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QR-code Based Metro Ticket Booking System with Payment Wallet

[1]Prof. Ravindra Jogekar, [2]Ragini Wasnik, [2]Prachi Supare, [2]Neharika Gawande, [2]Harsha Chopkar, [2]Rakshanta Ukeybondre

[1]Assistant Professor, Department of Computer Science and Engineering, Priyadarshini J. L. College of Engineering, Nagpur, Maharashtra, India

[2]B.E Scholar, Department of Computer Science and Engineering, Priyadarshini J. L. College of Engineering, Nagpur, Maharashtra, India

ABSTRACT

The advancement of data and technology the improvement of individuals' needs has made E-ticket an unavoidable pattern, making it a typical stage for web-based ticketing. The improvement in innovation has extended the skylines of the computerized world. This advancement has decreased the need for genuine cash and promoted the utilization of virtual cash. E-ticketing is one of the most well-known types of web-based exchanging. Utilizing Android Phones clients can lessen their difficulty of remaining in line and booking the tickets. The downside of hanging tight for the ticket was diminished with the creation of the savvy cards, yet the client needed to make sure to convey the card with him. Additionally the downside of savvy cards was that it could get lost or taken. With the coming of E-Ticketing, the client just expected to convey an SMS or a printout of the ticket which the client had booked on the web. Yet, that necessary workstations or work area for booking. Consequently came into front the utilization of advanced cell applications where conveying a PDA will accomplish all the work. Additionally, our android application furnishes Metro area with an advance google map which shows the area of Metro. This framework gives an office to ticket checkers to check every day travelers' tickets by simply examining the QR-code. The application is likewise giving live following with the goal that travelers can see up and coming stations on guide and time to arrive at a specific station. This undertaking gives an effective answer for overseeing metro tickets utilizing a database. Our framework has two logins; one for travelers, and another for ticket checker.

Keywords : Metro Tickets, Android, Smart Phone Application, Ticket Checker Application, QR-code.

I. INTRODUCTION

In fast forward world of technology everyone is running behind time. Thus the main motivation of technology is to produced a time and cost efficient product. Since mobile phones have become pervasive in our lives. Until now, the use of mobile phones has been limited. Both consumers and marketers have craved for an application that allows them to effectively use the cell phone in their pockets for something more than just calling people, taking spur of the moment photographs and forwarding annoying jokes to each other via SMS. Efforts are being made to develop applications that can use mobile phone as a payment instrument for ticketing. such application will play an even important role in a heavily populated country like India thereby allowing the

people to save a lot of time by avoiding never ending queues.

QR-code (abbreviated from Quick Response Code) is the trademark for a type of matrix barcode (or two-dimensional barcode) first designed for the automotive industry in Japan. A barcode is a machine-readable optical label that contains information about the item to which it is attached. A QR-code uses four standardized encoding modes (numeric, alphanumeric, byte/binary, and kanji) to efficiently store data. The QR-code system became popular outside the automotive industry due to its fast readability and greater storage capacity compared to standard UPC barcodes. Applications include product tracking, item identification, time tracking, document management, and general marketing. A QR-code consists of black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera, and processed using Reed–Solomon error correction until the image can be appropriately interpreted. The required data is then extracted from patterns that are present in both horizontal and vertical components of the image.

The Purpose of proposed system is to provide use of new technology in travel sector. To develop an android application that is cost efficient. To make an efficient use of QR-code technique. Provide solution without extra hardware requirement. To make system easy to handle. This system provides effective software for maintaining metro tickets. Digital metro ticket generating system is useful for peoples to get their metro ticket online, anytime and from anywhere instead of standing in long queues to get their tickets. This system reduces paperwork, time consumption and makes the process of issuing ticket in simpler and faster way. Passengers can book ticket very fast as within two or three click he / she can book metro ticket on app, just need to recharge their account of digital ticketing. No need to print the ticket every time. This system performs functionalities like accessing basic information of user authentication. The admin or the ticket checker would be able to verify the authenticity of the passenger's ticket by scanning QR-code which is provided on the recommended device like android mobile and after scanning it will notify to user when ticket is accessed.

