CMR UNIVERSITY

Private University Established in Karnataka State by Act No. 45 of 2013

Project Work Report

On

"Logistics Database System"

For the requirement of 4rd Semester (4CSGC2011 –Database Management System) B.Tech In Computer Science and Engineering

Submitted By

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SCHOOL OF ENGINEERING AND TECHNOLOGY

Chagalahatti, Bengaluru, Karnataka-562149

Department of Computer Science and Engineering (AIML)

CERTIFICATE

Certified that the Project Work entitled "**Logistics Database System" carried** out by **Adhish Bharadwaj,Chaitanya Arya and Devansh Bhasin ,** bonafide student of **SCHOOL OF ENGINEERING AND TECHNOLOGY**, in partial fulfillment for the award of **BACHELOR OF TECHNOLOGY** in Computer Science and Engineering (AIML of **CMR UNIVERSITY**, Bengaluru for 3rd Semester course **4CSGC2011 – DATABASE MANAGEMENT SYSTEM** during the academic year 2023 - 2024. It is certified that all corrections/suggestions indicated for the Internal Assessment have been incorporated in the report. The project has been approved as it satisfies the academic requirements in respect of project work prescribed for the said degree.

Signature of Course In-charge

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Dept. of CSE SoET,
CMRU, Bangalore

Signature of HOD

……

Dept. of CSE
SoET, CMRU, Bangalore

Name of the Examiners:

1. ……

2. ……

Signature with Date:

……

……

Declaration

We Adhish Bharadwaj,Chaitanya Arya and Devansh Bhasin bearing USN **22BBTCA005**,**22BBTCA037 and 22BBTCA045** students of Bachelor of Technology, Computer Science and Engineering, CMR University, Bengaluru, hereby declare that the Project Work entitled "**Logistics Database System**" submitted by us, for the award of the Bachelor's degree in Computer Science and Engineering (AIML) to CMR University is a record of bonafide work carried out independently by us under the supervision and guidance of **Prof.Spandana** Associate Professor, Dept of CSE. CMR University.

We further declare that the work reported in this mini project work has not been submitted and will not be submitted, either in part or in full, for the award of any other degree in this university or any other institute or University.

Place: Bengaluru

Adhish Bharadwaj 22BBTCA005

Date: 04/02/2024

Abstract

This project entails the development of a Logistics Database Management System designed to enable administrative oversight and high-level tracking of logistics operations. The system was engineered to provide a streamlined interface for managing and monitoring various aspects of the logistics business, ensuring efficient operation and timely decision-making. Utilizing a robust tech stack, the front-end was developed using HTML, CSS, and JavaScript, offering an intuitive and responsive user experience.

On the back-end, the system is integrated with a MySQL database through PHP, facilitating seamless data management and real-time updates. The Logistics Database Management System supports functionalities such as inventory tracking, order management, shipment scheduling, and reporting, thereby enhancing operational visibility and control for administrators. By combining a user-friendly interface with powerful database capabilities, this system aims to improve efficiency, reduce errors, and provide comprehensive insights into the logistics workflow.

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CHAPTER I

Introduction

Project Aim

The aim of this project is to design and implement a comprehensive Logistics Database Management System that streamlines the management of customer information, product inventories, orders, and warehouse logistics. This system provides a structured and efficient way to handle data, thereby enhancing the operational efficiency and accuracy of the logistics business. Key functionalities include Warehouse Stock tracking, orders management and shipment details. By offering comprehensive insights and high-level tracking capabilities, the system empowers administrators to make informed decisions, reduce operational errors, and optimize the overall logistics workflow. The Logistics Database Management System is designed to significantly improve efficiency and accuracy, providing a powerful tool for managing the complexities of logistics operations.

Application

This database system is designed to be a scalable and robust solution that supports the needs of an expanding logistics business. It ensures data integrity, provides easy access to information, and facilitates efficient management of transactions and inventory. The system plays a critical role in the day-to-day operations of the business, enabling seamless interactions between customers, products, orders, and warehouses.

By centralizing data storage, the system allows for real-time data retrieval and updates, which is essential for maintaining accurate stock levels and timely order processing. This not only improves customer satisfaction through faster and more reliable service but also optimizes inventory management, reducing the risk of overstocking or stockouts. Additionally, the database system supports various analytics and reporting functionalities, providing valuable insights into sales trends, customer behavior, and operational efficiency. These insights can inform strategic decisions, such as marketing strategies, product development, and resource allocation, ultimately driving business growth and profitability.

Furthermore, the system is designed with security measures to protect sensitive customer and business information from unauthorized access and data breaches. It also includes features to ensure compliance with data protection regulations, fostering trust with customers and stakeholders. In summary, this database management system is a vital tool for the efficient and secure operation of the logistics platform, offering both immediate operational benefits and long-term strategic advantages.

