VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI

A Project Report on

CARGOX

Submitted in partial fulfillment of the requirement for the award of the degree of

MASTER OF COMPUTER APPLICATIONS

Under

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

By

SHRAJAN
4SO22MC088

Department of Computer Applications
St Joseph Engineering College, Mangaluru-575028
(An Autonomous Institution)

2024

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI

A Project Report on

CARGOX

Submitted in partial fulfillment of the requirement for the award of the degree of

MASTER OF COMPUTER APPLICATIONS

Under

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

By

SHRAJAN

4SO22MC088

Under the Guidance of

Internal Guide:

Ms.Amitha Roshan Vakil
Asst. Professor
Department of Computer Applications
St Joseph Engineering College
Mangaluru-575 028.

External Guide:

Mr.Mohammed shaheed
Software developer
Cognitive solution
Light House Hill Road
Mangalore 575001

Department of Computer Applications

St Joseph Engineering College, Mangaluru-575028

(An Autonomous Institution)

2024

ST JOSEPH ENGINEERING COLLEGE, MANGALURU

(An Autonomous Institution)

DEPARTMENT OF COMPUTER APPLICATIONS

CERTIFICATE

This is to certify that the Project work titled

CARGOX

SUBMITTED BY

SHRAJAN

4SO22MC088

In partial fulfillment of the requirements for award of degree of
Master of Computer Applications of Visvesvaraya Technological University,
is a bonafide record of the work carried out at

COGNITIVE SOLUTION
MANGALURU

During the academic year
2023-2024.

Ms Amitha Roshan Vakil
Asst Professor
Department of Computer Applications
St Joseph Engineering College
Mangaluru-575 028.

Mr Murari B K
Project Coordinator
Department of Computer Applications
St Joseph Engineering College
Mangaluru-575 028.

Dr Hareesh B
HOD-MCA
St Joseph Engineering College
Mangaluru-575 028.

Dr Rio D’Souza
Principal
St Joseph Engineering College
Mangaluru-575 028.

Examiner 1.

Examiner 2.

COGNITIVE SOLUTION

DATE: 29-07-2024

CERTIFICATE OF PROJECT COMPLETION

This is to certify that **MR. SHRAJAN.,** a bonafide student of **ST JOSEPH ENGINEERING COLLEGE, MANGALORE,** (Registration Number 4SO22MC088) has completed his Project Work titled **"CARGOX"** at **Cognitive Solution** from 07th May 2024 to 27th July 2024 as part of curriculum.

We acknowledge and commend **MR. SHRAJAN.,** for his significant contribution and commitment throughout the period at **Cognitive Solution**. We wish him continued success in all his future endeavors.

Mr. Mohammed Shaheed,
Software Developer,
Cognitive Solution,
Mangalore.

COGNITIVE SOLUTION
Ground Floor, Condominium
Building, Light House Hill Road,
Mangalore-575001

DECLARATION

I hereby declare that the entire work embodied in this dissertation has been carried out by me and no part of it has been submitted for any degree or diploma of any university previously.

Place: Mangalore

Date: 28 Aug 2023

SHRAJAN

4SO22MC088

ACKNOWLEDGEMENT

1 extend my sincere appreciation to Mr Mohammed shaheed, operating under the name Cognitive solution, for providing me with the opportunity to work on Cargox a MERN stack website. A special thank you to Mr Mohammed shaheed, my external guide from the company, for their invaluable guidance and mentorship. I am grateful for the collaborative and innovative environment fostered by the Cognitive solution team.

A heartfelt thank you to Ms Amitha Roshan Vakil   Asst Professor, my Internal Guide, for her expertise and assistance during the project.

I would also like to express my gratitude to. Dr Hareesh B, HOD of MCA, and all the faculties at St. Joseph Engineering College for their academic guidance. The knowledge gained from course work has been instrumental in addressing real-world challenges.

Place: Mangalore

Date:

Signature

Name of the student: Shrajan

USN: 45022MC088

ABSTRACT

CargoX is a user-friendly logistics management system developed with the MERN stack (MongoDB, Express.js, React.js, and Node.js). Designed to make life easier for logistics companies, their clients, and administrators, CargoX offers three main modules: Admin, Company, and Client, each with its own set of features.The Admin module is the control center for the entire system. Admins can securely log in, manage company and client profiles, organize service categories, and keep an eye on feedback and bookings. This module ensures that everything runs smoothly behind the scenes.The Company module is tailored for logistics companies. It allows companies to register, confirm their email, log in securely, and manage their services. Companies can also handle client bookings and payments, view feedback, and log out securely. This module helps companies efficiently manage their operations and maintain good client relationships.The Client module is designed for people or businesses looking for logistics services. Clients can register, log in securely, browse and filter services, search for specific services, and view detailed service information. They can book services, process payments, view their bookings, provide feedback, and log out securely. This module makes it easy for clients to find and use the services they need.CargoX aims to improve the efficiency and transparency of logistics operations, making the entire process more satisfying for everyone involved. With its intuitive design and comprehensive features, CargoX provides a seamless experience for all users.

TABLE OF CONTENTS

LITERATURE SURVEY

SOFTWARE REQUIREMENT SPECIFICATION

SYSTEM DESIGN

DETAILED DESIGN

IMPLEMENTATION

SOFTWARE TESTING

CHAPTER 1

INTRODUCTION

PROJECT DESCRIPTION

CargoX is a sophisticated logistics management system implemented with the use of MERN stack (MongoDB, Express. js, React. js, and Node. js) to improve performances in logistics enterprises, optimise clients' experiences, and include detailed administrative control. The system is divided into three main modules: The concepts involved in SWOT analysis are Admin, Company, and Client. The Admin module makes the backend functioning secure by providing features for log in, and companies/clients profiles, service categories, feedback, and various bookings. While the Company module aids logistics companies in registration, validating the email, secure login, service and Booking Management, Payment, feedback and Secure Log Out. The Client module is designed to serve persons or enterprises who require logistics services: user registration, user login, service listing, category selection, service search, detailed descriptions, booking, payment, booking history, feedback, and logout. Through CargoX, logistics services will be improved, more transparent, and more satisfying for both service providers and customers, and through simple at very eficient means to transfer information, the listed goals will be achieved.

CHAPTER 2

LITREATURE SUREVEY

2.1 EXISTING AND PROPOSED SYSTEM

Currently, managing logistics operations involves a lot of manual work and can be quite cumbersome. Logistics companies often have to handle service registrations, client bookings, and payment processes manually, which can lead to errors and delays. Clients face the hassle of finding, booking, and paying for logistics services through various channels, often struggling to get detailed information and provide feedback. Administrators have a hard time overseeing the entire system, managing profiles, and ensuring quality control.

CargoX aims to solve these issues by providing a comprehensive online logistics management system. Our proposed system streamlines operations for logistics companies, improves the client experience, and offers thorough administrative oversight. With CargoX, all processes—from registrations to bookings and payments—are managed efficiently in one unified platform. The three modules—Admin, Company, and Client—work together to ensure a smooth and effective logistics operation, reducing errors and boosting satisfaction for everyone involved.

2.2 FEASIBILITY STUDY

We've put CargoX through extensive testing to ensure its security, and feedback from many users has been overwhelmingly positive.

- **Technical Feasibility:** CargoX is built using the MERN stack. MongoDB handles the database, while Express.js and Node.js take care of serverside development, and React.js powers the frontend. This combination is known for being robust, scalable, and reliable, ensuring high performance.
- **Economic Feasibility :**To use CargoX, all you need is a computer or mobile device with an internet connection. There are no membership fees—it's completely free. The costs of developing and operating CargoX are minimal compared to the significant benefits it offers.
- **Operational Feasibility:**CargoX is designed to be extremely userfriendly. Its intuitive interface makes it easy for logistics companies, clients, and administrators to navigate and operate, enhancing the overall user experience and satisfaction.

2.3 TOOLS AND TECHNOLOGIES USED

CargoX is developed with modern and efficient technologies to ensure it is robust and scalable. We use Microsoft Visual Studio Code as the development environment. The backend is built with Node.js and Express.js, and the frontend is developed using React.js. For the database, we use MongoDB, which ensures efficient data storage and retrieval. The server runs on Node.js, providing reliable and scalable backend infrastructure. This combination of tools and technologies ensures that CargoX is a highperformance, userfriendly, and secure logistics management system.

CHAPTER 3

SOFTWEAR REQUIREMENT SPECIFICATION

3.1 INTRODUCTION

3.1.1 Purpose

The main goal of this Software Requirements Specification (SRS) is to turn the client's ideas into a structured document. It aims to capture the client's needs and document user information comprehensively. This document is intended for developers and will serve as the basis for validating the final system. Any changes to the requirements in the future must follow the formal change approval process.

3.1.2 Document Abbreviations/Definitions

- MERN: MongoDB, Express.js, React, Node.js
- CRUD: Create, Read, Update, Delete
- API: Application Programming Interface
- JSON: JavaScript Object Notation
- UI: User Interface
- UX: User Experience
- MVC: ModelViewController
- REST: Representational State Transfer
- JWT: JSON Web Token
- NoSQL: NonRelational SQL
- IDE: Integrated Development Environment
- HTTP: Hypertext Transfer Protocol
- HTTPS: Hypertext Transfer Protocol Secure
- DOM: Document Object Model
- SPA: Single Page Application
- SEO: Search Engine Optimization
- CI/CD: Continuous Integration/Continuous Deployment

3.1.3 Target Audience

- **Developers:** This document guides developers in building and refining the system. It serves as a reference for making necessary revisions and ensuring the final product meets all requirements.
- **Administrators:** Administrators use the system to manage companies, categories, clients, feedback, and bookings. They ensure security and add new users as needed.
- **Companies:** Companies can register, manage their services, handle bookings and payments, and view client feedback, helping them streamline their operations.
- **Clients:** Clients use the system to browse and book services, filter by category, search for specific services, make payments, and provide feedback, making the process convenient and efficient.

3.1.4 Project Scope

The SRS for CargoX, a cargo handling website built with the MERN stack, brings together all the requirements into one clear document. This makes it easy for administrators to manage companies, categories, clients, feedback, and bookings. Designed for developers, this document ensures that the final system meets all needs and follows a structured process for any future changes. CargoX includes features like secure logins, easy registration, service management, booking, payments, and feedback for both companies and clients, making the whole process smooth and userfriendly.

3.1.5 Benefits

The CargoX system offers several benefits designed to improve efficiency and user experience. By streamlining the cargo handling process, it saves valuable time for both administrators and clients. The system allows for easy approvals and management, reducing the need for manual paperwork and visits. With its userfriendly interface, CargoX simplifies tasks like booking, payments, and feedback submission. The online platform ensures that all data is easily accessible and secure, making the entire process hasslefree for everyone involved.

3.2 OVERALL DESCRIPTION

3.2.1 Identification of Preexisting Work

Before CargoX, managing cargo handling required manual processes and various disconnected systems, leading to inefficiencies and delays. Traditional methods involved cumbersome paperwork, manual approvals, and fragmented communication between administrators, companies, and clients. Many existing systems lacked comprehensive integration, userfriendly interfaces, and secure online access, which resulted in errors, lost data, and timeconsuming tasks.

CargoX addresses these issues by providing an integrated, webbased solution built with the MERN stack. It brings together all necessary functionalities, including registration, service management, booking, payments, and feedback, into a single, cohesive platform. This modern approach eliminates the need for physical paperwork, streamlines approval processes, and enhances overall efficiency. With CargoX, users benefit from a seamless, secure, and efficient cargo handling experience.

3.2.2 Perspective on Product

CargoX is a modern, webbased cargo handling system designed to make life easier for everyone involved. Built using the MERN stack, it brings together administrators, companies, and clients on one userfriendly platform. For administrators, it simplifies managing companies, categories, clients, feedback, and bookings. Companies can easily register, manage their services, handle bookings and payments, and view client feedback. Clients can register, browse and book services, filter by category, search for specific services, make payments, and leave feedback with ease. Gone are the days of dealing with piles of paperwork and slow approval processes. CargoX streamlines everything into one efficient system, saving time and reducing hassle. Whether you're an administrator, company, or client, CargoX offers a seamless and secure online experience, making cargo handling smooth and straightforward for everyone.

3.2.3 Product Attributes

CargoX features a simple and userfriendly interface, accessible by admins, logistics companies, and clients at any time from any platform. Key functionalities include.

Admin Module:

- Login: Secure access for administrators.

- Manage Company: Add and manage logistics companies.
- Manage Category: Define and manage service categories.
- Manage Client: Add and manage client profiles.
- View Feedback: Access client feedback for services.
- View Booking: Monitor bookings made through the system.

Company Module:

- Register: Company registration process.
- Mail Confirmation: Email confirmation for registration.
- Login: Secure access for companies.
- Manage Services: Add and manage logistics services.
- Manage Booking: Oversee service bookings.
- Manage Payment: Handle payment processes.
- View Feedback: Access feedback from clients.
- Logout: Secure logout from the system.

Client Module:

- Register: Client registration process.
- Login: Secure access for clients.
- View Service: Browse available services.
- Filter by Category: Filter services based on categories.
- Search for Service: Search for specific services.
- View Details of Service: Detailed view of services.
- Book Service: Book logistics services.
- My Booking: Manage and view personal bookings.
- Payment: Process payments for services.
- Feedback: Provide feedback for services.
- Logout: Secure logout from the system.

3.2.4 End User Characteristics

CargoX is designed with simplicity and ease of use in mind, catering to a variety of users:

- **Administrators:** They manage the entire system, including companies, categories, clients, feedback, and bookings. Administrators can easily add and manage users, ensuring smooth operation and security.
- **Companies:** These users can register on the platform, confirm their registration via email, and manage their services effortlessly. They handle bookings, process payments, and view feedback from clients, all within a userfriendly interface.
- **Clients:** Clients can register and log in to access a range of services. They can browse available services, filter them by category, search for specific services, view detailed information, and book the services they need. Additionally, clients can manage their bookings, make payments, leave feedback, and log out securely. CargoX ensures that each user type has access to the features they need, presented in an intuitive and accessible way, making the entire cargo handling process efficient and straightforward.

3.2.5 Operating Environment

- **Devices:** Whether you're on a desktop computer, laptop, tablet, or smartphone, CargoX works seamlessly across all devices. If your device has a web browser, you're good to go.
- **Internet Connection:** A stable internet connection is essential for accessing CargoX and ensuring smooth operation. This allows realtime updates and seamless interaction between administrators, companies, and clients.
- **Web Browsers:** CargoX is compatible with all major web browsers, including Chrome, Firefox, Safari, and Edge. There's no need for special software or downloads—just open your browser and start using the system.
- CargoX's design ensures that no matter where you are or what device you're using, you can easily manage and interact with the cargo handling system, making your workflow efficient and hasslefree.

3.2.6 Constraints in Design and Implementation

- **Complete Information:** All required fields must be filled out accurately. Missing or incorrect information can lead to delays and errors.
- **Security:** Users must enter a valid email address and a strong password. This helps protect user accounts and sensitive data.

- **InstitutionSpecific:** Email addresses used for registration must be those provided by the organization to maintain a secure and controlled user environment.
- **Accessibility:** Users need to have basic computer skills and internet access to use the system effectively. This ensures that they can navigate the platform and utilize its features without difficulty.

3.2.7 Assumptions and Dependencies

- **User Access:** It's assumed that all users, including administrators, companies, and clients, have the appropriate access rights to the system. This ensures that they can perform their respective tasks without hindrance.
- **Basic Computer Skills:** Users are expected to have a basic understanding of how to use a computer and navigate the internet. This is crucial for them to interact with the CargoX platform efficiently.
- **Internet Connectivity:** Reliable internet access is necessary for users to access the CargoX system. Without internet connectivity, users will not be able to log in, manage services, or perform other essential tasks.

3.3 PRODUCT FUNCTIONALITY

3.3.1 Admin Module

- **Login:**Admins log in using their email address and password.
- **Manage Company:** Admins add and manage company profiles.
- **Manage Category:** Admins define and manage service categories.
- **Manage Client:** Admins add and manage client profiles.
- **View Feedback**: Admins access feedback from clients.
- **View Booking:** Admins monitor bookings made through the system.

3.3.2 Company Module

- **Register:** Companies register to use the system.
- **Mail Confirmation:** Companies confirm their registration via email.
- **Login:** Companies log in using their email address and password.
- **Manage Services:** Companies add and manage their logistics services.
- **Manage Booking:** Companies oversee service bookings.
- **Manage Payment:** Companies handle payment processes.

- **View Feedback:** Companies access feedback from clients.
- **Logout:** Companies log out securely from the system.

3.3.3 Client Module

- **Register:** Clients register to use the system.
- **Login:** Clients log in using their email address and password.
- **View Service:** Clients browse available logistics services.
- **Filter by Category:** Clients filter services based on categories.
- **Search for Service:** Clients search for specific services.
- **View Details of Service:** Clients view detailed information about services.
- **Book Service:** Clients book logistics services.
- **My Booking:** Clients manage and view their bookings.
- **Payment:** Clients process payments for services.
- **Feedback:** Clients provide feedback for services.
- **Logout:** Clients log out securely from the system.

