College Bus Management System

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***Abstract*— The College Bus Management System (CBMS) is a digital solution designed to streamline the management of college transportation services, specifically focusing on the efficient scheduling, and utilization of buses for student transportation. This system aims to automate and simplify the management of bus routes, schedules, and student registrations, offering an easy-to-use platform for both administrative and students.**

Key features of the CBMS include route planning and seat allocation for students. Through a web or mobile interface, students can view available bus routes, reserve seats ensuring timely arrivals and departures. Administrators can manage and monitor bus schedules, handle route assignments and generate reports related to bus utilization.

The system also includes notification features, alerting students about bus arrivals, delays, or any changes in the schedule. By automating routine processes, such as seat allocation, the CBMS reduces administrative workload and minimizes human errors, contributing to a more efficient and reliable transportation service.

In summary, the College Bus Management System enhances the overall efficiency of college bus operations, improves student satisfaction through better accessibility, and provides the administration with valuable data for planning and decision-making. The system also helps in optimizing resource use and ensuring the safety and punctuality of the transportation service.

***Keywords*— College Bus Management System**

I. INTRODUCTION

The objective of the "College Bus Management System" (CBMS) project is to make easy to the student and staff to search for the bus to reach their respective destinations and also save time to reach the bus location. BMS includes only the bus information (local/non-local) related to a specific organization or college such bus through college bus ID. Such as bus ID, bus number, areas covered by the bus. The BMS contains user dashboard and dashboard.

The admin has all the power to perform add, delete, update operations and route information respectively. The admin is able to perform all edit operations. Registered users can perform search operation and selection of buses. Administrator has privileges to perform operations.

- Efficient Route Planning: The system helps plan and optimize bus routes, ensuring that buses are allocated in such a way that students and staff can reach their destinations on time. It also minimizes travel time and fuel consumption by optimizing routes.
- Student Management: The system allows for the efficient management of students who use the bus service. It can view user details, seat allocation, and usage history.
- Admin Dashboard: An administrator interface allows college staff to manage routes, buses, drivers, and schedules. They can also track the usage data, attendance, and financial aspects of the transportation service.

II. SYSTEM OVERVIEW

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 which 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. The user can also set an alarm if they want to be notified when the bus is at a specific stop or a certain amount of time before the bus reaches their stop.

III. PROBLEM STATEMENT

To make an efficient use of Web & Android Technology! Provide solution with least hardware requirement. "Web & Android based Attendance System" is the software developed for maintaining the college bus management system. Nowadays, many colleges are still using the traditional way of using paper and files to keep record of the bus route and schedule as well as provide information through notices which is not effective. So, there is need of a systematic way of keeping records as well as providing information as per the need. Also students even don't know about the proper timing of the bus. Some students wait for the bus being unaware of that the bus had already been missed and they are late for the class. Therefore, the smart system is necessary which provides real-time information of bus to remote user. So we proposed a new system which overcomes the drawback of college transportation system.

IV. PROPOSED SYSTEM MODEL

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 locations 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.

A system model is a systematic approach towards software development. Before any application development built it is necessary to make the drawing of that building, similar is the case with any software. Here also before any coding of the software begins, it is necessary to make the model of the software.

