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Courier Delivery System Using Floyd Warshall Algorithm Based on Shortest/Optimal Path

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ABSTRACT: The significance of courier services has been stressed in today's fast-paced world since they serve as a link between companies and customers. The expectation of receiving goods and deliveries the same day or within a few days has now become the global standard for the majority of nations. The demand for such delivery services has been significantly altered by the expansion of online selling, E-commerce, and consumer online shopping behaviors. In the Philippines, courier services have expanded along with online shopping, and the ability to buy and sell goods online has increased the demand for these services. A web based platform called an online courier booking management software optimizes all activities associated to the courier industry. It manages the entire procedure, beginning with the booking of the package and ending with its collection and delivery. The process is transparent because all the parcel information and the current status are displayed on a single screen.

KEYWORDS: Courier, Webapplication, Shortest Path, Logistic, Supply Chain Management, Decision Support System, Performance Evaluation

I. INTRODUCTION

The organizations that help transport parcels are known as courier services. A crucial factor that distinguishes a courier service from the more regular and substantial delivery services in this type of service is delivery speed and efficiency. Accurate package pick-up path prediction is required for the logistics sector, which is expanding quickly. The pick-up route prediction challenge seeks to anticipate the courier's choice of pick-up orders for these unpicked-up packages given the courier's unpicked-up packages at time t . A dispatch system's ability to send parcels to couriers more intelligently can be improved by accurate route prediction. It is preferable to allocate the box to the courier.

The pick-up route prediction can be thought of as a combinatorial optimization problem with spatial and timing restrictions. Optimization-based methods primarily concentrate on identifying routes with the lowest predetermined cost making them unable to consider multiple limitations. The project's goal is to produce an effective courier management system, one whose primary functionality—aside from figuring out the courier bill—includes estimating the amount of time needed to get somewhere.

Our primary goal should be managing shipments effectively, as requested by our client. The proposed system automates every high-tech process and solves every issue with the current system. It should maintain a record of customer booking and delivery information, among other things, and can be effective with little effort. the precision with which the bill for each shipment was calculated. the precision with which one can estimate the travel time. User interface simplicity and user-friendliness.

II. RELATED WORK

This study intends to highlight and assess the increase in demand for the top five courier services offered in the Philippines during this COVID 19 epidemic and to determine the courier that end-users prefer. Analyze the usage of courier services throughout the pandemic, the participants' preferred courier providers, their preferred delivery options, and the frequency with which a certain courier service delivered their packages [1].

Examine how personality attributes, social support, and group affiliation affect the purpose of courier turnover. & Based on the given variables and the proposed model, relationships between them were investigated using SPSS 17.0 [2].

In Every day, several parcels are picked up. The dispatch system can more effectively assign packages to couriers if pick-up paths are accurately predicted. & Based on the couriers' decision-making expertise gained from their prior spatial-temporal behaviors, we present a novel model, Deep Route, to forecast the couriers' future package pickup routes [3].

In this paper, authors propose Online Parallel Optimization Approach to Courier Routing Problems & In this research, we have developed an online method to solve routing problems [4].

In this paper, A Decision Support System for Logistics Performance Evaluation of Courier Company. This paper's goal is to offer a prototype for a decision support system based on fuzzy - AHP (FAHP) that considers the knowledge and expertise of decision makers and managers and assesses overall execution in logistics [5].

Various stay scenarios and erroneous delivery locations make it difficult. To estimate the delivery time of waybills based on their trajectories, we present the improved Delivery Time Inference (DTInf+) [6].

In this paper, we propose DTInf+, a system to automatically fill the delivery time based on couriers' trajectories. Our method first separates waybills and stay points detected from trajectories by delivery trips, then mines delivery locations knowledge from historical trips by maintaining address-based mapping and Geocoded location-based mapping and finally, during the online inference, it constructs delivery events for waybills based on offline mined delivery locations, and predicts the delivery caused stay point for each event using a pointer network-like model SP Selector, which is further used to infer the delivery time of waybills in it [7].

