

Cloud-based Cargo Management and Live Location Tracking

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Abstract: Cargo Management System (CMS) refers to a software solution that helps businesses manage their cargo operations. Cargo management systems are essential for ensuring efficient and effective transportation of goods. However, several problems can arise in such systems. One common issue is the lack of real-time visibility into cargo movement, which can result in lost or misplaced shipments. The Cloud-based Cargo Management and Live Location Tracking project aims to provide an efficient and reliable cargo management system that enables cargo service providers, customers, and drivers to manage their cargo transportation needs seamlessly. The system enables cargo service providers to manage their fleet of trucks, track live locations of their trucks, and effectively manage bookings and payments. With the use of OTP for cargo tracking, the system ensures enhanced security and reliability in cargo transportation.

I. INTRODUCTION

Cargo Management System refers to a computer-based software system that is designed to manage and track the entire process of cargo transportation from one location to another. . Cargo transport is mainly for commercial purpose for which an air waybill, bill of lading or other receipt is issued by the carrier. It includes functionalities such as booking and scheduling, cargo tracking, inventory management, billing and invoicing, and reporting. The system helps cargo service providers to efficiently manage their operations and provide better customer service by ensuring timely delivery and reducing errors and delays. Cargo management systems assist transportation companies with the advanced shipping process, delivery tracking, carrier rates, paper trails, routes, and other activities.. Every second, millions of pieces of cargo move around for one reason or another, and with the help of cargo management systems, it becomes easier to transport from one place to another

Cargo Shipment Categories:

Container Cargo: Goods in large containers, protecting products during transport.

Dry Bulk: Non-liquid goods like grains, coal, and cement, shipped in bulk

Liquid Bulk: Liquids like oil and chemicals, transported in tankers.

Break Bulk: Goods in smaller packages, handled with forklifts or cranes

II. SOFTWARE ANALYSIS

Hardware Requirements

- Processors: Intel® Core™ i5 processor 4300M at 2.60 GHz or 2.59 GHz (1 socket, 2 cores, 2 threads per core), 8 GB of DRAM
- Disk space: 320 GB
- Operating systems: Windows® 10, macOS*, and Linux*

Software Requirements

- Server Side : PHP, Python 3.7.4(64-bit) or (32-bit)
- Client Side : HTML, CSS, Bootstrap
- IDE : Dreamweaver
- Back end : MySQL 5.
- Server : Wampserver 2i

III. SOFTWARE DESCRIPTION (PHP)

- ❖ **PHP (Hypertext Preprocessor)** is a widely-used, open-source server-side scripting language designed primarily for web development. It's particularly well-suited for creating dynamic and interactive websites.

FRONT END: DESIGN BOOTSTRAP 4

- ❖ Bootstrap is a free and open-source tool collection for creating responsive websites and web applications. It is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first websites.

FLASK

- ❖ Flask is a web framework. This means flask provides you with tools, libraries and technologies that allow you to build a web application. This web application can be some web pages, a blog, a wiki or go as big as a web-based calendar application or a commercial website.
- ❖ Flask is often referred to as a micro framework. It aims to keep the core of an application simple yet extensible. Flask does not have built-in abstraction layer for database handling, nor does it have formed a validation support. Instead, Flask supports the extensions to add such functionality to the application.

BACK END: MYSQL

MySQL tutorial provides basic and advanced concepts of MySQL. Our MySQL tutorial is designed for beginners and professionals. MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing the records in the database. MySQL is currently the most popular database management system software used for managing the relational database. It is open-source database software, which is supported by Oracle Company.

WAMPSEVER

WAMPServer is a reliable web development software program that lets you create web apps with MYSQL database and PHP Apache2. With an intuitive interface, the application features numerous functionalities and makes it the preferred choice of developers from around the world. The software is free to use and doesn't require a payment or subscription. WAMPServer is a reliable web development software program that lets you create web apps with MYSQL database and PHP Apache2.

