PMPML Pravas with online Bus Tracking System

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Abstract*: Transportation is one of the India's biggest problem. Majority of the population is dependent on the public transportation. But the transport technology has not evolve since many years. Most employees use their own vehicle to reach offices. This happens mainly due to the lack of public transportation facilities. If better public transportation facilities are arranged, it will help resolve traffic congestion, save fuel and reduce atmospheric pollution Most student who commute daily to their schools. Pravas aims to solve this problem using the smartphones that the general public possess. It aims to provide booking functionality, train tracking etc. Which will make the travel experience hassle free for their users*

Keywords: GPS : Global Positioning System BRTS : Bus Rapid Transit System

I. INTRODUCTION

After the world faced the Covid Pandemic. It has made everyone stronger and more online. This has lead India to adopt digital means in various areas of life. In this fast paced and internet world, people are demanding more and more facilities in their hand.

Public Transportation is the most basic facility, that an average resident uses on a daily basis. But the transportation system are still not leveraging the internet facilities for connecting the with the general public. When people will find travelling through buses efficient and hassle free, then they will start adopting public transportation. Pravas aims to solve this problem by using the smartphones that the general public possess. It aims at providing a better bus travel experience which would encourage citizens to adopt public transportation.It would provide booking functionality, bus tracking etc. Which will make the travel experience hassle free for their users.

There are many problems associated to public buses like bus arrival prediction, live bus tracking, accident detection, travel route recommendation etc.

II. RELATED WORK

In R. Chawla [1], the proposed solution aims at solving for calculating bus arrival time which would help the everyone in scheduling their trips based on the upcoming buses. It proposes to make use of the bluetooth beacons. These beacons are attached to each bus and operate in broadcast mode.

The bus stops will have Raspberry Pi 3, installed which will receive the notifications about the bus that is going to arrive, which notification will be uploaded to cloud and broadcasted to users. Commuters would have prior information of the seat reservation, and booking pass. The UWB BLE are used instead of GPS here, as it is simple, low latency, and highly customizable. They are low powered and need no pairing, which makes them accurate even in deterred conditions, and able to handle many buses at a time. [1]

The findings in A. Kulkarni, discusses about the propagation of Intelligent Transport System in Bus Rapid Transit Systems all over the world, and discusses the BRTS of Indore. According to the report, the bus transportation has declined by 15% during the period of 1995 to 2004 because of other means. Inclination towards personalized vehicles should be changed and people should be motivated to move towards public transportation. BRTS has specifically listed goals, like shorter trip times, short wait, easy to use, accessible, welcoming, integrated, distinctive, low environment impact, incremental development. ITS covers the use of location, communication technologies, and information for making safer, seamless and energy efficient travels. Integration of ITS in BRTS would improve the overall travel experience of the commuters. [3]

In the R. Rathod, it is discussed about assisting the public using smart systems available. It raises the concerns of bus arrival time, person count in bus, women safety, accident detection, alcohol detection for driver etc. The system

proposed uses the offline system like GPS and GSM for real time monitoring, and sms monitoring. They use PIR sensors on doors for counting person on bus, which helps in calculating available seats on bus. Alcohol sensor namely MQ3 alcohol detector sensor, is used to monitor the state of the driver, if the driver is not fit to drive then a sms is sent automatically to required authorities. This system also proposes ramp for handicapped to improve their travel experience. Any anomaly detected will result in sms trigger to respective bodies.

III. PROPOSED SOLUTION

The solution is based upon a mobile application. It will include :

The solution will be used by commuters to track the buses. This would make use of the GPS of onboard passengers mobiles. This will also be able to gather information from the passengers onboard if the bus has reached a particular stop.

Commuters can also use the proposed system for booking regular tickets for their entire journey, which would save them from booking multiple times, as well as, this would promote digital banking and a greater auditability.

The proposed system will have support for seasonal pass booking which can be used along with an ID. This promotes paperless booking and organized travel.

Proposed system will also keep the travel history of the commuter which the users can refer.