III. PROPOSED SYSTEM

1. SYSTEM ARCHITECTURE:

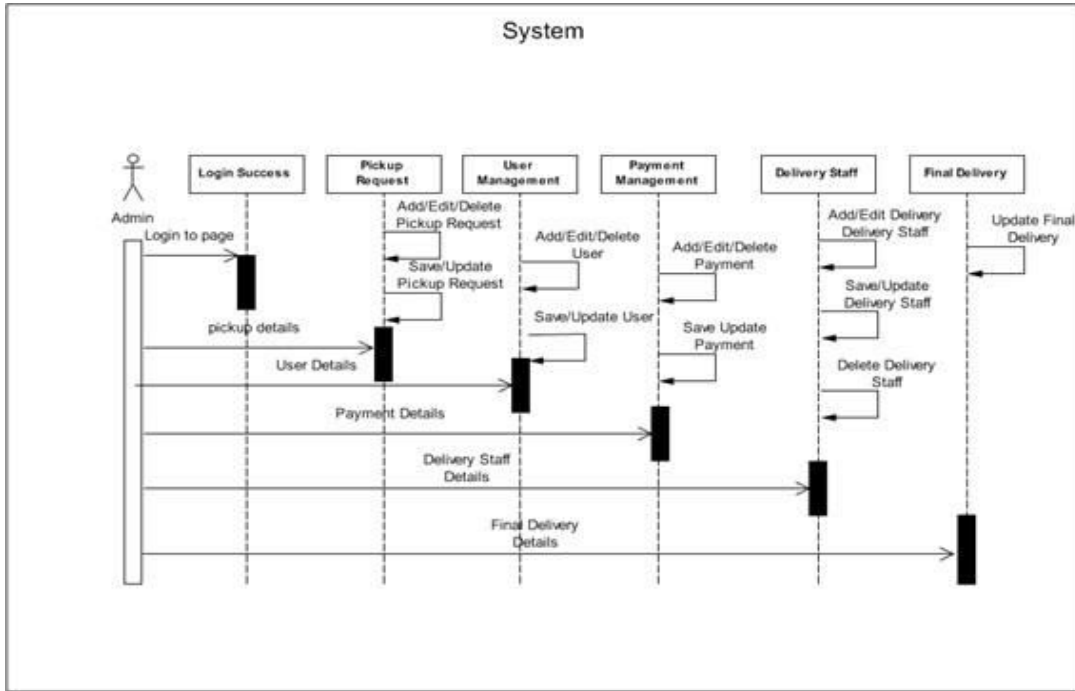


Fig.1: System Architecture