3.4 EXTERNAL INTERFACE REQUIREMENTS

- **User Interfaces:** CargoX can be accessed through any web browser, offering a straightforward and intuitive interface. The homepage provides links to various pages, allowing users to easily navigate through the system. The login form ensures secure access, and once validated, users can submit requests, view services, and manage bookings effortlessly.
- **Hardware Interfaces:** CargoX is compatible with any device that has a web browser, such as desktops, laptops, tablets, and smartphones. This flexibility ensures that users can access the system from any location.
- **Software Interfaces:** The system requires support from web browsers to function correctly. This includes compatibility with popular browsers like Chrome, Firefox, Safari, and Edge to ensure broad accessibility and usability.
- **Communication Interfaces:** CargoX relies on an internet connection with HTTP support to communicate with the server. This ensures that data is transmitted securely

and efficiently between users and the system, enabling realtime updates and interactions.

3.5 OTHER NONFUNCTIONAL REQUIREMENTS

- **Performance:** The system must offer quick response times, ensuring that pages load swiftly and user actions are processed without noticeable delay.
- **Reliability:** CargoX needs to be dependable and consistently available, with minimal downtime. Regular backups and strong errorhandling mechanisms are essential to maintain data integrity and continuous service.
- **Scalability:** The platform must be capable of expanding to accommodate a growing number of users and an increasing amount of data without compromising performance.
- **Security:** Ensuring user data protection is critical. CargoX must implement robust encryption for data transmission and storage, secure authentication processes, and regular security updates to safeguard against threats.
- **Usability:** The system should be userfriendly, with an intuitive interface that allows users to navigate and utilize features without the need for extensive training.
- **Maintainability:** CargoX should be easy to maintain and update. The codebase must be welldocumented, allowing for smooth implementation of updates and fixes without disrupting the service.
- **Compatibility:** The platform should be compatible with various web browsers and devices, ensuring accessibility across different environments and devices.
- **Compliance:** CargoX must adhere to relevant industry standards and regulations, ensuring that data handling and privacy practices meet legal and regulatory requirements.

3.6 SPECIFIC REQUIREMENTS

3.6.1 Operating Environment

3.6.1.1 Hardware Requirements

Processor	:	Minimum Intel Pentium 4 or equivalent
RAM	:	Minimum 1GB
Hard Disk	:	Minimum 10GB

3.6.1.2 Software Requirements:

Frontend Language	:	React.js, Mui components, CSS, JavaScript
Backend Language	:	Node.js with Express.js
Database	:	MongoDB

CHAPTER 4

SYSTEM DESIGN

4.1 SYSTEM DESIGN

4.1.1 Introduction

System design involves specifying the architecture, modules, and data components of the system. It often includes the creation of subapplications and focuses on selecting the necessary segments, ensuring that these modules are consistent and cohesive.

4.1.2 Scope

The scope of this document is to provide a comprehensive understanding of the CargoX application, a cargo handling website developed using the MERN stack, in a methodical way. It describes the system's context flow, allowing easy identification of the direction of data flow. Additionally, it explains the connections between each module of the software and use-case realization, guiding developers in adopting the best methods during programming.

4.1.3 Audience

The primary users of this document during the design phase include the developers, testing team, and maintenance team of the CargoX application.

4.2 SOFTWARE PRODUCT ARCHITECTURE

4.2.1 ARCHITECTURAL DESIGN

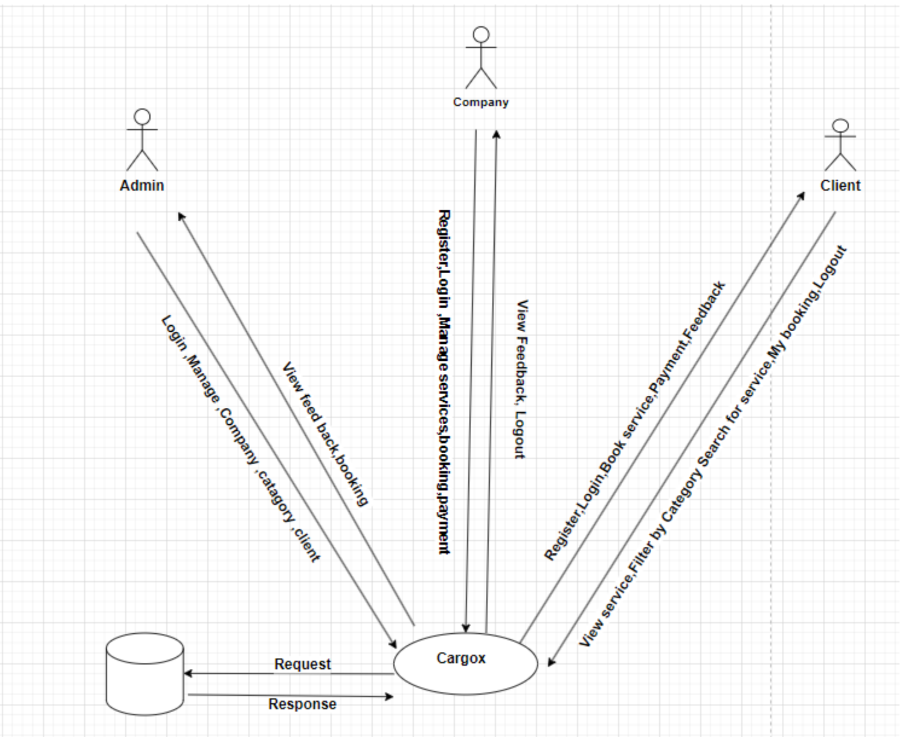

Company
Admin
Client
Register,Login ,Manage services,booking,payment
View Feedback, Logout
Login ,Manage ,Company ,catagory ,client
View feed back,booking
Register,Login,Book service,Payment,Feedback
View service,Filter by Category Search for service,My booking,Logout
Cargox
Request
Response

Figure 4.2.1 Cargox system architecture design

4.2.1.1 View Layer or Presentation Layer

This layer includes the Admin, Companies, and Clients. These users have direct interaction with the CargoX system, allowing them to perform tasks such as login, registration, and service management.

4.2.1.2 Business Layer

The Business Layer encompasses the core functionalities of the CargoX application, including managing companies, categories, clients, services, bookings, and payments. It also handles the business logic and processes requests between the presentation layer and the database.

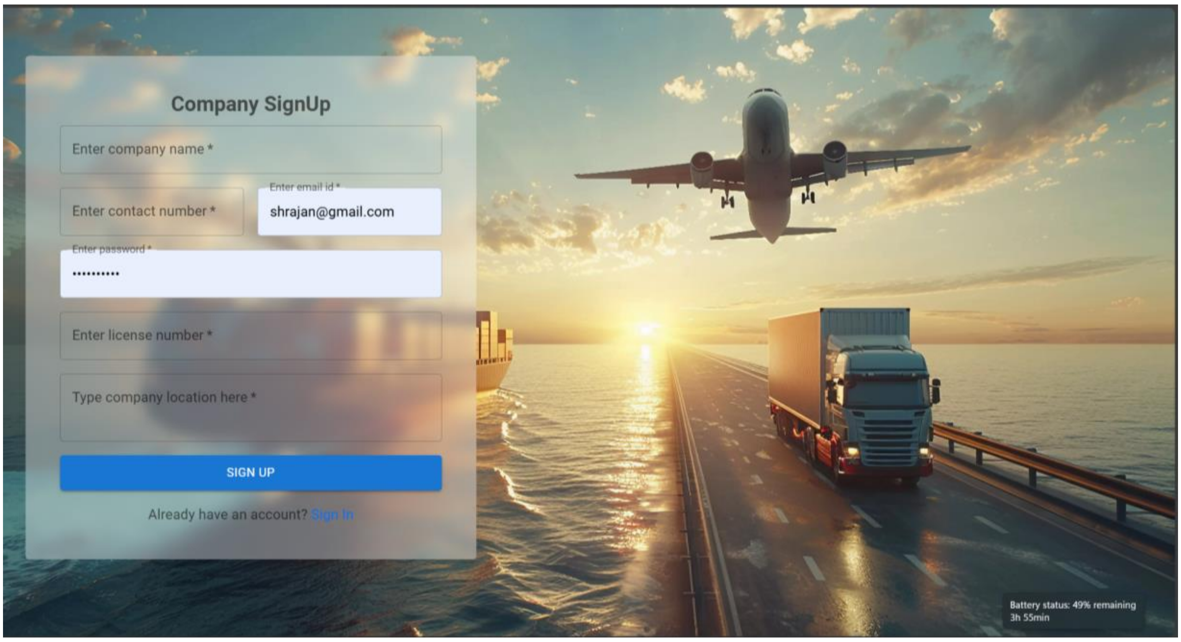
4.2.1.3 Access Layer

The Access Layer interacts with the database to store and retrieve user data. It ensures that all data operations are securely and efficiently managed, supporting the overall functionality of the CargoX system.

4.3 COMPONENT ARCHITECTURE

4.3.1 USER INTERFACE

The user Interface(UI) is a crucial component of the “CARGOX” architecture, providing the visual and interactive elements through which users and administrators interact with the system, It Includes



Company SignUp

Enter company name *

Enter contact number *

Enter email id *
shrajan@gmail.com

Enter password *
••••••••••

Enter license number *

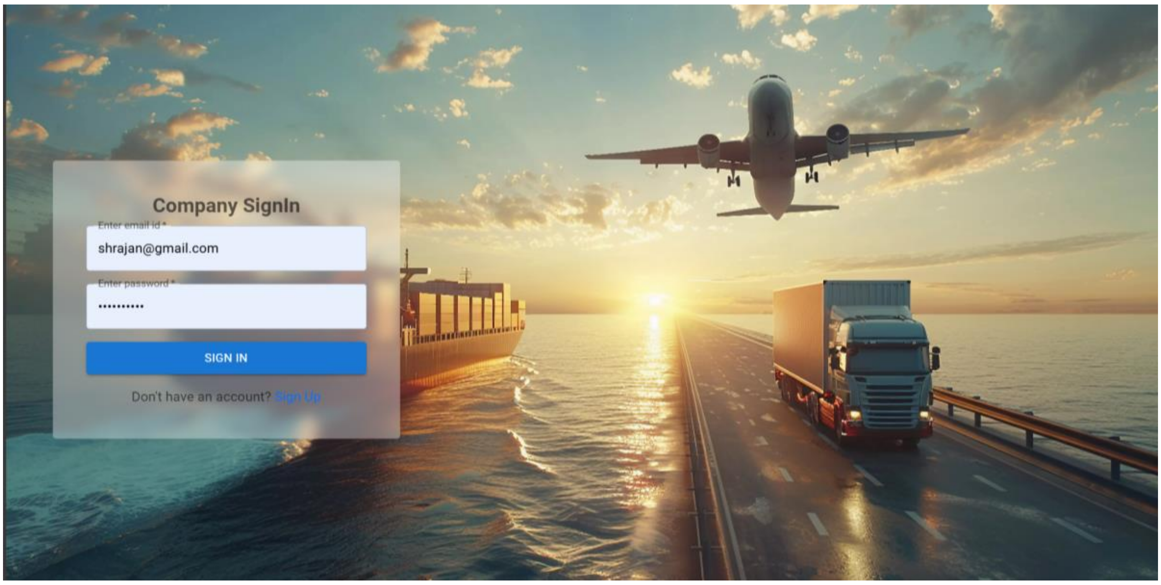
Type company location here *

SIGN UP

Already have an account? Sign In

Battery status: 49% remaining
3h 55min

Fig 4.3.1 User interface for register



Company SignIn

Enter email id *
shrajan@gmail.com

Enter password *
••••••••••

SIGN IN

Don't have an account? Sign Up

Fig 4.3.1 User interface for login

4.4 DATA FLOW DIAGRAM

4.4.1 DFD LEVEL 0 FOR CARGOX

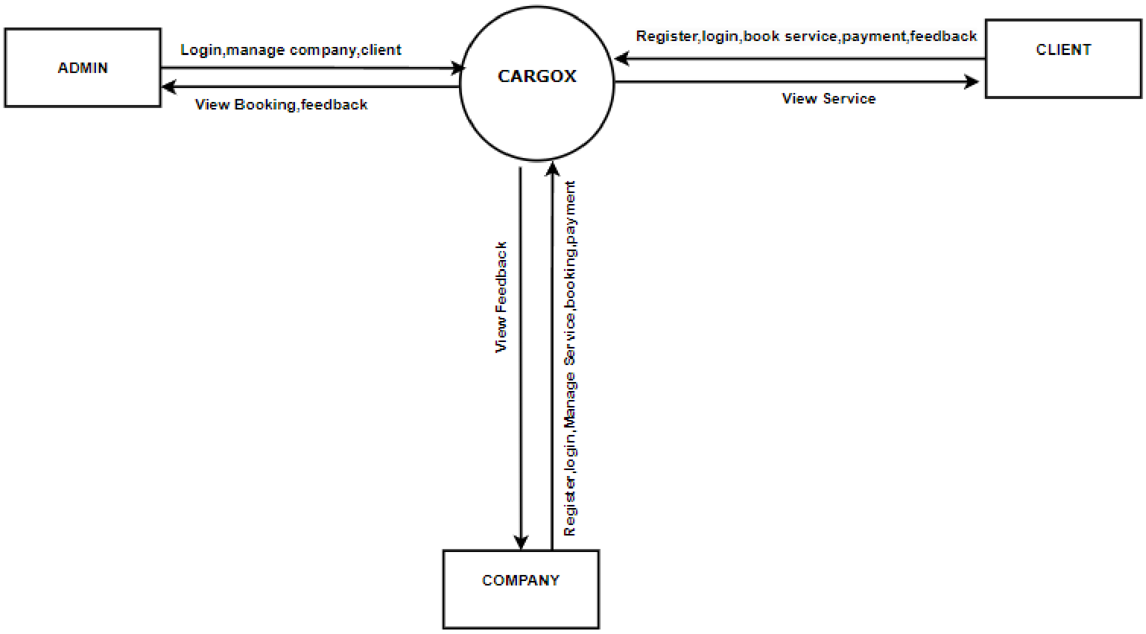

ADMIN
Login,manage company,client
View Booking,feedback
CARGOX
Register,login,book service,payment,feedback
View Service
CLIENT
View Feedback
Register,login,Manage Service,booking,payment
COMPANY

Figure 4.4.1 DFD Level 0 for Cargox

4.4.2 LEVEL 1 DFD FOR ADMIN

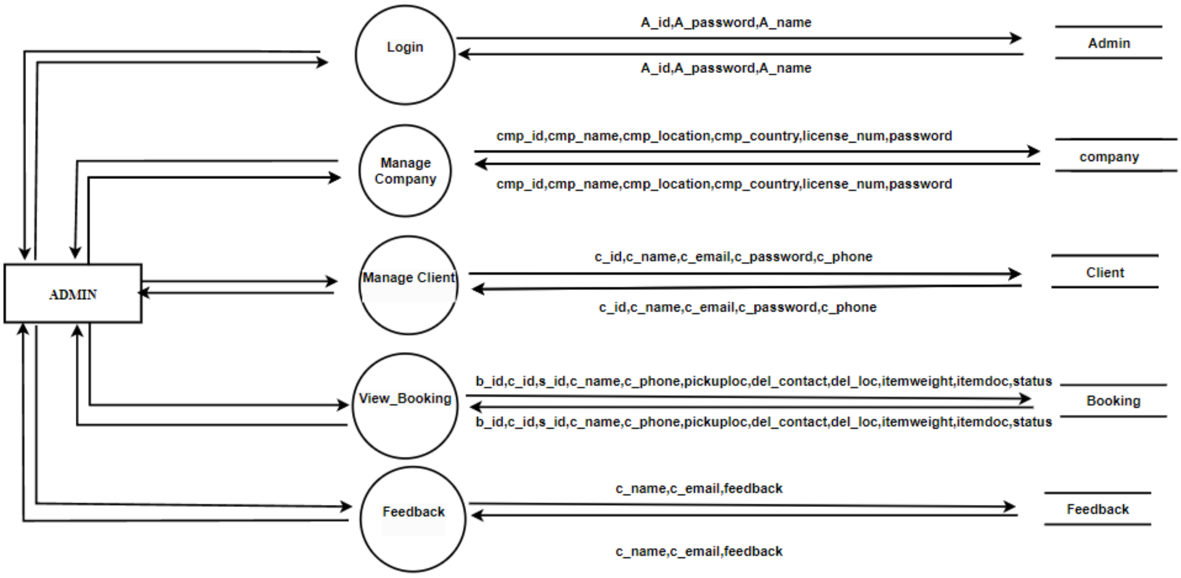

Login
A_id,A_password,A_name
A_id,A_password,A_name
Admin
Manage Company
cmp_id,cmp_name,cmp_location,cmp_country,license_num,password
cmp_id,cmp_name,cmp_location,cmp_country,license_num,password
company
ADMIN
Manage Client
c_id,c_name,c_email,c_password,c_phone
c_id,c_name,c_email,c_password,c_phone
Client
View_Booking
b_id,c_id,s_id,c_name,c_phone,pickuploc,del_contact,del_loc,itemweight,itemdoc,status
b_id,c_id,s_id,c_name,c_phone,pickuploc,del_contact,del_loc,itemweight,itemdoc,status
Booking
Feedback
c_name,c_email,feedback
c_name,c_email,feedback
Feedback

