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Smart Bus Ticketing System

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Abstract—Public transport is the cheapest and most reliable transportation system in India, hence it has always been popular with the masses. Buses are an integral means of public trans- port which plays an vital role in transportation in India. The advancement in transport system has been increasing in day-to- day life as more and more people rely on public transport to go to work, school, hospitals, etc. Even though the public transport buses have been providing fairly satisfactory services, there is a need for smart and reliable system. The major problem in local buses are about issuing bus tickets, which often leads to conflict between the passenger and the conductor. Keeping this in mind we are developing an android application which will provide an efficient and smooth bus ticketing experience for both the user(passenger) and the service provider(conductor). The android application provides an interface for the bus ticketing system combined with the technology of QR Code for quick money transfer. QR Code or the Quick Response Code is the most dominant form of storing and exchanging information between devices. It's a type of matrix Bar Code and has more capacity than UPC Codes. Typically scanned and interpreted by camera enabled smartphone, but also can be interpreted or generated by any camera device implemented with QR decoding logic. The passengers can go cashless using this application, neither the conductor has to worry about returning change for the paid bus fare. By this application, we can minimize the usage of paper tickets which will alos help in green India.

Index Terms—Public transport, Bus tickets, Android application, QR Code

I. INTRODUCTION

Bus service is an important mode of transportation now more than ever because of global warming as well as the state of the economy. 70 percentage of India's population rely on buses to get to their destination on time. Due to fast moving world, humans are in need of effortless transport system. In metropolitan cities like Mumbai and Delhi, 10-15 million people travel through public transport buses daily. As a large number of people board buses everyday it is often difficult for passengers to get the ticket and maintain it. So this system, applying the benefits of technology will solve the problem of bus ticketing by digitalizing the process of money transfer for bus fare, ticket generation and storage travel details. It also make it eco-friendly by eradicating the usage of paper rolls for a contribution towards Green IT and environment awareness. This smart bus ticketing system will lift the online ticketing system to a new level by introducing QR code for the purpose of safe transaction of bus ticket fare.

QR code (abbreviated from Quick Response code) is the trademark for a type of two-dimensional barcode. QR Codes are machine-readable and the content inside them cannot be changed once generated and also provides a rapid, easy, con-

venient, accurate and automatic data collection method. With the increasing application and popularization of wireless communication and mobile devices technology, two-dimensional barcode technologies have been employed worldwide. QR Codes are typically scanned and interpreted by camera enabled smartphone, but also can be interpreted or generated by any camera device implemented with QR decoding logic. Transferring of money using QR code not makes it safe but also easy to use by just scanning. It reduces the effort of entering the correct amount as the generated QR Code will already have the information of the bus fare.

II. PROBLEM STATEMENT

In India, public transport plays a prominent role in every individual's life. Buses are the widely used public transport by Indian citizens to reach their destination in daily life. As it is widely used, there are numerous number of problems in Indian bus system, such has no exact change, it is possible that both the passenger and conductor do not have change. In these cases, the conductor may not refund the balance to the passenger. The amount of paper required to generate bus tickets is far too high as almost all the passengers take tickets and just throw away once they reach their destination. Sometimes the passenger might lose the paper ticket, which results in buying of ticket again paying full fare.

The idea of this project is to change the current ticketing system of the bus into a digitalized and efficient system through an android application to prevent the problems caused by it and to provide a better journey for the passengers. This idea may help the citizens of India to go cashless, without having the problem to carry change or take it out in crowded bus.

III. LITERATURE SURVEY

S. Kazi, M. Bagasrawala, F. Shaikh and A. Sayyed [1] in the paper "Smart E-Ticketing System for Public Transport Bus" discusses the problem in modern public transport system and how their Application will overcome this problem. The applications allows users to book bus tickets and allot themselves a seat if available. The application also provide the user with a list of buses for their route from that bus-stop. The list will also contain the information about seat availability and the expected time for the bus to reach that particular bus stop.