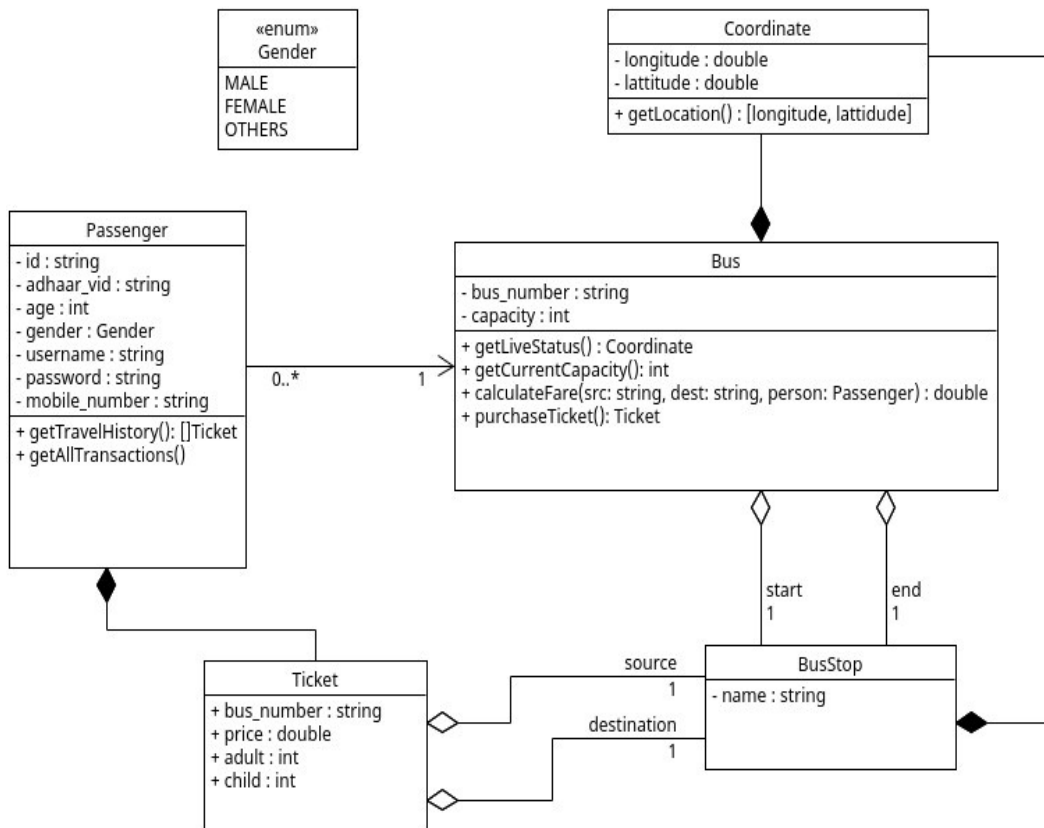Data gathered by the proposed system will also provide insights to the users.

Fig 1 Class Diagram

Bus Class: Manage all the operations of Bus

Passenger Class: Manage all the operations of Passenger

Ticket Class: Manage all the operations of Booking

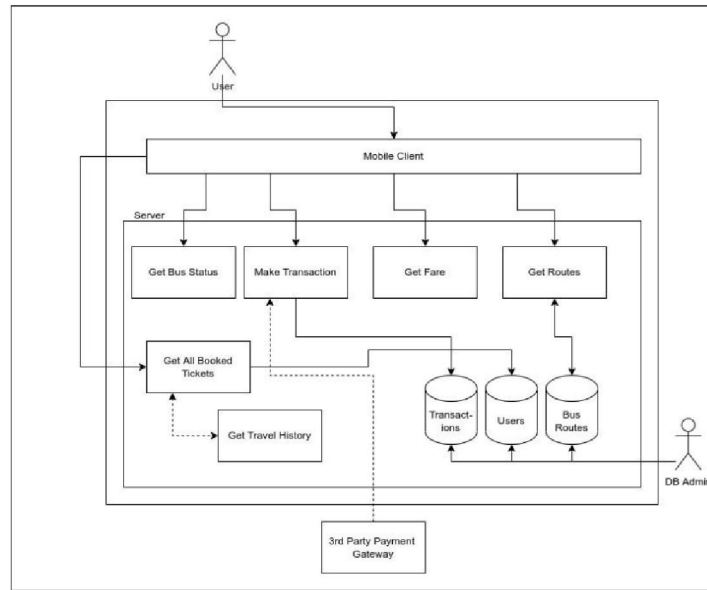Payment Class: Manage all the operations of Payment