Figure 4.4.2 DFD Level 1 for Admin Cargox

4.4.3 LEVEL 1 DFD FOR COMPANY

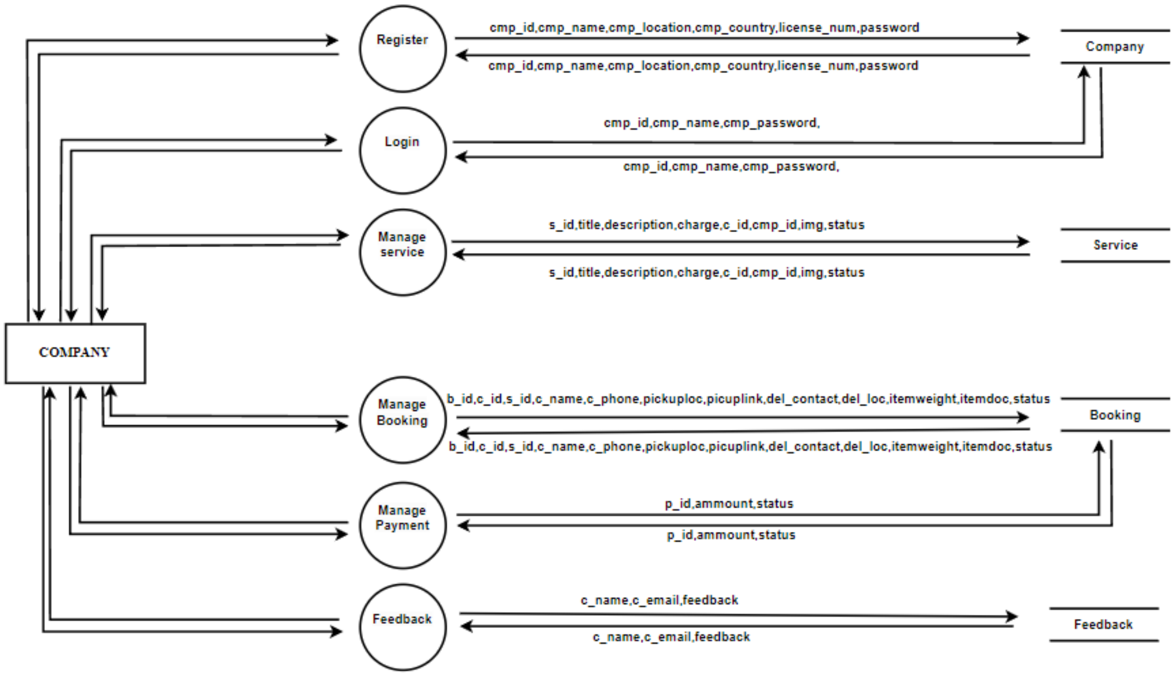

Register
cmp_id,cmp_name,cmp_location,cmp_country,license_num,password
cmp_id,cmp_name,cmp_location,cmp_country,license_num,password
Company
Login
cmp_id,cmp_name,cmp_password,
cmp_id,cmp_name,cmp_password,
Manage service
s_id,title,description,charge,c_id,cmp_id,img,status
s_id,title,description,charge,c_id,cmp_id,img,status
Service
COMPANY
Manage Booking
b_id,c_id,s_id,c_name,c_phone,pickuploc,picuplink,del_contact,del_loc,itemweight,itemdoc,status
b_id,c_id,s_id,c_name,c_phone,pickuploc,picuplink,del_contact,del_loc,itemweight,itemdoc,status
Booking
Manage Payment
p_id,ammount,status
p_id,ammount,status
Feedback
c_name,c_email,feedback
c_name,c_email,feedback
Feedback

Figure 4.4.3 DFD Level 1 for Company Cargox

4.4.4 LEVEL 1 DFD FOR CLIENT

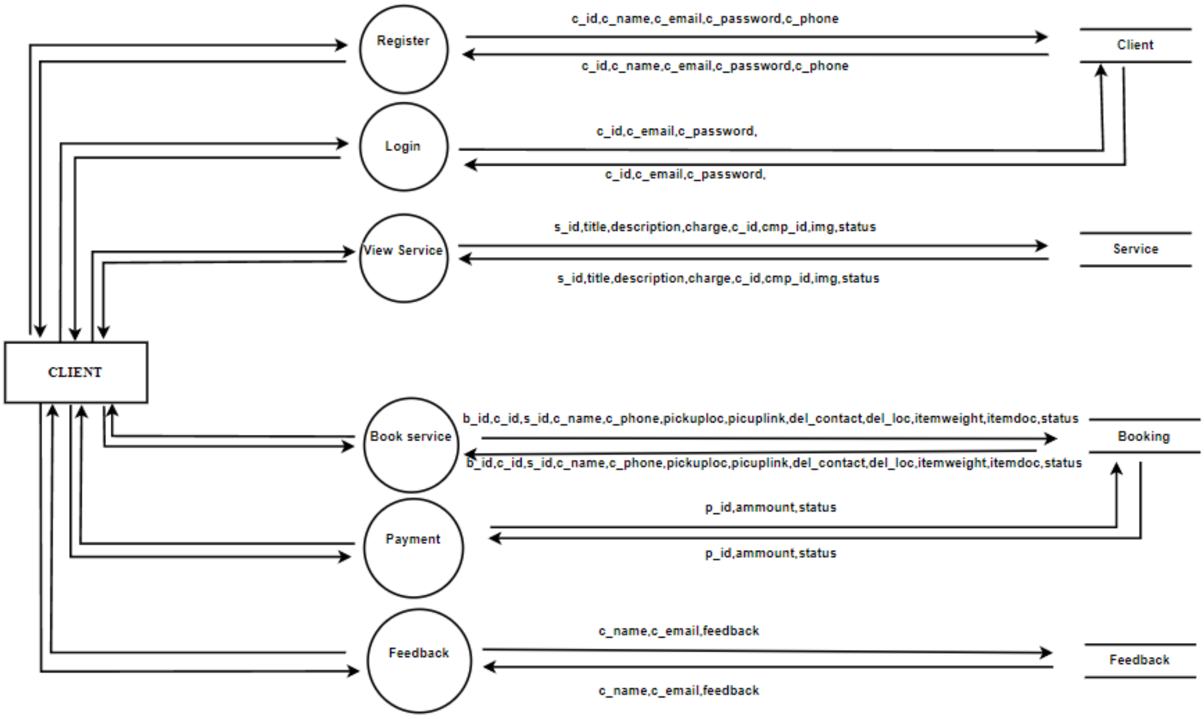

Register
c_id,c_name,c_email,c_password,c_phone
c_id,c_name,c_email,c_password,c_phone
Client
Login
c_id,c_email,c_password,
c_id,c_email,c_password,
View Service
s_id,title,description,charge,c_id,cmp_id,img,status
s_id,title,description,charge,c_id,cmp_id,img,status
Service
CLIENT
Book service
b_id,c_id,s_id,c_name,c_phone,pickuploc,picuplink,del_contact,del_loc,itemweight,itemdoc,status
b_id,c_id,s_id,c_name,c_phone,pickuploc,picuplink,del_contact,del_loc,itemweight,itemdoc,status
Booking
Payment
p_id,ammount,status
p_id,ammount,status
Feedback
c_name,c_email,feedback
c_name,c_email,feedback
Feedback

Figure 4.4.4 DFD Level 1 for Client Cargox

CHAPTER 5

DETAILED DESIGN

5.1 USE CASE DIAGRAM

A use case diagram for the CargoX system illustrates how administrators, companies, and clients interact with the system.

System: The system, represented as a rectangle, is the CargoX cargo handling website.

Actor: Each actor is depicted as a stick figure. The actors include Admin, Company, and Client.

Use Case: The operations performed on the CargoX system are represented by ellipses in the Use Case. These operations encompass tasks such as login, registration, service management, booking, and payment handling.

Cargox

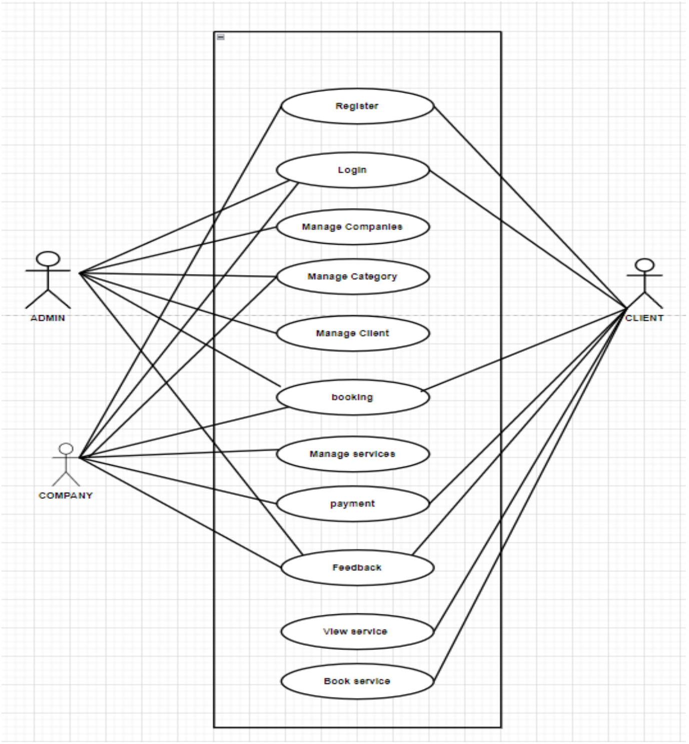


Figure 5.1 Usecase for Cargox

5.2 SEQUENCE DIAGRAM

A sequence diagram illustrates the interaction between objects over time. It is used to show the communication between objects and the messages exchanged between them. Sequence diagrams are also known as event diagrams.

