



## Smart Ticketing System for Local Transportation

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**Abstract** — The rapidly aging population causes long waiting times for taking bus pass. Diagnosing record of real-time data of each who are all using bus passes, Bus pass automation would be beneficial for government to implement proper and better rates for passes and also it would be useful for people who forget to renew their bus passes. Also taking tickets in an MTC bus is a tedious process now-a-days. Giving exact change for tickets to a large crowd is also a tedious process for conductors in the buses. In this paper, we propose a facility to take bus tickets and bus passes using android mobile application. This system provides a facility for taking tickets on the go, by just scanning the QR code bus conductor and bus depot admin calculate rush in bus. This system also provides a facility to remind when the bus pass is about to expire. The app is also used to take print out of the ticket, so that it can be shown to the conductors who are unfamiliar with android phones. The system is also provided with digital wallet where the user can load money as a whole and use it in each bus the user travels.

**Keywords-** QR Code

### I. INTRODUCTION

As technology starts growing we need to update ourselves to current trends and our upcoming generations looking forward for necessary services in one touch. The current system of taking tickets in the buses and applying or renewing for bus pass is a tedious process. It takes long time for taking bus tickets and for bus passes it involves a long queue in Depot and it is a time consuming process. The current system of taking tickets for larger crowd leads to stop the bus for long time before the stage closing for a long time. This increases increase in time delay for passengers and it hurts more for employees due to time delay in peak hours. Bus Ticket Automation System (BTAS) can be used to book tickets on the go and can be used to apply/renew the bus pass through smart phone, which helps all generation people. This system provides connection between government server, where data is managed and android app, which provides a GUI for the user. This helps in avoiding bus delay due to ticketing and queues in bus stands and helps in reminding user about bus pass expiry. In addition, providing a user tracking facility, this helps to determine how efficiently users use their bus passes and helps in planning new rates for bus passes.

### II. PROBLEM STATEMENT

In past days, due to unavailability of buses for specific route users have to face many problems like rush, waiting for bus, delay of bus and also if user won't have sufficient balance then it was not possible for him/her to travel. So to overcome these issues we implement system which will hide out ticket inside the QR Code so there are fewer chances of losing tickets. After scanning of tickets by conductor respected amount will automatically deducted from users wallet and if user don't have sufficient amount then system will automatically generate alert about it. System will also manage buses for specific routes or reduce the frequency of buses if necessary.

### III. LITERATURE REVIEW

The first paper [1], India's population increase day by day, mostly common peoples are depends on the railway locals for travelling to their destinations. Due to increase in travelling passengers by local trains, it is time consuming and frustrated process to buy tickets in a standing queue. To encounter this, the railway has introduced the concept of ATVM cards but losing or theft cards proved to be uneconomical. Our project deals with implementation of a smart-phone application to buy local railway tickets which is simple and easy to use. The customer application consists of Registration and buying ticket through QR-code. Payment can be done through user's account i.e. if user is agree to buy ticket then the equivalent amount of the ticket will be deducted from the users account. After payment, ticket is generated on server side, saved in the database and also sent back to the user mobile and saved in the application's memory which serves as a ticket for the

user. The ticket checker application is used to validate the ticket by entering the serial number obtained by the user and searching in the railway database to check whether the user's ticket is valid or invalid.

The second paper [2] The biggest challenge in the current ticketing system is „QUEUE“. In this growing world we have to stand in the queue for purchasing tickets. Tickets can vary i.e., movie tickets, bus tickets, railway tickets, etc. The technology is growing quickly, therefore this should be modified. This paper “An Intelligent Ticket Checker Application for Train Using QR Code” is mainly use to buy suburban tickets which is most challenging when compared to book the long journey tickets with the existing system. With our system ticket can be booked with just a smart phone application and ticket information is stored in the form of QR code. We will be using time based technique for automatically deleting of the ticket after a specific interval of time once user reaches the destination. The information of every user is stored in a CLOUD database for security purpose which is unavailable within the current suburban railway system database for checking purpose. Also ticket checker are going to be given QR code scanner, with that he will get the complete details of the passenger. This application will be very helpful for “Metros” which are now currently going to be established within the cities like Pune. For the generation of QR code we will make use of the transition id. When this transition id will be scanned by the checker form the user phone a request is send to server to retrieve the data to the checker phone. In this way the ticket will be checked by the checker.

SR.NO	YEAR	PAPER NAME	AUTHORS	DESCRIPTION
1.	March 2017	Android Application for Ticket Booking using QR-Code	Dhruvesh Papade , Abhishek Gabhale, Prathamesh Phadtare	Our project deals with implementation of a smart-phone application to buy local railway tickets which is simple and easy to use. The customer application consists of Registration and buying ticket through QR-code
2.	2016	An Intelligent Ticket Checker Application for Train using QR Code	Smita Patil , Shruti Desurkar	This application will be very helpful for “Metros” which are now currently going to be established within the cities like Pune. For the generation of QR code we will make use of the transition id. When this transition id will be scanned by the checker form the user phone a request is send to server to retrieve the data to the checker phone

#### IV. ALGORITHM

##### AES Algorithm

###### I Encryption Methods

1. The set of round keys from the cipher key.
2. Initialize state array and add the initial round key to the starting state array.
3. Perform round = 1 to 9 : Execute Usual Round.
4. Execute Final Round.
5. Corresponding cipher text chunk output of Final Round Step

A Study of Encryption Algorithms AES, DES and RSA for Security

###### II. Usual Round:

Execute the following operations which are described above.

1. Sub Bytes
2. Shift Rows
3. Mix Columns
4. Add Round Key, using K(round)

###### III. Final Round:

Execute the following operations which are described above.

