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MyBus: College Bus Booking and Tracking System

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ABSTRACT: The current college and school bus has a lot of problems when it comes to managing the students and bus coordinators. Any student or stranger without a bus pass can travel in the bus. Admins do not have access to proper data of all the users, students do not have access to Realtime location of the bus. This paper provides a simple but robust solution to this problem with more functionalities. With this App most of the problems can be fixed, along with giving both students and bus-coordinators more control over the data. Students can get access to features like Realtime tracking of bus and reserve bus tickets.

KEYWORDS: Android App, QR code Scanner and generator, Google Maps API, Firebase, Payment gateway.

I. INTRODUCTION

College bus booking and tracking application is an Android mobile application that helps students and bus coordinators with various problems that occur day to day for paid bus services. Students have access to their whole profile directly through the app. Students can pay bus fees directly through the app without having the hassle of several procedures. The students who do not travel by bus and want to avail one day access can also get direct and easy access to these services with a one-time fee. The app also provides an option to generate and display a unique QR code which can be shown to the bus coordinator to verify the fee structure or plan availed by the students. The app also features real-time access to bus location so that students don't miss their bus. The bus coordinators can also avail the features of the app by just using their admin credentials to log in to the app. The bus coordinators will be able to scan the QR codes shown by the students and get real-time details on the specific student. The bus coordinators will be able to search for students and get access to all the details in the database. The app also features a web version and a IOS app. An Admin portal where the admins can log in through their computers or any device that supports a web browser and an internet connection.

II. LITERATURE SURVEY

Pavan Telluri, Saradeep Manam, and Jayashree M Oli [1] Automated Bus Ticketing System Using RFID. They have used the RFID method to implement Automated bus ticketing system. We have taken small parts of their project to help us improve our app. By creating an automated system its easy to handle transactions and users.

Sanam Kazi, Murtuza Bagasrawala, Farheen Shaikh and Anamta Sayyed [2] Smart E-Ticketing system for Public Transport Bus. This paper provides insights on how to create a smart E-Ticketing system for public. How data of huge number of users can be managed.

Ifeanyi Cosmas Nwakanma, Chukwuemeka Etus, Ikenna Ajere and Uchechukwu Agomuo [3] Online Bus Ticket reservation system. For the reservation part of our app we have used this paper to get insights on how users can purchase a bus pass.

Sonam Khedkar, Swapnil Thube [4] Real Time Databases for Applications. Since our project uses realtime location tracking we needed a database that supports realtime data sharing. This paper demonstrates how Firebase realtime Database can be used for such purpose.



Chunnu Khawas, Pritam Shah [5] Application of Firebase in Android App Development-A Study. This paper demonstrates how Firebase can be effectively used for android development. Since our project is completely based on Firebase, this paper helps us get clear ideas on usage.

Neha Srivastava, Uma Shree, Nupa Ram Chauhan, Dinesh Kumar Tiwari [6] FIREBASE CLOUD MESSAGING (ANDROID). This paper shows how firebase cloud messaging can be used in an android application. For our project this concept will be used for notifying the users regarding bus delay.

R.A. Kalpana, S. Sheik Mohammed, K. Naadis, R. Praveen Kumar proposed [7] Smart Ticketing System using QR Code and Android Application. This paper helps us understand how QR code can be used to improve a smart bus ticketing system. The idea for fast QR code user data retrieval was derived from this paper.

III. METHODOLOGY

A new user has to initially register using the mobile app or the web version. If the user already has an account, then he can directly login to the application. Basic details like the user number, Name, email address and password will be asked.

The technologies that have been used are:

1) Java

Java is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. This language will be used for the backend development of Android application.

2) Firebase

Firebase is a platform developed by Google for creating mobile and web applications.

3) HTML

The Hypertext Markup Language, or HTML is the standard markup language for documents designed to be displayed in a web browser. This will be used for the development of the Web application and admin portal.

4) Dart

Dart is a programming language designed for client development, such as for the web and mobile apps. It is developed by Google and can also be used to build server and desktop applications. Dart will be used to develop the IOS version of the application.

