



# Project Report on Bus Tracker Via Gps Using Android Application

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## ABSTRACT

Android is becoming very popular in embedded market for two main reasons. First, it is open source software; moreover, there are no royalty fees for java VM (virtual machine). Second deriving from the first, android is highly suitable for expansion as the developer sees fit. Being Computer Science Engineering Users ourselves, we have been motivated to develop this project for the benefit of the people masses, by the idea of providing an easier means of accessing various web resources related to the bus, thus providing them with a better, richer experience of travelling. Further, the recent advent and popularity of android technology motivates us to create an android application for the same. Our project is an application for smart phones that supports android operating system. It uses the GPS function, available in most of smart phones today, to pin point current location fairly accurate. The whole project is revolving around the tracking of public transport (i.e. ST Buses).

In this project we having three modules i.e. Bus driver, customer & firebase database. As the name suggested Driver module is for the drivers. The driver will login through this module and after login it will insert the details of route. The whole details with the driver's location are stored in the firebase database. The location co ordinates will continuously storing in data base.

The next module is customer module, in this module the customer have to sign up and then login themselves. After login the user have to fill detail which is required for search the bus location, like sources address destination address. These details will used to search a current appropriate bus location. Here the role of third module plays important role. The whole database is manages here and serve for the use. The co ordinates of bus current location is continuously storing in database and serve it were its required.

## I. INTRODUCTION

As we discuss above our project is based on Global Positioning System (GPS) & compose of client-server interface. At client side we have Android Application. At server side we are using Fire base database provided by Google for storing information. GPS system is use to track the real

time location of the vehicle. In the early developed applications or in existing systems for vehicle tracking it consist of GPS and web server such as SQL for showing location on Google Maps. In our proposed system we are providing location to the user who requested for it or the user which has an account in our application. In our project we have used firebase because if there is no internet

connectivity is available the firebase stores the data locally and then stores it into the database.

## II. TECHNOLOGIES USED

### i. GPS Technology:

The Global Positioning System (GPS) is a satellite-based navigation system made up of at least 24 satellites. GPS works in any weather conditions, anywhere in the world, 24 hours a day, with no subscription fees or setup charges. The U.S. Department of Defense (USDOD) originally put the satellites into orbit for military use, but they were made available for civilian use in the 1980's. GPS satellites circle the Earth twice a Day in a precise orbit. Each satellite transmits a unique signal and orbital parameters that allow GPS devices to decode and compute the precise location of the satellite. GPS receivers use this information and trilateration to calculate a user's exact location. Essentially, the GPS receiver measures the distance to each satellite by the amount of time it takes to receive a transmitted signal. With distance measurements from a few more satellites, the receiver can determine a user's position and display it electronically to measure your running route.

### ii. Fire Base:

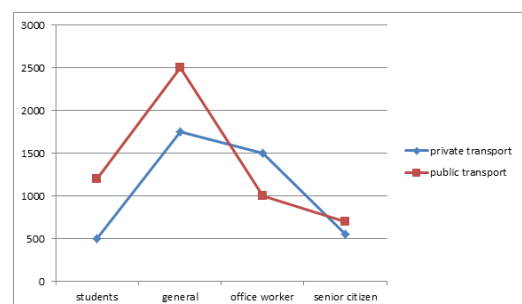
Firebase is a mobile and web application development platform developed by Firebase, Inc. in 2011, and then acquired by Google in 2014. Firebase provides a real-time database and backend as a service. The service provides application developers an API that allows application data to be synchronized across clients and stored on Firebase's cloud. The company provides client libraries that enable integration with Android, iOS, JavaScript, Java, Objective-C, swift and Node.js applications. The database is also accessible through a REST API and bindings for several JavaScript frameworks such as Angular JS, React, Ember. Js and Backbone. Js is The REST API uses the Server-Sent Events

protocol, which is an API for creating HTTP connections for receiving push notifications from a server. Developers using the real-time database can secure their data by using the company's server-side-enforced security rules. Firebase Storage provides secure file uploads and downloads for Firebase apps, regardless of network quality. The developer can use it to store images, audio, video, or other user-generated content. Firebase Storage is backed by Google Cloud Storage.

### iii. Google Maps:

Google Maps is a web mapping service developed by Google. It offer satellite imagery, street maps, 360° panoramic views of streets (Street View), real-time traffic conditions (Google Traffic), and route planning for traveling by foot, car, bicycle (in beta), or public transportation. Google Maps provides arouse planner, allowing users to find available directions through driving, public transportation, walking, or biking. The Google Maps apps on Android and IOS have many features in common, including turn-by-turn navigation, street view, and public transit information. Updates in June 2012 and May 2014 enabled functionality to let users save certain map regions for offline access, while updates in 2017 have included features to actively help U.S. users find available parking spots in cities, and to give Indian users a two-wheeler transportation mode for improved traffic accessibility.

## III. GRAPH



**Figure 1.** Graphical representation of Number of Users

#### IV. IMPLEMENTATION

The proposed system highlights on the GPS Location for Users about current position of state transport vehicle. Location-based Service is another key functionality that is used in Smartphone applications. It is often combined with maps to give a good experience to the user about their location.

##### A. Modules at Driver side

1. Bus Driver Login.
2. Fetching Bus Location.
- 1) **Bus Driver Login:** In this module, at front-end user enters the Bus details like Bus plate number, Bus Source and Bus Destination. These details are stored at back-end in SQLite database. These details include the schedule of Bus, and route of Bus. Server fetches these details by having link between Application and Server.
- 2) **Fetching Bus Location:** In this module, Bus Locator Application will fetch the coordinates from Google Map at Background so that it should not affect any other activities of device. By the time when device changes its location it will fetch the co-ordinates and sends these co-ordinates to the Server. These co-ordinates are in terms of longitude and Latitude

##### B. Modules at User side

1. User Login.
2. Graphical-Map.
- 1) **User Login:** This module consists of three sub modules, Source (From where user want to travel) and Destination (To where user want to reach), Show bus, Payment (if user want to pay online). In first sub module i.e. Source and Destination module, User will provide the source from where user want

to travel i.e. Source bus stop name and Destination where user want to reach i.e. Destination bus stop name. This sub module is to have interaction between User and Server.

2) **Graphical-Map:** This module displays Graphical Map of Real-time location of bus. When the application is running at Driver side it will fetch co-ordinates of device; further Driver application will send these co-ordinates to Server. Then Application locates these co-ordinates in Graphical Map by having markers on it.

#### V. CONCLUSION

By using GPS enabled Android device in every bus we can Track each and every bus from central location. Thus, reduces the traffic problems and leads to the better work. This project reduces the risk of losing signals by the time of bad weather as compared with GPS receiver hardware device. The GPS service will help to take the guess work Out of bus arrival at the stop. Project was great opportunity for us to learn and work in the Android environment. Considering the features of project such as Bus Locator, Graphical Map. We hope that our application will play an important role.