RTO Automisation using NFC

Driving License using NFC Technology

Anirudha Mayekar, Atul Nirbhavane and Amol Tamboli
Department of Computer engineering
Atharva College of Engineering
Malad, Mumbai,India

Prof Rajesh Gaikwad
Department of Computer engineering
Atharva College of Engineering
Malad, Mumbai,India

Abstract **- a) Motivation: (why do we care): A NFC based license is something which can be stated as the need of the hour. With the world moving at a rapid rate & technological advancement in every field has given rise to various new systems. One such system which needs to change & get revolutionised is an RTO system which uses NFC based Driving license which will provide collecting fines for violation of traffic acts by payment from that card itself.**

b) Problems Statement: (What problem): The traditional system of traffic police officer issuing a hard copy paper challan for collecting fines does lead to corruption from traffic officer but this NFC based Driving license make the system more clear. Also the records of the previous violations by that person is displayed which does happen in traditional system will provide traffic officer about the background of violations. If there are some major violations which are consistent then the officer can confiscate the license.

c) Approach: (How do you go about solving): NFC chips are the one's which can be read with the help of an integrated scanner in an smart phone or a tablet. All the papers required by the officer is available in an nfc chip embedded in the license. The smart phone will read a unique combination of numbers stored in nfc chip to the web application. We are going to develop a mobile application, database and NFC technology that enables the exchange of data between different devices over distances. Smart phones with NFC will be used in our project to pair NFC tags which can be latter on programed by NFC app to automate the task. We are basically introducing a new system for RTO using Android app which includes Near Field Communication.

Keywords – Corruption,violations,NFC,license,Android.

I. INTRODUCTION

The need for manual RTO based systems is completely reduced in this method and the RTO system works through NFC. A NFC system comprises of a transponder (tag), reader/writer and computer host. The transponder has a microchip which contains memory to store a unique data and to receive and send data back to the reader. The technology uses electromagnetic waves from a reader.Modern steps are taking place which includes shopping process using virtual money through these cards.In the year of 2011, Google integrated this device into an Android cell phone, which made money transfer through NFC tags.

The NFC tag provides a unique identification for different users.When a vehicle driver caught bay a traffic police, its driver is asked to scan his NFC driving license using a NFC based mobile phone by traffic police officer. If the identity (serial number of the tag) is matched with the one already stored in the system, the historical records of that driver get fetch on a mobile phone. Traffic police can also place a new complaint about that driver. If police places a new complaint then the user's balance get deducted which is equal to the amount of fine. When the fine is paid the user is allowed to go. This NFC based RTO system include some additional features. A new user can register him with the system. Balance can be recharged at various main police station through cash payment..

II. NEED

- Previous System was based on catching of people committing crimes & fining them via a challan of paper which is similar to the bill we get on buying of goods. Maintaining the record of these receipts for police officer as well as the offender was difficult. It also involved corruption as offender used to bribe the police officer & let go without filling the challan.
- In this system, all the records of the offenders will be available once the NFC cards are scanned, there is a least chance of bribing the police officers & the payment will be done on the spot by the balance in the NFC card. Due to the records serious offenders committing same crime can be punished heavily or the license will be seized.

III. BASIC CONCEPT

NFC based system is a application mainly designed for Traffic Inspector can be accessed on any ANDROID Mobile having NFC Real Time Application integrated with Traffic Police Server Traffic Inspector can access the detail of person just by Scanning license Query for past traffic violations List of Traffic rules and the fine against each. Online generation of Challan & spot payment.In simple when a traffic police officer catches an offender he scans his NFC card then the details about the previous offences is provided via the server to police officer.Now he adds a new complaint of the offender& fines the offender by the balance in the card & the person is let go.If the crimes committed by him are regular the traffic police officer can seize the NFC card

IV. REPORT ON PRESENT EXISTING SYSTEM

French system of road transport have now automised to NFC cards where there is data transfer between a mobile phone & a NFC based driving license. The private data of user remains with the user & police officer who scans the driving license.The new licenses are being introduced by Imprimerie Nationale, the French national printing works, and use Gemalto's Sealysmulti-application electronic driving license technology.The polycarbonate driving licenses house an ISO 14443 compliant microprocessor that includes two storage areas, one for public and one for private data. The private space will be used to store driving license data so that it can be verified by police officers in cases involving suspected fraud or other criminality. Previous System in India was based on catching of people committing crimes & fining them via a challan of paper which is similar to the bill we get on buying of goods. Maintaining the record of these receipts for police officer as well as the offender was difficult.It also involved corruption as offender used to bribe the police officer & let go without filling the challan.