5.2.1 SEQUENCE DIAGRAM FOR ADMIN

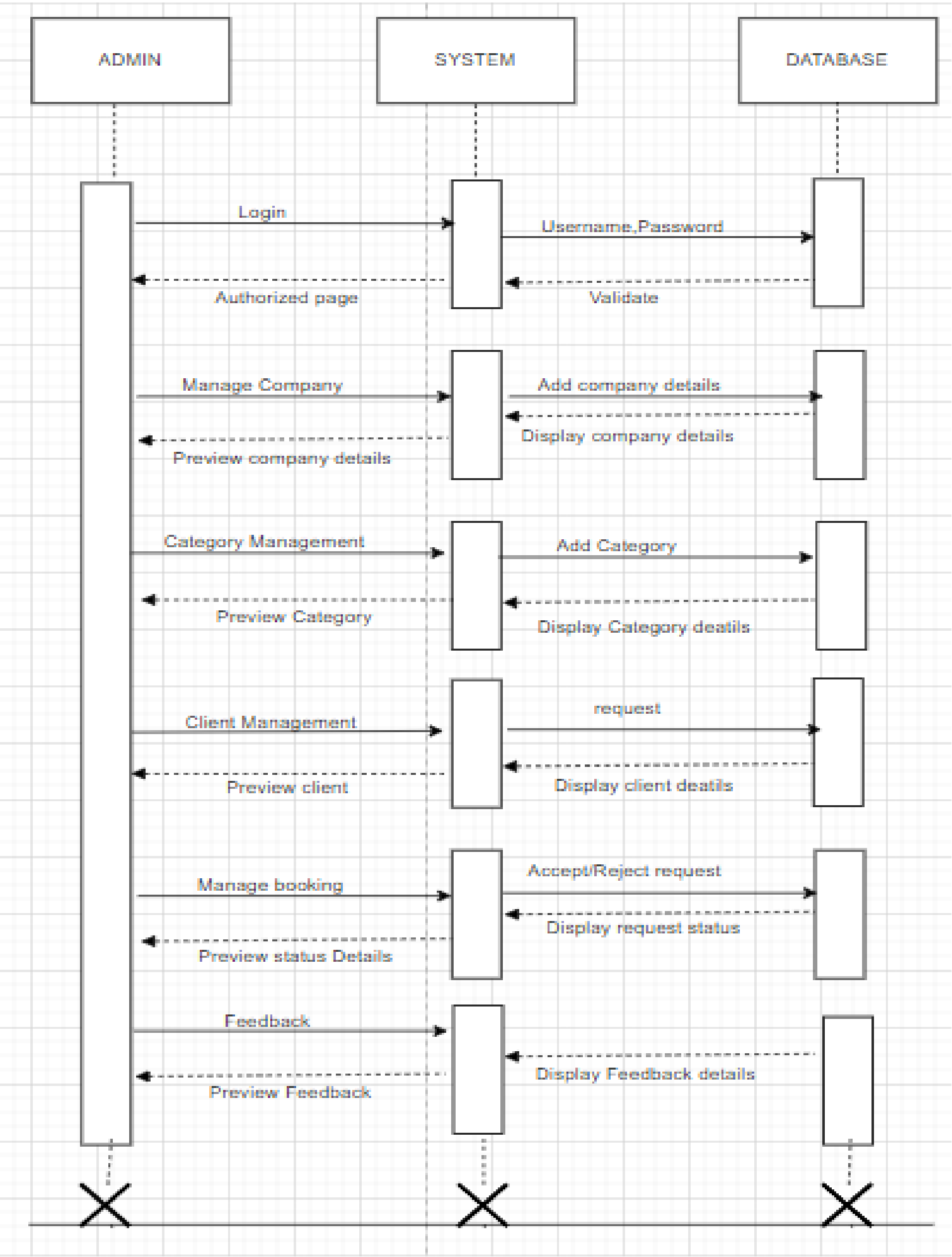


Figure 5.2.1 Sequence diagram for Cargox admin

5.2.2 SEQUENCE DIAGRAM FOR COMPANY

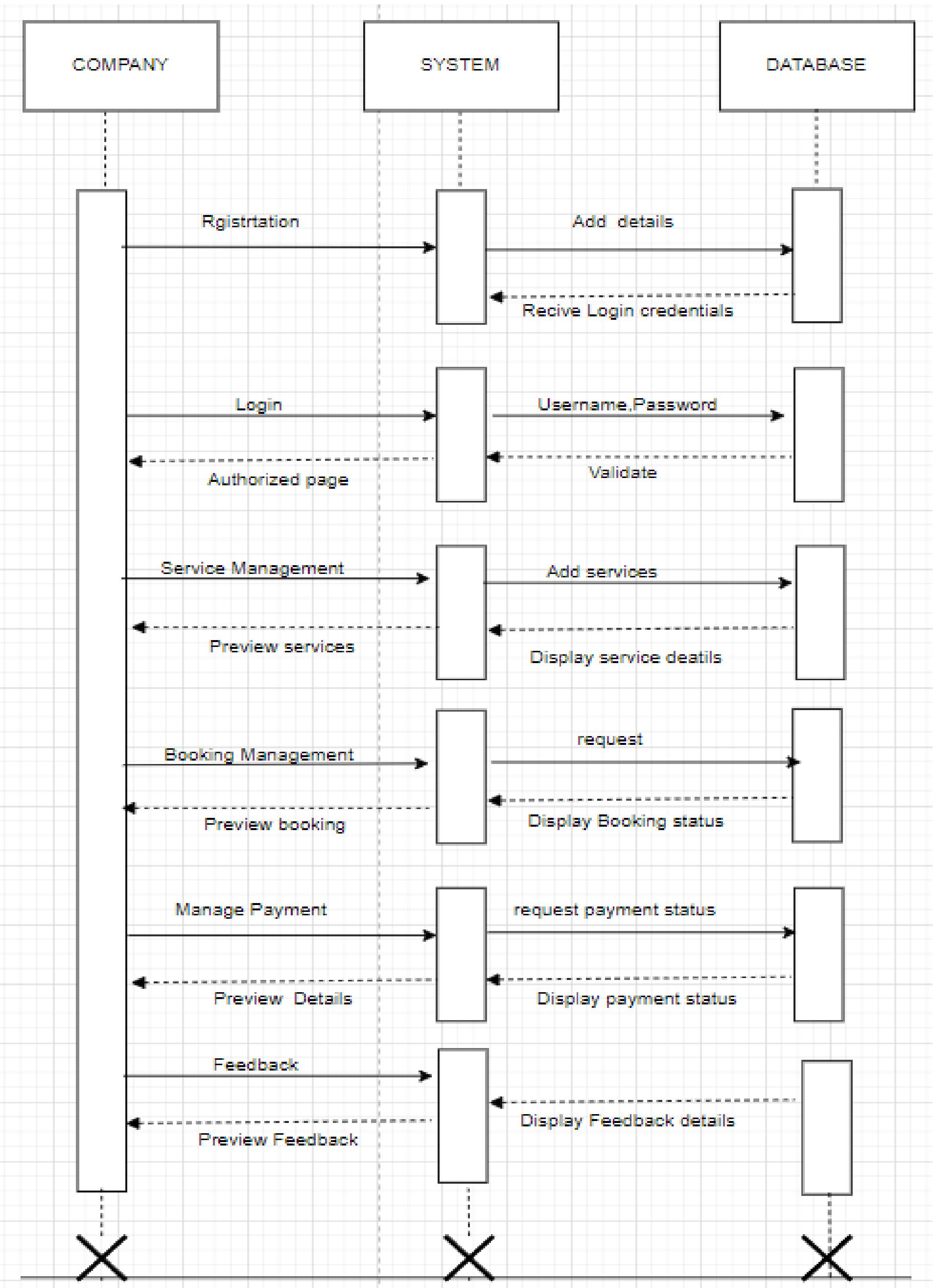


Figure 5.2.2 sequence diagram for Company Cargox

5.2.3 SEQUENCE DIAGRAM FOR CLIENT

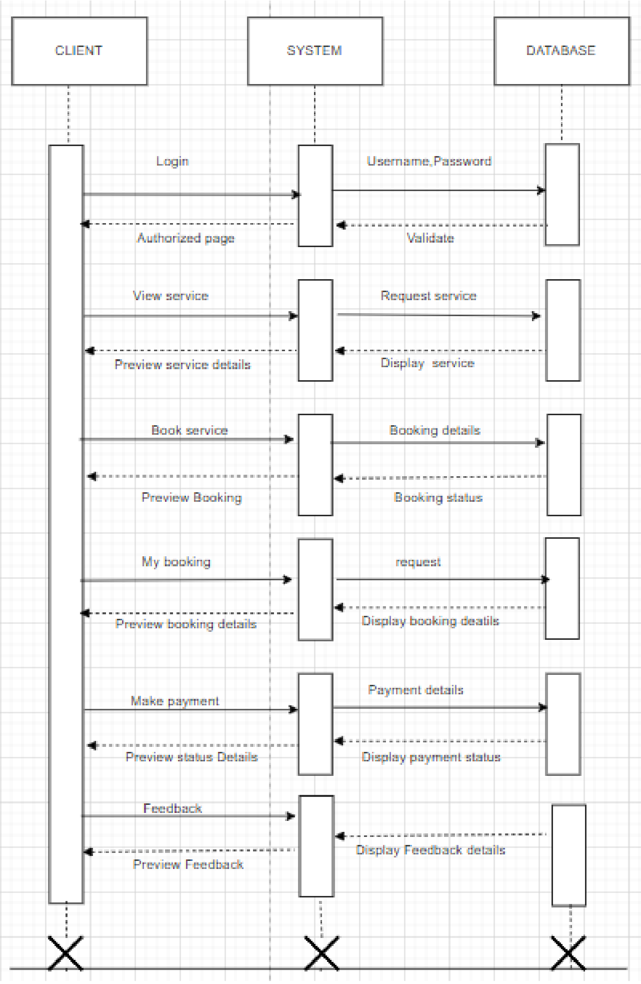
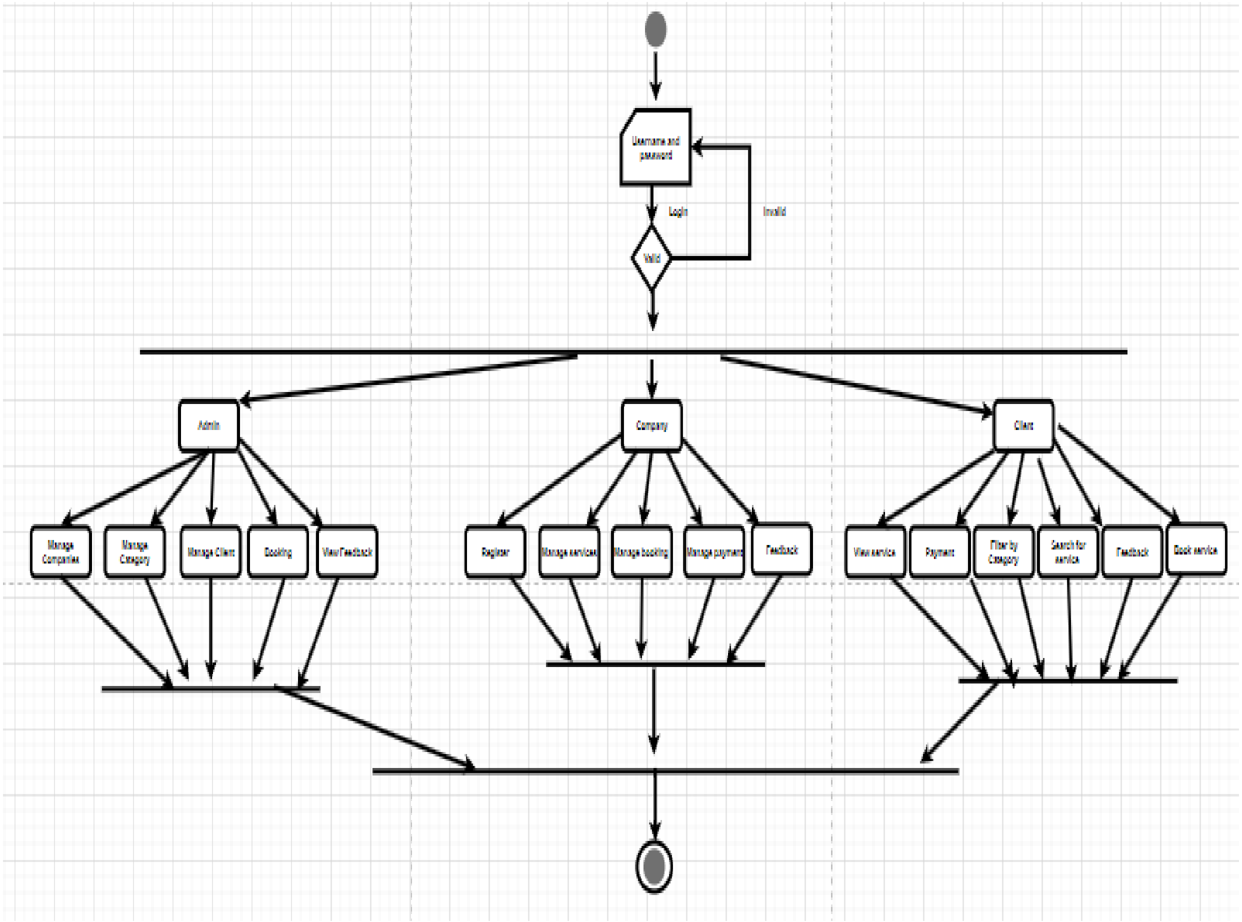


Figure 5.2.3 Sequence diagram for Client Cargox

5.3 ACTIVITY DIAGRAM

An activity diagram is a type of flowchart that represents the flow from one activity to another. It demonstrates the process within the system, showing how the system works and the sequence of activities.

5.3.1 ADMIN, COMPANY, CLIENT



5.3.1 Activity diagram

5.4 DATABASE DESIGN

The database for CargoX includes several tables, with the most important ones relevant to the system shown here.

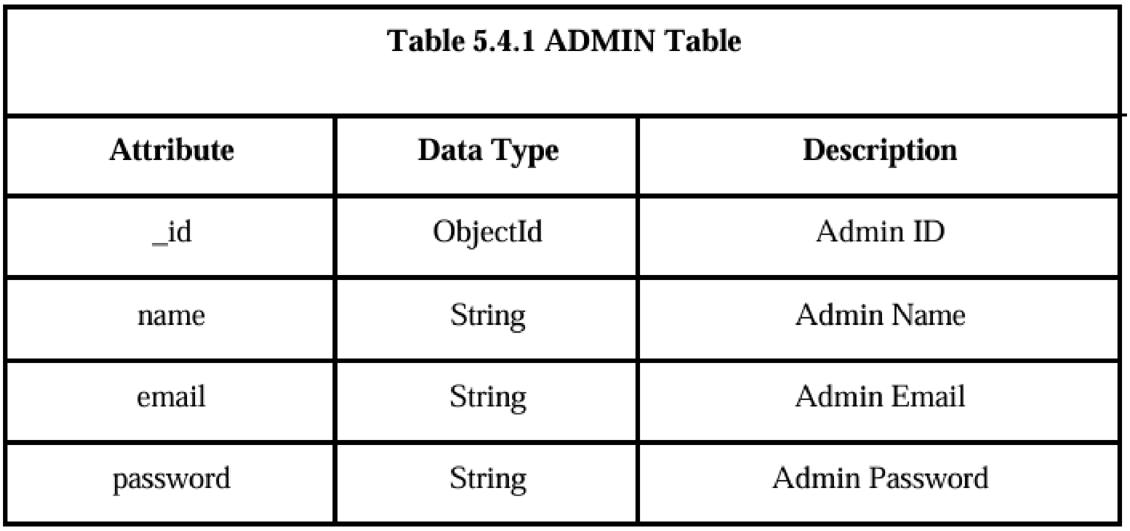


Table 5.4.1 ADMIN Table

Attribute	Data Type	Description
_id	ObjectId	Admin ID
name	String	Admin Name
email	String	Admin Email
password	String	Admin Password

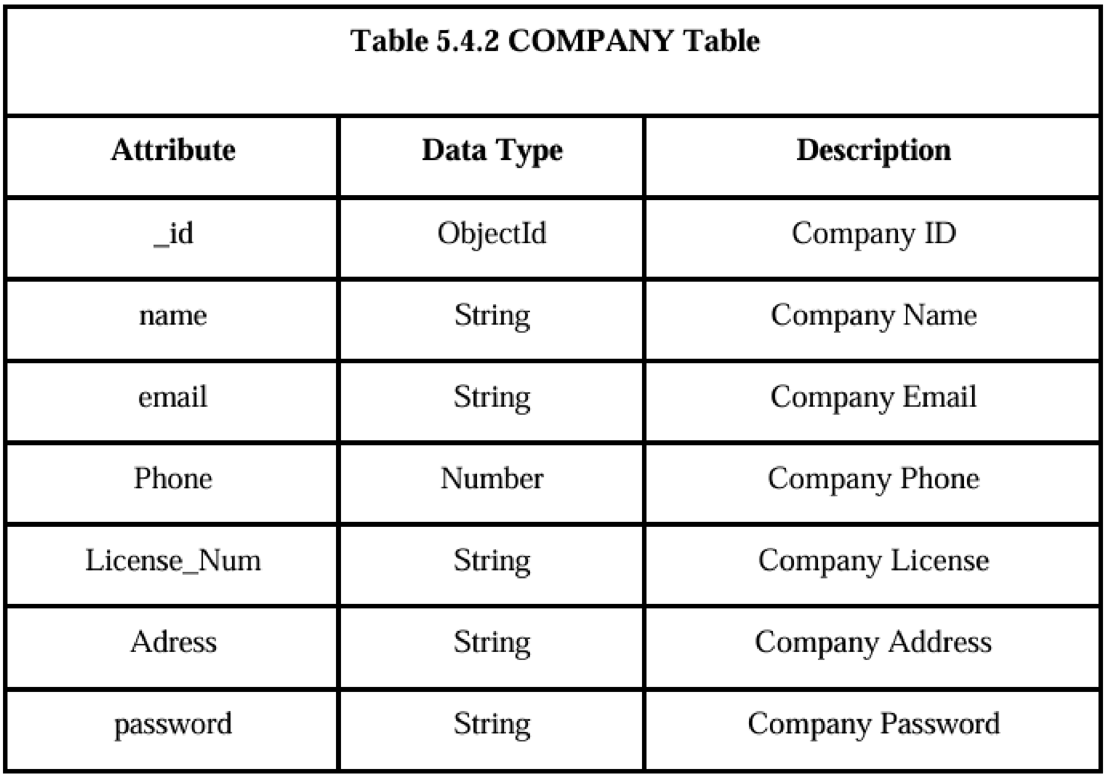


Table 5.4.2 COMPANY Table

Attribute	Data Type	Description
_id	ObjectId	Company ID
name	String	Company Name
email	String	Company Email
Phone	Number	Company Phone
License_Num	String	Company License
Adress	String	Company Address
password	String	Company Password

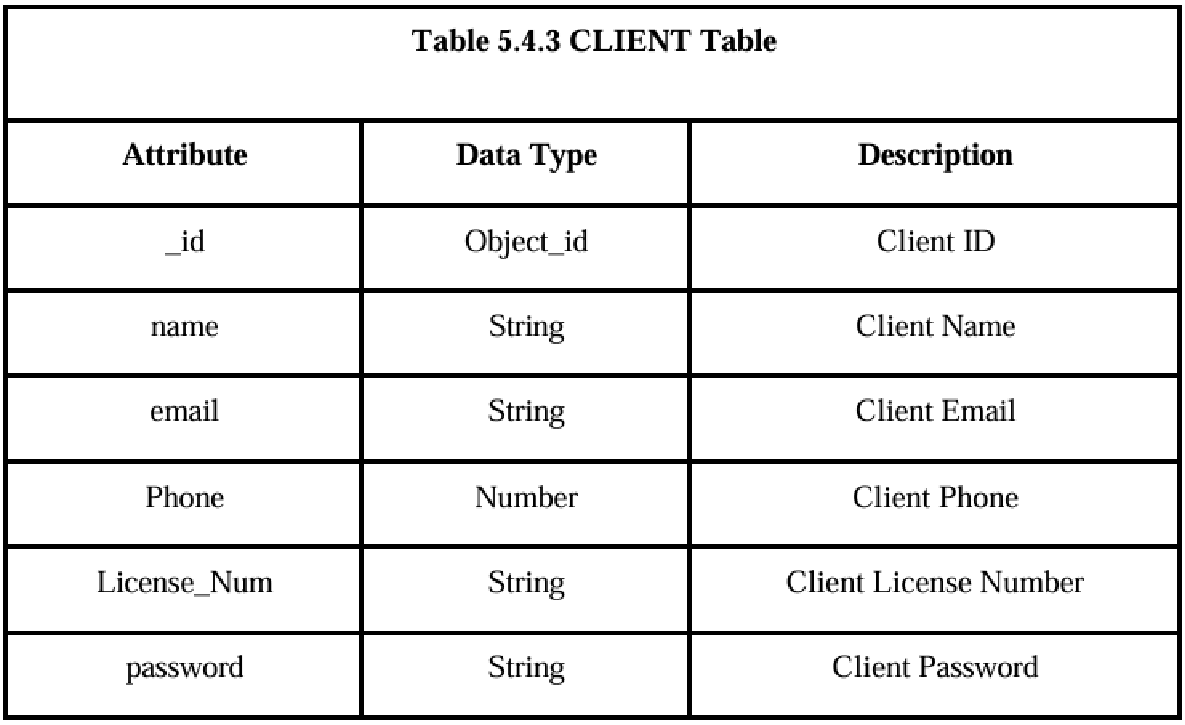


Table 5.4.3 CLIENT Table

Attribute	Data Type	Description
_id	Object_id	Client ID
name	String	Client Name
email	String	Client Email
Phone	Number	Client Phone
License_Num	String	Client License Number
password	String	Client Password

