

AN ANDROID APPLICATION FOR ISSUING AND VERIFYING COMMUTER TRAIN TICKET THROUGH GPS USING CLOUD

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ABSTRACT

Indian Railway (IR) is the heart of an Indian economy. But still IR goes under loss. As it is lacking providing modern facilities to the user. In present situation, the ticketing system is more tedious. There are traditional methods of booking the ticket like attending physically to buy or book the ticket. People are standing in long queues for getting tickets especially in public mode of transportation. It is not feasible to every passenger. It is the wastage of time and wastage of manpower.

Our "LetzRail" application is mainly to buy the commuter train ticket (local travel) which are the most challenging. CTBV (Commuter Train Book and Verify) ticket can be bought with just a smart phone application, where user can carry suburban railway tickets in his smart phone as a QR (Quick Response) code. our android application uses the smart phones "GPS" facility to validate and delete users ticket automatically after a specific interval of time once the user reaches the destination. User's ticket booking information is stored in a cloud database for security purpose which is missing in the present suburban system. and also checking the details of ticket by ticket checker is done through checker application to search tickets booking details in cloud database through QR code or PNR status. We will be using GPS facility to find the location of the user and nearby train station to display the train's arrival timings.

KEYWORDS: Android, SQ Lite, Cloud Database, QR Code, GPS

INTRODUCTION

In the past few years there were more advancement in the field of technology. Considering railway department, e-ticket facility was introduced where users browse through a governmental website and book their long journey railway tickets which can be printed out after confirmation to show it to the checker when needed. After which months before a new technology called M-ticketing (Mobile Ticketing) was introduced where customers messaged to the web portal through mobile phones after which a complete web page download to the mobile phone where users can do the same booking process as it was in the e-ticketing facility but these technologies uses credit card system facility for payment is obviously not suited to a significant number of train commuters which are daily travelling through local train because they do not use credit cards. Our "Letz Rail" application is mainly to buy the suburban tickets with just a smart phone application, where passenger can carry railway tickets in smart phone as a QR (Quick Response) code. Payment of buying ticket is done using the smart card systems where the initial cost of these systems are not much as compare to credit card or debit card.. By this way, the time taken in exchanging money and receiving the correct balance will be completely eliminated. Our application uses the smart phones "GPS" facility to validate and delete users ticket automatically after a specific interval of time once the user reaches the destination. User's ticket information is stored in a cloud database for security purpose which is missing in the present suburban system. Also the ticket checker is provided with a checker application to search for the user's ticket with the ticket number in the cloud database for checking purposes.

This paper attempts to provide a feasible solution for this problem of manual ticketing by the use of an android application used by Ticket checker. This paper also presents the details on the architecture, integration and different design aspects of Android application cloud, GPS. And also user can get details about the timetable of trains, different routes of trains, availability of trains. To provide an use the feasible solution for issuing the ticket and to avoid wastage of time and manpower and energy in standing in queue.

THE GROWING IMPORTANCE OF ANDROID MOBILE

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language. It is a Linux-based operating system for mobile devices such as Smartphone's and tablet computers. It is developed by the Open Handset Alliance led by Google.

SQLite

SQLite is used, which is extremely small (~500kb) relational database management system that is integrated in Android. It is based on function calls and single file, where all definitions, tables and data are stored. This simple design is more than suitable for a platform such as Android. There are a number of hardware dependent features, for instance, a huge media and connections support, GPS, improved support for Camera and simply GSM telephony

GPS Tracker

The Global Positioning System (GPS) tells you where you are on Earth. GPS is the only system today that can show your exact position on the Earth anytime, in any weather, no matter where you are!

Cloud

Windows *Azure* is an open flexible cloud platform built for basic need of cloud. Windows Azure is Microsoft's cloud application platform. According to the 2013 QuinStreet Enterprise survey, private cloud deployment may outpace public cloud use by two times within the 12 next months; while a 2013 IDG Enterprise Cloud Computing research report finds that the private cloud is the preferred model.

QR (Quick Response) Code



Figure 1

A QR code (Quick Response code) is a type of matrix-barcode (or two-dimensional code) first designed for the automotive industry. More recently, the system has become popular outside of the industry due to its fast readability and comparatively large storage capacity. The code consists of black modules arranged in a square pattern on a white background. The information encoded can be made up of four standardized kinds ("modes") of data (numeric, alphanumeric, byte/binary, Kanji), or by supported extensions virtually any kind of data. The amount of data that

can be stored in the QR code symbol depends on the data type (mode, or input character set), version (1,...,40, indicating the overall dimensions of the symbol), and error correction level (L[ow], M[edium], Q[uality], H[igh]). The maximum storage capacities occur for 40-L symbols

Encryption

Encryption although encrypted QR codes are not very common, there are a few implementations. An Android app. for example, manages encryption and decryption of QR codes using DES Algorithm (56 bits).

