

Figure 1: User story map - administrator

The intended application user story map for Pick&GO service centre staff is shown below.

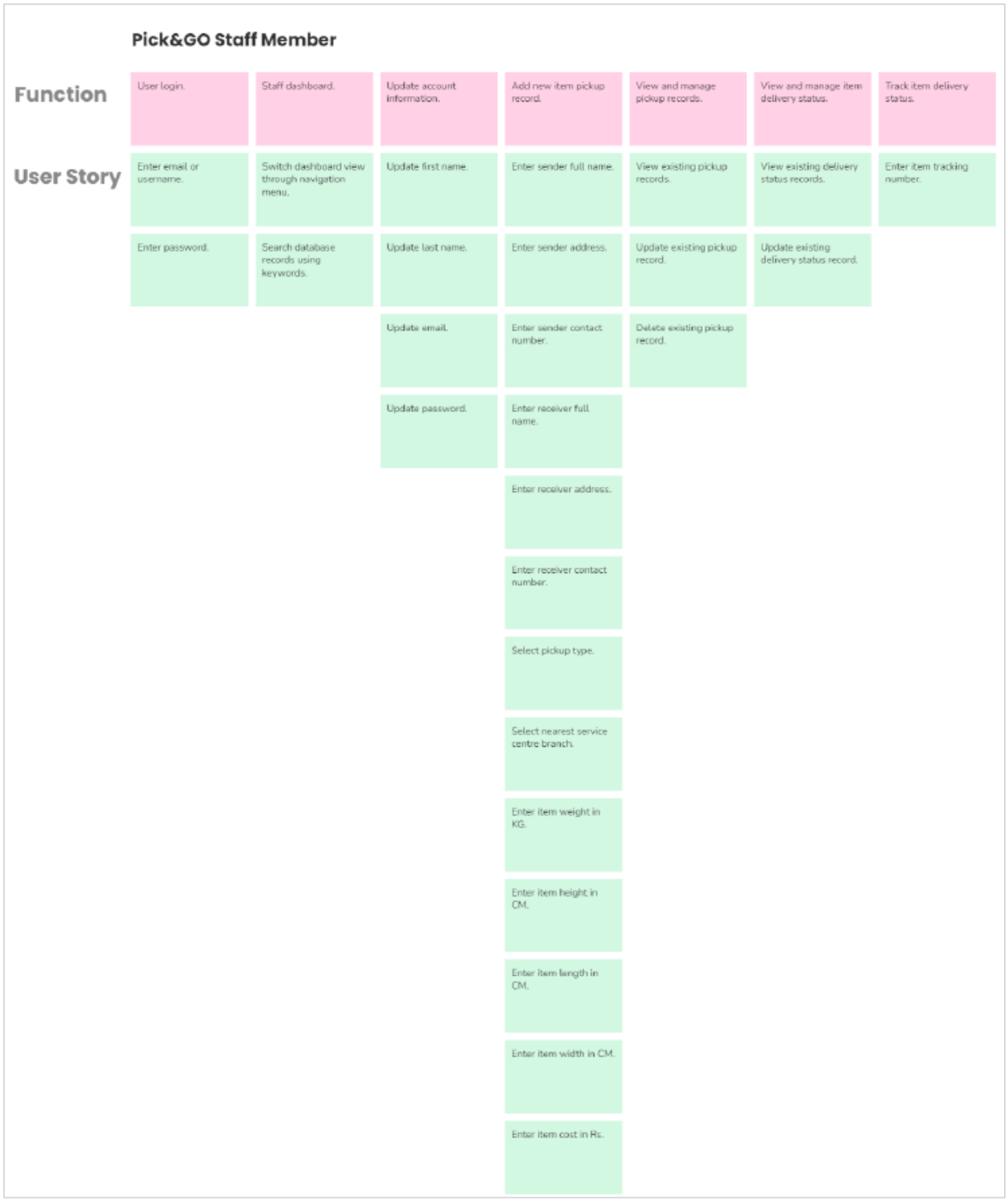

Figure 2: User story map - service centre staff

The intended application user story map for Pick&GO customers is shown below.

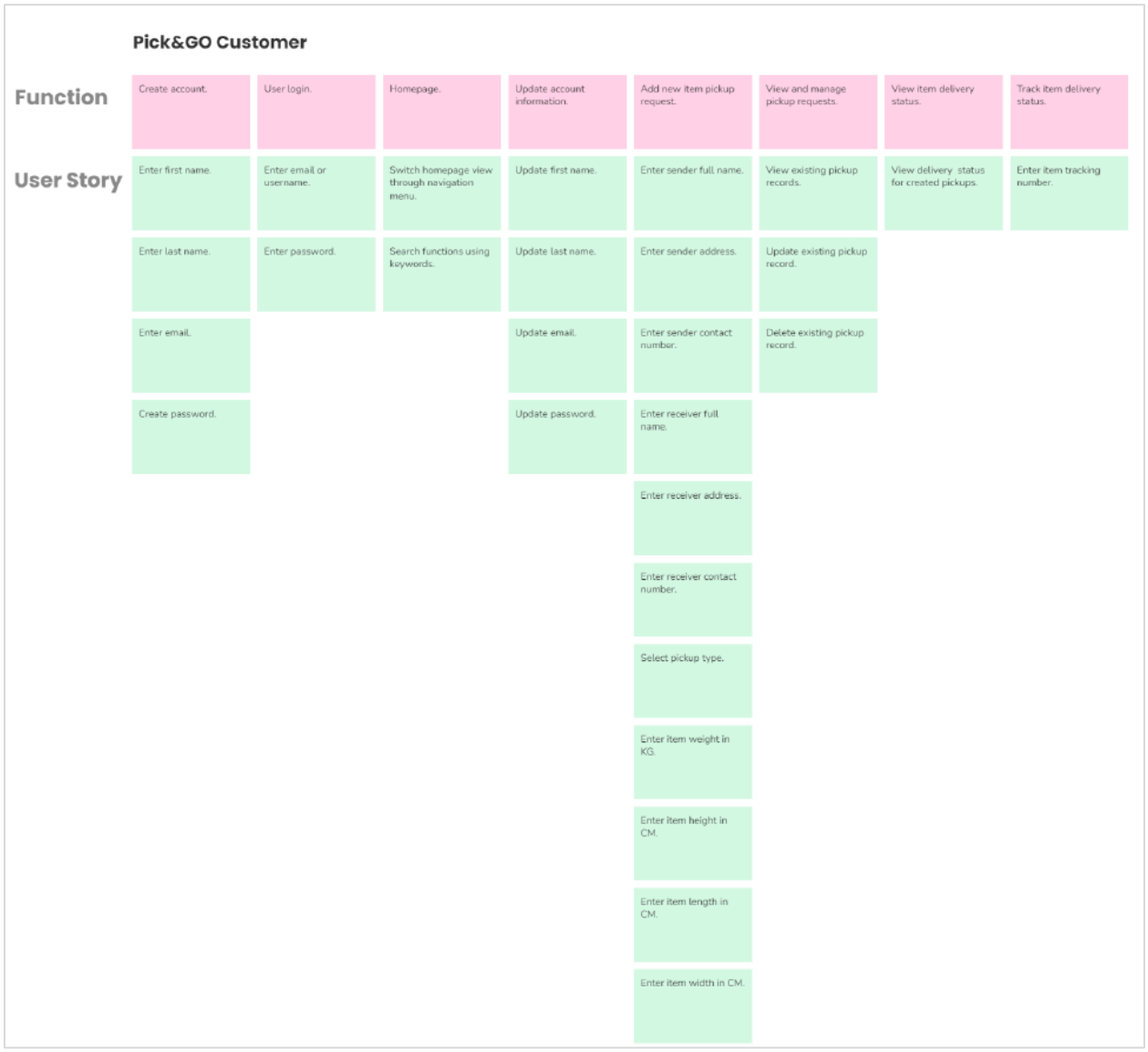

Figure 3: User story map - customer

3.0 Software Design Document

Pick&GO

Online Pick Requesting and Delivery System

- SOFTWARE DESIGN DOCUMENT -

3.1 Problem Definition

Pick&GO is a package delivery service which provides island wide goods delivery services. Pick&GO currently requires an online pick requesting and delivering system for the requirement of goods delivery. Their customers should be facilitated to request a pickup of an item and track the delivery to the destination. The purpose of the current project is to develop an online pick requesting and delivering system for Pick&GO to enhance their service providing experience with customers. The system requires Pick&GO to handle their operational service centre branch information based on their branches and location. Moreover, service centre branches should also contain centre staff members information. Pick&GO requires their staff members to add and manage item pickup records. Customers are required to be able to initiate pickup requests and track their deliveries using a tracking number system.

3.2 Intended Solution

The intended solution is to develop an Online Pick Requesting and Delivering system, with the essential requirements necessary to carry out daily operations for Pick&GO package delivery service. The developed software would be a web application, which users can access remotely through the internet.

This project's online pick requesting and delivering system could be designed using a web application. Users would be able to access the web application remotely through the internet. The development would majorly include Java, HTML, CSS, Bootstrap, JavaScript, Ajax and PHP languages. MySQL could be used as the application relational database management system to store Pick&GO centre and customer related data. Visual studio code could be used as the development environment.

The planned functionalities of the application are mentioned below.

- User login based in user permissions for admin, centre staff and customer.
- Create and manage operational centre branches based on centre location.
- Create and manage operational centre staff members based on centre branch.
- Create and manage pickup item records based on item dimensions and cost.
- Search and track item deliveries using unique pickup tracking number.

3.3 Tools and Technologies

The development of Pick&GO online pick requesting and delivering system would be based on web application technologies. System users would be able to access the system though the internet. Development tools and technologies required to develop and execute the application are shown below.

Table 2: Development Tools and Technologies

Software Platform	Web Application
Mobile Application Platform	Web-Based Mobile Application
Front-End Programming Language	HTML, CSS, Bootstrap, JavaScript and Ajax
Back-End Programming Language	PHP, JavaScript and Ajax
Database	MySQL
Local Web Server	XAMPP
Development Environment	Visual Studio Code

The technical requirements to properly configure the application are mentioned below.

Table 3: Technical requirements

Hardware Requirements	• Pentium 4 or newer processor. • Minimum 4GB of RAM. • Minimum 250GB of HDD storage. • Stable internet router connection.
Software Requirements	• Running Windows (7 or newer) or macOS (OS X El Capitan 10.11 or newer) system operating system. • Internet browser, Google Chrome recommended.
System Configuration	• Web application domain name. • Web server with database system for application hosting.

Web Application:

Web applications are programs that utilize the internet in order to send and retrieve system data. These applications are designed to run on web browser software, where all functions are transferred. The program is directly connected to the internet through a web server, which contains the application's source code and allows it to run. Web applications are widely popular among software development projects due to their simple user accessibility and efficient development approaches. Web application are included with client-side and server-sided technologies. The client of a web application would be the end user accessing the application while the server-side hosts the application [1]. Web application platform development has been chosen for the current project as Pick&GO requires an online system to be accessed through the internet.

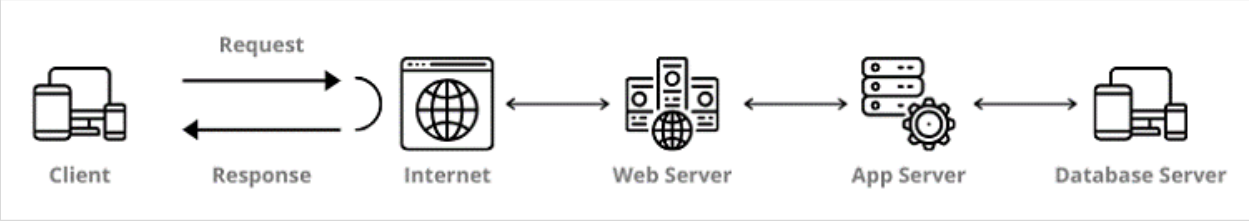

Figure 4: Web application architecture

HTML (HyperText-Markup Language):

HTML is a text-oriented language which is used to code the front-end interfaces of web applications. HTML is used to implement the visual structures of an application, based on what the end-user is required to see, based on the requirements. HTML basically instructs web browsers on how visual contents should be structured and viewed for the end user [2]. HTML has been chosen for the current project's online pick requesting and delivering application, as it is an efficient pick to implement the front-end development.

CSS (Cascading Style Sheets):

CSS is a simple concept of "style sheets" implemented along with HTML language, for front-end based implementation of an application. CSS assists to create efficient visual contents of an application. For example, visual contents such as web content colours, alignments or text decorations could be described using CSS in integration with HTML language. CSS has been selected along with HTML or the current project as it would be an easier task to design the visual interfaces of the web application.

JavaScript (JS):

JavaScript is a straightforward dynamic programming language which initiates logical concepts for the structures and contents of a web application. JavaScript assists the application to insert dynamic web components that could interact in real-time. Visual interface component functionalities would be greatly reduced without the implementation of JavaScript. [3] JavaScript has been selected for the current project to develop dynamic features, that wouldn't be possible with just HTML and CSS. The intended application would not be visually efficient without the implementation of dynamic web components using JavaScript.

MySQL:

MySQL is a free and open-source database management system, which is based on relational database management technologies. MySQL has been selected as the current projects database system, considering that the Pick&GO application requires essential data to be integrated within the system and a database management system, following a connection required within the system and application data.

Visual Studio Code:

Visual studio code, also known as vs code is an open-source and free application source-code editing software development environment developed by Microsoft. The editor is included with essential application development features along with an efficient interface, ideal for any sort of application development. Visual studio code has been selected as the development environment for the current project due to its advanced development features with straightforward system structural concepts.

Web-Based Mobile Application:

Web-based mobile application uses a simple concept of just requiring an installed web browser on any mobile device. The supplication would still work as same as the online web application. Considering that Pick&GO requires a mobile-supported application, web-based mobile application methodology has been selected to provide the same functionalities as the web application. Moreover, the web-based mobile application would be able to run on any mobile operating system including Android, iOS or Windows.

3.4 Design Specification

Use Case Diagram:

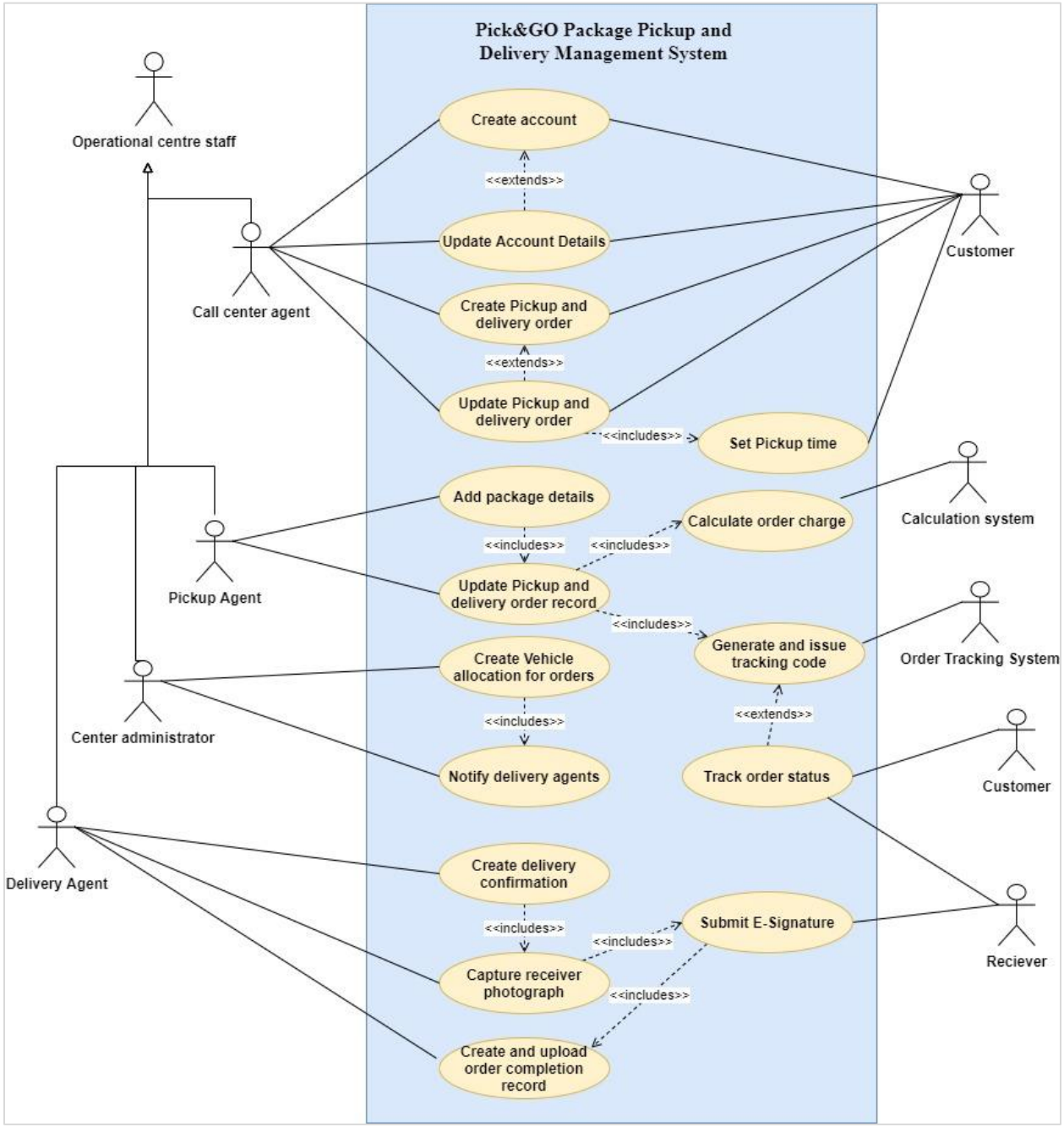

Figure 5: Use Case Diagram

Data Flow Diagram:

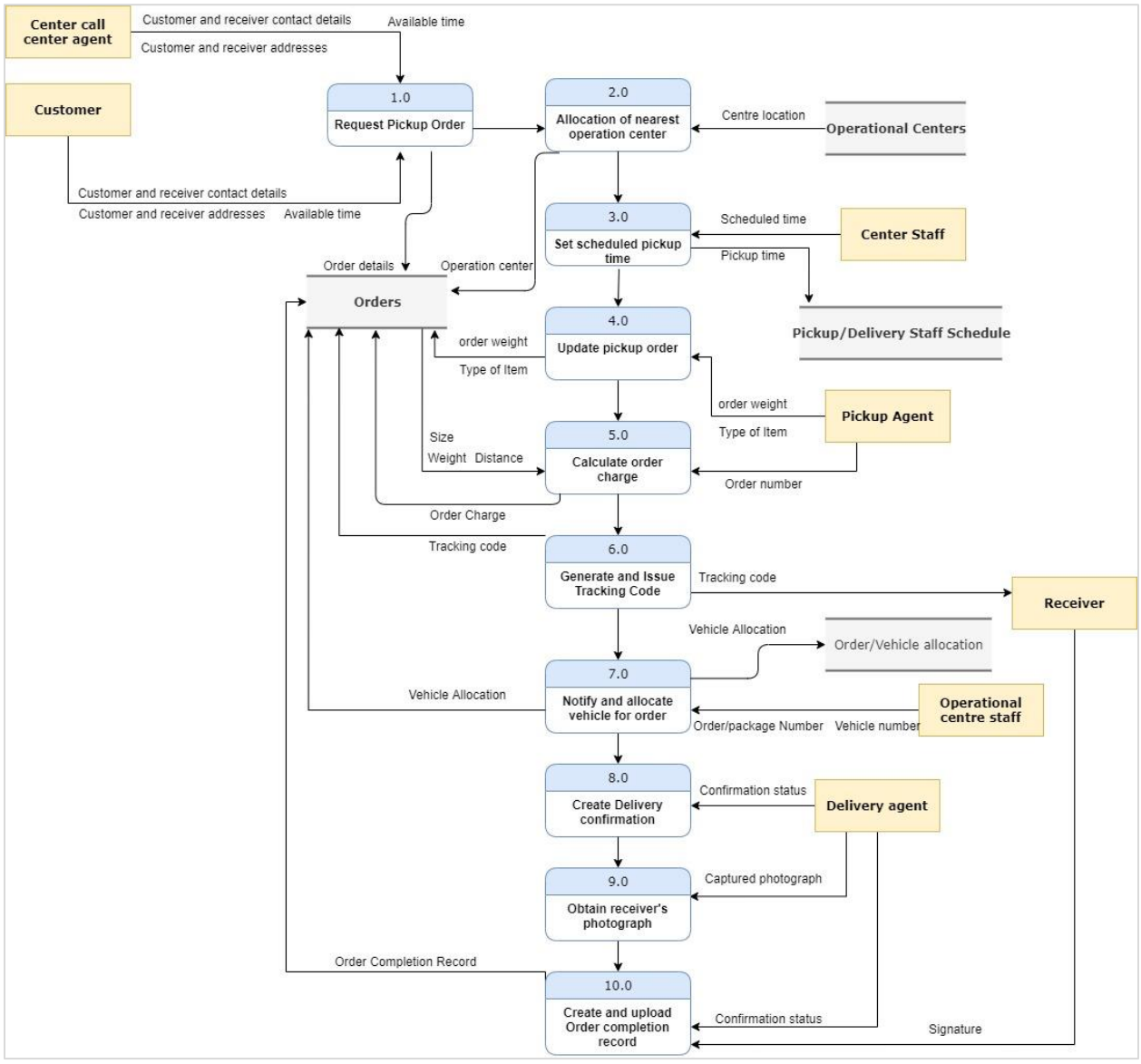

Figure 6: Data Flow Diagram

Class Diagram:

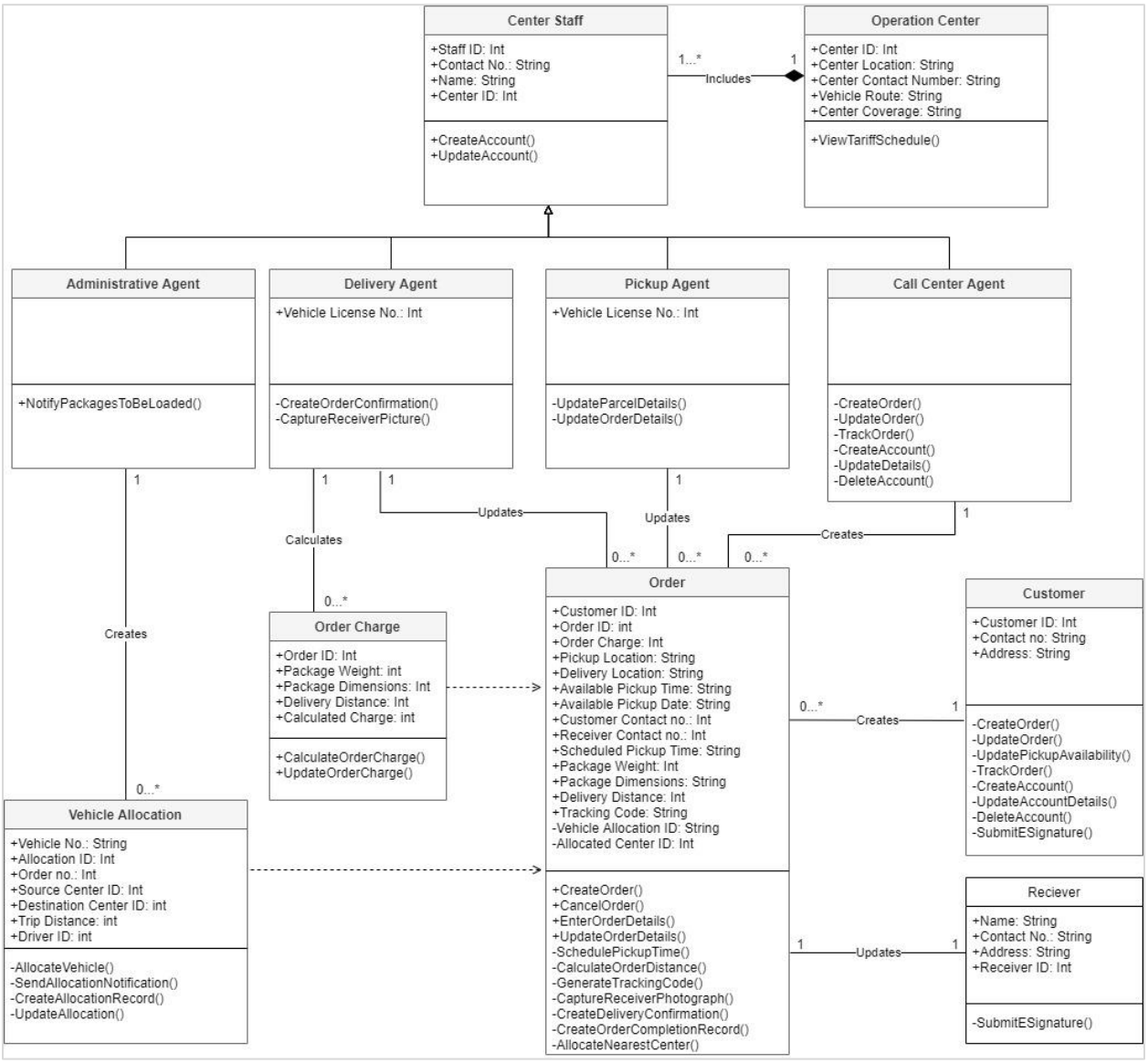

Figure 7: Class Diagram

3.5 System Architecture

The MVC (Model, View, Controller) architectural pattern will be used to construct the web application, which promotes code modularity and maintainability. It is a well-known software architecture that may be applied to a variety of frameworks and programming languages. The proposed software system is made up of several different components that work together to handle a variety of different business logic and database query activities.

The front-end interfaces for the functions that end-users must use can differ depending on their role. Across Business logic, database queries, and presentation, this software architecture logically isolates the source code and functions. Developers can manage the codebase with less complexity thanks to the enhanced modularity. Multiple developers will be able to maintain parts of the code independently, allowing for faster development and optimization.

The following are a few more reasons to use the MVC design pattern:

1. Because the code structure is defined as numerous levels in different source code files, it supports test-driven development and makes unit testing and debugging easy.
2. The MVC framework makes it simple to create different view components for your model component. It allows you to create several view components, allowing you to reduce code duplication by separating data and business logic.
3. Low code and quick development equate to lower costs. MVC facilitates rapid development, resulting in a shorter time to market. Even more so, with less money spent and a shorter learning curve.

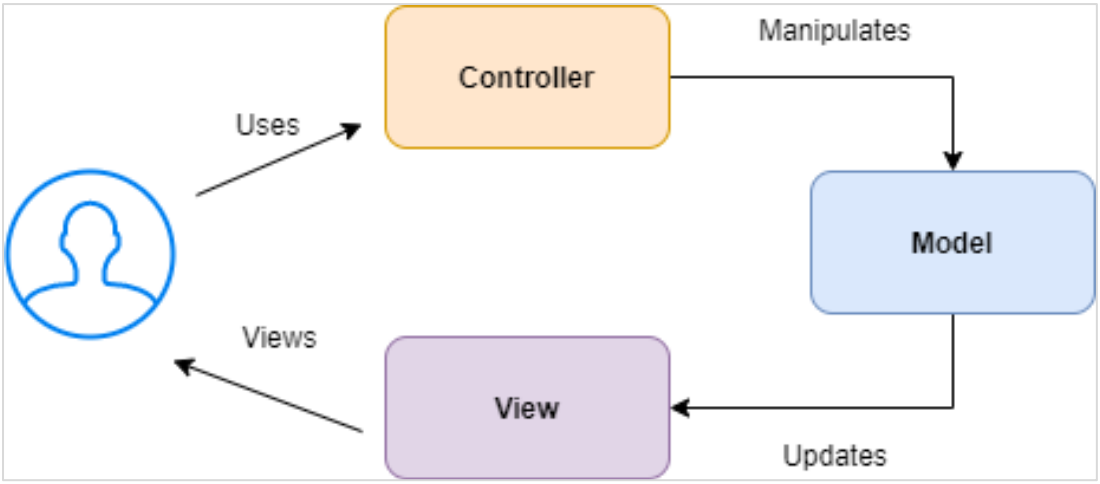

Figure 8: System architecture diagram

3.6 Software Development Methodologies

In profession consideration of the requirements of Pick&GO package delivery service. “Traditional” system development methodology would be implemented in the current project to develop an online pick requesting and delivering system. Traditional system development approaches employ a linear approach, with all operations and stages pre-organized and carried out in a sequential order. The analysis techniques are unidirectional, only following the stages that have been pre-planned. The project flow procedures would not be repeated once a planned stage has been completed. [1]

Under different types of tradition development methodologies, “Waterfall” method is intended the suit the requirements of Pick&GO. The waterfall model would be advantageous for the current project as it suggests a sequential project flow. The entire process would be broken down into multiple phases. Each phase should be completed before moving on to the next, without any overlapping.

The phases for the current project are described below;

01. **Requirement Collection**: The requirements for the system development are derived in consideration of Pick&GO system expectations to get a fundamental idea of the application to be designed.

02. System Analysis: Collected system and user requirements are effectively analysed against the intended solution of the current project, to assist the project planning.

03. **System Design**: System plans are initiated to develop the application. This includes stages of identifying system analysis methods, development methodologies and system architecture design.

04. Implementation: This phase includes the process of developing the planned system. Identified requirements and methodologies would be effectively used to start implementing the required system.

05. Software Testing: Once the application development is completed, the final application will be tested in order to test the functional effectiveness of the application.

Project Milestones:

Extended stages based on the overall project phases are mentioned below.

1. **Requirement Collection.**
    - To evaluate the requirements provided by Pick&GO.
    - To identify different users included in the system.
    - To identify user requirements of the system.
    - To identify the system requirements of the application.

2. **System Analysis.**
    - To identify suitable system development approaches.
    - To identify suitable development tools and technologies.

3. **System Design.**
    - To identify the architectural requirement of the application.
    - To design the system architecture of the application.
    - To design the user interfaces of the application.

4. **Implementation.**
    - To design and integrate a system database.
    - To develop the system functionalities.

5. **Software Testing.**
    - To test functional effectiveness of the system.
    - To test the overall acceptance of the application.

3.7 Workplan

ID	Task Name	Start	Finish	Duration
1	**REQUIREMENT COLLECTION**	5/1/2022	10/1/2022	6.0 d.
2	Identify User Types	5/1/2022	6/1/2022	2.0 d.
3	Identify User Requirements	6/1/2022	8/1/2022	3.0 d.
4	Identify System Requirements	8/1/2022	10/1/2022	3.0 d.
5	**SYSTEM ANALYSIS**	11/1/2022	19/1/2022	9.0 d.
6	Identify Methodologies	11/1/2022	15/1/2022	5.0 d.
7	Identify Tools and Technologies	15/1/2022	19/1/2022	5.0 d.
8	**SYSTEM DESIGN**	20/1/2022	29/1/2022	10.0 d.
9	Identify Architectural Requirements	20/1/2022	21/1/2022	2.0 d.
10	Design System Architecture	21/1/2022	25/1/2022	5.0 d.
11	Design User Interfaces	25/1/2022	29/1/2022	5.0 d.
12	**IMPLEMENTATION**	30/1/2022	12/2/2022	14.0 d.
13	Integrate Database	30/1/2022	3/2/2022	5.0 d.
14	Code Functionalities	3/2/2022	12/2/2022	10.0 d.
15	**SOFTWARE TESTING**	13/2/2022	15/2/2022	3.0 d.
16	Quality Assurance	13/2/2022	14/2/2022	2.0 d.
17	Acceptance Testing	14/2/2022	15/2/2022	2.0 d.
18	**DOCUMENTATION**	16/2/2022	20/2/2022	5.0 d.

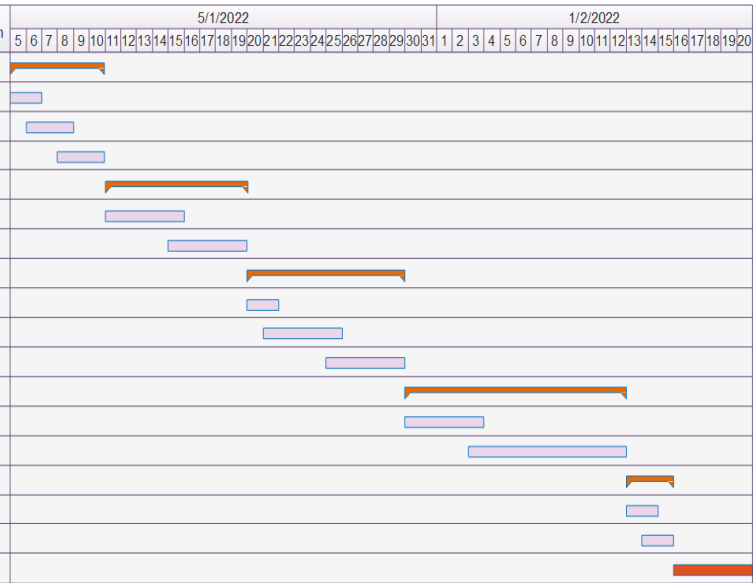

Figure 9: Project Workplan

4.0 Implementation

The users included in the current system are,

1. Admin
2. Operational Centre Staff
3. Customer

The development folder structure is shown below.