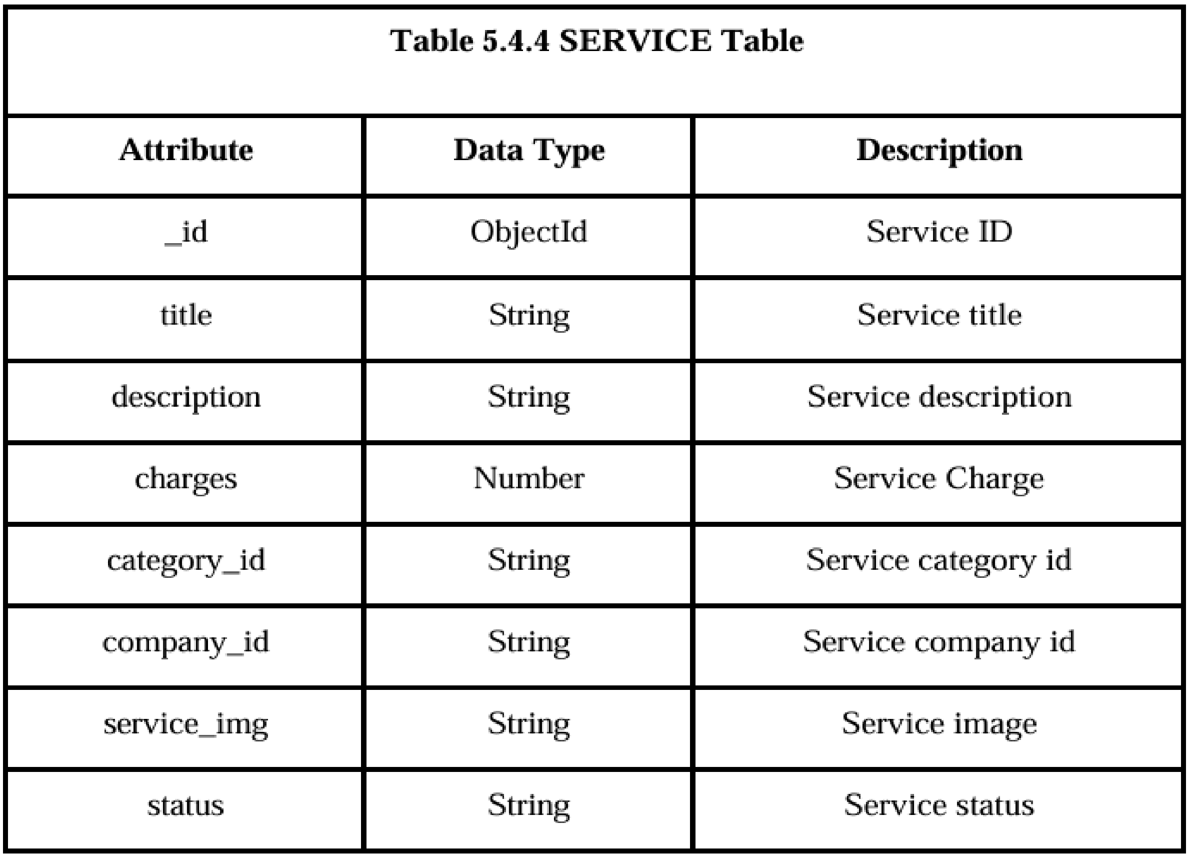


Table 5.4.4 SERVICE Table

Attribute	Data Type	Description
_id	ObjectId	Service ID
title	String	Service title
description	String	Service description
charges	Number	Service Charge
category_id	String	Service category id
company_id	String	Service company id
service_img	String	Service image
status	String	Service status

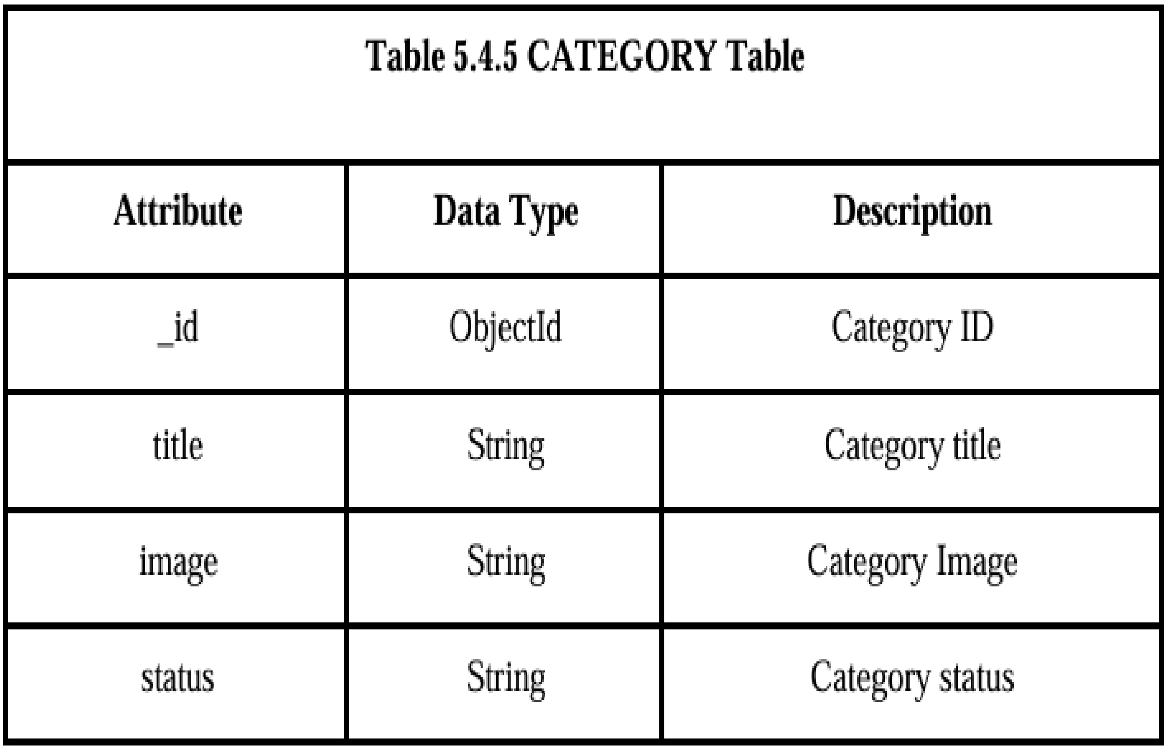


Table 5.4.5 CATEGORY Table

Attribute	Data Type	Description
_id	ObjectId	Category ID
title	String	Category title
image	String	Category Image
status	String	Category status

Table 5.4.6 BOOKING Table

Attribute	Data Type	Description
_id	ObjectId	Booking Id
Client_id	String	Client Id
Service_id	String	Service Id
Client_name	String	Client name
Client_phone	Number	Client phone
Pickup_loc	String	Pickup location
Pickup_country	String	Pickup Country
Pickup_loc	String	Pickup location link
Item_wegiht	Integer	Item Weight
Item_img	String	Item image
document	String	Item documents
charge	Integer	Delivery charge
Pickup_date	Date	Delivery Date
status	String	Booking Status
Transaction_id	String	Transaction id
feedback	String	Feedback Message

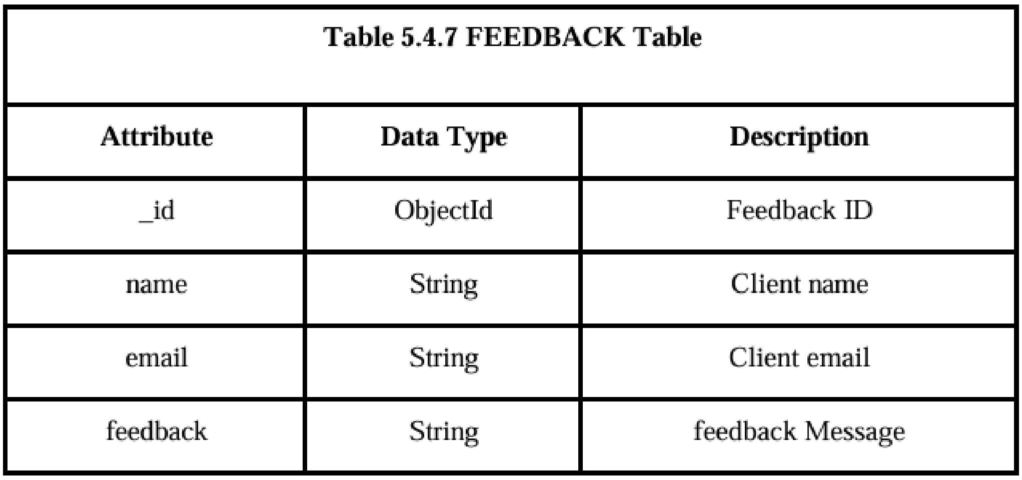


Table 5.4.7 FEEDBACK Table

Attribute	Data Type	Description
_id	ObjectId	Feedback ID
name	String	Client name
email	String	Client email
feedback	String	feedback Message

CHAPTER 6

IMPLEMENTATION

6.1 INTRODUCTION

Implementation is the process of executing a plan and bringing it into action. The implementation plan provides an overview, brief description, and details the tasks involved in the process of implementing the CargoX system. Various test cases will be executed during the implementation phase to ensure the system's functionality and reliability. Adhering to coding standards is essential for maintaining a system, as it allows people other than the original programmers to easily understand and work with the code. Standards facilitate easier maintenance and modification of the system. The naming conventions used in CargoX follow best practices to ensure clarity and consistency throughout the codebase.

6.2 PSEUDO CODES

6.2.1 PSEUDO CODE FOR USER REGISTRATION PAGE

Users must register to the CargoX system. During registration, users need to input their name, email ID, contact number, and password. If the data is valid, a message will be displayed indicating "Registration successful."

```
Begin
  Input Name, Email-ID, Contact No, Password
  Check whether data is valid and mandatory fields are filled
  If data is valid then
    Update to database
    Display "Registration successful"
  Else
    Display error message
End
```

6.2.2 PSEUDO CODE FOR LOGIN PAGE

Users need to log in to the CargoX system using their email and password. If the email exists, then we need to check whether the password matches. If the password matches, the user will be successfully logged in; otherwise, an error message will be displayed.

```
Begin
    Input Email, Password
    Check whether data is valid and mandatory fields are filled
    If Email and Password exist then
        checkUserType()
        If user equals user_register then
            showUserHome()
        Else
            Show error
        End If
    Else
        Show error
    End If
    ShowErrorPage()
End
```

6.2.3 PSEUDO CODE FOR COMPANY REGISTRATION

The admin will add company details to the CargoX system.

```
Begin
    Input CompanyName, Email, ContactNumber, Address, licence number, location
    Check whether data is valid and mandatory fields are filled
    If valid then
        Update to database
    Else
        Show error
    End If
End
```

CHAPTER 7

SOFTWARE TESTING

7.1 INTRODUCTION

Testing is a process used to ensure the correctness, completeness, and quality of developed computer software. It is crucial for the success of the CargoX system. The primary purpose of testing is to detect software failures so that defects can be discovered and corrected. This project is analyzed according to the specified requirements of the user, and various validations and testing are performed to meet the user's needs. It has been tested at both unit and integration levels and is given to users unfamiliar with the software and its procedures to understand what is expected from the software. Testing determines the conditions under which the software is tested, generates test data, and produces a schedule of expected results. Initially, different units are tested, and then the system as a whole is tested.

7.2 TESTING OBJECTIVE

Testing is carried out to ensure that the CargoX system is designed according to the needs of the user.

- Testing further enhances the quality of the software and ensures that the product is error-free.
- To guarantee that all verification and validation processes are completed.
- Ensure that all modules are implemented according to the specified requirements.

In the testing phase of this project, various testing methods such as Unit Testing, Integration Testing, Functional Testing, and Regression Testing are included. The module-wise implementation of the project is shown below.

7.3 UNIT TESTING

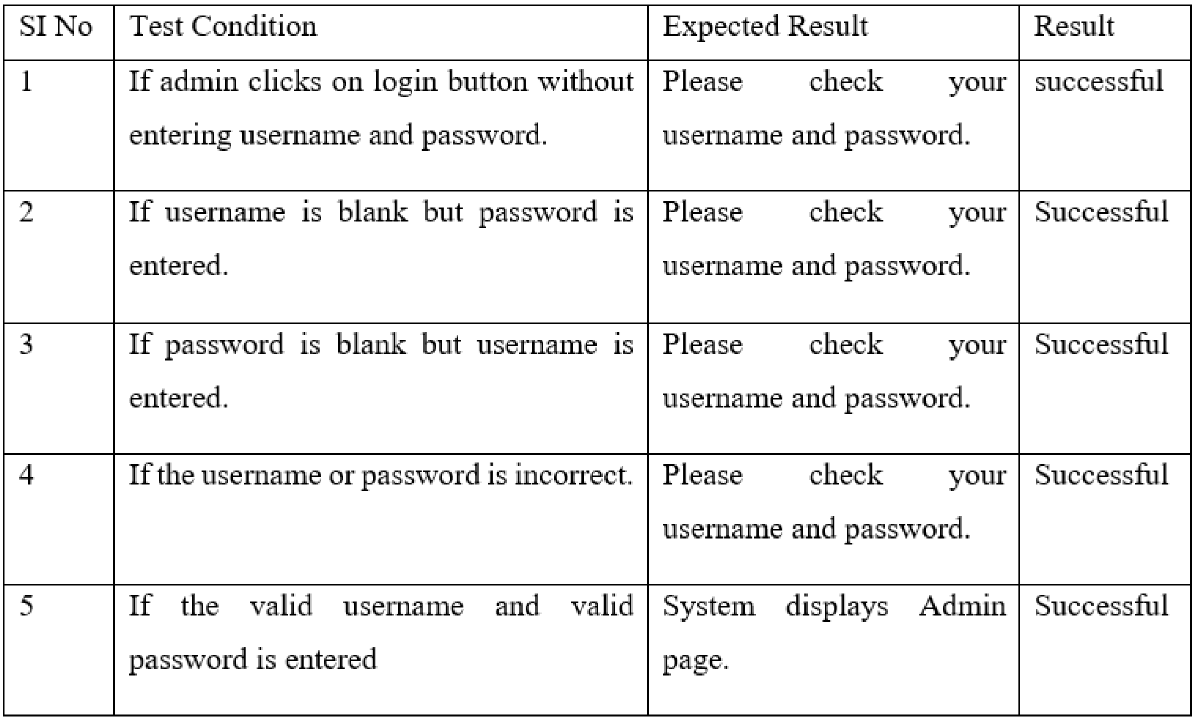
Unit testing, also known as component testing, refers to tests that verify the functionality of a specific section of code, usually at the functional level. These tests are typically done by developers or programmers as they work on the code to ensure that each specific function in the CargoX system is working as expected. Unit testing aims to implement defect prevention and detection strategies to reduce software development risks, time, and costs. The purpose of unit testing is to validate that each unit of the software performs as designed. A unit is the smallest testable part of software, usually having one or a few inputs and typically a single output.

7.3.1 UNIT TEST CASES

Unit testing focuses on examining the smallest units of the CargoX application. This stage involves detecting and fixing errors in a straightforward, efficient, and cost-effective manner. For this project, each module is tested individually using specific inputs, and the results are compared against the expected outputs to ensure accuracy.

7.3.2 TEST CASES

7.3.2.1 TEST CASE FOR ADMIN LOGIN FORM



SI No	Test Condition	Expected Result	Result
1	If admin clicks on login button without entering username and password.	Please check your username and password.	successful
2	If username is blank but password is entered.	Please check your username and password.	Successful
3	If password is blank but username is entered.	Please check your username and password.	Successful
4	If the username or password is incorrect.	Please check your username and password.	Successful
5	If the valid username and valid password is entered	System displays Admin page.	Successful

Table 7.3.2.1 Testing Admin Login Form

7.3.2.2 Testing for Company Register Form

SI No	Test Condition	Expected Result	Result
1	When the Company clicks “Submit”	It adds new record to database.	Successful
2	If the Company name field is blank and click “Submit” button	Please fill out this field.	successful
3	If you enter invalid phone number with characters	Please match the format requested. (10 numeric character only)	Successful
4	If the Username is empty.	Please fill out this field.	Successful
5	If the Email is not in proper manner	Please include an ‘@’ in the email address	Successful
6	If the Company License Number field is empty	Please fill out this field.	Successful
7	If the Company Location field is empty	Please fill out this field.	Successful
8	If the Password field is not in proper manner	Please match the format requested. (at least one number, one uppercase letter, one lowercase letter and at least 8 or more characters)	Successful

