



RF Reader for Vehicle Detection/RF Sonar Device

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Abstract: *This project deals with the vehicle inspection department. In concept all vehicle will have a RF card, as they pass over the inspection team nearby public road the RF Reader device will detect the owner and will register complete details of the vehicle with date, time and squad number. Later the authority can track the vehicle very easy by looking on the inspection report. Using the system we can also find lost vehicle. To find the vehicle owner can login to the system by the username and password, which will available right after registration. This includes three modules: Admin- can register inspection team, view vehicle registration, owner details, squad details etc., Squad- can detect the passing vehicle using RF Raeder device, view owner detail, chatting with admin., User- registered user can view profile, vehicle passing history with location etc.*

Keywords— *Radio Frequency Identifier (RFID), RFID Tag, Web Application, Centralized Database.*

I. INTRODUCTION

Smart road checking system is proposed to take off the manual road checking by the police. Now a days there is many road accidents occurs while on road checking. The main reason is the escaping mentality of riders. Sometimes people will have to do unnecessary payments. Tremendous amount of time and power is also wasted due to this type of vehicle checking. Based on the proposed system, the system locks all ways to escape from the checking. As the speed tracking cameras placed near by highways, we implements RF Detectors at each police station limits. Also introducing rule that strictly mentions, each vehicle running on the road should have proper RF chip given while vehicle registration and the vehicles that are registered should get the RF chip from concerned department.

The system works in such a way that, as the vehicle moves through the RF Detector area, the RF Reader module will read the vehicle ID by scanning the RF chip and the associated computing module will validate the vehicle ID with pre-stored records and automatically checking for all certificates validity. If any invalid details found, the system will make alert to the department via email. So the department can take further actions on the system generated report. Some certificates like pollution, insurance etc. are of short term validity, and those certificates will have to be updated in the specific periods. For this purpose, as per the proposed system users have to link with corresponding department.

II. OBJECTIVES

The main objective of the proposed system is to automate the on road vehicle checking by the police department. For which we are introducing a new concept that every vehicle should have RF Device fitted with the vehicle. By replacing the on road checking the RF Reading device placed near by the road will read the card details, and automatically validates the owner details and corresponding certificate details. If any mismatch found the system will automatically send alerts to the specific department.

Another facility provided by the system is lost vehicle detection and/or vehicle robbery tracking. The owner and police department can see the vehicle location that is the vehicle is under which station limit. So it will be much easier to find out the vehicle.

III. PROJECT CATEGORY

- **Artificial Intelligence**

There are opportunities for AI specialists within many IT roles such as software development, systems design and programming.

IV. TOOLS/PLATFORM, AND REQUIREMENT SPECIFICATIONS

Functional Requirements

- The user can track their vehicles easily.
- The system provides a web application that can be accessed by a web browser.
- The system will connect users and road transport authorities.
- The RF reader should identify and detect the vehicles which contain the RF tags.

Hardware Requirements

Processor : Core 2 Duo
 Memory : 1 GB RAM
 Hard Disk : 80 GB

Software Requirements

Operating System : Windows 7
 Programming environment : Java
 IDE : Netbeans7.0
 Java Version : JDK 1.7
 Back-end : MySQL

V. PROBLEM DEFINITION

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VI. SCOPE OF THE SOLUTION

By replacing the on road vehicle checking system with proposed automated system we can avoid the head ache in different levels of police department and public people. Since the system is automated there is no more direct user interaction needed to work out the system. Also the department can check all vehicles passing through the RF Detector area. This is the most important achievement of the system. In case of manual vehicle checking there is limitation to check out all vehicles. Here the system will give efficient solution to take off all head ache over the scenario.