2. BLOCK DIAGRAM:

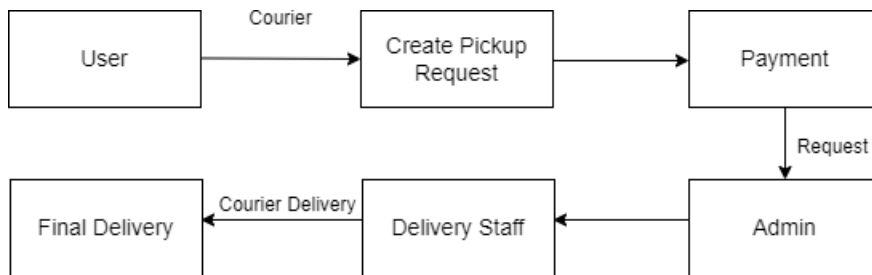
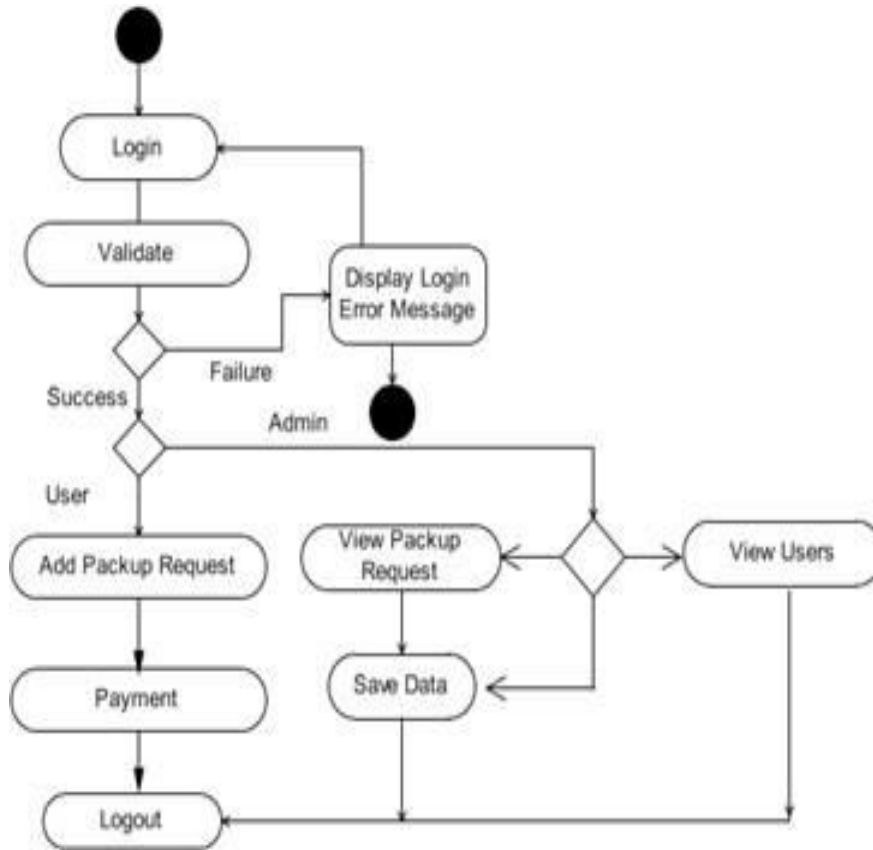


