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ijircce@gmail.com



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# Smart Bus Ticket app System Using Java

Gopal Tukaram Chinchole, Akshay Anil Patil, Rahul Sakharam Kalunke,

Rishikesh Dharunde Varsha Rajmane

Dept. of Computer, Pimpri Chinchwad Polytechnic Pune, Maharashtra, India

**ABSTRACT:** The project entitled “Smart Bus Ticket system” is developed using Active Server Page. Bus ticket System is useful for passengers who are facing problems with the current manual work of bus pass system. His/her renewal or registration can be done through payment gateway. In the manual system the user has to go on particular date and time if they fail then the renewal cannot be done. This online bus system application will help candidates to save their time and renewal bus pass without standing in a line for hours near counters. Initially users need to register with the application by submitting their details through online. The administrator will verify the candidate details and if they are satisfied they will approve bus E-pass. The candidate can login with their username and password and renewal is performed. The renewal process is carried by paying the money using the payment gateway. The candidate can give their valuable feedback for further enhancement of this project.

**KEYWORDS:** QR Code, Bus Ticket, GPS, Live Tracking

## I. INTRODUCTION

Customer can buy the bus pass using our Bus e-Pass System application, this solves the issue of bus pass being misplaced or stolen. In addition, the system lets the customers check the availability of the bus pass before they buy bus pass. Furthermore, customers no need to pay Online to buy bus pass because they can pay the bus pass price by using Credit Card (e.g. Master Card, Visa Card) OR using Netbanking, Online payment. Hence, there is a need of reformation of the system with more advantages and flexibility. The Bus e-Pass System eliminates most of the limitations of the existing system. Bus e-Pass system to put it simply, means system can provide pass identification using QR-code, Pass renewal, cancellation, updating, Student discount etc.

## II. RELATED WORK

In this paper, we proposed a smart bus ticket system using QR code in android application which is user friendly. Nowadays, Android mobile phones play a major role in the society. IR sensors are placed in the bus in order to get the passenger count. Whenever the user selects the source and destination, the available buses along with the passenger count are provided in the application. After the user enters the number of tickets, the total fare gets generated. Now the user can scan the QR code available in the bus. On scanning the QR code, the generated fare gets detected from the E-Wallet and the ticket will be generated. On the conductor side, the number of passengers travelling in the bus will be displayed. The total number of passengers can be found. Based on the analysis, peak hours in each area will be calculated and many more buses can be let. The conductor will collect money from each passenger and issue ticket. Initially, printed papers or tokens are used as tickets. For example, if a passenger wishes to travel in bus, he has to carry money with him. Then conductor will collect the money and issue the ticket. This will take more time and waste of human resource as well as energy. In the general way, every bus is controlled by a conductor. Nowadays, handheld machines are used to print tickets. This system has many disadvantages. The passenger has to carry the ticket till the end of travel and more amount of paper is needed to print the ticket. Even handheld ticketing machine is comparatively slow and need trained person to operate it

## III. PROPOSED SYSTEM

### A. DESIGN CONSIDERATION:

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 application has a 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 conductor's 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 this information on the passenger’s 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. 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. Shows the data flow of the Conductor. 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.

