National Conference on
"Role of Engineers in Nation Building" organized by VIVA Institute of Technology, Mumbai
(6th and 7th March 2020)
International Journal of Engineering Research & Science (IJOER)
ISBN:[978-93-5391-287-1] ISSN: [2395-6992] [Vol-6, Issue-3, March- 2020]

Real Time Bus Tracking System

Aniket Jadhav[1], Omkar Kajrolkar[2], Suraj Varma[3], Asst.Prof.Archana Ingle[4]
[1]Department of EXTC, Viva Institute of Technology, Mumbai University
Email: aniketjadhav1515@gmail.com,
[2]Department of EXTC, Viva Institute of Technology, Mumbai
University Email:omkarkaj123@gmail.com,
[3]Department of EXTC, Viva Institute of Technology, Mumbai
University Email:varmasuraj46@gmail.com,
[4]Department of EXTC, Viva Institute of Technology, Mumbai University
Email: archanaingle@viva-technology.org

Abstract—*BUSES are becoming an vital means of transport in cities. public transport are used by common population in cities. Buses also have one drawback that is, the commuters have to wait for longer time for the bus arrival; which in turn leads to usage of private vehicles thus leading to increase in fuel consumption. Rather than waiting for buses it would be useful for the passengers to know the tentative timing of the buses,so that they can plan their journey accordingly. Hence, for the ease of citizens an android application is planned, which will track the location of both the user and the BUS and then will analyze the approximate time necessary by the BUS to reach the stop including the traffic analysis. As almost every commuter is familiar with the working of Android phones there won't be any problem in using the app, as Android is a user-friendly operating system. The estimated time will be calculated by tracking the current location of the bus and the user. As the BEST has already installed GPS in buses, the tracking will help in locating the bus. The approximate time necessary by the bus will also be calculated so that the commuters will be aware about the waiting time for their respective buses. It will also be favourable for those not having GPS facilities as theywill be able to know the updated bus schedule with the help of Internet.*

Keywords—Fleet Management, Vehicle Tracking System, GPS Tracking Devices, Security, GPS

I. INTRODUCTION

Unusual and unexpected conditions on the roads affect the smooth operation of the bus system and the movement of vehicles. Also, everyday problems such as traffic jam, unexpected delays, chance in passenger demand, irregular vehicle dispatching times take place and as a result of which the schedule of the passengers are affected and we certainly have to wait for the arrival of the respective bus. Passenger hassle can be avoided by introducing a system which provides real-time information about the location and predictable time of arrival of the buses. Our project focuses on the execution of a Real-Time Tracking System by installing GPS module devices on college buses which will broadcast the current location on the GPS Receiver. The GPS Receiver will be interfaced with a computer and driver data will be auto save in the database. From here the application will recover data and store it in web server from where the system will display real-time information of the bus. The real-time bus tracking system is a impartial system designed to display the real-time location of the buses provided by the college. The approximate time required by the bus will also be calculated so that we as a commuters will be aware about the waiting time of the respective buses. It will also be favourable for those who are not having GPS facilities as they will also be able to know the updated bus schedule with the help of Internet.

II. WORKING PRINCIPAL

The system is functioned by the GPS which is attached to the bus. Firstly it receives the satellite signals and then the position coordinates with latitude and elongation are estimated. This system used Automatic Vehicle Location (AVL). By using AVL the Geographic location of a vehicle is unwavering and this data is transmitted to a remotely placed server. With the help of GPS and Tran's mechanism, the location is estimated. The data is established by satellite or a global radio cellular connection by the bus to a radio receiver. After receiving the location the tracking info can be transmitted using wireless communications systems. This system uses GSM to transmit the info. A remote operator can access the data on a bus based on user's supply as well as destination. The proposal system provides the perfect location of the bus. Bus surveillance technology is an advantage for tracking and observing a bus.

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In bus unit, bus has GPS device which is attached and it sends its coordinates i.e. longitude and altitude after every predetermined Interval of time to the main server. To use GPS there are no costs or setup charges. To determine the position, GPS receiver is able to receive signals from the satellites. It depends on the kind of application the GPS transceivers may be a data Loggers, data Pullers or Data Pushers. This device receives GPS information and send the data at definite intervals to the server. On receiving, the server analyses the data. To receive signals in the suitable place the GPS antenna connected to the right jack and fixes the antennas. One slot is allotted for SIM card and it receives the signal from the GSM towers to respond to the users. The positive and negative wires are connected to 12V or 24V vehicle power system. Then to receive the signals from the satellite tracker device is on. Now the device is able of acceptance the latitude and longitude values of the position of the bus. At any point of time, the GPS receiver gives the location. Now the bus unit has the coordinates with a timestamp which is then compared to the before coordinates and if there is any well-defined then the coordinates are updated and sent to a server over GPRS network.

The location details are stored on a server. To define every bus among the different buses here Identification is taken. Each bus is given one characteristic ID number. The server is the most important module during this system which acts as a central archive of the system. In this system, whole information is stored and conserved by the server. The server is between bus and user. These databases consist of real-time information Capitalization bus it includes bus routes, actual arrival/departure time and real time location of the bus.