Fig.2: Block Diagram

3. FLOW CHART:

Fig.3: Flow Chart



4. DATA FLOWDIAGRAM:

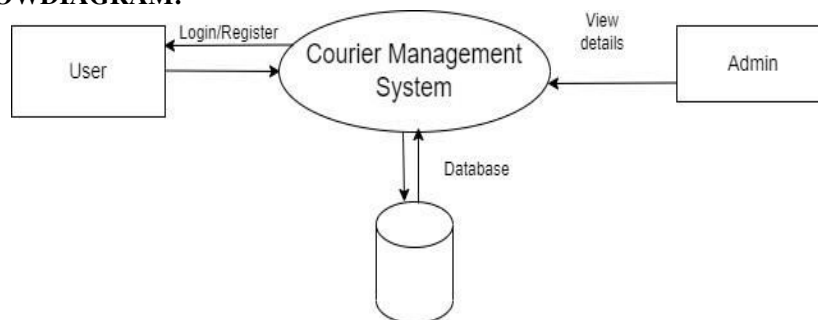


Fig.4.1: DFD Level 0

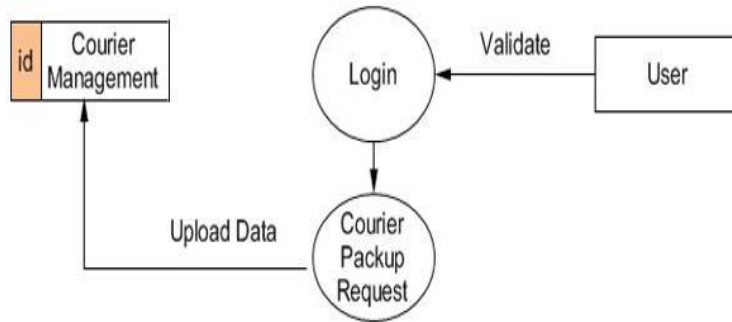


Fig.4.2: DFD Level 1

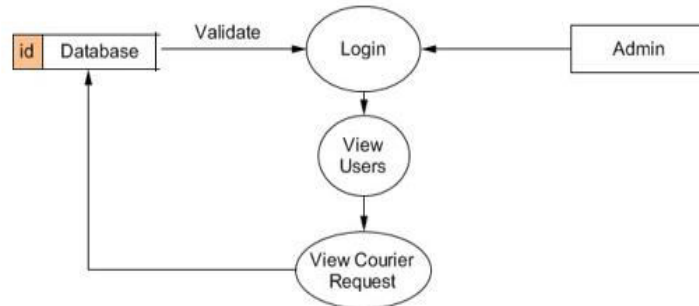
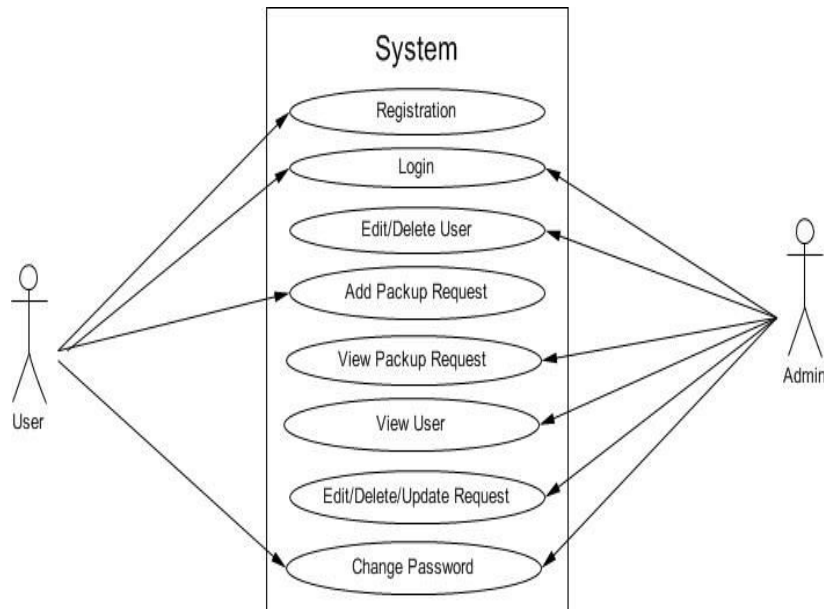


Fig.4.3: DFD Level 2

5. USECASEDIAGRAM:

Fig.5: Use Case Diagram



ADVANTAGES:

- Making deliveries faster means your drivers are free dup to deliver more orders.
- As driver teams grow, it’s important for dispatchers and managers to be able to manage and monitor each team member as easily as possible.
- Anybody who has ever tried to manually optimize delivery routes knows howtime-consumingitis.
- Using delivery managements of ware to run your own delivery operations-means you can be in charge of the entire process, from order to delivery, and create a unique customer experience.

APPLICATION:

- Food Delivery System
- Cart Logistics
- Book Delivery System

COMPARISON:

- Most of the existing Courier Management Systems are not provide facilities for delivery agent/boy to deliver the courier in shortest and minimum time in our delivery system we provide lots of facilities for user who give the order as well as for delivery agent/boy to deliver the courier in optimal path and minimum time.
- In normal courier management system delivery agent takes lots of efforts to deliver the courier, in our delivery system user as well as delivery agent/boy take minimum efforts to deliver the product.

RESULTS AND DISSCUSSION:

- When user launches the application in his/her Desktop, the very first screen which lands is the Home Page. Where he/she see different sections and start button.