IV. PROPOSED WORK

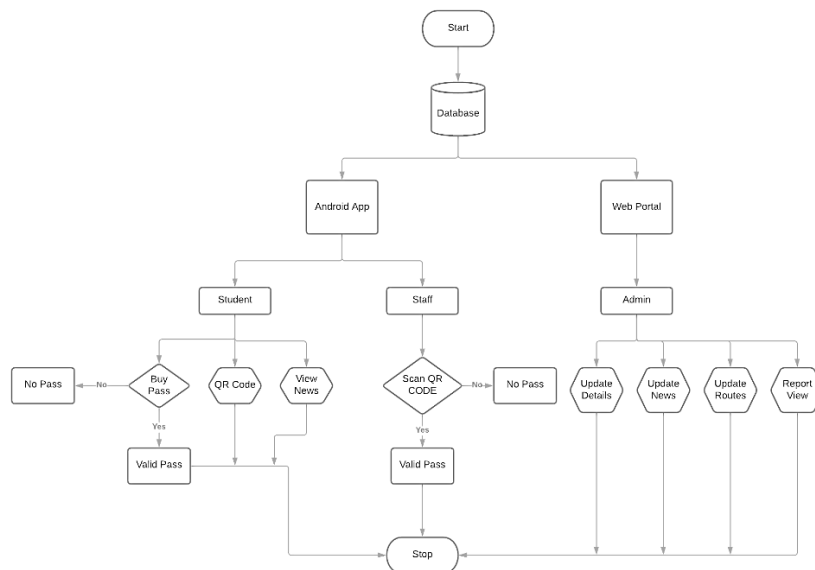


Figure 1: Complete System Flow design

Figure 1 shows the complete system flow design of the college bus booking and tracking system. The following are the functionalities of the system:

- 1) User can register and login with email and password.
- 2) Based on the user email, the type of control the user has on data will be determined.
- 3) Students are the users who will purchase the bus pass and will travel.
- 4) Staff are the Bus coordinators who will be scanning the students QR code.
- 5) Admin are the users who have full control on all the users, they use the admin portal.

Student

Users of the application that are students, can Book Bus Tickets directly from the android/IOS application. Users can also Track the bus location, update their profile details, view QR code and keep track of old transaction history. They also have access to Bus routes.

Staff

Staffs are the users who will verify whether a student has a valid bus pass. Staff can also access details of all the users and also send location data in real-time. This location data will be used by the students to track the bus. Verification of students can be done using a QR code scanner.

Admin

Admins have ability to update of details of any user, offline accepting of payment and generation of physical bus pass. Admins can also update news, Bus routes, view and generate reports of past transactions.

V. RESULTS

The final project can be used by all the users, along with all the features mentioned before. Figure 2 displays the home page of students. This home page will be displayed on successful login of the user.

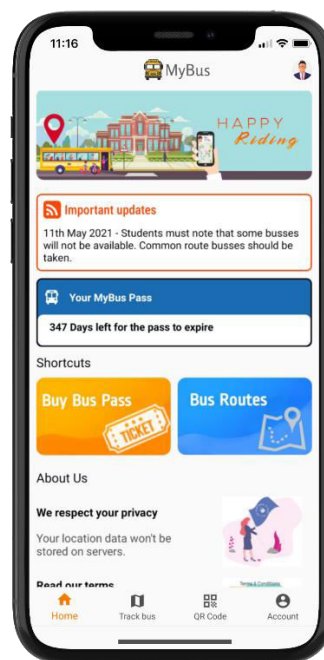


Figure 2: Home Page

Figure 3 displays the Track Bus section of the app where the students can track the Bus location in Realtime. This Bus location will be sent by Bus coordinators.

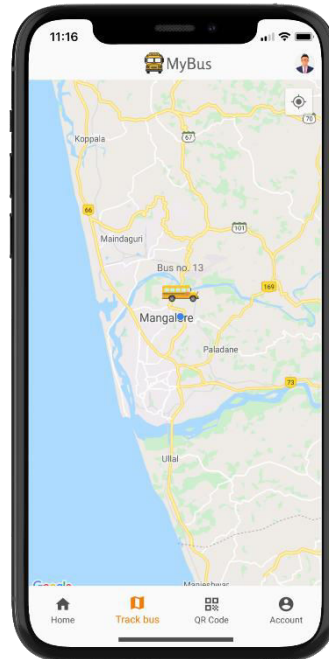


Figure 3: Live Tracking of Bus

Figure 4 displays the QR code section of the app where the students can generate a QR code based on their user id which is unique and this QR code can be showed to Bus coordinators for Bus Pass verification.

