



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6

Issue: II

Month of publication: February 2018

DOI:

www.ijraset.com

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Android Based Smart Ticketing System Using QR Code

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Abstract: As digitalization has taken the world like a storm and every domain is being reworked and reframed. It has brought a lot of advantages and improved the efficiency of the existing systems. In this work we present an advanced Ticketing System making it easier for the commuter to travel in the bus and the driver to keep exact records of the passengers. This System is a web and Android Based System where the Android will have an app for the passenger and the bus with connected Barcode scanner. It is possible to set the fares and bus stops and to keep and monitor the current updates of a particular bus and passengers on it. This System has the potential of letting the admin know where the bus is exactly and how many passengers are travelling on the bus with their details. From the Passenger's point of view this system makes it easier for them to travel as they need not use cash for tickets and the fare is automatically deducted from their account.

Keywords: Android, QR Code, Barcode

I. INTRODUCTION

The extensive use of mobile technologies has resulted in increasing interest in various sector. Today lots of transactions are being done online by using various options for example online banking, credit card or debit card etc. In transportations and travel sector is not last in smartphone race today various people use smartphone to book the tickets. India's population is increasing day by day, and lot of peoples are using buses for travelling to their desired destinations. Due to increase in the number of travelling passengers by local bus, it is time consuming and frustrating process to buy tickets in a standing queue. To encounter this, the bus corporation had introduced the concept of passes but loss or theft of passes proved to be uneconomical. Our project deals with implementation of a smart-phone application to buy a local bus tickets which is simple and easy to use. The customer application consists of Registration and buying ticket through bar-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 bus database to check whether the user's ticket is valid or invalid.

A. Features of System

- 1) The system allow user to generate ticket on the go using their smartphones.
- 2) User can pay online by adding amount into application wallet.
- 3) The bus driver does not need to carry paper tickets anymore. He can directly scan ticket using his/her smartphone.
- 4) Application allows user to view bus routes

B. Advantages

- 1) The Commuter can go cashless and the amount is automatically deducted without any inputs given to the app.
- 2) The Consumer can view all his previous travels.
- 3) The Admin has all the details regarding the bus and the passenger travelling.
- 4) Easy to track and monitor everything
- 5) If the passengers account has no fund the system gives a alert.

C. Disadvantages

- 1) It requires an active internet connection
- 2) If the Internet is slow or no connection the apps won't work leading to data loss.
- 3) Improper scanning of QR Codemay incur inaccurate data.

4) QRCode is only per user for per journey; ticket is considered only for a single person.

During the research we found various system purposed by various authors some of them are mention below

II. LITERATURE REVIEW

In 2005 the German transport association RMV (Rhein Main-Verkehrsverbund) started a pilot project, where customers could use their NFC enabled mobile phone to purchase tickets. Based on a best price-policy passengers only had to check in/out at a terminal in the bus when they entered or left, in order to receive the cheapest ticket for the route. But the major problem is NFC enabled mobile phoes are high costly. In may 2012 Man Mohan Swarup, AbhiramDwivedi, ChanchalSonkar, Rajendra Prasad, Monark Bag, Vrijendra Singh proposed a system in which the Dynamic Seat Allocation (DSA) system consider the advantage of QR code processing along with one of the standards of wireless communication. Their approach is to make fair processing in seat reservation or allocation in Indian Railway In January 2014 Sadaf Sheikh, Gayatri Shinde, Mayuri Potghan, Tazeen Shaikh introduced a android application in which ticket can carry in the form of QR-code but it is difficult to passenger to understand the buying ticket is correct or not .Because most of the people are unaware of QRCode technology.

A. The System Description

The proposed system consist of the following modules

B. Admin Module

- 1) *Add Commuter*: The Admin will take few details of the User and provide him the Barcode and an email will be sent to the passengers email id for the password.
- 2) *Add Buses*: The Admin is responsible to add busses.
- 3) *View Buses/Routes*: The Admin is allowed to view buses and routes. Bus Driver/QR Code App Module:
- 4) *Scans*: The QR Code scans the card which contains destination details, commuter's id and tells the app about the passenger detail also checks whether the passenger's account has sufficient amount and deducts the amount from the passengers account for the travel. Once the QR Code is scan its mark as used in server. Each barcode have an id using that it will mark as used. Commuter's App Module:
- 5) *Login*: The user has to login using his id and password and he is remembered the system until he logs out.
- 6) *Add Money*: The user is allowed to add money into his account using his Debit or Credit Card.
- 7) *History*: The user is allowed to see his previous travelling histories.
- 8) *Generate QR Code*: The user can generate QR Code for their route which scan by the driver app.

