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Bus Tracking Android Application

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Abstract- Bus Tracking Android Application designed to show a real timing of bus and user gets a notification on their mobile related to bus delaying, failure and the exact time. Due to rapid increase in traffic, there is need for public transportation system. This Application has power to fetched the bus from anywhere with an internet connection. This application handles all the data like current location of the bus, management of buses and its schedule. Application involves some technologies like GPS, Google maps etc. Bus Tracking Application is mobile friendly and easy to use. User don't need to waste their time for waiting for a bus for a long-time.

***Index Terms*- Google Map, GPS, Android Application, Real Time Notification**

I.INTRODUCTION

Dynamic application offers real-time notifications to user, informing them of the arriving time of the Bus. The real-time tracking of the Buses, along with estimated arrival times, minimizes waiting times for users and ensures the timely Arrived at the specific place. There are so many buses are available for passengers but passengers may not have complete information about the Buses like Bus number, arriving time of Bus etc.

Proposed System deals with all the problems and gives proper information about the bus. Everyone can download this application on their mobiles with an internet connection. Bus Tracking application needs only Internet connectivity for use this application in a proper way. The Bus Tracking Application introduces a revolutionary approach to streamline and enhance the public transportation experience. In a world where efficient commuting is paramount, this application emerges as a solution to address the challenges faced by commuters, providing real-time insights into the location and movements of buses. By leveraging cutting-edge technology, the Bus Tracking Application aims to empower passengers with the ability to track their bus's live location, anticipate arrivals, and plan journeys with unprecedented ease. This innovative tool not only promises to enhance the overall efficiency of public transportation but also offers commuters a sense of control and convenience, ultimately transforming the way we navigate our daily commutes. Welcome to a smarter, more connected way of traveling – welcome to the Bus Tracking Application.

The Bus Tracking Application is a revolutionary solution designed to enhance the efficiency and convenience of public transportation. In an era where connectivity is paramount, this application aims to simplify the commuting experience for users. By leveraging advanced tracking technology, it provides real-time information on the location and movement of buses within a transportation network. Users can effortlessly access accurate arrival times, plan their journeys more efficiently, and minimize wait times at bus stops. This application not only transforms the way people navigate public transportation but also contributes to a more streamlined and accessible urban transit system. Embracing the power of technology, the Bus Tracking Application is poised to redefine the commuter experience, making daily travel more predictable, convenient, and user-friendly.

II.LITERATURE SURVEY

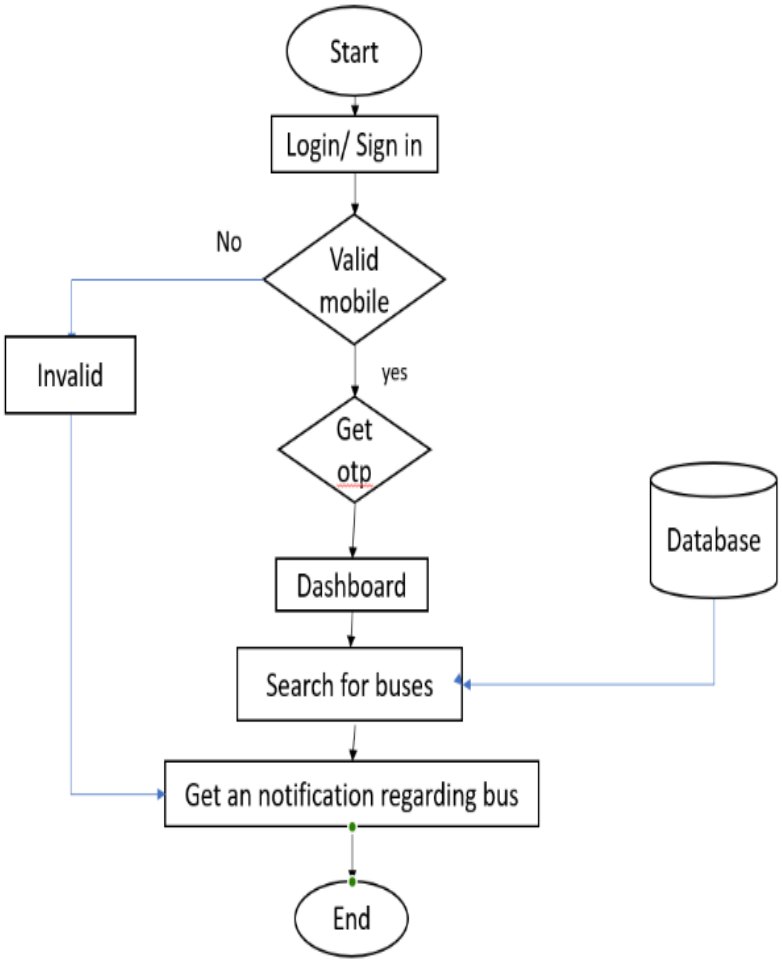
A bus tracking system is very useful for tracking the movement of a Bus from any location at any time. In this work, real time Google map and GPS based Bus tracking system is implemented. These are some of the technical literatures in engineering and technology where people have tried to implement similar kind of system which are mentioned below.

