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On-Time Delivery Opt (ODO) Courier Services using Angular and Spring

Dr.Naveen Durai K[1], Praveen Kumar A[2] , Sri Balaji J C[3]

Assistant Professor, Dept. of CSE , Sri Eshwar College of Engineering, Coimbatore, India[1]

UG Student, Dept. of CSE , Sri Eshwar College of Engineering, Coimbatore, India[2,3]

ABSTRACT: An idea is to develop a software module for a leading Courier Service company, which handles over 20,00,000 parcels per day. However currently, all the parcel handling is managed through manual operations. The manual operation takes much of the time and the man-power. It obviously leads to the dissatisfaction of the customers, which automatically affects the company's growth. So to automate the parcel management, in order to achieve these objectives, increase operational efficiencies, Increase customer experience, Reduce the operational cost The proposed idea is to develop a software module, which satisfies the above complexities and to improve the growth of the courier companies.

I. INTRODUCTION

A software to implement automation in the courier service providing company. The software is named as On-Time Delivery Opt. (ODO) courier services, which provides all the necessary features in a single application. It is a web-based application developed using java, angular, spring boot, hibernate, etc. The features provided by ODO are parcel tracking, transport management, parcel distribution efficiently, etc. It takes the parcel and provides a unique id to the customer, which can be used for tracking. Then the parcels are distributed safely and securely, and it gets delivered in the destination. Previously in Courier Service providing companies, the parcels are handled manually with lots and lots of man-power. It is more convenient for a small scale courier service, which performs within a zone. When these companies try to spread their wings to fly higher, they face a major problem in managing the parcels and logging them. Man-power can help to maintain a reputation to a certain extent, when there is an increment in the parcels, the man-power isn't sufficient. Moreover, it takes an ample time to get through the process. So to overcome these issues, Man-power and the automation should be intertwined.

As the rate of people is getting into a bigger number, should be used for maintaining those automations and make sure they work perfectly.

The basic idea to solve the complications faced in previous decades is to develop a software model. This tool helps by handling more parcels at a time and reduces man-power and time. It increases the operational efficiencies, customer experience and reduces the operational cost.

II. RELATED WORKS

There are many courier service companies provides courier services like shipping parcels with in a particular zone. Some companies do couriers with limited orders. There are companies which delivers only small packages. Few companies' charges way more than it works.

Other companies have no options for the customers to track parcels and their locations. ODO Courier service provides Geolocation Service to track the parcels and update them to server.

The features missing in other companies and the key features in ODO Courier Services are security, management of parcels, etc. The security is handled using OAUTH 2.0 authentication services, which provides a well secured environment. The parcels are managed Parcel Management team, the parcel tracking are monitored by Parcel Tracking team, the parcels are shipped efficiently by Transport Management team and a unique id is generated for the customers to track their parcel.

The ODO courier service provides a secured transactions and delivering parcels to customers.

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III. MODULE DESCRIPTION

1. SSO MODULE

The login module is built considering the security and the users secured authentication with the help of OAUTH 2 authentication. OAUTH 2 is an authentication technique, it is used for security purposes.

2. CONSUMER PARCEL TRACKING MODULE

Tracking a parcel is done by the Geo Location API services, which provides the current location / live location of the parcel. The parcel can be tracked with the help of a unique ID, which is generated after the billing process with the help of user data and the parcel data.

3. TRANSPORTATION MODULE

The purpose of transport manager module is to manage the parcels for transport and to find the optimised route to the destination, which cuts the operational cost, fuel cost, trucks mechanical service, etc.

4. PARCEL REGISTERING & MONITORING MODULE

The parcel registering module is where the data from user is fed to the forms. The user/customer data and the parcel data are fed to the form.The monitoring module is where the customer and the branch officers can track/monitor the parcel with the help of the unique ID.

5. ADMIN

The admin module is dedicatedly developed for admins to view, edit stats and analytics of the branch. The admins create profile for the branch officers for the security reasons. An admin can add, remove an officer; can store, retrieve, track from the database.