Fig. 2. System Architecture of Proposed System

Users will interact with mobile client which will have our application installed. The application will have various features, surrounding the bus traveling. Mobile client will make API calls to our server which will return appropriate responses. Server will also contain the Payment Gateway secrets and various other security measures. Server will serve all the API requests from the database, which will also contain user specific settings for personalisation.
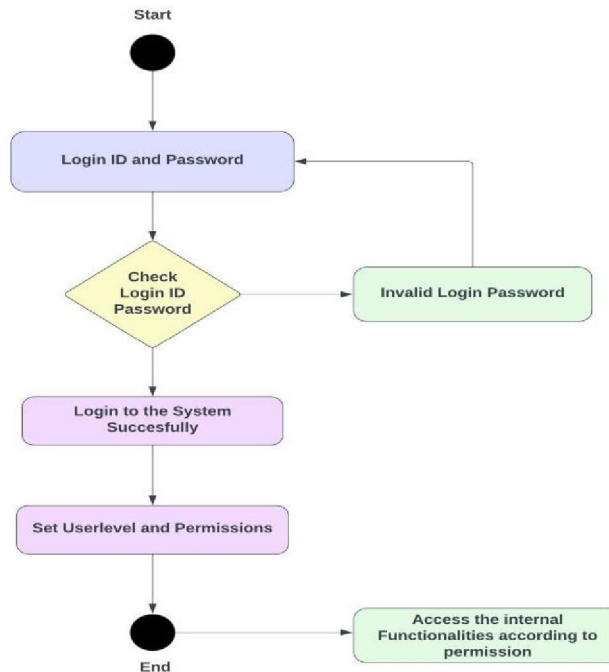

Fig 3.Activity digram

This is the Login Activity Diagram of Bus Ticket Booking System, which shows the flows of Login Activity, where admin will be able to login using their username and password. After login user can manage all the operations on Seats, Payment, Booking, Customer. All the pages such as Booking, Customer. The diagram helps demonstrate how the login page works in a Bus Ticket Booking System. The various objects in the Customer, Seats, Payment, Booking, and page-interact over the course of the Activity, and user will not be able to access this page without verifying their identity.
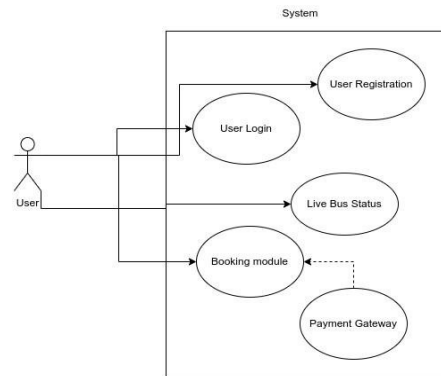
Fig. 2. Usecase Diagram

The use case diagram demonstrates various ways with which user can interact with the system. It is interaction of the system with the environment that is primary and secondary actors.

IV. ADVANTAGES

- Improve the tradition buses using the intelligent transport systems.
- Make public transport systems on hand using App.
- Facilitates booking using mobile phone, for regular and seasonal pass for buses, which will increase the reliability and auditability of the process.
- Provides live status to the users so that they can plan their journey according to the bus route and expect any delays

V. FUTURE WORK

- System can be expanded to include chatbots for easier interaction with the users.
- System can integrate with other 3rd party services.
- Platform can be converted into a gamification based app which would help in building an active user base.

VI. CONCLUSION

This system will reduce the traffic congestion, and encourage the use of public transport by providing ease of use and better sense of dependability. This app can also harness the power of masses and can gain knowledge by the users for their live status. Booking system will make regular tickets and seasonal pass booking easy for everyone. When more and more users start using the application, then it will be able to leverage the smartphone from multiple users and will make the results more accurate.

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