Bus Notification System with Alarm

T. Jahnavi Lakshmi, K. Sri Lakshmi, G. Naga Sai Teja, J. Harika, Associate Prof. G. Kalyani
Department of Information Technology,
Velagapudi Ramakrishna Siddhartha Engineering College,
Vijayawada, India
188w1a12A9@vrsiddhartha.ac.in, 188w1a1287@vrsiddhartha.ac.in, 188w1a1221@vrsiddhartha.ac.in,
198w5a1211@vrsiddhartha.ac.in, gkalyani@vrsiddhartha.ac.in

Abstract- Now a day's, an individual can't determine which bus is coming to the bus depot. They're always reliant on somebody to assist them out on an equivalent issue. So we've come up with a project which might allow the person to work out the buses which are coming at the bus depot and also give them information about the route through which they're going. During this system, there's a requirement to put a GPS device on all the buses. This can help the person to work out which bus is coming to the bus depot and what its route alongside the stops is without counting on anybody.

Keywords- Bus Notification, Android, Smart Phone, GPS.

I. INTRODUCTION

Public transport is at a turning point in its history, where it must find how to transition from a standard service moving masses of individuals, to a service offering customized solutions. Customers expect a safe, profitable, and multimodal experience, offering personalized services.

The problem with the current transport system is that they don't provide us accurate data of vehicle's current location and arrival time. This makes the system inefficient because the user doesn't skill much time he/she has got to await the bus to return to the actual stop.

Also, people seating in public transport don't know how much time it will take to reach their destination or what is the next stop. In addition, it also makes the scheduling task difficult as we don't know that the bus is on time or it is running late. The increased waiting time and thus the uncertainty in bus arrival make convenience system unattractive and impractical for passengers to manage their daily transportation.

The real-time bus tracking system uses GPS (Global Positioning System) technology to fetch data and displays the data employing software allowing a user to observe a selected bus on a specific route.

When this information is presented to the passenger by wireless media or online web media, they're going to manage their time efficiently and reach the stop just before the bus arrives, or people takes an alternate means of transport if the bus is delayed. They will even plan their journeys long before they really initiate them.

The real-time tracking of the bus are often done by our proposed system and this information is then given to a far off user who wants to know the real-time bus information.

II. ORIGIN OF PROBLEM

Public transport is at a turning point in its history, where it must find how to transition from a standard service moving masses of individuals, to a service offering customized solutions. Customers expect a safe, profitable, and multimodal experience, offering personalized services.

The problem with the current transport system is that they don't provide us accurate data of vehicle's current location and arrival time. This makes the system inefficient because the user doesn't skill much time he/she has got to await the bus to return to the actual stop. Also, people seating in public transport don't know how much time it will take to reach their destination or what is the next stop. In addition, it also makes the scheduling task difficult as we don't know that the bus is on time or it is running late.

III. PROBLEM STATEMENT

Nowadays, a person can't determine which bus is coming to the bus terminal. They are always relying upon somebody to assist them out on an equivalent issue.

So we have come up with a project which would allow the person to determine the buses which are coming at the bus terminal and remind by the alarm According to the setting of the user prior to the destination of 5 or 10 mi n before according to their convenience.

IV. REVIEW OF LITERATURE

1. Title: Accident identification based alerting location over GSM and GPS.

Description:
Working on this proposed project is an attempt to develop an advanced vehicle security and location system that can

detect vehicle accident detection and send location details via GPS and GSM waiting for someone. Help inform our tutors, this is a very big problem with 4WD vehicles, so we mainly developed a prototype model that has an accident detection system on the front and back of the vehicle when pressed to indicate a detected accident.

2. Title: Web Based Vehicle Tracking System Using GPS.

Description:
Tracking frames were first developed for the delivery industry because they wanted to confirm where each vehicle was at a given point in time. Independent frames were first improved to meet the proposed requirements. VEHICLE tracking system is the technology that is used a vehicle location using various methods such as GPS and other radio navigation systems that work via satellites and ground stations. Vehicle information such as location details, speed, and distance traveled, etc. can be displayed on a digital map using software over the Internet.