IV. ER DIAGRAM

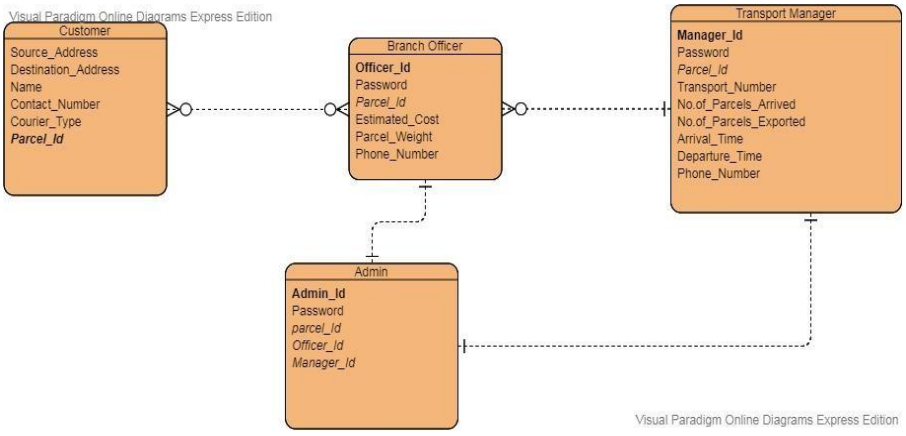

Fig. 1ER Diagram

V. PROPOSED IMPLEMENTATION

System Specifications

Minimum 8GB DDR3 RAM
Minimum i3 Processor (Processing Speed 3GHz)
Minimum 500GB of Hard Disk
Visual Studio Code - 1.42.0
Angular - 9.0

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Node JS - 12.14.1
OAUTH - 2.0
MySQL Workbench - 8.0 CE
Spring Tool Suite - 3.9

The customer couriers his/her parcel in the courier office, the branch manager generates the bill with a unique ID to track the parcel.

A customer is accessing the site to track their parcel with the unique ID issued to them. The customer enters the ID and clicks the track button. An HTTP Request is sent to the server and the required data is fetched and the response for the request is sent back. The location of the parcel is sent back for the user. The response is displayed in the interface. The Branch Officers can add parcels to the database and have access to track them.
The admins can add the Branch Officer and the Transport Manager to the database and can also track the parcel. The Transport Manager updates the parcel location to the database.

This is how the system is implemented and so sooner there are many new cool features to be updated in near future to make the user feel comfortable and ship register their parcel from home, no need to travel to register the parcel.