C. Flowchart

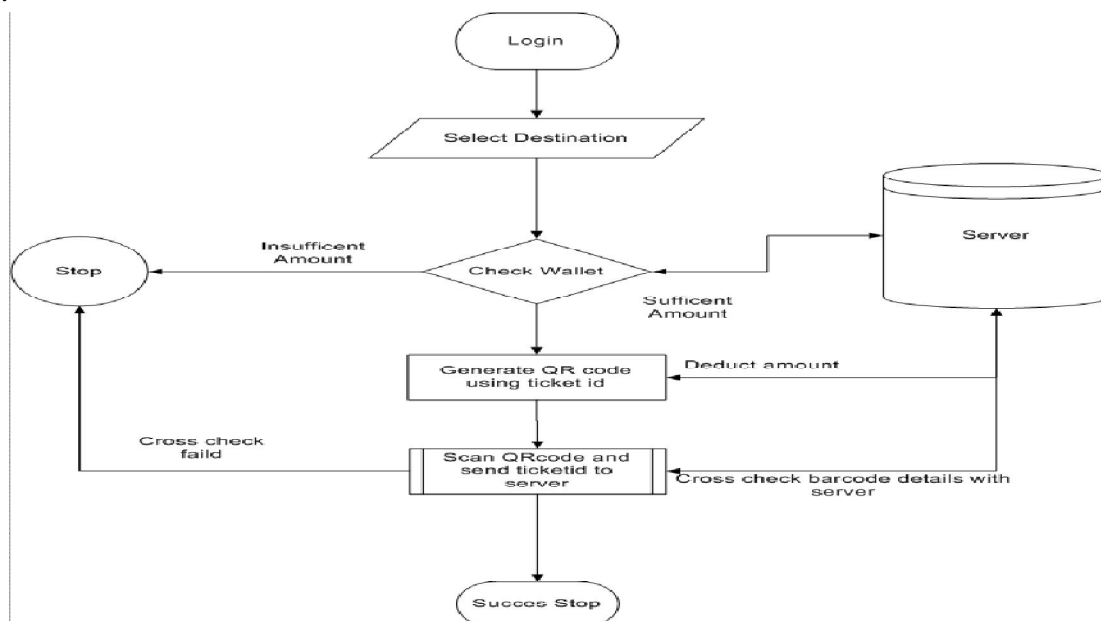


Figure 1Application Flow Chart

III. RESULTS AND DISCUSSIONS

Our proposed application will be feasible for novice users as well as professional users. The proposed application will be used for the booking a ticket without standing in queues for travelling through local buses and it's easy for ticket checker to check whether ticket is valid or invalid. This android application reduces the manual work of both ticket bookers and ticket checkers. It is basically the transition from a manual to digital system for ticket booking of as well as ticket checking of Local buses. The results using the screen shots of Commuter App, Scanner App and Admin Panel are provided below.

A. Admin Menus:



Figure 2 Admin Menus

Admin have various options to manage the application like

- 1) Adding, updating Buses
- 2) Adding Driver and Conductor
- 3) Account Details
- 4) Commuter Details

B. Add Bu

To add a new bus Admin needs to provide following sets of details

- 1) Bus No
- 2) Latitude
- 3) Longitude
- 4) Amount
- 5) Source
- 6) Destination
- 7) Distance
- 8) Time