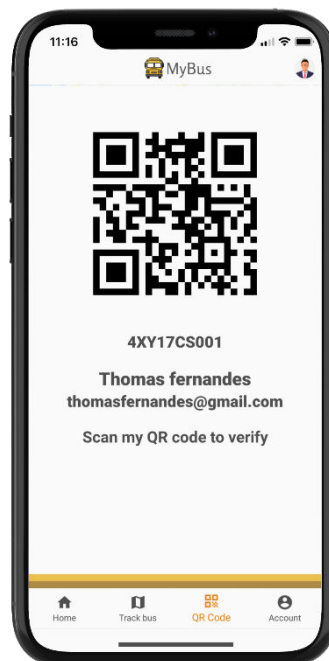


Figure 4: Unique QR code generator



Figure 5 displays the QR codescanner section of the staff app. The staff can use this to scan the students QR code and get details on the specific student. Details related to the pass will also be fetched from database.

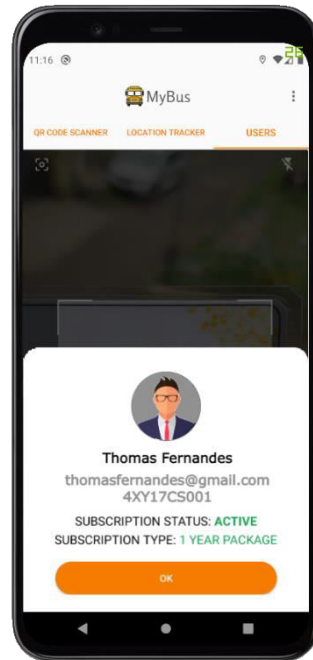


Figure 5:QR code scanner for Staff

Figure 6 displays the admin portal for Admins, Admins can keep track of the all the details from here. They can update routes, keep track of student’s transactions.

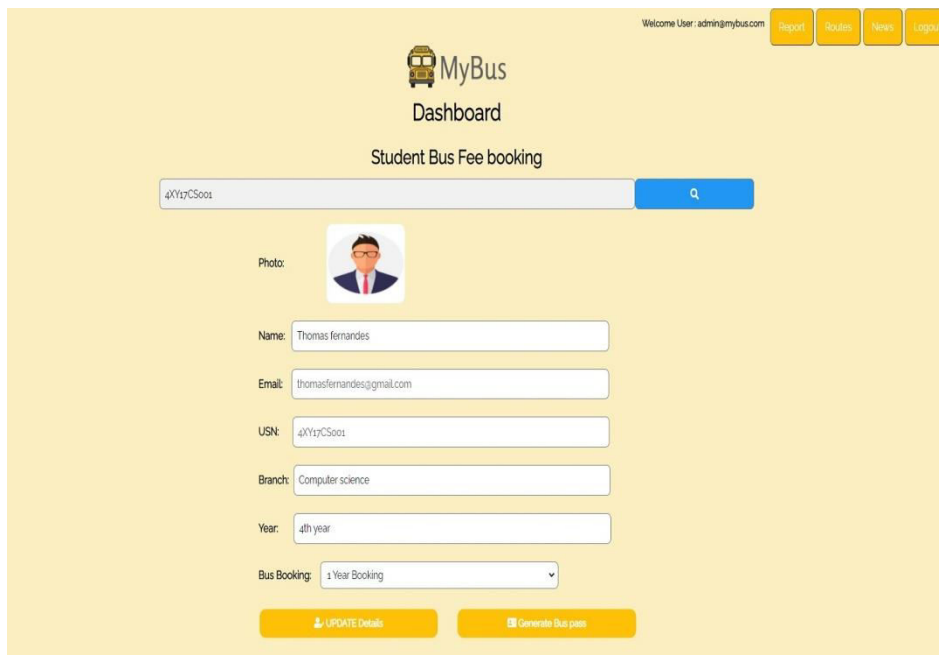


Figure 6:Admin portal home page for Admins

Figure 7 displays the web version of the app. Students who do not want to install an app can access the features directly through the web browser that is available.



Figure 7: Web version for students

VI. CONCLUSION

Finally, the users will receive an app that can work on all the platforms including Web Browser. Using features like 3rd party payment gateway, it makes it easier to allow multiple payment methods. In addition to this, Students can track the bus location which will be updated in Realtime by the bus coordinator. Such features will help the student be on time, and not miss the bus. Bus coordinators don't need to keep track of students using hard copy, every detail related to the student will be available directly in the app.

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