1. Sub Bytes
2. Shift Rows
3. Add Round Key, using K (10)

###### IV. Encryption:

Each round consists of the following four steps:

- i Sub Bytes : The first transformation, Sub Bytes, is used at the encryption site. To substitute a byte, we interpret the byte as two hexadecimal digits.
- ii Shift Rows : In the encryption, the transformation is called Shift Rows.
- iii Mix Columns : The Mix Columns transformation operates at the column level; it transforms each column of the state to a new column.
- iv Add Round Key : Add Round Key proceeds one column at a time. Add Round Key adds a round key word with each state column matrix; the operation in Add Round Key is matrix addition. The last step consists of XORing the output of the previous three steps with four words from the key schedule. And the last round for encryption does not involve the "Mix columns" step.

#### Decryption:

Decryption involves reversing all the steps taken in encryption using inverse functions like

- a) Inverse shift rows
- b) Inverse substitute bytes
- c) Add round key, and
- d) Inverse mix columns.

The third step consists of XORing the output of the previous two steps with four words from the key schedule. And the last round for decryption does not involve the "Inverse mix columns" step.

#### B. BLOCK DEIAGRAM OF SYSTEM

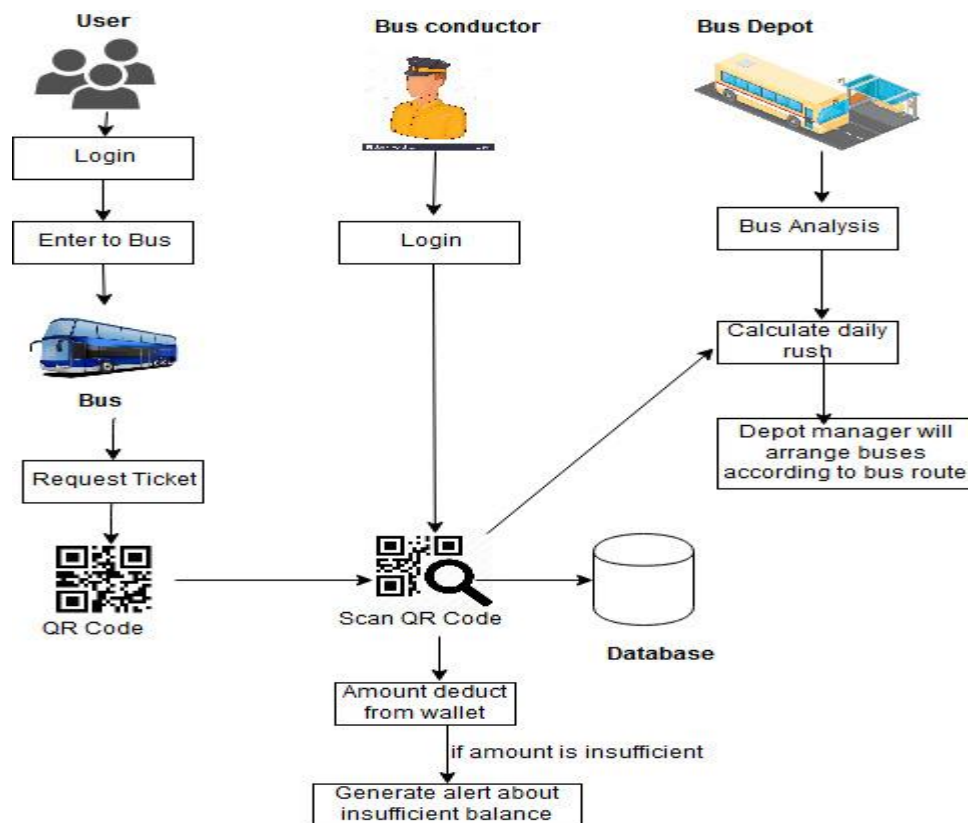


Figure 4.1. Block diagram of Bus ticket system

In this architecture there are three modules like user, conductor and bus depot admin. When user register and login to system then he will generate ticket in the form of QR Code .When he enter in bus then conductor will scan that QR Code and deduct amount from user wallet. Also by scanning of QR code bus depot admin will easily calculate daily rush in buses and according to it bus depot admin will arrange buses for specific route .

## **HARDWARE REQUIREMENT**

- SYSTEM : Pentium IV 2.4 GHz
- HARD DISK : 40 GB
- FLOPPY DRIVE : 1.44 MB
- MONITOR : 15 VGA colour
- PHONE : Android Device
- RAM : 256 MB

## **SOFTWARE REQUIREMENTS**

### **Operating System**

Windows XP Professional

### **Java**

Code is written in Java. The recommended Java version is JDK 1.6 release and the recommended minimum revision is 31 (v 1.6.31).

### **Backend**

MySQL database

## **V. ADVANTAGES**

- This system will automatically calculate daily rush in buses.
- By scanning QR Code bus depot admin will arrange buses according to specific route.
- To provide security and confidentiality.

## **VI. APPLICATION**

- We can use this system for ticket booking (Railway, bus).
- We can use this system for ticket booking at Cinema Hall (Theatre)
- Car parking system for allocation.
- School and colleges for attendance record.

## **VII. CONCLUSION AND FUTURE SCOPE**

In the current mode of Bus ticket, providing system the passenger has to go and wait in a queue to get the pass and he/she has to remain about renewal but we proposed BPAS makes the process of taking bus pass easier, efficient and secure. It also helps in digitalizing India. The app is also used to collect information about the travel of the passenger and helps government in bringing new plans helping the passenger.

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