CHAPTER II

SOFTWARE REQUIREMENTS SPECIFICATION

XAMPP

XAMPP is an open-source cross-platform web server solution stack package developed by Apache Friends. It primarily consists of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in PHP and Perl. XAMPP is used in this project for its ease of installation and configuration, providing a local environment for developing and testing the database management system.

Browser

A modern web browser is essential for accessing the web-based interface of the database management system. Browsers like Google Chrome, Mozilla Firefox, and Microsoft Edge are compatible with the system's frontend, which is built using HTML, CSS, and JavaScript. The browser serves as the primary user interface, enabling users to interact with the system seamlessly.

CHAPTER III

FRONTEND DESIGN

HTML, CSS, JS

The frontend of the database management system is meticulously crafted with HTML, CSS, and JavaScript, leveraging each technology's strengths to deliver a seamless user experience. HTML lays the foundational structure of the web pages, providing a clear and organized layout for effortless navigation. CSS enriches the visual appearance, imbuing the interface with aesthetic appeal and intuitive design elements. Meanwhile, JavaScript injects interactivity, enabling dynamic content updates and responsive behavior.

Within this framework, we have meticulously designed and implemented multiple essential pages, including the login page, admin page, customer page, warehouse page, order page, and delivery page. Each page is tailored to fulfill specific user requirements and optimize workflow efficiency. Whether it's accessing administrative controls, managing customer information, overseeing warehouse logistics, processing orders, or tracking deliveries, the interface ensures intuitive interaction and smooth data entry processes. By integrating these diverse functionalities seamlessly, our frontend design fosters a user-friendly environment conducive to effective management and streamlined operations within the logistics platform.

CHAPTER IV

BACKEND DESIGN

For the backend design, we employed PHP and MySQL to create a robust and efficient system that manages the database operations seamlessly. PHP serves as the server-side scripting language, handling dynamic content generation and interaction with the MySQL database. MySQL, a powerful relational database management system, stores and retrieves data efficiently, ensuring reliability and scalability

To illustrate the integration of PHP and MySQL in the backend development, consider the following queries and their usage:

```php
<?php
// Establishing connection to the MySQL database
$servername = "localhost";
$username = "username";
$password = "password";
$database = "database_name";

$conn = new mysqli($servername, $username, $password, $database);

// Check connection
if ($conn->connect_error) {
  die("Connection failed: " . $conn->connect_error);
}

// Creating the Delivery table
$create_delivery_table_query = "CREATE TABLE Delivery (
    DeliveryID VARCHAR(10) PRIMARY KEY,
    W_ID INT,
    W_location VARCHAR(50),
    Delivery_loc VARCHAR(50),
    total INT,
    CONSTRAINT FK_Warehouse FOREIGN KEY (W_ID, W_location)
        REFERENCES Warehouse(W_ID, W_location)
)";

if ($conn->query($create_delivery_table_query) === TRUE) {
  echo "Delivery table created successfully";
} else {
  echo "Error creating Delivery table: " . $conn->error;
}

// Other CREATE TABLE queries for Product, Customer, and Warehouse tables go here

// Closing the database connection
$conn->close();
?>
```

In the above PHP snippet, we establish a connection to the MySQL database and execute a CREATE TABLE query to create the Delivery table. The query defines the structure of the table, including its columns, data types, and constraints. Similar queries are used to create other tables such as Product, Customer, and Warehouse, defining their respective schemas.

These tables establish relationships between entities using FOREIGN KEY constraints, ensuring data integrity and referential integrity across the database. For example, the Delivery table references the Warehouse table using the W_ID and W_location columns as foreign keys.

By leveraging PHP for server-side scripting and MySQL for data storage and retrieval, our backend design facilitates seamless interaction with the database, enabling efficient management of logistics data and operations.

Tables Schema's and Relationships

The database comprises several tables, including Customer, Product, Warehouse, Warehouse_Location, Delivery, and Order. Each table is defined with specific fields, and relationships between the tables are established using foreign keys. This relational database structure ensures data consistency and supports complex queries.

Customer*(CustomerID, FirstName, LastName, PhoneNumber, HouseNumber, Address)*

Product*(ProductID, Name, Brand, Category, UnitPrice)*

Warehouse*(WarehouseID, ProductID, StockQuantity)*

Warehouse_Location*(WarehouseID, Warehouse_Location)*

Delivery*(DeliveryID, WarehouseID, Location, Destination, TotalCost,delivery date)*

Order*(OrderID, ProductID, CustomerID, Quantity, DeliveryLocation,orderdate)*

Relationships

Customer to Order (1:N): Each customer can place multiple orders. This is represented by the foreign key Cust_ID in the Order table referencing the primary key Cust_ID in the Customer table.

Order to Product (N:M): Each order can include multiple products, and each product can appear in multiple orders. This many-to-many relationship is managed through a junction table (not explicitly mentioned in the list but inferred from the ER diagram), which includes foreign keys Order_ID and Product_ID.