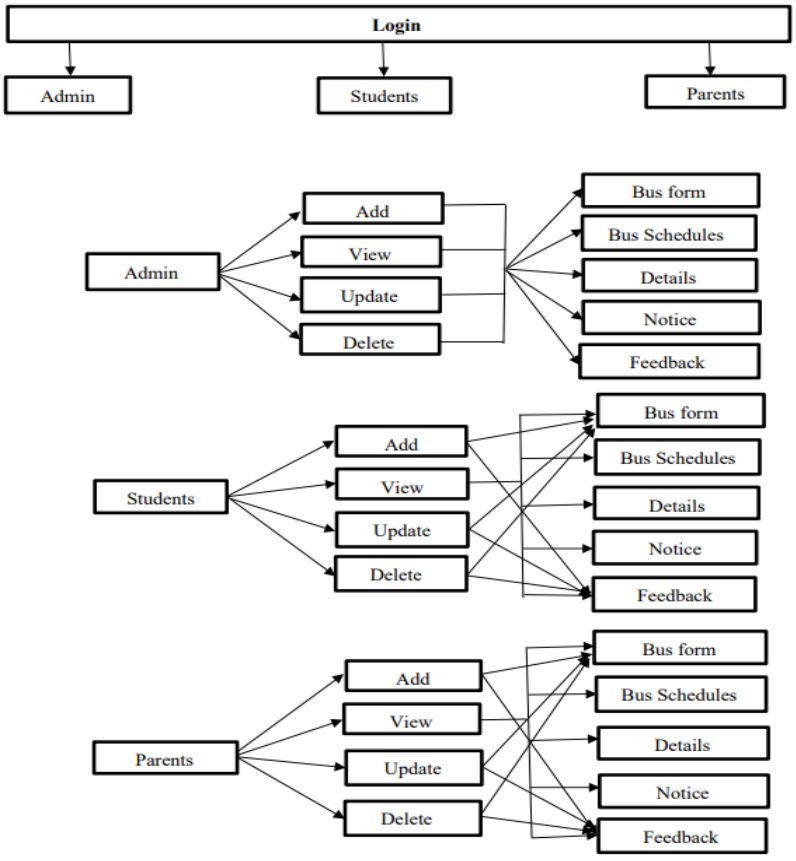

Fig.4.1 Block diagram

V.FLOWCHART

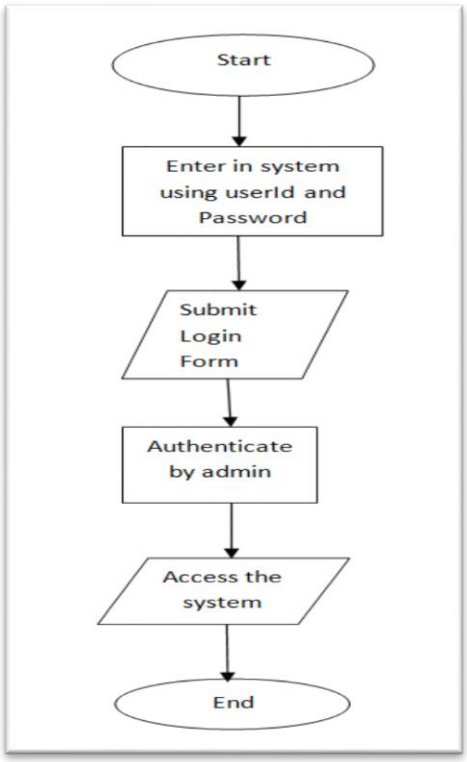

Fig.5.1 flowchart

VI. SYSTEM REQUIREMENTS

1. Computer System:
   i. Lenovo (i5)
   ii. 8GB RAM
2. Software :
   i. Android Studio(Ladybug)

VII.RESULT OF IMPLEMENTATION

i. Login Page : -

ii. Dashboard : -

VIII. ADVANTAGES

1. It saves lots of time.
2. It is easy to use and fast to implement.
3. User-Friendly GUI.
4. Reduction of paperwork.
5. The system eliminates the use of paperwork needed for attendance marking and monitoring.
6. There is no need for laptop or computer in every class to run the system as the system runs on mobile, so no need of extra efforts and resources.
7. The app is easy to install and use.
8. This system is very easy to implement.
9. The same system can be used for many applications with minute changes.
10. Very easy to maintain.
11. We can provide security to the bus management system data.

IX. CONCLUSION

The proposed system is implemented practically in the bus and the working is monitored and observed that it has maximum functional capability. This application will make it easier for users to students to track the real-time location of their buses. This ensures that the user arrives on time to the university and does not get delayed trying to find a bus or wondering if they missed their bus. It is useful to first-year students who might not know the bus might arrive that their stop and lets them know if they have missed their bus in which case, they can find other buses that might pass by their stop. This system only gives the latitude and longitude of the place, in future

we are trying to implement the system which gives the name of the place.

X. REFERENCE

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