V. PROBLEM STATEMENT

- The traditional system which currently exist is generating paper challan which is similar to bill.
- There is no record of the past frequent violations of the offender.
- Offenders who committ the same dangerous crimes again & again are left
- There is also corruption in the system as traffic police take bribe instead of issuing a challan
- The payment is done in cash which can be a problem.
- The system which is in use is not eco-friendly& requires a lot of paper work instead our proposed system is eco-friendly& technologically advanced.

VI. PROPOSED SYSTEM

The proposed system is the RTO automisation using NFC in which we would have a NFC card as the driving license which can be scanned and the payment of the fines can be done on the spot through the balance in the card.The system goes like this:

1. A user is caught by a traffic police officer for a violation of traffic rule.
2. His NFC card is scanned via the android app and an android phone which has a NFC feature.
3. The records of his previous violations are displayed.
4. Now the traffic police officer adds the new complaint and fines the offender for it with the balance in the NFC card.

Now the offender is allowed to go.

VII. REQUIREMENT ANALYSIS

User Requirements:

1. Easy to use
2. On the spot payment
3. Technologically advanced

Government Requirements:

1. Corruption free.
2. Record of all fines from the traffic police officers.

Developer Requirements:

Hardware Specification

- NFC tags
- NFC based Android Mobile
- Intel processor IV and above
- 1 GB RAM
- 160 GB hard disk

Software Requirements

- Visual Studio 2010
- MS SQL Server 2005
- SDK for Android 4.2
- Windows Operating System
- Eclipse
- .NET framework

VIII. FEASIBILITY

OPERATIONAL FEASIBILITY: The site will reduce the time consumed to maintain manual records and its not tedious to access the data & maintain it. Hence operational feasibility is assured.

TECHNICAL FEASIBILITY:

- At least 166 MHz Pentium Processor or Intel compatible processor.
- At least 1 GB RAM.
- 14.4 kbps or higher modem.
- A video graphics card.
- A mouse.
- At least 160 GB free hard disk space.
- Microsoft Internet Explorer 4.0 or higher.

ECONOMICAL FEASIBILTY: when the software and hardware requirements are met,then there is no need for the user of our system to spend anything extra. For the user, the web site is financially feasible in the following aspects:

- The web site reduces tedious paper work.
- It reduce the time that is consumed in manual processes.
- The storage space like a cupboard and problems of loss of files can be solved.

LEGAL FEASIBILITY: The licensed copy of the required software is easy to get & it does not cost much. So the proposed system is legally feasible from legal point of view.

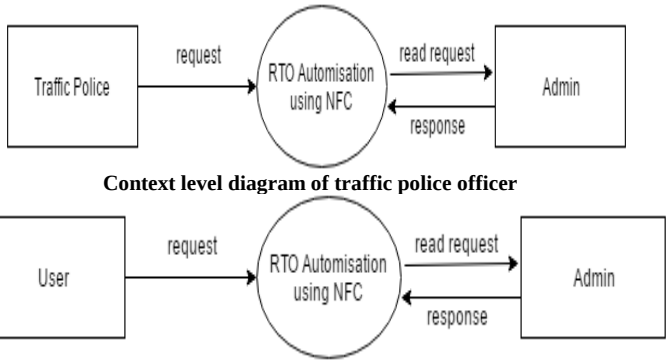
IX. MODULES OF THE PROJECT

Admin Module:-
1. Admin can login into the application.
2. Admin check the documents and if those documents are legal then he will make a new user account into the application and provide a new licence to the user.
3. After creating a new user account user will get the username and password by mail.

Traffic Police Module:-
1. Traffic police login to the android application.
2. If any user caught by traffic police then police will get the driving licence and tap using android phone.
3. After tapping, police can view the previous records, can placed a new complaint.
4. After placing a new complaint the fine amount will get deduct from a total balance of the user.

