Blockchain based Fleet Management System for Efficient Transportation

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Abstract:- In the current Fleet Management System, Fleet management is complex, frustrating and leads to mistakes made by many people. To make the process easier and simpler this shipping program is useful. In order to plan vehicles and staff, the manager must have an idea of how many vehicles are available and available for distribution. Also, the system should follow all the details because sometimes cars can be sent to insurance. The proposed system keeps track of information about Vehicles, Car Maintenance, Car Repair, Car Parts, Staff, Location and much more. The plan will also track maintenance, condition of vehicles and available transport vehicles.

Keywords:- Admin module, MongoDB, block chain, Node Js, React Js.

I. INTRODUCTION

The Fleet management system keeps track of information about specific information including vehicle information, driver information and user information. It also tracks the care done to different vehicles for travel purposes. System users include managers and owners of the various departments assigned to the administrator. Here the regulator may be the owner of the transport company or the manager of the transport.Details include whether the vehicle is new or seized. Newly appointed and existing staff. details are stored including, personal information and job information. Details regarding vehicle maintenance such as repairs/repairs and future repairs are also kept. Car maintenance can be done, depending on the type of car. Details of parts and Inventory used by the vehicle are kept. For each component of the vehicle, the recording level and the number of recordings are specified in advance. The car dealer and parts do the necessary maintenance on the car.

Introduction of block chain in fleet management results in a fruitful solution. It Covers areas like freight tracking payment transaction, ordering processes and customer clearance.Blockchain offers many options in the security sector. The most effective blockchain system is a consortium that only allows team members to access a series of information. Vehicle managers, owners, drivers, employees, vendors, and anyone else in the supply chain can access blockchain content, creating an efficient, transparent system with a high level of security. Fleets will benefit from using the blockchain in everything from car repairs and route planning to compliance and payment. Blockchain can provide more access and more efficiency in all aspects of vehicle management and operations.

II. LITERATURE REVIEW

Vinay Kukreja et. al, in the paper "Automatic Fleet Tracking & Scheduling Management System" [1], the author suggested that with increasing shipping numbers, budget and time, vehicle planning, safety concerns about speeding, private use of ships by pilots to be successful. Its benefits have led to the development of a vehicle management software program for car owners. This assists the former naval office and commander to effectively and efficiently control ships. The Fleet Management System allows transportation companies to eliminate or reduce vehicle-related risks, improve production, planning and reduce their total transportation costs. Every car is provided with a unique auto-generated ID. Customers or passengers book their tickets using the booking system.

Priya Singh et. al., in the paper "Smart Fleet Management System Using loT, Computer Vision, Cloud Computing and Machine Learning Technologies" [2]. The purpose of this paper was to introduce the effective use of niche technology in solving the most important issues of Fleet Industry. Proposed fleet management system Driver authentication and driving pattern monitoring, Fuel use prediction modules, vehicle maintenance, bulk shipping tracking and driver information can be measured. Every five minutes interval, the vehicle unit with the help of the mobile and communication system sends the length, latitude speed, start time and shutdown of the bus engine to the central server Continuous length, latitude and navigation mode are transferred to Google Maps.

Sudip Maitra et. al., in the paper "Securing a vehicle management through blockchain and internet of things" [3]. In their paper "Protecting vehicle management through blockchain and internet of things", have explained that the design of the automotive management system also examines the same in terms of latency and power consumption. Procrastination is imminent and harnesses the power of great improvements from common solutions. With the increase in shipping numbers on the road, budget and time constraints, vessel planning, safety concerns about ship speed, private use of ships by pilots to their advantage have led to the design of a cruise control software program.

Cui Dong, et. al., In the paper "Method of Intelligent Vehicle Management Analysis and System Design" [4]. With the aim of improving the efficiency of the automotive management system and improving the efficiency of modern car management, this paper sets out a new smart management system based on a variety of advanced science and technology. The program is largely based on the online environment and incorporates a variety of advanced science and technolo-

gies, such as automated technology, intellectual property technology and online material technology.

Kharanshu Bhavasar et. al, in the paper "Vehicle Fleet Management System and Safety Functions" [5], have explained that with the increase in the number of vehicles worldwide, all countries are facing a serious problem of road accidents that occur as a result of mechanical faults or human negligence. Thus, the system allows car companies to collect data on commercial vehicles so that the use and quality of oil and cooling can be analyzed in different climatic conditions by machine learning algorithms. This program helps to manage oil, cooling, oil levels of the brakes with the help of nerves. And overcoming dangers due to the bright light at night. At the same time, GPS captures the car's geo-location and keeps all operations to the clouds, which is where the car goes. In the event of an accident.