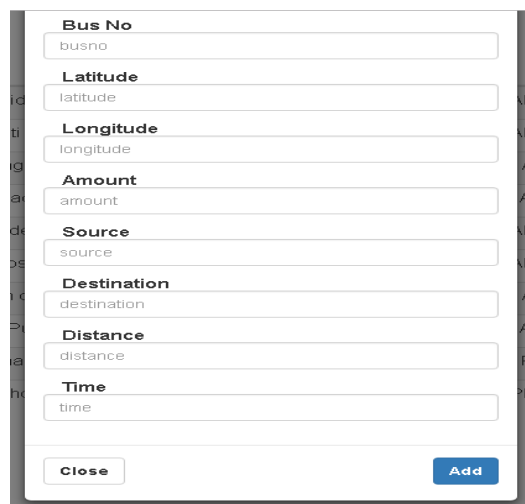
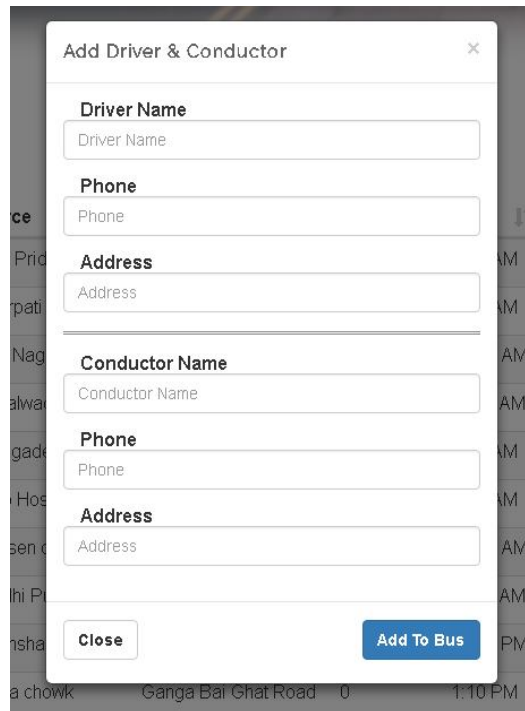


Figure 3 Add Bus



Add Driver & Conductor

Driver Name

Driver Name

Phone

Phone

Address

Address

Conductor Name

Conductor Name

Phone

Phone

Address

Address

Close

Add To Bus

Figure 4 Add Driver& Conductor

C. Add Driver& Conductor

Admin can add driver and conductor details to any bus.

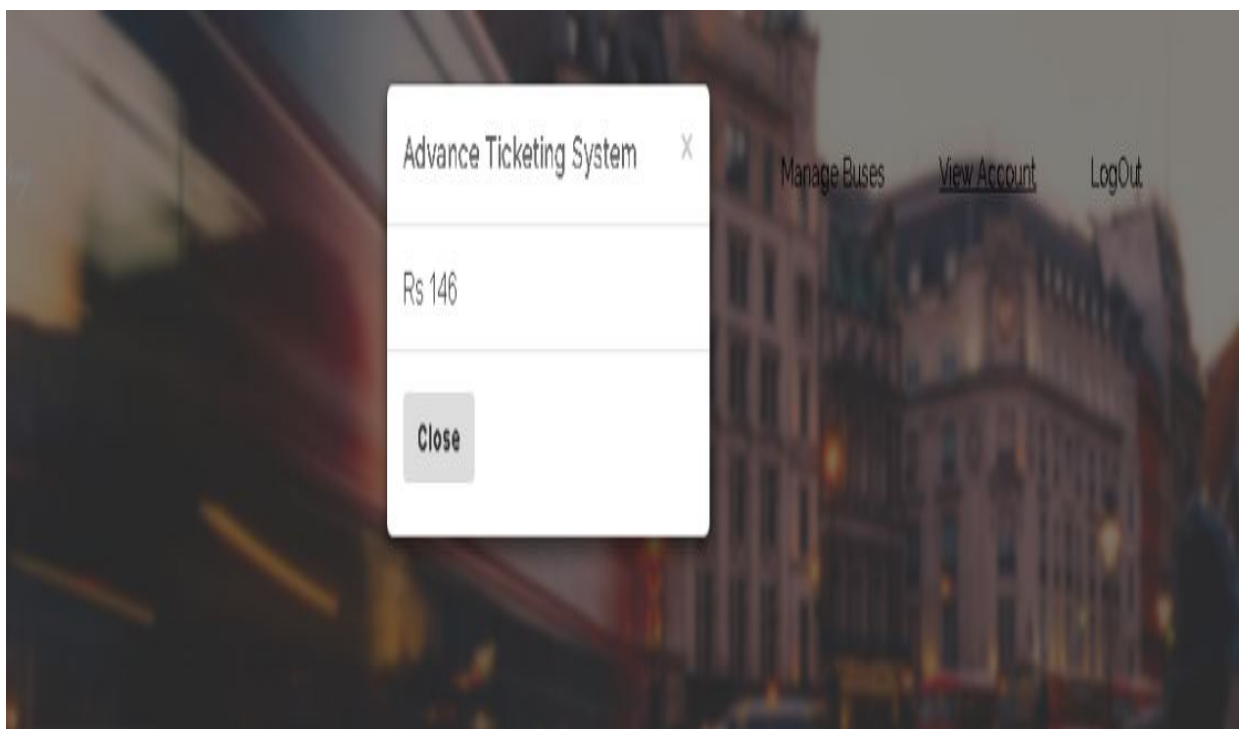


Figure 5 Total Amount

Add Show 10 entries Search:

Bus No	Latitude	Longitude	Cost	Source	Destination	Distance	Time	Manage
11	21.1108	79.07	19	Hotal Pride	Chhatrapati square	0	8:45 AM	Update Remove Driver View Driver
11	21.1017	79.0666	59	Chrarpati square	Rajiv Nager	0	9:47 AM	Update Remove Driver View Driver
11	21.0927	79.0744	28	Rajiv Nagar	Somalwada	0	10:30 AM	Update Remove Driver View Driver
11	21.087	79.0639	22	Somalwada	Hotal Pride	0	11:00 AM	Update Remove Driver View Driver
12	21.1533	79.0952	18	Waragade hospital	Meyo Hospital	0	8:45 AM	Update Remove Driver View Driver
12	21.151	79.1038	24	Meyo Hospital	Agrasen chowk	0	9:47 AM	Update Remove Driver View Driver
12	21.15	79.1094	35	Agrasen chowk	Gandhi Putala	0	10:30 AM	Update Remove Driver View Driver
12	21.1491	79.1144	48	Gandhi Putala	Adamsha chowk	0	11:15 AM	Update Remove Driver View Driver
12	21.1840812	79.0969998	17	Adamsha chowk	Zanda chowk	0	12:00 PM	Update Remove Driver View Driver
12	21.1485938	79.1200436	71	Zanda chowk	Ganga Bai Ghat Road	0	1:10 PM	Update Remove Driver View Driver

Showing 1 to 10 of 91 entries

Figure 6 List Of Buses

D. Commuter App

Settings screen need to configure the server IP and Port number to fetch the details