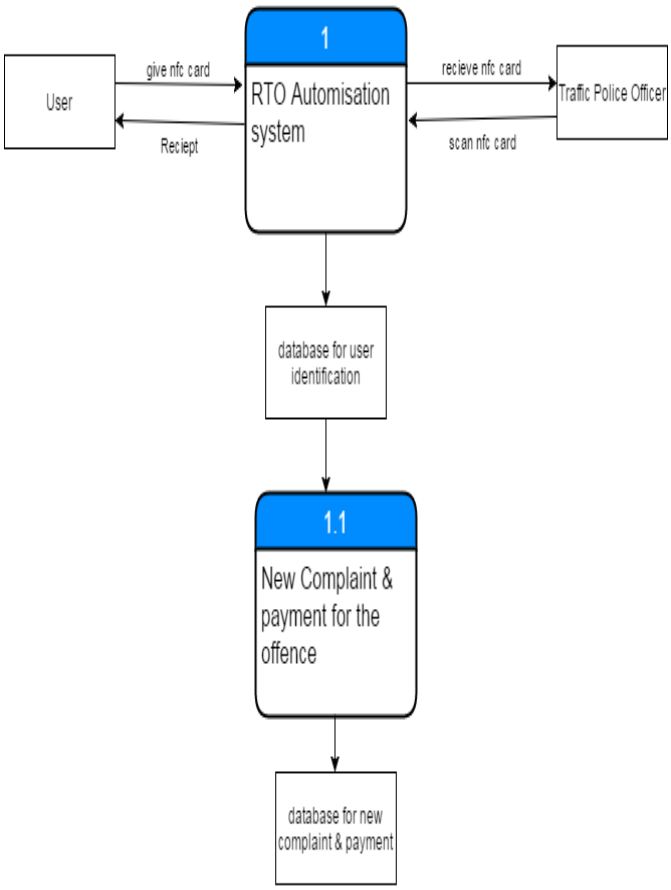
User Module:-
1. User can login into the system using username and password.
2. User can view the complaints which are placed against him.