Falah Y.H. Ahmed, in the paper "Improvement of Vehicle Management System (IVMS)" [6]. The research paper focuses on the development of Unihomes' Vehicle Management System (VMS) software. The development of this membership management system was proposed as a result of the standard automotive management practices conducted by Unihomes, which resulted in various vehicle management issues, hiring and operational details. In particular, problems identified with vehicles and rental information are not available on the website, long processing time to produce reports, faulty vehicles are booked. Therefore, the main objectives of this development project were to address many of the challenges and difficulties encountered as a result of standard vehicle management processes.

III. PROBLEM STATEMENT

Managing large-scale Fleet information personally is a tedious and often flawed task. In order to organize cars and staff, the organizer should not have too many cars available. Tracking details of repairs are required as sometimes cars can be sent to insurance. All of these things cannot be accomplished in an existing system. From major road accidents to unpredictable weather, the problem could put both your drivers and your cars at risk. Fleet tracking lets you know immediately if you have assets in an active environment, giving you both peace of mind and the ability to take action if needed.

IV. SYSTEM OVERVIEW

The Fig 1represents the block diagram of a fleet management system using block chain technology . The purpose of using a block chain system is to keep in check the records of transactions that access between the linked system. It also provides security against hackers. If someone tries to change or replace the code without the permission of the participants involved in it, the chain will automatically be broken. Securing all the details of the participants. In this block diagram a database section is created where user and admin have access to it .The admin has the entire vehicle information, driver and all user information. Whenever the client wants to access the information about his vehicle he must enter the vehicle booking number given to him by the admin. The person en-

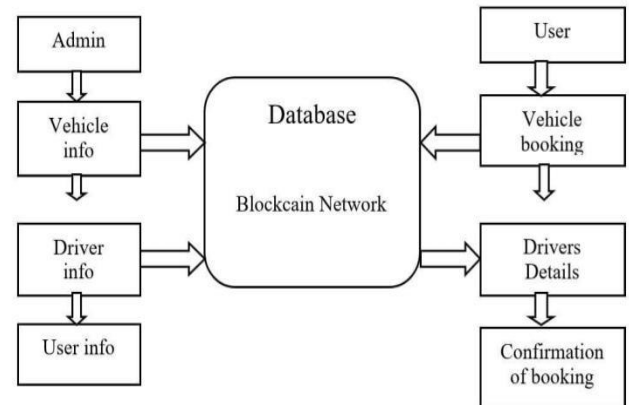ters the booking number and all the details are acquired and confirm his booking details.

Fig. 1: Overview of the system

The admin assigns a driver whenever a Booking is made. The customer is provided with the driver details. In this way both the driver and client do not have access to change the details which are only given to the admin. Admin will have entire access so that he can update or delete or modify the data whenever it's necessary. Vehicle details will contain vehicle model, manufacturing details, about value etc. By using block chain techniques, transaction processes can happen securely.

When a user books a car, the controller provides the driver. Initially, user information from the website was assigned to the driver. The block includes user data, controller and driver information. Now, user information is sent to the driver and even the customer receives the driver information. User cannot modify data himself. If it is able to do so the user address changes which will cause a change in the hash address of the controller and driver.

Similarly, some users can book a car and the details are secure and the car booking system is organized.

V. WORK COMPLETED & EXPECTED RESULT

Fleet management system is an application that manages, controls, analyses, optimizes, and schedules tasks for any business. Homepage is the default or preset page for a site. It is the first page that visitors see when they upload a URL. Web administrators can manage the homepage as a way to direct user information.

Admin Login: A login page is a web page or login page that requires admin identification and verification, which is usually done by entering a username and password combination which is depicted in Fig 2.
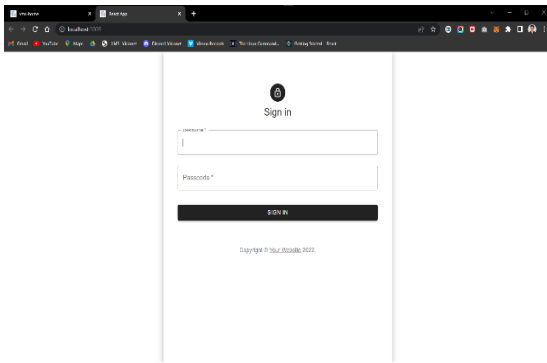
Fig. 2: Admin Login

Admin Dashboard: The Fig 3 shows administrators' direct access to encopass's essential tools for quick and easy public administration. The dashboard acts as a control homepage that has access to important parts of your community.
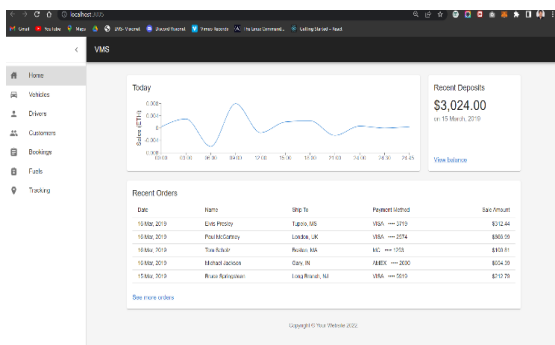

