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COLLEGE BUS MANAGEMENT SYSTEM

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Abstract -The modern world is guided by the change in the technology day by day. The bus tracking system plays a vital role in current technology due to its various applications. Due to over population, there is a need for efficient public transportation system. There is increased burden on public transportation like bus just because of population. Therefore remote user needs a smart system which provides real time information of bus. So we proposed a new system which solves the drawback of current public transportation system. So our system handle all the data like current location of bus, management of buses. It provides current location of bus on google maps to the remote user. For development purpose technologies like GPS(Global Postioning System)andgoogle maps are used. LOCATIONBASED services are increasingly important for modern mobile devices such as the Smartphone. An important feature of a modern mobile device is that it can position itself. Not only for use on the device but also for remote applications that require tracking of the device. Furthermore, tracking has to robustly deliver position updates when faced with changing conditions such as delays due to positioning and communication, and changing positioning accuracy. The realized system tracks pedestrian targets equipped with GPS-enabled devicesCollege bus management System is based on Android& Web, which can be implemented on any Android Phone.

Keywords:*Bus tracking, GPS Location tracker Android, Web Application, Real Time Tracking,*

1.INTRODUCTION

College Bus Management System Application is a Web And Android application to help campus members detect the current location of the bus in real-time. It is based on client-server technology along with the use of database. One Android user (College Bus Driver) sends real time location of the bus with additional date and time information to the server. The information provided by that user is stored in the database of the server. And other android users can get the information through the server. The login page is available on the user app for the college administrator. The administrator can keep the record of the bus such as bus no., bus schedule, route info, driver contact, etc. on the database. The administrator also has the permission to manipulate the bus record as per the needs.

Student need to login. Student can search for the bus present on the particular stop. Students get updated on the bus location at certain time interval so that they don't have to wait for the bus being unknown whether the bus is coming or has gone. our system handles all the data about current location of bus and by using this data the real time tracking of bus can be done and this information is then given to remote user who want to know the real time bus information. For development purpose some technologies like GPS (Global Positioning System) and Google maps are used. The system includes server-client based application, which gives real time location of bus on Google Maps.

In thissystem through GPS we will get the bus running distance, distance will be getting from the map API. We can track the bus from where it is coming and where is

its next stop so student, staff, parents do not need to wait they can track the bus in the mobile application. Security head needs to give the daily report of transportation to the concerned authority, this report is generated through this system it will be sent to the concerned authority. After some distance for maintains of the vehicle this system will notify to maintain department that particular bus needs maintenance. And using the QR Code, we will get the attendance of students and staff on time so that if the bus was late then the staff cannot get late remark and if a student is not in the bus after a certain stop parent will get notified that their child was not in the bus .Information about the bus acquired by integrating the GPS device and biometric device in the bus. This will help to reduce man power and time for this work. There are many systems are available to bus tracking and monitoring student in bus. This system will be easy to access because there is no any manual work needs to do, making system smart which works automatically. This system also monitors student who are traveling through the bus,View students details. We fix QR Code scanner for monitoring. This report will send to the central system.From this all collected information we are generating report for higher authority so they will check transport status. If there is any mistake or error, they will take action. It also improves data security no one will be change data.

2. LITERATURESURVEY

A Real-Time College Bus Tracking Application which runs on Android smart phones. This enables students to find out the location of the bus so that they won't get late or won't arrive at the stop too early.The main purpose of this application is to provide exact location of the student's respective buses in Google Maps besides providing information like bus details, driver details, stops, contact number, routes, etc.This application may be widely used by the college students since Android smart phones have become common and affordable for all. It is a real time system as the current location of the bus is updated every moment in the form of latitude and longitude which is received by the students through their application on Google maps.[1]The Proposed work is to develop the bus tracking and monitoring method through the android application. Knowing the consequence of the time in the report to travel to and from college wants to make the college journey completely transparent and responsible. The proposed model imagines a complete monitoring scheme that would trace the college bus continuously in current and involves notification to the driver when the users miss the bus. The student login with his/her roll no in the firebase correlated to the android application and this acts on the android operating method. The application can contain three types, administration, users, and drivers. After sign up, the user has to use the identical password with their roll number to login.[2]