Warehouse to Product (1:N): Each warehouse can store multiple products. This relationship is represented by the foreign key W_ID in the Product table referencing the primary key Warehouse_ID in the Warehouse table.

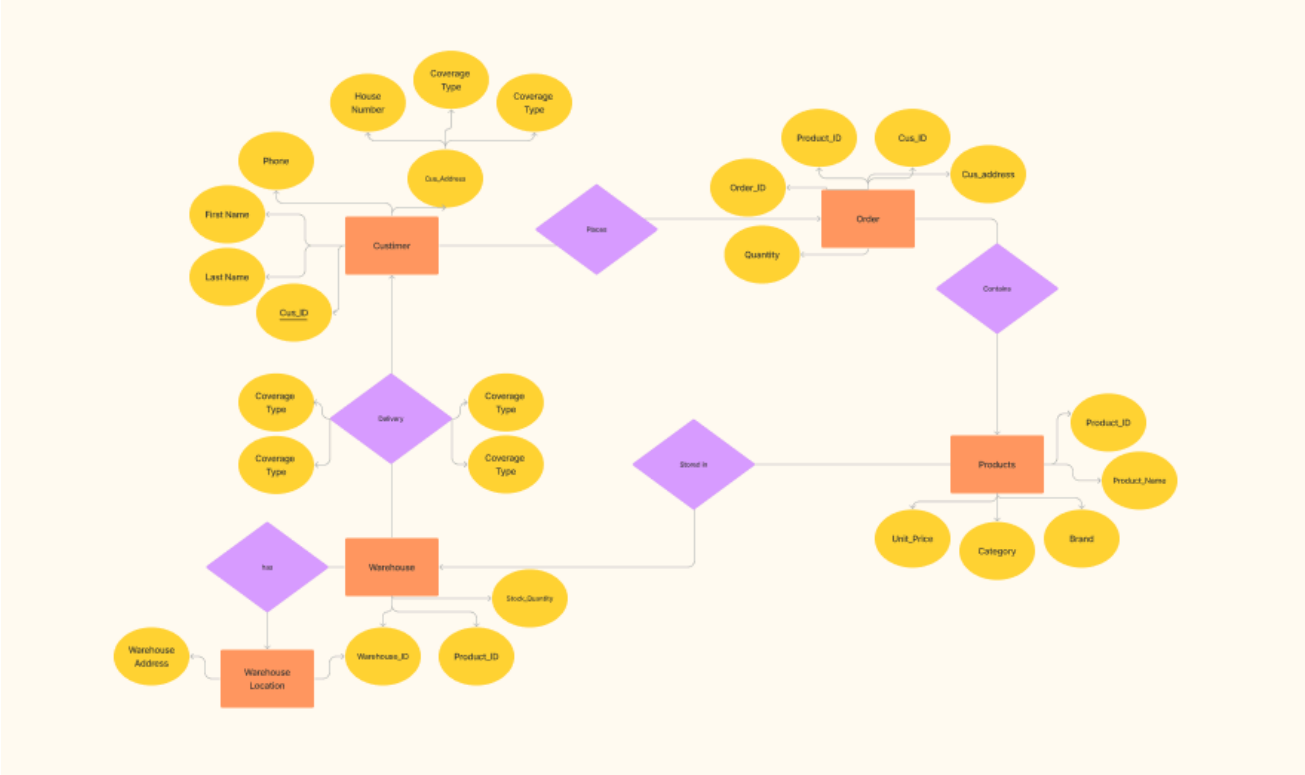
Warehouse to Warehouse_Location (1:1): Each warehouse has a specific location, which is managed by a one-to-one relationship. The primary key Warehouse_ID in the Warehouse table is also the primary key in the Warehouse_Location table, ensuring that each warehouse corresponds to one location entry.

Delivery to Warehouse (N:1): Each delivery is associated with one warehouse, but each warehouse can have multiple deliveries. This relationship is represented by the foreign key W_ID in the Delivery table referencing the primary key Warehouse_ID in the Warehouse table.

Delivery to Customer (N:1): Each delivery is linked to one customer, but each customer can have multiple deliveries. This is represented by the foreign key Cust_ID in the Delivery table referencing the primary key Cust_ID in the Customer table.

Order to Delivery (1:1): Each order is associated with one delivery, establishing a one-to-one relationship. The primary key Order_ID in the Order table is also used as a foreign key in the Delivery table, ensuring each order corresponds to a unique delivery entry.

E-R Diagram



CHAPTER V

IMPLEMENTATION

In the development phase, we began by creating the login page, a critical entry point to our Logistics Database Management System. Utilizing HTML, CSS, and JavaScript, we crafted an interface that not only welcomed users but also ensured data validation for secure access. JavaScript played a pivotal role in implementing client-side validation, ensuring that entered credentials met specified criteria before submission. This step was crucial in safeguarding the system against unauthorized access and potential security breaches.