VI. RESULTS

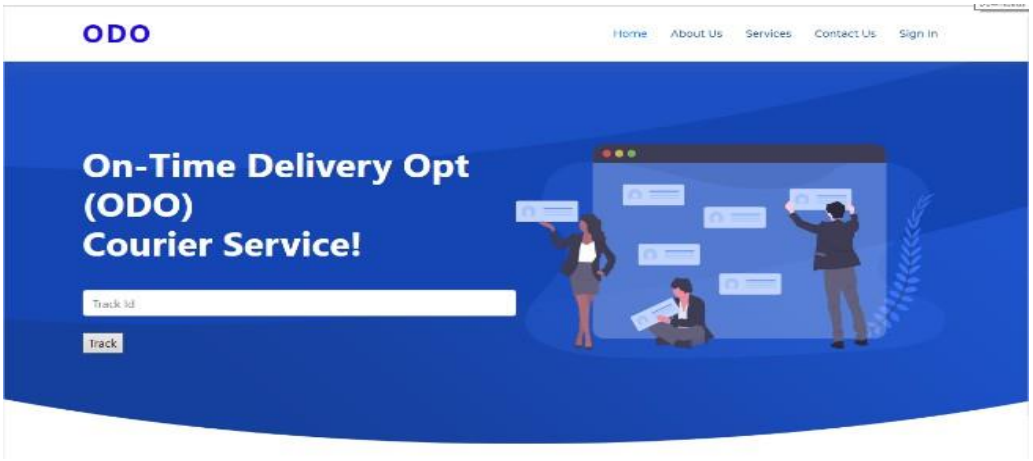

Fig. 2 MainPage

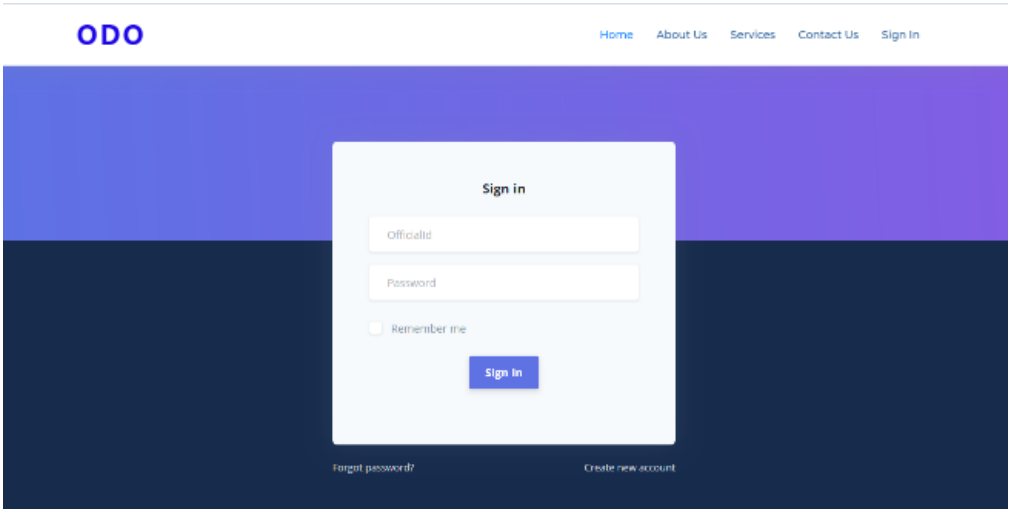

Fig. 3Login Page

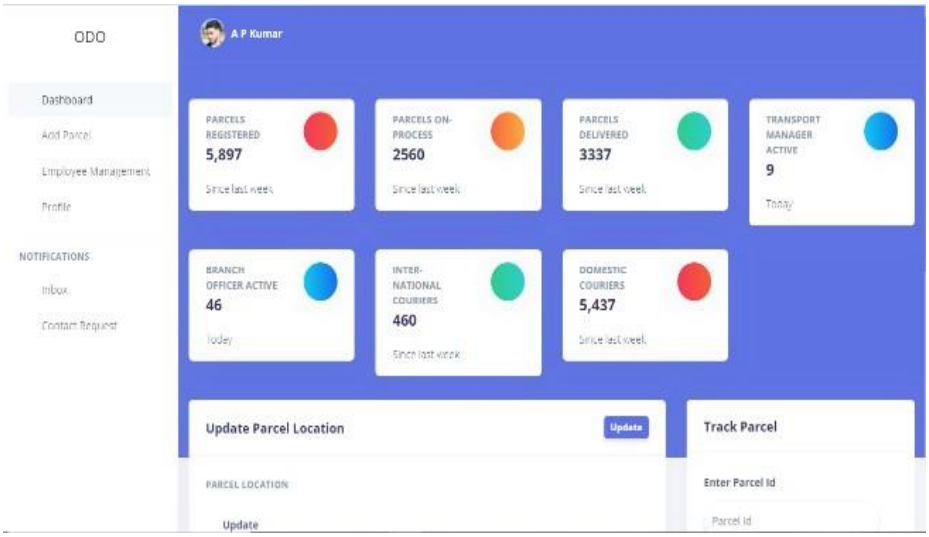

Fig. 4 Admin Dashboard

VIII. CONCLUSION

The idea to develop a software module for a courier services company to make their business easier and make big numbers as revenue is implemented as ODO Courier Services. This software module implements the basic needs and automations and more new features to be implemented in near future as updates. It provides the basic services like registering parcel, tracking parcel, transporting parcel, adding employees, live location of parcel, etc. This tool helps the courier service companies to make their work easier using automations and the data are handled without any interruptions. The delivered parcels details are stored for 90 days and the it is automatically deleted from the database to maintain the optimal user experience.

VII. FUTURE SCOPE

The Future scope of ODO courier service is to function globally. In 400BC, the prince Cyrus the Younger started couriers with the help of the pigeons. His vision of delivering message to people at other end is accomplished. But he'd never thought delivering packages this much faster.

In 297AC, the people of Westeros used ravens to message people around the world. The ravens played a major role is capturing the throne between the houses. The Queen Daenerys Targaryen used ravens and dragons to capture the throne.

Like Cyrus the younger, Daenerys many Kingdoms used their own form of messaging medium. Since their period couriers played a major role. The growth of courier system from those period till now is spectacular.

In near future the courier system will take its form into an AI/ML. With the help of Virtual Reality and the Augmented Reality technologies, the growth of courier system will take a different form and the business will take part in a hype.

In past, the courier services played major role in wars. But in this modern era, the uplift of the courier services will help in maintaining world peace.

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