DESIGN DETAILS

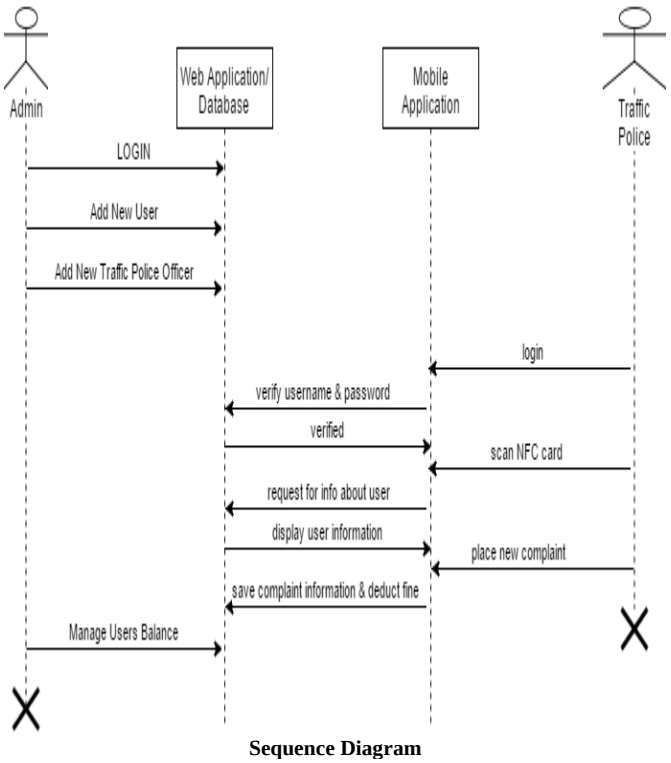


Context level diagram of traffic police officer

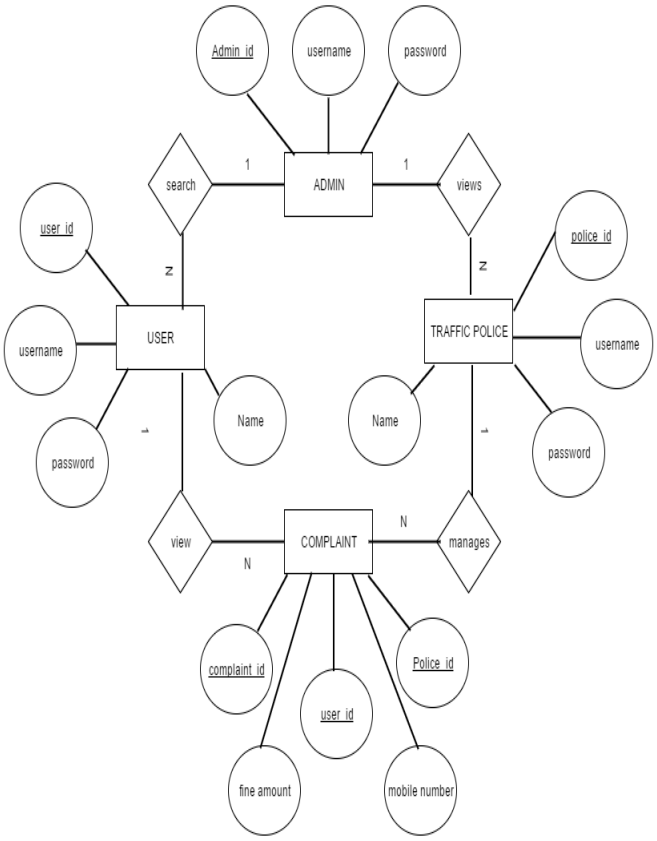
Context level diagram of user



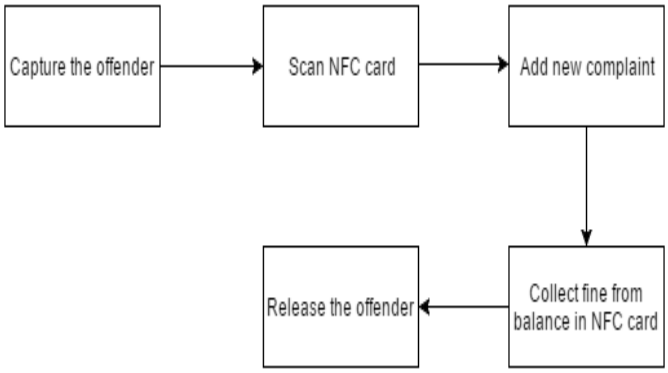
DFD diagram



Sequence Diagram



E-RDiagram



Control Flow Diagram

X. REFERENCE

[1] "Android Application for E-Card Transaction UsingNFC" by"A. Saranya B.Tech. Student, Department of Information Technology",.

[2] "Enhanced Driving License(EDL) Using Near Field Communication(NFC)" by "Vishal Bandgar, Prajakta Pawar, Sheetal Shetty, Sachin Gupta, Prof. SachinBarahate".

[3] "Automobile information retrieval with NFC TAGs" by "Sarabjeet Singh".

[4] "Smart License Patrolling by Introducing Enhanced Driving License using Near Field Communication Technology" by "Nikhil P. Barot,Abhijit Bobhate,Pratik Ghogale,Umesh Rane,Prof.Rashmi Chawla"

[5] "E-commerce: Recommended Online Payment Method - PayPal" by "Niranjanamurthy M".

[6] "Tracking the Challenges of E-ticketing: An analysis of the implementation in the Oslo region" by "Julie Runde Krogstad".

[7] "Secure Bus-Ticketing System using NFC" by "Monalisa Lopes, Grishma Shah, Nandini Vyas, Saloni Shetye, Sohagani Shah".

[8] "User Privacy in Transport Systems Based on RFID E-Tickets" by "Ahmad-Reza Sadeghi1, Ivan Visconti2, and Christian Wachsmann1".

[9] "DEVELOPMENT OF A SAFEGUARD MODEL FOR E-TICKETING" by"June Wei".

[10] "Secured Green Payments using NFC Device" Subhasini Dwivedi, Shraddha Panbude, Rama Rao".