Fig. 3: Admin Dashboard

Vehicle List: Fig 4 represents vehicle list section all assigned and unassigned vehicle is monitored. Also, the adding of vehicle details and removing vehicle can be performed. Overall, in this section vehicles status can be tracked.
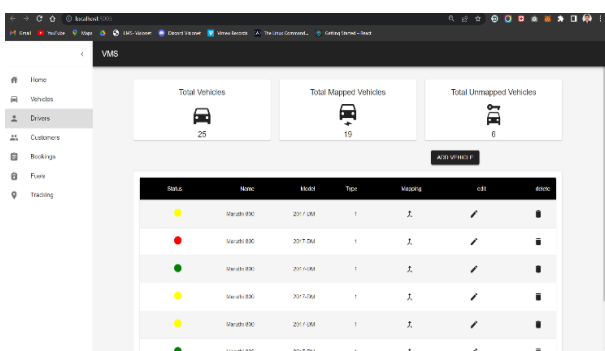

Fig. 4: Vehicle List

User Home: The Fig 5 shows a booking window where users can book a vehicle with the details such as from and to address.
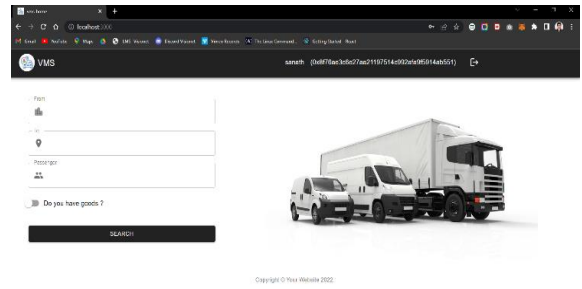

Fig. 5: User Home

User Login: The Fig 6 shows the process by which a person gains access to a computer system using an email id and password.
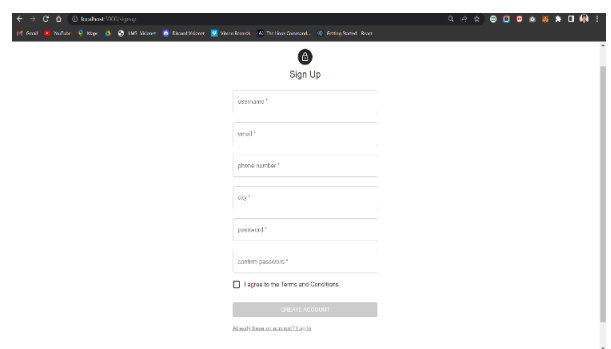

Fig. 6: User Login

User Sign Up: A registered user is a user of a website, program, or other program that you have previously registered. Registered users often provide some type of information (such as username or email address, and password) in the system to verify their identity: this is known as login. Systems intended for public use generally allow for who they are. any user to register by simply selecting the register or registration function and providing this information for the first time. Registered users may be granted more rights than those granted to unregistered users which is depicted in Fig 7.
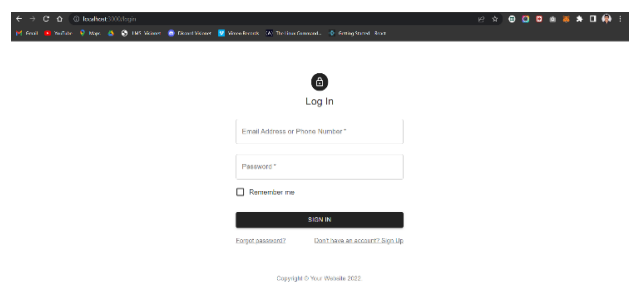

Fig. 7: User Sign Up

User Password Reset: The password reset is to deactivate the current password on a website, service, or device, and create a new one. Password can be reset using software or service settings, or by contacting the customer service department which is depicted in Fig 8.
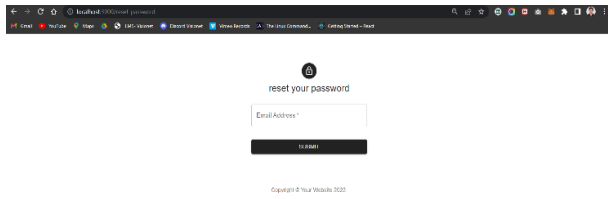
Fig. 8: User Password Reset

VI. CONCLUSION

Fleet management systems can be used by anyone who owns multiple vehicles and would like to track each vehicle in real time. In this way it is easy to track the progress of each vehicle and the date information of each vehicle. This app also reveals an API that can show all group vehicles on a map. For secure and secure paid payment service blockchain technology has been used. This web application can be used by a variety of users for various purposes like booking, tracking, secure payment etc.

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