Table 7.3.2.2 Testing for Company Register Form

7.3.2.3 Testing Company Login Form

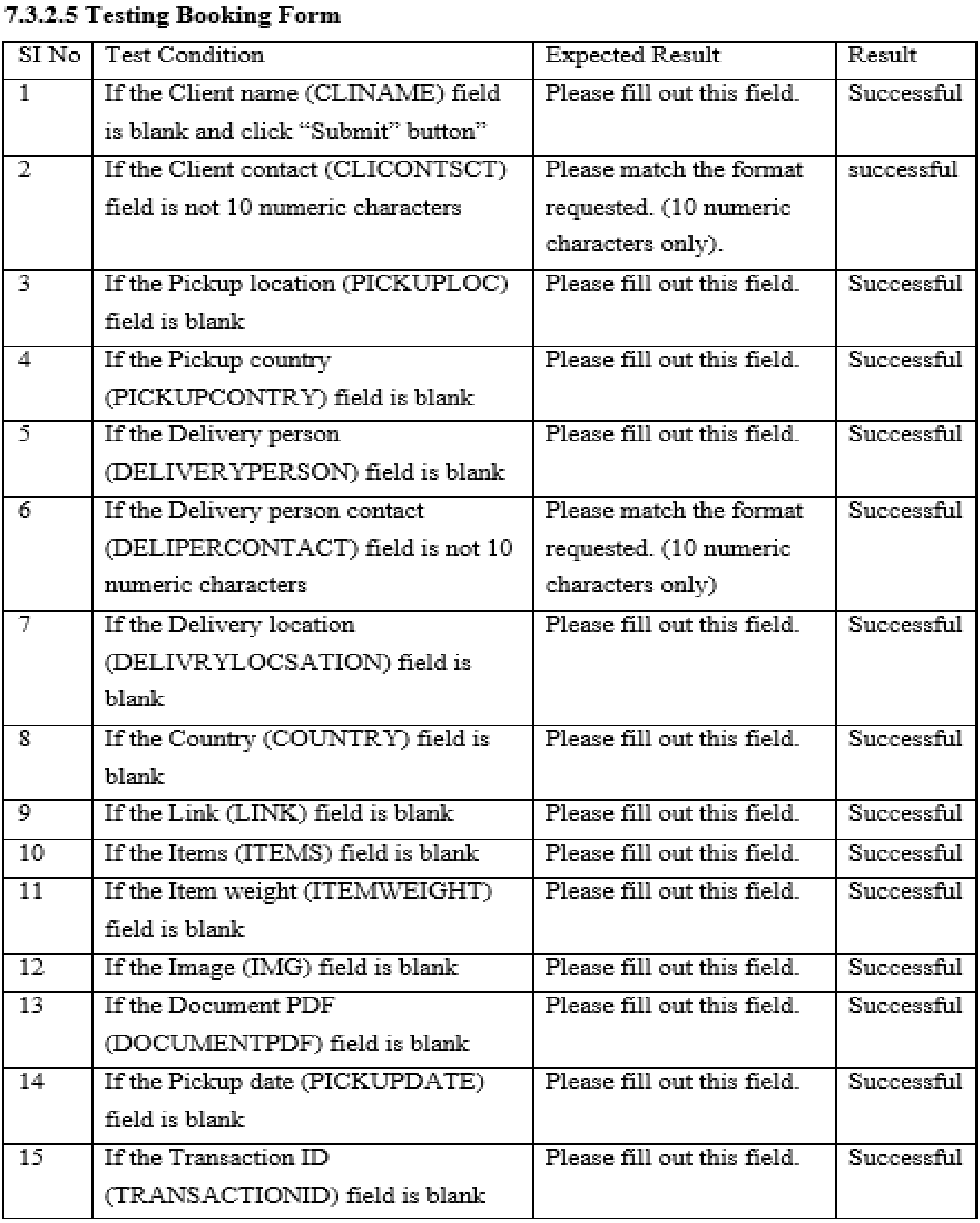
SI No	Test Condition	Expected Result	Result
1	If Company clicks on Login button without entering Email and Password.	Please check your email and password.	successful
2	If Email is blank but Password is entered.	Please check your email and password.	Successful
3	If Password is blank but Email is entered.	Please check your email and password.	Successful
4	If the Email or Password is incorrect.	Please check your email and password.	Successful
5	If the valid email and valid password is entered	System displays profile page.	Successful

Table 7.3.2.3 Testing Company Login Form

7.3.2.4 Testing Feedback Form

SI No	Test Condition	Expected Result	Result
1	When the user clicks “Send”.	It adds new record to database.	Successful
2	If the Feedback field is empty.	Write your Feedback	successful
3	If user clicks “Send” without entering all the fields.	Did You Fill form properly??	successful
4	If the user enters Feedback field without logging in.	Please Login	successful

Table 7.3.2.4 Testing Feedback Form



7.3.2.5 Testing Booking Form

SI No	Test Condition	Expected Result	Result
1	If the Client name (CLINAME) field is blank and click "Submit" button"	Please fill out this field.	Successful
2	If the Client contact (CLICONTSCT) field is not 10 numeric characters	Please match the format requested. (10 numeric characters only).	successful
3	If the Pickup location (PICKUPLOC) field is blank	Please fill out this field.	Successful
4	If the Pickup country (PICKUPCONTRY) field is blank	Please fill out this field.	Successful
5	If the Delivery person (DELIVERYPERSON) field is blank	Please fill out this field.	Successful
6	If the Delivery person contact (DELIPERCONTACT) field is not 10 numeric characters	Please match the format requested. (10 numeric characters only)	Successful
7	If the Delivery location (DELIVRYLOCSATION) field is blank	Please fill out this field.	Successful
8	If the Country (COUNTRY) field is blank	Please fill out this field.	Successful
9	If the Link (LINK) field is blank	Please fill out this field.	Successful
10	If the Items (ITEMS) field is blank	Please fill out this field.	Successful
11	If the Item weight (ITEMWEIGHT) field is blank	Please fill out this field.	Successful
12	If the Image (IMG) field is blank	Please fill out this field.	Successful
13	If the Document PDF (DOCUMENTPDF) field is blank	Please fill out this field.	Successful
14	If the Pickup date (PICKUPDATE) field is blank	Please fill out this field.	Successful
15	If the Transaction ID (TRANSACTIONID) field is blank	Please fill out this field.	Successful

Table 7.3.2.5 Testing for Booking Form

7.4 INTEGRATION TESTING

Integration testing focuses on verifying the interactions and interfaces between different components of the CargoX system. This type of testing is crucial as it helps identify issues between integrated modules more swiftly and precisely. By progressively combining and testing these components according to the system's architectural design, integration testing aims to uncover defects in how the modules work together. The process continues until the entire system functions seamlessly as a cohesive whole.

7.4.1 INTEGRATION TEST CASES

When integrating modules, one module's behavior can impact others, potentially leading to unexpected results. To address this, all modules of the CargoX system are integrated and tested together to ensure they work cohesively as a complete system. This process helps identify any issues that may arise when the modules interact and ensures that the integrated system meets the desired functionality and performance standards.

CHAPTER 8

CONCLUSION

The CargoX system, developed using the MERN stack, offers a comprehensive and efficient solution for cargo handling and management. Through rigorous testing phases, including unit testing and integration testing, the system has been validated to meet its design specifications and user requirements. The detailed testing processes have ensured that each module functions correctly both individually and in conjunction with others, contributing to the overall reliability and performance of the system.

The successful integration of features for admins, companies, and clients demonstrates CargoX’s capability to streamline operations and enhance user experience. The system’s adherence to modern development standards and thorough validation processes reinforces its robustness and readiness for real-world application. With a focus on meeting user needs and maintaining high-quality standards, CargoX stands as a well-designed and dependable solution in the cargo management domain.

CHAPTER 9

FUTURE ENHANCEMENT

- **Advanced Analytics and Reporting**: Implementing advanced analytics tools could provide valuable insights into cargo operations, user behavior, and system performance. Enhanced reporting features could help in tracking key metrics and generating comprehensive reports for better decision-making.
- **AI and Machine Learning Integration:** Integrating AI and machine learning could enable predictive analytics for optimizing cargo routes, managing inventory more efficiently, and identifying potential issues before they arise.
- **Mobile Application Development:** Developing a dedicated mobile application could enhance accessibility for users on the go, providing features such as real-time tracking, notifications, and streamlined booking processes.
- **Enhanced Security Features:** Implementing advanced security measures such as multi-factor authentication, encryption, and regular security audits would further protect user data and system integrity.
- **User Interface Improvements:** Continuous updates to the user interface can ensure a modern, intuitive experience. Incorporating user feedback and staying updated with design trends can make the system more user-friendly.
- **Integration with Third-Party Services**: Expanding integration with other logistics and cargo management services could improve system interoperability and provide users with more comprehensive tools for managing their cargo.
- **Scalability Enhancements:** As the user base grows, enhancing the system’s scalability to handle increased load and ensure consistent performance will be crucial.
- **Automated Notifications and Alerts:** Implementing automated notifications for key events such as booking confirmations, delivery status updates, and system maintenance can keep users informed and engaged.

APPENDIX A

REFERENCES

[1] https://nodejs.org/en

[2] https://mui.com/material-ui/

[3] https://in.search.yahoo.com/search?fr=mcafee&type=E210IN885G0&p=wikipedia

[4] https://www.npmjs.com/

[5] https://palettes.shecodes.io/

[6] https://www.cssfontstack.com/

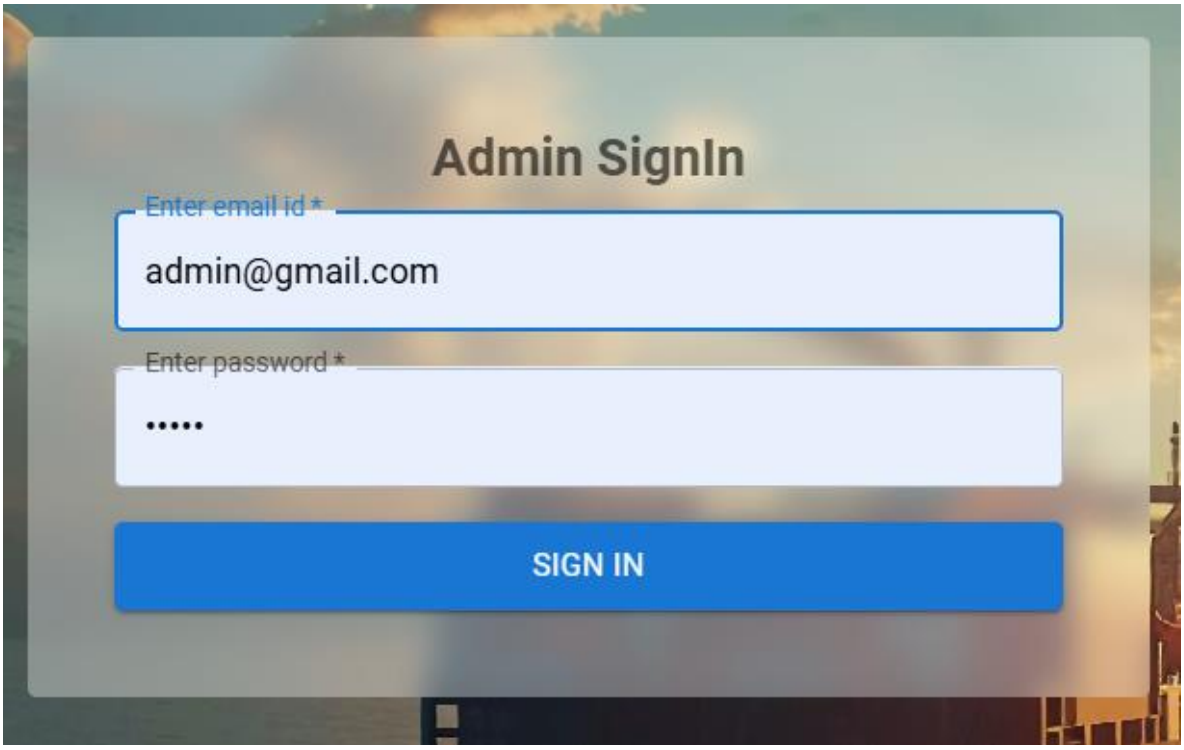
APPENDIX B

USER MANULE

1.ADMIN MODULE

1.1 LOGIN PAGE FOR ADMIN

On the login page, the Admin must enter a valid ID and password to access the system. Upon successful login, the Admin will have full access to manage all aspects of the system.



Admin SignIn

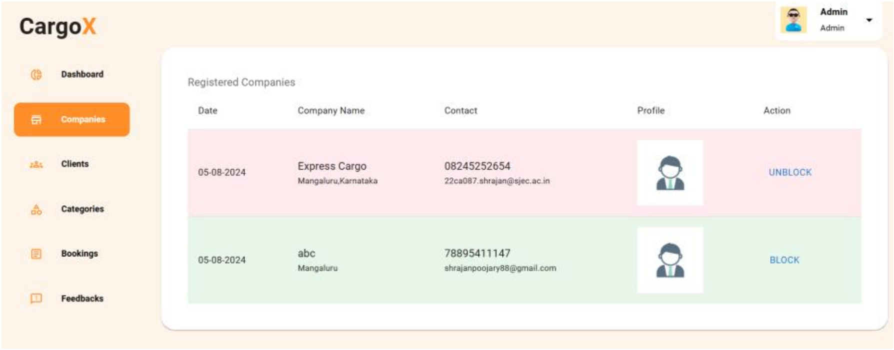
Enter email id *: admin@gmail.com

Enter password *: •••••

Fig 1.1 Admin Login Page

1.2 ADMIN DASHBOARD

On the login page, the Admin must enter a valid ID and password to access the system. Upon successful login, the Admin is directed to the dashboard, where they have full access to manage and control all aspects of the system.



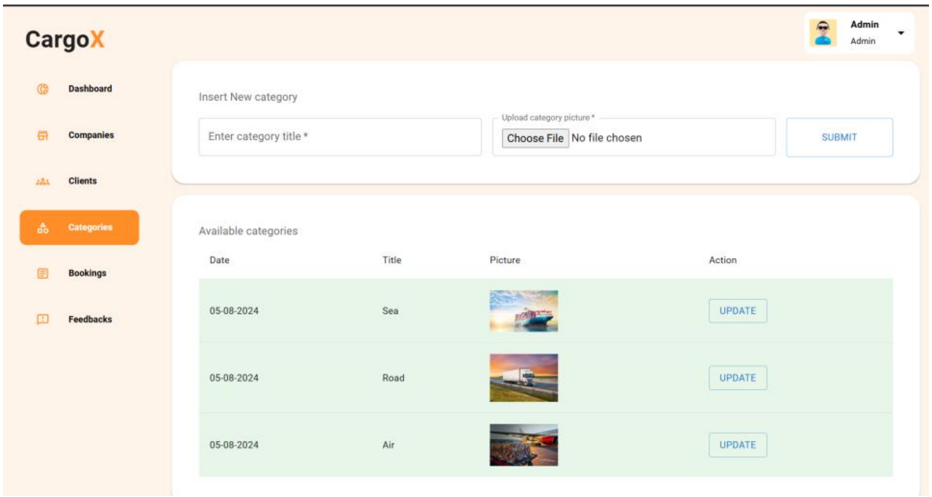
Registered Companies

Date	Company Name	Contact	Profile	Action
05-08-2024	Express Cargo Mangaluru,Karnataka	08245252654 22ca087.shrajan@sjec.ac.in		UNBLOCK
05-08-2024	abc Mangaluru	78895411147 shrajanpoojary88@gmail.com		BLOCK

Fig 1.2 Admin dashboard

1.3 MANAGE CATEGORY

On the login page, the Admin must enter a valid ID and password to access the system. Upon successful login, the Admin is directed to the dashboard, where they have full access to manage and control all aspects of the system, including managing categories.



Insert New category

Enter category title *

Upload category picture *
Choose File No file chosen

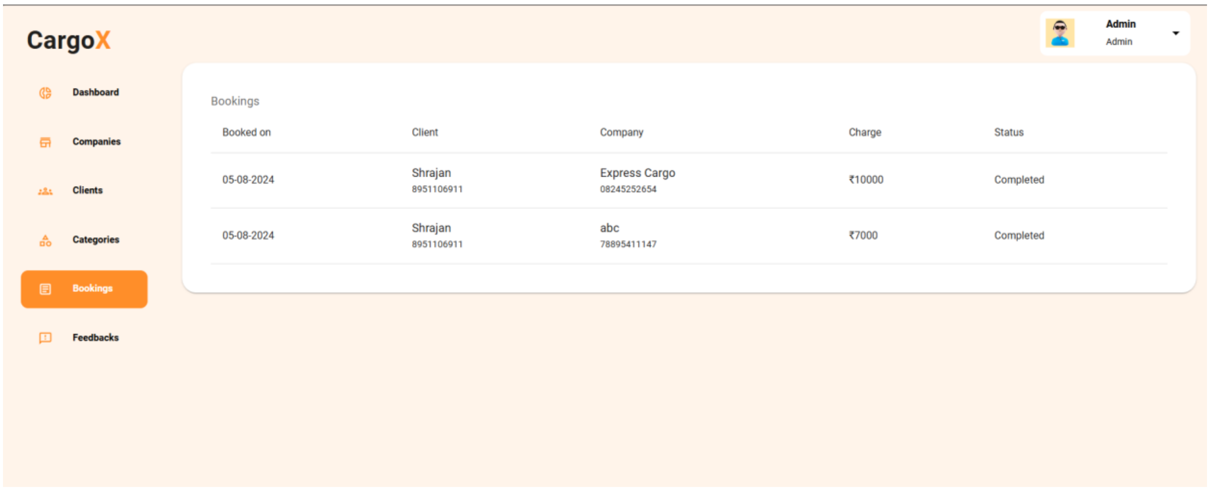
Available categories

Date	Title	Picture	Action
05-08-2024	Sea		UPDATE
05-08-2024	Road		UPDATE
05-08-2024	Air		UPDATE

Fig 1.3 Manage Category

1.4 HANDLE BOOKING

On the login page, the Admin must enter a valid ID and password to access the system. After logging in, the Admin is directed to the dashboard, where they can manage all aspects of the system, including categories.



