KATHMANDU UNIVERSITY

SCHOOL OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Dhulikhel, Kavre

A PROJECT REPORT ON

MTT- Mobile Transportation Tracker

Second year project report

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Abstract

This proposal has been drafted keeping in mind the end goal to meet the prerequisites of COMP 207 offered by the Department of Computer Science and Engineering, Kathmandu University. By the means of this project, we developed skilled planning, programming and creating by designing and looking after programs.

As per the COMP 207 project, we had targeted to develop a Mobile Transportation Tracker (MTT) application. We have accomplished this project by the use of Java programming language. The main aim of this mobile transportation tracker application is to locate the real time location of different transportation vehicles traveling on different routes and display their position on the map. In this way, any user of this application expecting for the respective vehicle can know the position of the vehicle and go to the bus stop accordingly.

Our main aim was to contribute for the prosperity of Smart City by developing an application which will remain not only as something we did just as a project but something that can be commercialized in the future for the betterment of people throughout the country. By doing this project, we have advanced our skills in android development which will be helpful on doing similar projects in future.

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Acronyms

HTTP	Hypertext Transfer Protocol
PHP	Hypertext Preprocessor
HTTPS	Hypertext Transfer Protocol Secure
API	Application Programming Interface

Chapter 1: Introduction

1.1 Background

In the contexts of our country the transportation system is not very facilitated. Civilians wait at bus stops even for hours as there is no way to get any information on when a bus will arrive at that stop. So, we have tried solving this issue by developing a simple android application that locates the position of the buses or transportation media on the map and gives real time data.

Some of the transportation companies like Mayur Yatayat have provided internet facility in their vehicles. Other transportation companies are also looking forward for this improvement. With the internet access in the vehicles, it is possible to easily transfer the real time location of the vehicle and display it on the map. We have developed an android application MTT that sends the longitude and latitude of the vehicle to the Firebase and displays the location on the map using Google map and Google maps API. Whenever the user turns on the map, he/she can see his/her location as well as the real time location of those vehicles.

Our main aim is to facilitate the people by saving their time as time is as valuable as money.

1.2 Objectives

MTT has been developed keeping in mind the following objectives:

- To contribute for smart city by implementing intelligent transportation system with in the country
- To facilitate people by providing location of respective buses they are waiting for
- To make sustainable transportation popular by the means of technology
- To save one's time waiting for the bus
- To learn Android framework of Java and develop concepts of API

1.3 Motivation and Significance

Through one of our project team member, we came to realize the fact how bad the transportation management system in our country is. We researched things and came to know that in some cases people wait hours and hours for the buses. This results in wastage of the customer's valuable time. On our level we cannot change the entire transportation system so we thought something that can be done from our level.

At the same time we wanted to develop a project that will remain not only with us but benefit the whole nation. There are barely any applications designed in the context of Nepal that displays a particular transportation media's location traveling on the route. The project might be complex from our level as everything is different besides the concepts of programming. We hope this project will serve the nation.

Chapter 2: Existing Works

Transit

Transit is a real-time urban travel companion that navigates city's public transit system with accurate real-time predictions, simple trip planning, step-by-step navigation, service disruption notifications, and departure and stop reminders. Its key features involve knowing when the bus or train will arrive in real time, planning trips from A to B with ease, knowing the exact location of the buses.

City Mapper

City Mapper is another similar ultimate transit app, making cities easier to use. It checks nearby departures in real-time, find the fastest route combining bus, subway, train, ferry, taxi, car, etc, following step-by-step directions, including the best subway exit to reach the platform and receiving alerts when the favorite lines get disrupted.

Moovit

Moovit is another similar application that finds the nearest train station to the destination whether which destination is close to the home, how far is it from the walking distance, from when the train of the day departs, when the first bus line starts operating, etc. Moovit is basically functional when it comes to real-time arrivals, directions, real time updates, user reports, maps view, favorite line, stations and places, etc.

Chapter 3: Procedure and Methods

First of all we researched on the process and codes to be implemented for application. At the same time, we collected information about transportation vehicles and the availability of an internet connection in it. Next, we implemented the research into code and created application as per the need. Then, we connected them together to form an application. Finally, we checked for any flaws in the application technically as well as theoretically.

3.1 Work Flowchart

The following flowchart will help understand the procedure implemented.

