

Automatic challan System using RFID Technology

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Abstract – The Project detects any signal break by the vehicle on the traffic signals and generates the e-challan through implementation of programming and hardware mechanism. Deploying the RFID technology which constitutes tags storing data and transferring that data to readers over a wireless interface. Microcontroller compares this reader's information with previously stored information of that vehicle after comparing. It sends the texted message (e-challan) to GSM. Which send it to registered mobile number of owner of that vehicle as well as RTO (Regional transport office) office. Owner has to pay the challan amount to the RTO office or can pay online if linked to online payment system. This system also provides the tracking of vehicle driven by anonymous vehicle driver. Since vehicle would be among traffic signals and database are linked online to RTO office as security purpose.

Index Terms – Challan , anonymous , tracking , Radio frequency identification (RFID).

1. INTRODUCTION

These days in our country challan are done manually with pen and paper on the traffic premises. Which is often tedious and it takes lot of time and sometimes it turns into the corruption because traffic police write something else on challan paper and pay the government something else. However there has not been employed any system to exclude such issues in traffic. Since traffic has become an important event in the national interest. So according to this project when a vehicle jump the red signal beyond green, Then propose system identify the red signal jumping by the vehicle, generating an automatic e-challan to that vehicle owner along with RTO. This concept is new at all. Since there is no need of pen and paper purely green technology. And this will remove the increasing day by day complexity in challan payment on the traffic signals. The system will also minimize the death occurrence due to collision on the traffic because drivers would be having of prior knowledge of signal jumping that if they pass the signal beyond green they have to pay the fine. In this project the signal pole is the target object for any vehicle to cross them. The RFID reader extract information form tags of vehicle. Whenever vehicle moves near the reader module. Information is passed to AT89S51 microcontroller for the subsequent operation. Like ultimate to automatic generation of e-challan. RFID are categorized into two classes: active and passive. Components of RFID include Tags and RF tag readers. Its operational frequency decides the range of reader. The max232 is a serial driver IC. It Support serial communication between microcontroller and GSM and RFID reader. It converts TTL logic to CMOS and vice versa.

2. RELATED WORK

There are lots of people working on automatic challan project using LCD. In most of the proposed project there has been discussion about automatic toll collection only. These project form the base of "Electronic challan system using RFID technology" project. One of the related works is:-

- Paramjeet Singh Kaler, Sheetal Singh, Shubhangi Singh and Surendra Kumar Tripath. "RFID based automatic challan system" International Journal of Innovative Science, Engineering & Technology, Vol. 2 Issue 5, May 2015.

2.1. "RFID based automatic challan system"

In this related work it is gathered that RFID has broad importance in coming days, application of this technology in various fields like security, medicals, military, smart cards and identifying attack ranges. And the aim of this work is that RFID reader is liable to power and interact with the RFID tag. The reader does this by generating a high frequency electromagnetic energy and a query signal. This energy is seized by tag antenna and transmits the tag's unique ID to the reader. Basic idea is to develop the automatic challan system that can check for signal break by any vehicle. The RFID Reader reads the information like vehicles no. and automatically sends a report on the site itself through LCD.

3. PORPOSED MODELLING

Our proposed system consists of two models:-

1. Power section

2. Controller section

3.1. Power section:-

The block diagram of power section of the Electronic challan system using RFID technology is shown in figure: 1. this section is dedicated to the continuous power supply throughout the whole circuitry. A 12V DC, 1A AC adapter is used to give the 12V DC to the DC jack of the power supply circuit, this 12VDC is gone through two capacitor section to remove the AC spikes followed by voltage regulator which convert the 12VDC into proposed 5VDC. This is the output response of two capacitor. This supply is sent to microcontroller for further operation.

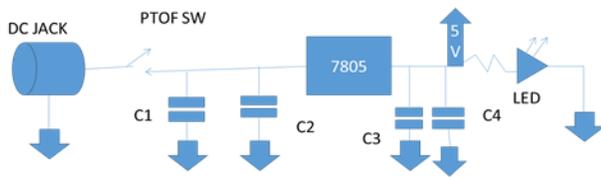


Fig: 1 Block diagram of power section

3.2. Controller section

The controller section is heart of the proposed system. It consists of Microcontroller, Relay, RFID reader, GSM, max232 serial driver IC and four signal poles. Signals coming from the RFID reader after detection of broken signal is processed in this section. This signal is sent to the microcontroller module for the verification purpose. This is done with the help of programming module in microcontroller. After verification a message (texted e-challan) which is already stored into the memory of microcontroller is sent to GSM via relay and max232 in order to deliver to vehicle owner's mobile number and RTO .Relay is used here to shift the connections of the RFID and GSM simultaneous.Max232 which works as serial communication between either of GSM-Relay and RFID reader-Relay. Initially reader and GSM are connected to max232 as normal and whenever TXD pin of microcontroller is ready to transmit the data to outside. Then relay make direct path between GSM-Max232-Realy.Max232 also convert TTL logic to CMOS logic vice-versa.

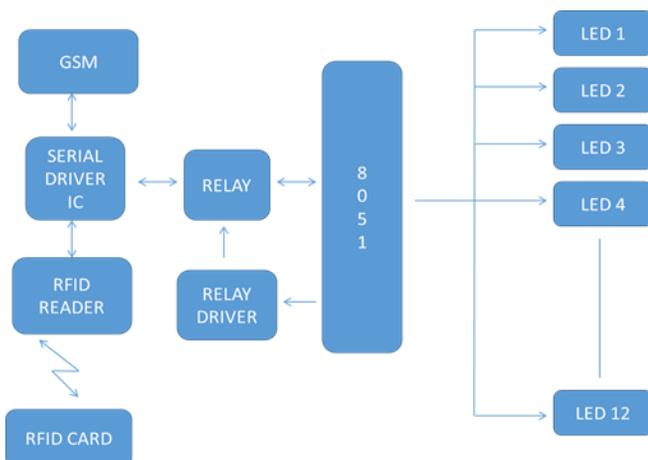


Fig: 2 Block diagram of controller section

4. RESULTS AND DISCUSSIONS

4.1 verified broken signal

Power on the proposed system. All the section like GSM, RFID and MC are ready to do their operation and four traffic signal lamps are also gets ON.As soon as the Car with RFID card jump the red signal lamp along with riding over the RFID reader module. Reader extracts all information from card and sends it to microcontroller.

Broken signal has been detected



Fig: 3 Signal detection using model

4.2 Delivered the challan message

However GSM takes bits of second to activating itself ,after getting activated microcontroller Sends a request to GSM. It takes message scripts which is stored in microcontroller. Then GSM sends this message to that vehicle owner's mobile and RTO office. Any event occurs on green signal lamp that will not be detected by our proposed system. For RTO consideration we have assumed the same number which is car owner mobile number.



Fig: 4 Output challan message

5. CONCLUSION

A working model of Electronic challan system using RFID reader, GSM, and microcontroller has been implemented successfully.

One can explore this project with connecting Internet banking for automatic payment of challan. Also can design challan android app as alternate option. This up-routes manual challan and going on corruption since some traffic police don't pay proper amount to government. Use of this technology will become ubiquitous in coming day. And will be one of the greatest contributions to development of 21st century. And RFID technology will open new volumes in the field of security against vehicle stealing.



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