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E-Tran
A Mobile Application to Help Travellers to Reach Destination by using Local Bus

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Abstract— **Android is a latest mobile operating system which can be regarded as rapidly growing technology available for touch screen mobile devices such as smart phones and tablets in today's market. A wide range of increase in the end user acceptance has been experienced in couple of years. This project has been developed on the Bus Information System in Mysore. This paper proposes an Android mobile phone application that gives information about buses, bus numbers as well as bus routes with sequential stop names from source to destination mentioned earlier by user when online.**

Reason for Android platform - Android is an open source development which is probably the most feasible and present a user friendly approach. This paper also deals with voice message as soon as user enters the source and destination names , approximate time for the bus to reach its destination using the Client-Server technology as well as it provides feedback system for users .

Keywords—Android, Voice message, Android plug-in, Client-Server Technology.

I. INTRODUCTION

There are many buses which are available for passengers to travel different distances, but many passengers do not have complete information about these buses. Complete information namely the number of buses that go to the required destination, bus numbers, the routes through which the bus would pass, approximate time taken for the bus to reach the destination.

The system used here is an Android application that gives necessary information about all the local buses travelling in Mysore. The android platform is a free software stack that includes operating system, middleware and also the key applications for user mobile devices. It is owned by almost every second person. It has greater advantage when most of the users understand how to use it which in turn help in maximum number of access by the users. A number of applications made for the Android Operating System is increasing on a large scale since its advent. Android is an open source mobile operating system 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 in up-time memory usage as well as resources.

This application has been developed using IDE (Eclipse Integrated Development Environment) to develop software with ADT (Android Development Tools) i.e. designed to give a powerful, integrated environment to build android applications and Android SDK (Software Development Kit) which provides the API libraries and developer tools necessary to build, test and debug apps for Android..[1]

The rest of the paper has been organized as: section II highlights the related work along with their downsides, section III discusses the proposed system to overcome those downsides, section IV gives the implementation details. Section V shows the results of the system followed by conclusion and future enhancement as well as references.

The main aim of the proposed work is to improve the local bus system by including the necessary additional features into the application, like approximate bus timings to reach the destination, correct bus numbers.

II. RELATED WORK

From couple of decades, have seen growing interest in the development of Android based platform. We can come across a number of approaches which provide that of similar to our respective operation of application.

The application that was implemented in Mumbai, named "M-Indicator Mumbai" has drawbacks like: [2] It displays the matter which is same as what is present in online. Its latest updates have given issues on most of Android mobile which supports even the most recent version. Whenever an option for the source to destination is selected, the field still remains blank, i.e. no bus routes are displayed.

Another application built in Delhi named "Delhi Bus Navigator" has drawbacks like: [3]

The application works smoothly when offline, the application gives information about direct routes only. It does not give information about the alternate routes. This application has bugs due to which it lags all the time. Most of the time the application crashes when requested for specific bus routes.

The application developed in Bangalore named "Bangalore BMTC Info" has drawbacks like: [4]

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The application is never in an updated condition. The application has fed in wrong routes on several bus direction and no updates are given to fix them. After the restoration of the application, it is not efficient to use. This application crashes most of the time. The application is not user friendly with a complicated User Interface (UI).

The application developed in Chennai named "Chennai Bus Route" has the following drawbacks like: [5]

The application works fine, but the bus timings have not been mentioned. Not all bus stops are updated.

The application built in Ahmadabad named "Ahmadabad BRTS" has the following drawbacks like : [6]

This application has not been updated since the time of its development. Number of buses and routes remain still the same. No changes are made to them.

These examples clearly state that all the bus applications implemented so far has faced problems, which still not been fixed. Currently, there is no framework application built for Mysore local bus with feedback system. Most of the earlier tools were developed considering only a few constraints. This led to exclusion of many important constraints which further caused problems while operating the application.