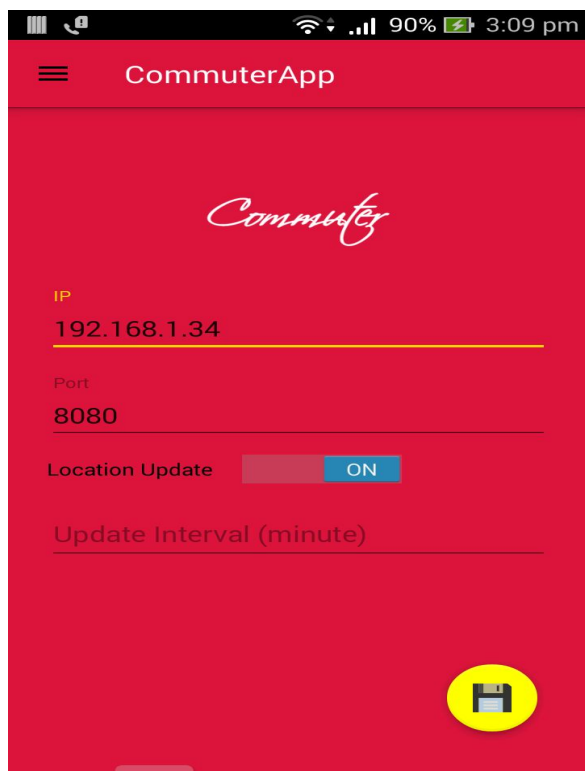


Figure 7 Setting Screen

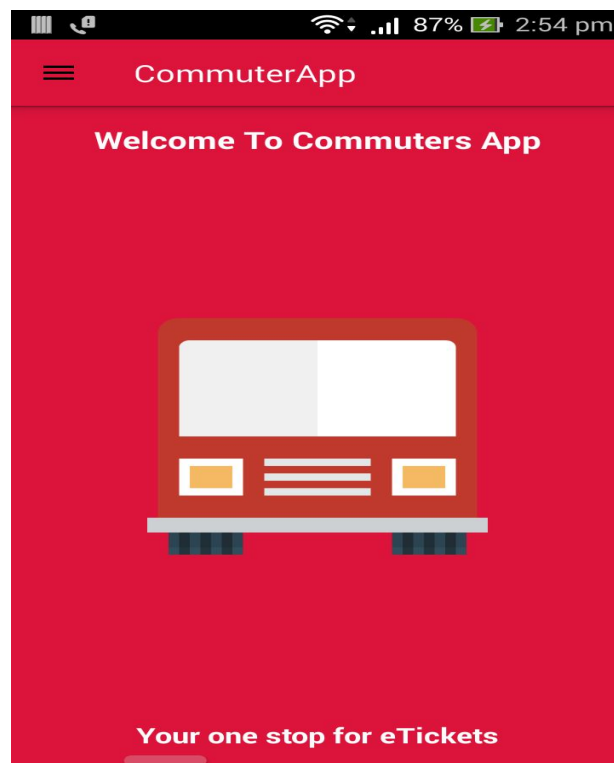


Figure 8 Home Screen

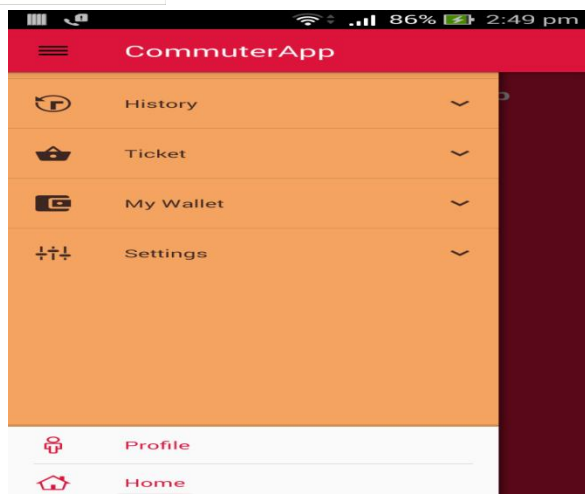


Figure 9 Dashboard Screen

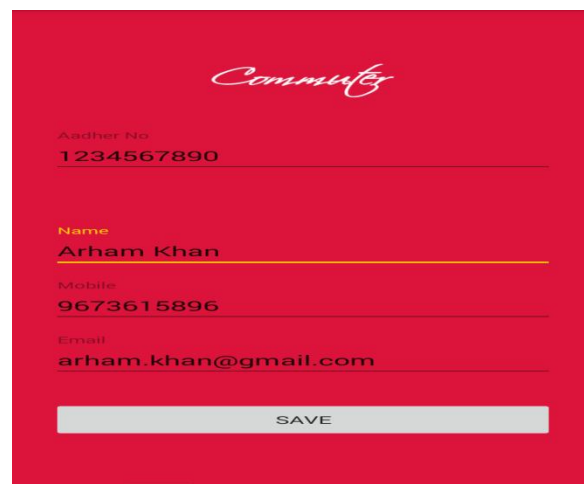


Figure 10 Profile Screen

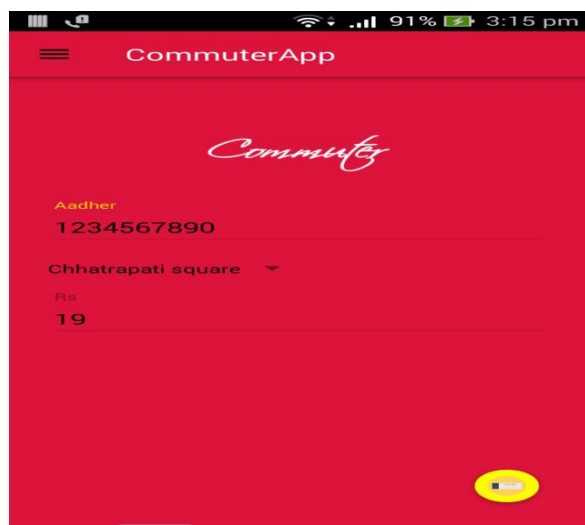


Figure 11 Ticket Generate Screen

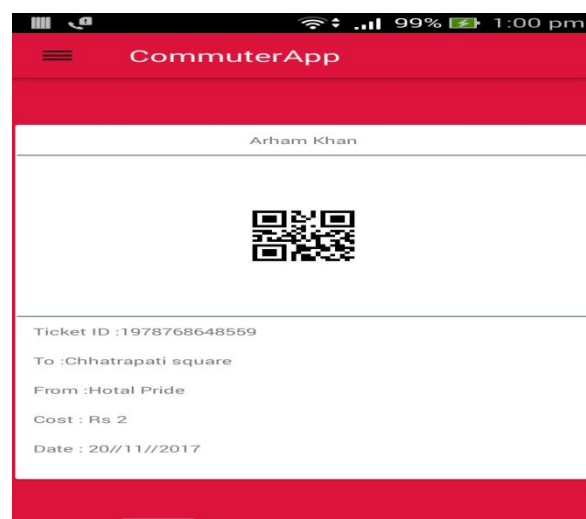


Figure 12 Ticket Output

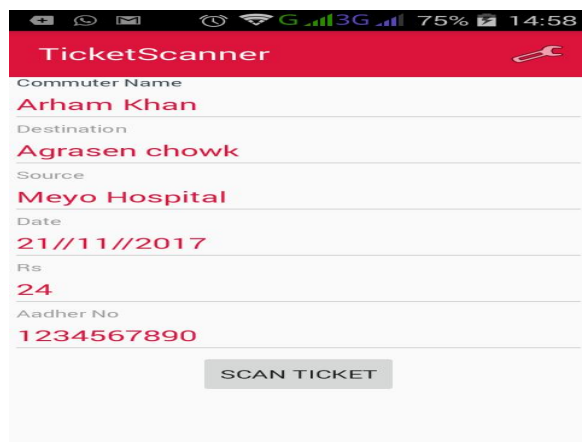


Figure 13 Scanner Result

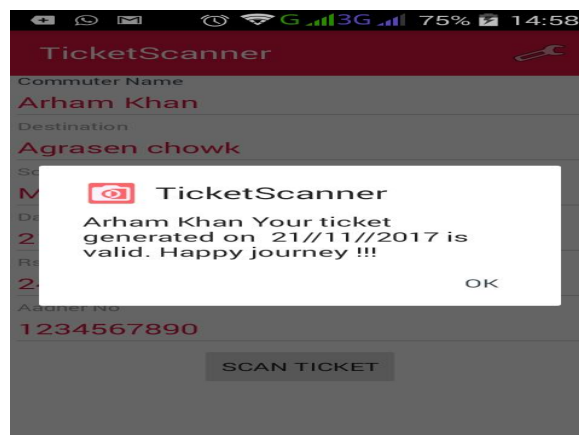