The user side module is nothing but a mutual web-based application that facilities the various function of the system to remote users. The user side module takes two responses i.e. one is source that indicates wherever the remote user is now and other is the end user wants to travel to. When a user sends request the device fires a query to the server to access the data stored within the server database and provides a list of attainable buses in keeping with remote users supply and destination. Now it's user's task to choose or select precise bus range to understand the real time location of the bus or other information. After choosing an precise bus number the application shows the real-time location of that bus on the user screen. This application collaborates and interacts with varied clients to offer service to user's requests. The system simplifies the real-time search of the bus.

III. METHODOLOGY

3.1 BLOCK DIAGRAM:

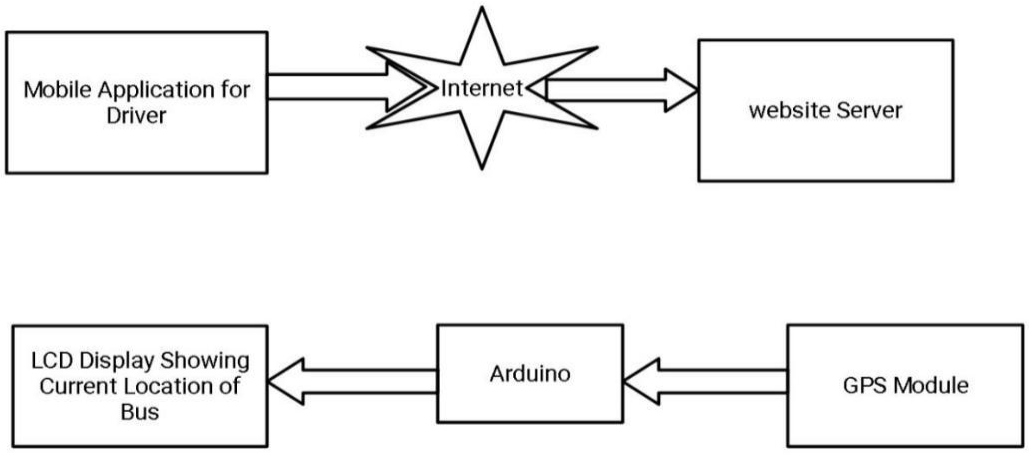

Figure 3.1 Block Diagram

This module is for the bus driver. The authorized bus drivers are provided with their unique log in credentials. They need to log in and then have to start their location service before driving. The current location of the bus will be updated from driver‟s mobile to the server every moment in the form of latitude and longitude. The location of the bus is visible in Google Maps when asked for.

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3.2FLOW CHARTS

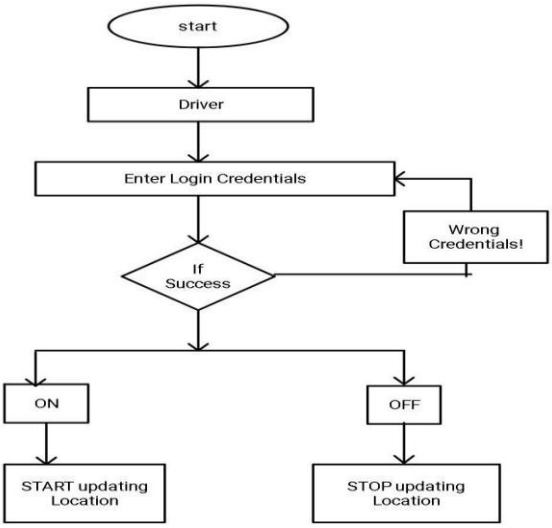

Figure 3.2 flow chart for bus driver.

This module is for the bus driver. The authorized bus drivers are provided with their unique log in credentials. They need to log in and then have to start their location service before driving. The current location of the bus will be updated from driver‟s mobile to the server every moment in the form of latitude and longitude. The location of the bus is visible in Google Maps when asked when asked for.