III. E-TRAN ARCHITECTURE

The application is user friendly that anyone with smart phone can access. The basic idea for this project is to help the bus travelers with the routes, to reach the destination. The application shows the estimate time required to reach. The main goal is to overcome most of the drawbacks faced in all the previous applications and generate fast and accurate results. The proposed system has been divided into two modules as follows.
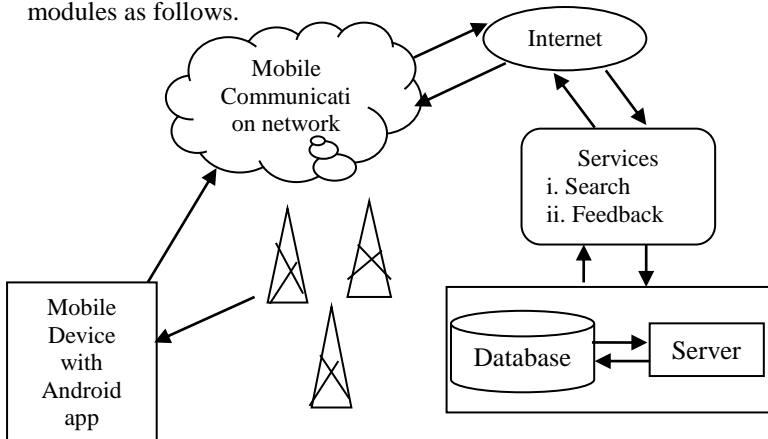

Figure: E-TRAN Architecture

Module 1 gives information about all the alternate bus numbers from source to the destination for guidance. If we consider as a user who has to travel from one place to another place, the application takes the input as source and destination by manual method. Every destination path selected can have more than one path from the source. The bus route travelled for same destination can cover different paths with more or less distance travelled. It can also cover parallel roads which may be required by the user. So, in this

module the flowchart shows alternate paths for the respected destination with a reference of map.
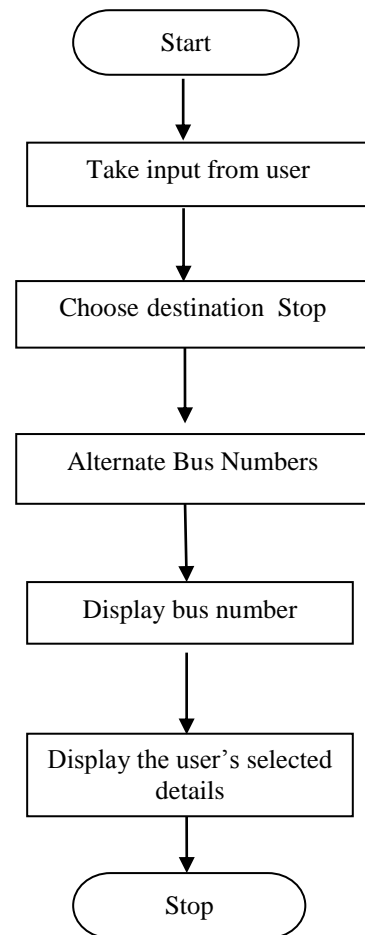

Figure: Alternate routes

Module 2 gives approximate time required for the bus to reach destination. It also includes feedback system to the users to register requests and complaints; this is done using the Client-Server technology.

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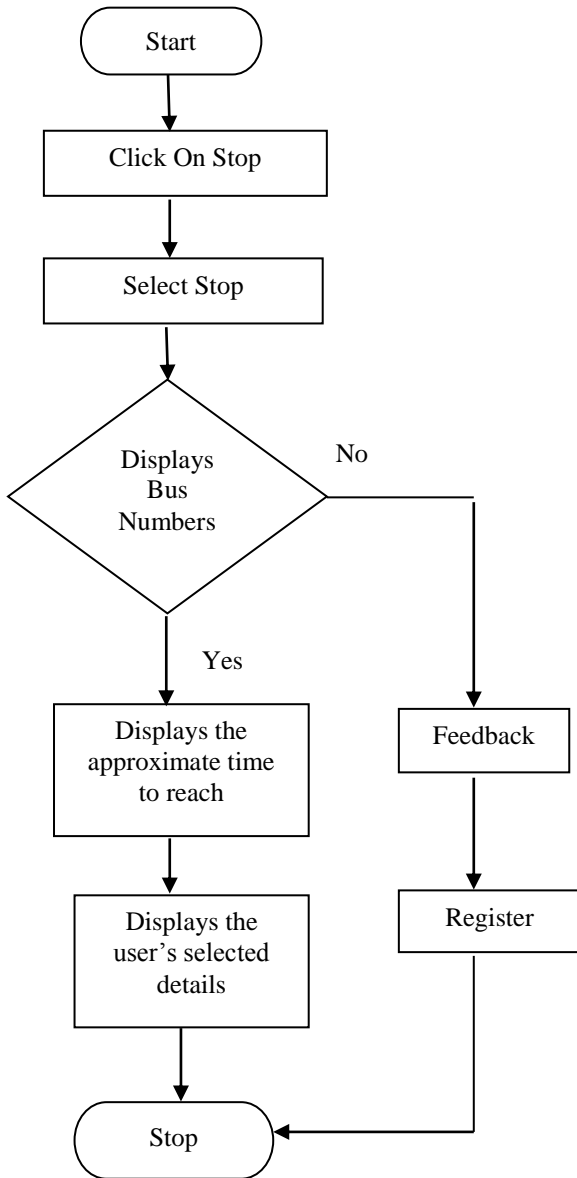NCETEIT - 2017 Conference Proceedings