Error Correction

Codeword's are 8-bits long and use the Reed-Solomon Error Correction algorithm with four error correction levels. (i.e Level L, Level M, Level Q, Level H). Due to the design of Reed-Solomon codes and the use of 8-bit codeword's, an individual code block cannot be more than 255 codeword's in length. Since the larger QR symbols contain much more data than that, it is necessary to break the message up into multiple blocks.

PROPOSED SYSTEM

Basic architecture of the Letz Rail is as shown in Figure 2 The architecture is used three main actors playing role in this architecture one is a passenger who is reserving the tickets second is the ticket checker who is checking the tickets validation thirdly the server.

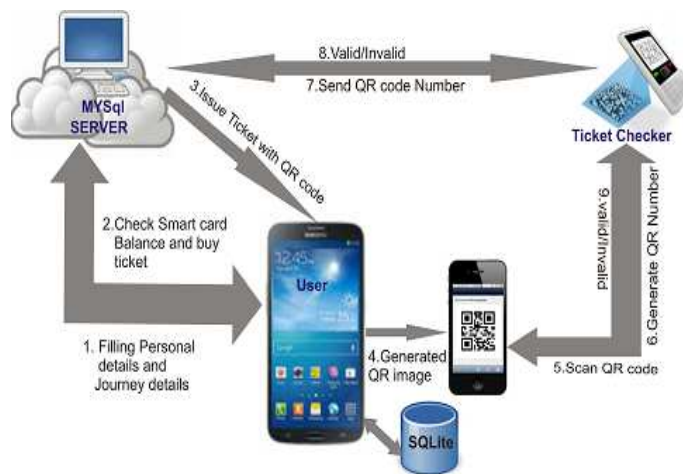


Figure 2: Architecture of Letz Rail Application

System Features

Register

The process starts during the first time installation of this application. It gathers the passenger information like first name, last name, date of birth, city, state etc., and it will be stored into passenger's mobiles, SQ Lite database. So every time when the passenger buys the tickets this personal information is also sent to the database for security purpose and used also in the QR (Quick Response) code generation.

Login/Logout

When the passenger is logged in the application, he can use the application; otherwise he cannot be able to book tickets.

Booking Tickets

The passenger selects source, destination, class, no. of Adult and child tickets, ticket type etc then the passenger browse through the menu option to choose either credit buy option or token buy which simplifies the buy process by remembering the credit card details. Once the user chooses any of these options the application moves on to the pin code validation module.

Pin Code Validation

After clicking on the buy button a PHP code in the railway server validates the pin number and passwords, if it is successful it saves both the journey details and customer info in the server's My SQL database. After which ticket number and time of buying is generated by the PHP code.

QR Code Generating

Once the php code generates the ticket number and time of buy the details saved in the My SQL database are sent to Google Chart API engine in order to generate the QR code and sent back to the user mobile as HTTP response.

GPS Ticket Validation

In this module the GPS (Global Positioning System) plays the role of the checker, where when the user buys the ticket, the source, destination, ticket type, expiry time & date are stored in database.

Checker Application

In this module the checker will have QR Code reader and scan the QR code with the checker application in order to validate QR code and verify the journey details, especially the time and date of the ticket.

Recovery Option

In case of the user's display is being damaged and not able to scan the QR code due to other reasons like battery failure, that time another failsafe option to check the ticket by searching the ticket database with the user's ticket number for validation purposes.

OVERVIEW OF SYSTEM



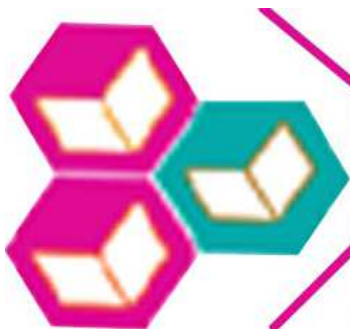
Figure 3: System Overview

CONCLUSIONS

We present an android application which will provide easy way to passenger for issuing the ticket and reduce the paperwork as it is using concept of e-ticket. We are using GPS to track the location of passenger while requesting and issuing the ticket. The person is also able to issue the ticket of his friends and relatives. ie. Donation of ticket has implement in this system. We are implementing an application for ticket checker who will scan the encrypted code i.e. Sema code/QR code through camera and will verify the validity of issued ticket using cloud server database. It incorporates easy access to information which is to be projected on the screen by eliminating use of stationary devices. As we are booking ticket according to station to station therefore it is more feasible for passenger. Hence missing of train is no more issue.

REFERENCES

1. <http://www.indianrail.gov.in>
2. www.cloudtimes.org/cloud-computing-and-smartphones/.
3. Google. Android developers. <http://developer.android.com/guide/basics/what-is-android.html>, 2012.
4. SQLite.org.Abou SQ Lite, 2010. <http://www.sqlite.org/about.html>,accessedDec.2010.
5. Wallace Jackson's (2011) "Android Apps for Absolute Beginners" - Apress Publications.
6. Cloud Computing –Issues Research and Implementations Mladen A. Vouk.



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