The developed android based system provides the students to find out the exact location of the buses from anywhere. The bus routes are shown on the user interface displaying the position of the buses using google map. Accordingly, user can plan and start. The system consists of a client and a server interface. The developed android application is used on both driver and user module. The user can track the location of buses controlled by a driver on Google map from the server using GPS. Admin maintains and updates all relevant information like bus routes, driver number, number of buses, etc. on the server.[3]Thisproposed GPS based bus tracking systems is to get real time location coordinates of the bus and the bus arrival time so that passengers can make better travel decisions and also to make user friendly system to track location and get approximate bus arrival time. Such a system could also be used by parents to track the location of the bus of their children. Main effects of such a bus tracking system are reduced wait time, reduced uncertainty time, ease of use, greater feel of security, increased willingness to pay and customer satisfaction.[4]

3.PROPOSED SYSTEM

We tried to implement a system which overcomes the limitations of the existing approach.The Bus Management System is a desktop system aimed at students, college administration to maintain bus facility.The system takes student information as input source and attempts to maintain the bus services. It allows flexibility during these processes.The system generates exhaustive reports related to the Bus Management i.e. Fees paid, dues, rout no. & bus stop. The reports highlight various bus services and features of the bus, which can be subjected to improvements especially for the college administration to improve bus transport system.The system requires comparatively small amount of resources such as memory, input/output devices and disk space.We are expecting to find the location of the bus and let the users know the location.so that one can manage their time efficiently and reach their stop just before the bus arrives or take an alternate means of transport if they miss the bus or they are running late.

4. SYSTEM ARCHITECTURE

The system architecture diagram shows that when the user opens the application, they will need to log in or register if they do not have an account. Once they successfully log in, they will see the home page which will display their current location on a map as well as the current location of their assigned bus. The current location of their assigned bus will be obtained by getting the longitude and latitude values of the bus from the database with is updated from the global positioning system and the location of the bus is displayed on the user's map.

The driver's details such as their name and number will also be retrieved and displayed to the user, in case they need to contact the driver. Once the location is displayed on the map, the estimated time for the bus to reach the user's location will also be displayed. This will record the time it took the bus previously to reach the user's stop from its current location.

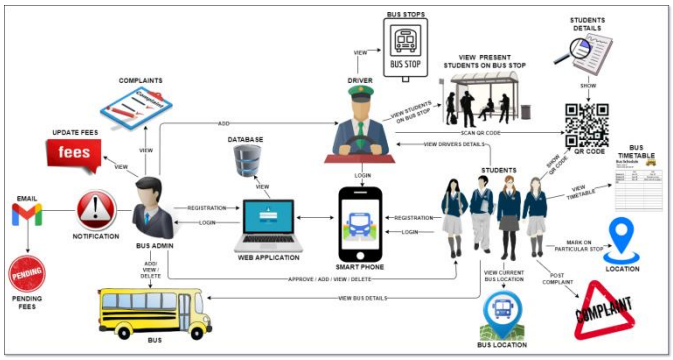


Fig 4.1. Architecture Diagram of Smart Bus Management System

5.ALGORITHM

System S=Android Application for Bus Module
System S1 ={S1', I, δ , O}
S1' = {GPS}
I = {Bus Route, Bus number}
δ →{Function to determine current GPS location using Location based services}
O = {Latitude, Longitude, Speed}
System S2 = Server side
System S2'= {S2' ,I', δ',O'}
S2' ={ Internet, Database server}
I'= { Longitude, Latitude, Speed, Route, Bus number}
δ' → Cal
Let, F(M) =∑ i=1n
Cal
Cal = {R, Dist, Va} [R = Routes, Dist = Distance, Va = Average velocity]
R = {R1, R2, R3, ……..,Rn}
R1 = {Source, L1, L2, L3,……..,Ln}
where L1,L2,L3…….Ln are intermediate Geographical points
Dist = {D1, D2, D3,……,Dn}
where D1, D2, D3……Dn are distances between these points
Va= Average velocity from prediction system
Time= Dist/Speed
O'→{Dist, Time, average velocity of the current segment}
System S3=Android Application for Passenger Module
System S3={S3', I'', δ'' , O''}
S3' = {GPS}
I'' = {Bus Route, Bus number}
δ'' →{Function to determine current GPS location using Location based services and sent to web service}
O'' = {Distance, Arrival Time of bus}