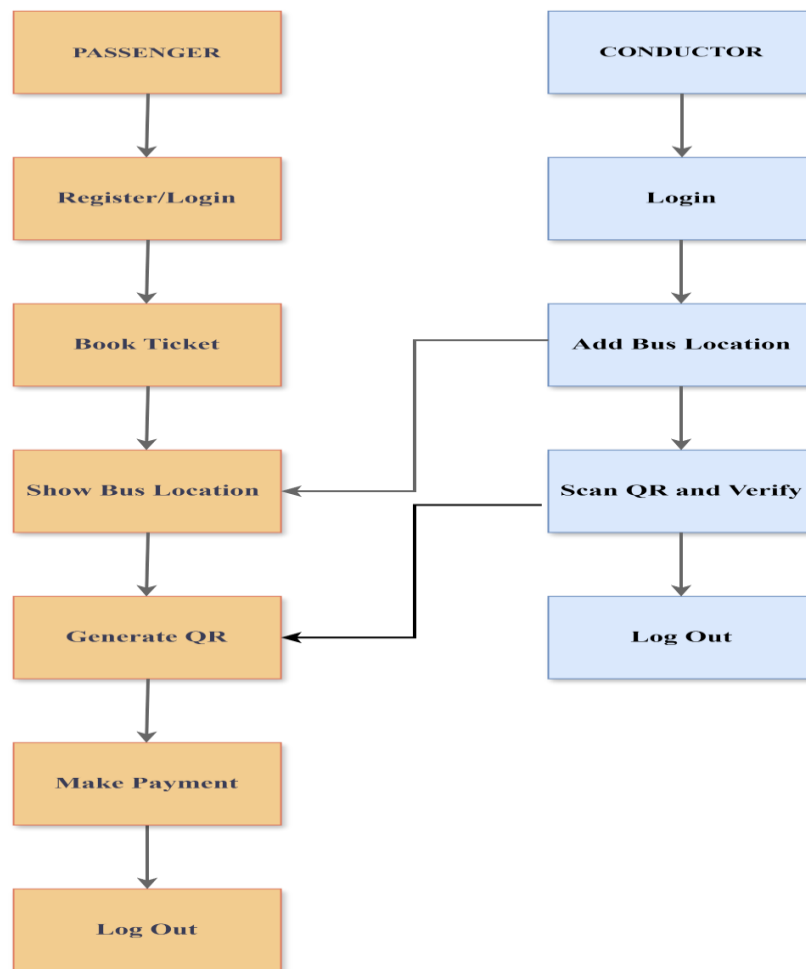


Fig. 1 User and Conductor Data Flow

**B. DESCRIPTION OF THE PROPOSED SYSTEM:**

- Conductor
- In this module,the Conductor has to log in by using valid user name and password.After login successful he can do some operations such as View the location on map, View All the features In this software.



- View and Authorize Users
- In this module, the Conductor can view the list of users who all registered. In this, the can Conductor view the user's details such as, user name, email, address and Aadhar no etc.
- In this module, there are numbers of users are present. User should register before doing any operations. Once user registers, their details will be stored to the database. After registration successful,he has to login by using autho- rized user name and password Once Login is successful user will do some operations like show location, generate QR, Make Payment etc. View All Users Transactions.
- End user
- In this module, there are numbers of users are present. User should register before doing any operations. Once user registers, their details will be stored to the database. After registration successful,he has to login by using autho- rized user name and password Once Login is successful user will do some operations like show location, generate QR, Make Payment etc. View All Users Transactions.

#### IV. PSEUDO CODE

```
// Define classes and data structures

class User {
    String username
    String password
    String email
    // Other user information
}

class Bus {
    String busNumber
    String route
    // Other bus information
}

class Ticket {
    String ticketId
    Bus bus
    User user
    Date bookingDate
    Bitmap qrCode // QR code representing the ticket
    // Other ticket information
}

// Define functions for each functionality

function registerUser(username, password, email):
    // Validate input
    // Create a new user object
    // Store user data in the database

function loginUser(username, password):
    // Validate input
    // Check if the user exists and the password is correct
    // Set user session

function searchBuses(source, destination, date):
    // Validate input
    // Query the database for available buses based on source, destination, and date
    // Return list of buses

function bookTicket(user, bus, seats):
```

```
// Validate input
// Check seat availability
// Create a new ticket object
// Generate QR code for the ticket
// Store ticket data and QR code in the database
// Update seat availability

function getBookedTickets(user):
    // Retrieve booked tickets for the user from the database
    // Return list of tickets

function cancelTicket(ticketId):
    // Validate input
    // Retrieve ticket from the database
    // Delete ticket and associated QR code from the database
    // Update seat availability

function generateQRCode(data):
    // Generate QR code using a library or algorithm
    // Return the QR code image

// Main program

// User registration
registerUser("john_doe", "password123", "john@example.com")

// User login
loginUser("john_doe", "password123")

// Search for available buses
buses = searchBuses("New York", "Boston", "2024-04-10")

// Book a ticket
selectedBus = buses[0]
bookedTicket = bookTicket(currentUser, selectedBus, 2)

// View booked tickets
tickets = getBookedTickets(currentUser)
foreach ticket in tickets:
    print(ticket.ticketId, ticket.bus.busNumber, ticket.bookingDate)

// Cancel a ticket
cancelTicket(tickets[0].ticketId)
```