3. Title: GPS Ambulance Tracker.

Description:
Some of you may be wondering why ambulance tracking is so important, but the reality is, a 10 second delay can make the difference between a person's life and death. We know the concept of the ambulance, an ambulance that is used to quickly transfer patients to the intensive care unit of an emergency room under medically necessary conditions, but also for routine transports of non-urgent cases, such as hospitals and nursing homes and accidents in most countries Road ambulance priority as time is of the essence in transporting a critically ill or injured patient.

Ambulances are therefore not only important tools for helping rescue workers and other trained first aiders quickly get into an emergency, but also for taking life-saving measures

4. Title: Women Safety Device With GPS Tracking And Alerts.

Description:
Given the current situation in the world, women face many problems relating to their safety; Insecurities increase when you are traveling or walking alone; everyone wants their girls to come home safe; Consider a scenario where your child didn't do this. come back home on time. You may want to know more about your safety. When you are fine, in trouble, or had an accident. It gets worse when you don't know where your child is right now. You need to know the location at this point. Stage too.

Novelty:
These applications have different uses according to their functionalities. Different applications are used for different

practical styles to overcome problems faced by the people. These applications may be only used for only location tracking. This application used for tracking the bus location of the buses near to us, so that we can manage our time according to it.It also contains the alarm feature when we are going to reach out destination according to our alarm setting before 5 or 10 minutes time according to the user.

V. METHODOLOGY

The system provides the live location of the bus to the user. The commuters can't only fetch the bus location but also know estimate time taken by bus to succeed in its destination. The Location information is fetched from the web database which receives the info regarding the situation from a separate application employed by drivers/conductors on the bus.

This helps in maintaining the individuality of the bus while displaying its location on the map. The request made by the straphanger for the bus information is going to be fetched from the database and delivered to client through server. The coordinators of the bus will send its coordinates continuously to our server where data will be stored.

When the user selects that specific Bus ID, its location is going to be retrieved from the server and shown on the map. Since the coordinates are going to be changing, the purpose on the map will keep it up moving; hence the user can actually see the live location of the chosen bus.

Also we will use distance matrix algorithm to show the passenger the relative time taken by bus to reach the user. The mobile application will be developed using android studio which has a very simple User Interface to use it. Maps API are the core component that will be used in it, which is very easy to use and explore maps with simple gestures such as pinch to zoom tap to point etc. It will be very easy for the user to track the bus.

1. System Architecture Diagram:
System architecture is the conceptual model that defines the structure, behavior, and other views of a system. System architecture can consist of the system components and developed subsystems that work together to implement the overall system.

User Opens the mobile application and enters the source and destination and press search. By searching, it requests for location to the server, it searches the location in the database, it tracks the all the destination reaches buses.

In that list, Using GPS in buses, it tracks the nearest buses to the source. Those buses nearer to the source will display as a result in the users mobile. In this way it searches all the nearby buses to the source and displays the result.
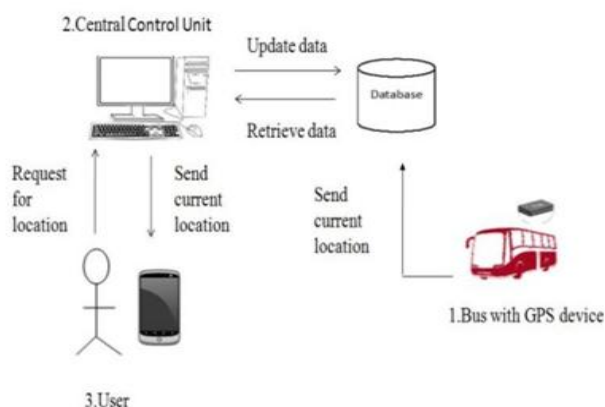
Fig 1. System Architecture.

VI. REQUIRE TOOLS

1. Android Studio:
Android Studio is that the official integrated development environment for Google's Android OS built on Jet Brains' IntelliJ IDEA software and designed specifically for Android development. To support application development within the Android OS, Android Studio uses a Gradle-based build system, emulator, code templates, and GitHub integration.