IV.2.3EXISTING SYSTEM

❖ **Manual Systems**

The existing manual system of cargo management and tracking system involves managing the entire cargo shipment process manually. In this system, cargo booking, scheduling, tracking, and delivery activities are all performed manually, which can be time-consuming and prone to errors

❖ **Desktop Software**

The existing desktop software system of cargo management and tracking involves using a software application installed on a local computer to manage the cargo shipment process. This feature provides real-time updates, which can help to reduce delays and improve accuracy.

V.2.4PROPOSED SYSTEM

The proposed cloud-based cargo management and tracking system offers a comprehensive solution to the challenges faced by businesses in managing and tracking their cargo.

The system provides a centralized platform for managing and tracking cargo and which is provide businesses with up-to-date information on the location and status of their cargo.

The system provides efficient communication between stakeholders offers data analytics and reporting capabilities,

VI. 4.2MODULES

1. CargoMS Web App

• **Development of Front End**

The front-end development of the CargoMS web application was done using HTML, CSS, and JavaScript. The front-end is responsible for displaying the user interface of the application to the user.

• **Development of Back End**

The back-end of the CargoMS web application was developed using PHP programming language.

The back-end is responsible for processing the user's request and returning a response

• **Development of Database**

The database used in the CargoMS web application was MySQL.

MySQL is a popular open-source relational database management system.

It stores information about the customers, bookings, trucks, and drivers.

2.End User Interface

2.1. Cargo Service Provider Admin Interface Module:

Login: Provides a login interface for the admin to access the system.

- | | |
|--------------------------------------|---------------------------|
| 1. Add Truck Details | View Payments |
| 2. Track Trucks Live Location | Add Driver Details |
| 3. Booking Management | Reports |

3. Search Available Truck

Truck selection and booking request: Customers can select a truck from the search results and send a booking request to the cargo service provider

4. Booking management

system provide features for the cargo service provider admin, customers, and drivers to manage their bookings efficiently

5. Payment

The payment modules in the Cloud-based Cargo Management and Live Location Tracking system include:

- **Payment Verification:** Once the payment is made, the system verifies the payment through the payment gateway and updates the payment status in the system.
- Customers can view the details of their previous payments, including the date, time, and amount.

Payment Reports: The system generates payment reports for the cargo service provider admin, which helps them keep track of the payments received and pending.

6. Truck Location Tracking

GPS Tracking: The truck location tracking module uses GPS technology to track the location of the shipment in real-time

Live Tracking: The truck location tracking module displays the real-time location of the shipment on a map in the web app interface

Route Optimization: The module can suggest the most efficient route based on factors such as traffic, distance, and fuel consumption.

7. Customer Track Truck Live Location using OTP

CargoMS web app allows customers to track the live location of their shipment trucks using an OTP (One-Time Password) based authentication system

Test Result:

TC ID	Description	Expected Result	Actual Result	Pass/Fail
001	Login as Admin with valid credentials	Dashboard should be displayed	Dashboard was displayed	Pass
002	Add truck details by Admin	Truck details should be added	Truck details were added	Pass