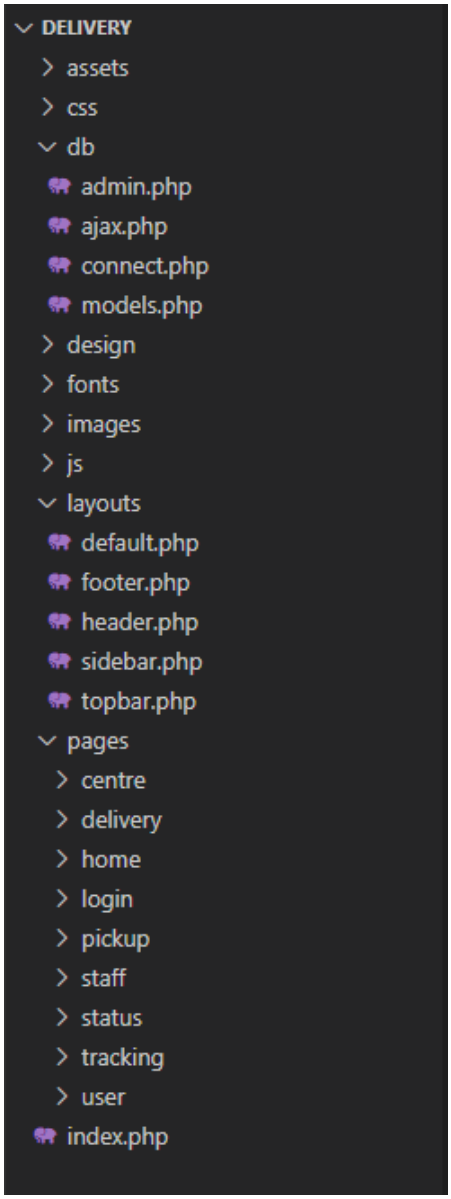

Figure 10: Implementation - folder structure

4.1 Functionalities

01. User login for application user. System roles are based on the user-level permissions.

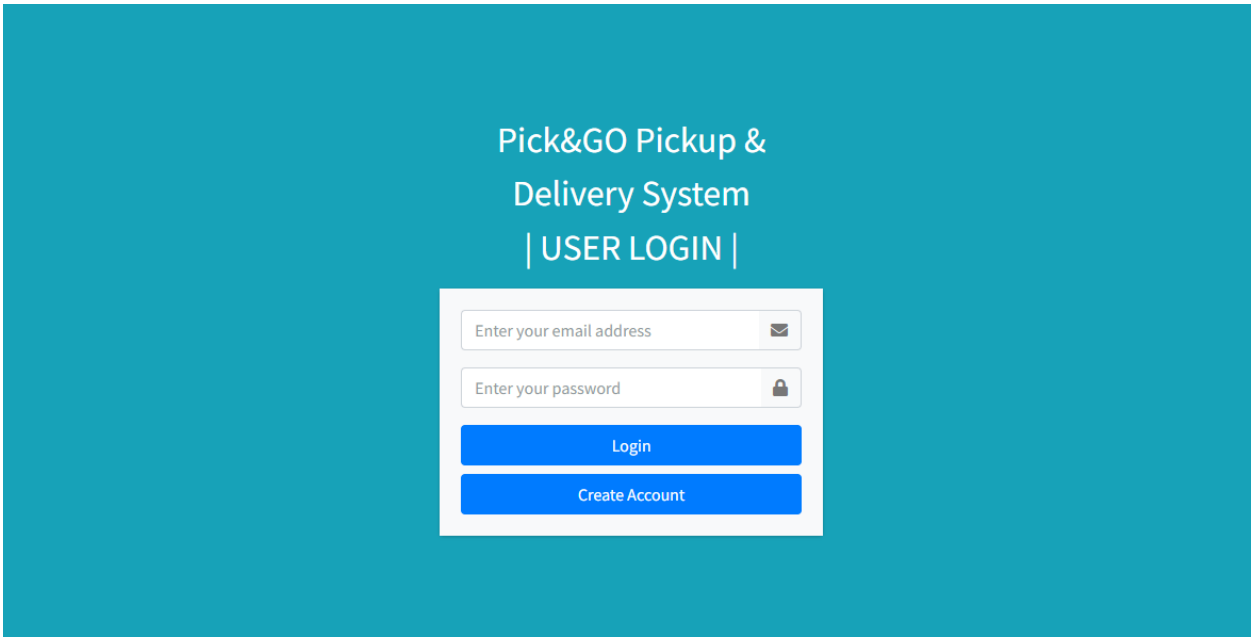

Figure 11: Function - user login

02. Add new operational service centre branch.

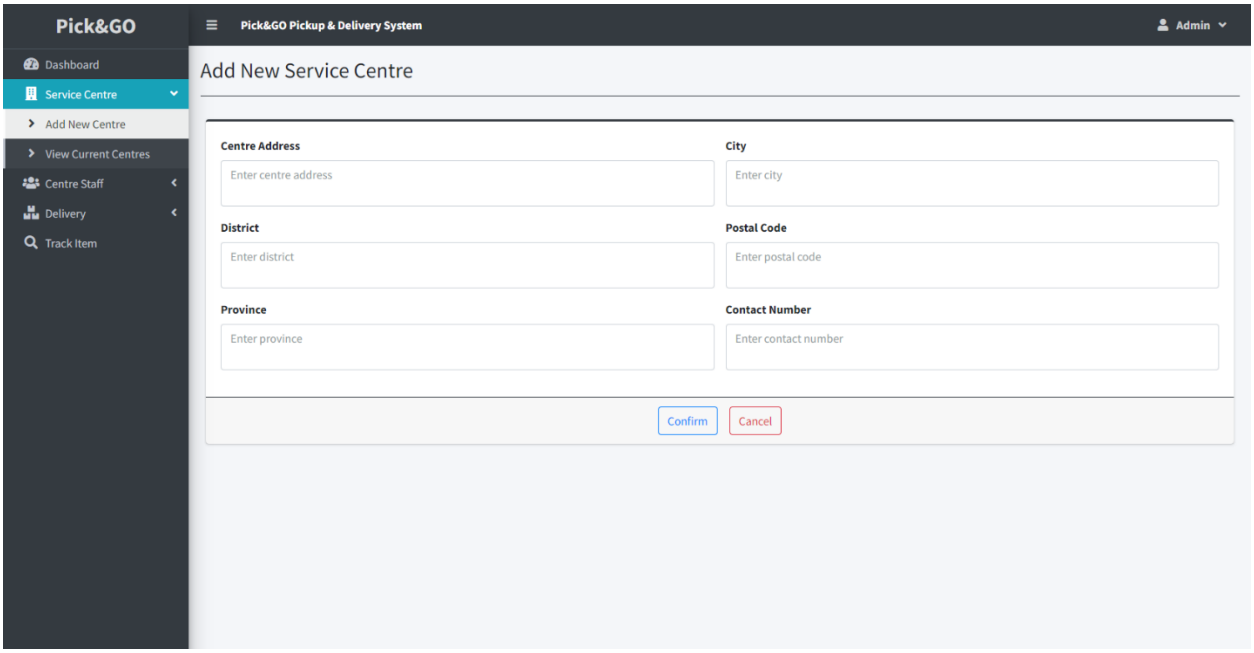

Figure 12: Function - add new service centre

03. View or manage current operational service centre records.

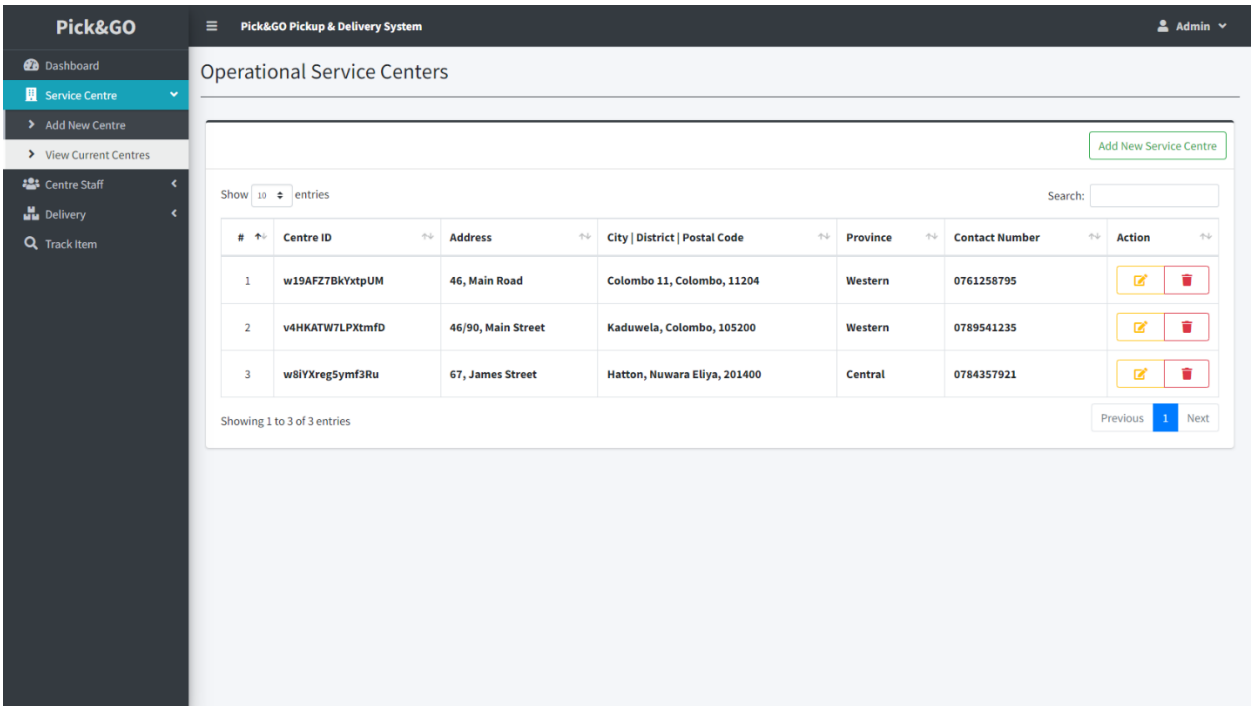

Figure 13: Function - view and manage service centre records

04. Update operational service centre record.

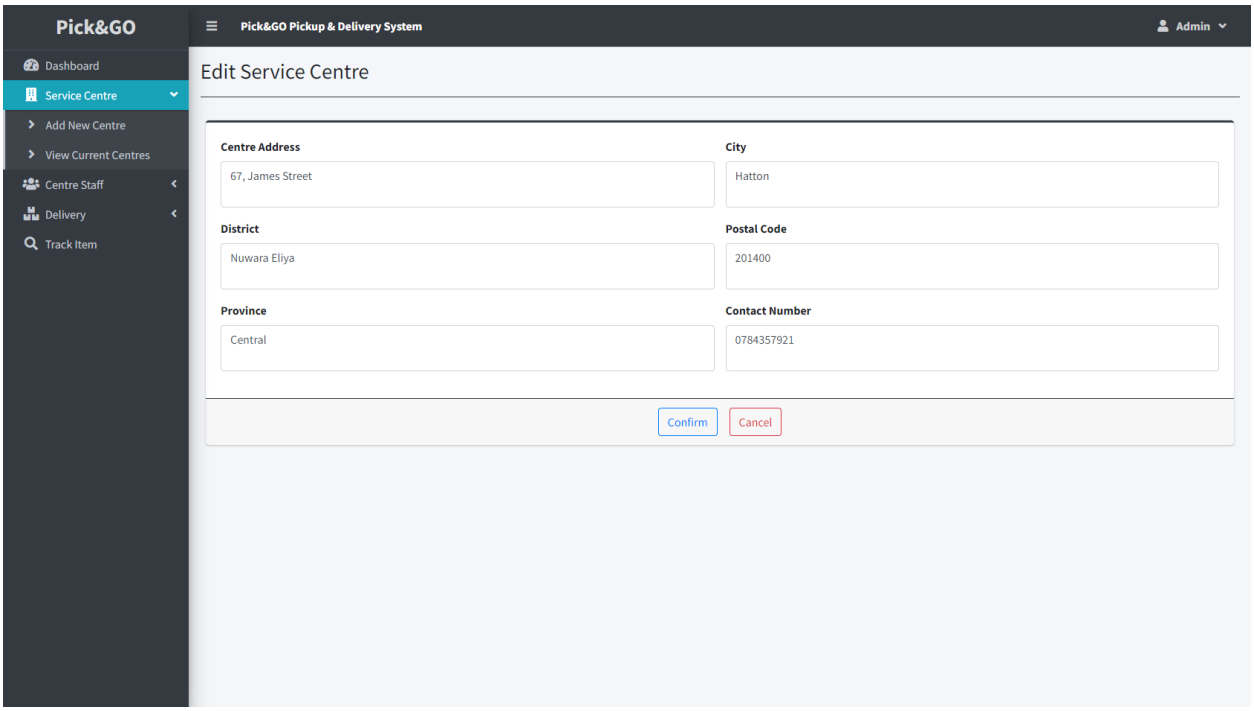

Figure 14: Function - update operational service centre record

05. Add new operational service staff member, categorized by the specific branch.

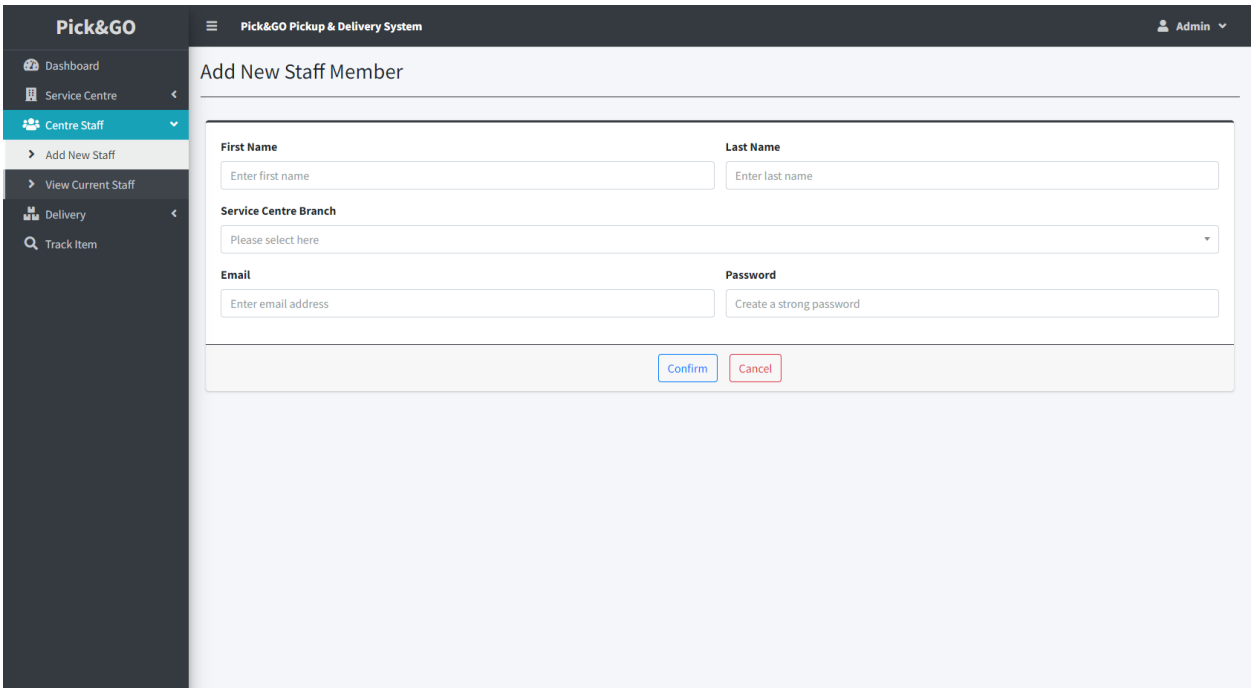

Figure 15: Function - add new operational service staff member

06. View or manage current service centre staff member records.

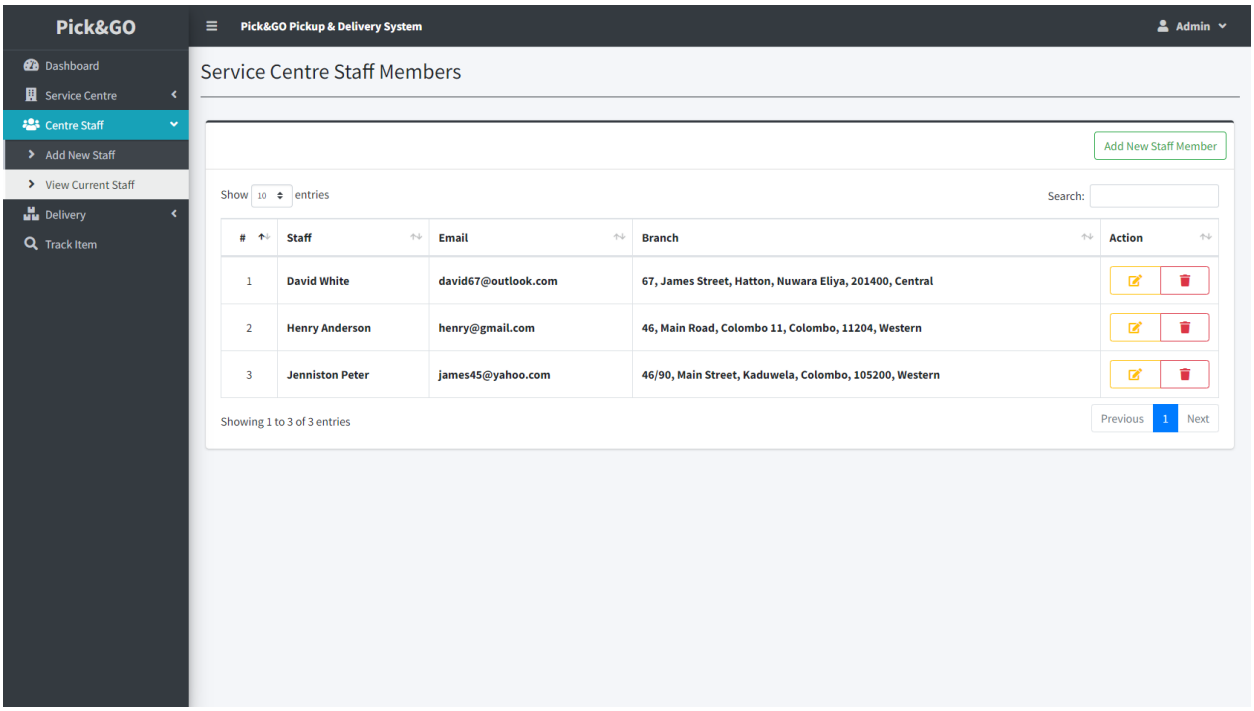

Figure 16: Function - view or manage current service centre staff member records

07. Update service centre staff member record.

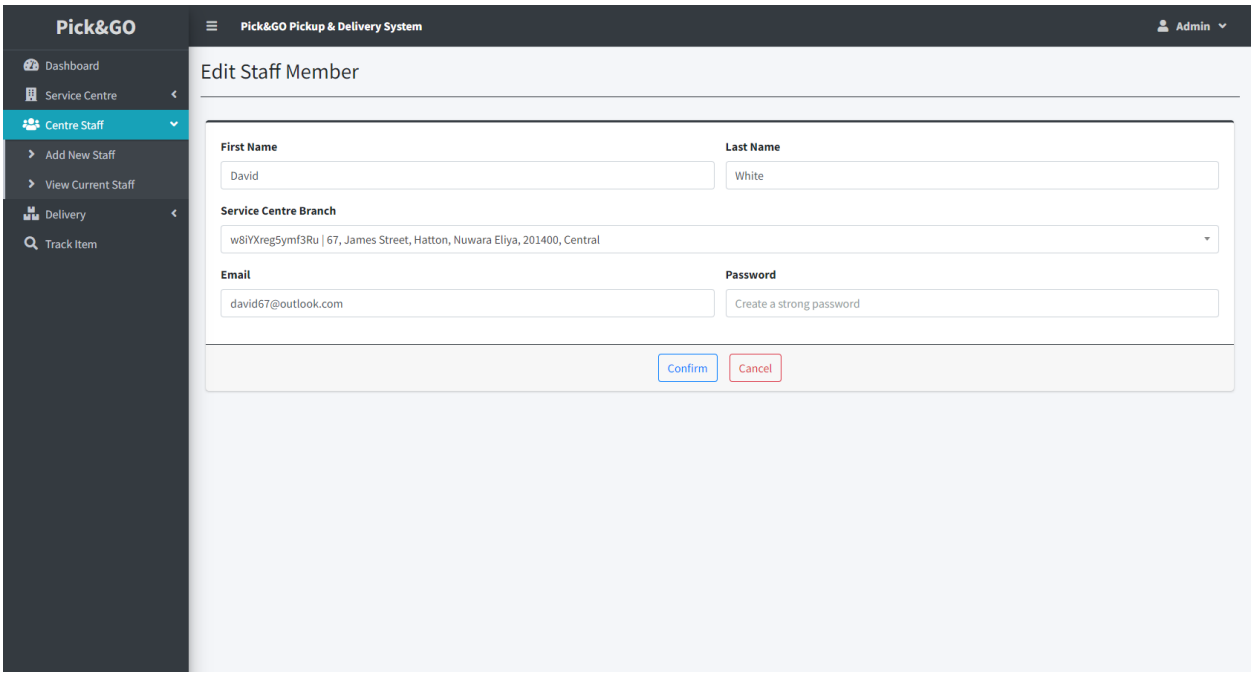

Figure 17: Function - update service centre staff member record

08. Add new pickup item with sender and receiver information.

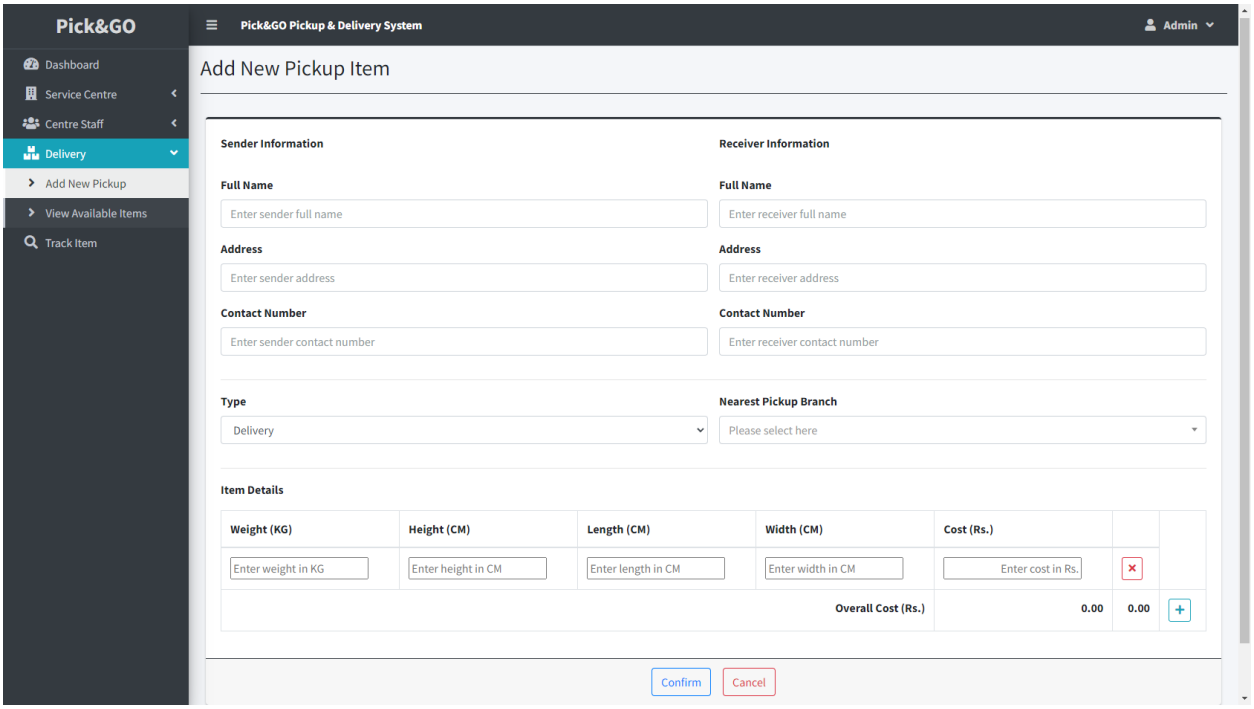

Figure 18: Function - add new pickup item

09. View or manage current item pickup and delivery records.

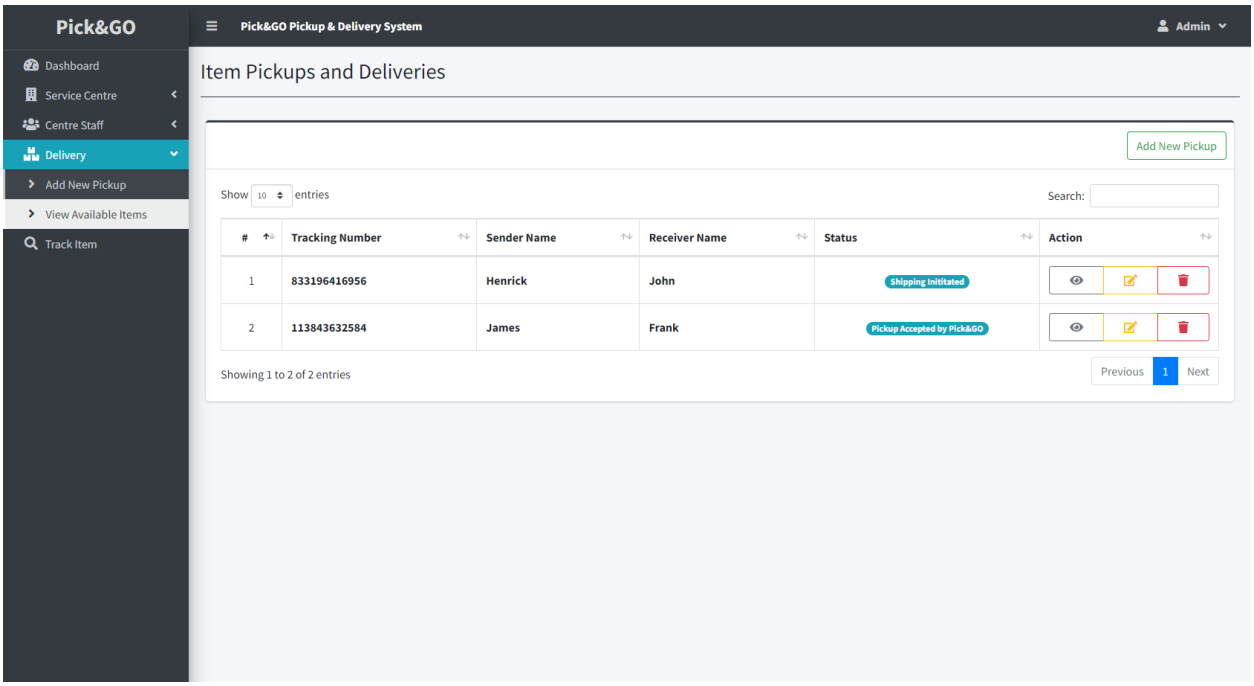

Figure 19: Function - view or manage current item pickup and delivery records

10. Update item pickup or delivery record.

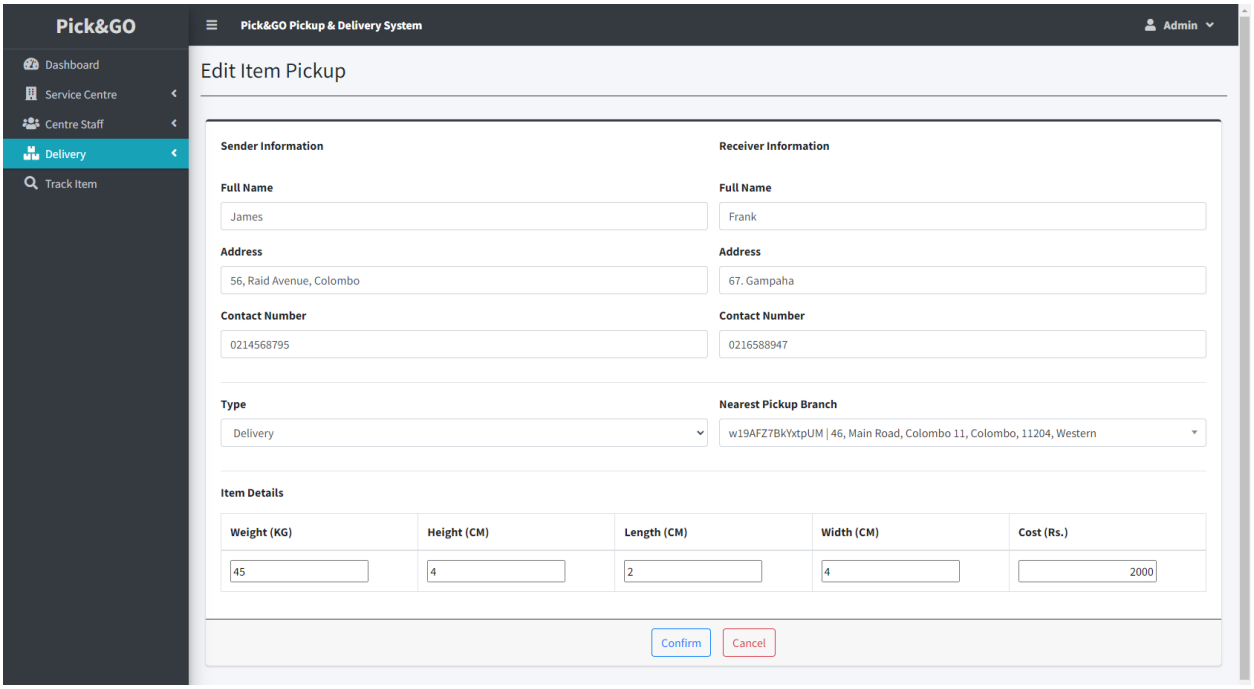

Figure 20: Function - update item pickup or delivery record

11. View specific item pickup record.

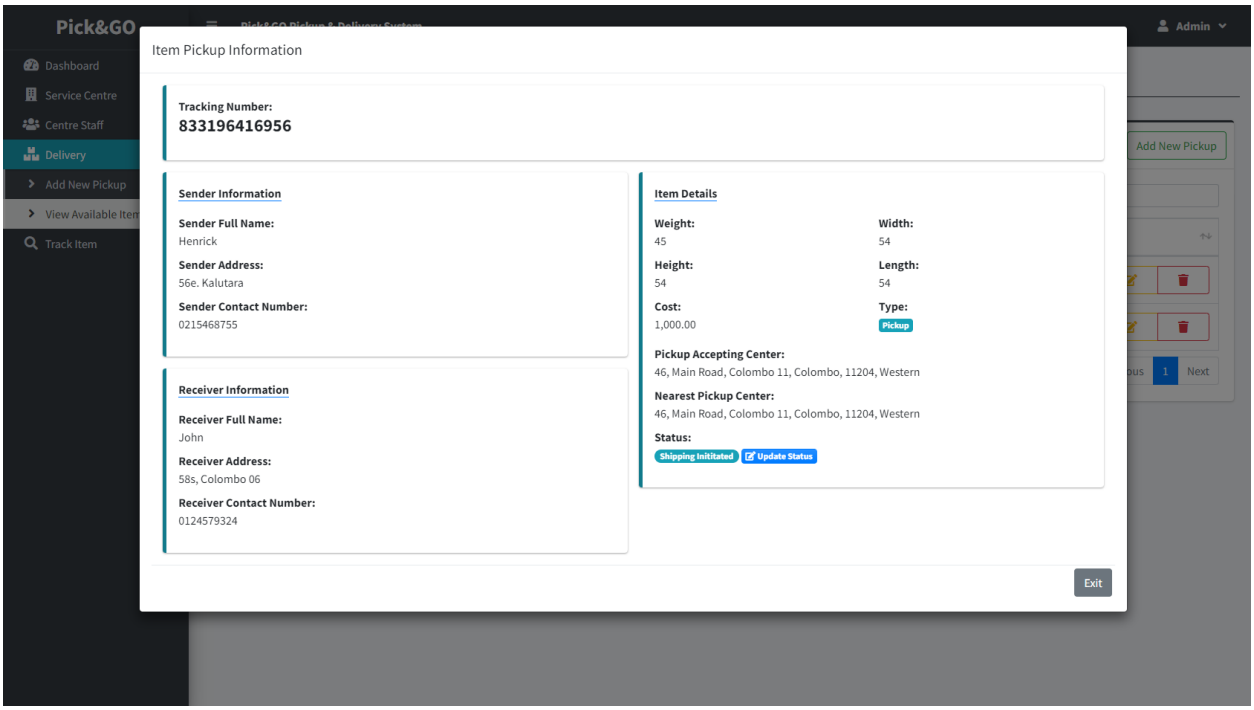

Figure 21: Function - view specific item pickup record

12. Update specific item pickup record's delivery status.

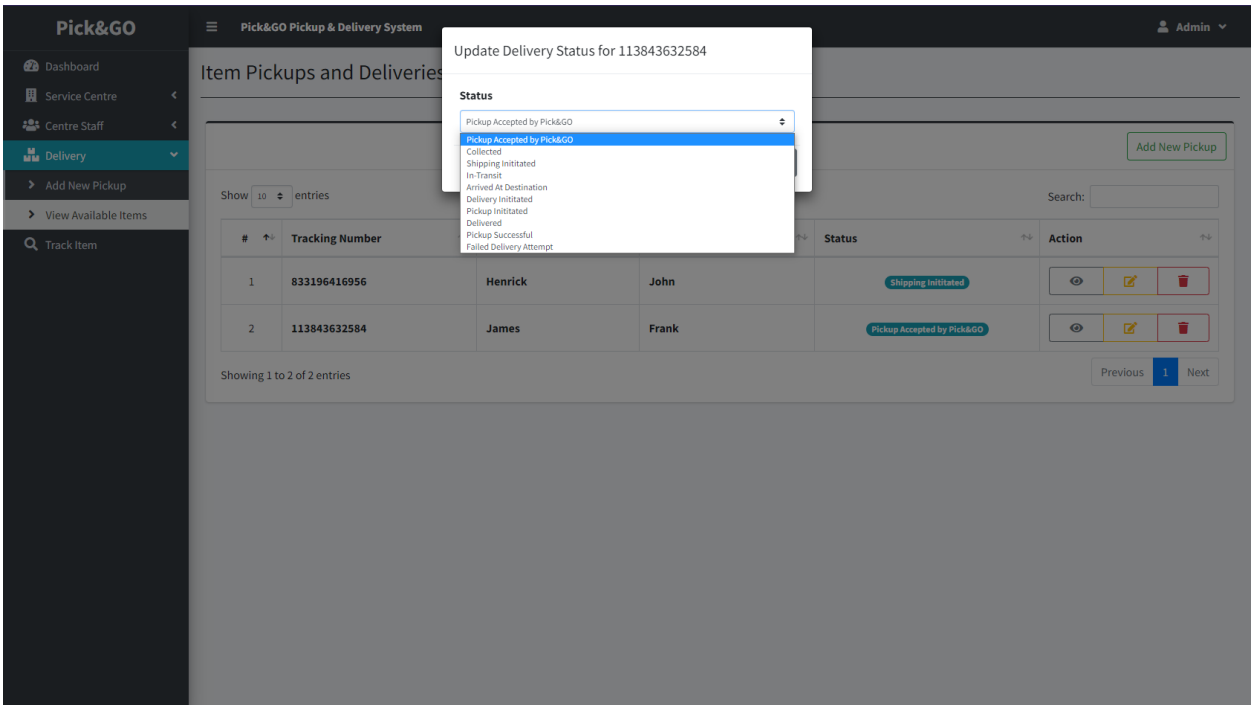

Figure 22: Function - update specific item pickup record's delivery status

13. Create new customer account.

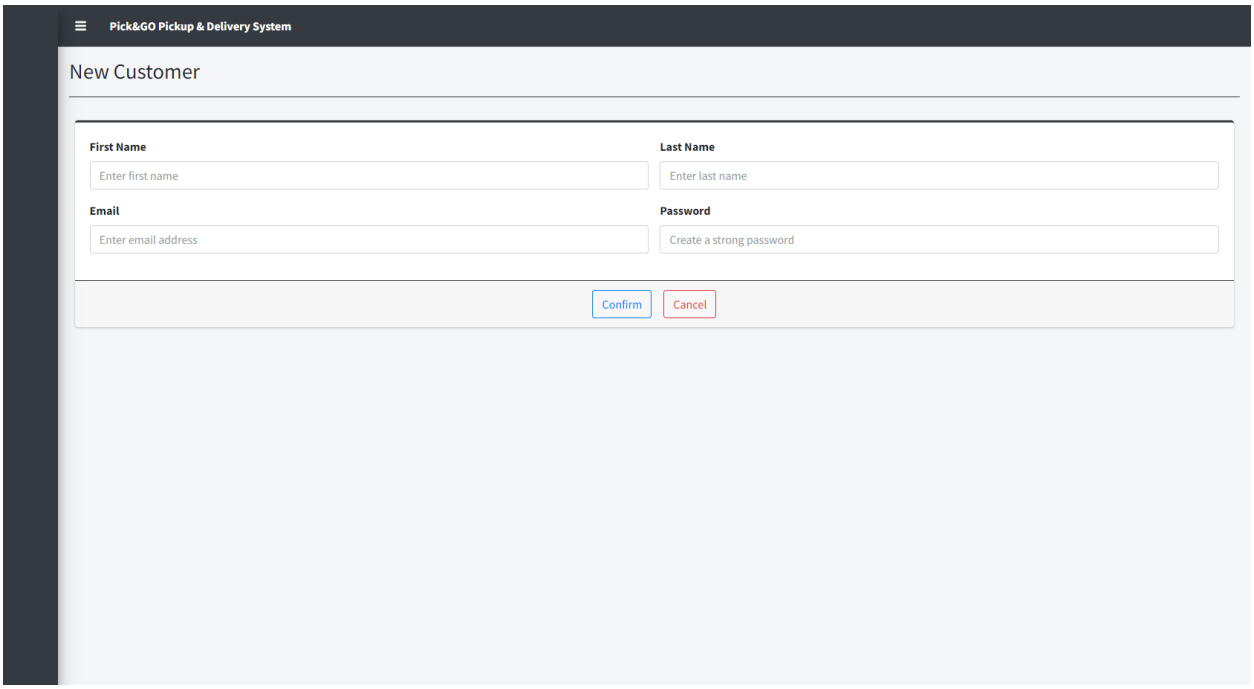

Figure 23: Function – create new customer account

14. Track specific item pickup record's delivery status using its unique tracking number.

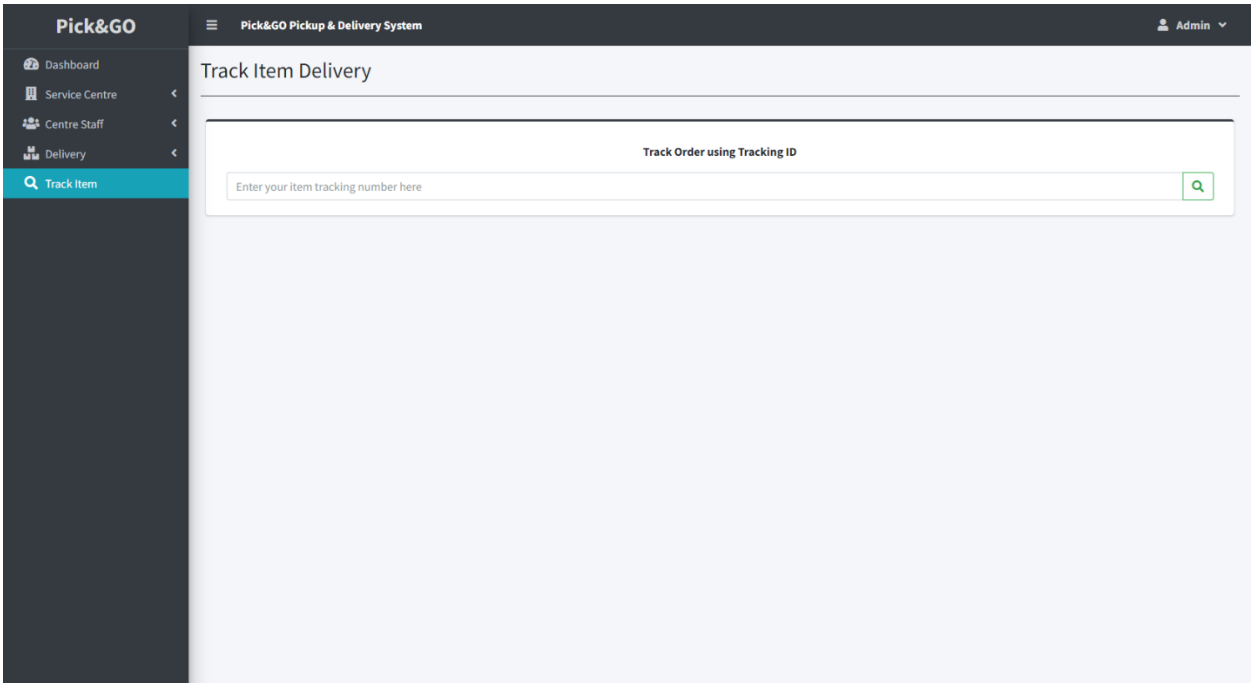

Figure 24: Function - track specific item pickup record's delivery status

The system's web based mobile application views would look exactly like the web application as it utilizes web-based technology. For example, the system user login page would look as follows;

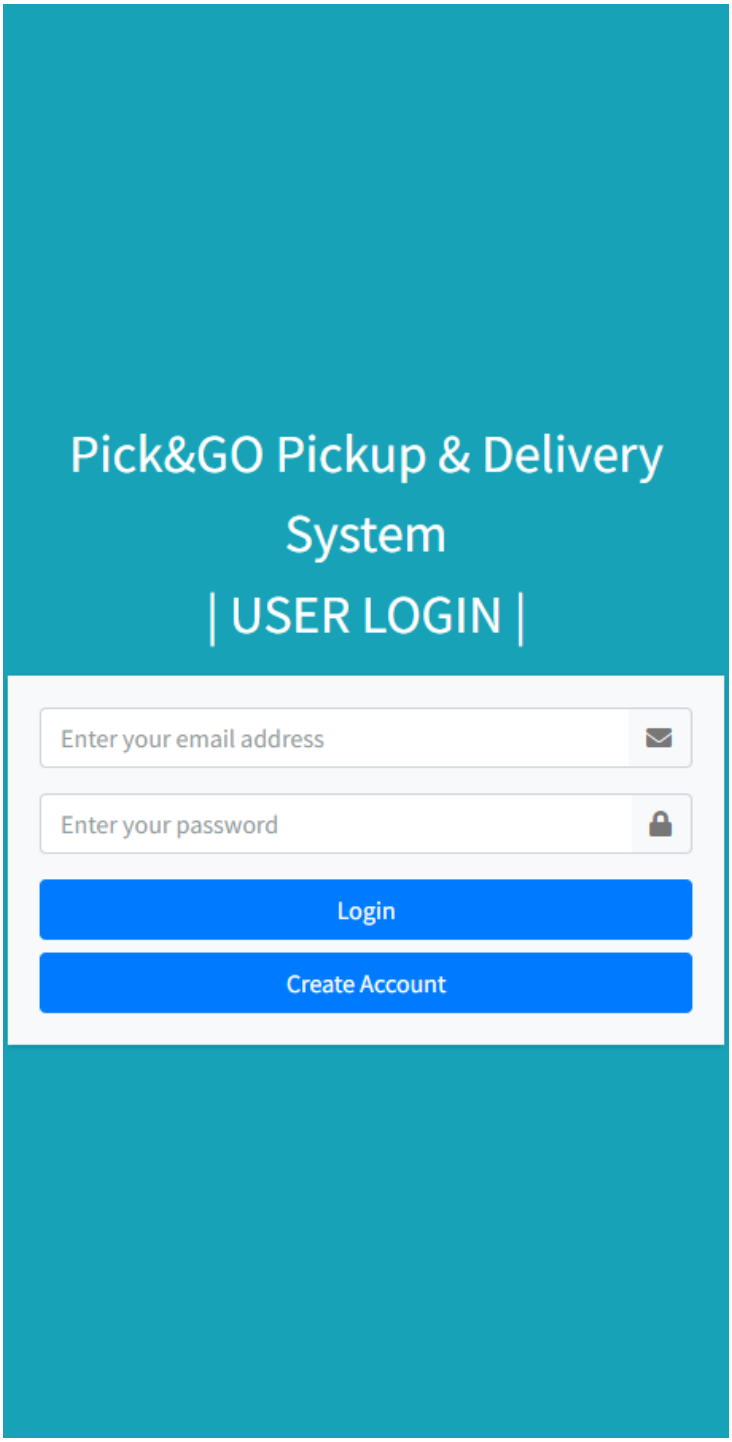

Figure 25: Function - user login - mobile view

Forms on the mobile app would be just resized in mobile view, but the functional backend would be working just as intended on the web application. Below shown is an example of forms in mobile view.

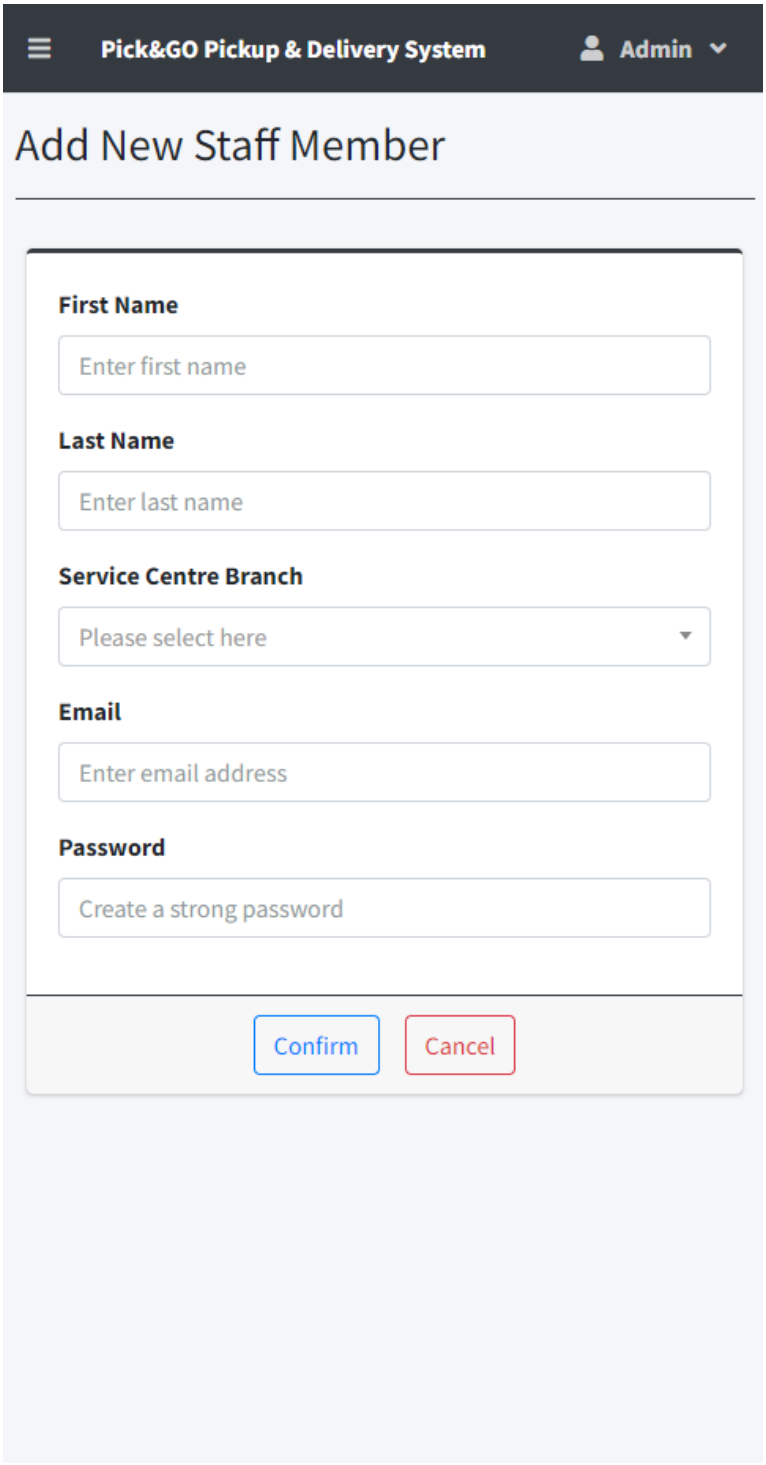

Figure 26: Function - forms - mobile view