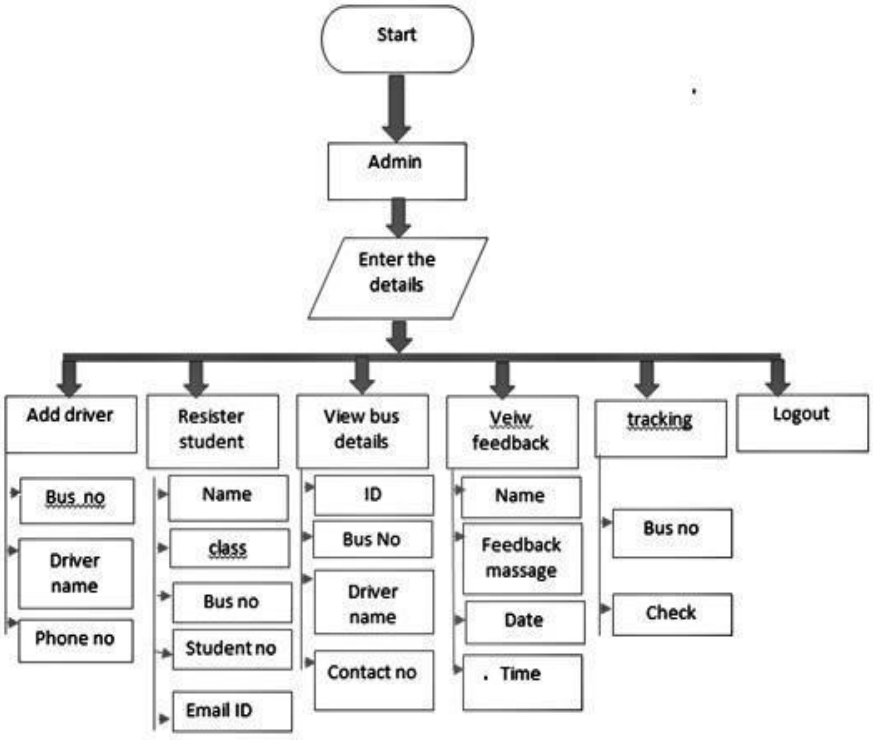

Figure 3.3 flow chart for Admin.

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This module is for the Administration. The admin will provide with the unique log in credentials to the bus driver and to the students or parents. They take care of the system if anybody face's a problem while travelling they can easily track them and resolve the problem with the help of the tracking option in the system. They also take care of the data store in the server.

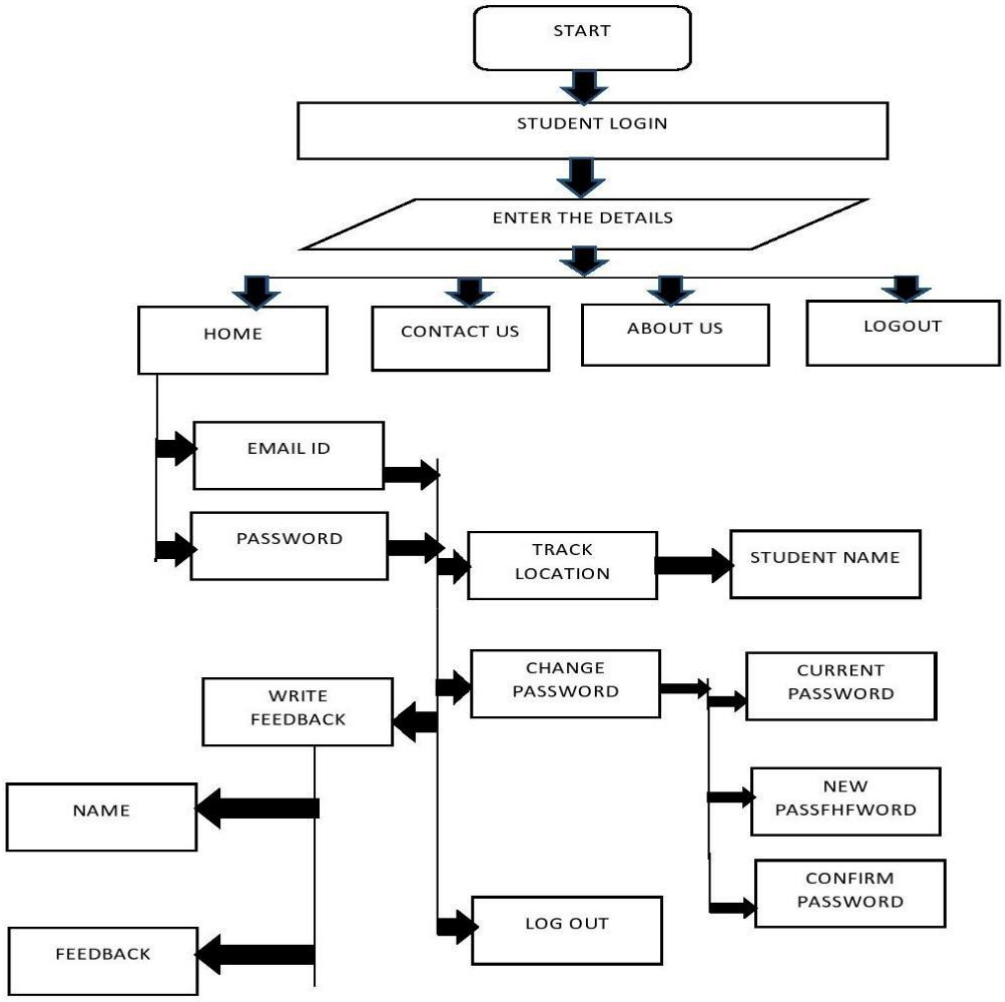

Figure 3.4 flow chart for students.

This module is for the student. Students or their parents or commuters will login with the given credentials given by the admin After logging the credentials, if they want to track the bus to check the location they can easily check the location of the bus and if they want to contact they can contact with the admin and also they can give a heptic feedback.

IV. CONCLUSION

We developed an Android Application to track the college buses and provide relevant information to their Bus Stop .This paper has described the design and architecture of our bus tracking system. Our systempoised of smart phones and a server. The system is able to exhibit its performance to track bus from any area.

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