Bookings

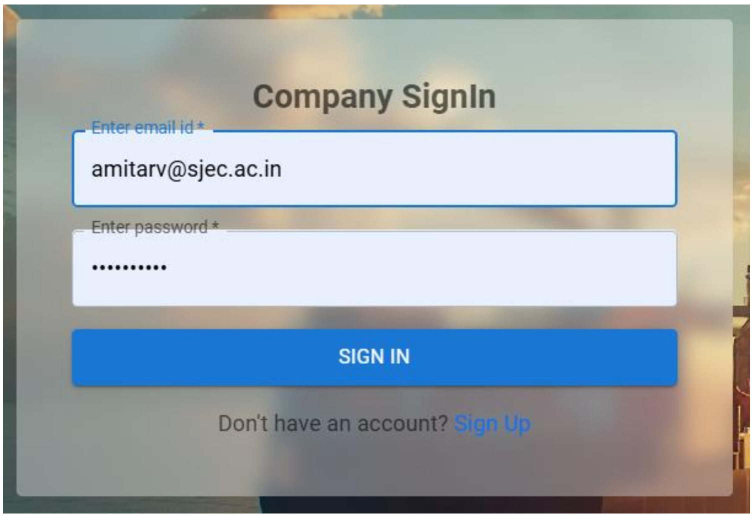
Booked on	Client	Company	Charge	Status
05-08-2024	Shrajan 8951106911	Express Cargo 08245252654	₹10000	Completed
05-08-2024	Shrajan 8951106911	abc 78895411147	₹7000	Completed

Fig 1.4 Handle booking

2. COMPANY

2.1 COMPANY SIGNIN

The company can sign in using its credentials. Once signed in, the company can access and manage its specific information, track shipments, update details, and view analytics related to its logistics operations.



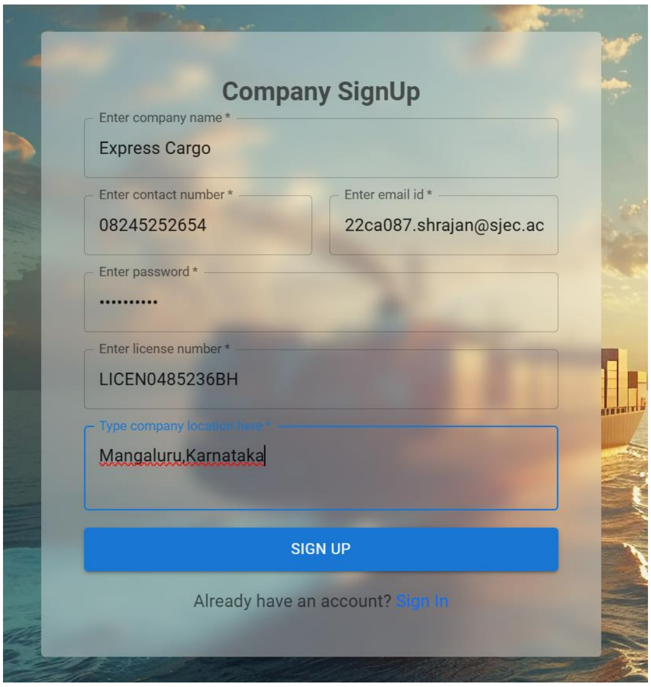
Enter email id *
amitarv@sjec.ac.in

Enter password *
••••••••••

Fig 2.1 Company signin

2.2 COMPANY SIGN UP FORM

If a company does not have an account, it can use the sign-up form to create one. After registration, the company will gain access to the system to manage its information, track shipments, and use logistics management features.



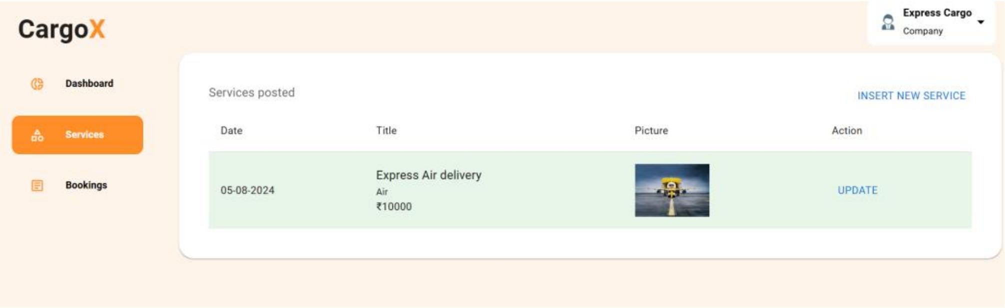
Company SignUp

Enter company name *	Express Cargo
Enter contact number *	08245252654
Enter email id *	22ca087.shrajan@sjec.ac
Enter password *	••••••••••
Enter license number *	LICEN0485236BH
Type company location here *	Mangaluru,Karnataka

Fig 2.2 Admin signup form

2.3 HANDLE SERVICE

The Admin can handle services here. This includes creating new services, updating existing ones, and removing services that are no longer required. The Admin can also configure service parameters, monitor service performance, and ensure that all services are running smoothly to meet client needs and system requirements.



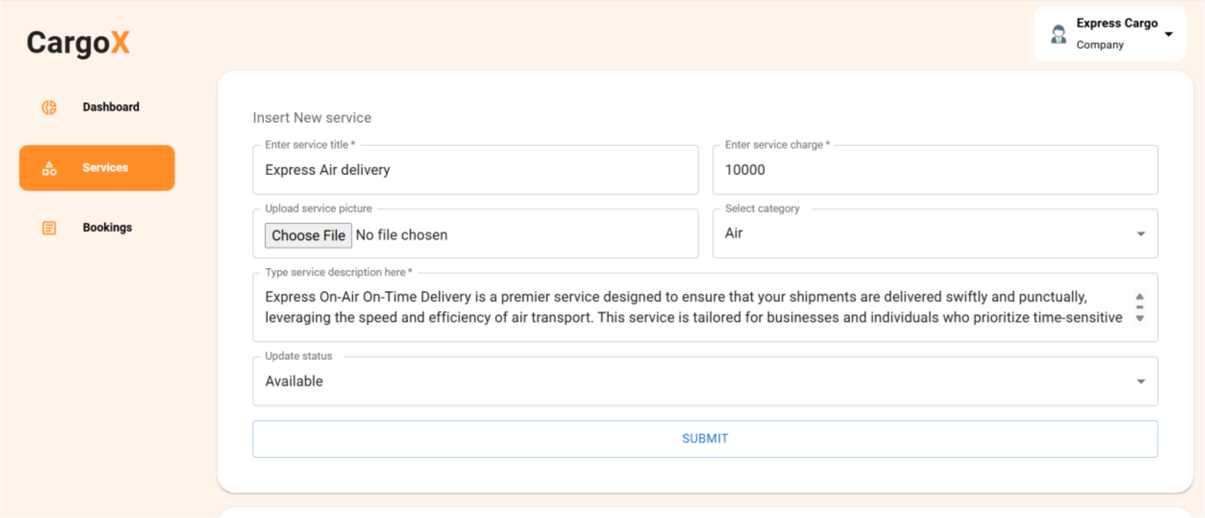
Services posted

Date	Title	Picture	Action
05-08-2024	Express Air delivery Air ₹10000		UPDATE

Fig 2.3 Handle service Page

2.4 UPDATE SERVICE

The Admin can update services here, including modifying details like descriptions, pricing, and availability. This ensures services meet client needs and align with company policies.



Insert New service

Enter service title *: Express Air delivery

Enter service charge *: 10000

Upload service picture: No file chosen

Select category: Air

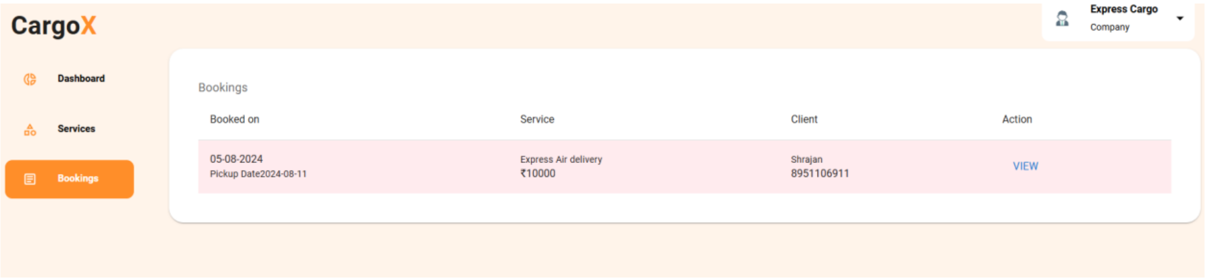
Type service description here *: Express On-Air On-Time Delivery is a premier service designed to ensure that your shipments are delivered swiftly and punctually, leveraging the speed and efficiency of air transport. This service is tailored for businesses and individuals who prioritize time-sensitive

Update status: Available

Fig 2.4 Update service for admin

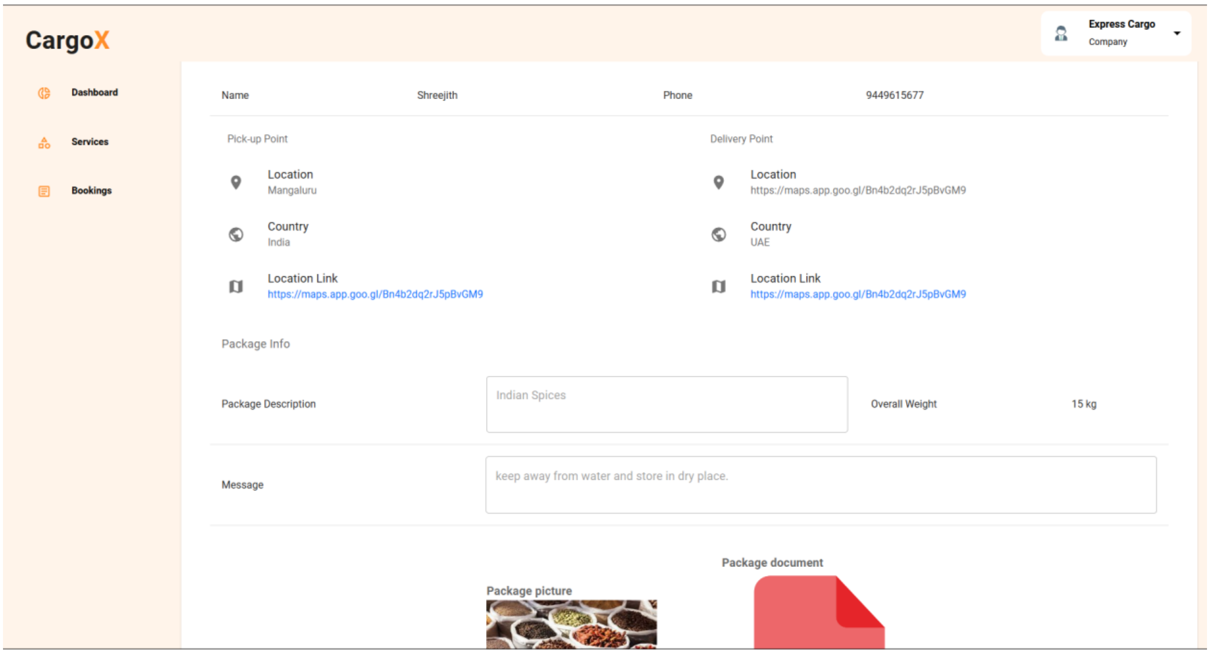
2.5 HANDLE BOOKING

The admin has the capability to update booking, allowing for modifications to details such as descriptions, pricing, and availability. This functionality ensures that booking remain aligned with client needs and adhere to company policies.



Bookings

Booked on	Service	Client	Action
05-08-2024 Pickup Date2024-08-11	Express Air delivery ₹10000	Shrajan 8951106911	VIEW



Name Shreejith Phone 9449615677

Pick-up Point

Location
Mangaluru

Country
India

Location Link
https://maps.app.goo.gl/Bn4b2dq2rJ5pBvGM9

Delivery Point

Location
https://maps.app.goo.gl/Bn4b2dq2rJ5pBvGM9

Country
UAE

Location Link
https://maps.app.goo.gl/Bn4b2dq2rJ5pBvGM9

Package Info

Package Description: Indian Spices

Overall Weight: 15 kg

Message: keep away from water and store in dry place.

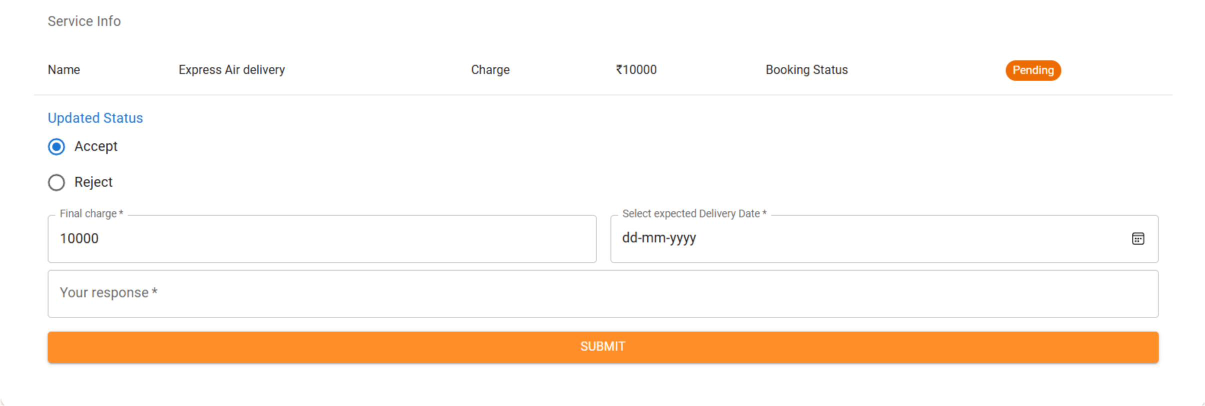
Package picture

Package document

Fig 2.5 Handle booking

2.6 HANDLE PAYMENT

To reduce the impact of extended payment terms, negotiate shorter terms with clients and offer incentives for early payments. Explore tiered pricing based on payment schedules to maintain liquidity.



Service Info

Name Express Air delivery Charge ₹10000 Booking Status Pending

Updated Status

● Accept

○ Reject

Final charge *: 10000

Select expected Delivery Date *: dd-mm-yyyy

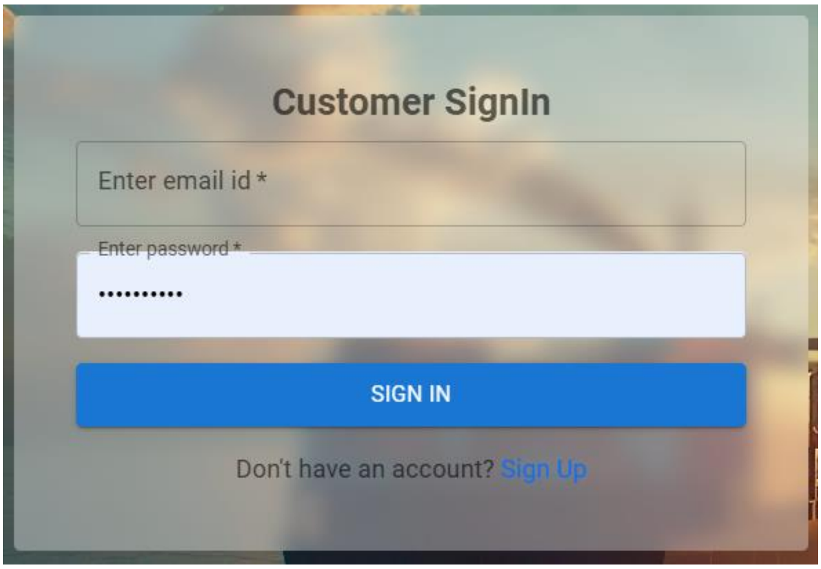
Your response *

Fig 2.6 Handle payment

3. CLIENT

3.1 CLIENT LOGIN

To log in, navigate to the client portal and enter your username and password. If you forget your password, use the “Forgot Password” link to reset it.



Customer SignIn

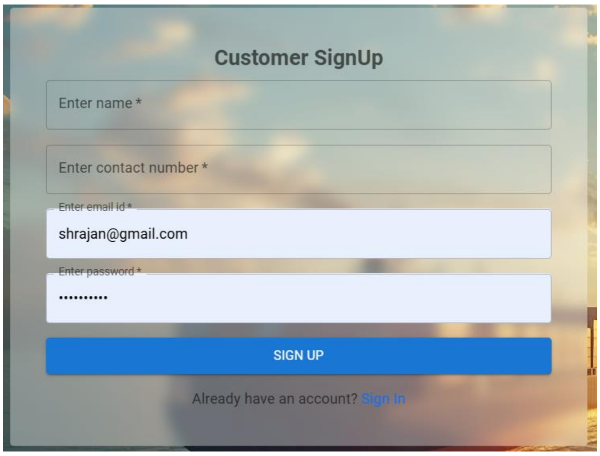
Enter email id *

Enter password *
••••••••••

Fig 3.1 Client login

3.2 CLIENT SIGNUP FORM

The client signup form should include fields for personal information (name, email, phone), account details (username, password), and company information if applicable. Additionally, include a checkbox for agreeing to terms and conditions.