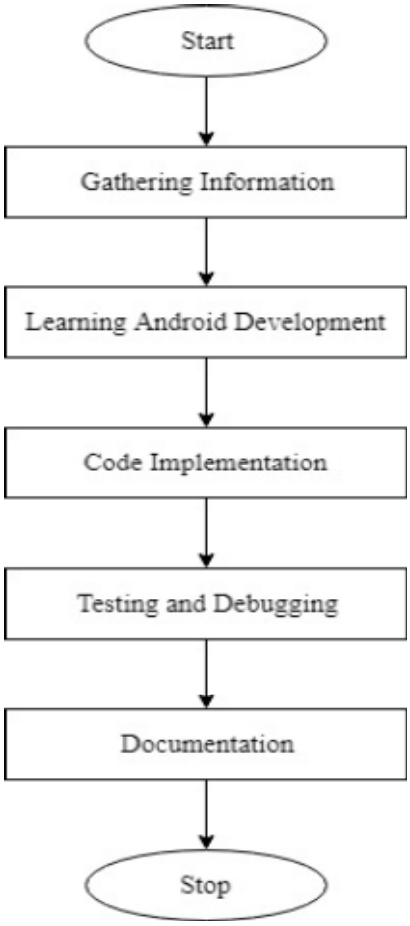

Fig 3.1: Flow Diagram

3.2 Explanation

There are two sections on our android application, the vehicle driver section and the normal user/passenger section.

Talking about the vehicle driver section, at first the drivers of the particular bus will register their bus using the pin-code provided by the developers. Due to this, only the admin can allow what buses should be registered on to the database. Now, when they log on to the application they will be provided with features of turning on their GPS location and displaying their bus on the map, updating the bus routes, sending messages in case of emergencies and traffic jams, turning off the GPS when the bus is not running and hence logout.

Now, talking about the normal user/passenger section, the user can only go the map section where he/she can see different vehicles on the map as a marker and their position changing respectively. The user can also view if there is any emergency messages like: Traffic Jam updates, accident updates, etc.

In this way, the coordination of these two sections makes a complete application as a whole that can send and receive location updates facilitating the sustainable development of transportation by the effect of technology.

