REAL TIME TRANSPORT TRACKING AND MANAGEMENT SYSTEM USING GOOGLE API

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Abstract - *Travelling is a large growing business in India and other countries. We researched and observed the working of the Bus Reservation System and after going through it, we got to know that many of the operations are done manually and took a lot of time and sometimes errors were made. The App for the Manager is designed to serve as a tracking system which helps the Manager to see the current location of the buses and to calculate the expected and arrival time of the bus to reach the destination. The Location of the buses can be seen on the App of the Manager. The location is also given to a third party termed as "Friend" for safety purposes. The system is already developed which will be put on the cloud platform soon, so that it is available to every user.*

Key Words: GPS, Google API, Android, Real Time Tracking, developing.

1. INTRODUCTION

Android is very trending because it is an open source platform and is highly suitable for expansion as the developer sees fit. Hence building a mobile application for Android devices is very common these days.

With Google's various APIs (Application Programming Interface) the development of location-based services has become less hectic than before. Location-Based Services (LBS) denotes applications integrating geographic location to provide a certain service. Examples of such applications include emergency services, car navigation systems or tourist tour planning information delivery. [10]

This development of technology has allowed the concept of an intelligent transport system. There is tremendous growth in the transport sector. The system proposed in this paper states the smart way to manage transport system. Considering all the issues and problems such as time, ease of transport, safety, and user-friendly environment, this system has been designed.

2. DETAILED PROBLEM DEFINATION

By law, reckless driving is a major moving traffic violation. It is usually a more serious offense than careless driving, improper driving, or driving without due care and attention and is often punishable by fines, imprisonment, or driver's license suspension or revocation. The bus drivers, in order to save time and money, they follow wrong routes or take wrong decisions which leads to the blaming of the whole organization or the manager. Also this puts a question on safety of passengers. Also the passenger need to think twice before travelling by bus.

Fig -1: Road accidents most dangerous for India [11]

As shown in the above diagram, Road Accidents cause more deaths than any other causes. Hence there is a need of tracking the bus along with the driver. Tracking the busses will make the Agency or the manager more responsible for if any accident that may take place.

3. EXISTING SYSTEM

Bus movements are monitored and recorded by the time-keepers available at the main bus-stands in main cities. These time-keepers keep records about arrival and departure buses from the Stand. The rest is not monitored using proper mechanism [6] . The manual system could have the chances to get the improper recording because of human errors, also this paper-based system is worthless in many

occasions. These records are not helpful anymore to passengers as well. [5]

4. MARKET SURVEY

These are some of the technical literature in engineering and technology where people have tried to implement similar kind of Systems which are mentioned below with their shortcomings with respect to our Application.

My study concludes that real time bus monitoring system may be designed to serve as a tracking system for the frequent local bus travelers using a GPS (Global positioning system) device system. The existing systems focuses on system that helps passengers locate the current location of the buses and expected arrival time of the buses to their nearest bus stop. The location will be shown on the mobile app and can also be received through SMS service (Short Messaging Service). The location can also be tracked by the network administrator through a web application which will keep the complete location history of the busses. [1]

5. ARCHITECTURE

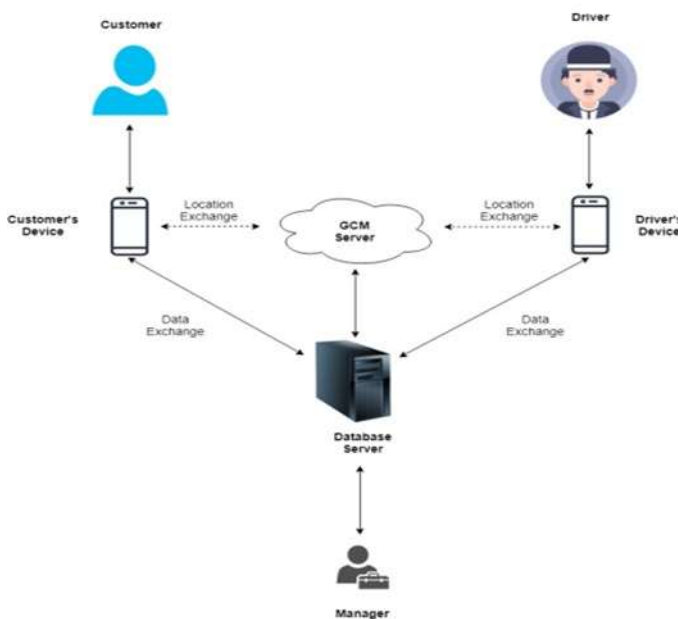The proposed system is implemented using Client-Server technology. The system architecture is shown below:

Fig -2: Architecture

As shown above the system is divided into three Modules,

1. Customer: This app is used by registered users for services such as bus booking, cancellation, and viewing their current whereabouts during their journey.

2. Manager: This app is used by the Managers of the Bus Service. It is used to computerize the work of the manager by holding records of the busses, drivers, conductors, and other employees of the organization. The App is also used to keep track of the busses to be assured that they reach their destination safely and in time.

3. Driver: This App is specifically for the drivers of the Bus Service. The app shares the location of the device which is recorded into the database via the Firebase Cloud Messaging Server. This information is used by the Manager to keep track of the bus.

The Database contains information about the users, records of the organization and the location of the running buses.

6. WORKING

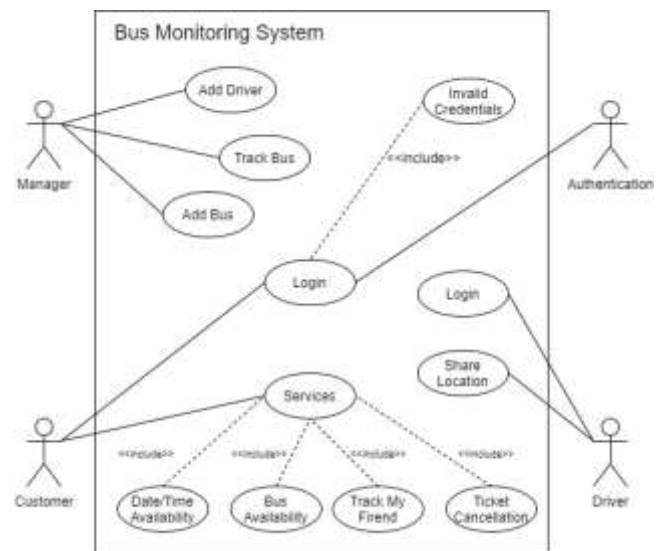The use-case diagram given below shows the working of the System.

Fig -3: Use Case Diagram

The Customer logs into the app and may use services such as booking or canceling tickets, checking seats, view seats or track their friend. The Track My Friend Feature allows a Customer to share his/her real-time geographic location with his/her relative or a friend so that they can monitor his/her location and also can see that they are reaching safely and on time and if they are picking him/her up they can expect the approx. arrival time.

The Manager manages the system by deciding when to dispatch the busses and also keeps tracks of the busses using this app. The Manager also keeps records of the busses and employees via the app.

The location of the bus is determined by the location of the driver The Driver shares the location of the busses via his mobile phone which will be monitored by the Manager and the friend or relative of the passenger.

7. CONCLUSIONS

It can be observed that even Mobile Applications can be important in the fields of human endeavor. This System reduces the workload of the staff and reduces the time used for making a reservation at the bus terminal. It also increases the efficiency of an organization as the application can update records in various files automatically thereby relieving the work of the staff.

After observing the working of the Bus Monitoring System, we got to know that many of the operations were done manually. Hence we have made a Cloud-Based System that is available 24X7 for the Customers.

Customers can check availability of bus, reserve selective seats, cancel their reservations etc, as they feel comfortable. This system provides and reviews all sorts of constraints so that the user gives only useful data and validation is done efficiently.

This project, as a whole, will give a new way in the Vehicle Transport System process.

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