Figure 14 Valid Ticket Alert

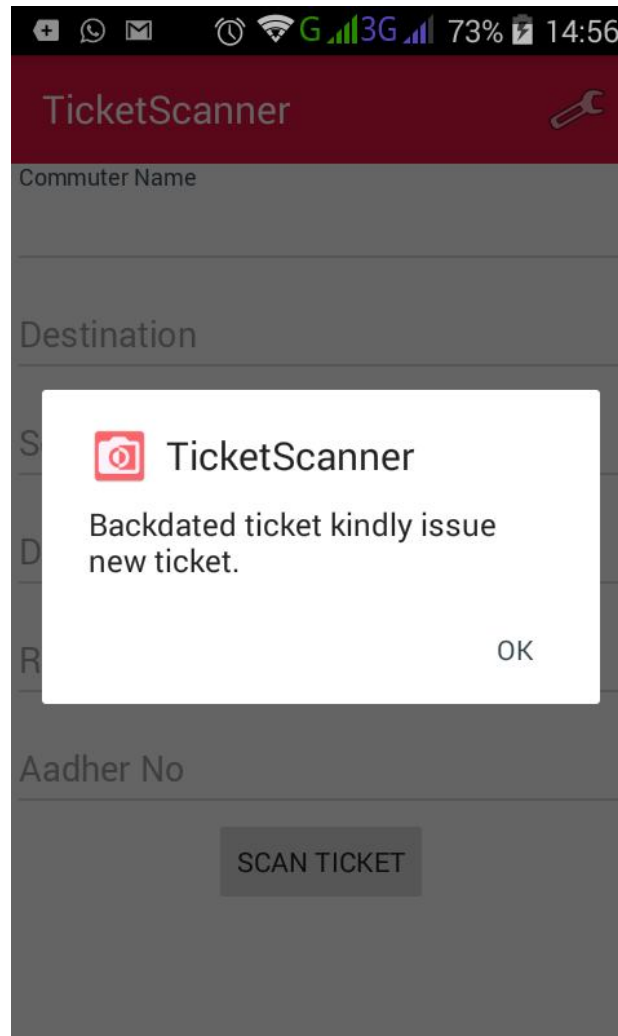


Figure 15 Invalid Ticket or Backdated ticket Alert

IV. CONCLUSION

Thus we have been able to develop an advanced Ticketing System making it easier for the commuter to travel in the bus and the driver to keep exact records of the passengers. This System is a web and Android Based System where the Android will have an app for the passenger and the bus with connected Barcode scanner.

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