3.3 Database Design

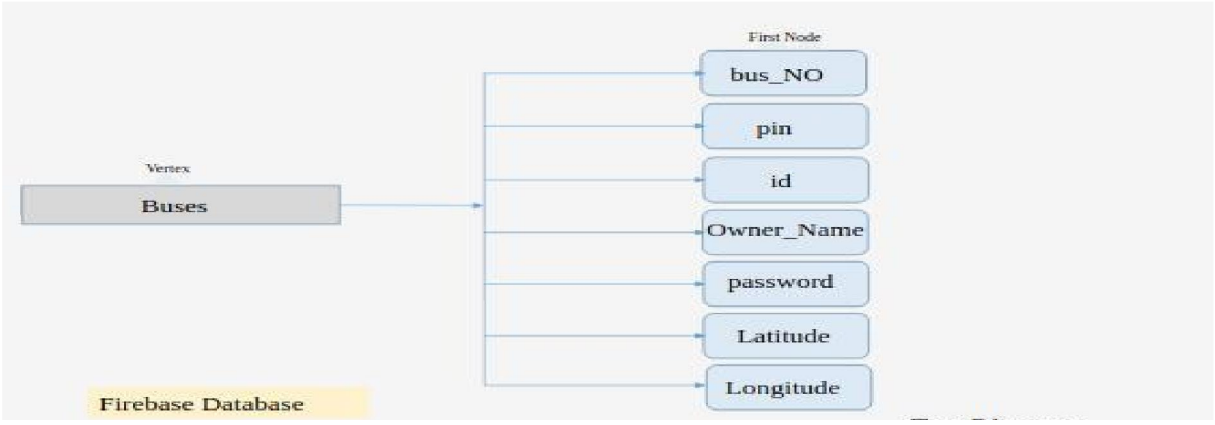

Fig 3.2: Firebase Database

3.4 Use Case Diagram

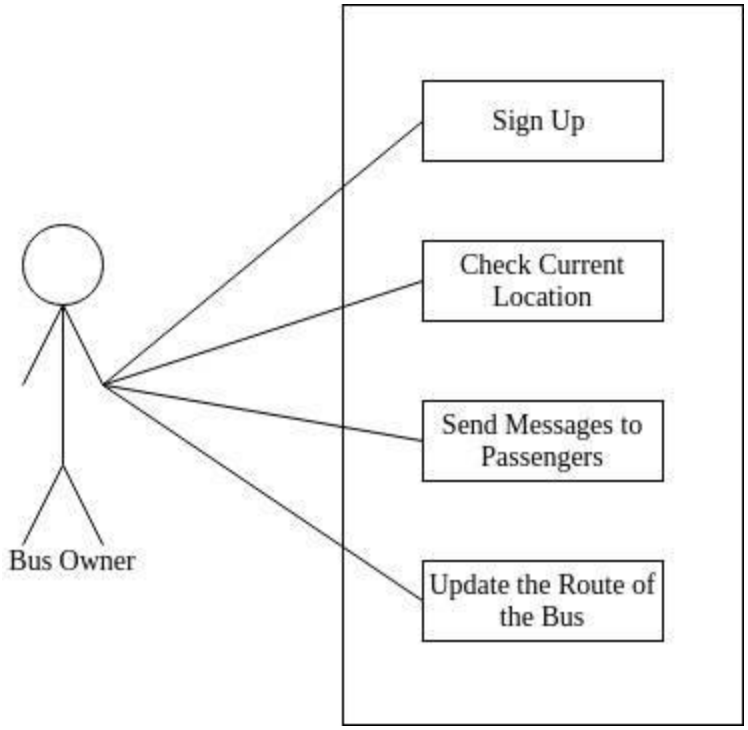

Fig 3.3: Use Case Diagram for Bus Owner

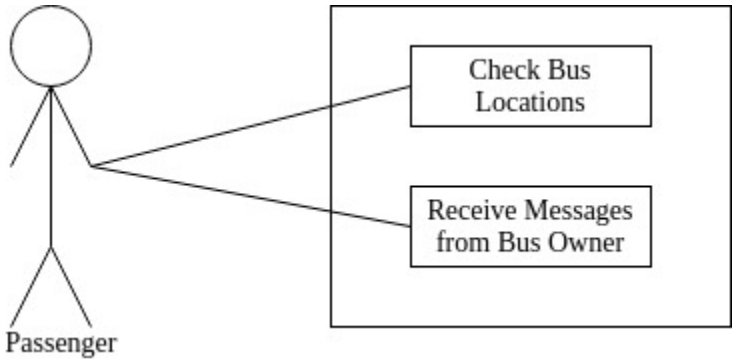

Fig 3.4: Use Case Diagram for Passenger

Chapter 4: System Requirement Specification

4.1 Software Specification

4.1.1 Front End Tools: GIMP, Android Studio, Photoshop

4.1.2 Back End Tools: Google maps, Google API, Firebase, XAMPP

4.2 Hardware Requirements

4.2.1 Compatibility: Compatible with all Android 4.4 Kitkat and above

Chapter 5: Project Planning and Scheduling

Gantt chart

The project followed the schedule shown through Gantt chart.

Work/Weeks	Week	Week	Week	Week	Week	Week 6	Week	Week	Week	Week
	1	2	3	4	5		7	8	9	10
Research										
Learning Android										
Coding										
Testing Debugging										
Documentation										

Fig 5.1: Gantt Chart

References

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2) *AndroidAPI: http://developer.android.com/reference/packages.html (visited on 2018/05/27)*

3) *Android User Interfaces: http://developer.android.com/guide/topics/ui/index.html (visited on 2018/06/25)*

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6) *Android Developer's Blog: http://android-developers.blogspot.com/(visited on 2018/03/28)*

Bibliography

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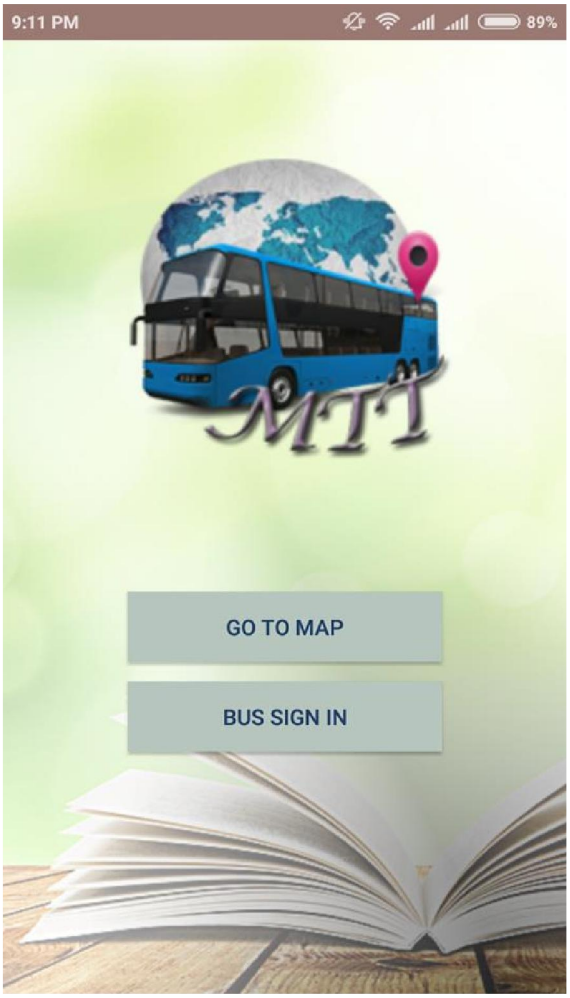
2) John Horton. *Android Programming for Beginners*, 2015.