The most essential feature on the mobile application would be the ability for system users to track pickup item delivery status using a unique user tracking number.

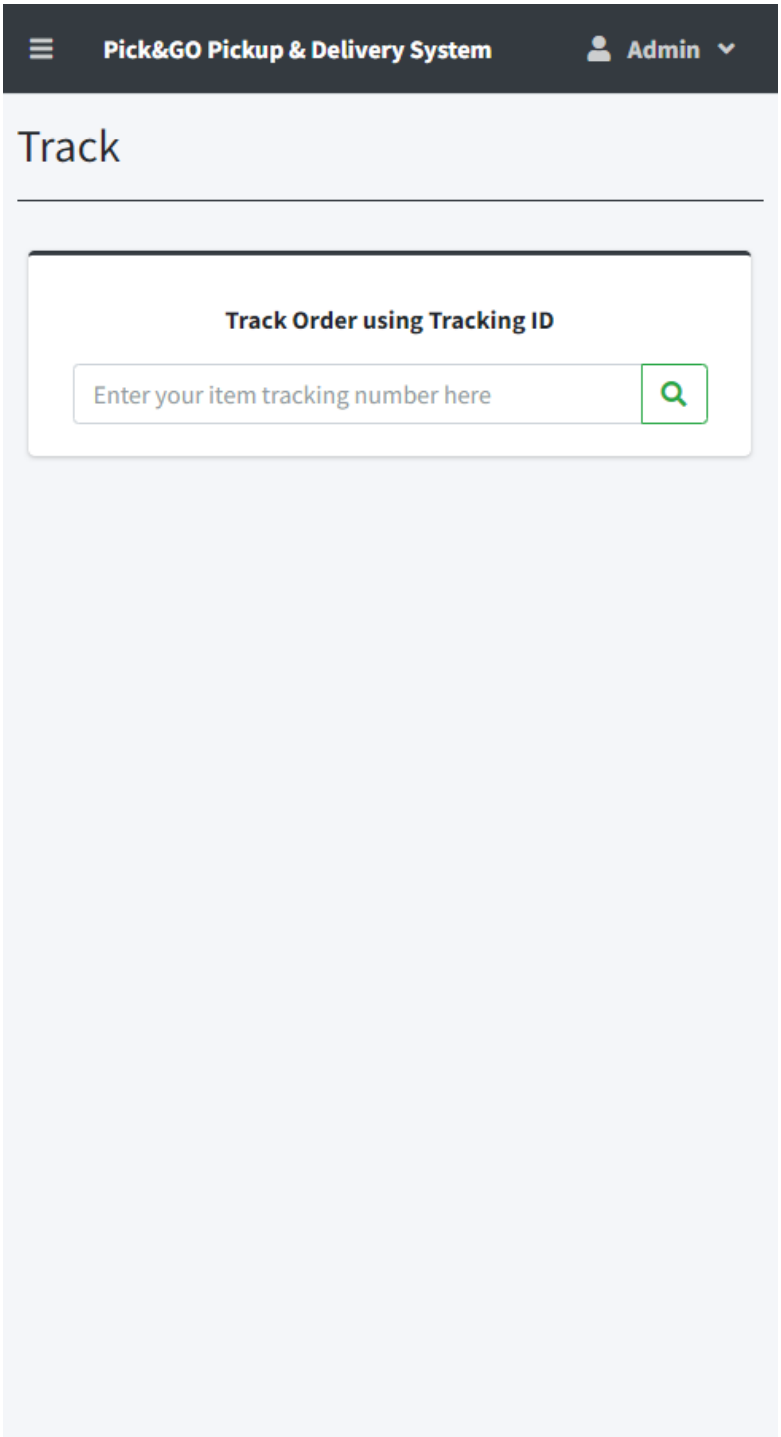

Figure 27: Function - track item delivery - mobile view

4.2 Development Tools Utilization

Visual Studio Code:

Initially, for the entire development process of the online pick requesting and delivering system, Visual Studio Code development environment has been utilized. Visual studio code is an open-source and free application source-code editing software development environment developed by Microsoft. The editor is included with essential application development features along with an efficient interface, ideal for any sort of application development. Visual studio code has been utilized as the development environment for the current project due to its advanced development features with straightforward system structural concepts.

The snippet below shows the utilization of visual studio code for system development.

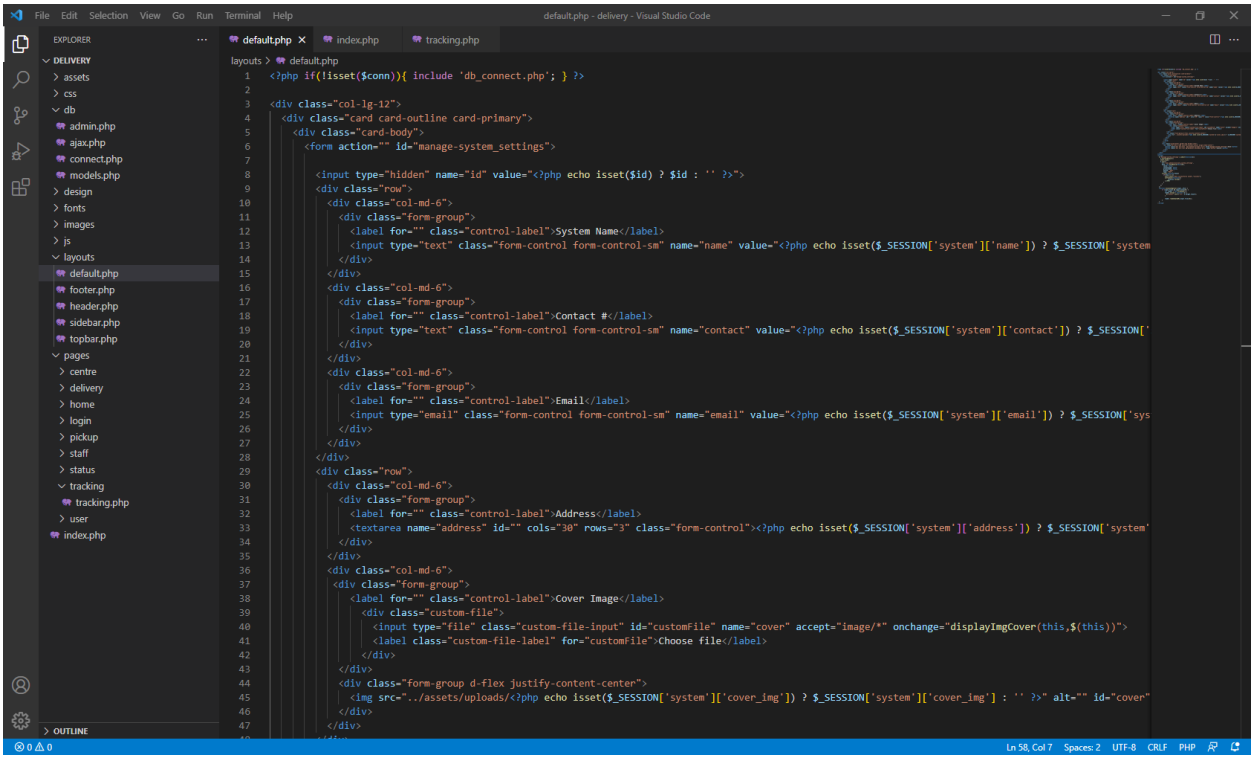

Figure 28: Visual studio code utilization

XAMPP:

Web server software is a special application precisely intended to transform usual computers into virtual web servers. These software applications are crucial in application development, testing, quality assurance and system evaluation of web application development projects.

XAMPP is a web server host which was used to test the web application locally, with an active MySQL database connection. XAMPP was utilized in the current project during development and testing phases in order to configure and run the web application. Snippet for XAMPP utilization is shown below.

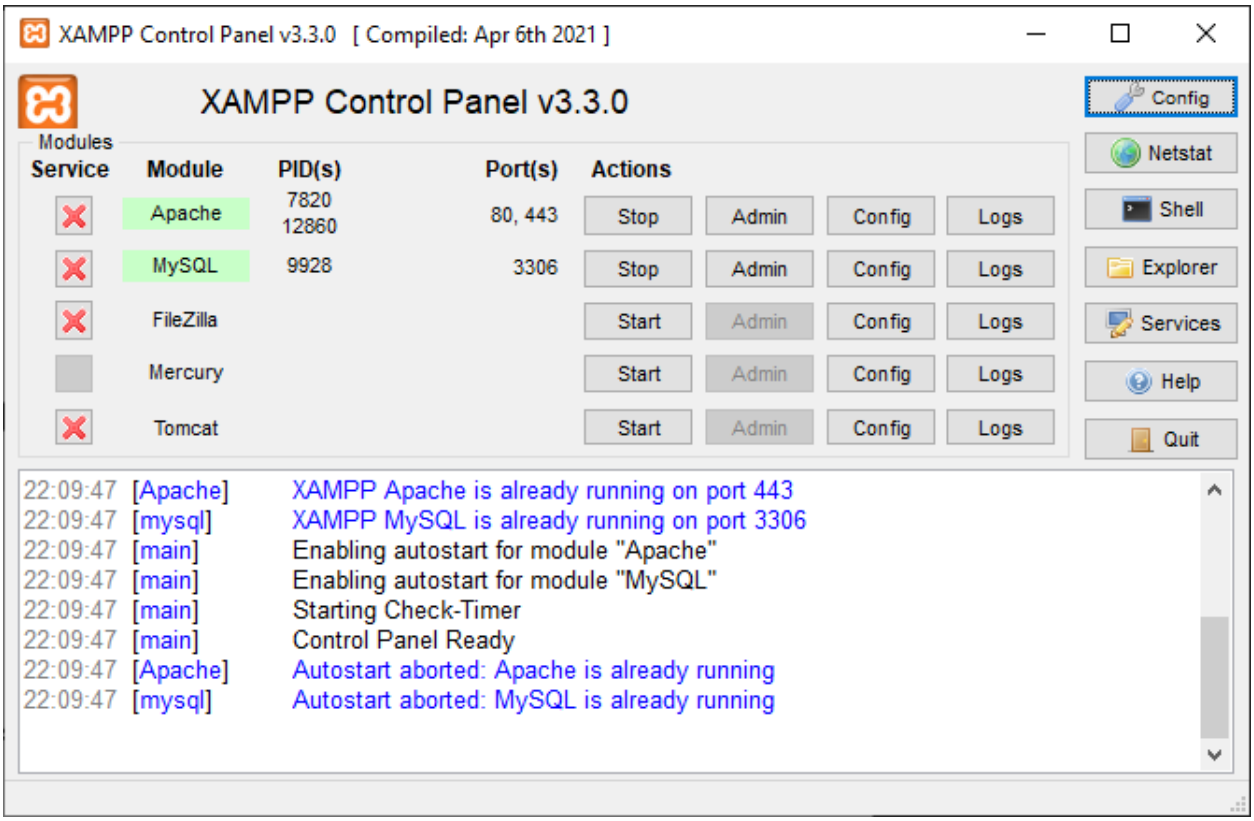

Figure 29: XAMPP server utilization

4.3 Collaboration Tools Utilization

GitHub:

GitHub is a cloud-based internet hosting service allowing developers to manage software application source code, with the ability to collaborate development groups on software projects. GitHub is also consisted of advanced software development technologies such as version controls to manage applications.

GitHub was utilized in the current project so that multiple developers would be able to work on their specific development components individually, at the same time itself. The overall application system source code would be hosted through GitHub where each developer could access and update system components.

Snippets for GitHub utilization for the current web application project is shown below.

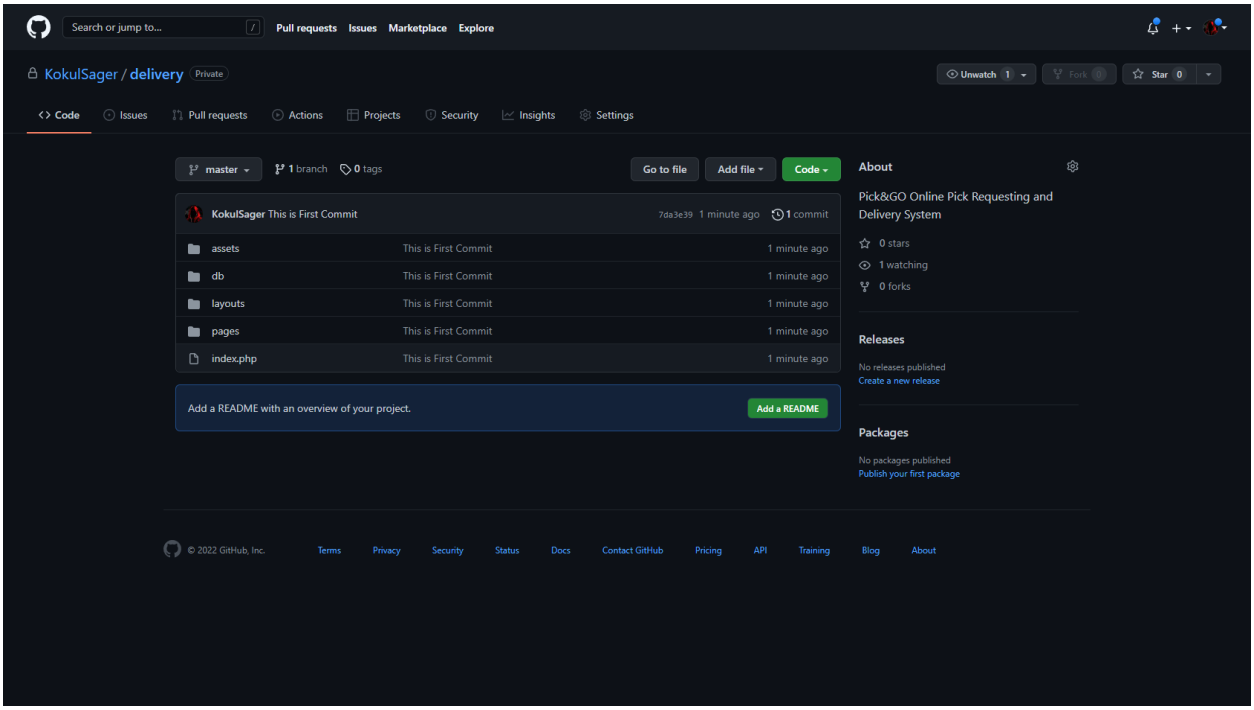

Figure 30: GitHub utilization 1

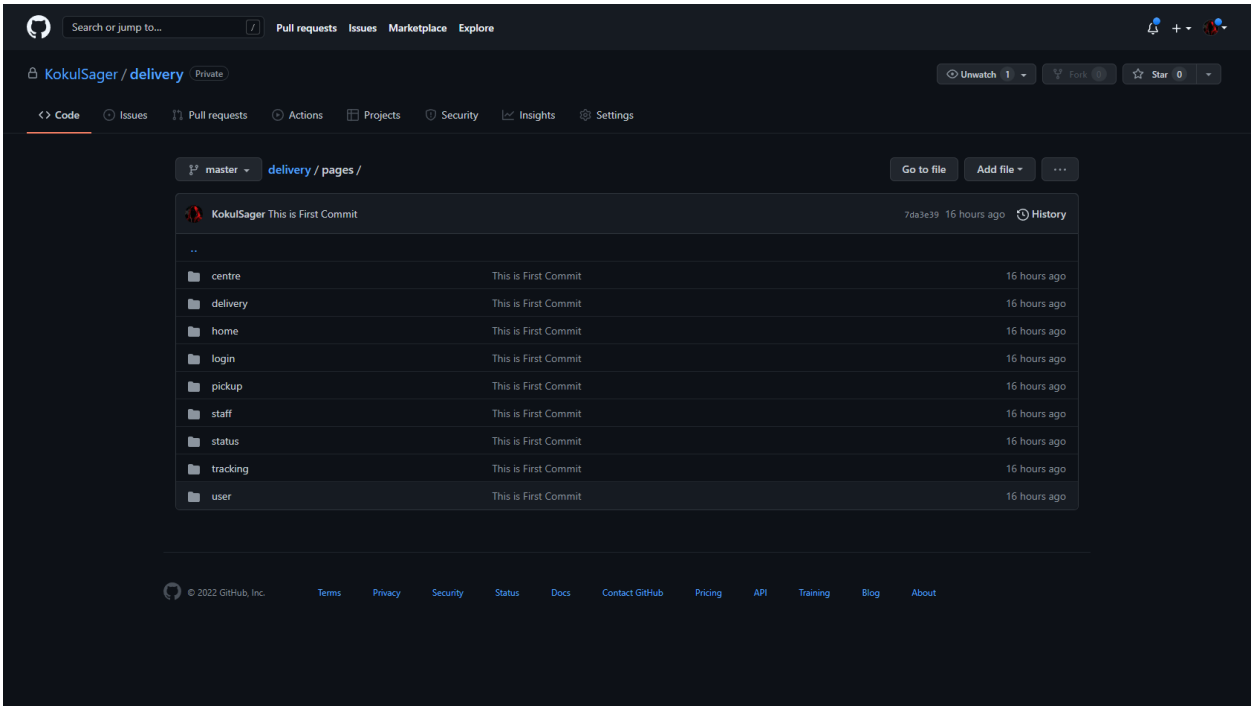

Figure 31: GitHub utilization 2

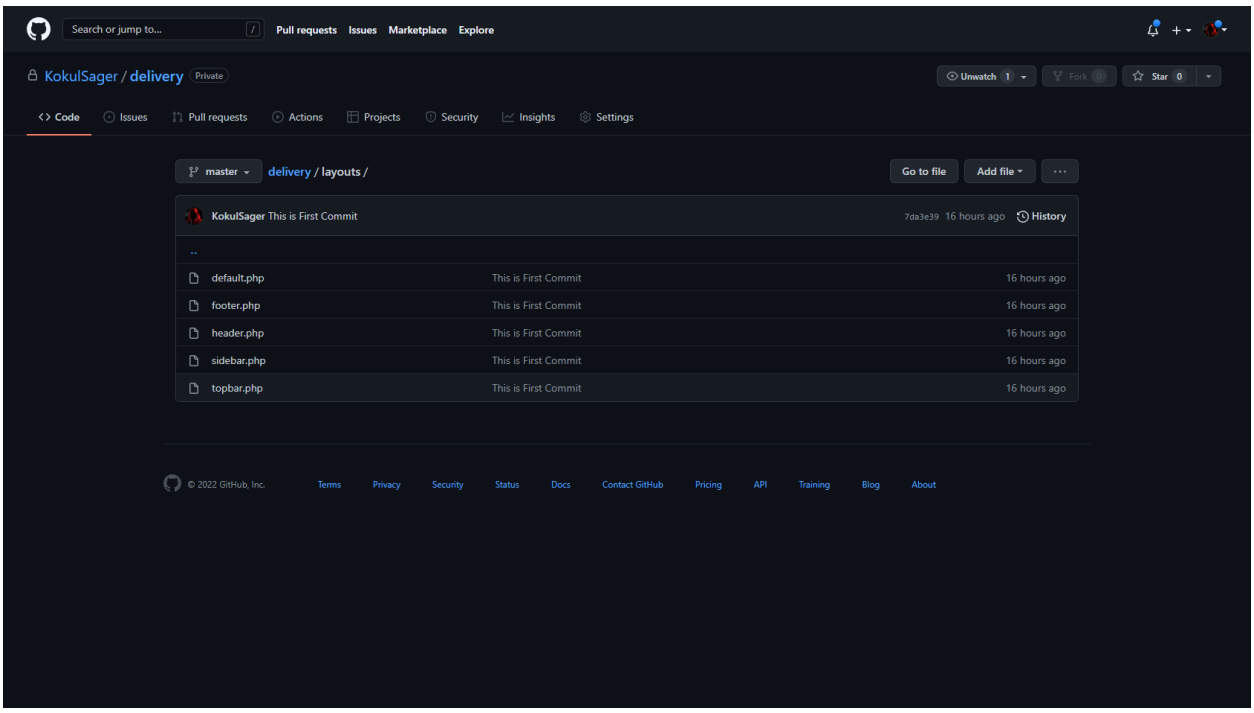

Figure 32: GitHub utilization 3

Trello:

Trello is a web-based project tasks management tool which allows multiple developers to collaborate and manage projects effectively. Trello was utilized in the current project to add, view and track the tasks during various development phases of the current web application by leveraging cards.