VII. ANALYSIS

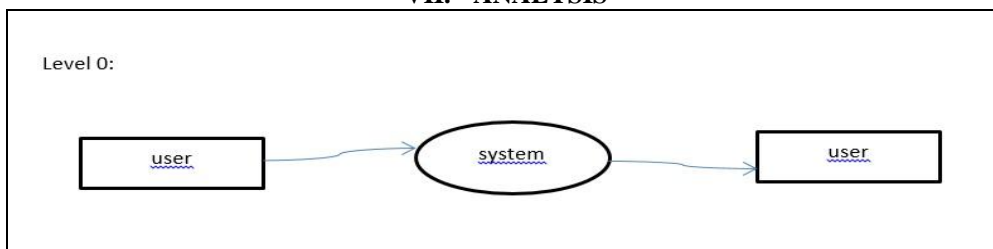


Fig.1. Level 0

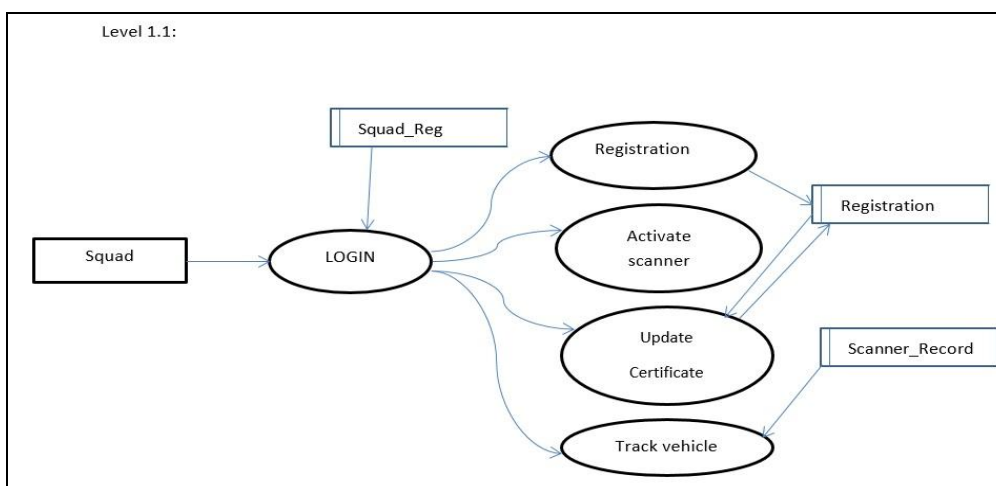


Fig.2.1. Level 1.1

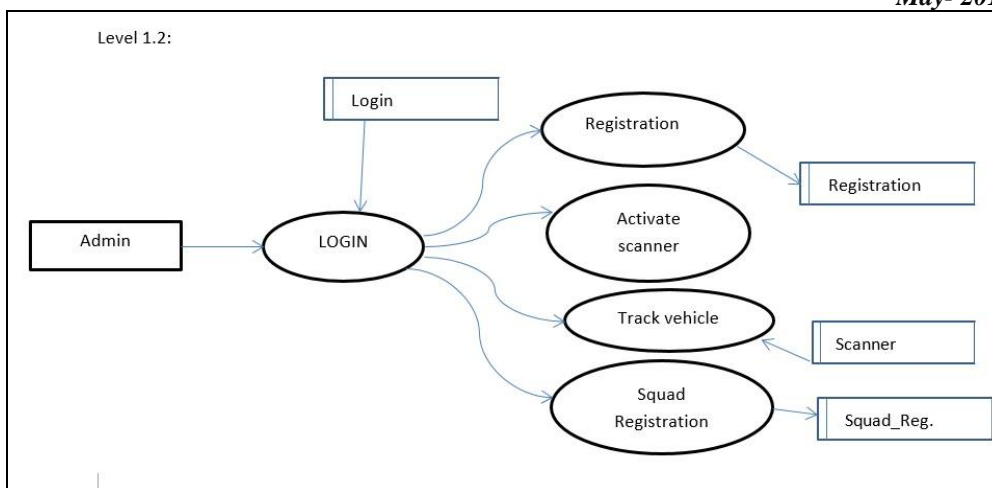


Fig.2.2. Level 1.2

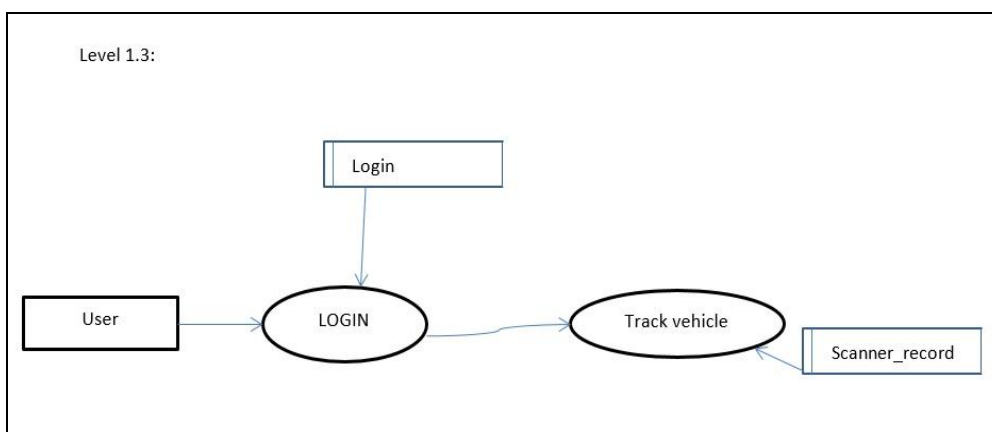


Fig.2.3. Level 1.3

VIII. DATABASE DESIGN

Table 1: Login

Primary Key: uid
Foreign Key: null

Id	Name	Type	Size	Description
1	uid	bigint	100	User Id
2	username	varchar	100	User name
3	password	varchar	100	password
4	utype	varchar	100	User Type

