

## Automated Toll Plaza Using RFID & GSM Using PROTEUS Software

Ashish Gamit<sup>1</sup>, Akash Vaniya<sup>2</sup>, Darshan Daliya<sup>3</sup>, Divyang Patel<sup>4</sup>, Trupen Naik<sup>5</sup>

<sup>1</sup>Assistant professor, electrical Engg, Mahavir Swami college of Engg. & Tech, Surat, Gujarat, India

<sup>2345</sup>Student, electrical Engg., Mahavir Swami college of Engg. & Tech, Surat, Gujarat, India

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**Abstract**-ATCS Full name is Automated Toll Collection System And It is used for collecting tax automatically and it is work on radio frequency. A vehicle or car will hold an RFID tag and This tag unique identification number and it Is assigned by RTO or traffic governing authority. In accordance this number we will store, all basic information as well as the amount he has paid in advance for the TOLL collection. Reader will place at toll collection center. Whenever the vehicle or car passes through toll naka, tax amount will deducted from his prepaid balance and New balance will updated. Other condition if one has insufficient balance or low balance, GSM modem sends SMS to user. Also user can pay manually and then door will open. Advantages of this system As vehicles do not have to stop in a queue, it assures time saving, fuel conservation and contributing in saving of money..

**Key Words:** ATMEGA328P, AURDINO, PROTEUS, GSM, RFID

### 1. INTRODUCTION

Considering the present toll collection system where each vehicle has to stop and pay taxes. Suppose the manual toll collection system is very efficient then for one vehicle to stop and pay taxes total time taken are 60 seconds. And suppose 100 vehicles passes the toll plaza. the time is taken by one vehicle with 60 sec. average stop in one month :  $60 \times 30 = 1800$  second and Yearly total time taken is  $1800 \times 12 = 216200$ second = 6 hours On average each vehicles that are passes through the toll plaza has to be waiting 6 hours in engine starting condition yearly. The figure staggering if on an average we take 100 vehicle passes through the toll plaza each days, then in a year 36000 vehicles passes through the toll plaza. And each

year 36000 vehicles just stands still for 6 hours in engine starting condition. Thereby reducing pollution and wasting fuel and money. This study is that if the system is very efficient but what if vehicles has to wait for 5 minutes? This is the figure considering only one toll plaza. Here we are going to see some points regarding to purpose behind choosing this topic & what is the requirement of this type of the project in our day to day life.

Avoid the fuel loss.

Saving of time in collecting toll.

Avoid financial loss.

To monitor the traffic.

So, according to servey of Maharashtra Government carried out in September 2010,they have purposed to get the annual tolltax collection of 1500 corers per year .But in the present situation only 1200 corers of the tolltax value is collected. That Means there is a loss of 300 crores due to human errors. So, thats why we have must control this leakage.

2. SYSTEM OVERVIEW & SIMULATION RESULTS

This is the basic Block Diagram of Paper Shown in Figure

1.

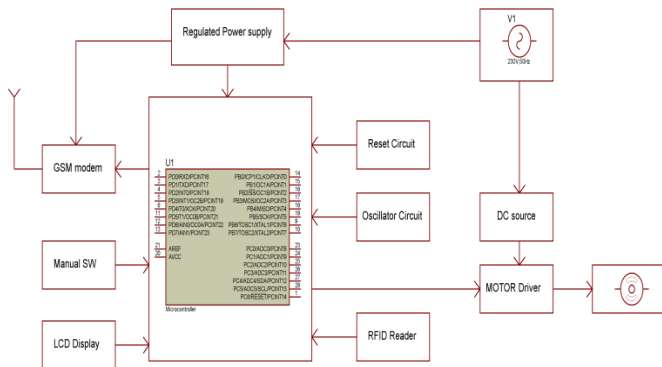


Figure -1: Main Block Diagram

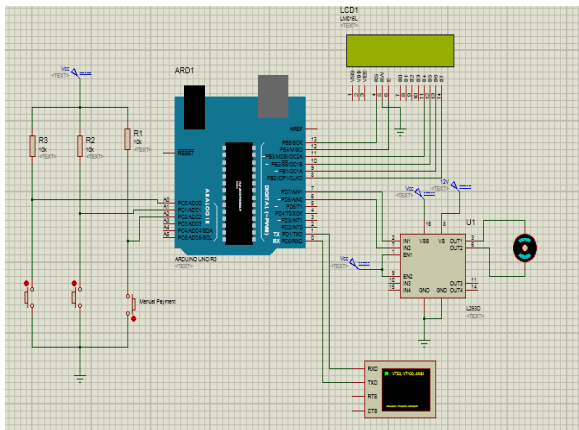


Figure-2: Main Simulation circuit

Here we interface switch as RFID equivalent to controller. Also we interface LCD, virtual terminal (equivalent to GSM modem) Motor Driver to controller which is shown in figure 2.[1]

Similarly when SW2 is pressed, it will detect by micro controller and run code of it. Controller check Balance of second owner and cut appropriate tall tax from his/her account. Also it will display remaining balance on LCD as well as owner name and send SMS to owner which is shown in figure 3.