Following the successful implementation of the login page, our focus shifted to designing the admin page, which serves as the central hub for system administration and oversight. To enhance usability, we incorporated a side navigation bar, offering quick access to key functionalities such as order management, customer data, delivery logistics, and warehouse inventory. The navigation bar was implemented using HTML and CSS, providing a visually intuitive and responsive layout. JavaScript was leveraged to add dynamic behavior, enabling smooth transitions and interactions as users navigate between different pages.

By systematically implementing these components, we established a solid foundation for our Logistics Database Management System, ensuring not only a seamless user experience but also robust security measures and efficient administrative control. This iterative process of development and refinement allowed us to create a comprehensive solution that meets the diverse needs of our stakeholders while adhering to best practices in software design and implementation.

Screenshots:

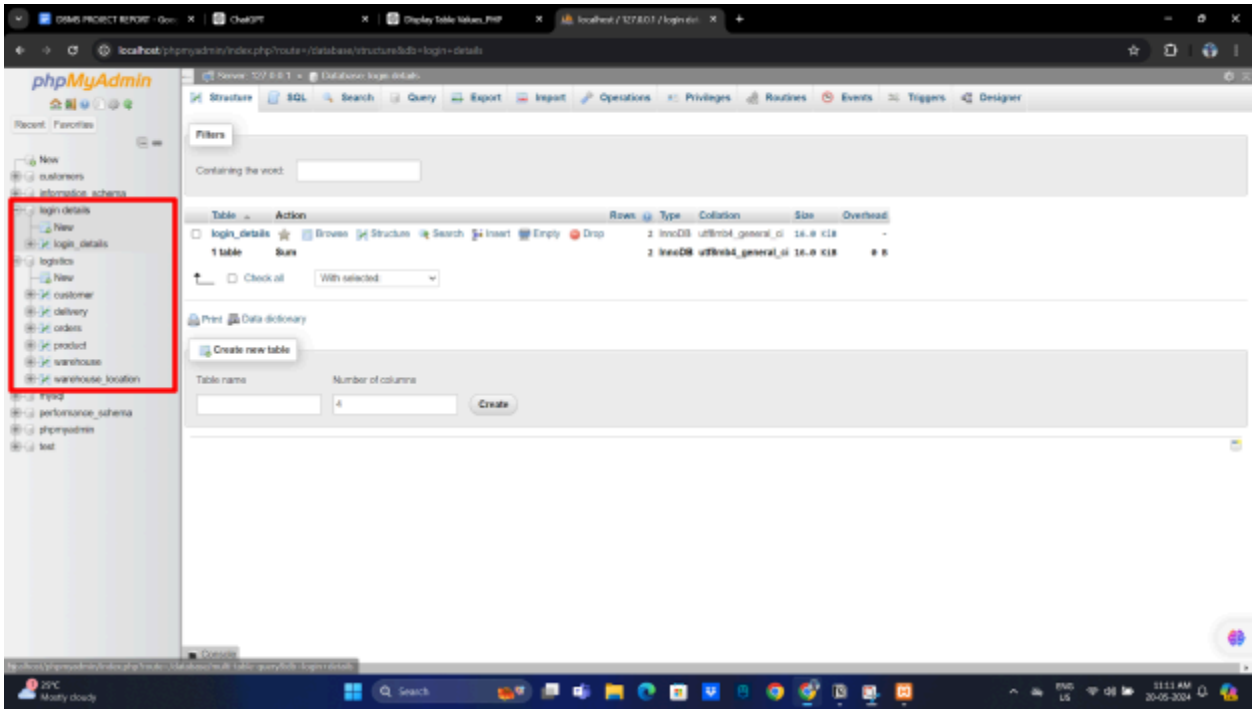


Fig 1: PHP ADMIN WITH ALL DATABASES AND TABLES

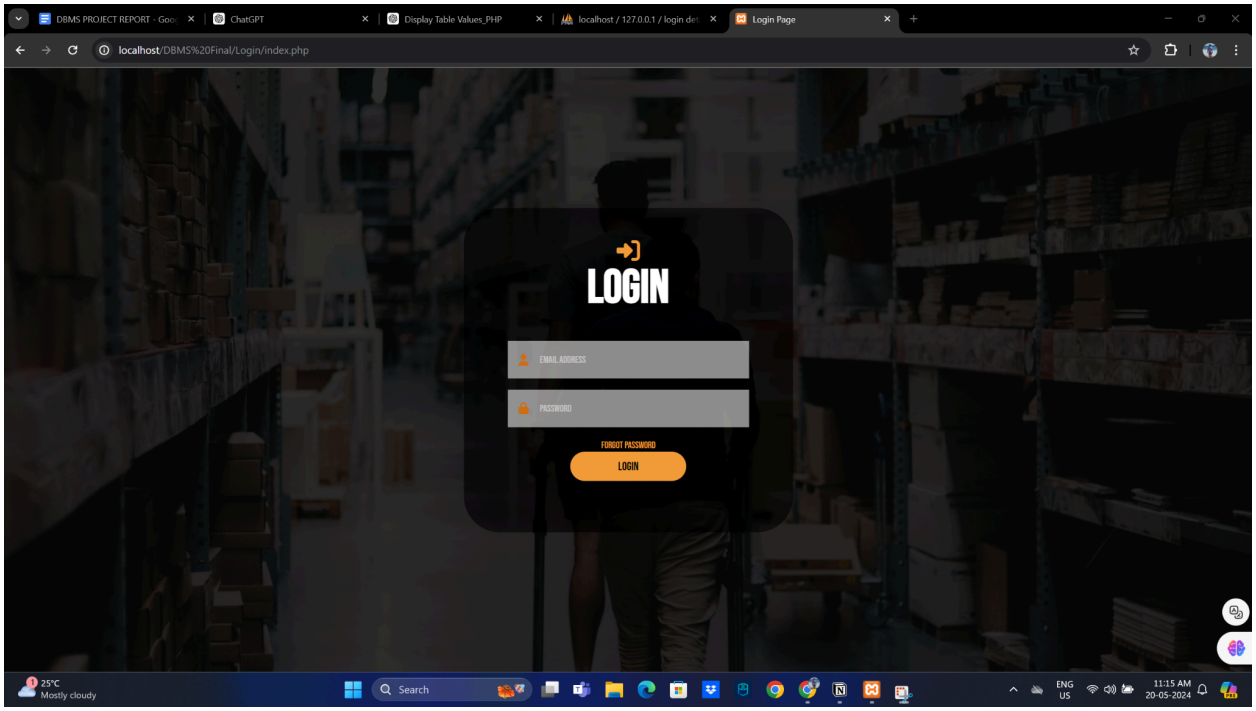


Fig 2 : Login Page done using HTML AND CSS

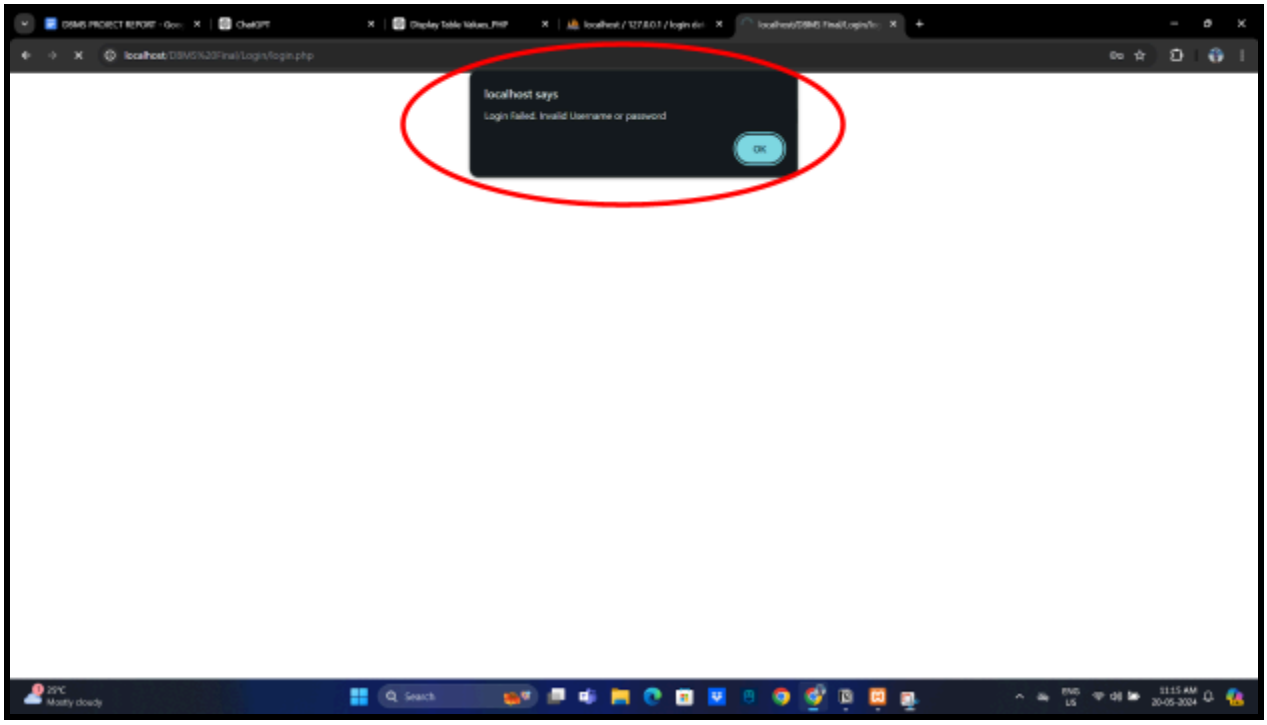


Fig 3: Data Validation Using php for login

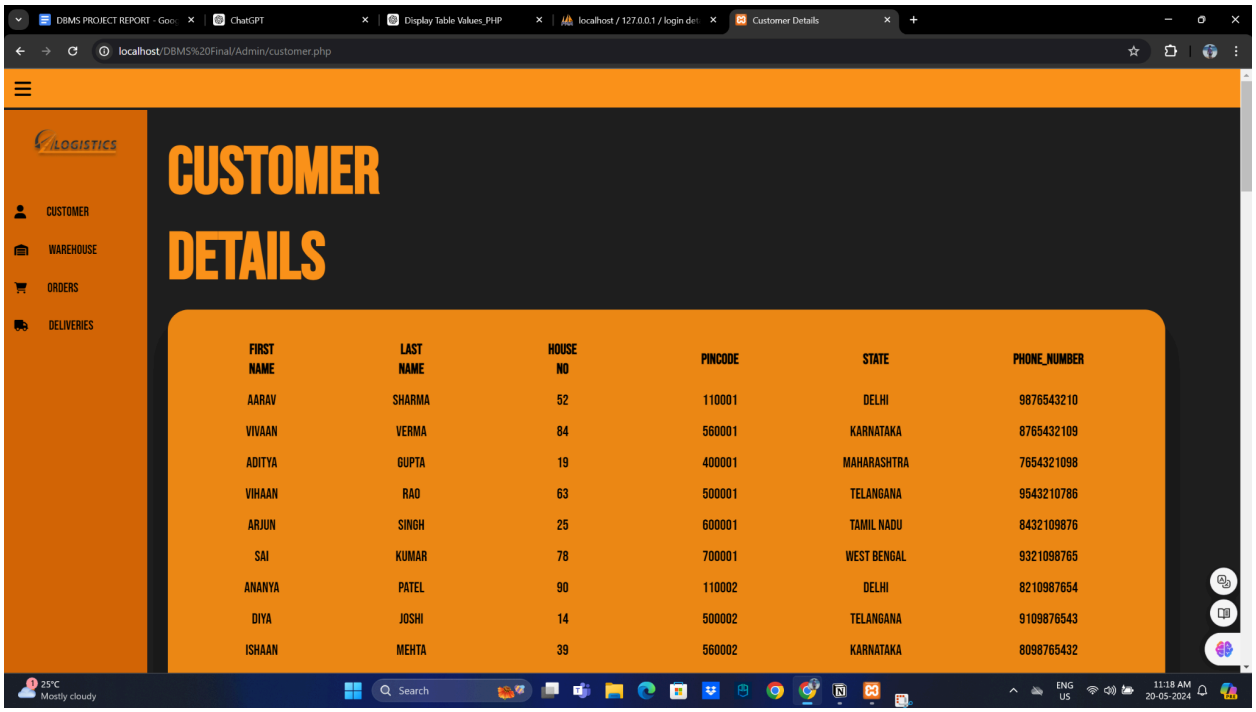


Fig 4: Customer TABLE in html linked to Customer Table in SQL

Fig 5: Warehouse Data sorted according to its location and updates according to the database