Table 2 : Registration

Primary Key: uid
Foreign Key: rfid

Id	Name	Type	Size	Description
1	uid	bigint	100	User Id
2	name	varchar	100	User name
3	address	varchar	100	password
4	contact	varchar	100	User Type
5	email	varchar	100	User email id
6	License	varchar	100	User license
7	Pollution_certificate	varchar	100	Pollution certificate nam3
8	model	varchar	100	Vehicle model
9	Reg_no	varchar	100	Vehicle reg number
10	Rfid	varchar	100	Rfid
11	Insurance	varchar	100	Insurance name

Table 3: Notification

Primary Key: nid
Foreign Key: sqid

Id	Name	Type	Size	Description
1	nid	bigint	100	Notification id
2	sqid	varchar	100	Squad id
3	msg	varchar	100	Message
4	time	varchar	100	Notification time
5	rply	varchar	100	Notification reply

Table 4: scanner_record

Primary Key: rfid
Foreign Key: sq_id

Id	Name	Type	Size	Description
1	rfid	varchar	100	rfid
2	Dt_time	varchar	100	time
3	sq_id	varchar	100	Scanner id

Table 5: squad_reg

Primary Key: sq_id
Foreign Key: null

Id	Name	Type	Size	Description
1	sqid	bigint	100	Squad id
2	location	varchar	100	location
3	circle	varchar	100	circle

IX. PROJECT MODULES

Admin Module: Manages all the functionalities of the proposed system. The second level user that is the squad is registered by the admin. Also admin have all privileges including vehicle detection, tracking and verification.

RF Reader Module: Used to scan the passing vehicle over the road, this can be placed near by the road. The result will and checking capacity will be much more and better based on the quality and range of the device.

Report: This is automated module that generate the alert to the concerned department based on the validation result.

User Module: The user means the vehicle owner, who can see the details of the vehicle passing through with date time and station range, so the owner can track the location of vehicle.

X. CONCLUSION

Working on the Project was really a learning experience and we have come a long way in building our concepts of Software engineering. By replacing the on road vehicle checking system with proposed automated system we can avoid the head ache in different levels of police department and public people. Since the system is automated there is no more direct user interaction needed to work out the system. Also the department can check all vehicles passing through the RF Detector area. This is the most important achievement of the system. In case of manual vehicle checking there is limitation to check out all vehicles. Here the system will give efficient solution to take off all head ache over the scenario.

XI. RESULT

The system works in such a way that, as the vehicle moves through the RF Detector area, the RF Reader module will read the vehicle ID by scanning the RF chip and the associated computing module will validate the vehicle ID with pre-stored records and automatically checking for all certificates validity. If any invalid details found, the system will make alert to the department via email. So the department can take further actions on the system generated report.

REFERENCES

- [1] Ms.Pallavi Choudekar, Ms. Sayanti Banerjee, Prof .M.K.Muju "Implementation of Video Processing in Real Time Traffic Light Control" IEEE in 2013.
- [2] Harsh Kumar Verma, Ravindra Kumar Singh "Enhancement of RC6 Block Cipher Algorithm and Comparison with RC5 & RC6" IEEE in 2013.
- [3] Ganiyu R. A., Arulogun O. T., Okediran O. O "Development Of A Microcontroller- Based Traffic Light System For Road Intersection Control" IEEE in 2012.

- [4] Hossam El-din H. Ahmed, Hamdy M. Kalash, and Osama S. Farag Allah "Implementation of RC5 Block Cipher Algorithm for Image Cryptosystems" IEEE in 2007.
- [5] Malik Tubaishat, Yi Shang and Hongchi Shi "Adaptive Traffic Light Control with Wireless Sensor Networks" IEEE in 2007.
- [6] Gil-Ho Kim, Jong-Nam Kim, Gyeong-Yeon Cho, "An improved RC6 algorithm with the same structure of encryption and decryption" ISBN 978-89-5519-139-4,2008, IEEE.
- [7] Abdul Hamid M. Ragab, Nabil A. Ismail, Senior Member IEEE and Osama S. Farag Allah, "Enhancements and Implementation of RC6™ Block Cipher for Data Security", IEEE Catalogue No. 01 CH37239-0-7803-7101-1/01 © 2001 IEEE.
- [8] N. J. Ferrier, S. M. Rowe, A. Blake, "Real-time traffic monitoring," Proceedings of the Second IEEE Workshop on Applications of Computer Vision, pp.81 -88, 1994. V. Kastinaki.
- [9] Rita Cucchiara, Massimo Piccardi and Paola Mello, "Image analysis and rule-based reasoning for a traffic monitoring system," IEEE Trans. on Intelligent Transportation Systems, Vol. 1, Issue 2, pp 119- 130, 1993.