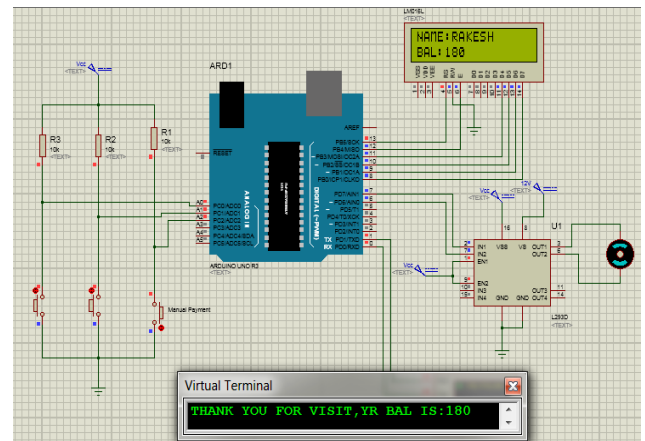


Fig 3 Simulation circuit & Result

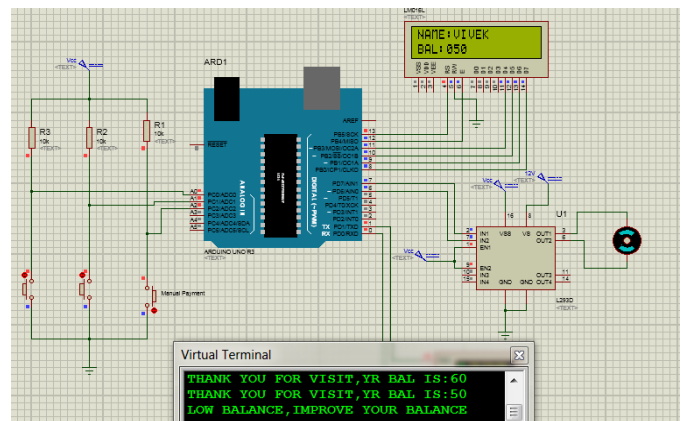


Fig 4 Simulation circuit & Result

If any owners have low balance in his/her account. System inform to owner about it by SMS which is shown in figure 4.

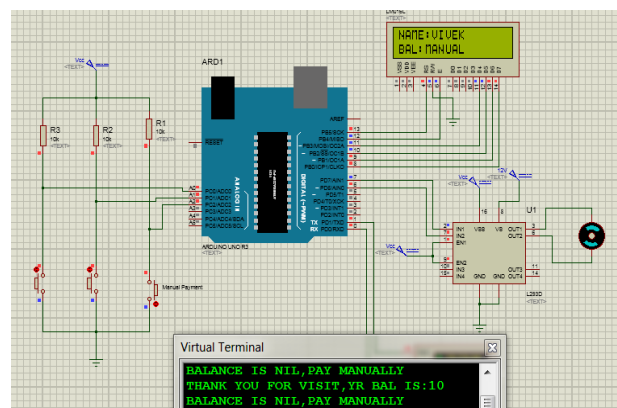


Fig 5 Simulation circuit & Result

If there is NIL balance in owner account, system sends message about it. Then owner have to pay rupees manually. After that door is open which is shown in figure 5.

### CONCLUSION

Paper we are introduced the technique By doing this automation of toll plaza ,we have the best solution over the money losses by reduced the man power required for collection of tolltax and also reduced the traffic indirectly resulting in to the reduction of time at toll plaza.

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### BIOGRAPHIES



Ashish K.Gamit is a Asst. professor in MSCET Surat. He has 2.7 year of experience in Electrical Engineering.



Akash K.vaniya is final year student in Electrical department in MSCET, Surat.



Darshan H.daliya is final year student in Electrical department in MSCET, Surat.



Divyang J.patel is final year student in Electrical department in MSCET, Surat.



Trupen K.naik is final year student in Electrical department in MSCET, Surat