In our proposed system once the ticket number and time of buy is generated the details saved in the MySQL database are sent to Google Chart API engine in order to generate the QR-code. here all the personal and ticket information are converted into QR-code and sent back to the user mobile as an HTTP response and saved in the application memory. In this Module the GPS plays the role of the checker, where when the passenger buys the ticket, the source geo points, destination geo points, ticket type, expiry time & date are stored in a mobile MySQL database. This service checks the user's current location in accordance with the destination geo points, after which the ticket type is checked and accordingly the ticket is deleted if two is single or updated if type is return. In this module the checker will have QR-code reader and scan the QR-code with the application in order to validate QR-code and verify the journey details, especially the time and date of the ticket.

II. LITERATURE REVIEW

A QR-code [1] (it stands for "Quick Response") is a mobile phone readable barcode that can store website URL"s, plain text, phone number, Email addresses and pretty much any other alphanumeric data. The Quick Response (QR) code first used in automotive industry has now become popular due to its large storage capacity and extremely less response time here QR-code is used to store user information in encoded form. QR-code can be used in Android, Blackberry OS, Nokia Symbian as well as Apple iOS devices. The browser supports URL redirection which allows QR-code to send metadata to existing applications on the device.

In paper [2] Vrijendra Singh, Man Mohan Swarup, Abhiram Dwivedi, Rajendra Prasad, Chanchal Sonkar , Monark Bag, 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. [2]

In paper [3] Gayatri Shinde Sadaf Sheikh, Tazeen Shaikh, Mayuri Potghan, authors proposed an 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 QR-code technology.

In paper [4] Akshay Babar, Tushar Dongare introduced a model which provide various techniques for buying tickets through their mobile application through GPS facility of android mobile so that user can easily get the list of station and he can easily buy tickets, but Sometimes GPS signals are not accurate due to some obstacles to the signals.

In paper [5] L. Trebar, Finzgar describes the implementation of a system, which enables the use of phones for acquiring electronic public transport ticket. QR-codes and RFID tags are used for registering passenger at the beginning and at the end of their journeys. Use of NFC and QR-code identification in an e-ticket system for public transport.

In paper [6] authors implemented a smart card for digital bus pass system. They used QR-code on smart card to fetch the information of the user like username, source, destination, DOB, expiry date etc. In their system, user has to create his profile by visiting the website, after registering he/she will be able to sign in and make payment, for his pass / ticket. After the successful payment, QR-code will be generated and sent to his email address. Hence, e-mail address is mandatory field. Camera and Android third party libraries will be used to scan the QR-code. When QR-code is successfully scanned, we will be able to fetch all the general information of the user as well as the validity of the card. The information fetched by scanning will be verified by the conductor who will be scanning the smartcard.

As pointed out by Sadaf Shaikh et al. [7], this QR-code can be used to transfer between mobiles and can be shown to the ticket checker for validation. QR-codes are the 2D barcode that can store more than 4,000 alphanumeric characters in a limited horizontal and vertical space. A traditional linear (1D) barcode can hold roughly 20 horizontal characters. QR-codes are also easy to use and can be easily read from any direction with a simple Smartphone application or dedicated barcode scanner.

ATVMs and CVM machines technologies are already installed in the Mumbai Suburban Railways. On October 2007 ATVM technology was introduced in the MSR in order to decrease long queues for tickets. The major drawback with existing ATVM system is the scalability issue. Only 3-4 tickets can be bought per minute through ATVM. Another issue with the system is the cost of installing the machine. Each machine costs around 17500 INR excluding the maintenance costs which vary according to the usage intensity [8]

In paper [9] 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 passenger 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 phones are high costly.