Figure: Approximate time

There are a number of constraints that need to be satisfied.

A few of them may be stated as follows:

1. There should not be any issues with phone like hanging, lagging etc when bus is requested.

2. Mandatorily android platform should be used.

3. Complete bus numbers must be fed in the database and retrieved whenever required.

4. The bus timings must match the real time bus arrival.

5. The application contains detailed information about all the routes in Mysore.

6. The application must be user friendly i.e. easily understandable for the users to operate it.

7. The application must be updated with the addition of new buses along with the bus numbers and new routes.

8. The application may not need internet while displaying only the route's information. It can also be done in offline mode.

9. User can play the voice message, which plays the respected source and destination selected place names.

10. Feedback system is included in this application where requests and complaints can be registered. The Android versions must support the application.

11. Traversed path of a user can be stored for future usage.

12. The chosen path will have a display of route in the form text message for user's guidance.

IV. IMPLEMENTATION DETAILS

The proposed system requires Eclipse that is an open source software development environment. Eclipse consists of an extensible plug-in system and an IDE. The Android project has been developed in Eclipse, as it has plug-in that is mainly used for Android.

I. A software development kit that enables developers to create applications for android platform. The Android SDK includes sample projects with source code, development tools, an emulator and required libraries to build Android applications. It has been recommended for the developers because of its simplicity in working. Android platform mainly helps in multitasking. To give an example, the application has display for navigation, another application for games, and for messaging. These applications can work simultaneously because of this multitasking ability of the Android platform.

II. ADT Plug-in ADT (Android Development Tools) is a plug-in for Eclipse that provides GUI - based access to many of the command line Android SDK tools. ADT extends the capabilities of Eclipse to let you quickly set-up new Android projects, create an application UI, add packages based on the Android framework API, debug your application using the Android SDK tools and even export signed(or unsigned) .apk files in order to distribute your application. Text editor should not be used as it cannot highlight wrong spellings.

III. Android Emulator is included in every Android SDK which runs on the user's 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 itself is an emulator. It contains specific Smartphone Operating System. Using AVD, one can easily test his/her 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 with few limitations. Neither does it support Bluetooth, nor SMS/MMS communication.[7]

A. *Functionalities of the System*

Below mentioned are the functionalities provided by the system:

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- Route Information
- Bus numbers
- Feedback system
- Voice message
- Extraction of previously traversed data

B.Database

The databases created in this application are done using 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.

CONCLUSION AND FURTHER ENHANCEMENT

The conclusion of this study suggests that knowledge of specific domain improves the results. This Project has been implemented on Android platform. Also, different properties have been added to the project which will be of greater use to the system. The requirements and specifications have been listed above. This project is implemented using Android and the SQL domain. It has feedback system which directs the user's request and complaints for further upgradation. Can play voice message which can be helpful for speech impaired people. The application will prove beneficial for every bus traveler, or even tourists. This application will be useful for every person travelling in Mysore through local bus system.

To improve the working efficiency and better performance of this application, can incorporate sensors to the bus that can be used for tracking the current location which will be helpful for better decision making to users.

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