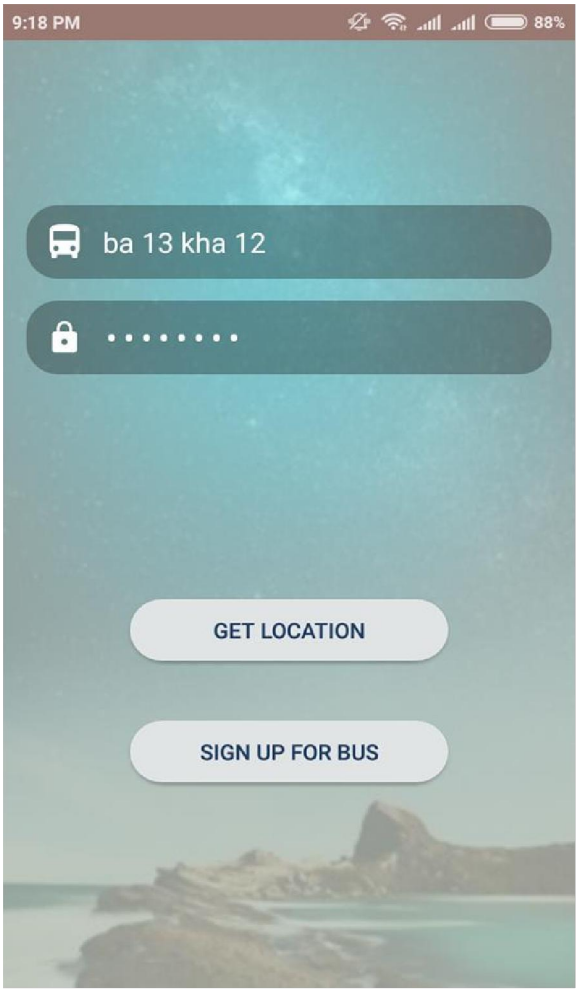
3) Ed Burnette. *Hello, Android: Introducing Google's Mobile Development Platform,* 2015

4) Dwan Griffiths. *Head First Android Development: A Brain friendly Guide*, 2015.