Customer SignUp

Enter name *

Enter contact number *

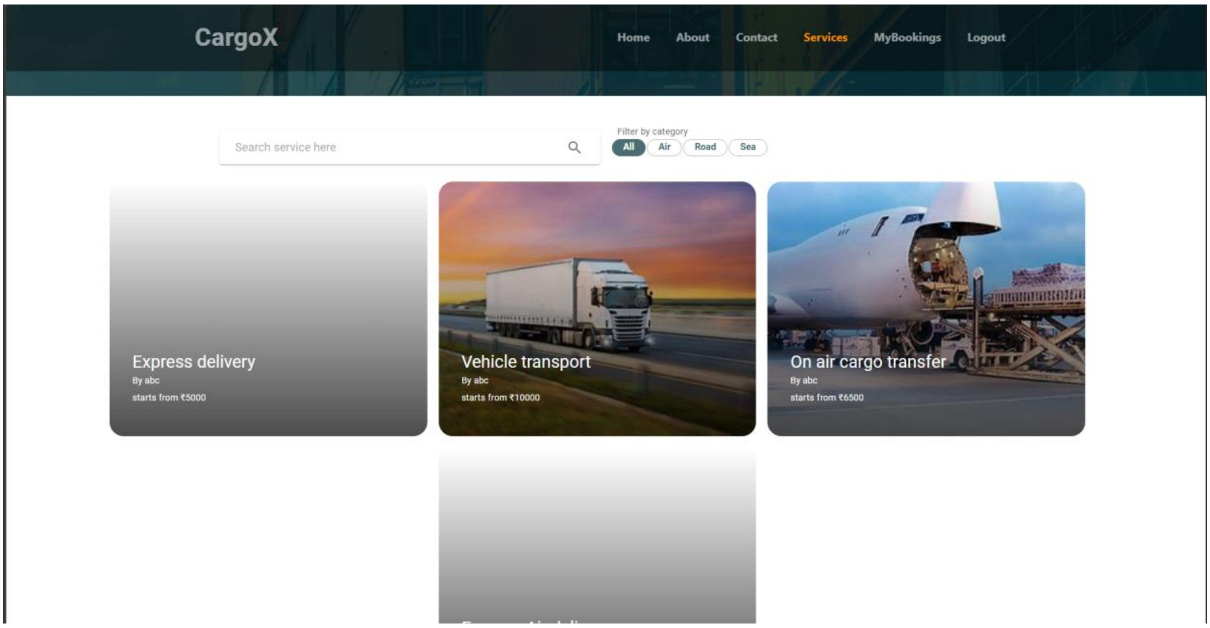
Enter email id *
shrajan@gmail.com

Enter password *
••••••••••

Fig 3.2 client signup form

3.3 SEARCH SERVICE

A search service enables users to find and retrieve information efficiently by indexing content, allowing query submissions, and ranking results by relevance.



Express delivery
By abc
starts from ₹5000

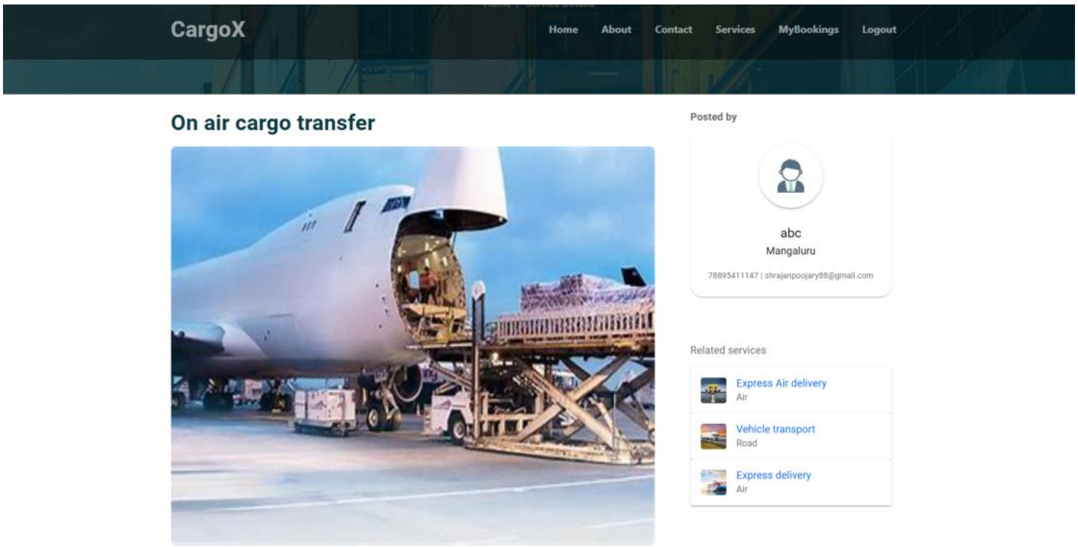
Vehicle transport
By abc
starts from ₹10000

On air cargo transfer
By abc
starts from ₹6500

Fig 3.3 Search service

3.4 BOOK SERVICE

To extend a booked service, log in to your account, locate the booking, and request an extension from the service provider. Confirm availability and any additional fees before receiving updated booking details.



On air cargo transfer

Posted by

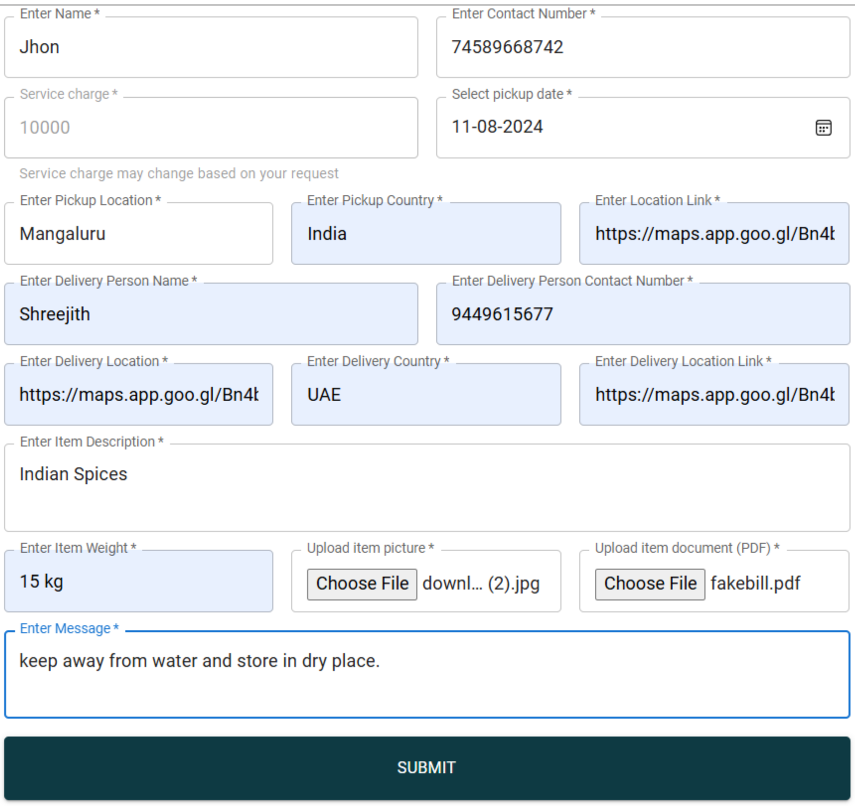
abc
Mangaluru
78895411147 | shrajanpoojary88@gmail.com

Related services

Express Air delivery
Air

Vehicle transport
Road

Express delivery
Air



Enter Name * Jhon

Enter Contact Number * 74589668742

Service charge * 10000

Select pickup date * 11-08-2024

Service charge may change based on your request

Enter Pickup Location * Mangaluru

Enter Pickup Country * India

Enter Location Link * https://maps.app.goo.gl/Bn4t

Enter Delivery Person Name * Shreejith

Enter Delivery Person Contact Number * 9449615677

Enter Delivery Location * https://maps.app.goo.gl/Bn4t

Enter Delivery Country * UAE

Enter Delivery Location Link * https://maps.app.goo.gl/Bn4t

Enter Item Description * Indian Spices

Enter Item Weight * 15 kg

Upload item picture * Choose File downl... (2).jpg

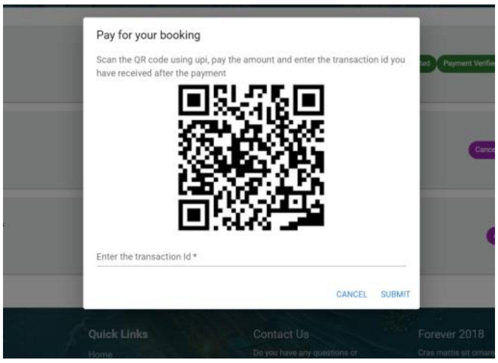
Upload item document (PDF) * Choose File fakebill.pdf

Enter Message * keep away from water and store in dry place.

Fig 3.4 Book service

3.5 PAYMENT

To reduce the impact of extended payment terms, negotiate shorter terms with clients and offer incentives for early payments. Explore tiered pricing based on payment schedules to maintain liquidity.



Pay for your booking

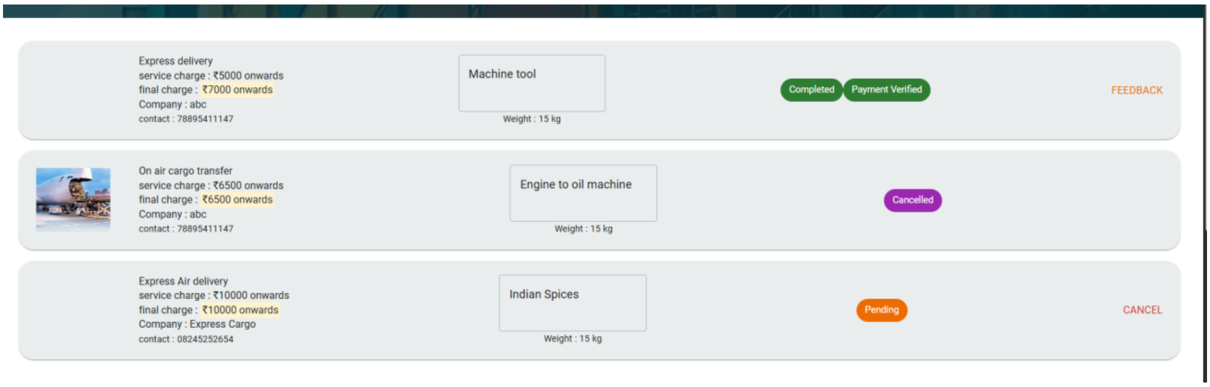
Scan the QR code using upi, pay the amount and enter the transaction id you have received after the payment

Enter the transaction Id *

Fig 3.5 Payment

3.6 VIEW STATUS

To view the status of your account or order, log in to your account and navigate to the "Account Status" or "Order Status" section. Here, you can check details like your account balance, current subscriptions, and the shipping status of your orders.



Express delivery
service charge : ₹5000 onwards
final charge : ₹7000 onwards
Company : abc
contact : 78895411147

Machine tool
Weight : 15 kg

On air cargo transfer
service charge : ₹6500 onwards
final charge : ₹6500 onwards
Company : abc
contact : 78895411147

Engine to oil machine
Weight : 15 kg

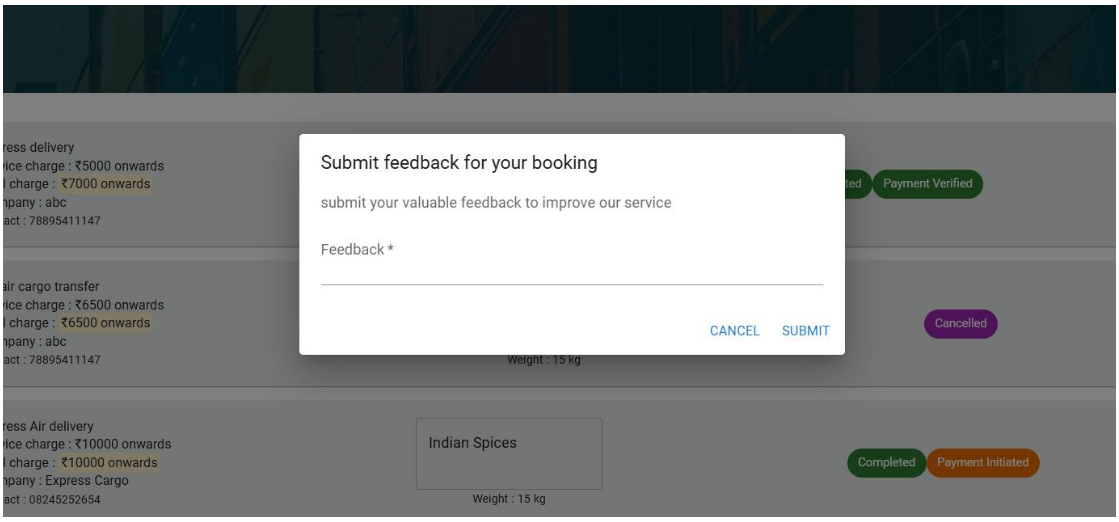
Express Air delivery
service charge : ₹10000 onwards
final charge : ₹10000 onwards
Company : Express Cargo
contact : 08245252654

Indian Spices
Weight : 15 kg

Fig 3.6 View status

3.7 FEEDBACK

Feedback is crucial for improving services and products, allowing clients to share their experiences and suggestions. It can be collected through surveys or direct communication to ensure customer voices are heard.



Submit feedback for your booking

submit your valuable feedback to improve our service

Feedback *

ress delivery
ice charge : ₹5000 onwards
l charge : ₹7000 onwards
npany : abc
act : 78895411147

air cargo transfer
ice charge : ₹6500 onwards
l charge : ₹6500 onwards
npany : abc
act : 78895411147

Weight : 15 kg

ress Air delivery
ice charge : ₹10000 onwards
l charge : ₹10000 onwards
npany : Express Cargo
act : 08245252654

Indian Spices
Weight : 15 kg

Fig 3.7 Feedback

DrillBit

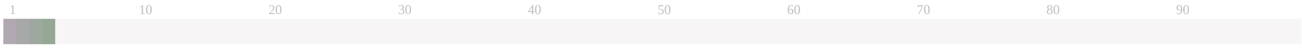
The Report is Generated by DrillBit Plagiarism Detection Software

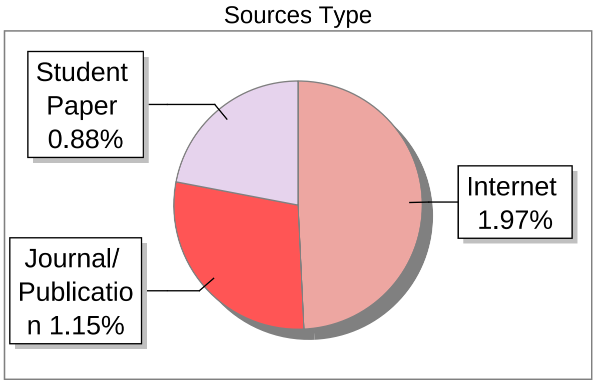
Submission Information

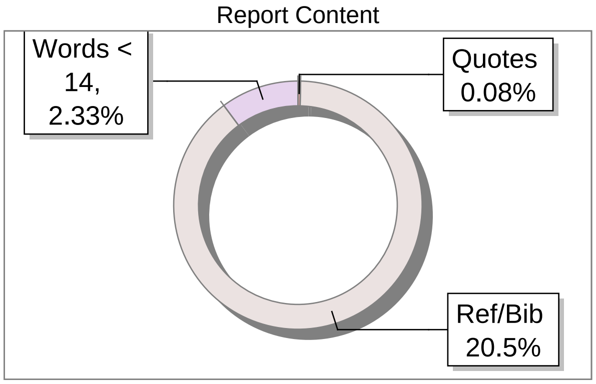
Author Name	Shrajan
Title	Cargox
Paper/Submission ID	2210346
Submitted by	amitarv@sjec.ac.in
Submission Date	2024-08-07 13:44:53
Total Pages, Total Words	50, 3995
Document type	Project Work

Result Information

Similarity **4 %**







Exclude Information

Quotes	Not Excluded
References/Bibliography	Excluded
Source: Excluded < 14 Words	Not Excluded
Excluded Source	**0 %**
Excluded Phrases	Not Excluded

Database Selection

Language	English
Student Papers	Yes
Journals & publishers	Yes
Internet or Web	Yes
Institution Repository	Yes

A Unique QR Code use to View/Download/Share Pdf File