2. Firebase:
Firebase may be a mobile and web application development platform developed by Firebase, Inc. in 2011, then acquired by Google in 2014. Firebase may be a Backend-as-a-Service (Baas). It provides developers with a selection of tools and services to help them develop quality apps, grow their user base, and earn profit. It's built on Google's infrastructure. In Firebase, a document could also be a group of key-value pairs defined by a schema.

3. Microsoft Visual Studio:
Ultimate is the design software program used. Uses Microsoft extension platforms including Windows API, Forms, Store, and Presentation Foundation. We develop PC programs, websites, apps and mobile apps

4. React JS:
React JS is an open-source front-end JavaScript library for building user interfaces or UI components. It's used as a base within the development of web applications.

VII. RESULTS

Outputs of the project are shown below figures. The latitude and Longitude of a location using GPS developed by Java Language in Android Studio.

This Latitude and Longitude is Stored into the firebase database.Using this firebase database, we will know about the latitude and longitude of certain location.So that it traces the source and destination points.
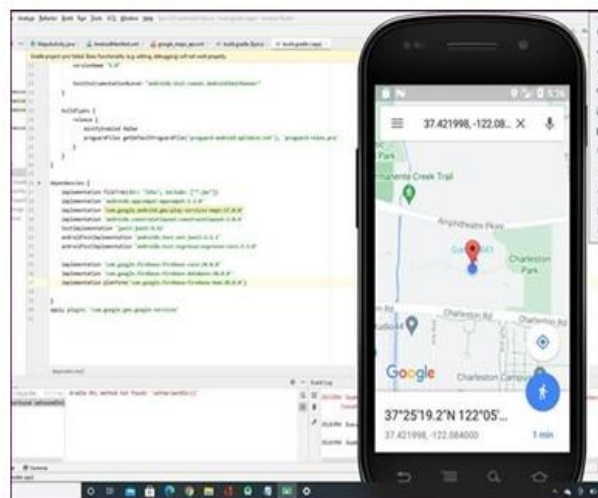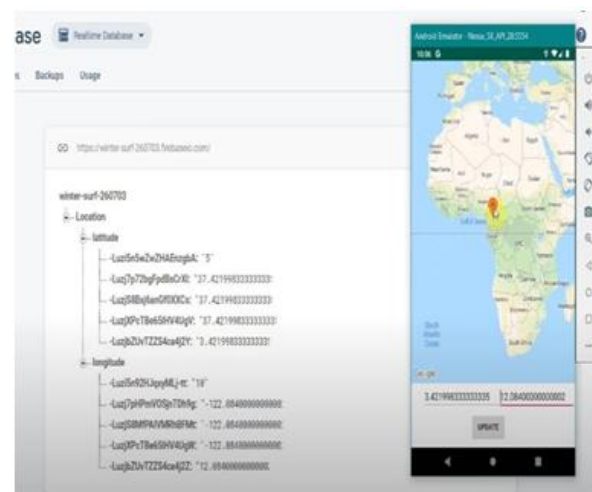

Fig 2. Tracking the Location.

Fig 3. Storing latitude and Longitude into database

It is the sample data of buses information like bus numbers, its routes, starting point of the bus destination point and its middle routes that it travels, all the information of the buses will be there.

It maintains the two databases, so that it checks the bus which reach the destination, from that list of sorted buses, those buses which are nearer to the source are displayed as a result.

	bus number	source	middle stop	middle stop1	destination
1	116				
2	116	gannavaram	ring	railstat	market
3	145	nidaman	ring	busstand	market
4	222	thadigada	kanuru	kandari	market

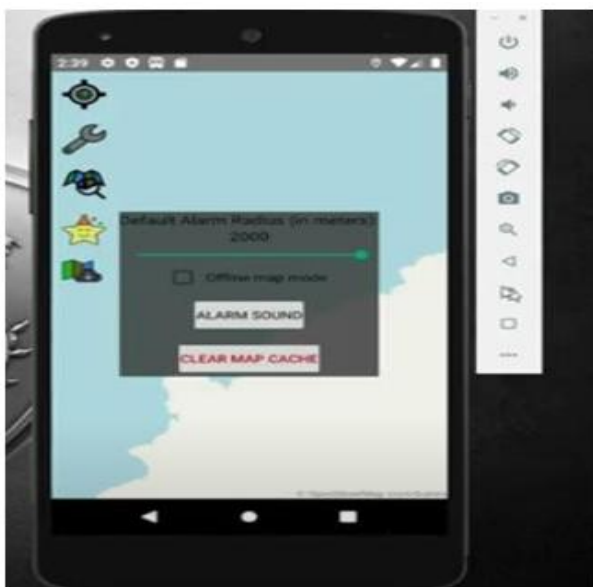Fig 4. Database contains all the Information of the buses.