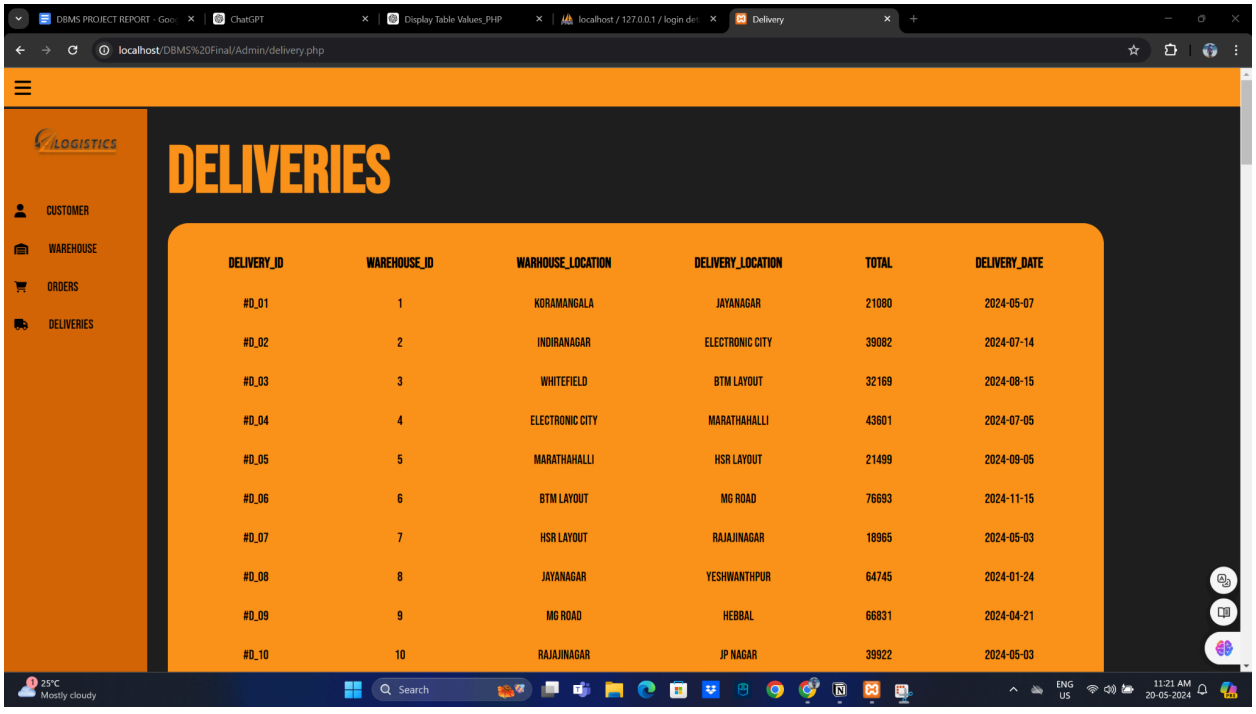


Fig 6: Delivery Tracking Data connected to Delivery Database

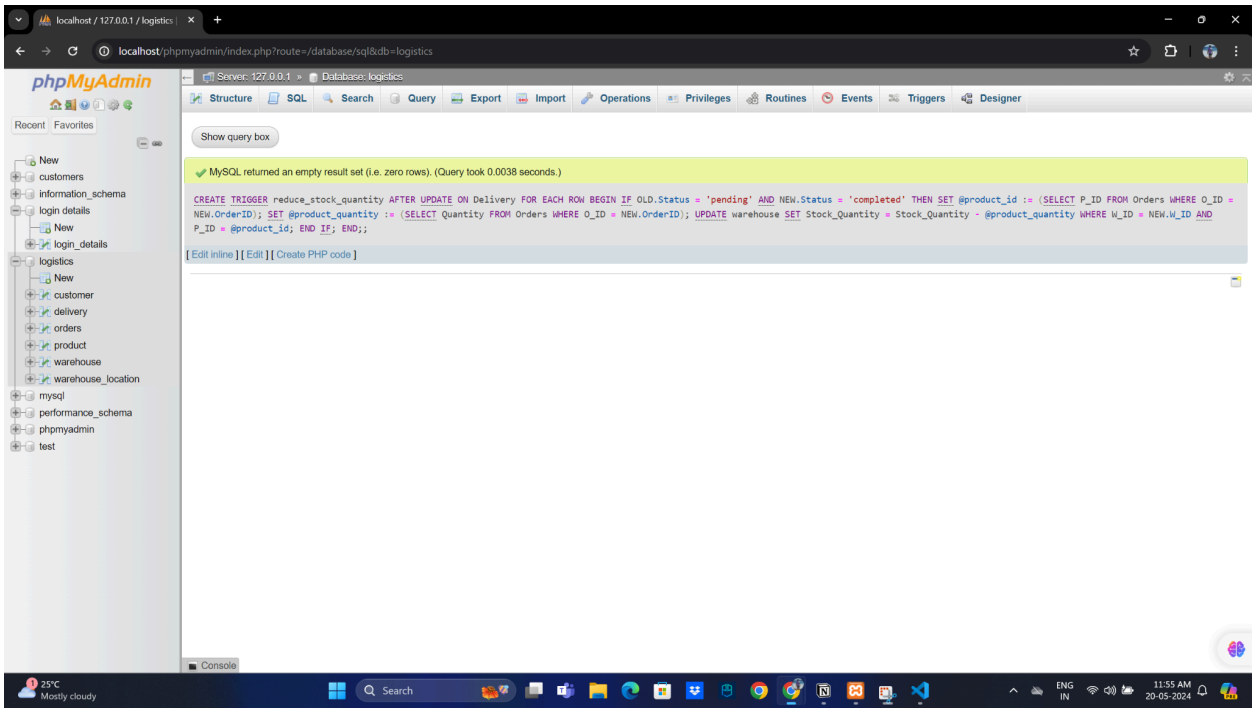


Fig 6: SQL Query for Reducing Product Quantity after delivery

CODE (PHP)

```
<?php

include("connection.php");

?>

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Login Page</title>

    <link rel="stylesheet" href="style.css">

    <script src="https://kit.fontawesome.com/a6ba84593c.js" crossorigin="anonymous"></script>

    <style>

        @import url('https://fonts.googleapis.com/css2?family=Bebas+Neue&display=swap');

    </style>

</head>

<body>

    <div class="container">

        <div class="form-box">

            <i class="fa-solid fa-right-to-bracket fa-2xl"></i>

            <h1>Login</h1>

                <form action="login.php" method="POST"> <!-- Corrected action attribute and
method -->

                <div class="input-group">

                    <div class="input-field">

                        <i class="fa-solid fa-user" style="color: #d07016;"></i>

                        <input type="text" placeholder="Email Address" name="user">

                    </div>
```

```
                </div>
                <div class="input-group">
                    <div class="input-field">
                        <i class="fa-solid fa-lock" style="color: #d07016;"></i>
                        <input type="password" placeholder="Password" name="Pass">
                    </div>
                    <a href="#"> Forgot Password</a>
                </div>
                <div class="btn-field">
                      <button type="submit" name="submit">Login</button> <!-- Changed type to
"submit" -->
                </div>
            </form>
        </div>
    </div>
</body>
</html>
```