[1] Authors "Hafiizh Nur M.A, Sugondo Hadiyoso, Fefa Bianca Belladiana, Dadan Nur Ramadan, Inung Wijayyanto" have implemented "Tracking, Arrival Time Estimator, and Passenger Information System on Bus Rapid Transit (BRT)" This paper gives an integrated online system is designed to provide information, including bus arrival time, bus position and the number of passengers on the bus.

[2] Authors "Vigneshwaran, Nithya B, Kishore V M, Raghul K" have implemented "Design of bus tracking and fuel monitoring System". This Vehicle Tracking System can likewise be utilized for accident Detection alert system and some more.

[3] Authors "Asif Ahmed, M M Rayhan Parvez, Md Hridoy Hasan, Fernez Narin Nur, Nazmun Nessa Moon, Asif Karim, Sami Azam, Bharanidharan Shanmugam, Mirjam Jonkman" have implement "An Intelligent and Secured Tracking System for Monitoring School Bus". In This system, all buses can be tracked by the guardians using the proposed intelligent and secured tracking system.

III. PROCESSED SYSTEM



A bus tracking application typically functions through a combination of technologies, such as GPS, mobile networks, and software systems, to provide real-time information about the location and movement of buses within a transit network.

1. GPS Tracking: Each bus in the fleet is equipped with a GPS device. This device constantly tracks the bus's location and relays this information to a central server.

2. Data Transmission: The GPS device transmits location data, typically via cellular networks or other wireless communication protocols, to the central server.

3. Server Data Processing: The central server collects and processes the incoming location data from all buses. It uses this data to update the bus locations in real-time.

4. User Interface: The processed data is then made available to users through the bus tracking application. Users can access this information via a mobile app or a web-based platform.

5. Map Integration: The application usually displays a map interface that shows the bus routes, current locations of buses, estimated arrival times at different stops, and sometimes even the traffic conditions along the routes.

6. User Interaction: Users can view the buses near their location, track their movements in real-time, and plan their journeys based on the estimated arrival times provided by the application.

7. Notifications and Alerts: Some applications allow users to set alerts for bus arrivals or departures, providing timely notifications to users about their preferred buses.

8. Analytics and Optimization: Transit authorities often use the collected data for analysis, optimizing bus routes, schedules, and operational efficiency based on demand patterns.

9. Customized Alerts and Notifications:
Users will have the option to set up personalized alerts and notifications for bus arrivals, ensuring that they are informed in advance and can manage their time efficiently.

10. Scalability and Flexibility:
The proposed system is designed to be scalable, accommodating the growing needs of expanding public transportation networks.
It allows for easy updates and modifications to adapt to evolving technologies and changing user requirements.

Overall, the bus tracking application operates by collecting and processing GPS data from buses, which is then presented to users through an intuitive interface, enabling them to make informed decisions about their commute. The system also facilitates transit authorities in optimizing their services for improved efficiency and better user experience.

IV. WORKING

1. User Registration and Login: The user can download and install the Android application on their mobile device. Upon first use, the user registers an account with their personal details or logs in if they already have an account.

2. Live Tracking of Bus: The application provides real-time tracking of Bus using GPS. Users can view the live location of nearby Buses on a map within the app.

3. Notifications and Alerts: Users receive notifications whenever Bus is nearby, delay or cancel. Notifications may include estimated arrival times and any specific instruction.

4. User Feedback and Reporting: Users can provide feedback on the Application, report any issues.

5. Location Services: The app can use GPS or location-based services.

V. ARCHITECTURE

The architecture of application is designed to provide a robust and scalable platform. It consists of the following components:

Mobile Application: It is available for Android devices and can be easily downloaded and installed from the Google Play Store.

Server Backend: The application's server backend is hosted on cloud infrastructure and is responsible for processing real-time data, managing notifications, and handling user requests. It also stores and manages data related to Buses.

Functionality: The "Bus Tracking Android Application" offers a seamless user experience while providing efficient solutions.

1. **Installation:**
   Users can download and install the application.

2. **Registration:**
   New users are required to create an account, providing essential details such as name and contact information.

3. **Notifications:**
   Once registered, users receive real-time notifications whenever user search for an appropriate bus. These notifications include estimated arrival times, allowing residents to prepare their waste for pickup.

4. **Reporting:**
   Users can report issues, this feedback is sent to the responsible authorities for prompt action.

5. **Notifications Service:**
   Responsible for sending push notifications to users.

VI. CONCLUSION

The development and implementation of a Bus Tracking Android application for so many common people like us who always waited for a long time for Bus represent a beneficial for everyone like us. This project introduces a cost-effective, user-friendly, and highly efficient solution. This application is free of cost, freely available and easy to install on the device. The accuracy of the Application is depended on GPS. It shows the real time notification of bus delaying and bus failed. It may help so many users to do not wait for a long time.

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