College Bus Tracking and Campus Notifications Using Android

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Abstract: **This paper proposes an Android Application for college Bus tracking and Campus Notification.This application consists of eight modules. They are tracking; Login, Profile, Circular Tray, Suggestion Box, Forum, End semester results and Library index.This Application will be very much helpful for the students to overcome their inconvenience with college. Students at any unfortunate condition will be late for bus pickup point; with this application students can track the location of the bus. This system makes use of GPS device and Google Map.The bus will be equipped with the GPS transmitter and the GPS receiver is used to receive signals and the locations are updated in the server frequently. Circulars will be sent as notification to the students, Students can post suggestions to the respective department, This application has Forum, So students will be able to discuss their ideas with faculties and co-students, End semester can be sent as message through this App, Students can have access to library index. This application will be helpful for students.**

Keywords - **GPS (Global Positioning System), GPS Transmitter, GPS Receiver, Server.**

I.INTRODUCTION

The usages of smart phones have been grown dramatically in past few years. We use mobile phones for many purposes from sending messages to surfing net. Technologies make our life more convenient than before. Technology should be utilised completely. We have developed this concept to act as an interactive medium between students and College management. Most of the Smart phones run under Android.

What is Android? Android is an Operating System that is specially designed for touch screen mobile phones and laptops. Android can manage large data base than Java.
This Application uses GPS technology to track location of bus and the locations are updated consistently in the server.

II.PROBLEM STATEMENT

- In daily operation of bus transportation, the movement of bus are interrupted by uncertain conditions such as traffic, unexpected delays, etc.
- Without knowing the location of the bus, students will be confused to take alternate decisions, such as finding short route to next pickup point or finding alternate transportation.
- In any uncertain conditions students will be late for classes.
- The absentees may not be aware of the circulars of the day by the college.
- The students may suffer lot to check their result due to network traffic.
- May of the colleges does not have Forum, to discuss subjects with the Staffs and co students.
- Students feel hesitated to write complaints to suggestion box, they are not aware of the suggestion box.
- There is no adequate time for students to access the college library index.

III.EXISTING SYSTEM

This concept is developed from Vehicle Tracking System. A Vehicle Tracking System combines the use of Automatic Vehicle Location (AVL) in individual vehicles with software that collects these fleet data for a comprehensive picture of vehicle locations. Modern Vehicle tracking systems commonly use GPS or GLONASS technology for locating the vehicle. Vehicle locations can be viewed on electronic maps via the internet or specialized software.

IV.PROPOSED SYSTEM

- The proposed System is integrated with Google Maps, which points location of the bus.
- The buses are equipped with the GPS transmitter.
- The location of the bus will be updated in the server consistently.
- The Application will have access to the Student database from the college server.
- The Application has Forum to discuss doubts with faculties and co students.
- The Application has Circular tray and Suggestion box. Through which college circulars can be notified to students and they can post feedbacks via suggestion box.
- Students can have access to the Library index.

V.SYSTEM REQUIREMENTS

SOFTWARE REQUIREMENTS:
- For developing Android Application the popular tool used is Android Studio.

- Android Studio is the official IDE for Android application development, based on IntelliJ IDEA.
- MY SQL 5.711.0 is used for the Data Base Management System.
- It is an open-source relational database management system (RDBMS).

- *HARDWARE REQUIREMENTS:*
- GPS device
- Server

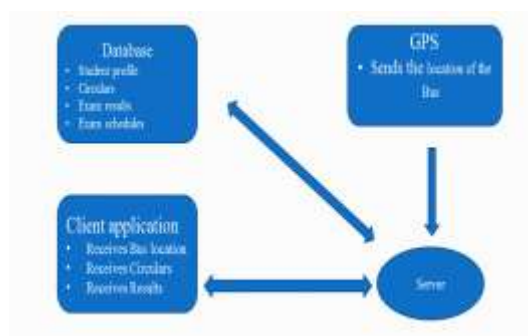## VI.SYSTEM ARCHITECTURE
The simplied system architectur(Figure 1.1).