Fig 5. Setting of Alarm.

Fig 6. Alarm is Turned on.

VIII. FURTURE ENHANCEMENTS

This app entails in the sections: Geo tracking, Scheduling & fair query and security module. Here the central server would play pivotal role in storing all the information of buses and its routes. Considering the potential of GPS , this app surely holds the potential to improve the existing bus transportation system for people .We are consider to adding worthful feature that is alarm system and improvements such as a notification messages, calculating the remaining time, and a notification when all are on-board.

So that for now we developed location tracking of bus and alarm feature, further we will develop the feature of on route travel assistance for the people don't know the route they are travelling.

IX. CONCLUSION

It's clear that now android operating system is getting vital day by day. This app is more users friendly that makes easier to manage our time. With this app all the clear details about the buses is in your hands.

Also The app have best combo feature that is the alarm system so no need to know clear about your destination path and no need to check the bus stops always.

The alarm notifies you when you reach your destination. This app provides a bus route and bus name. From this we can conclude that our application can be handful/easy to use for common persons who travel through buses in their day to day life.

REFERENCES

[1] Carden, P.J.C.; Beck, I.H. (Ref. No. 1999/087), IEEE Seminar Driver information systems: inuencing your route, Page (s): 1-13, 1999.

[2] Liikka, J; VTT Tech. Res. Centre of Finland KAMO-mobile guide for the city traveller, Page(s): 1-7, 21-22 July 2008.

[3] Joo-Yen Choi; Ja-Hyun Jung; Sungmi Park; Convergence and hybrid information tech-nology,2008. ICCIT A Location-Aware Smart Bus Guide Application for Seoul, Page(s): 875-880, 11-13 Nov. 2008.

[4] Doulamis, A; Pelekis, N; Y. Informatics (PCI) Easy Tracker: An Android Application for Capturing Mobility Behaviour, Page(s): 357-362, 2012.

[5] Garcia, C.R; Candela, S; Ginory, J; (IMIS) on route travel assistance for public transport based on android technology. Page(s) : 840-845, July 6, 2012.

[6] N. Davies, "Using and Determining Location in a Context-Sensitive Tour Guide", Computer, pp. 35-41, Aug. 2001.

[7] Military Uses for GPS, [online] Available: http://www.aero.org/publications/GPSPRIMER/MltryUse.html.

[8] C. Drane, M. Macnaughtan and C. Scott, "Positioning GSM Telephones", IEEE Comm. Magazine, pp. 46-59, Apr. 1998.

[9] H. Dana, Global Positioning System Overview, [online] Available: http://www.colorado.edu/geography/gcraft/notes/gps/gp s_f.html.

[10] G.M. Djuknic and R.E. Richton, "Geolocation and Assisted GPS", Computer, pp. 123-125, Feb. 2001.

[11] H. Sandstrom, GPS RAIM and Measurement Signal Analysis in Personal Positioning, [online] Available: http://www.cs.tut.fi/~sandstro/di.pdf.

[12] R. Klukas, G. Lachapelle and M. Fattouche, "Cellular Telephone Positioning Using GPS Time Synchronization", GPS World, pp. 49-54, Apr. 1998.

[13] Enhanced 911, [online] Available: http://www.fcc .gov/911/enhanced/.

[14] H. Koshima and J. Hoshen, "Personal Locater Services Emerge", IEEE Spectrum, pp. 41-48, Feb. 2000. 15] All About GPS, [online] Available: http://www.trimble.com/gps.

[15] Rani, R.C., Kumar, A.P., Adarsh, D., Mohan, K.K. and Kiran, K.V (2012). Location Based services in Android. International Journal of Advances in Engineering and Technology. 3(1), pp. 209-220.