A Mobile Application for Bus Tracking System

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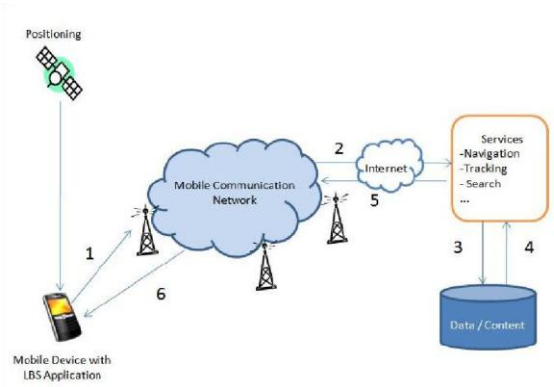
***Abstract*- This application provides the users with the current location of the bus according to the source and destination for which the user will make an enquiry the user will be connected to a central server which will have a relational database containing all the records of the bus and their routes on which they ply. The user will get the exact location of the bus on the map. So that the passengers can reach their stop just in time and board the bus without any waiting. There will be two andriod application required for this one will be for the user who needs to look for the location of the bus and another application which will be installed on the mobile of the conductor which will update the location of the bus to the server so that when a user queries for a bus on a particular route he can get the complete information about that bus.**

I. INTRODUCTION

This application provides the users with the current location of the bus according to the source and destination for which the user will make an enquiry the user will be connected to a central server which will have a relational database containing all the records of the bus and their routes on which they ply. The user will get the exact location of the bus on the map. So that the passengers can reach their stop just in time and board the bus without any waiting. There will be two andriod application required for this one will be for the user who needs to look for the location of the bus and another application which will be installed on the mobile of the conductor which will update the location of the bus to the server so that when a user queries for a bus on a particular route he can get the complete information about that bus.A number of applications made for the Android Operating System is increasing on a large scale ever since its advent. Android is an open source mobile software environment Brought up by Google, the operating system has been made Linux based and uses Java programming language. It has a virtual machine that is used to optimize memory usage as well as resources.

The application have been developed using Eclipse Integrated Development Environment Android Development Tools and Android Software Development Kit.



II. IMPLEMENTATION

This project mainly consists of three modules which are client, conductor and admin.

The admin module is composed of two applications:-

Admin Application: Java Application

Web Application: JSP Servlet

The client and conductor is an android application. The admin application and web application is created by using Netbeans IDE and client and conductor app is created by using eclipse IDE. Even though google has removed eclipse is removed from the list of support development IDE's and google now supports android studio, the developers still use eclipse because of the fact that later having less bugs and more stable. That is why we are still using eclipse for development of client and conductor in our project.

Apart from that there are other components in our project which are as follows:-

2.1 Development Environment

2.1.1 Database

The databases created in this application are created in SQLite. User passes a query to access the database. All the rows in the database that match this query are passed as a type of pointer(cursor) and then displayed to the user. The application maintains an Adapter class that handles calls that are made to the database. The databases play an integral part of the system as all the bus information, stop information as well as routes are all stored in these databases

2.1.2 SQL Server

SQL Server is an open-source application server project started by Sun Microsystems for the Java EE platform. SQL server is now sponsored by Oracle Corporation. SQL Server is the reference implementation of Java EE and as such supports Enterprise JavaBeans, JPA, Java Server Faces, JMS, RMI, Java Server Pages, servlets, etc. This allows one to create enterprise applications are portable and scalable in nature, and that integrate with legacy technologies. Optional components can also be installed for additional services

2.1.3 ADT Plugin

ADT (Android Development Tools) is a plugin developed by Google. Its main purpose is for developing Android mobile applications in Eclipse. It makes it easy and convenient for all the Android developers working in Eclipse environment to quickly create Android projects and debug the programs whenever needed.

2.1.4 Android Emulator

Android emulator is a virtual mobile device which is included in every Android SDK which runs on the users computer. Android emulators are used to test Android applications, so there is no need of any physical device.

Android emulator supports Android Virtual Device (AVD) configuration, which in itself is an emulator containing specific Smartphone Operating System. Using AVD, one can easily test his applications.

Any application running on an emulator can use the services provided by the Android platform like play audio, store or retrieve data etc. But with these features comes a few limitations. Neither does it support Bluetooth , nor does it support SMS/MMS communication.[4]

2.2 MODULE AND ALGORITHM

2.2.1 A Proposed Framework

The application is a user friendly , and available free of cost. The project was developed to guide the daily commuters with bus routes, bus stops, bus schedule from souce to destination as well as display maps and track real time bus locations and display the estimated remaining time required to reach destination. The aim is to overcome all the drawbacks faced in all the previous applications and generate fast and accurate results.

The proposed system has been divided into three modules as follows. module 1 admin app module 2 is conductor app and module 3 is client app. This is done using the Client-Server technology.

1. Module 1 (Admin App)

The admin application is used to add bus stops, remove bus stops, add bus stops location, remove bus stop location, add buses, remove buses, and update bus status etc.

