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LOGISTICS AND CARGO AUTOMATION SYSTEM

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Abstract: The "Logistics and Cargo Automation System" is a web application developed using PHP for the front-end and MySQL for the back-end. It aims to streamline the logistics business by managing employee and customer details, bookings, transport, and deliveries. Employee information, including contact details, is stored in the system. Customers can book shipments, providing details like product type, quantity, weight, total amount, and delivery address, all of which are saved for future reference. Based on this information, trips are assigned, and transport details are allocated to employees for delivery. Employees can track deliveries, generate bills for pending payments, and update delivery statuses. Admins can monitor outgoing shipments, ongoing trips, and generate reports for system management.

Keywords: Cargo Automation ,Employee Management ,Customer Management, Product Details, Pending Payments, Transport Allocation.

1. INTRODUCTION

In this paper, we will maintain the details of our employee like their id, name, mobile, place of contact, contact address and their email id are stored. The customer can book the products by providing the details of the customer which is saved as records into our system for future reference. The customers provided details along with the product, quanity, weight, total amount, contact number, their address are stored. Based on these details, the trip is assigned for the customer goods who booked to deliver the products. The transport details can assign to the employees.

The employee can view the allocated goods transports and to deliver the correct product to the customers. If any other amount is pending the bill is generated by the employee. In case, if the employee can't delivered the products to the customer means the status to be updated if it is delivered or not .The admin can check the outgoing products list. And also the admin can check the ongoing trip and dropping outgoing products list. The admin can view the reports by the use of report link.

2. RELATED WORK

Logistics and cargo automation systems have transformed the way goods are transported and tracked. One key area of research is the application of artificial intelligence (AI) and machine learning (ML) in logistics, which enables predictive maintenance, route optimization, and demand forecasting. Another important topic is the use of blockchain technology for cargo tracking and verification, which provides a secure and transparent way to conduct transactions and verify cargo authenticity. Automated warehousing is also a critical area of research, with technologies like AS/RS, robotic picking systems, and IoT sensors streamlining inventory management and order fulfilment.

This paper extends existing research by

1. Review of Logistics and Supply Chain Automation: current trends and future directions in logistics and supply chain automation.

2. Automated Cargo Tracking and Monitoring System Using IoT and Blockchain: It proposes an automated cargo tracking and monitoring system using IoT and blockchain.

3. Optimization of Logistics Operations using Artificial Intelligence and Machine Learning: explores the application of AI and ML in optimizing logistics operations.

4. A Blockchain-based Framework for Secure and Transparent Logistics: blockchain-based framework for secure and transparent logistics.

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5. Automated Warehousing and Inventory Management using Robotics and Computer Vision: the application of robotics and computer vision in automated warehousing and inventory management.

3. MODEL ARCHITECTURE

The proposed Logistics and Cargo Automation System architecture consists of the following components:

1. Transport

In this module the mode of Transport is identified. The details of the forwarding agencies are also maintained in this module. It also maintains the port details and any other transport through which the goods are going to be shipped and the status of the cargo whether it is been delivered or is on the way.

2. Accounting

This module calculates the charges payable by the customer like the services charges, and other charges suffered. Preparation of a bill slip to the customer is also done in this module.

3. Forwarding agent

The details of forwarding agents who help in delivering the cargo are maintained like the name and the other contact information.

4. Employee details

This module covers the details of the employees working in company like the details of their job and the personal profile of them. It's also manages the employee work allocation.

5. Reports

Necessary reports are generated when required. The reports that can be generated in this module are cargo details report, employee details report, and the cargo status report.

4. IMPLEMENTATION

Implementation is the process that actually yields the lowest-level system elements in the system hierarchy (system breakdown structure). The system elements are made, bought, or reused. Production involves the hardware fabrication processes of forming, removing, joining, and finishing; or the software realization processes of coding and testing; or the operational procedures development processes for operators' roles. If implementation involves a production process, a manufacturing system which uses the established technical and management processes may be required.

The purpose of the implementation process is to design and create (or fabricate) a system element conforming to that element's design properties and/or requirements. The element is constructed employing appropriate technologies and industry practices. This process bridges the system definition processes and the integration process.

System Implementation is the stage in the project where the theoretical design is turned into a working system. The most critical stage is achieving a successful system and in giving confidence on the new system for the user that it will work efficiently and effectively. The existing system was long time process.

The proposed system was developed using PHP. The existing system caused long time transmission process but the system developed now has a very good user-friendly tool, which has a menu-based interface, graphical interface for the end user. After coding and testing, the project is to be installed on the necessary system. The executable file is to be created and loaded in the system. Again the code is tested in the installed system. Installing the developed code in system in the form of executable file is implementation.