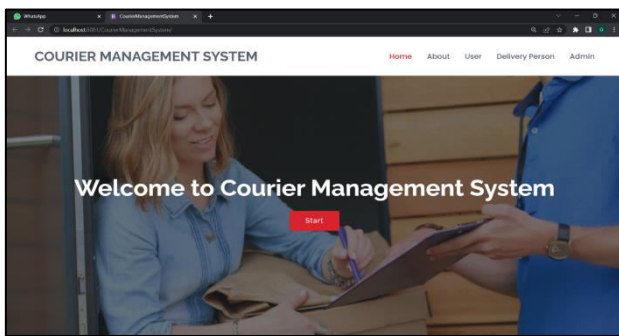


Fig.: Home Page

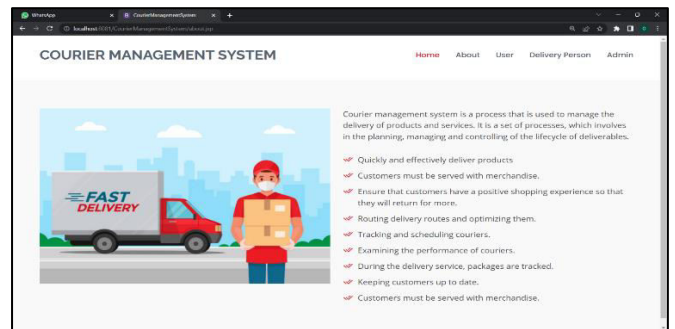


Fig.: About Section

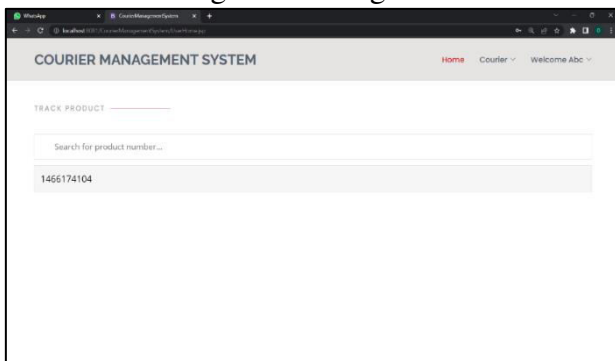


Fig.: User Section

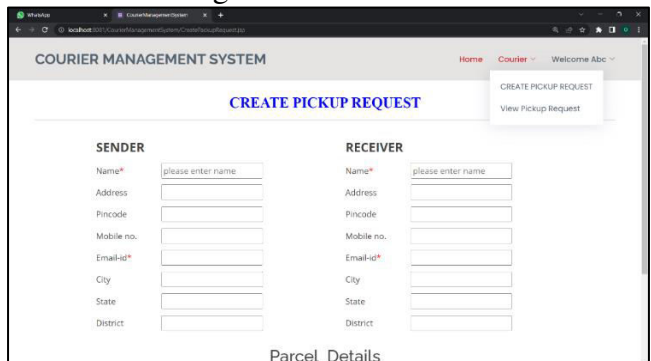


Fig.: Create Pick-up Request

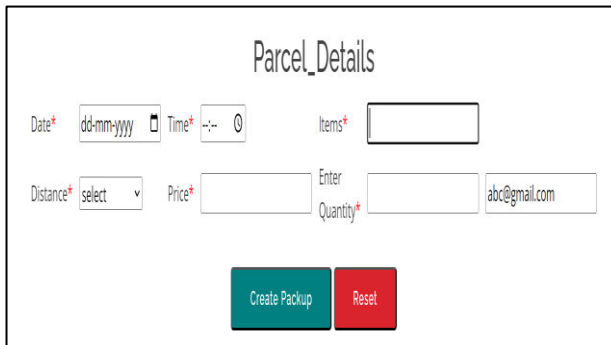


Fig.: Parcel Details

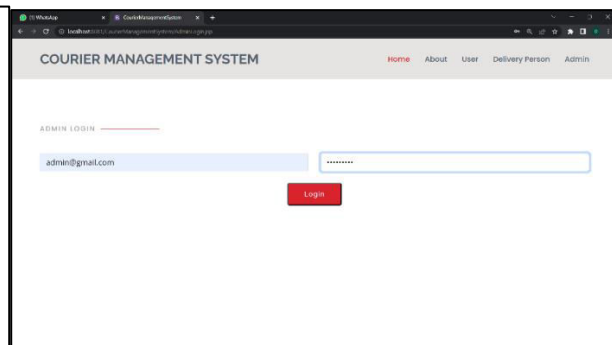


Fig.: Admin Section

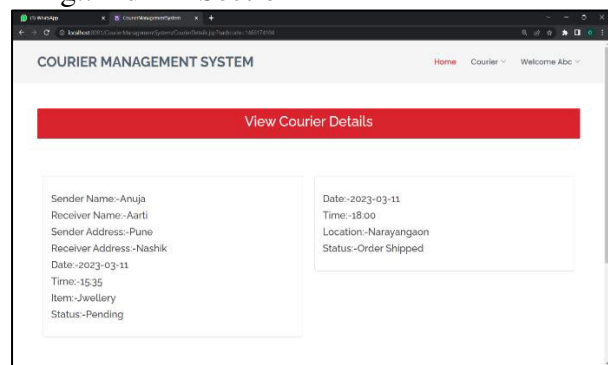
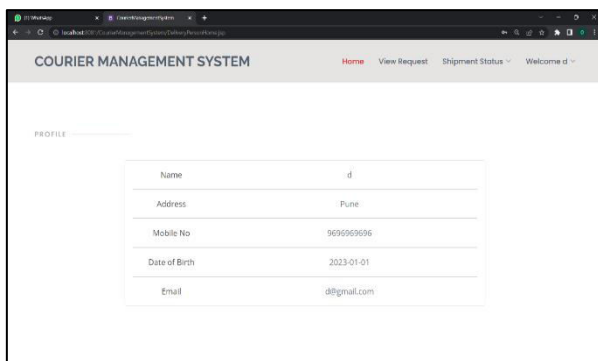


Fig.: Delivery Boy Section Fig.: User Section After All Approval

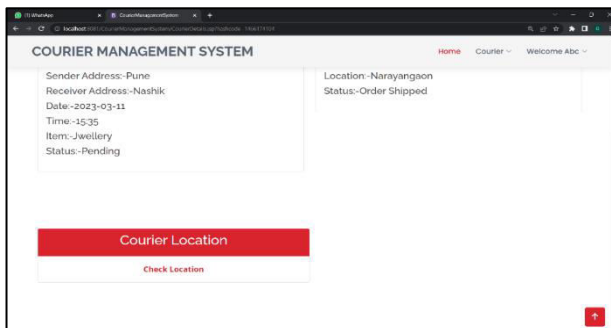


Fig.: User Check Location Section

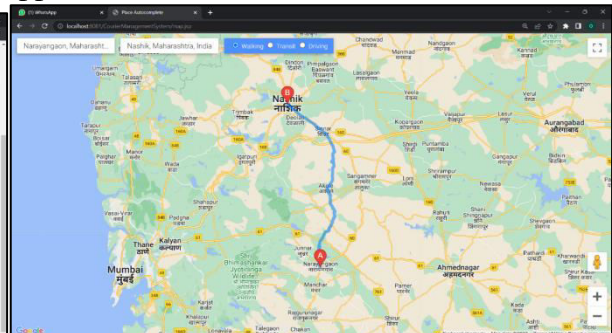


Fig.: Map Section

IV. CONCLUSION

The “Courier Delivery System Based on Shortest/Optimal Path” project was created under the guidance of and with the assistance of courier services. After the system underwent testing, it was determined that its performance was satisfactory. All required output was produced. The system was discovered to be user-friendly and to include customer assistance messages. The system’s menu-driven architecture offers consumers a user-friendly environment. The system was successfully put into use. The system was seen as being more secure and required less staff and working hours to run. As a result, the Project was successfully finished.

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