III. SYSTEM ARCHITECTURE

Architecture Overview

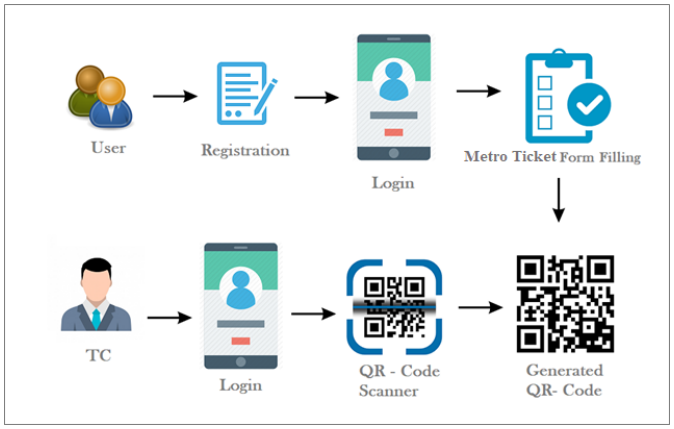

Fig 1. System Architecture

Fig 1. Shows the proposed system architecture. Initially passenger do registration and then login to system with valid credentials and then fill the ticket details. Information is stored in the passenger details database. After scanning the ticket holder details, the information is verified and in response server generate QR-code which is store in passenger / user application. Once the QR-code is generated the passenger can use that QR-code for day today traveling through metro. The generated QR-code is need to show to ticket checker when passenger wants to travel, the ticket checker has QR-code scanner through which it scans the ticket details of passenger and check validity of ticket through available details which are displayed on his android application. Figure 2 shows the flow of the system.

The module of the system are as follows:

The login information of the admin is checked and verified with the user database. Then the admin proceeds to generate the tickets and moves to the ticket printing screen. It checks the validity of the ticket by checking it along with the ticket database. If not then it will show the invalid message but if valid then it will update the database i.e mark the ticked as checked to avoid fraudulent use of the tickets.

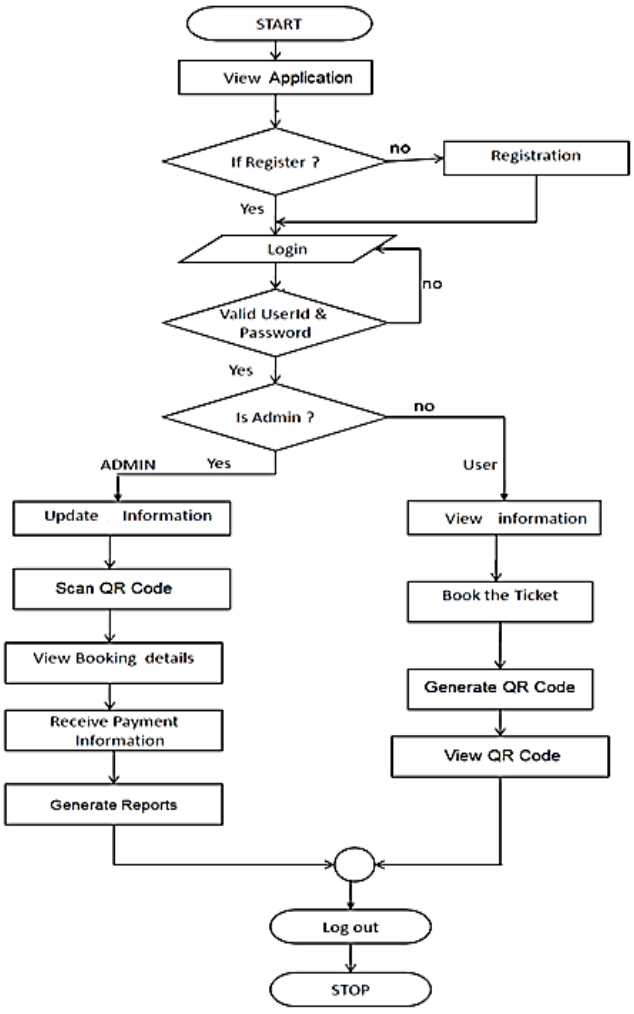

Figure 2. Flowchart of the System

USER

- This Project basically provides a Metro information and regarding Metro information. First of all, in our website any user or visitor are view our system and also search the Metro and how many seats are available in our Metro.
- User can also register its own seats in Metro and generate QR code.
- But user can compulsory registered first in the system.

ADMIN

- In this system admin can maintain all the Metro information
- In this system admin can view the registered users, Metro bookings
- Scan QR Code and Approve Seat

IV.CONCLUSION

QR-Code innovation would be all the more effectively incorporated into existing open vehicle framework foundations. QR-Code gives all the highlights which make it a legitimate innovation for mass open vehicle ticketing: contactless exchanges at rapid, security and effortlessness. The proposed arrangements dependent on blends of gauges and innovations utilizing current contactless foundations. Our proposed application will be practical for amateur clients just as expert users. The proposed application will be utilized for booking a ticket without remaining in queues for going through nearby trains and it's simple for ticket checker to check whether the ticket is legitimate or invalid. This android application lessens the manual work of both ticket bookers and ticket-checkers. It is fundamentally the change from a manual to the advanced framework for ticket booking of just as ticket checking of Local Trains. In this manner the issue related to neighborhood train ticket booking as nearly understood.

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