Saurabh C. and Balram T. [2] in the paper "Public transport system ticketing system using RFID and ARM processor Perspective Mumbai bus facility B.E.S.T" discusses about the ticketing and identification of the passenger in the public transport. This paper suggests building a RFID system using ARM processor that can identify passengers in public transport as well as does all accounting purpose related to travelling expenses. Automated accounting of public transport can be used to provide useful estimates of the cost of travelling from one bus stop to another as well as the crowd density can be measured inside the public transport. But in case of India measuring crowd density is of no use. Radio Frequency Identification (RFID) tags has been proposed to be used in this project.

S. Karthick. and A. Velmurugan [3] in the paper "Android suburban railway ticketing with GPS as ticket checker" explains how you can buy suburban tickets which just a smart phone application, where you can carry your ASR ticket in your smart phone as QR-code (Quick-Response). It uses the smartphone's GPS facility to validate and delete your ticket automatically after specific interval of time once the user reaches the destination. Ticket information is stored in a cloud database for

security purpose which is missing in the present suburban system. On the other side, the ticket checker has a checker application to search and validate the user's ticket information which is been stored in the cloud database.

Shital Kotle, Korke Jayshree D., Kandharkar Snehal B., Gaikwad Pranali A. and Kale Geetanjali J. [4] in the paper "Smart Bus Ticketing Destination Announcement System Us- ing QR-Code" explains how an application is used to book bus tickets. The user also able to book a ticket by application by selecting source and destination then QR code will be generated. In Conductor's application, the conductor will scan QR code generated on passenger's application. User is able to see QR-Code, Travel route information.

IV. EXISTING METHOD

- In the existing system, the conductor in the bus has to visit each passenger one by one
- The conductor then has to enquire each passenger about their destination and develop a ticket manually on a paper roll.
- The conductor has to issue the ticket to the passenger to collect the bus fare.
- The Passenger has to carry change for bus fare or the conductor has to return the change, which often leads to conflict
- If the given ticket is lost by the passenger, when checked again by the conductor, the passenger has to buy the ticket again paying the full bus fare

All these points clearly indicate that the existing method of bus ticket system is not efficient enough in terms of time management, service and security. Also using paper roll for tickets is not eco-friendly nowadays as there is scarcity of trees.

V. PROPOSED SYSTEM

The main idea of this project is to overcome the problems faced by every citizen in bus ticketing system of local buses. The proposed system consists of an android application with QR Code reader and a money wallet. The android ap- plication has an user friendly interface for both the passenger and the conductor to use, so that it will be easy to use even for people who are not much educated.

The application consists of separate registration for both passenger and conductor. The conductors account registration is controlled by the admin itself. The admin will provide the credentials for conductor so that not everyone can register as conductor. Passenger registration is easy, anyone can register as passenger with a username and password. Once logged in, both conductor and passenger has to link their bank account to the application, so that they can transfer add and withdraw money from application wallet. While boarding bus, the passenger has to choose from and to destination. The bus fare from one place to another, with the basis of kilometer is already set by the admin. The amount will be shown automatically on passengers display after choosing from and to destination. A QR Code will be generated with these information on the passengers display, which is then scanner by the conductor using the QR reader from his account. After scanning, the mentioned bus fare will be debited from passenger's application and get credited to the conductor's application wallet. Once the transaction is complete, an acknowledge will be sent to the passenger in form of text message. The passenger's and

the conductor's database will get updated with travel details. In this way both, passnger and conductor will have a smooth ticketing experience.