6.MATHAMATICAL MODULE

System Description:
S= I, O,F,DD,NDD, Failure, Success
Where,
S=System
I= Input
O=Output
F=Failure
S=Success

I is Input of system
Input I = set of Inputs
Where,
I= {I1,I2 ,I3,I4,I5 }
Where,
I1={ Admin}
I2= {Students}
I3= {Bus}
I4= {Drivers}
I5= {Bus Admin}

F is Function of system
F = set of Function

O is Output of system
Output O1 = { Web&Anroid Application for College bus management system}
•**SuccessConditions:** Product working Soothly.DevelopAnroid Application for College bus management system successfully.
•**Failure Conditions:** if internet connection Unavailable.

7.MODULES

This Web & Android Based College bus management System can be implemented in colleges. The system is divided into following modules:

1) **Admin Module:**This module is designed for the bus administrator for updating the information. Admin can

log in to the admin account after authentication and authorization. He can enter new route details and also he has the options to add or remove a route. The authority has the right to update the driver's name, driver's contact number, routes, stops, etc. If the admin wants to send any information to the driver, then he can send the message to the driver's mobile.

2) Student Module: They can access the details of all the buses through their smartphones. Here, they will get all the buses and driver-related information too. Students can track the location of their buses from any location.and RegistrationLogin, Mark present on particular stop, View current bus location ,View bus details, drivers details, timetable of bus, Add complaints. in this Module.

3) Driver Module: This module is designed for the bus driver. The authorized bus drivers can use this module by providing their unique login credentials. They need to start their location services before driving. The current location of the bus will automatically be updated from the driver's mobile to the server every moment in the form of latitude and longitude.

8. USED TECHNOLOGY

The College Bus Management System is developed using a range of technologies to enable its various features and functionalities. Some of the key technologies used in the system are:

ASP.NET/C#: The system is developed using the ASP.NET programming language, which is a popular language used for web development, Android development. ASP.NET/C# is used for server-side scripting and enables the system to interact with the database and other web technologies.

MySQL: The system uses MySQL as its database management system to store and manage all the data related to students, teachers, and fees. MySQL is a popular relational database system that is widely used for web applications.

HTML/CSS/XML: The system's user interface is built using HTML and CSS and XML, which are the standard languages used for creating web pages and android page. HTML is used to structure the content of the pages, while CSS is used to style and format the pages.XML also used in structure and style in android.

MOBILE GPS: It is a real time system as the current location of the bus is updated every moment in the form of latitude and longitude which is received by the students through their application on Google maps.

GOOGLE MAP: Google map is a free software that renders 3D graphics of earth using satellite images around the world. It is a version of Google earth that shows the maps and can be embedded into web pages through Google maps API .

9.ADVANTAGES

- It is easy to use and fast to implement.
- User Friendly GUI
- Reduction of paper work
- The system eliminates the use of paperwork needed for attendance marking and monitoring.
- There is no need for laptop or computer in every class to run the system as the system is run on mobile so no need of extra efforts and resources.
- The same system can be used for many applications with minute changes.

10. APPLICATION

- School
- College
- Companies
- Big Organizations.
- used in bus monitoring and controlling systems
- used as library login system.
- used as student attendance monitoring system.
- used in Electronic transportation system.