## V. SIMULATION RESULTS

### Objective:

- Implementing this system primarily provides information about bus transportation in the cities.
- It keeps information like bus routes and stops. This system uses the BEST bus route finder, so the user can find the exact bus number from one point to another as well as stops for that particular bus.
- It also provides a timetable of the bus services as per their timings.
- This system provides a platform that allows the bus management team to update the bus schedule through the Internet instead of posting paper copies of the bus timetable on the notice board.
- It reduces the workload of bus management team, and they can utilize the time on other matters in order to enhance the quality of bus service.
- The main goal of the proposed work is to improve the bus system by adding the necessary additional features to the application, like accurate bus timings, correct bus numbers. Emergency situations can also be informed to the Bus Management.

### Simulation Setup:

- User Interface (UI) Components:**
  - Login Activity: Allows users to log in to the app.
  - Registration Activity: Allows new users to register for an account.
  - Ticket Booking Activity: Allows users to search for buses, select seats, and book tickets.
  - Ticket Display Activity: Displays booked tickets along with QR codes.
- Data Model Classes:**
  - **User:** Represents user information.
  - **Bus:** Represents bus information.
  - **Ticket:** Represents a booked ticket.
- Database Integration:**
  - Use SQLite or Firebase Realtime Database/Firestore to store user data, bus information, and booked tickets.
- QR Code Generation:**
  - Implement QR code generation using ZXing library or other available libraries.
- Networking (Optional):**
  - If necessary, implement networking to fetch bus information from a remote server.
- Business Logic:**
  - Implement the logic for user authentication, ticket booking, ticket cancellation, etc.
- UI Design and Layout:**
  - Design and create UI layouts for each activity using XML layout files.
- Activity Navigation:**
  - Set up activity navigation using intents to move between different screens of the app.
- Testing:**
  - Test the app thoroughly to ensure functionality and usability, including unit tests and user acceptance tests.
- Deployment:**
  - Once the app is ready, deploy it to the Google Play Store for users to download and install.  
Please note that this is a high-level overview, and actual implementation details will depend on your specific requirements, design preferences, and technical expertise. You may need to refer to Android development resources, tutorials, and documentation for detailed guidance on each aspect of the project.

## VI. CONCLUSION AND FUTURE WORK

### Conclusion:

A bus ticketing system is highly beneficial and crucial, particularly in urban areas. Numerous benefits come with this system, including its large capacity, ease of use, wide coverage, ease of integration with cars, and increased effectiveness. The tracking module in this system used a model to retrieve the dynamic vehicle location and transmit it to a server. People can then use their Android smartphones to obtain this information. Bus travel is also made extremely convenient with smart card based ticketing. People can travel securely and moneylessly with the use of this facility. In this project user enter the source and destination and show the driver location on map then driver Add the driver location

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#### BIOGRAPHY

**Dr. John Doe** Driven by a desire to create meaningful impact through technology, John ventured into entrepreneurship in 2012. He co-founded a startup focused on developing innovative mobile applications for enhancing productivity and connectivity in the workplace. Under his leadership, the startup achieved rapid growth and garnered attention for its innovative products and solutions. In 2015, John launched his second venture, a tech consultancy firm specializing in digital transformation and software development services. Leveraging his expertise and insights gained from years of experience in the tech industry, John led the firm to success, serving a diverse range of clients and industries.



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