2. Module 2 (Conductor App)

The conductor updates bus location either by using GPS or by sending bus stop location (Longitude and Latitude). It can also tell whether the bus has been delayed or been out of commission.

3.Module 3 (Client App)

This module is used by the customers. It's UI consists of following functionality.

a. Main Menu
b. Add Route
c. Manage Route
d. Add Location
e. Bust Status Update

It provide information about buses and its location on map that is currently being searched.

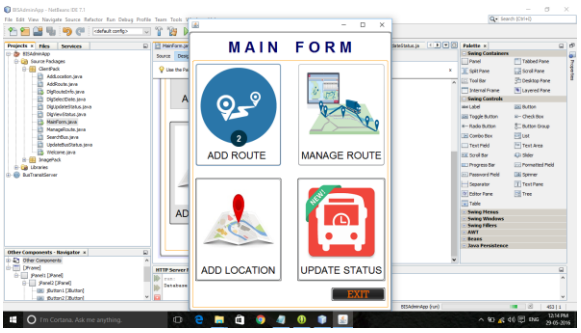


Fig. 2.2: Main screen

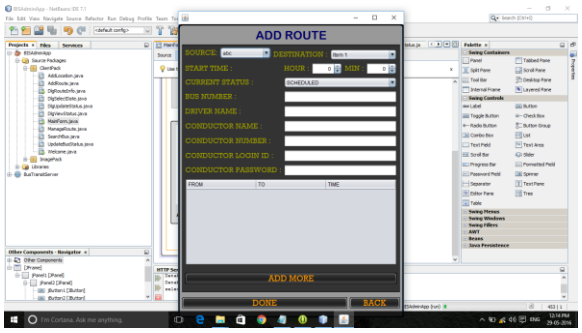


Fig. 2.3: Add Route Functionality

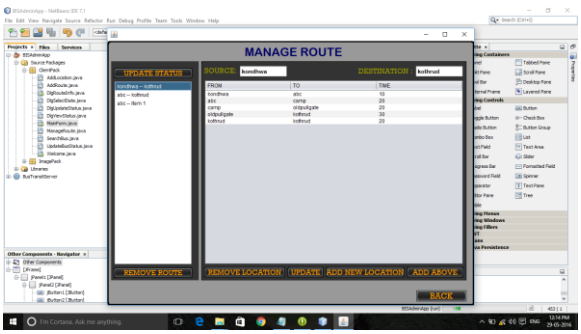


Fig 2.4 Manage Route Functionality

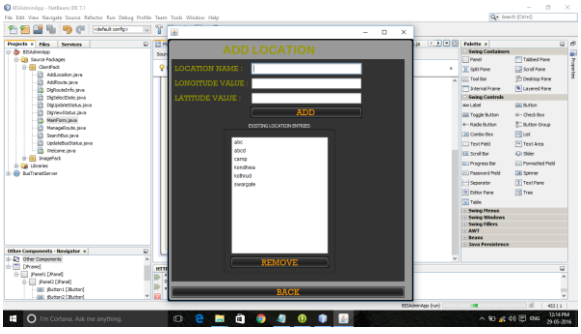


Fig 2.5 Add Location Functionality

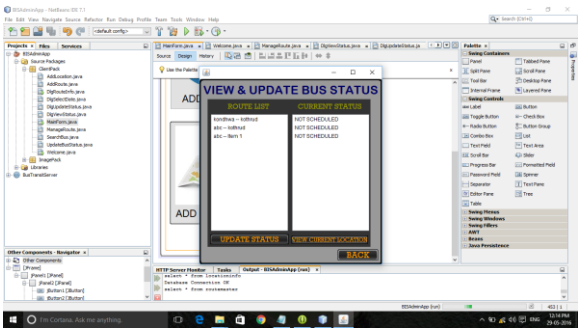


Fig.2.5 Bus Status Update Functionality

III. BENEFITS

- Tracking real-time bus location .
- Notification about bus delay.
- No peripheral databases are necessary for this system.
- It makes sure that drivers will not depart from their preset routes.

IV. CONCLUSION

The conclusions of this study suggest that knowledge of specific domain improves the results. This Project has been developed on Android platform. Also, different functionality have been added to the project which will prove to be valuable to the system. The requirements and specifications have been listed above. This project is implemented using Android and SQL domain. Using the GPS system, the application will automatically display the maps and routes to the different locations and also track the bus location using client-server technology and forward it to the client device.

The application will be of use to every commuter for everyday travel . Not just buses, but this application idea would be usefull for development of other tracking application. The real time Location Tracker will help passengers in their travel and time management.

V. ACKNOWLEDGEMENT

This research paper is written under the guidance and support from experts teachers and friends. We would like to show our gratitude towards Prof.A P Ramdasi for his utmost support and encouragement. he thoroughly checked our paper and gave detailed

advices on language rules, organization, and the subject of the paper. We would also like to thank Prof.B B Gite to reproSof the paper as well as all the other professors who have taught us about the techniques we've used in our project. The product of this research paper would not be possible without all of them.

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