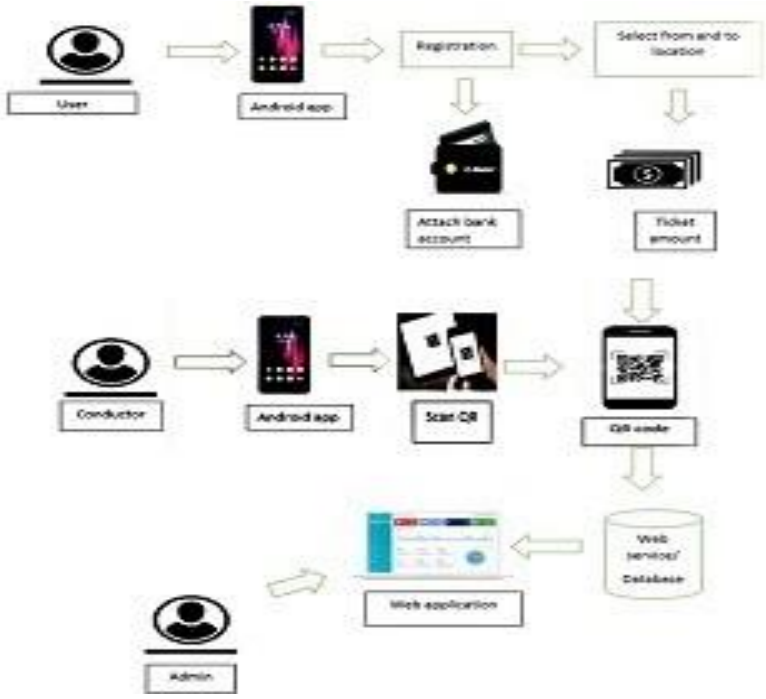

Fig. 1. Data Flow Diagram of System.

Figure 1: Shows the data flow of the system. The user (passenger) and conductor will register through an android application, the passenger will then link his bank account to his application. Later he chooses his destination and generates the QR Code. The conductor will scan the QR code with his account and payment will be done. All this activity will get updated in the server which is controlled by Admin.

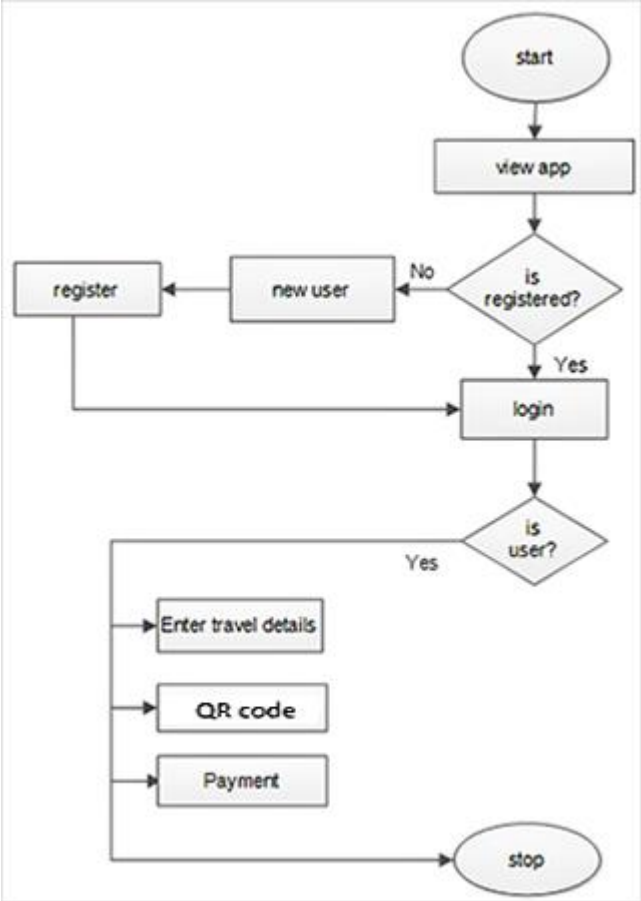

Fig. 2. Flow Chart Diagram for User.

Figure 2: Shows the flow of User process. First the user will launch the android application. If is an already registered user he can login directly, if no, then the user has to register first using his personal details. Once registered, user can login to the system where he has to enter the from and to details which will generate a QR Code. Later payment will be done by scanning the QR code. When the process is complete the user can close the application

VI. CONCLUSION

In summary, this project aims to give a smooth ticketing experience for both conductor and passenger. The paper overcomes the problems of transport system in individual's life. The system gives passenger a new experience of ticketing which will be easy to understand and helpful by going cash- less, reducing time for buying tickets and storing the details of travel of passenger. The projects also contribute little towards the nature by paperless transaction. Since amount is directly debited from passenger's application wallet to conductors application wallet, it overcomes the problem of keeping or returning change. The project also helps in the idea of making digital India.

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