Snippets for Trello utilization for the current web application project is shown below.

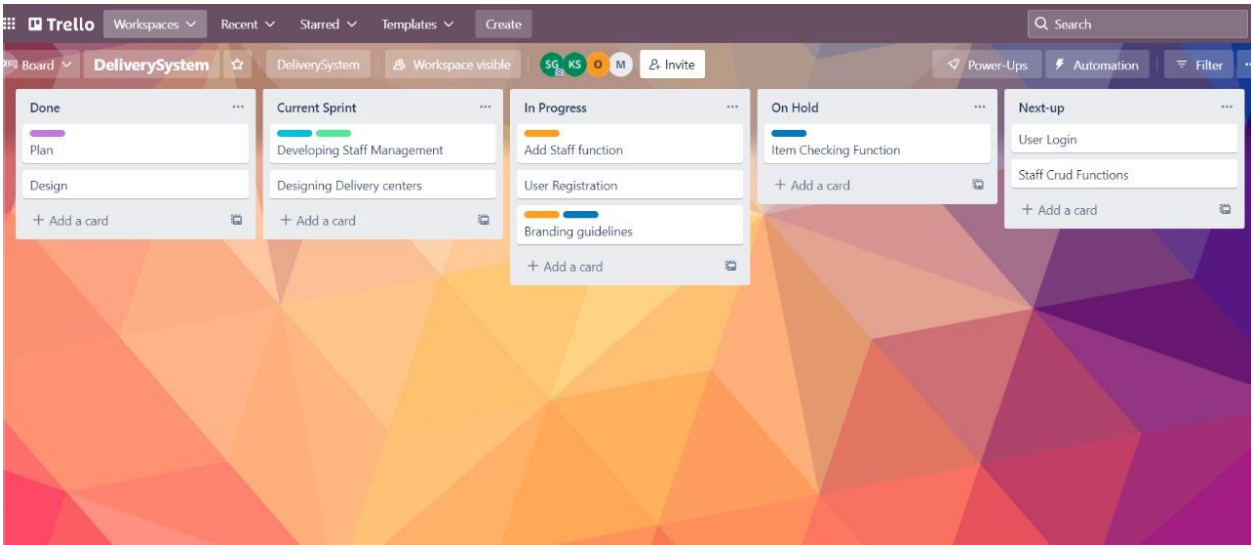

Figure 33: Trello utilization 1

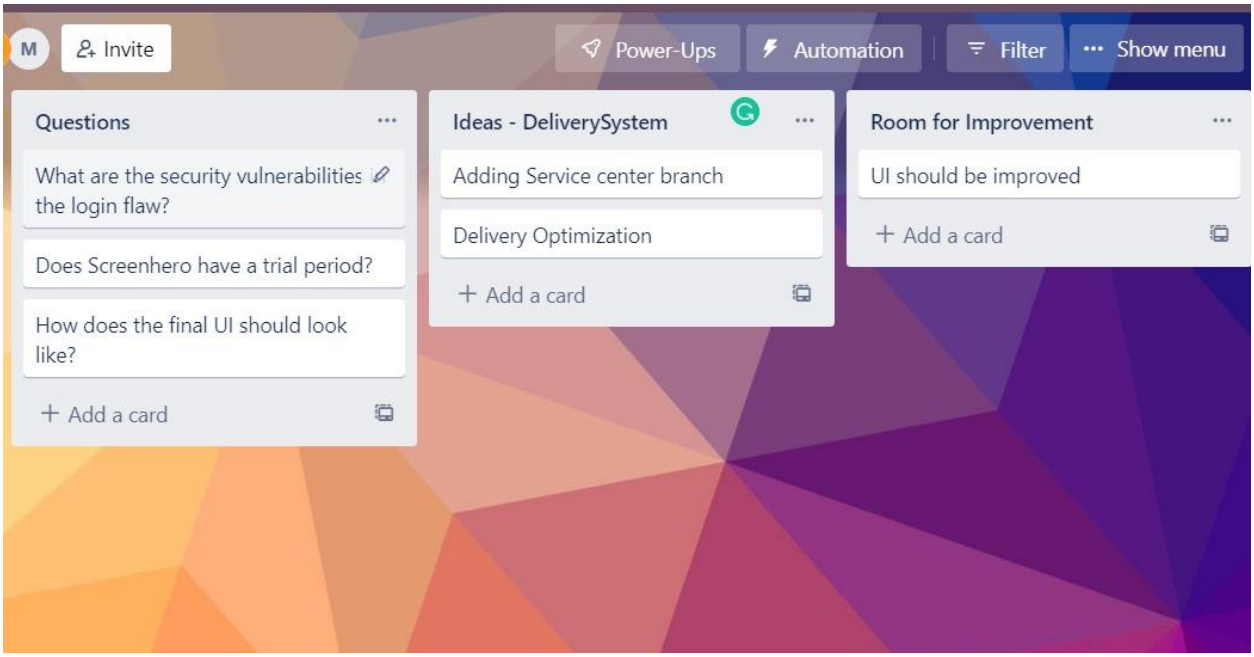

Figure 34: Trello utilization 2

5.0 Software Testing Design

Pick&GO

Online Pick Requesting and Delivery System

- SOFTWARE TESTING DESIGN -

5.1 Acceptance Testing

Acceptance testing is an essential type of software testing type which bases on verifying if the system functionalities could be accepted before application finalization. Essential functionalities are tested and compared against the initial requirements to make sure that the final application could be accepted. This testing methodology has been selected to test the overall functionalities of the Pick&GO application.

Test Scope:

The major scope of the current testing design is to make sure that the online pick requesting and delivering system meets the proper requirements stated by Pick&GO. Testing the system would be considered as an essential procedure as it determines if the final application would actually be useful for the end user.

Test Objectives:

- Test essential parts of the Pick&GO web application for proper functionalities.
- Verify if the application meets the initial requirement analysis.
- Check whether the initial system analysis has been implemented for development.
- Test the user experience and efficiency of the application.

Test Approach:

Acceptance testing for Pick&GO application would be done in a step-by-step procedure, as shown below;

1. Use a common test case template for each functionality testing.
2. Test overall functionalities of the system along with their component separations.
3. Include evidence for each function component under testing.

Test Case Template:

Table 4: Acceptance testing - test case template

Tester Name				
Test Description				
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (Pass/Fail)**

Testing Targets:

Table 5: Acceptance testing - targets

Test Targets for Pick&GO Pickup & Delivery System		
Test Case ID	**Test Description**	**Test Date**
01	Logging into the system.	17/02/2021
02	Create customer account	17/02/2021
03	Profile bar	17/02/2021
04	Add new Service Centre branch	17/02/2021
05	View, Edit, Delete service centre branch records	17/02/2021
06	Add new staff record	18/02/2021
07	View, edit and delete staff records	18/02/2021
08	Add new pickup record	18/02/2021
09	View, edit and delete item records	18/02/2021
10	Track deliveries	18/02/2021

Test Implementation:

01. Logging into the system.

Table 6: Acceptance test case 01

Tester		Mathan		
Test Description		Logging into the system		
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
1.1	Enter correct username and password	Successful login and redirection to system dashboard	Successful login and redirection to system dashboard	PASS
1.2	user name or Password is wrong	username or password is incorrect message should popup	username or password is incorrect message popped up	PASS
1.3	Click the add button without filling boxes	you have to fill the details" should message popup	you have to fill the details" message popup	PASS

Evidence:

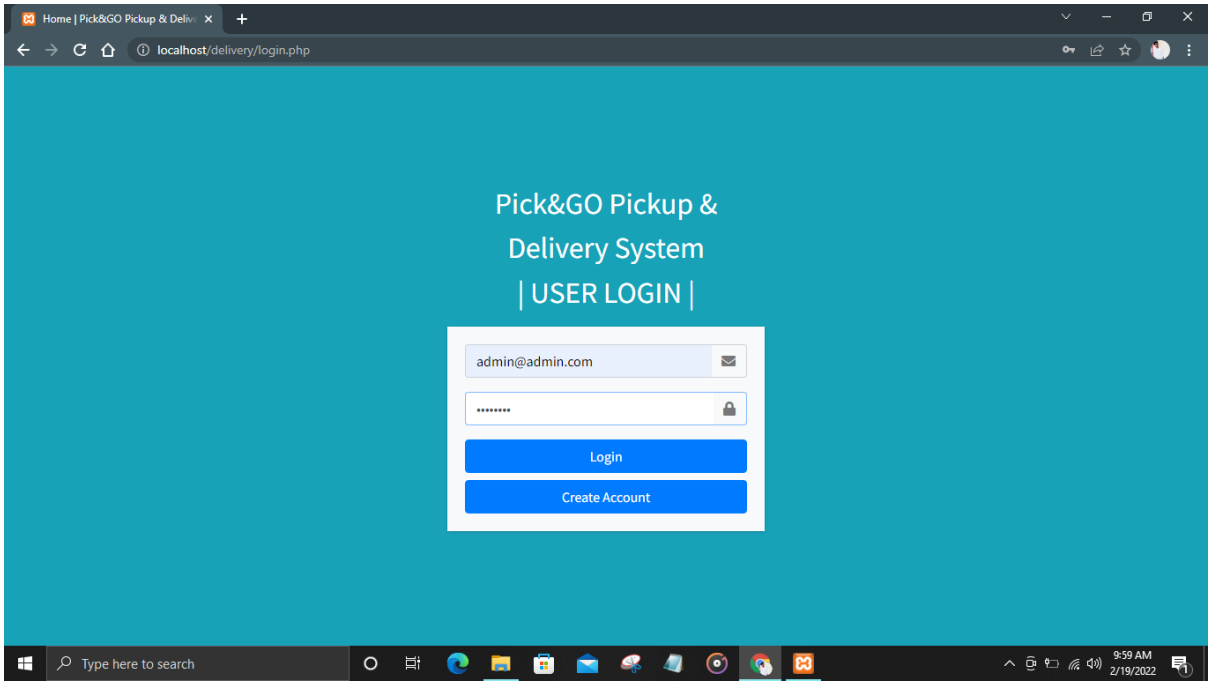

Figure 35: Acceptance test case 01 - evidence 01

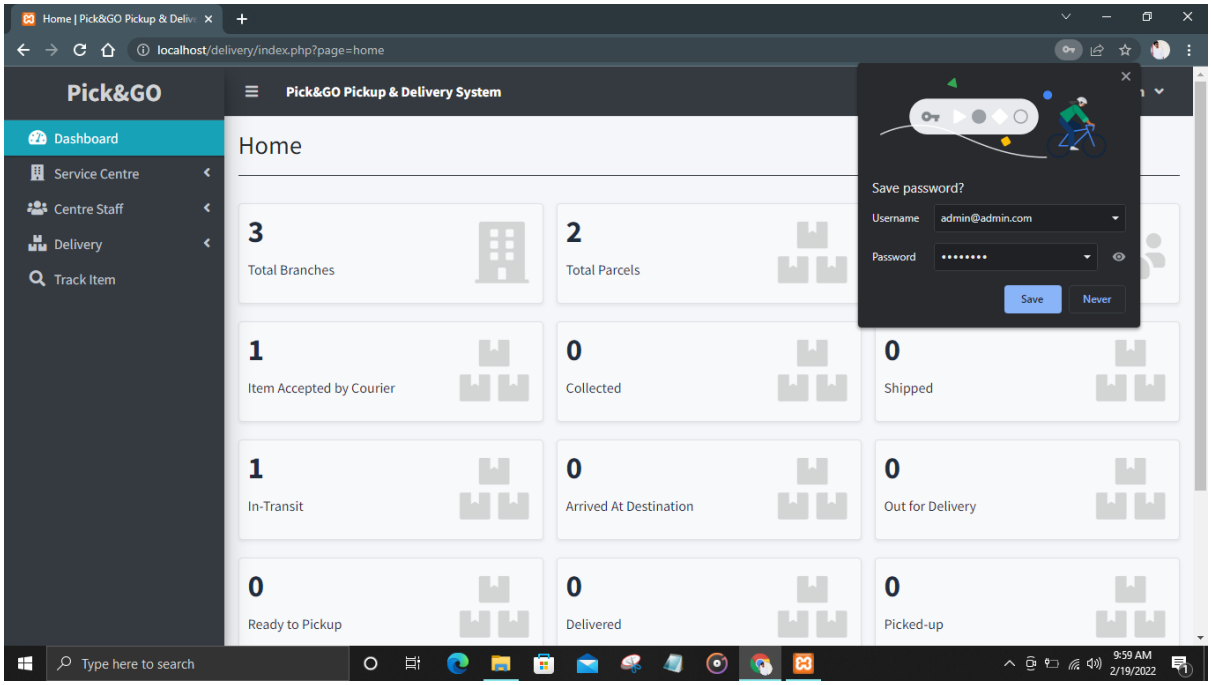

Figure 36: Acceptance test case 01 - evidence 02

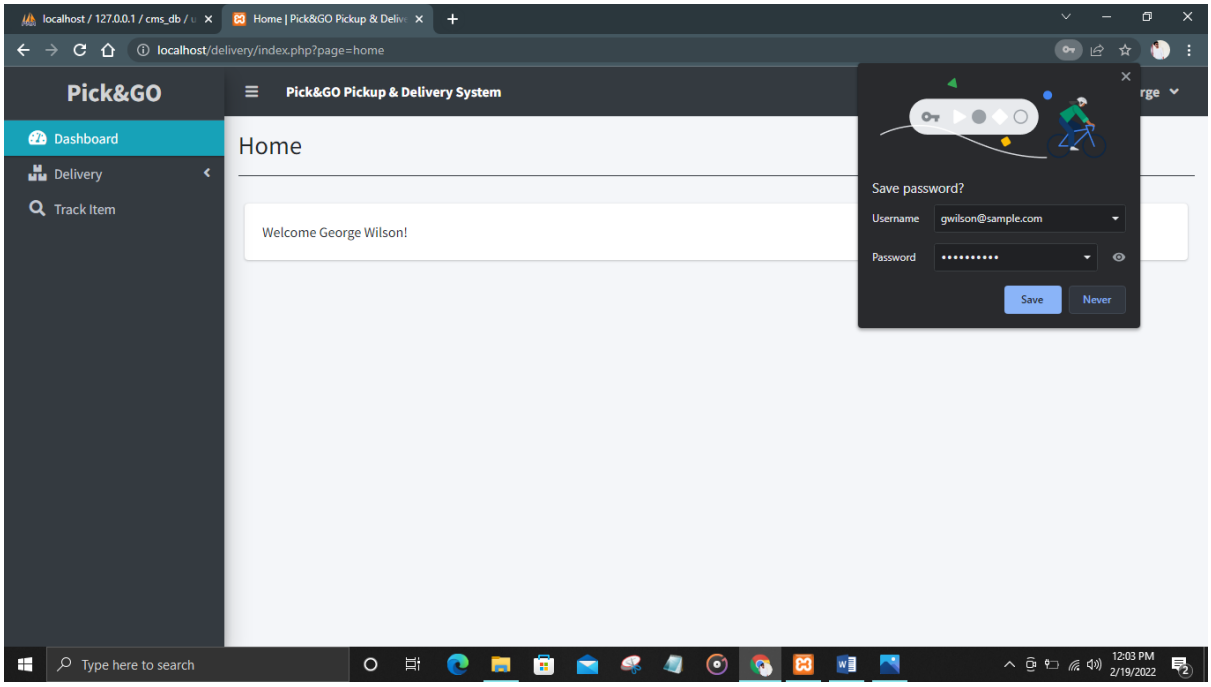

Figure 37: Acceptance test case 01 - evidence 03

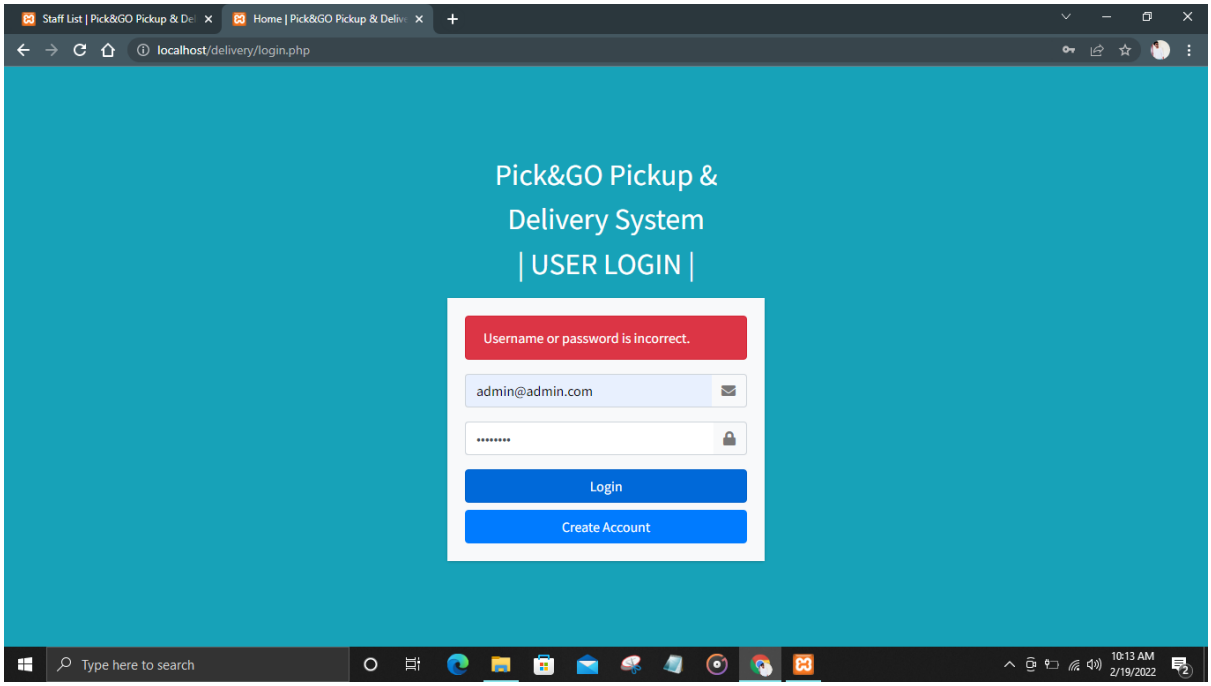

Figure 38: Acceptance test case 01 - evidence 04

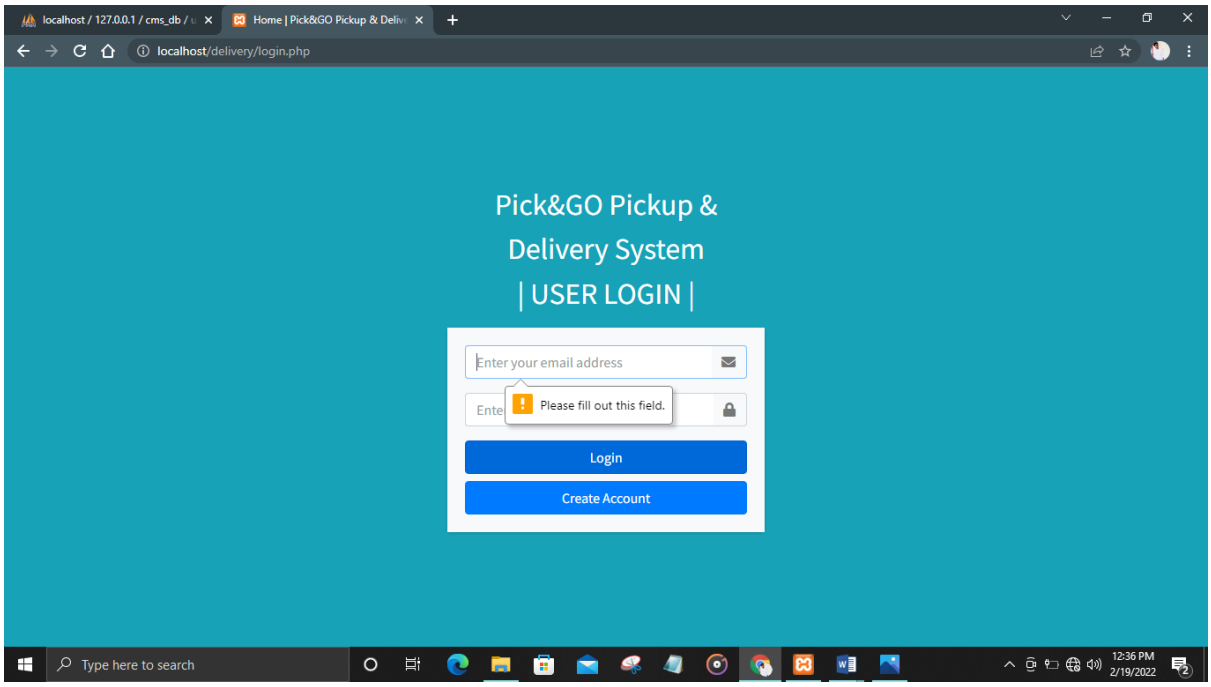

Figure 39: Acceptance test case 01 - evidence 05

02. Create customer account.

Table 7: Acceptance test case 02

Tester	Kogul Sager			
Test Description	Create customer account			
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
2.1	Click the create account	Should Open the create new account page	Opened the create new account page	PASS
2.2	Fill all details and click confirm button	Data saved successfully message should popup	Data saved successfully message popped up	PASS
2.3	Click the Cancel button	Operation should cancel.	Operation cancelled	PASS

Evidence:

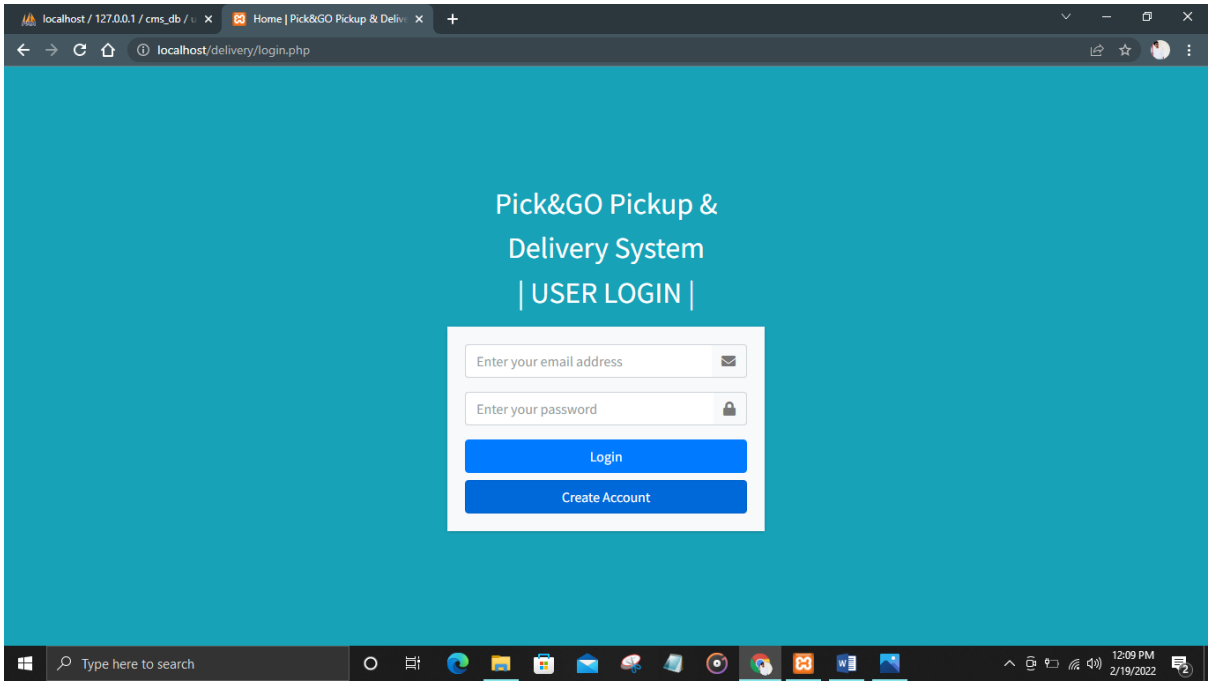

Figure 40: Acceptance test case 02 - evidence 01

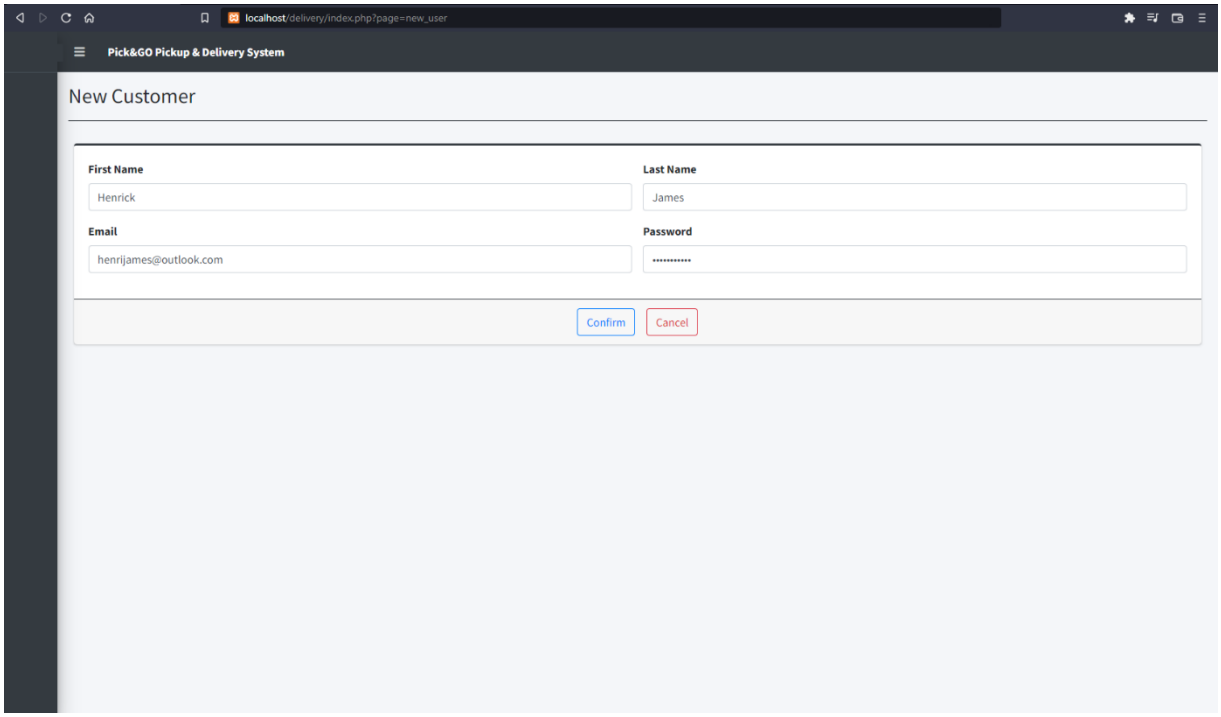

Figure 41: Acceptance test case 02 - evidence 02

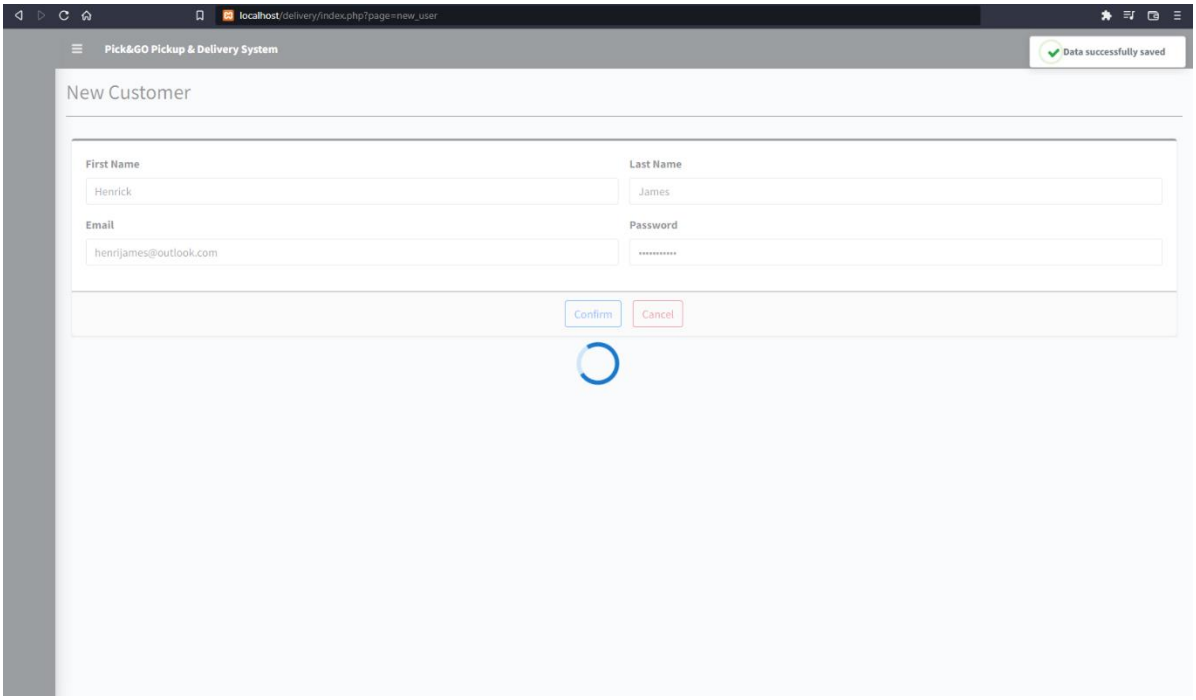

Figure 42: Acceptance test case 02 - evidence 03

03. User profile management.

Table 8: Acceptance test case 03

Tester	Tuan Saad			
Test Description	User profile management			
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
3.1	Click the Admin button	Should Open the options buttons	Opened the options buttons	PASS
3.2	Click the Edit account button	Should Open the Manage account page	Opened the Managed account paged	PASS
3.3	Fill the already used account user name	User name already exit message should popup	User name already exit message popped up	PASS
3.4	Fill different details and click save button	Details should save successfully	Details saved message should popped up	PASS

Evidence:

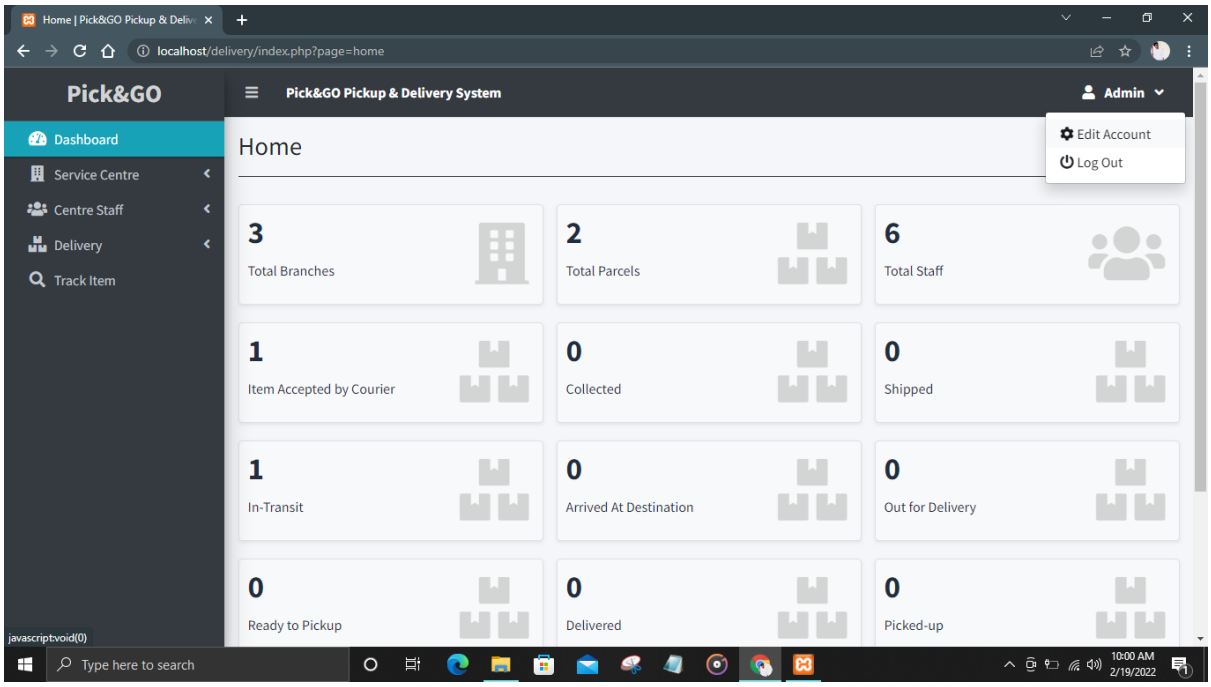

Figure 43: Acceptance test case 03 - evidence 01

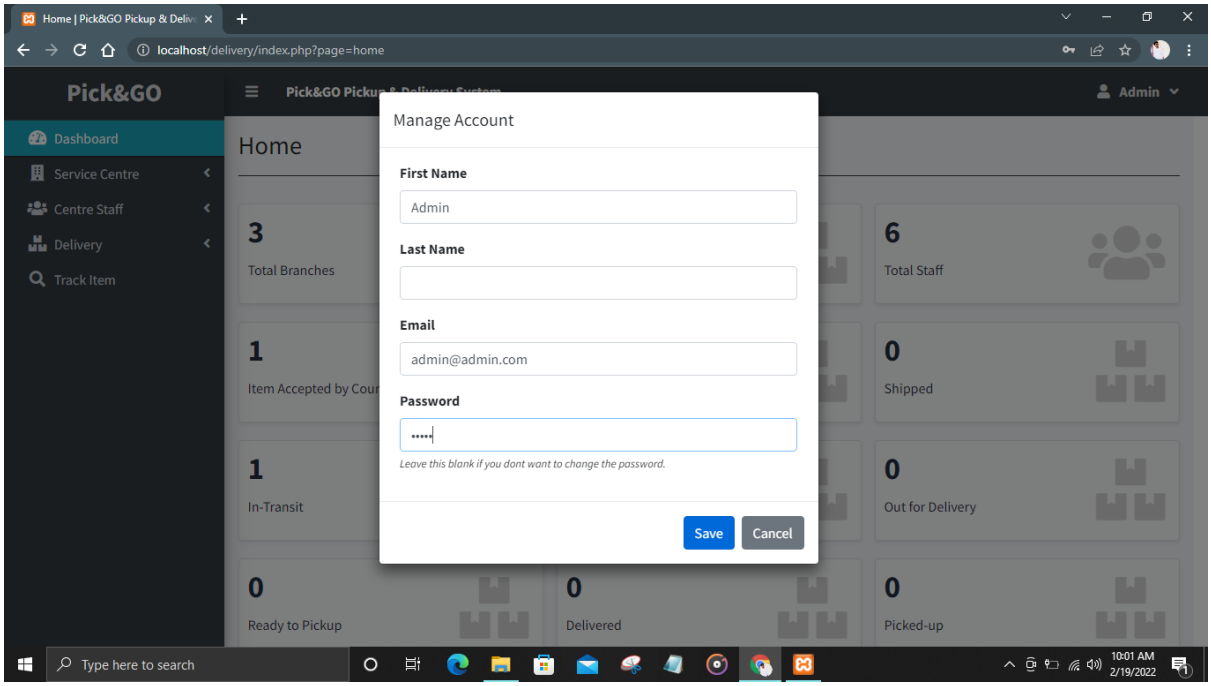

Figure 44: Acceptance test case 03 - evidence 02

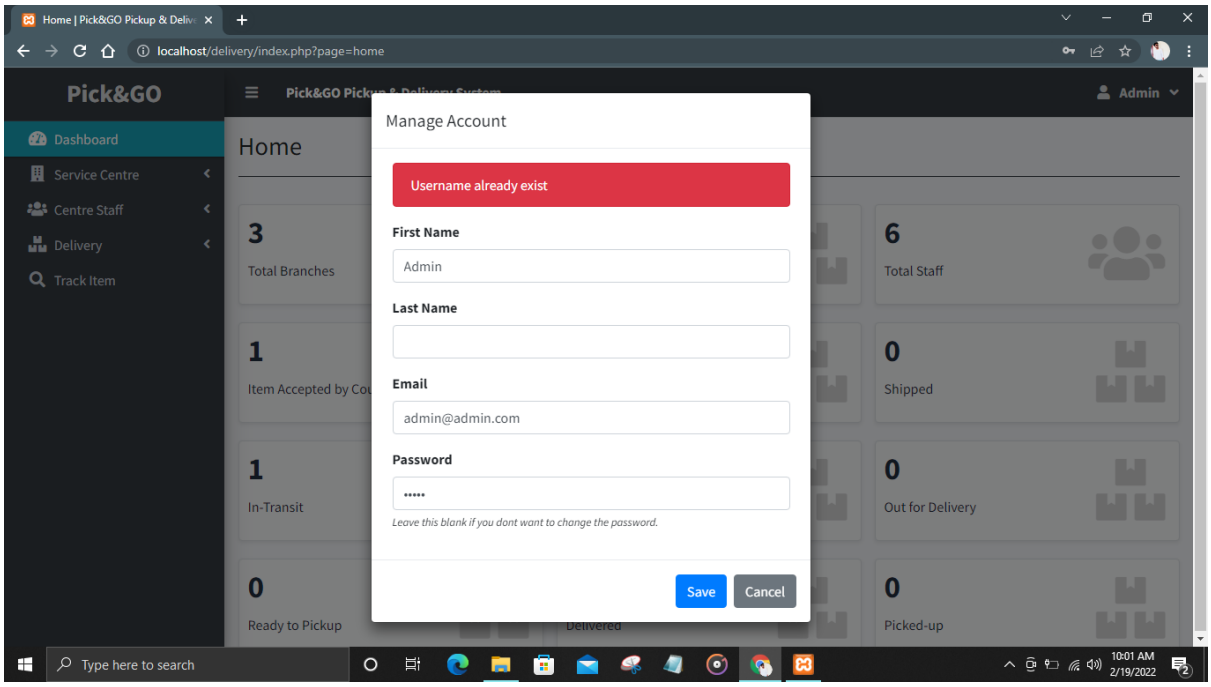

Figure 45: Acceptance test case 03 - evidence 03

04. Add new service centre branch.

Table 9: Acceptance test case 04

Tester	Mathan			
Test Description	Add new service centre branch			
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
4.1	Click the add new centre button	Should Open the add new branch page	Opened the add new branch page	PASS
4.2	Fill all details and click confirm button	Data saved successfully message should popup	Data saved successfully message popped up	PASS
4.3	Click the Cancel button	Operation should cancel.	Operation cancelled	PASS

Evidence:

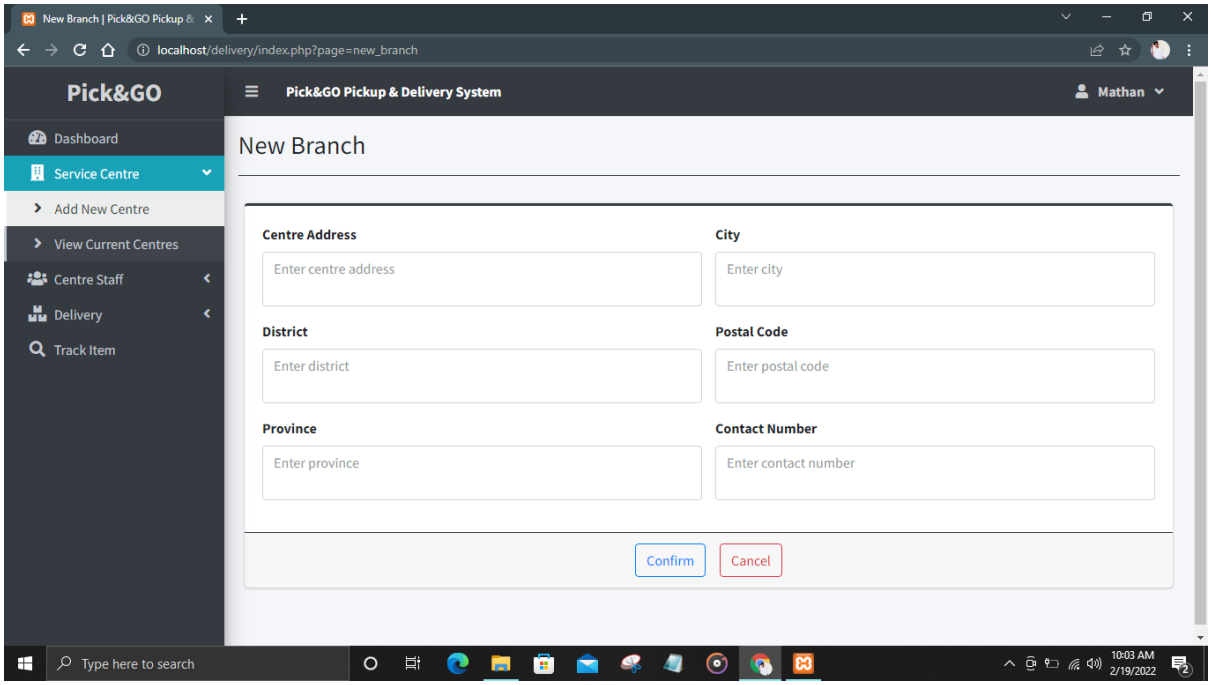

Figure 46: Acceptance test case 04 - evidence 01

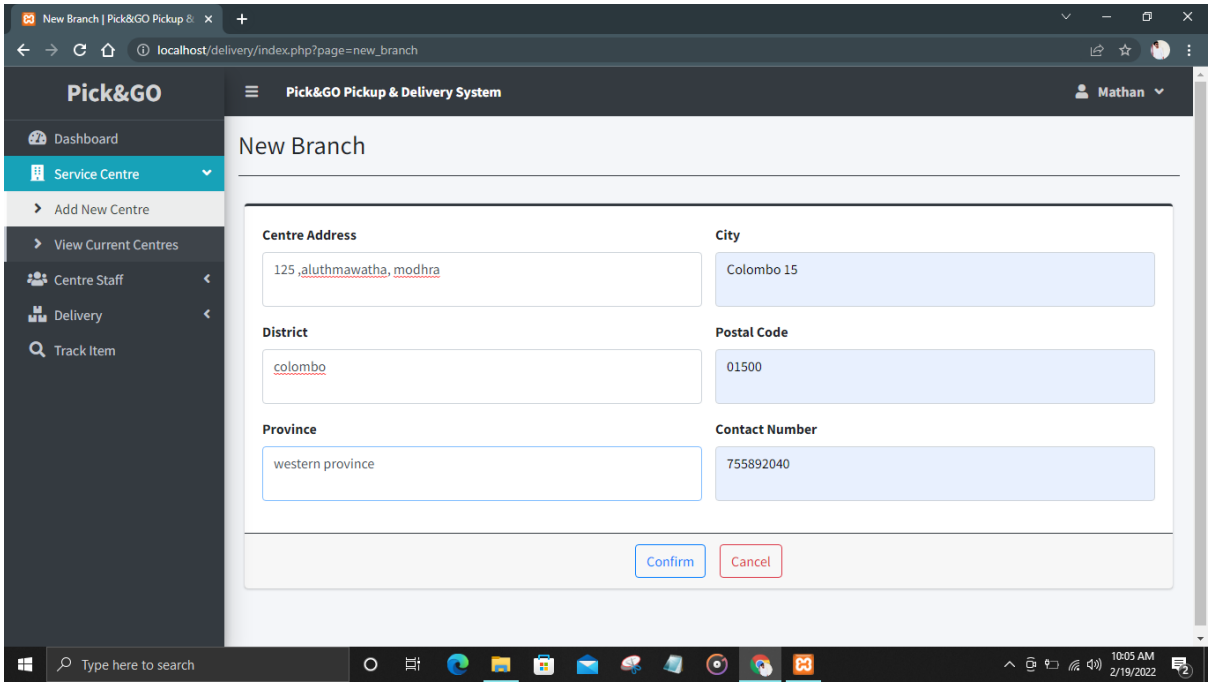

Figure 47: Acceptance test case 04 - evidence 02

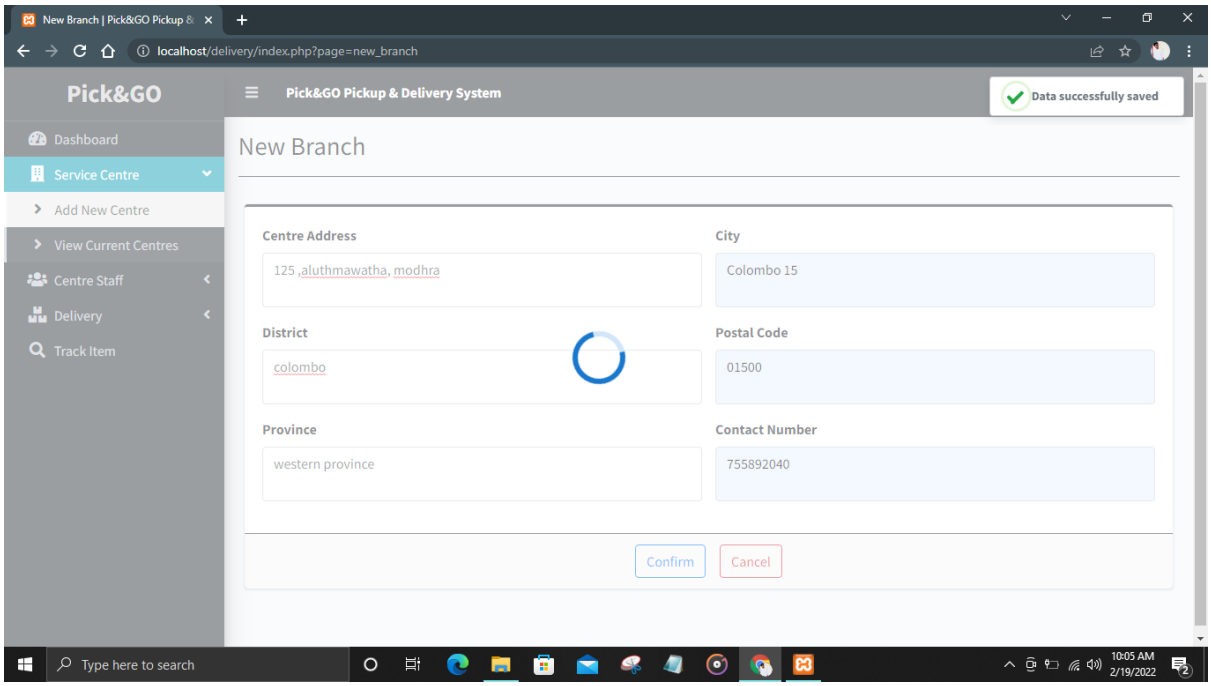

Figure 48: Acceptance test case 04 - evidence 03

05. View, edit, delete service centre branch list

Table 10: Acceptance test case 05

Tester	Sujeevan			
Test Description	View, edit, delete Service Centre branch list			
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
5.1	Click the View current Centre button	Should Open the branch list page	Opened the branch list page	PASS
5.2	Click the Add new service Centre button	Should Open the Add new service Centre page	Opened the Add new service Centre page	PASS
5.3	Click the edit button	Should Open the edit branch page	Opened the edit branch page	PASS
5.4	Edit the details and click the Confirm button	Details should update in branch list page	Details updated in branch list page	PASS
5.5	Click the cancel button	Operation should cancel and go back to branch list page	Operation cancelled and went back to branch list page	PASS
5.6	Click the Delete button	Confirmation page should popup	Confirmation page popped up	PASS

5.7	Click the continue button	Should Delete the branch list and “Data successfully deleted” message should popup	Deleted the branch list and “Data successfully deleted” message popped up	PASS
5.8	Click the cancel button	Operation should cancel and go back to branch list page	Operation cancelled and went back to branch list page	PASS
5.9	Type the Centre id in search bar	Only Typed branch list should display	Only Typed branch list displayed	PASS
5.11	Type the wrong Centre id in search bar	No matching records found message should popup	No matching records found message popped up	PASS

Evidence:

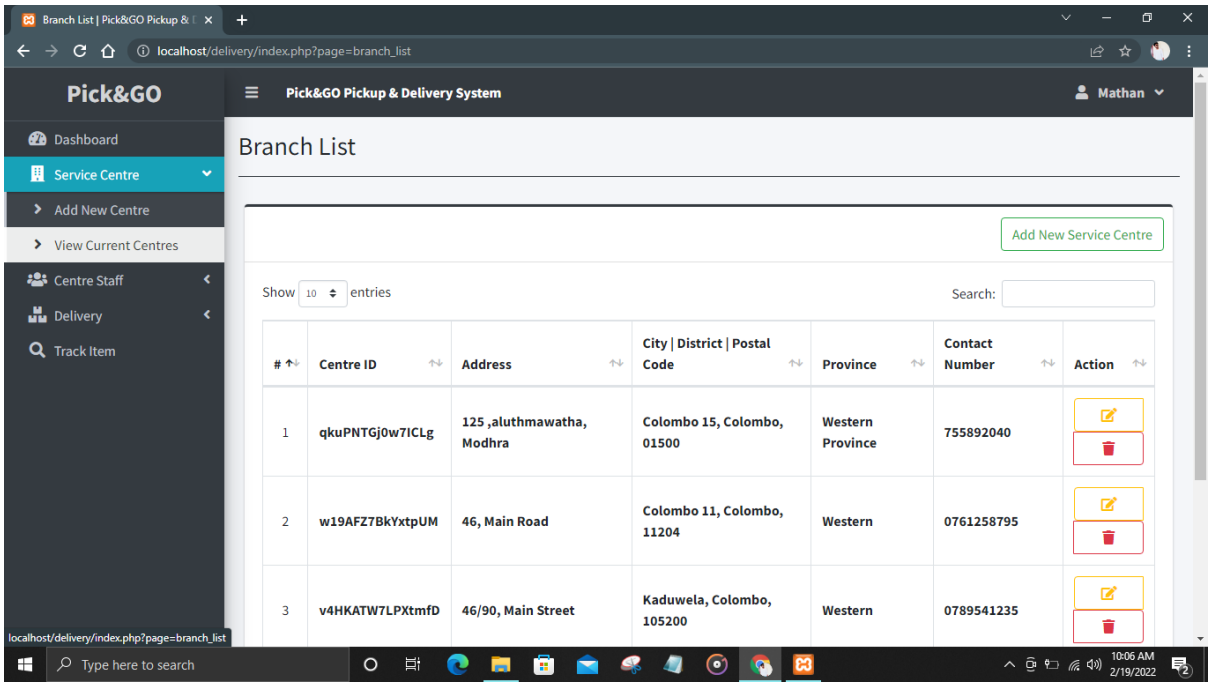

Figure 49: Acceptance test case 05 - evidence 01

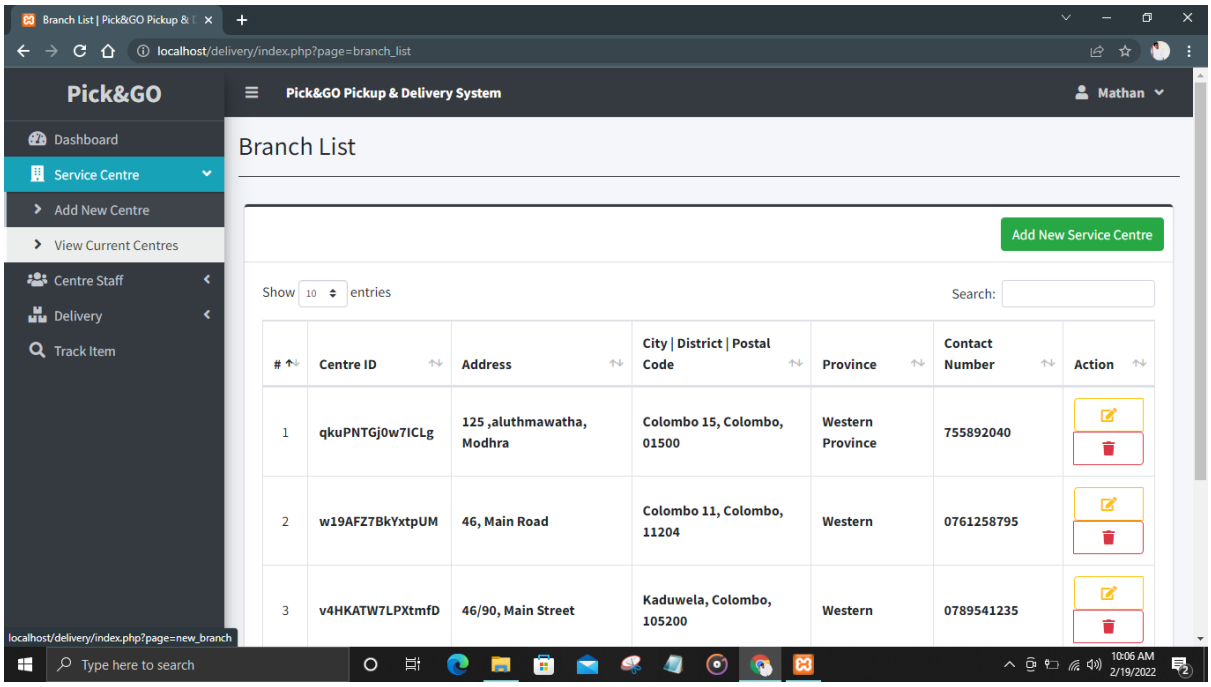

Figure 50: Acceptance test case 05 - evidence 02

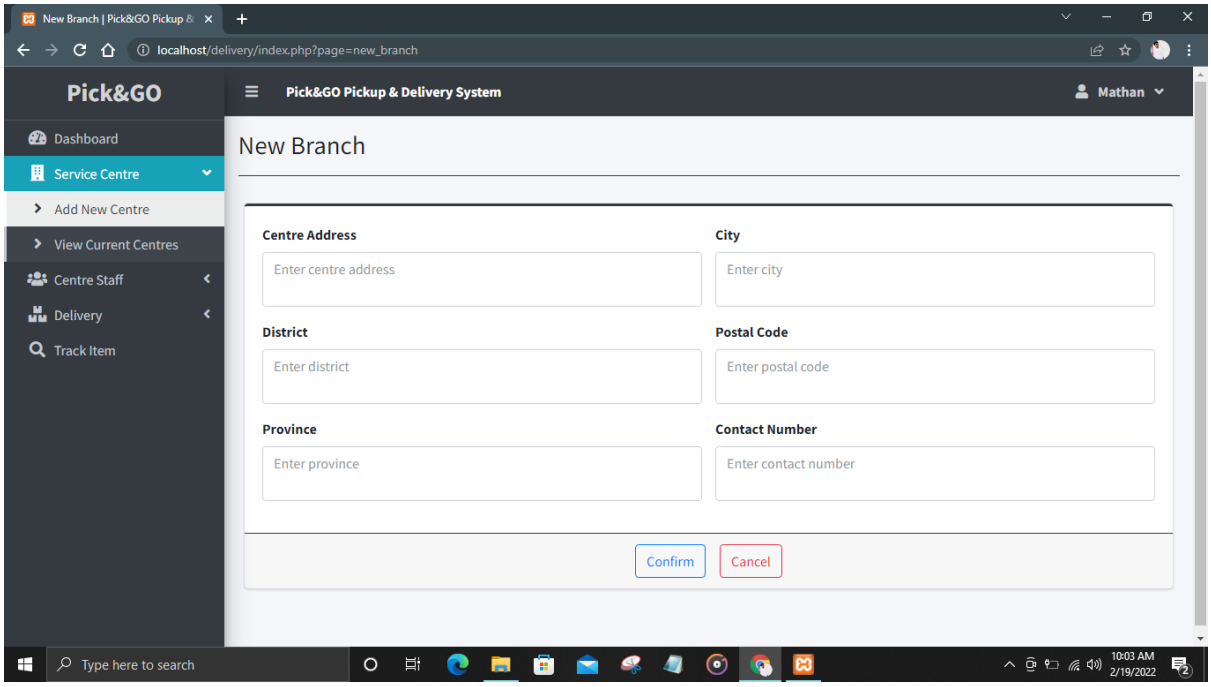

Figure 51: Acceptance test case 05 - evidence 03

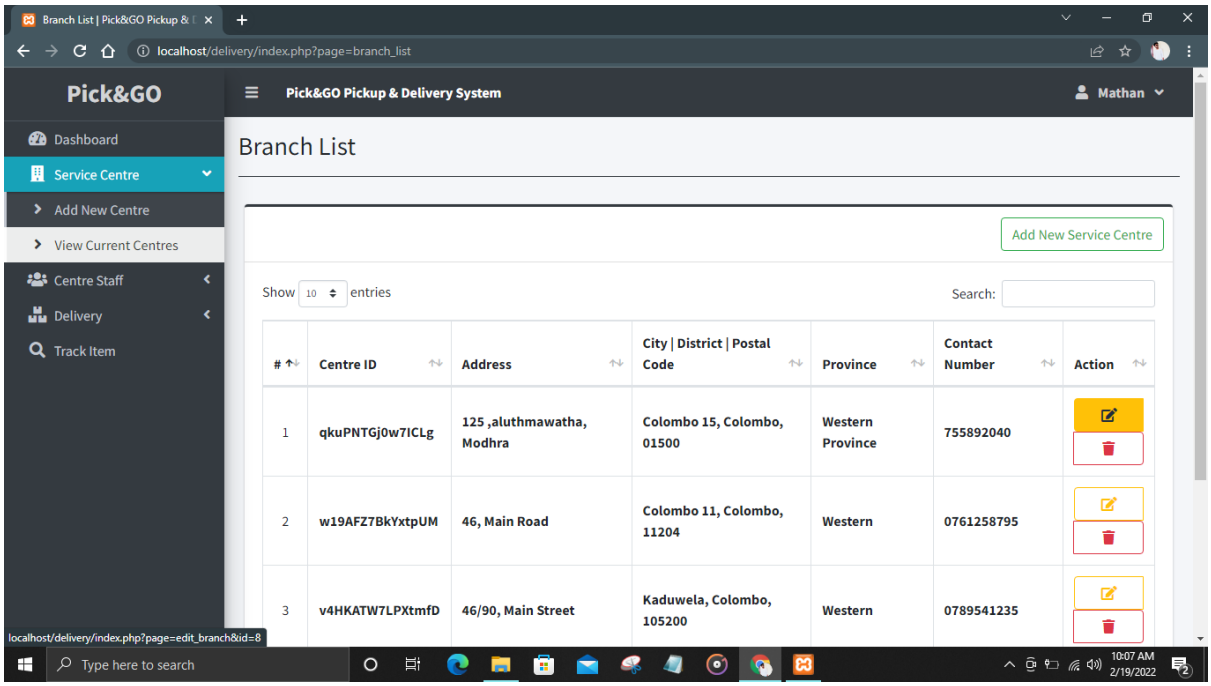

Figure 52: Acceptance test case 05 - evidence 04

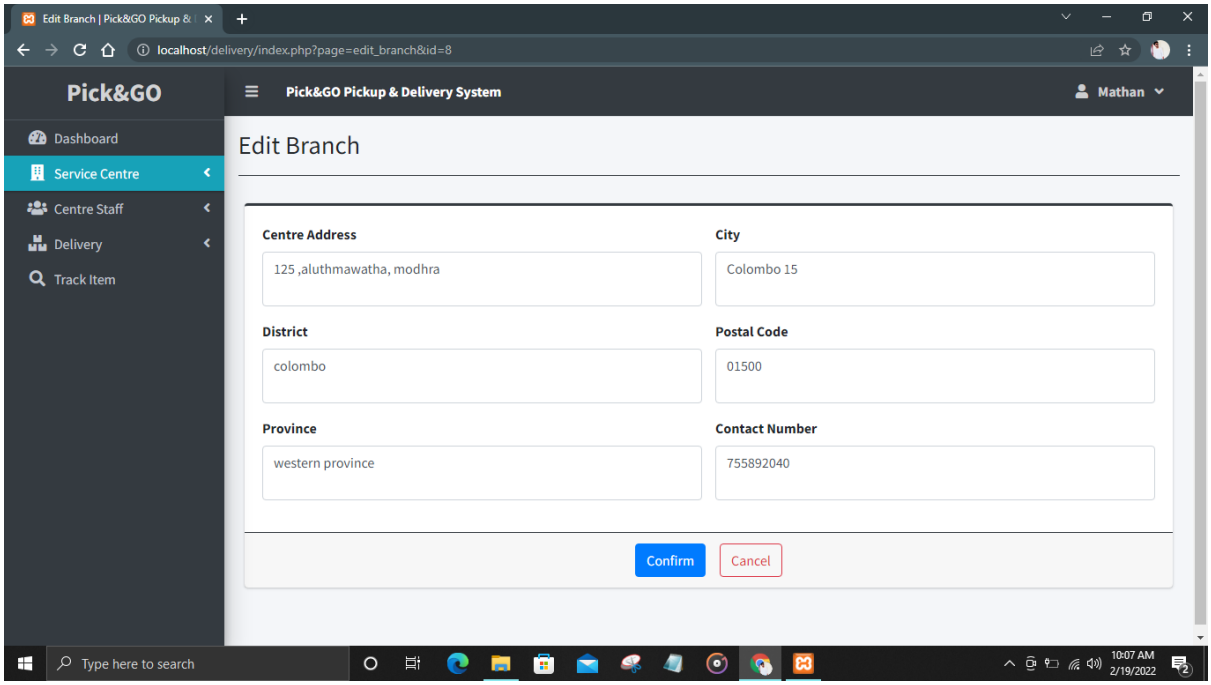

Figure 53: Acceptance test case 05 - evidence 05

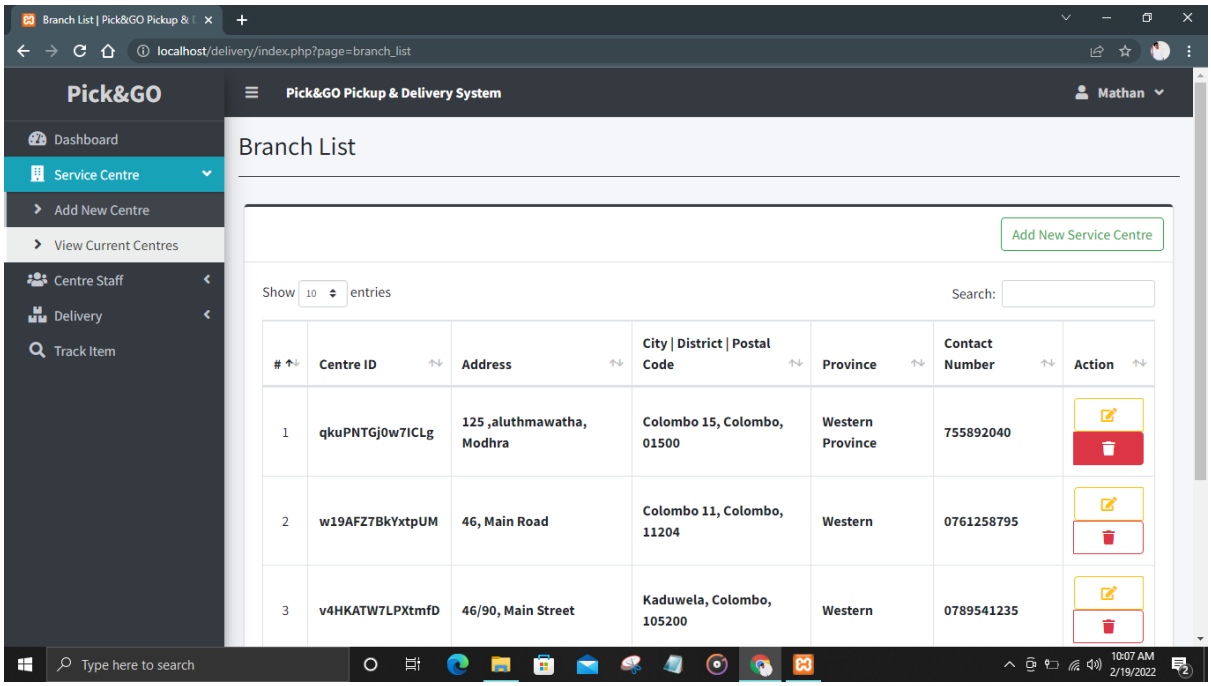

Figure 54: Acceptance test case 05 - evidence 06

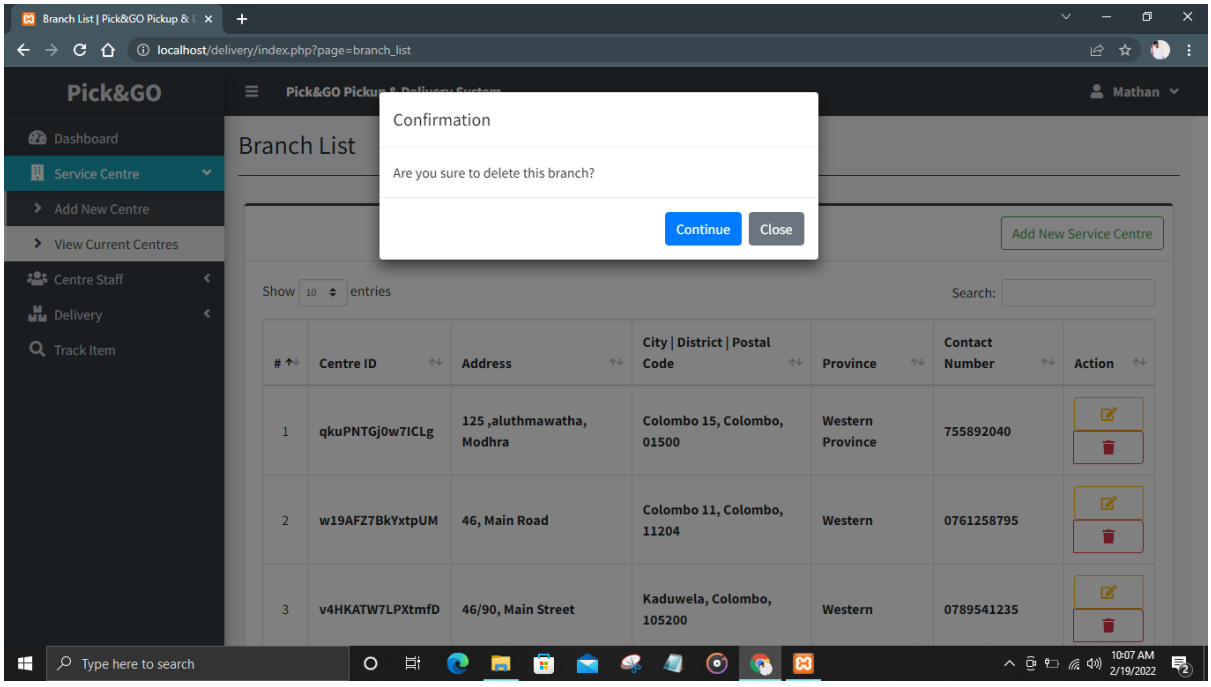

Figure 55: Acceptance test case 05 - evidence 07

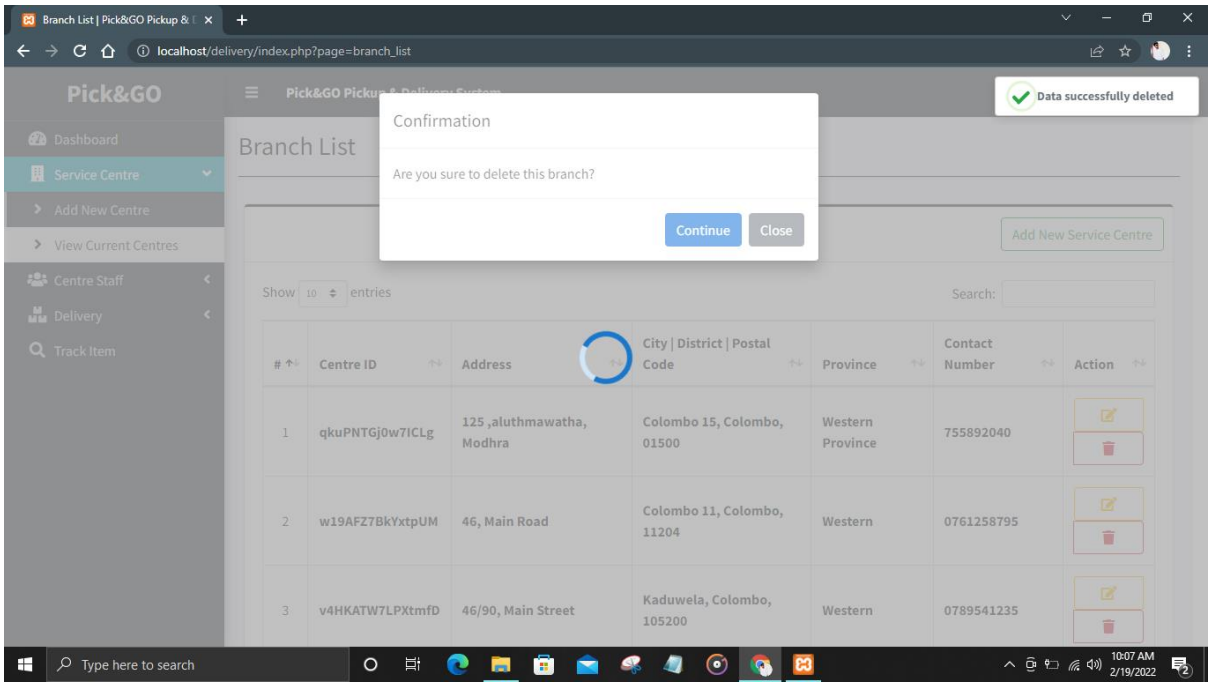

Figure 56: Acceptance test case 05 - evidence 08

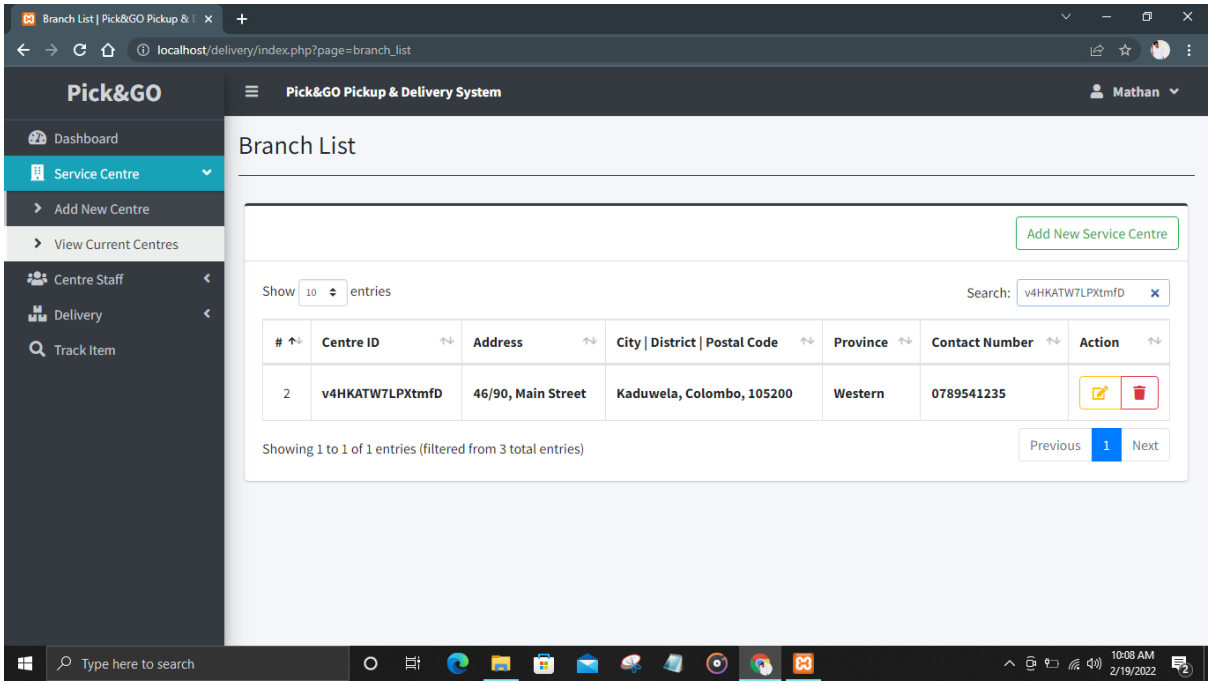

Figure 57: Acceptance test case 05 - evidence 09

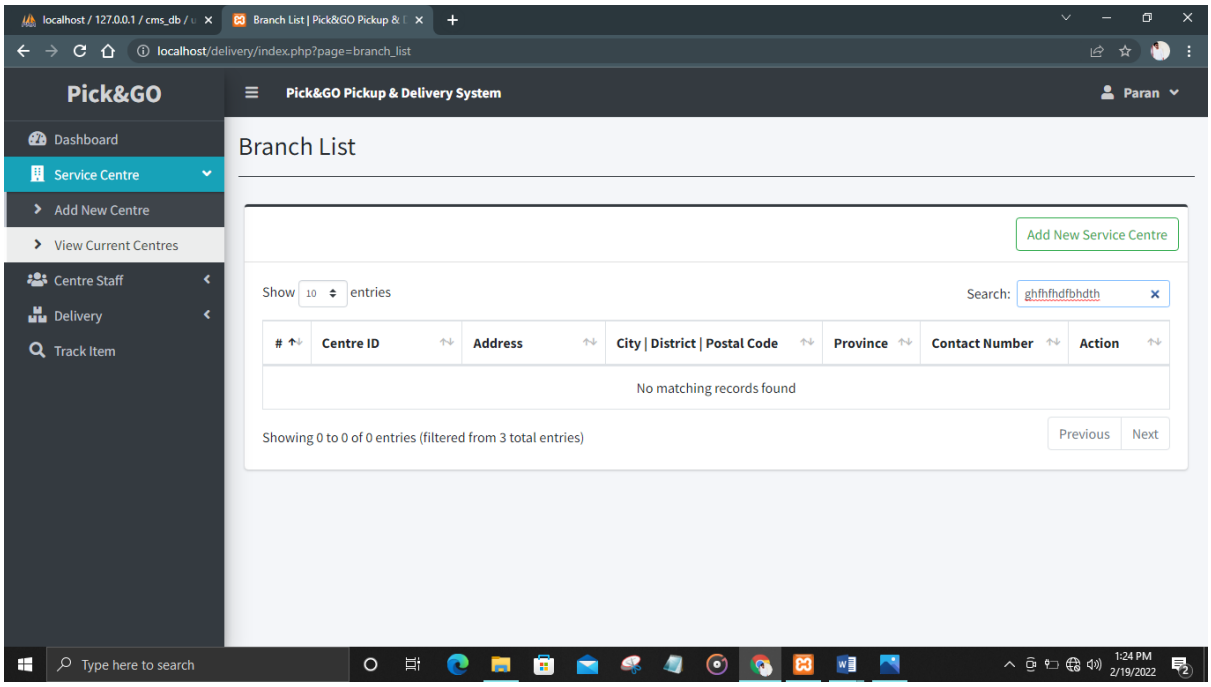

Figure 58: Acceptance test case 05 - evidence 10

06. Add new centre staff.

Table 11: Acceptance test case 06

Tester	Tuan Saad			
Test Description	Add new Staff			
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
6.1	Click the add new Staff button	Should Open the add new Staff page	Opened the add new Staff page	PASS
6.2	Fill all details and click confirm button	Data saved successfully message should popup	Data saved successfully message popped up	PASS
6.3	Click the Cancel button	Operation should cancel.	Operation cancelled	PASS

Evidence:

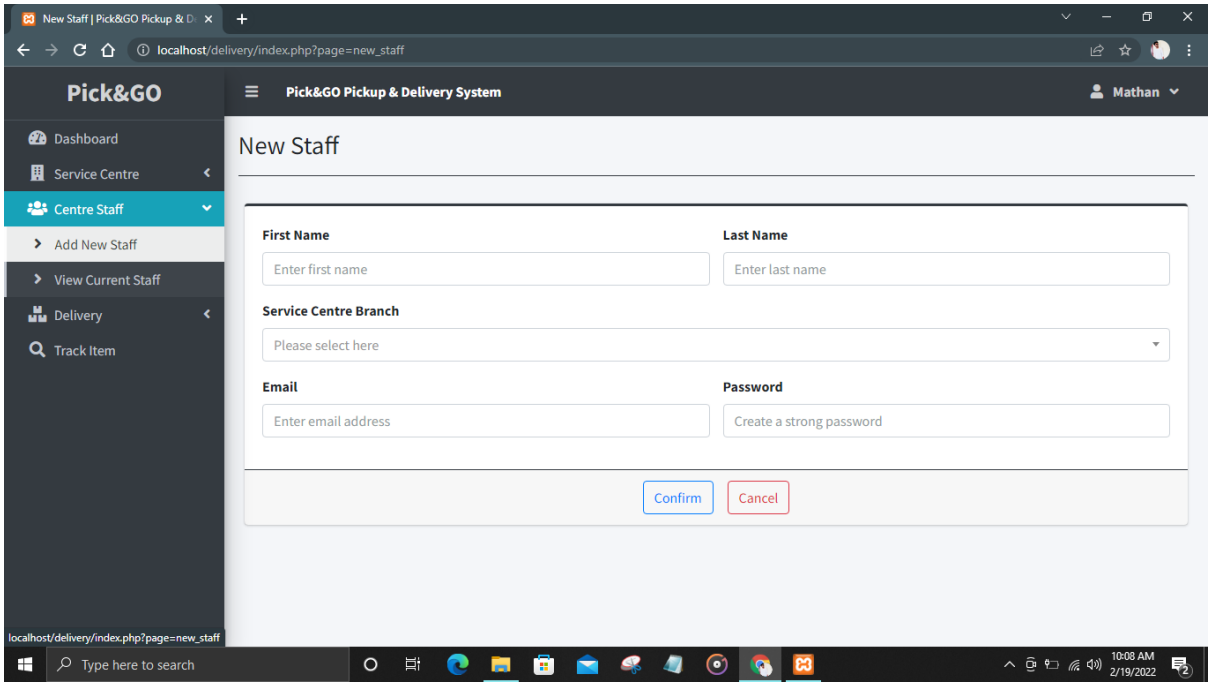

Figure 59: Acceptance test case 06 - evidence 01

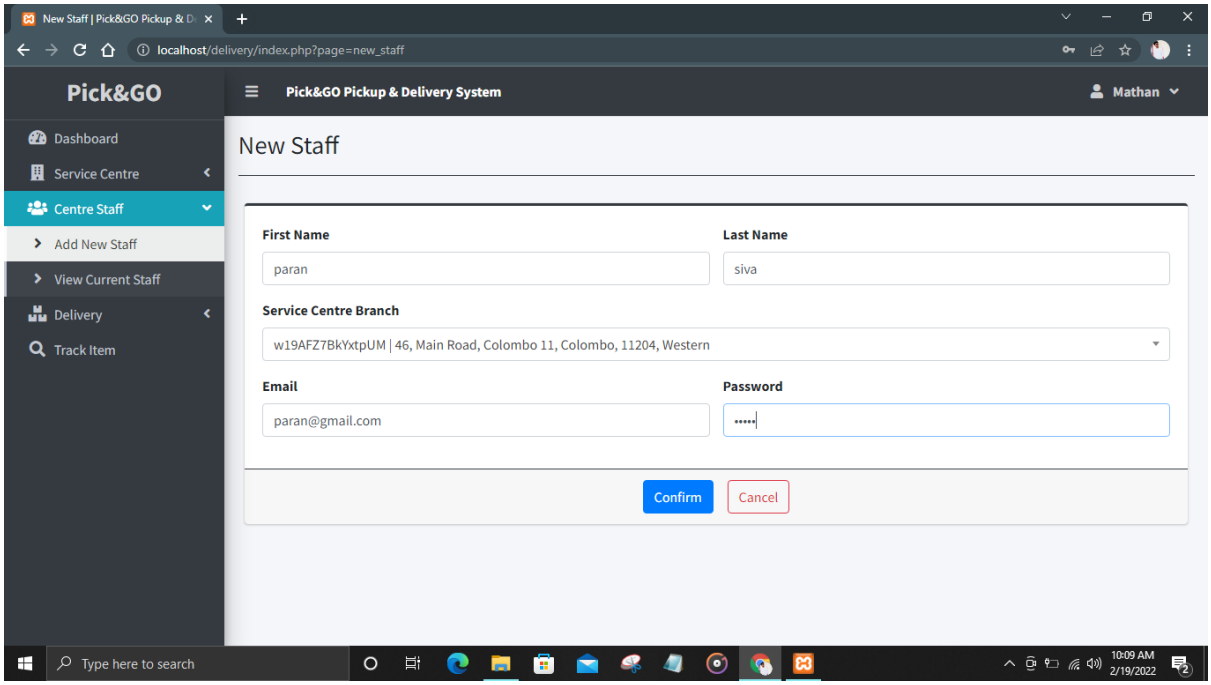

Figure 60: Acceptance test case 06 - evidence 02

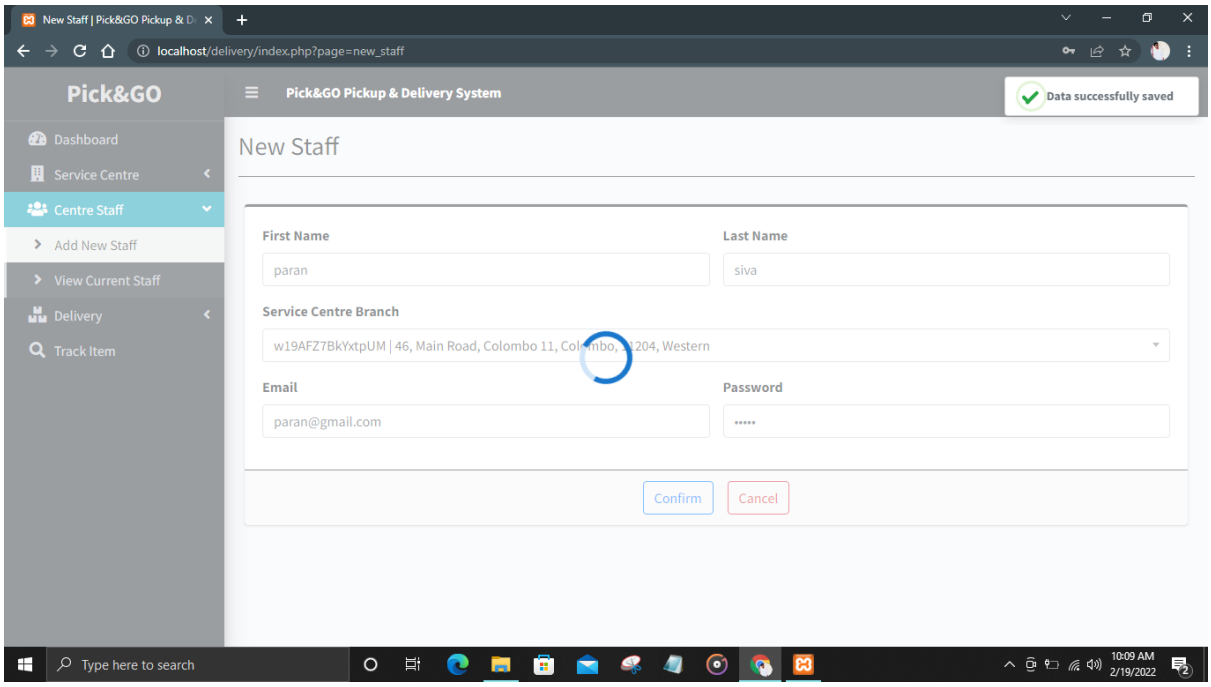

Figure 61: Acceptance test case 06 - evidence 03

07. View, edit and delete staff list.

Table 12: Acceptance test case 07

Tester	Kogul Sager			
Test Description	View, edit and delete staff list			
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
7.0	Click the View current Staff button	Should Open the Staff list page	Opened the Staff list page	PASS
7.1	Click the Add new Staff member button	Should Open the Add new Staff page	Opened the Add new Staff page	PASS
7.2	Click the edit button	Should Open the edit Staff page	Opened the edit Staff page	PASS
7.3	Edit the details and click the Confirm button	Details should update in Staff list page	Details updated in Staff list page	PASS
7.4	Click the cancel button	Operation should cancel and go back to Staff list page	Operation cancelled and went back to Staff list page	PASS
7.5	Click the Delete button	Confirmation page should popup	Confirmation page popped up	PASS
7.6	Click the continue button	Should Delete the Staff list and “Data successfully deleted” message should popup	Deleted the Staff list and “Data successfully	PASS

			deleted" message popped up	
7.7	Click the cancel button	Operation should cancel and go back to b Staff list page	Operation cancelled and went back to Staff list page	PASS
7.8	Type the Staff name in search bar	Only Typed staff details should display	Only Typed staff details displayed	PASS
7.9	Type the wrong staff name in search bar	No matching records found message should popup	No matching records found message popped up	PASS

Evidence:

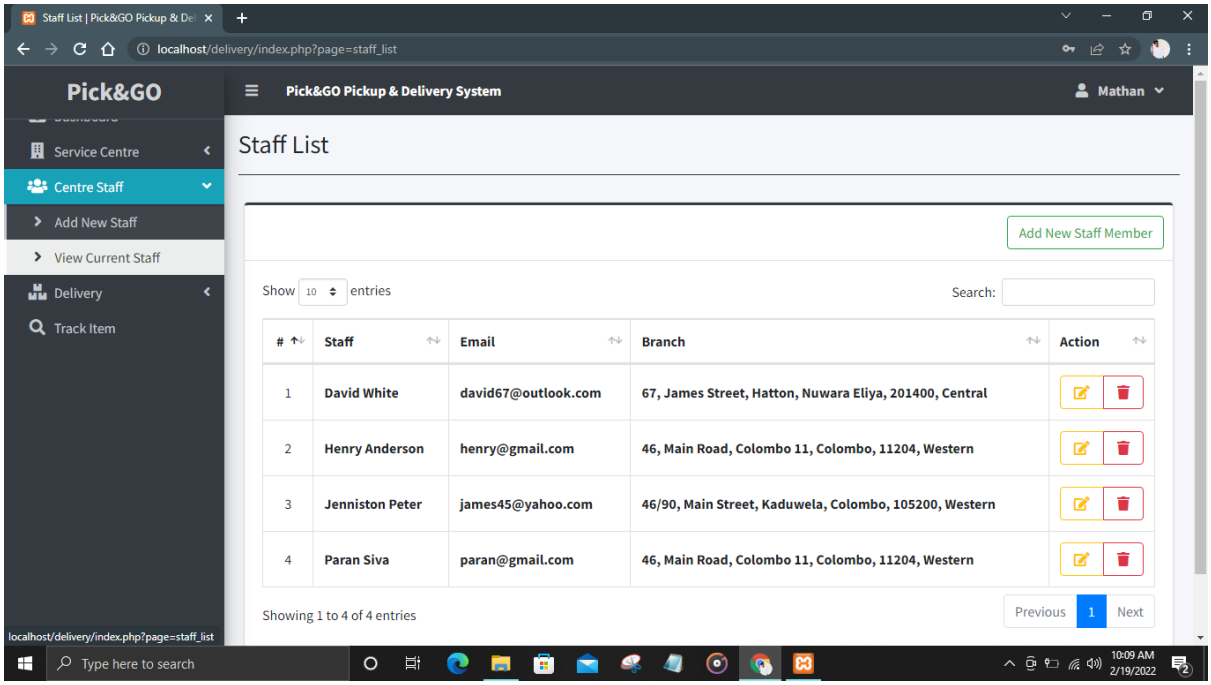

Figure 62: Acceptance test case 07 - evidence 01

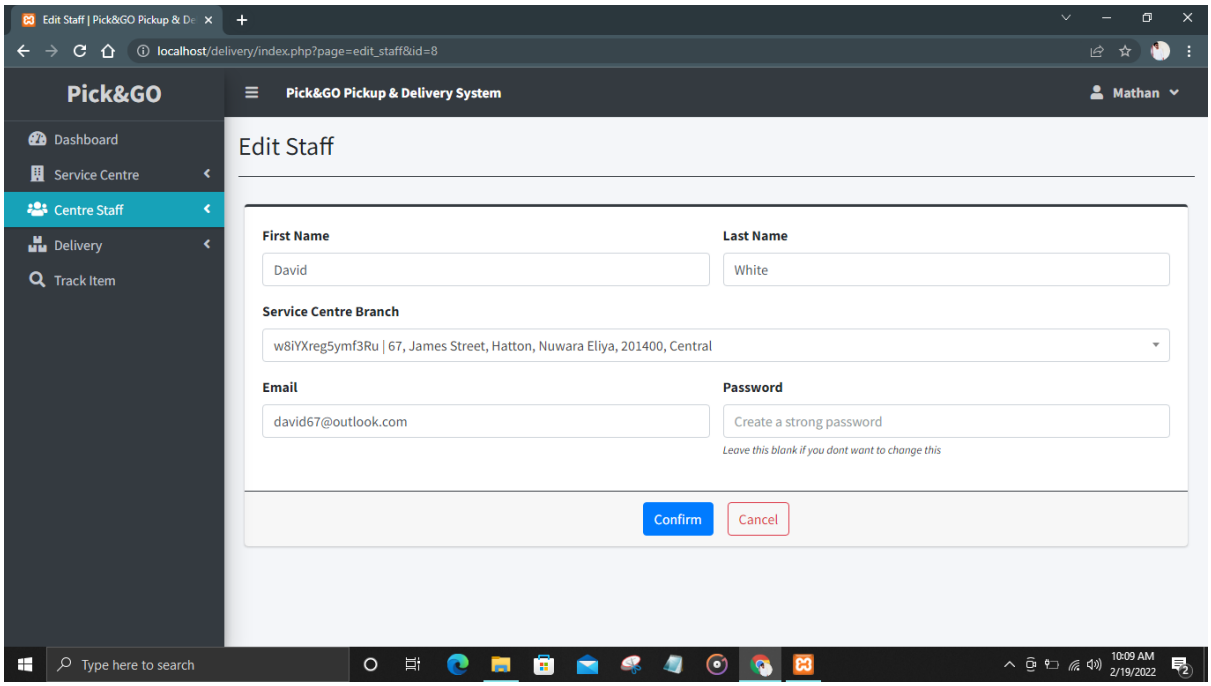

Figure 63: Acceptance test case 07 - evidence 02

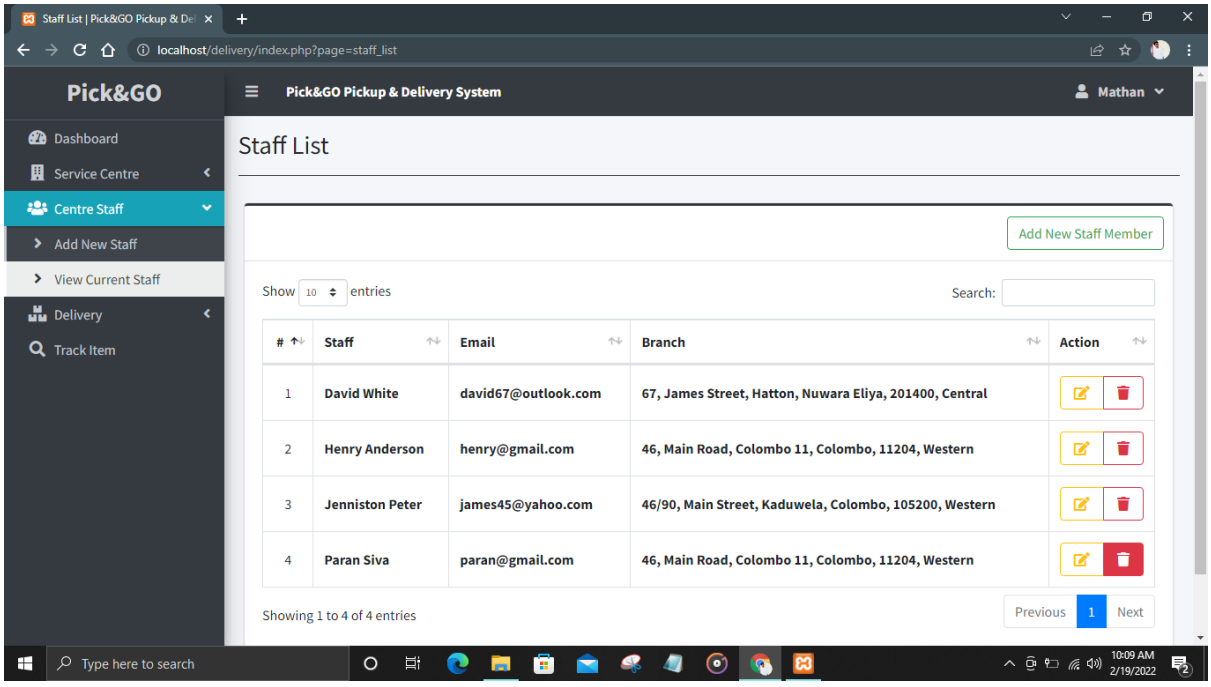

Figure 64: Acceptance test case 07 - evidence 03

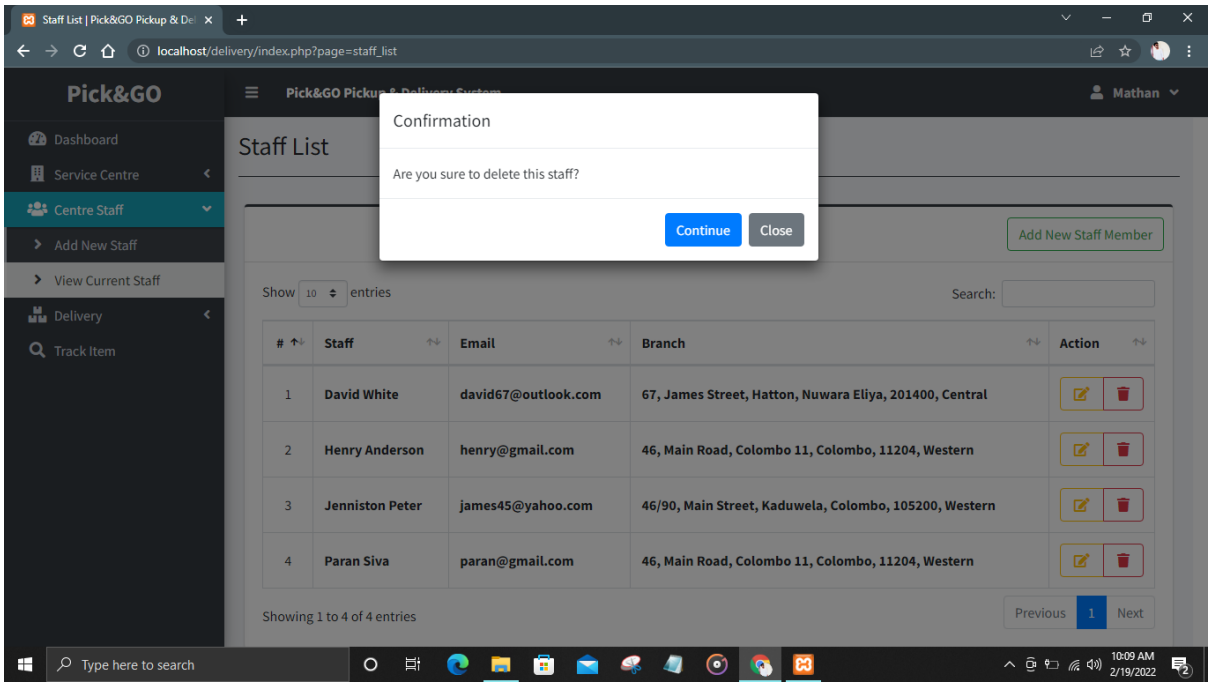

Figure 65: Acceptance test case 07 - evidence 04

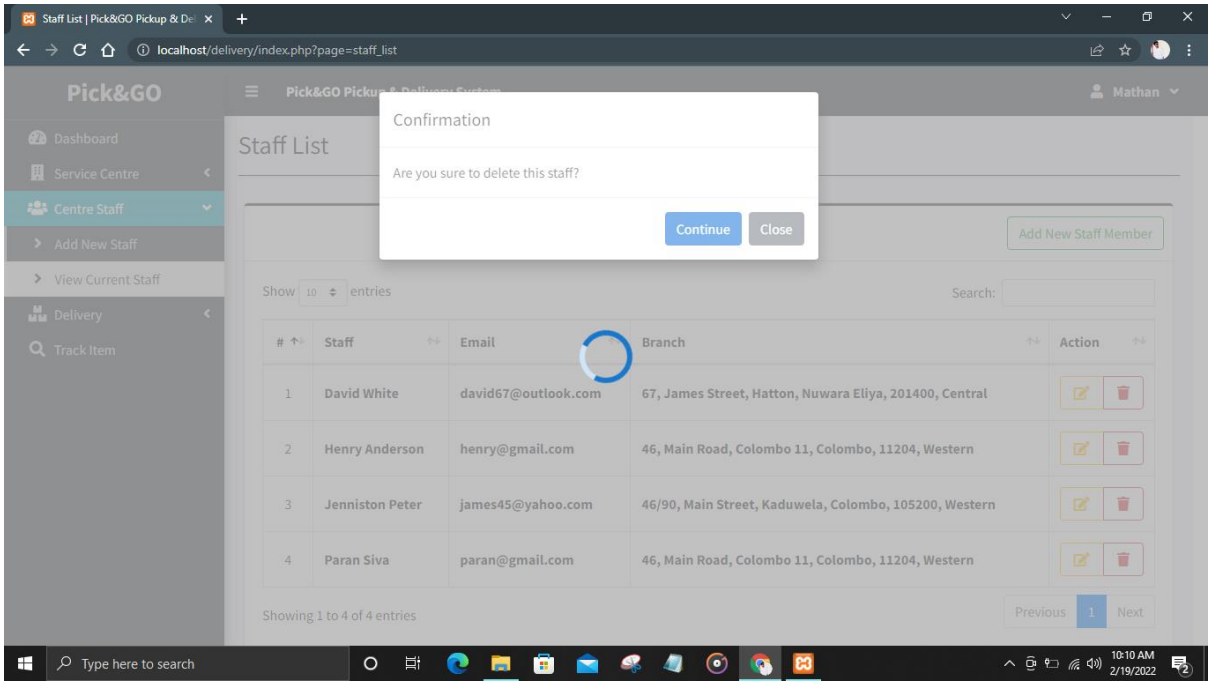

Figure 66: Acceptance test case 07 - evidence 05

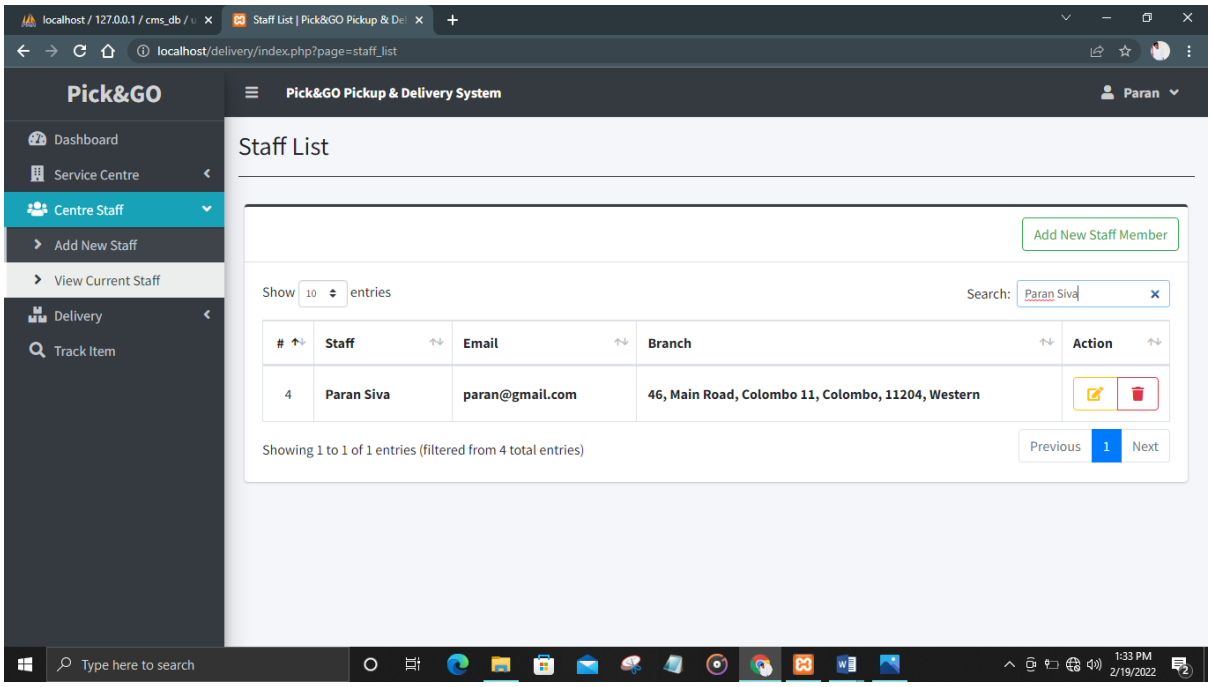

Figure 67: Acceptance test case 07 - evidence 06

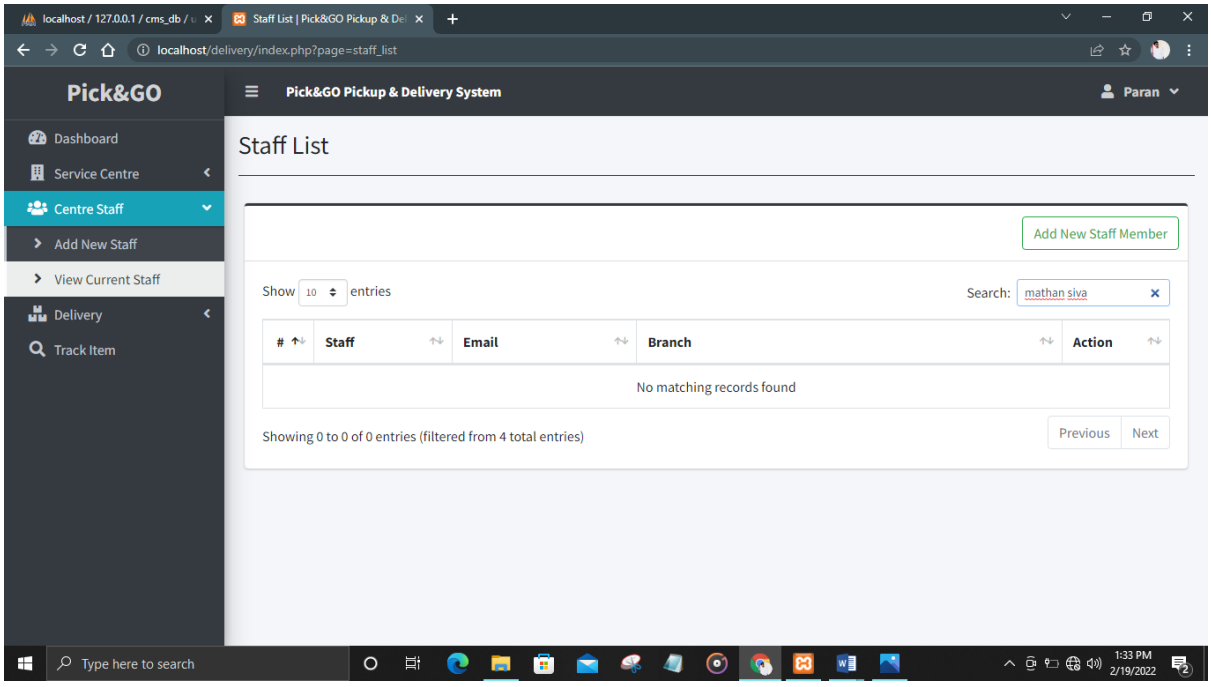

Figure 68: Acceptance test case 07 - evidence 07

08. Add new pickup.

Table 13: Acceptance test case 08

Tester	Sujeevan			
Test Description	Add new pickup			
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
8.1	Click the add new pickup button	Should Open the add new parcel page	Opened the add new parcel page	PASS
8.2	Fill all details and click confirm button	Data saved successfully message should popup	Data saved successfully message popped up	PASS
8.3	Click the Cancel button	Operation should cancel.	Operation cancelled	PASS

Evidence:

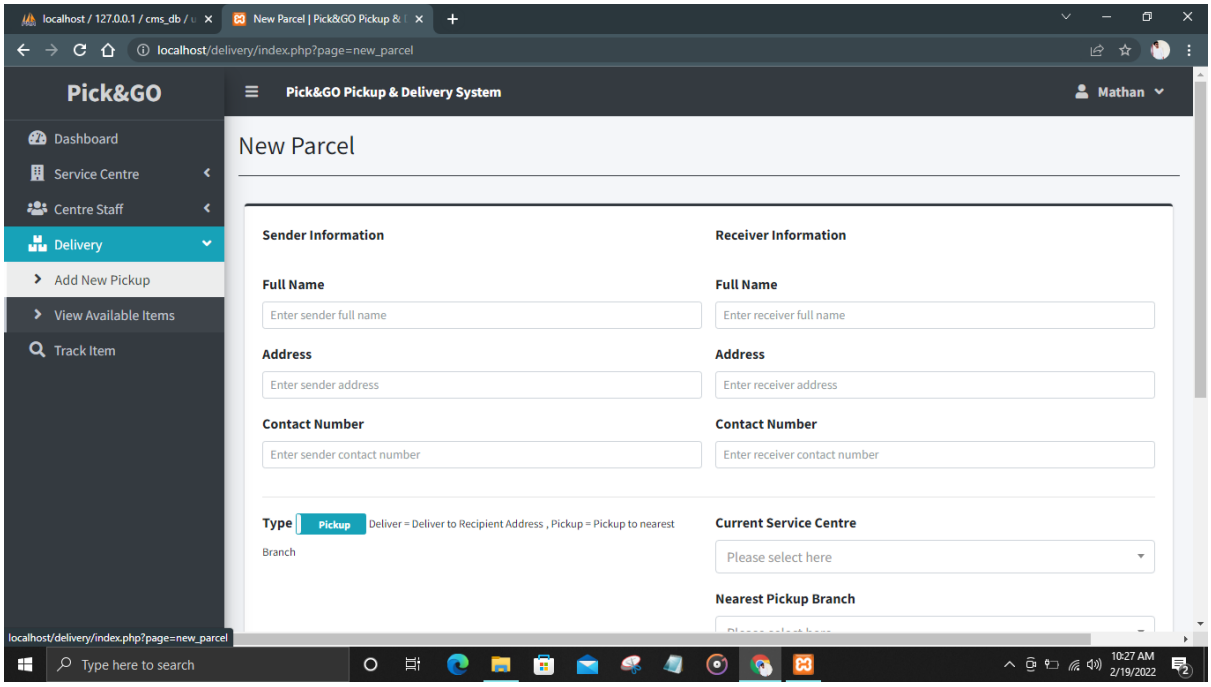

Figure 69: Acceptance test case 08 - evidence 01

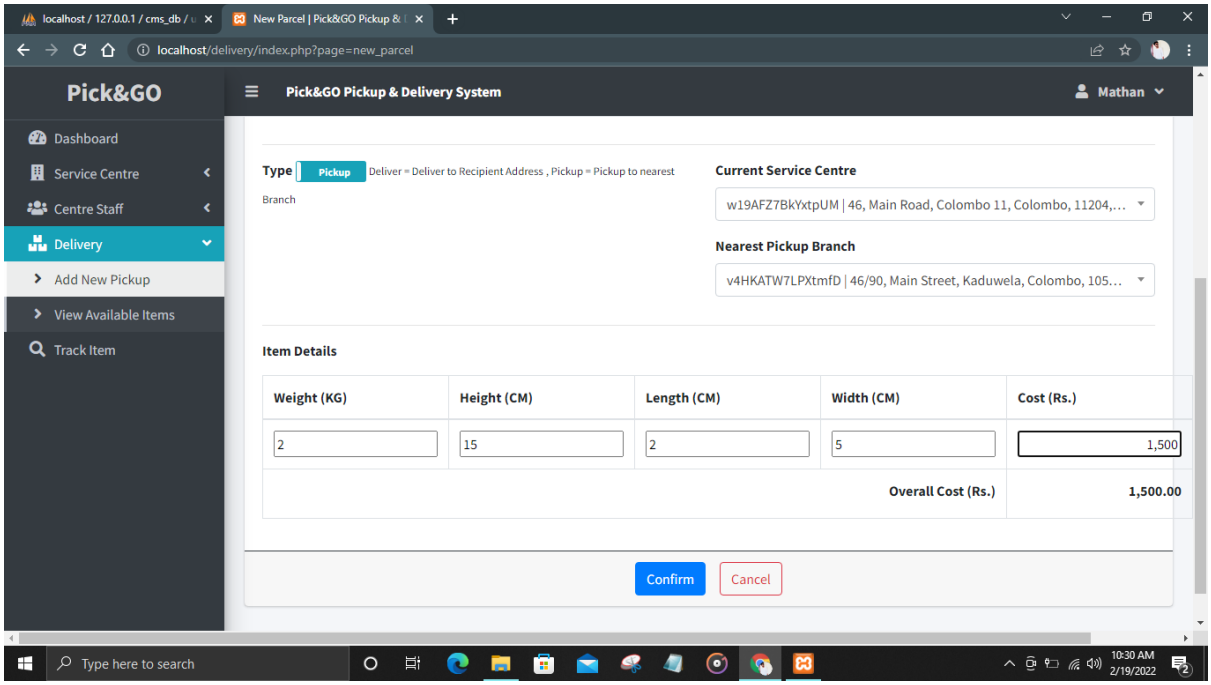

Figure 70: Acceptance test case 08 - evidence 02

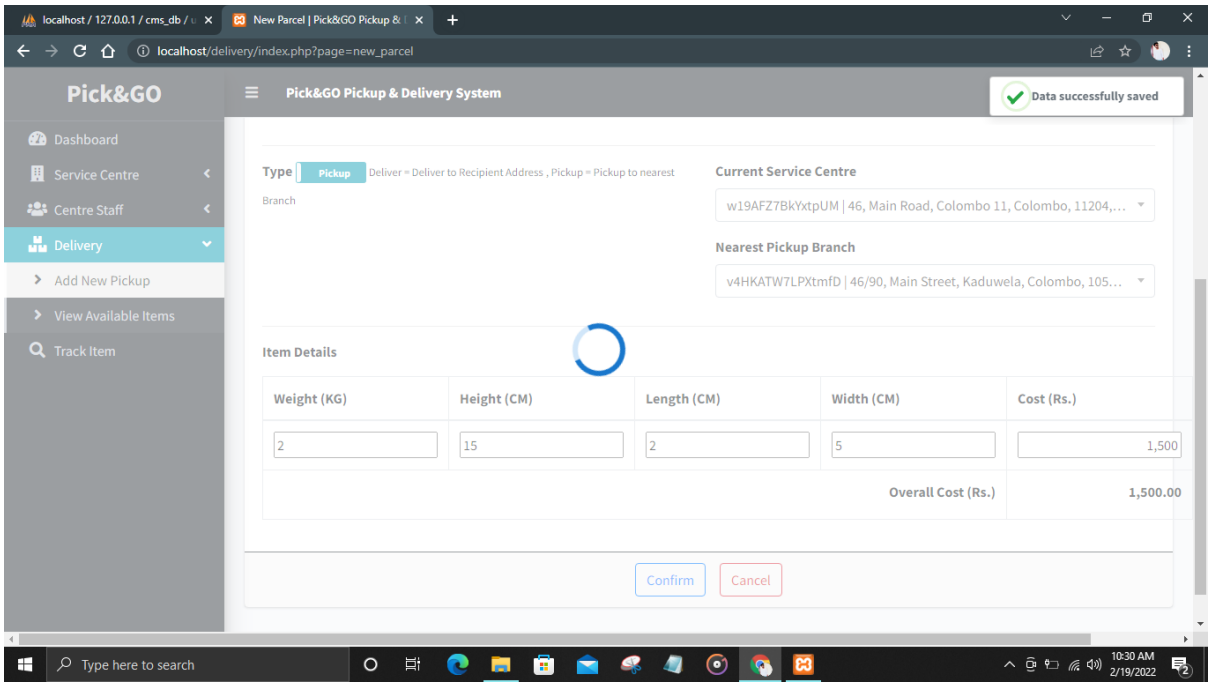

Figure 71: Acceptance test case 08 - evidence 03

09. View, edit and delete parcel records.

Table 14: Acceptance test case 09

Tester	Tuan Saad			
Test Description	View, edit and delete parcel records.			
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
9.0	Click the View available items button	Should Open the parcel list page	Opened the parcel list page	PASS
9.1	Click the Add new pickup button	Should Open the Add new Parcel page	Opened the Add new Parcel page	PASS
9.2	Click the review button	Should Open Parcel details page	Opened the Parcel details page	PASS
9.3	Click the update statues button	Should Open update statues page	Opened the update statues page	PASS
9.4	Select the statues and click update button	statues should update	statues updated successfully	PASS
9.5	Click the close button	Operation should cancel and go back to parcel details page	Operation cancelled and went back to parcel details page	PASS
9.6	Click the edit button	Should Open the edit parcel page	Opened the edit parcel page	PASS

9.7	Edit the details and click the Confirm button	Details should update in parcel list page	Details updated in parcel list page	PASS
9.8	Click the cancel button	Operation should cancel and go back to parcel list page	Operation cancelled and went back to parcel list page	PASS
9.9	Click the Delete button	Confirmation page should popup	Confirmation page popped up	PASS
9.11	Click the continue button	Should Delete the parcel list and “Data successfully deleted” message should popup	Deleted the parcel list and “Data successfully deleted” message popped up	PASS
9.12	Click the cancel button	Operation should cancel and go back to parcel list page	Operation cancelled and went back to parcel list page	
9.13	Type the tracking number in search bar	Only Typed tracking number item details should display	Only Typed tracking number item details displayed	PASS
9.14	Type the wrong tracking number in search bar	No matching records found message should popup	No matching records found message popped up	PASS

Evidence:

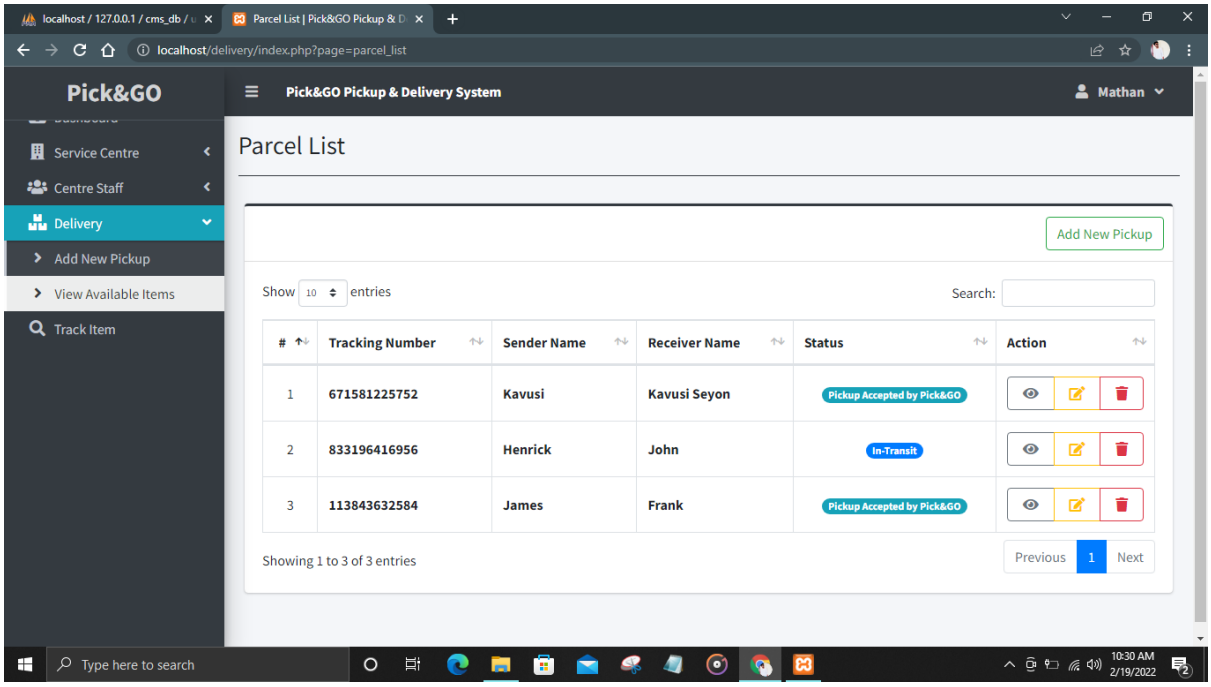

Figure 72: Acceptance test case 09 - evidence 01

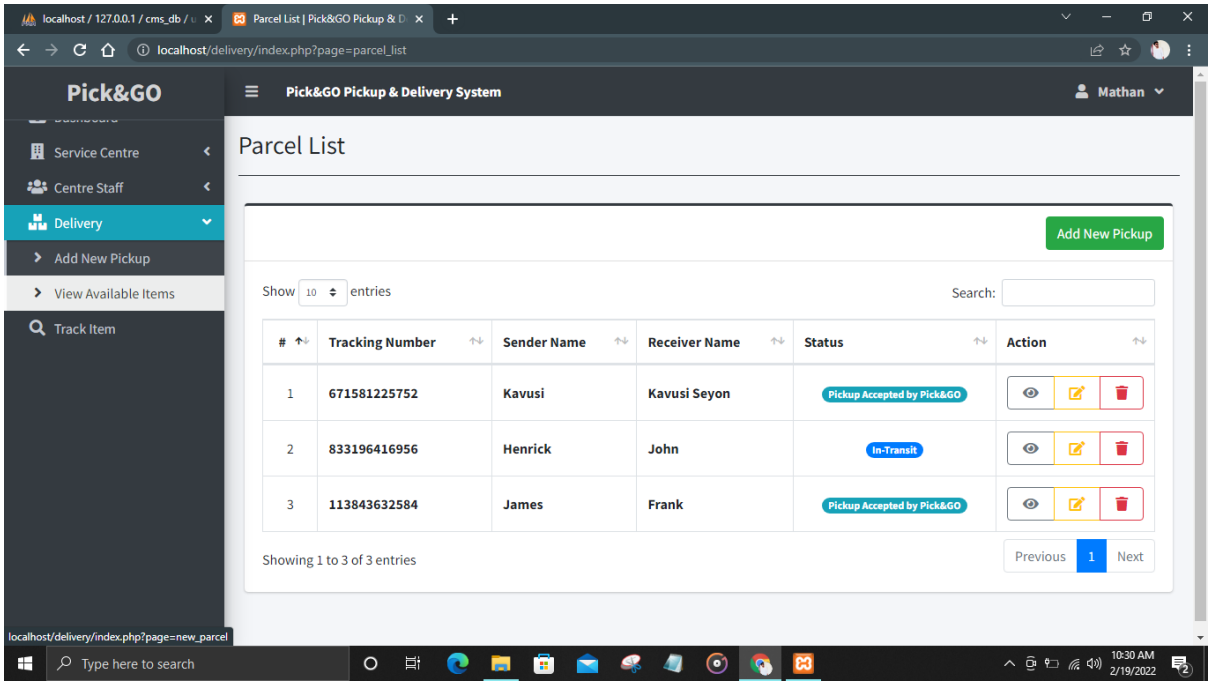

Figure 73: Acceptance test case 09 - evidence 02

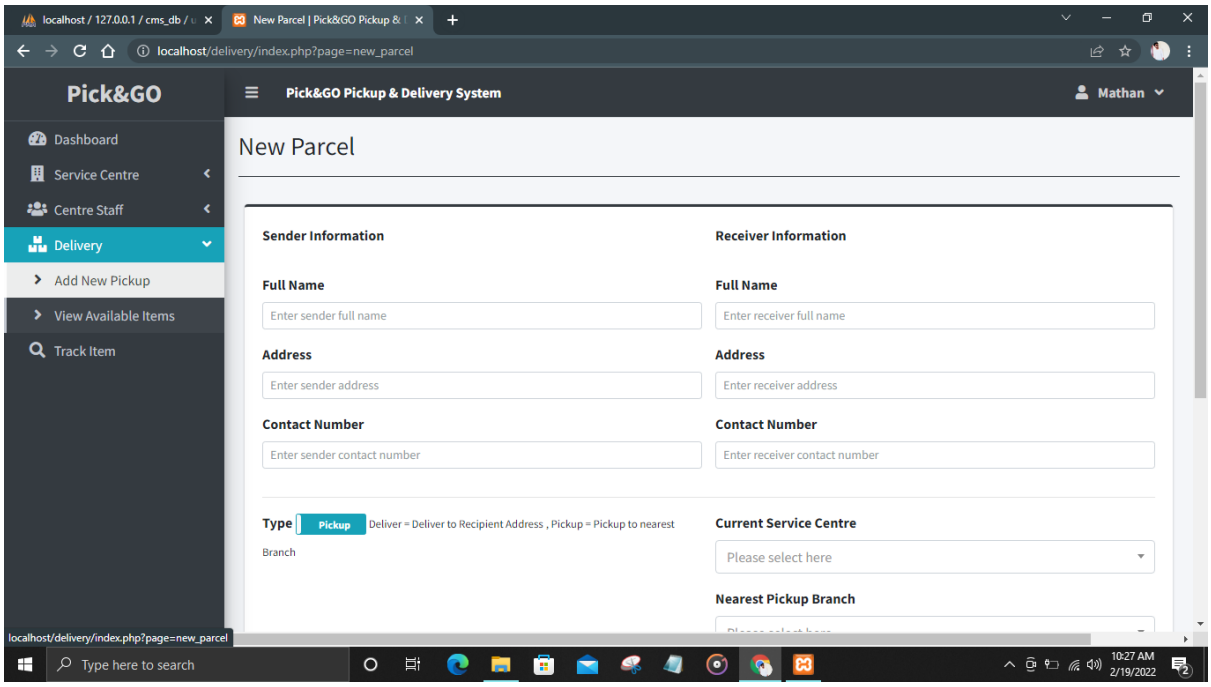

Figure 74: Acceptance test case 09 - evidence 03

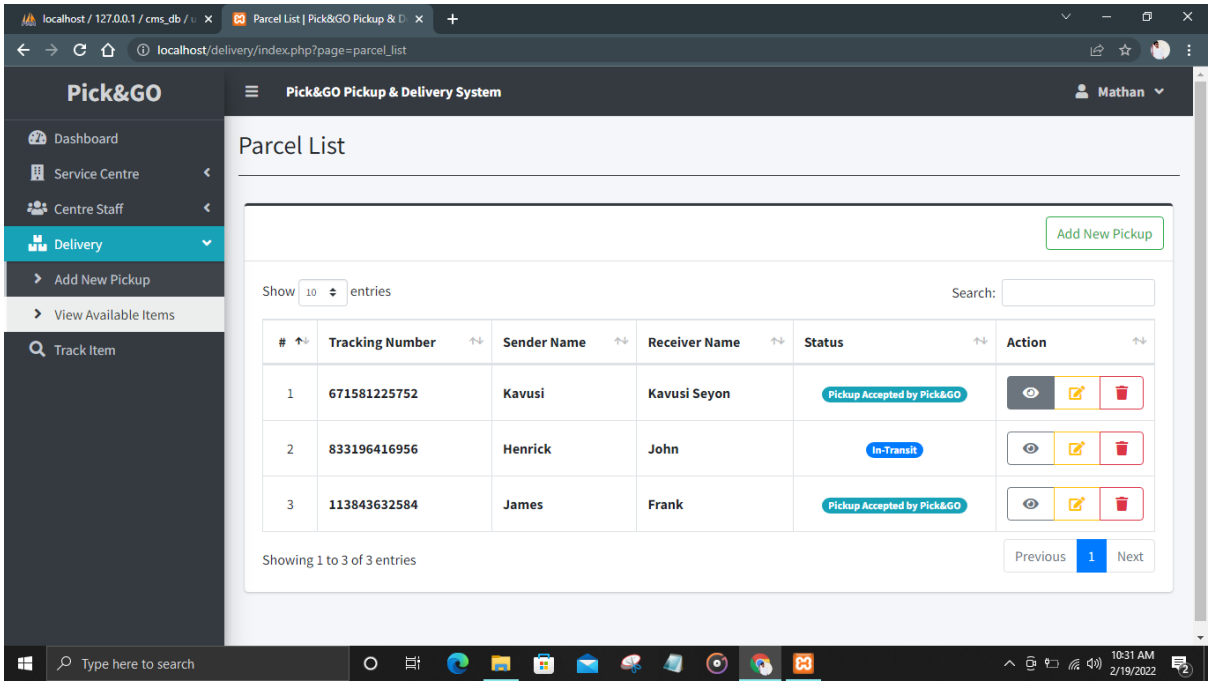

Figure 75: Acceptance test case 09 - evidence 04

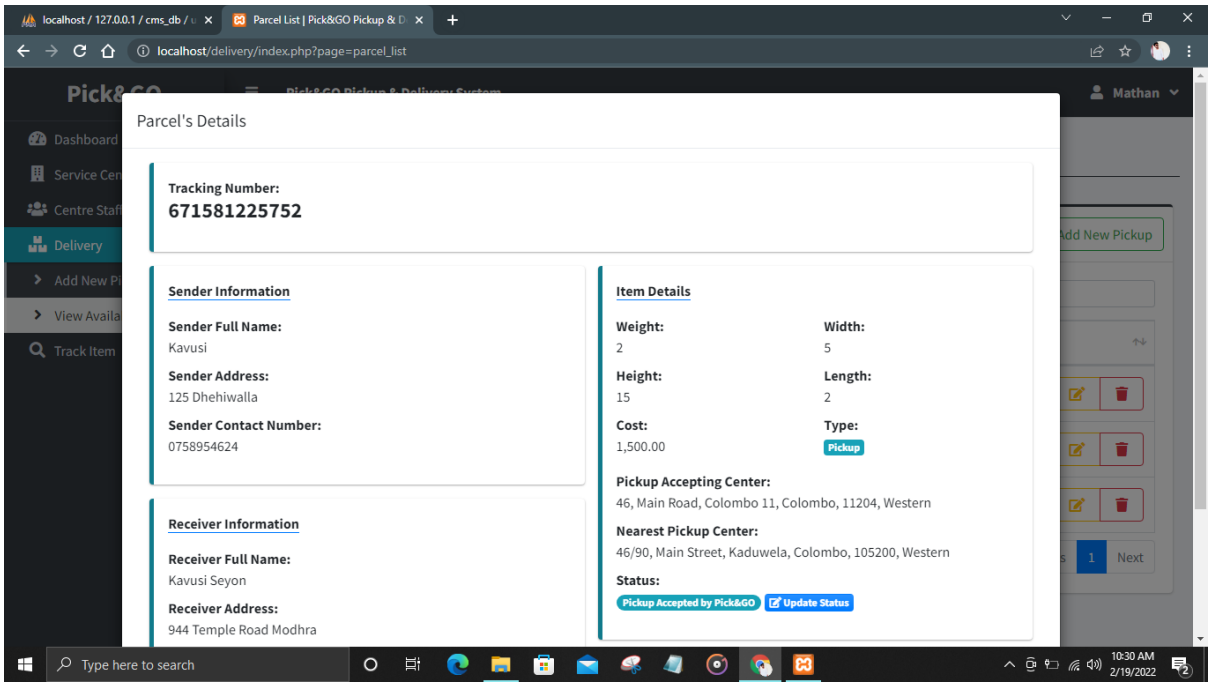

Figure 76: Acceptance test case 09 - evidence 05

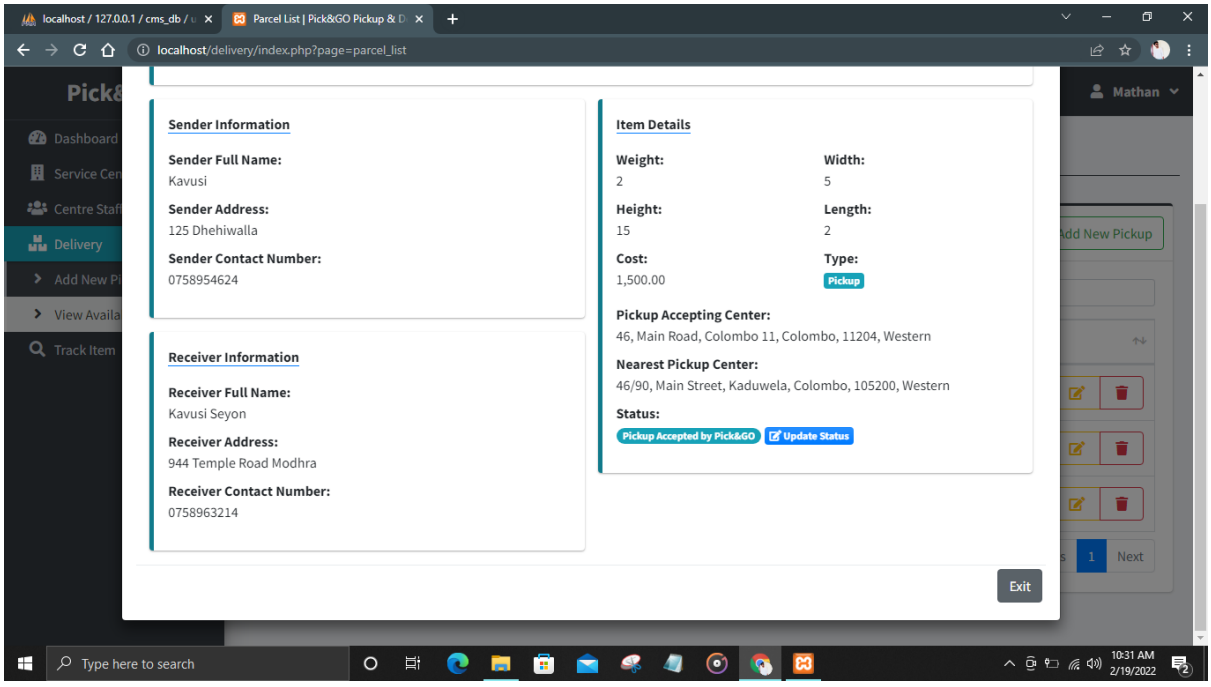

Figure 77: Acceptance test case 09 - evidence 06

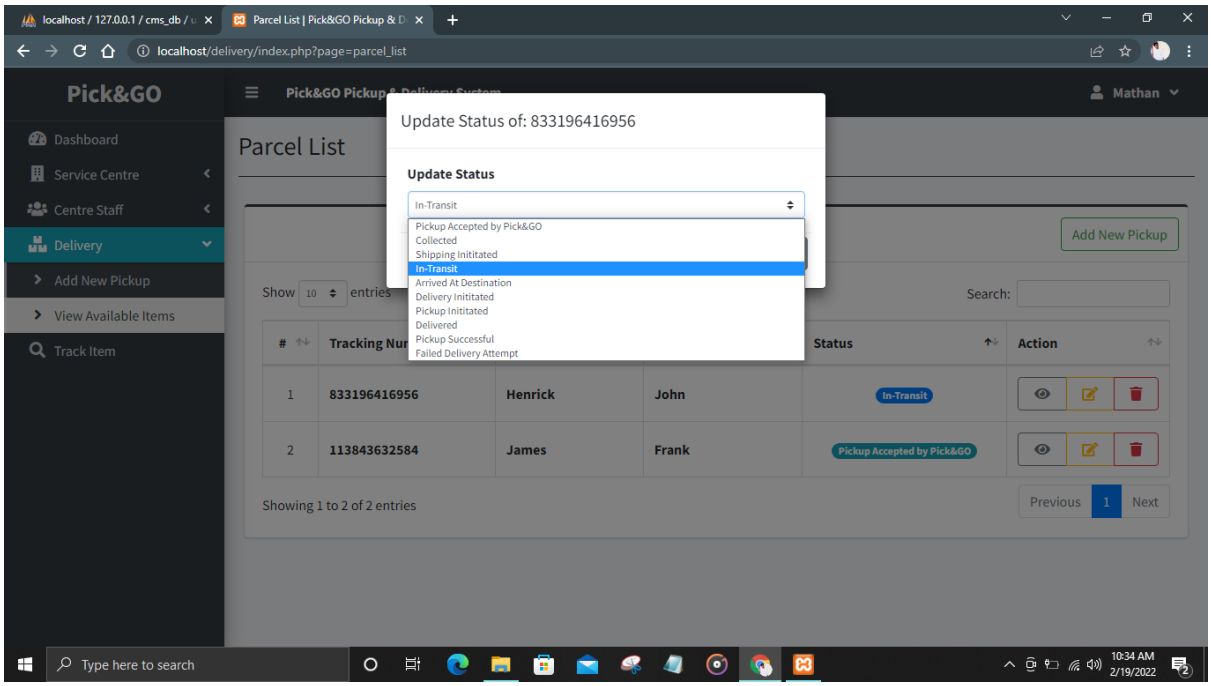

Figure 78: Acceptance test case 09 - evidence 07

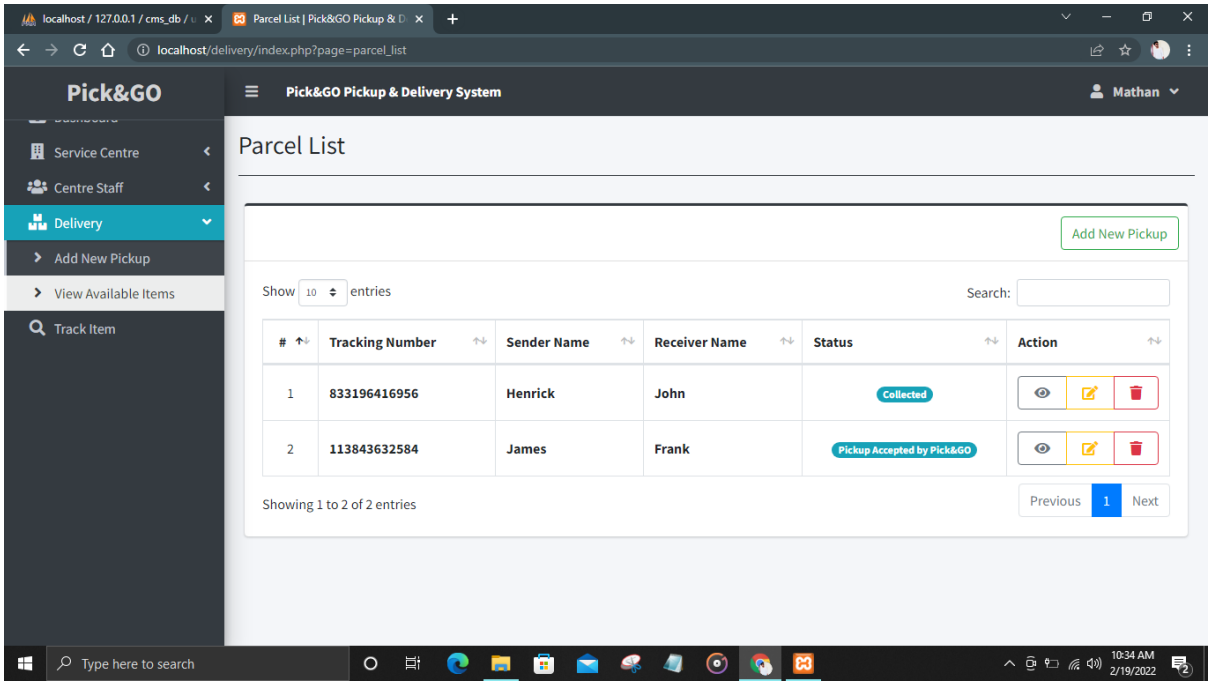

Figure 79: Acceptance test case 09 - evidence 08

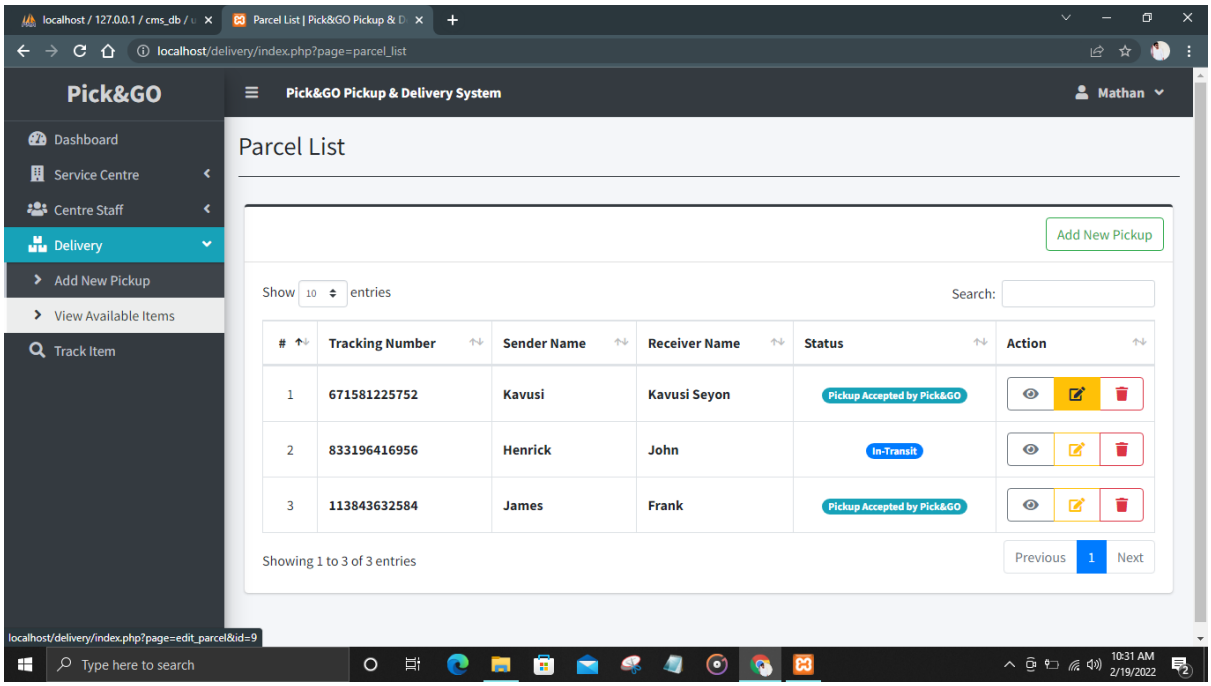

Figure 80: Acceptance test case 09 - evidence 09

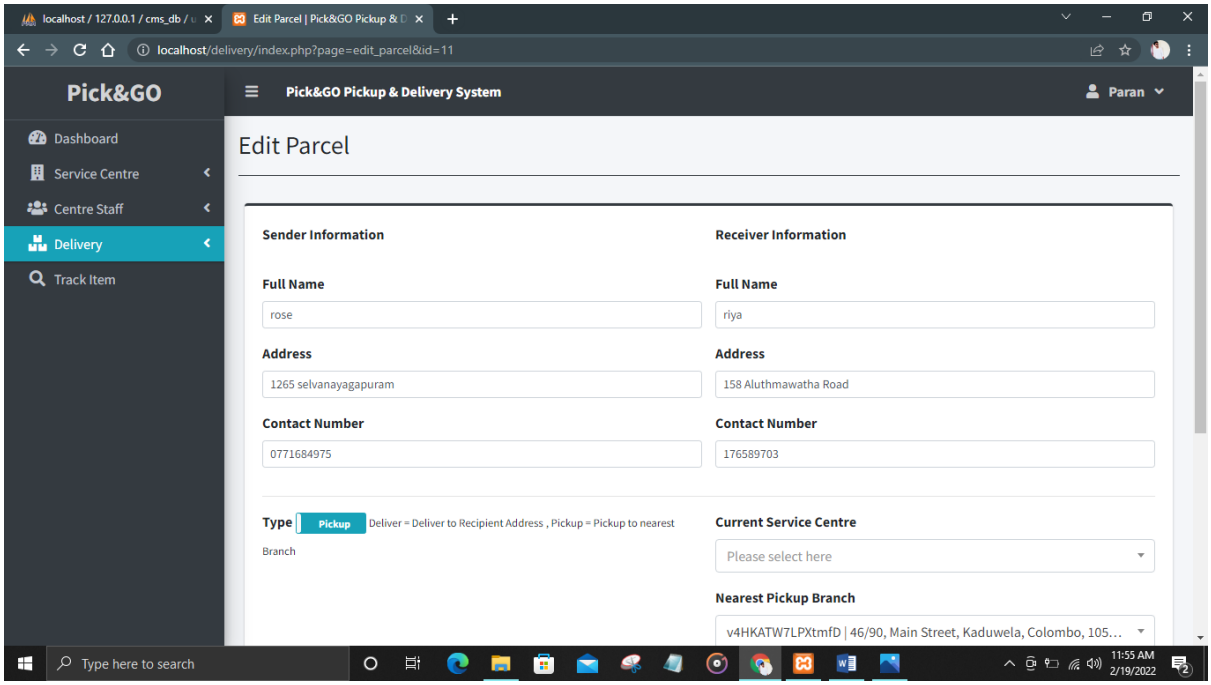

Figure 81: Acceptance test case 09 - evidence 10

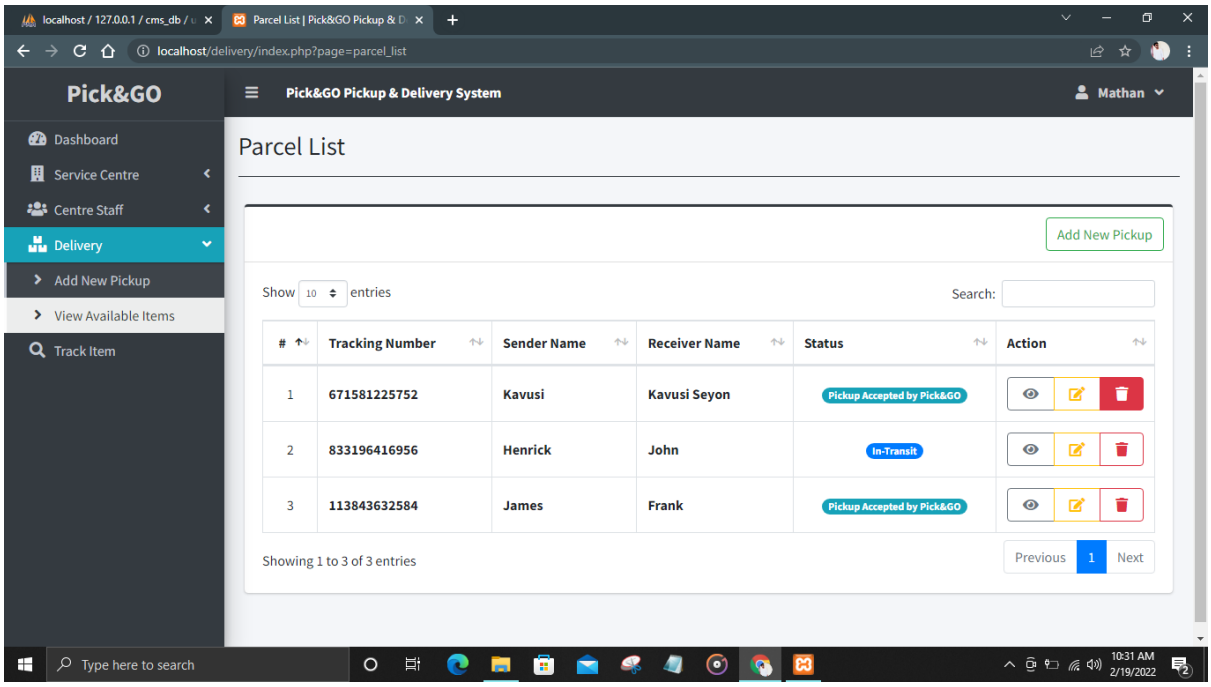

Figure 82: Acceptance test case 09 - evidence 11

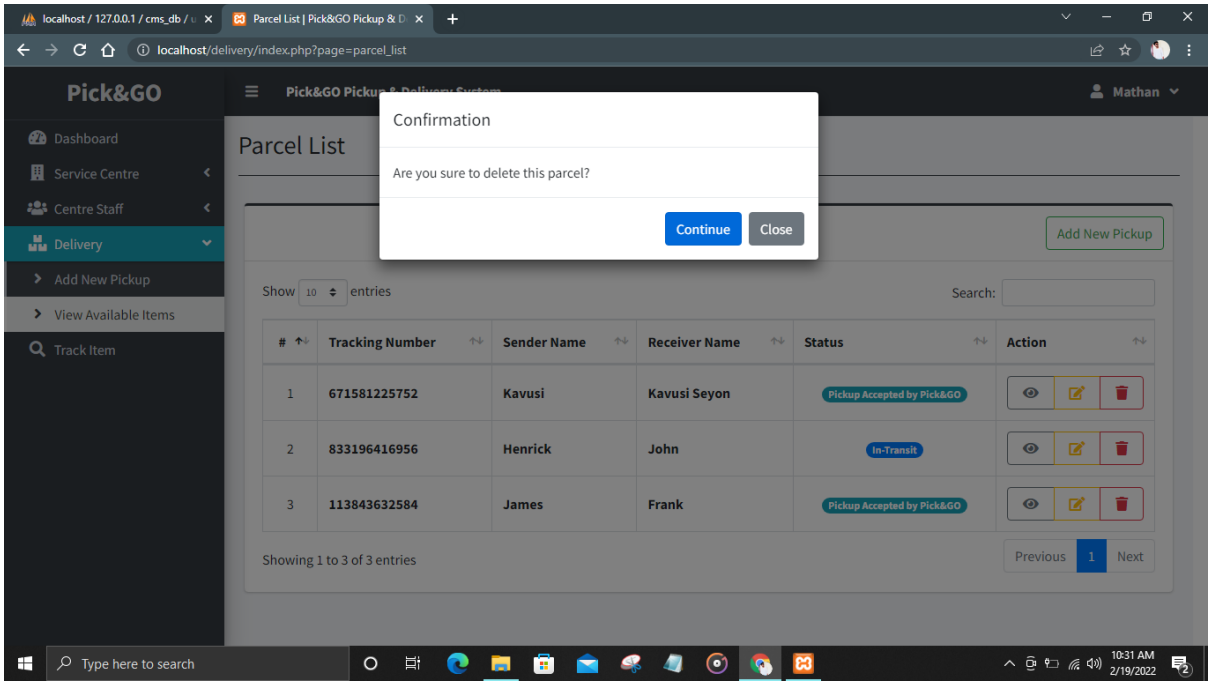

Figure 83: Acceptance test case 09 - evidence 12

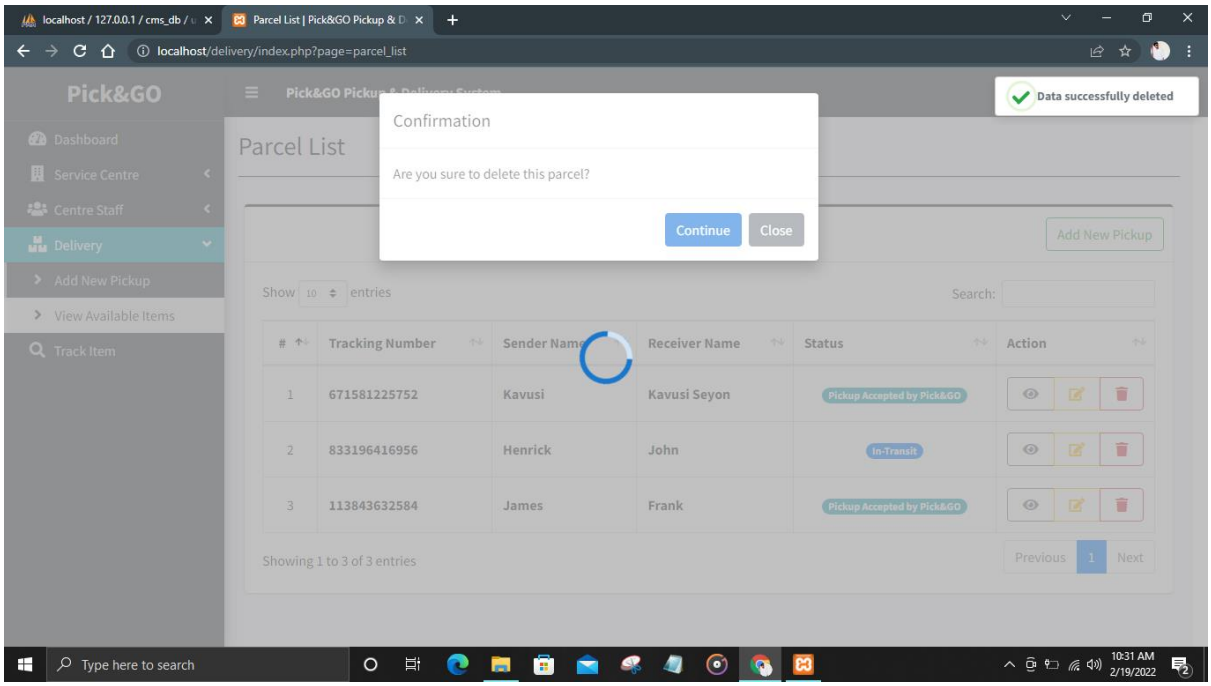

Figure 84: Acceptance test case 09 - evidence 13

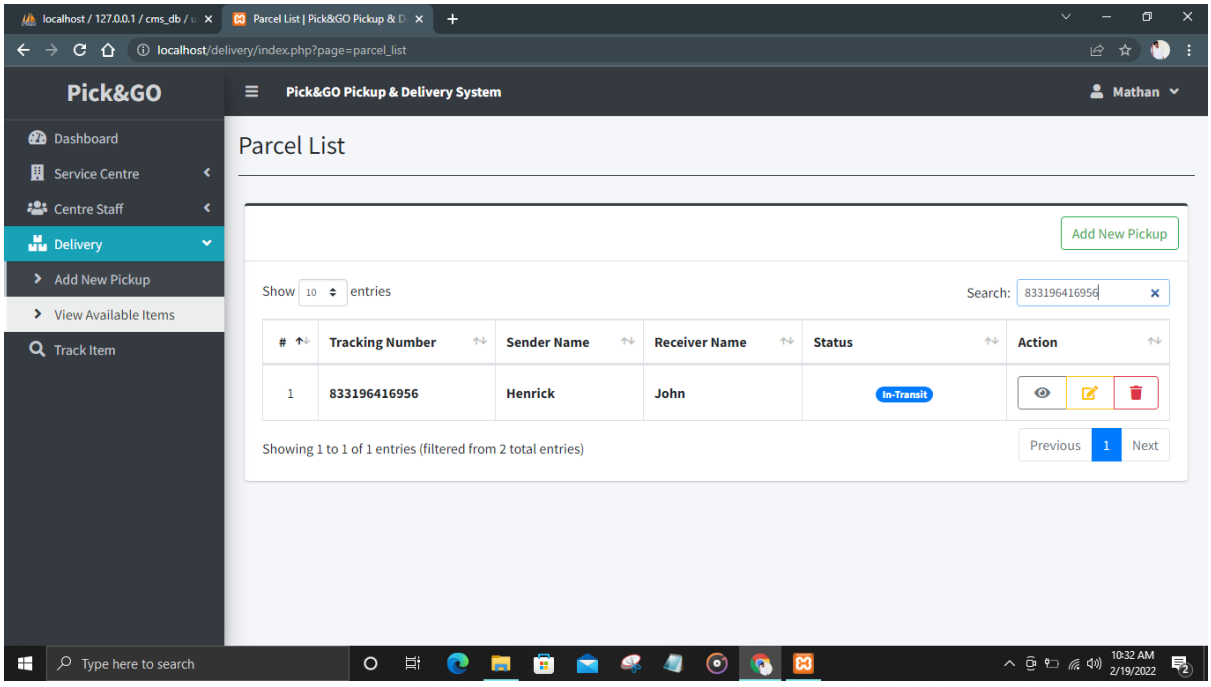

Figure 85: Acceptance test case 09 - evidence 14

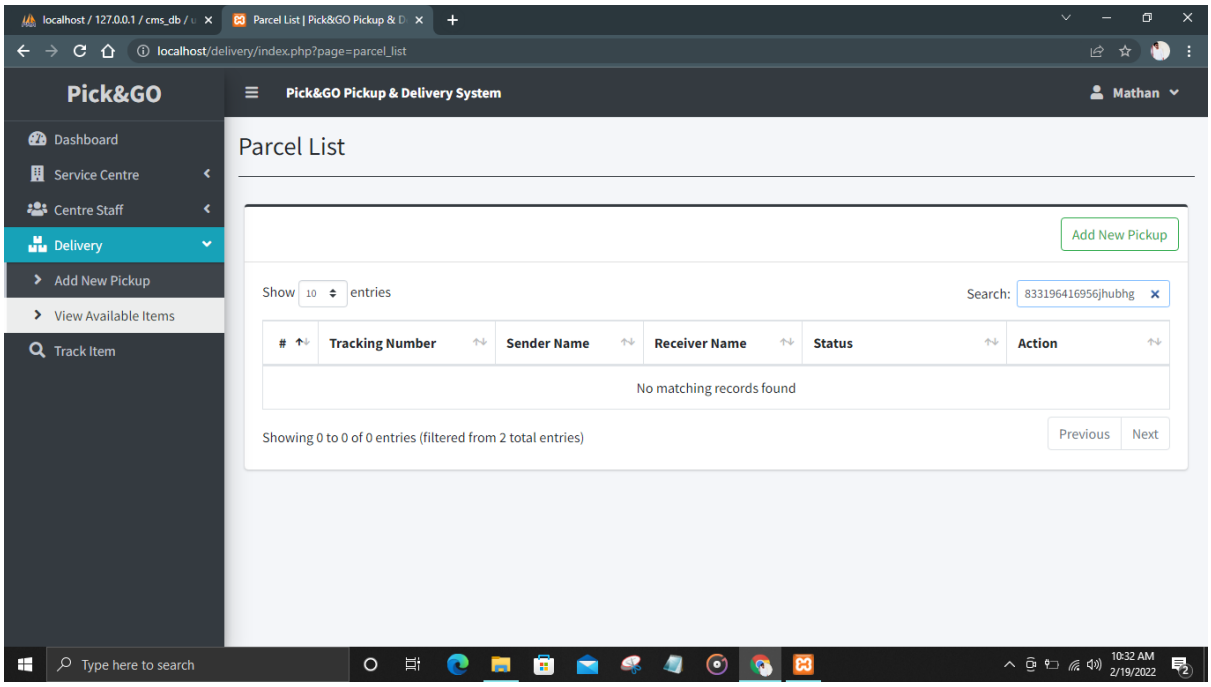

Figure 86: Acceptance test case 09 - evidence 15

10. Tracking deliveries.

Table 15: Acceptance test case 10

Tester	Mathan			
Test Description	Tracking page			
Test Case	**Input Data**	**Expected Outcome**	**Actual Outcome**	**Outcome Result (PASS/FAIL)**
10.1	Enter tracking number	Tracking details and statues should display	Tracking details and statues displayed	PASS
10.2	Enter wrong tracking number	Unknown tracking number message should popup	Unknown tracking number message popped up	PASS

Evidence:

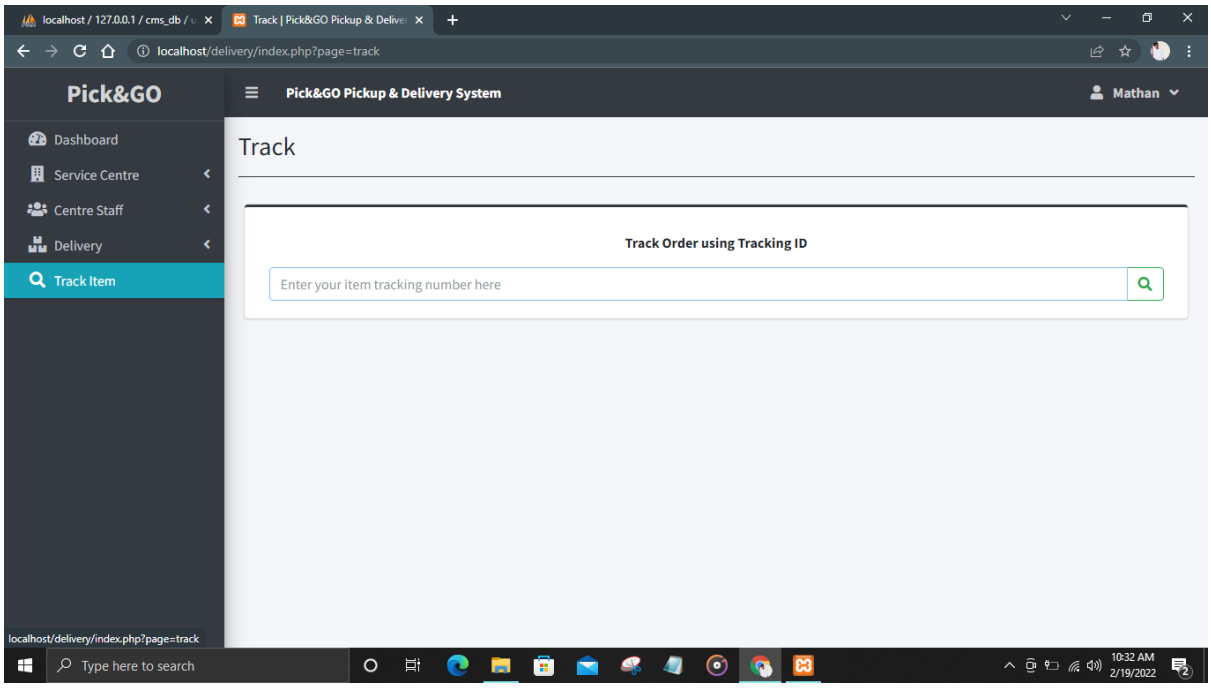

Figure 87: Acceptance test case 10 - evidence 01

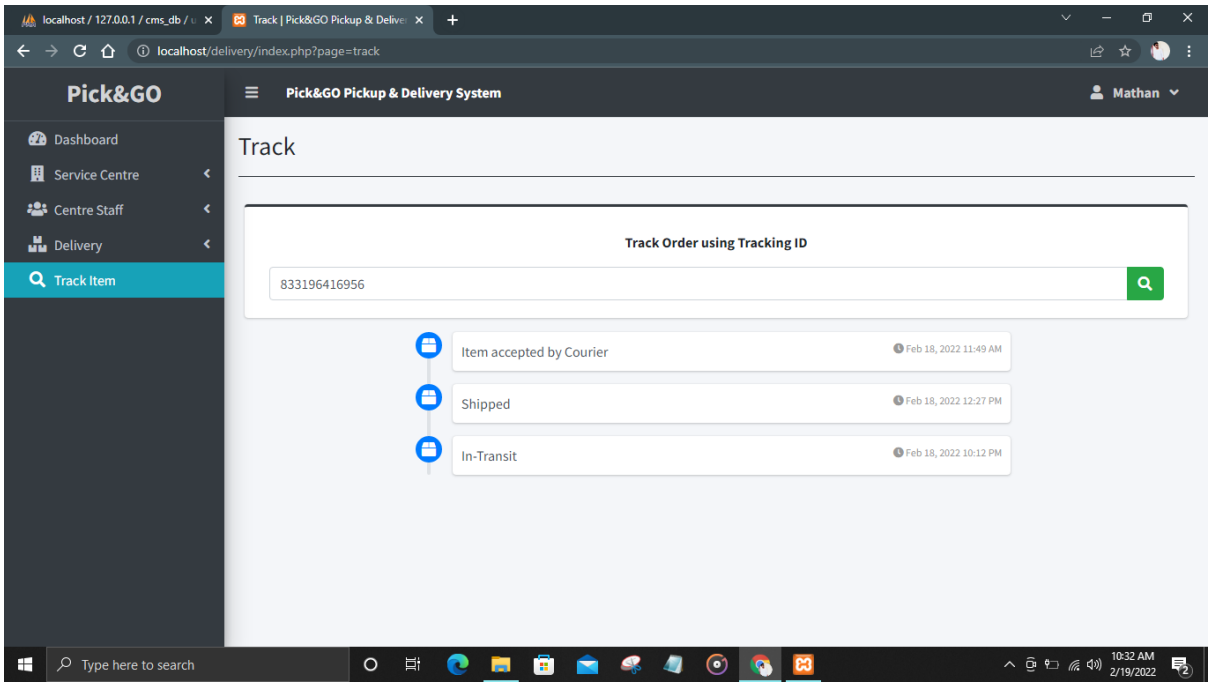

Figure 88: Acceptance test case 10 - evidence 02

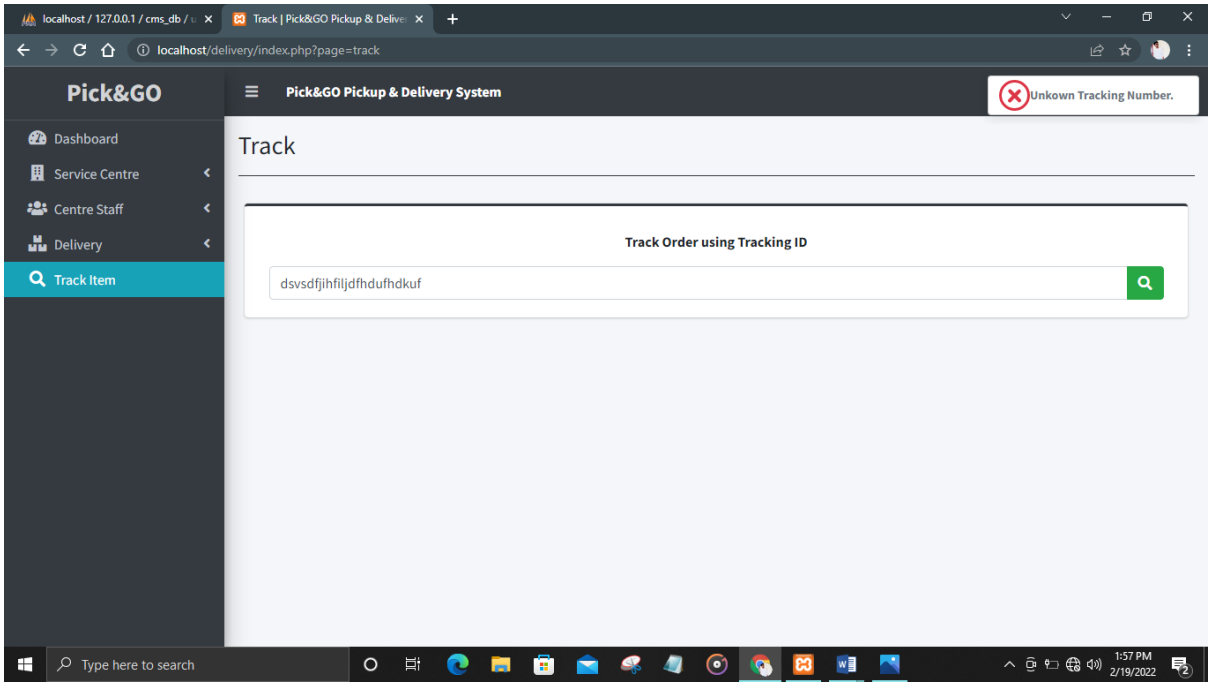

Figure 89: Acceptance test case 10 - evidence 03

Test Report:

Table 16: Acceptance testing report

Test Report for Pick&GO Pickup & Delivery System			
Test Case ID	**Test Description**	**Test Date**	**Status**
01	Logging into the system.	17/02/2021	PASS
02	Create customer account	17/02/2021	PASS
03	Profile bar	17/02/2021	PASS
04	Add new Service Centre branch	17/02/2021	PASS
05	View, Edit, Delete service centre branch records	17/02/2021	PASS
06	Add new staff record	18/02/2021	PASS
07	View, edit and delete staff records	18/02/2021	PASS
08	Add new pickup record	18/02/2021	PASS
09	View, edit and delete item records	18/02/2021	PASS
10	Track deliveries	18/02/2021	PASS

Test Outcome Evaluation:

Considering that all the test cases in the acceptance testing have passed, the online pick requesting and delivering could be accepted as the final system for Pick&GO. The application also verifies that all the initial requirements have been properly utilized and moved towards the development process. Eventually, this depicts that the final system could be accepted and ready for Pick&GO deployment.

Conclusion

This project was dedicated to develop an online pick requesting and delivering system. This includes the essential requirements necessary to carry out daily operations for Pick&GO package delivery service. The developed software would be a web application, which users can access remotely through the internet. The project timeline started with the process of collecting user and client requirements for the implementation. Collected requirements were then illustrated using multiple diagrams. Following, system interfaces were designed along with the application implementation. Moreover, software testing designs was also applied to ensure the application functionalities are working properly, meeting the requirements. Proper software development and collaborative tools were utilized for an effective and efficient development procedure.

References

[1] Indeed, “What Is a Web Application? How It Works, Benefits and Examples,” Indeed, 11 November 2021. [Online]. Available: https://www.indeed.com/career-advice/career-development/what-is-web-application. [Accessed 16 February 2022].

[2] B. Lutkevich, “HTML (Hypertext Markup Language),” TechTarget, February 2020. [Online]. Available: https://www.theserverside.com/definition/HTML-Hypertext-Markup-Language. [Accessed 16 February 2022].

[3] D. Megida, “What is JavaScript? A Definition of the JS Programming Language,” freeCodeCamp, 29 March 2021. [Online]. Available: https://www.freecodecamp.org/news/what-is-javascript-definition-of-js/. [Accessed 16 February 2022].

[4] I. Mavuru, “Traditional Software Development Methodology,” KPI Partners, 22 June 2018. [Online]. Available: https://www.kpipartners.com/blog/traditional-vs-agile-software-development-methodologies. [Accessed 16 February 2022].