Figure 1.1 Simplified architecture

VII.MODULE DESCRIPTION
a) LOG IN:
This module enables access to application only for the authenticated users. The student has to sign up with fields such as Register Number, Password, Name, Email ID, Department and year. This data will be stored in the server. The student can login using register number and password. The Layout of login page will be as in Figure 1.2.

Figure 1.2 Login

b) TRACKING:
GPS System is used to track the location of the bus. A GPS transmitter will be equipped in the bus, A GPS receiver's job is to locate four or more of these satellites, finds the distance to each other and computes its own location. This is based on the mathematical principle called Trilateration. So this GPS device will send the location concurrently to the server, this data's are collected and stored in the college server. Google Maps API (Application Program Interface) will integrate this value with electronic map And displays the current location of the bus on users request.

The two interfaces required in our activity to have location based functionality are:

- **GooglePlayServicesClient.ConnectionCallbacks**

- **GooglePlayServicesClient.OnConnectionFailedListener**

Google provides Google Map and Map Fragment API to integrate map in your android application. In order to use Google Map, you have to create an object of Google Map and get the reference of map from the xml layout file. Its syntax is given below:

```
GoogleMap googleMap;googleMap
=((MapFragment)
getFragmentManager().findFragmentById(
R.id.map)).getMap();
```

The layout of the module will be as in Figure 1.3

Figure 1.3 Google Map

c) PROFILE:
The profile is used to identify the individual student.The profile consists of Personal details, academic details about the student, his previous semester marks, Extra Curriculum Activities and events excellence, etc. He/she can set privacy mode to the profile.

d) CIRCULAR TRAY:

Sending circulars to every class in the education institute is quite difficult and requires more man power. Smartphones became necessary thing in everyone's daily life especially for students. So college management can ping circulars to every student as notifications through this mobile application.

Syntax to create notification

```
mBuilder.setSmallIcon(R.drawable.notif
ication_icon);

mBuilder.setContentTitle("Notification
Alert, ClickMe!");

mBuilder.setContentText("Hi, This is Android
Notification Detail!");
```

e) SUGGESTION BOX:

Students are not aware of suggestion box. This module has suggestion box through which students can post suggestions and complaints to the management.so there will a healthy relationship between the students and management.

f) FORUM:

Forum is the interactive environment where students can discuss their ideas and doubts with their faculties and co students.It will be very much helpful during examinations.

The layout of the Forum will be as in Figure 1.4 and 1.5.

Figure 1.4 Forum

Pic 1.5Forum

g) END SEMSTER RESULT:

Students after completing their exams will be waiting eagerly for their results; on the day of result published thousands of students login all together simultaneously to know about their result. This causes network traffic and exceeds the server's capacity which leads to sever down. Our system has solution to this problem; the results can be sent to individual students as messages through this application. As soon as the result is published, the results will be sent to individual student's application. This will be very much helpful for autonomous institutions to publish their results.

h) LIBRARY:

Students borrow book from college library. They should return or renewal those after a certain period of time, But most of students forget to return/renewals their borrowed book. At this cause the students will be fined for late returns.
This application has library module which will remind the student before due date to make return or renewal of the book. The student can also have access to the college library index and availability of books. This will save the time for students.

The Library layout of this module will look as in Figure 1.6

Figure 1.6 Library search

VIII.OUTCOME

Students will be able to:

- ✓ Track the location of college bus.
- ✓ Receive circulars as Notifications.
- ✓ Post Suggestions
- ✓ Make Complaint to management.
- ✓ Receive End semester results.
- ✓ Discuss subject doubts in Forum.
- ✓ Have access to Library index.
- ✓ View co student's profile and academic excellence.

IX.FUTURE ENHANCEMENT

This college bus tracking system can be enhanced and implement in public bus transportation system.so that public can track the bus and check the availability of bus to their destination. People new to places with the help of this application can find routes and buses to their destination.

X.CONCLUSION

This paper described about our project "College Bus Tracking and Campus Notification. This system uses GPS to track the position of the college bus. This application has other modules like Forum, Result, Library, Profile, Circular tray and suggestion box. This is an embedded application of different important modules that are very much useful for the students. On implementation this application will play the major role in student's day to day life.

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