CODE (CSS)

```
*{
    margin: 0;
    padding: 0;
    box-sizing: border-box;
}

.bebas-neue-regular {
    font-family: "Bebas Neue", sans-serif;
    font-weight: 400;
    font-style: normal;
  }

.container{
    width: 100%;
    height: 100vh;
    background-image:linear-gradient(rgba(0, 0, 0, 0.8),rgba(0, 0, 0,
0.8)),url("Background.jpg");
    background-position: center;
    background-size: cover;
    position: relative;
}

.form-box{
```

```
    width: 90%;
    max-width: 450px;
    position: absolute;
    top: 50%;
    left: 50%;
    transform: translate(-50%,-50%);
    background: rgba(0, 0, 0, 0.6);
    padding: 50px 60px 70px;
    border-radius: 49px;
    text-align: center;
}

.form-box h1{
    font-size: 64px;
    font-family: "Bebas Neue", sans-serif;
    margin-bottom: 30px;
    color: rgba(255, 255, 255, 1);
    position: relative;
}

.form-box i{

    color: rgba(242, 157, 56, 1);
}

.input-field{
```

```
    background:rgba(255, 255, 255, 0.55) ;
    color: white;
    margin: 15px 0;
    border-radius: 3 px;
    display: flex;
    align-items: center;

}

::placeholder{
    color: rgba(255, 255, 255, 0.49);
    font-family: "Bebas Neue", sans-serif;
}

input{
    width: 100%;
    background: transparent;
    border: 0;
    outline: 0;
    padding: 18px 15px;
}

.input-field i{
    margin-left: 15px;
}

form  a{
```

```
    text-align: left;
    font-size: 13px;
    color: rgba(242, 157, 56, 1);
    text-decoration: none;
    font-family: "Bebas Neue", sans-serif;
}

.btn-field{

    width: 100%;
    display: flex;
    justify-content: center;
    bottom: 10px;
}

.btn-field button{
    background-color: rgba(242, 157, 56, 1);
    color: black;
    font-family: "Bebas Neue", sans-serif;
    font-size: medium;
    flex-basis: 48%;
    height: 40px;
    border-radius: 20px;
    border: 0;
    outline: 0;
    cursor: pointer;
    transition: background 1s   ;
```

```
}


.input-group{
    color: white;
}
```

The above code it just of the admin page we have provided a link of the git repository below for the source code of the project

Git Repository Link: -

https://github.com/WHYDOESADICODE/dbms-final.git

CHAPTER VI

CONCLUSION

The successful implementation of our database management system represents not just a technological upgrade but a transformative leap forward in our logistics operations. This milestone achievement heralds a new era of efficiency, agility, and strategic prowess within our organization. By centralizing data management and streamlining processes, the system has become an indispensable tool in our quest for operational excellence and customer-centricity.

Through meticulous planning, rigorous development, and seamless integration, we have laid a robust foundation for navigating the complexities of the logistics landscape with confidence and ease. The system's ability to harness data, optimize resources, and facilitate informed decision-making empowers us to meet the dynamic demands of modern commerce while staying ahead of the competition.

In addition to its immediate impact on our day-to-day operations, the database management system sets the stage for future growth and innovation. Its scalability, adaptability, and potential for continuous improvement position us to embrace emerging technologies, explore new markets, and seize untapped opportunities.

Future Scope

Looking ahead, the database management system is poised for further advancements and expansions to meet the evolving needs of our business and industry. Potential future developments include:

1. **Advanced Analytics:** Integration of sophisticated data analytics tools to extract deeper insights into sales trends, customer behavior patterns, and inventory management strategies, facilitating data-driven decision-making.

2. **Mobile Application:** Development of a user-friendly mobile application to extend system accessibility beyond desktop environments, enabling users to manage logistics operations conveniently on-the-go.

3. **Automated Alerts:** Implementation of automated notification systems to proactively alert stakeholders about critical events such as low stock levels, order status updates, and customer feedback, enhancing communication and responsiveness.

4. **Enhanced Security Measures:** Continual reinforcement of security protocols and measures to fortify the system against potential threats, ensuring the confidentiality, integrity, and availability of sensitive data.

By embracing these future enhancements and innovations, our logistics platform will remain at the forefront of technological advancement, empowering us to adapt to market dynamics, deliver exceptional service, and drive sustainable growth well into the future.