11. RESULT ANALYSIS

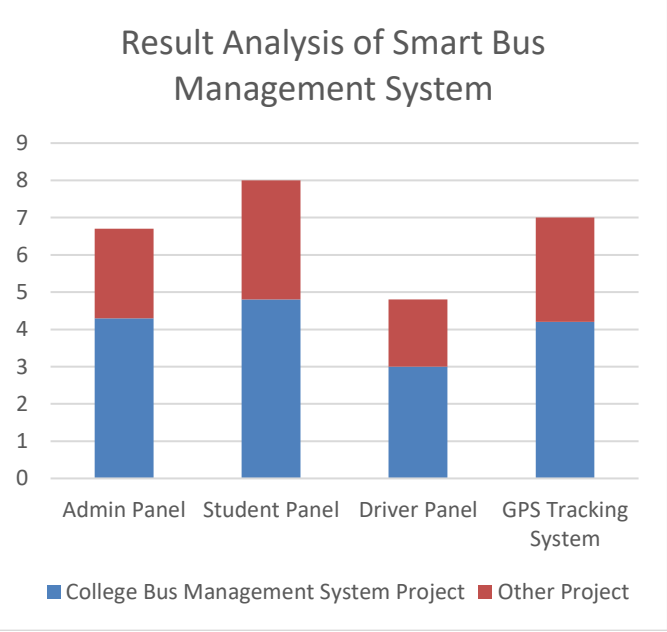
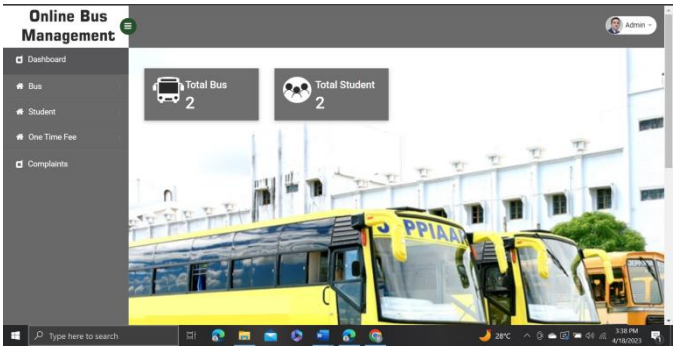


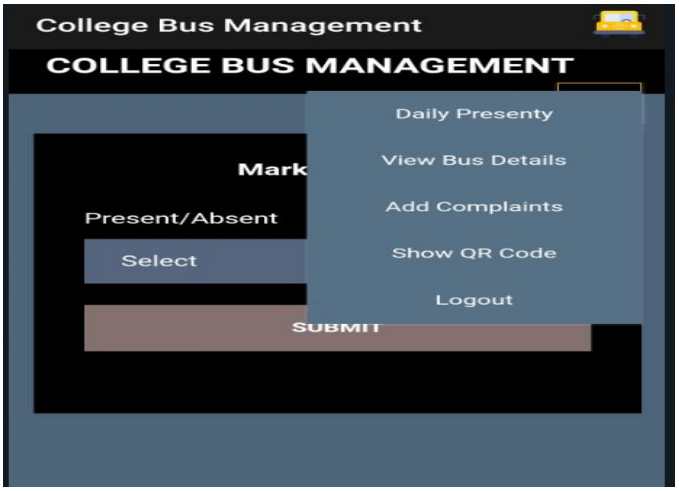
Fig 11.1 . Result Analysis Smart Bus Management System

12.EXPRIMENTAL RESULT

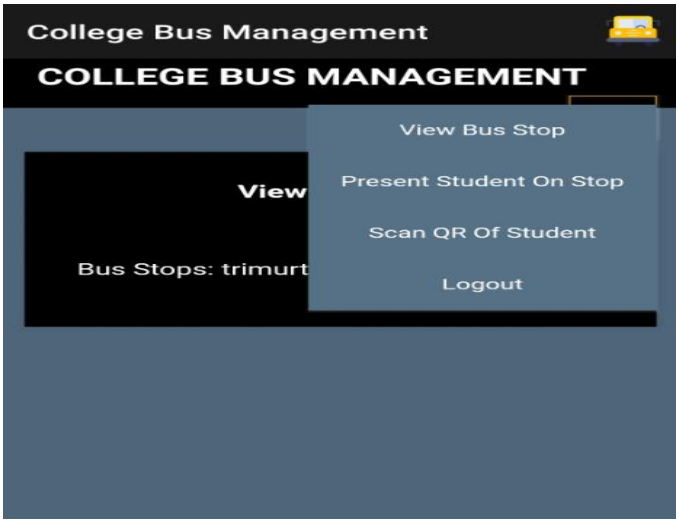
Fig(1). Login



Fig(2). Admin



Fig(3). Student



Fig(4). Driver

CONCLUSION

The proposed system explains how to follow college buses and provide more efficient and effective interaction, resulting in increased reliability and security. We employ a simple but clean user interface that makes it simple to use.No additional hardware is required for implementation because we are using an Android application. Because the majority of the functions execute in the background, no specific notification of alert messages is required. The software also assists in keeping track of pupils, parent/authority contacts, and emergency notifications in the event of a tyre puncture, engine failure, or even an accident.The project may be improved by connecting it to the cloud, where we can track the movement of the bus in real time using Google Maps.

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