APPENDIX

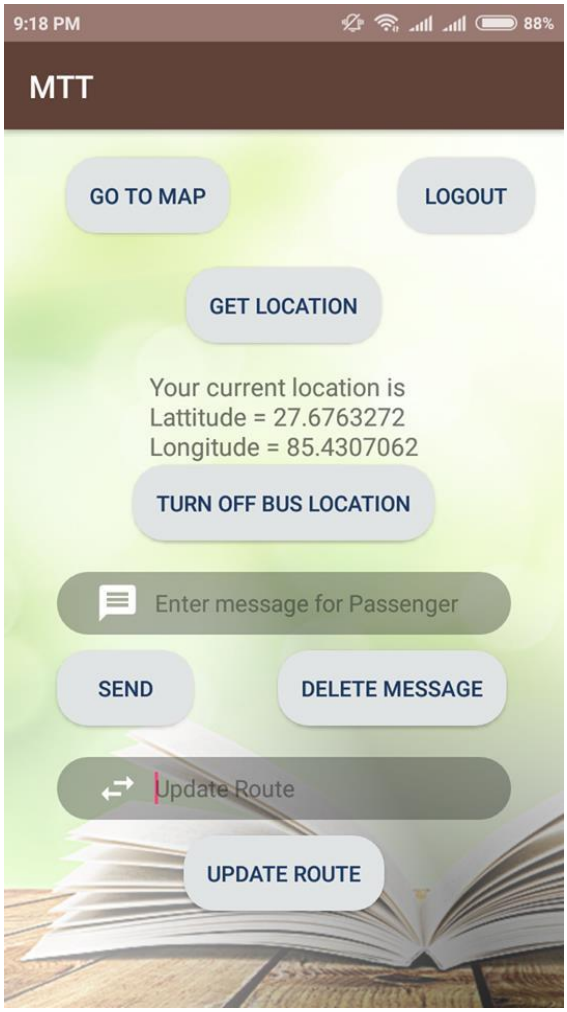
Some Screenshots of our application



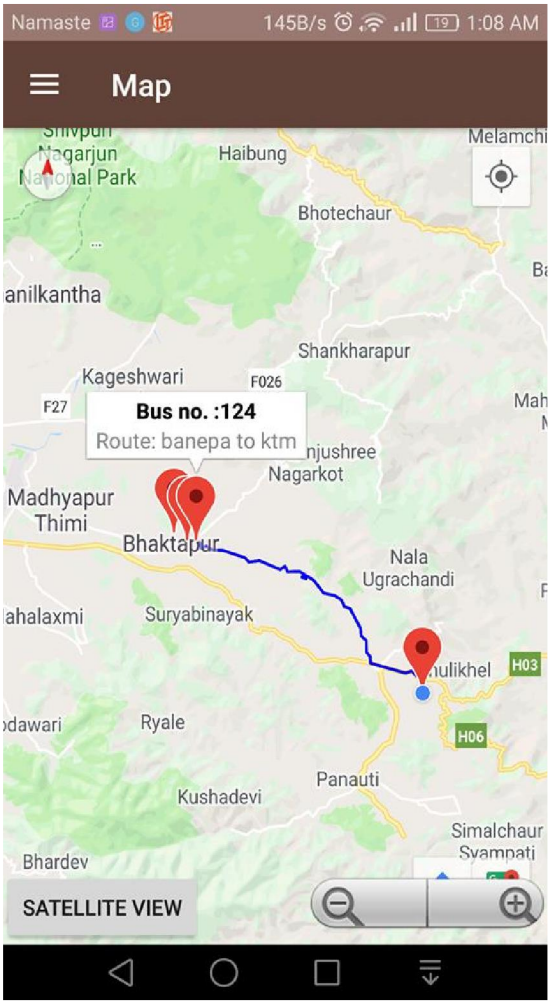


Landing Page

Vehicle Driver Login

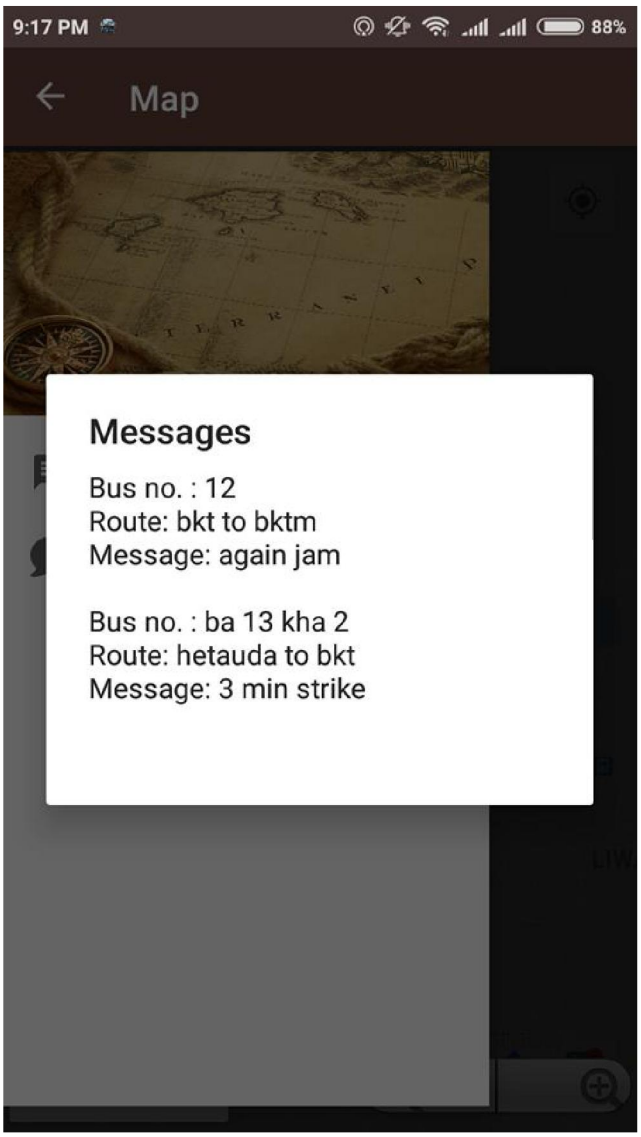


Inside Vehicle Driver's Panel



Map View of Buses with their current location

Vehicle Driver Sign Up



Message Sent By Vehicle Driver In case of Issues and Emergencies

ABOUT

We're a team of developers, designers and programming nerds who believe technology can make sustainable transport more popular than ever. Whether it's public transit or car renting, we believe the revolution taking over our streets will be captained from our phones.

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About Us