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Vehicle Tracking Using Android Driver Mobile GPS Tracking

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ABSTRACT

The Global Positioning System (GPS) is a space-based satellite navigation system that provides location information. This system uses GPS to track the location of the vehicle. This system will track location of the vehicle and will send details about the location to the admin. This system helps admin to find out the location of the driver driving the vehicle. Admin will know which driver is in which location. This system can be implemented in call taxi to find out the location of the driver driving the vehicle and will help the admin to allocate taxi to the customer. User login to the system using his user id and password. System will track the user's location with the help of GPS and will send this detail to admin. Admin will access the system using his admin ID and password and will view the location of the driver driving the vehicle based on these details he will perform various operations. This application helps the admin to find the location of various drivers. He can keep record of the driver's attendance that will help him to calculate salary of the driver very easily. Driver cannot do any type of cheating otherwise admin can easily find out using this system.

Keywords— vehicle, tracking using gps, vehicle tracking, mobile gps, gps tracking.

INTRODUCTION

Vehicle Tracking is based on an android based mobile application and web based management system. The main intention of this system is to render easy use and helpful mobile application to the android users which will make them enable to track a nearest vehicle and reserve sitting from their location comfortably instead of waiting in the road.

This system uses smart phone and personal computer in which the first one is used to monitor the vehicle location and the other one act as a tracker. This system uses android mobile phone as mobile terminal because it is more convenient and flexible. Android mobile phone will link to the web server and enter the information. Thus, user can retrieve the information for further action. GPS is used to provide a very accurate location, time, and date. The satellite will transmit the information to the GPS so that GPS can receive the information.

By measuring the distance from satellite, it allows the data to identify the location[Kushwaha et al (2011)]. Two types of user can use this application. They are driver and passenger. Drivers have to register the information (name, phone, cab no, email and password). Then driver sign in the information (email and password) that passed to the server. Server checks whether the driver is registered or not. If registered, then next activity will work, otherwise error message will show.

Passengers have to register this information (name, phone number, address, email and password). Then email and password passed to the server. Server check whether the passenger is registered or not. If registered, then the passenger can track nearer most vehicle location. Finally, the nearer most driver list is shown and passengers can call the nearest driver. The users (passengers and drivers) will be much benefited from this vehicle tracking software.

This application will help the passenger (registered) to find the near most vehicles at a short time. It also helps the drivers to find passengers in a short period of times. User friendly interfaces are developed to easy use the software. All information is stored in an organized way easily. This software uses the best searching and finding techniques to enhance the performances of vehicle tracking. The remaining part of the paper is structured as follows: Section two presents the related works. Section three provides an overview of the related technology. Section four and five presents the architecture, design and implementation of the proposed system. Experimental results and discussion are presented in section six. A conclusion is included to summaries the contribution of the research.

LITERATURE REVIEW

Uber is a location-based app that provides hiring an on-demand private driver. Now it operates in 643+ cities in 77 countries. Uber is convenient, inexpensive and safe taxi service for riders. It makes hiring a private driver to pick up passengers and take them to their destination with the tap of a button on any smart phone device.

Uber provides drivers an exceptional pay, allows them to be their own boss and even receive tips. After each ride passengers get to rate their driver and overall experience and drivers are reliant on good overall ratings (otherwise they will get the boot). Likewise after each ride drivers get to rate the

passenger. So if a rider is troublesome or belligerent, other drivers can get a heads up. Uber is extremely safe for "taxi" service and it has been giving their driver and passenger overall user experience and personal security protocols.
Real time vehicle monitoring system using LCD screens has been proposed for the Mumbai City in India.

The main objective of the GPS based vehicle monitoring system is to help the passengers of Mumbai City by giving proper instructions whether to wait for the vehicle or walk or take alternate transport [Chheda et al (2012)].

In SMS Based Vehicle Tracking System, SMS is used over the GSM networks to transfer the coordinates of vehicle location. The vehicle with GPS receiver calculates the latitude and longitude of the vehicle coordinates. This information is directed to the central server using SMS over the GSM networks and is stored in the database.
The information can be retrieved by sending the vehicle number and the route number. The arrival time of the vehicle is sent to the user over SMS [Maruthi and Jayakumari (2014)]. Web based application system has been proposed for the Baghdad City in Iraq. This system is developed using the central server system, vehicle-mounted tracking devices and the web based application.