ARCHITECTURE DIAGRAM

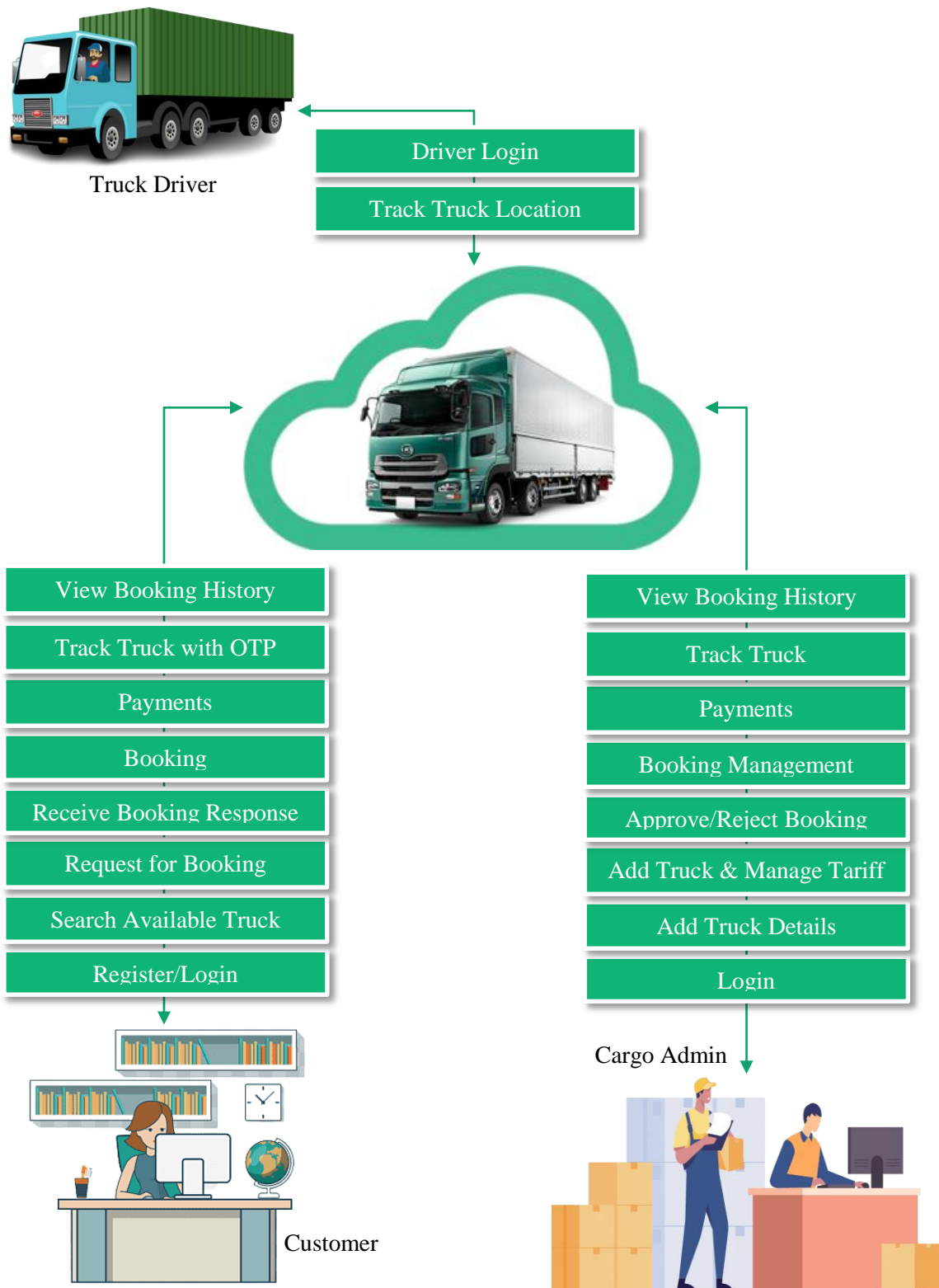


Fig.1. System Architecture

VI. CONCLUSION

The "Cloud based Cargo Management and Live Location Tracking" project has been developed with the objective of providing an efficient and user-friendly system for managing cargo transportation and tracking the real-time location of trucks. The project covers various modules such as Cargo Service Provider Admin, Customer, and Driver. . The project includes features such as real-time truck tracking, booking management, payment management, and reporting. These features make the system efficient and easy to use for all the stakeholders involved in cargo transportation. The test report indicates that the system is functioning as expected and that there are no major issues or bugs. In conclusion, the "Cloud based Cargo Management and Live Location Tracking" project is a robust and reliable system that can significantly improve the efficiency of cargo transportation and tracking. The system is user-friendly, scalable, and customizable, and can be easily implemented by organizations involved in cargo transportation.

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