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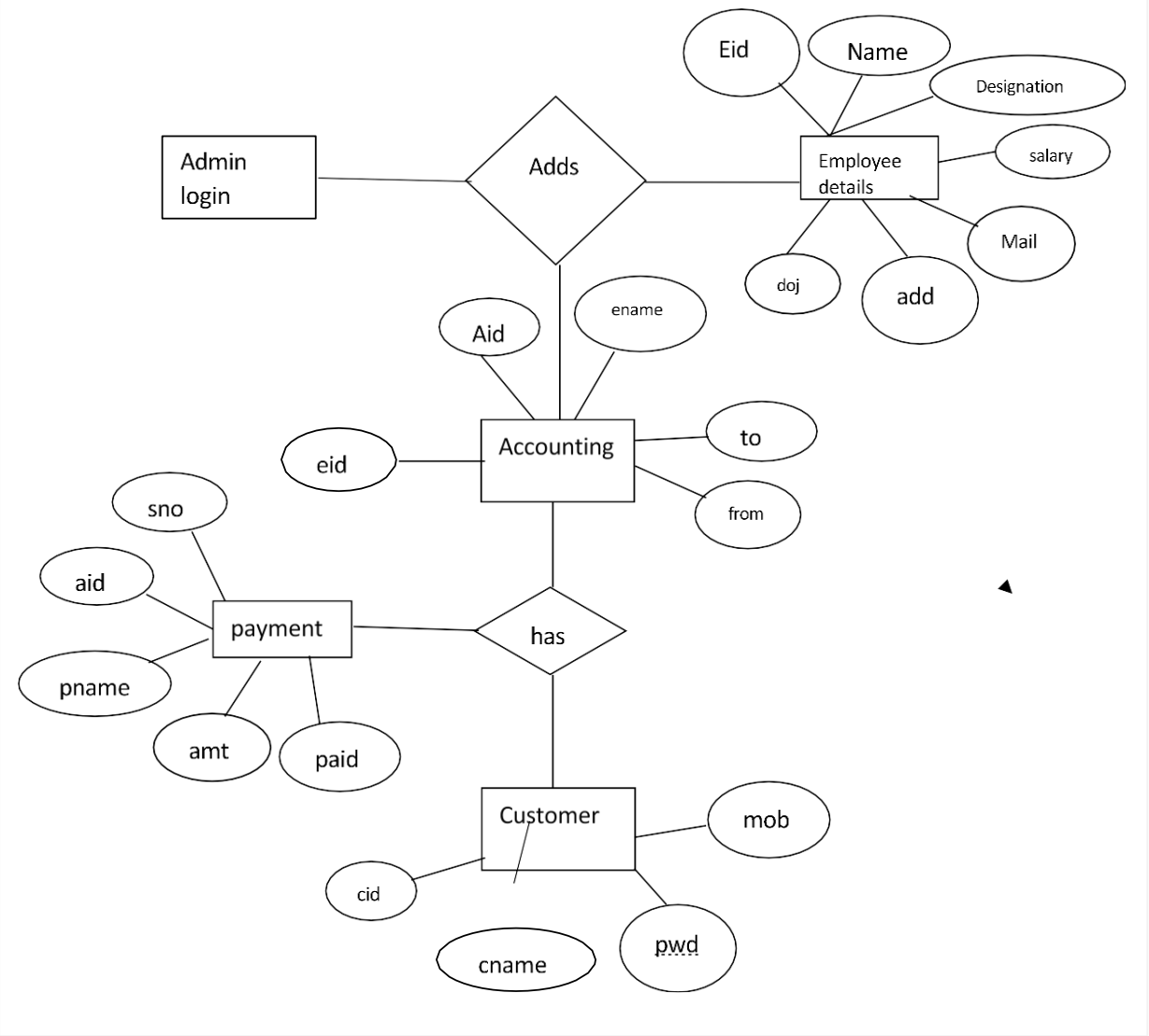

SYSTEM ARCHITECTURE

The architecture of a logistics and cargo automation system is critical to ensuring its efficiency, scalability, and flexibility in handling complex logistics operations. A robust architecture should enable seamless integration of various technologies, optimization algorithms, and real- time data processing. The proposed system architecture for logistics and cargo automation can be divided into several layers, each responsible for specific tasks.

- User Interface (UI)

  The user interface (UI) layer serves as the point of interaction for both logistics personnel and customers. It allows users to monitor, control, and interact with the system.

- Data Collection

  This layer is responsible for gathering data from various sources and devices to enable real-time decision-making and monitoring of logistics operations.

- Data Processing and Integration

  This layer processes raw data collected from the data collection layer, performs analytics, and integrates information from various sources into a unified platform.

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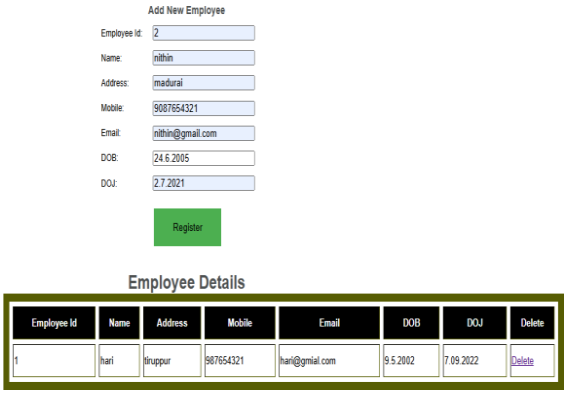
- Security and Privacy
  Protects sensitive data and ensures secure operations within the logistics system, especially concerning cargo and customer information.

5. RESULTS



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6. CONCLUSION

It is concluded that the application works well and satisfy the end users. The application is tested very well and errors are properly debugged. The application is simultaneously accessed from more than one system. Simultaneous login from more than one place is tested.

This system is user friendly so everyone can use easily. Proper documentation is provided. The end user can easily understand how the whole system is implemented by going through the documentation. The system is tested, implemented and the performance is found to be satisfactory. All necessary output is generated. Thus, the paper is completed successfully.

Further enhancements can be made to the application, so that the application functions very attractive and useful manner than the present one. The speed of the transactions become more enough now.

FUTURE SCOPE

Every application has its own merits and demerits. The paper has covered almost all the requirements. Further requirements and improvements can easily be done since the coding is mainly structured or modular in nature. Changing the existing modules or adding new modules can append improvements. Further enhancements can be made to the application, so that the future enhancement is we develop the application through website and useful manner than the present one.

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