Web based application queries about the vehicles real time location and tracks the route on the map through the web application with the embedded Google map and interacts with the database server for the track details. Using the internet access web based application also permits users with diverse operating system platforms to easily query the real time location of vehicle [Salim and Idrees (2013)].
Mobile Application has been proposed for the Pune City in India. Using Android application bus tracking system uses the inbuilt GPS service provided by the Smartphone. In each bus smart phone is mounted to get its GPS coordinates. To the central server these coordinates are transferred.

Through android application users can retrieve information about the bus number, route number and the arrival time of the bus. Google maps are used to track the bus and the user graphically [Sardey et al (2014)]. The usage of public transport instead of private vehicles is encouraged in VT and PIS (Vehicle Tracking and Passenger Information System) by APSRTC. VT and PIS (Vehicle Tracking and Passenger Information System) implement APSRTC (Andhra Pradesh State Road Transport Corporation).

This system is developed to overcome the crucial problem of road congestion by making it comfortable, convenient, attractive and introducing value added services.

RELATED TECHNOLOGY

Different technologies are used to develop this application. The technologies are GPS, Android, XAMPP, PHP and MYSQL. Familiarization of these technologies is given below:

A. GPS

GPS is a radio navigation system that makes allowance for land, sea, and airborne users to determine their appropriate location, velocity, and 24 hours a day, in all weather circumstances, anywhere in the world. GPS stands for Global Positioning System. It is well-known navigation and positioning "technology"—namely the magnetic compass, the sextant, the chronometer, and radio-based devices—impractical and obsolete [Johnson and Russell (1995)].

The GPS satellites are in orbit at 10,600 miles above the earth. Each day every satellite checks the time and position with a ground station and makes any minor correction. By getting bearings from three of the four satellites on the ground, the GPS receiver which contains a computer triangulates its own position. For most receivers, the result is provided in the form of a geographic position - longitude and latitude within a few meters [Brown et al (1995)]. The position can be shown on the map, if the receiver is equipped with a display screen. The GPS receiver may be able to calculate our speed and direction of travel and give us estimated times of arrival to specified destinations, when we are moving. Geographic Information and map making data can be stored by some specialized GPS receivers [Caron and Francois (2006)].

B. Android

The Android operating system is made-up of a virtual machine that runs on the Linux kernel, plus APIs and built-in applications. The open source code under the Apache License is released by Google. Additionally, Android has a large community where developers write application in a customized version of the Java programming language primarily [Meier and Reto (2012)].

C. XAMPP

XAMPP contains Cross platform(X), Apache(A), MariaDB(M), PHP(P) and Perl(P). In both a full and a standard version, self-contained and multiple instances of XAMPP is offered. Without any access to the internet XAMPP is used as a development tool and web server solution stack package to allow website designers and programmers to test their work on their own computers [Dvorski and Dalibor (2007)].

D. PHP

PHP is used in server-side scripting language which is designed for web development and it is also used as a general-purpose programming language. The web server puts together the results of the interpreted and executed PHP code. With a command-line interface (CLI) PHP code is also executed and is used to implement standalone graphical application [Lengstorf et al (2009)].

E. MYSQL

"My while SQL" is the shortening for structured query language. MYSQL is an open source relational database management system (RDBMS) which is introduce in July 2013. It is the world's second most extensively used RDBMS and most extensively used open source client server model RDBMS. [Meloni and Julie (2012)].

Existing System

Drivers heading for their car every morning. For all those drivers driver have to go office during peak hour and record his attendance. And driver may miss lot of customer. Those have to go some destination in hurry.The obvious solution to this is for the Driver have to maintain his own attendance every day till month end. This is not a real solution.

Proposed System

The proposed system overview for this system. The Global Positioning System (GPS) is a space-based satellite navigation system that provides location information. This system uses GPS to track the location of the vehicle. This system will track location of the vehicle and will send details about the location to the admin.

The server will collect the data and store them only a database. This data will be analyzed and displayed on admin dashboard that can be accessed by the admin only.

Using GPS data reports will be generated which can be monitored by the admins through the admin dashboard

Based on the GPS data collected, Admin can see routes generated by car GPS via google maps API to very efficiently.

Driver Can Add Fuel Fill up detail with date information and cost of Fill up

Driver Can Add Car Service Detail with date information and cost of service with detail description

ER DIAGRAM
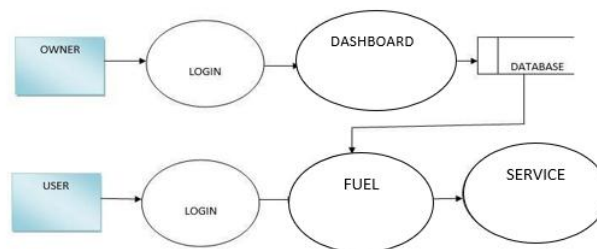
MODULE DESCRIPTION

The modules are,
Login
Registration
Fuel
Service

Admin will provide a unique ID and password to each customer in which they can enter in the system for accessing server. The two types of authentications i.e. 1. Admin and 2. Driver.

Registration

Driver can register using mobile application with unique ID and password for each driver.
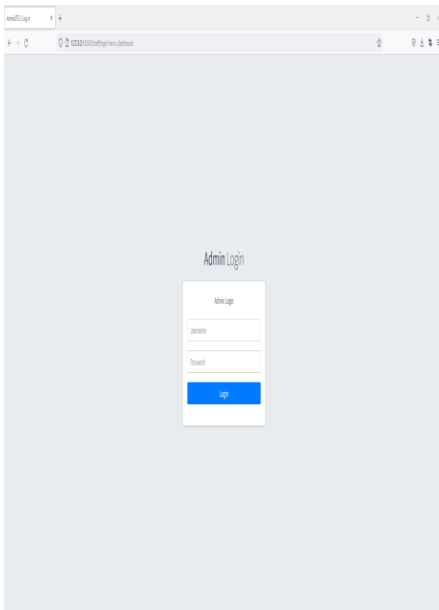
Fuel

To retrieve Fuel information from backend server. And displayed from backend server or android mobile application

Service

To retrieve Service information from backend server. And displayed from backend server or android mobile application
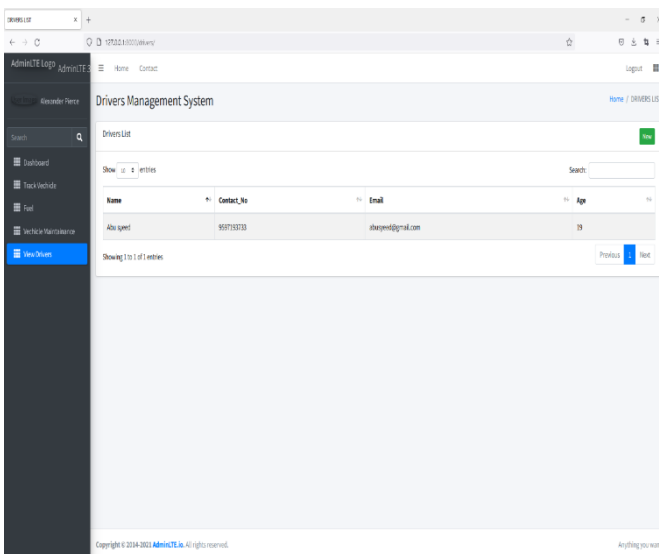
SCREEN SHOT

Login

The Login Page act as the entry point of the system.
Login Page is used to authenticate the system with valid UserName and Password

Drivers

It shows the details of the drivers.
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Fuel

It shows the details of the fuel.

CONCLUSIONS

The successful creation of fully functioning of Vehicle tracking system provides a feasible solution to manual complex vehicle reservation system. The system allows users to complete online registration rapidly, helps to track the nearest vehicle providing benefits in terms of privacy. This system introduces the detailed process of the Vehicle Tracking System under Android operating system. The prospect for the mobile phone is very bright, particularly for the smart phone with an Android system. Overall this application is user friendly and shows better performance. This application is only usable for one operating system android devices and not usable for iOS devices. We want to implement it with iOS in future. Without internet connection, this system doesn't work. Record keeping is too much analogous in the existing system. We want to extend this research by solving these problems.

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