

SMART TOLL PLAZA

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ABSTRACT

Due to increasing the number of the Roads the Toll system is increases. Generally most of the tolls will operated manually. Due to manually operating there is lots of problem will occurring their such as heavy traffic, passing over loaded vehicles etc. To avoid such problems the Electronic toll is necessary their and Weight sensor is also present their for stopping overloaded vehicle. The Electronic Toll system manual operation will reduced and All the Task will completed automatically. In that smart card is present on the vehicle and Due to this cash free operation will get perform. **In that theft protection will also provided if stolen vehicle is passing through that Toll the Mail will goes to owner and Police station.**

Keywords— Rfid, PIC16F87XA Microcontroller, Load Cell, Dc Motor.

ARTICLE INFO

I.

INTRODUCTION

“Design and develop a Smart Toll Plaza by using Rfid, Microcontroller, Dc motor etc. technology and load cell to save the time at Toll plaza and having cash free operation. In this project all the working of the Toll will take place automatically. By using this project we reduce a manual work and heavy traffic .For opening the gate Dc motor is operated after the payment mechanism .In the project when the vehicle is reached on the Toll Rfid will read the smart card and the information is provided to control room. After that the weight of the vehicle is measure by using a load cell if weigh is in between range the amount will deducted and gate will get open If the vehicle is over loaded that will not pass through that place. If any stolen vehicle is passing through that Toll the mail will goes to owner and Police station.

The purpose of the project is that:-

- To Avoid the fuel loss.
- Saving of time in collecting toll.
- Avoid Financial loss.

- To monitor the traffic.

In the Maharashtra Government carried a annual !500 corers/year to Toll system, but present situation toll collected only 1200 corers/year. Means the 300 corers loss will take place due to Human error. To avoid these error we have to use a smart toll plaza. The manually work Toll plaza will take 2-3 Minutes time for all the working and Smart Tol Plaza will take a 40-42sec. to complete whole operation. Reduction in time means low traffic.

II.

LITERATURE SURVEY

This will provide all the review of the literature of the “Smart Toll Plaza” system. This will include all the information survey and market survey. The shortcoming of this method is that a number of tax payers, who do not use any of the roads and carriage ways, have to pay extra money. However, in the other system, called direct method, the tolls are taken directly from the drivers passing that road or street. There are millions of drivers passing through Toll Gate Stations every day. The conventional or the traditional way of collecting the toll from the vehicle owners or the drivers is to stop the car by

the Toll Gate Stations and then pay the amount to the toll collector, standing (or perhaps sitting!) By the side of the toll booth, after which the gate is opened either mechanically or electronically for the driver to get through the toll station. It causes long quos of vehicle, no checking for overloaded vehicles, manual operation traffic problem.

We are surveying about the components require in the Smart Toll Plaza like Rfid, Microcontroller, Dc motor,

Load cell Lcd display etc. Rfid cards simulate a smart card in the capacity and pattern, the taf usually contains an embedded microprocessor. Normally the overloaded and theft vehicle will not pass through that Toll system. All the working of the Toll will take place Automatically. Rfid is more efficient for working of the Toll plaza And thus will require a PIC16F87XA Microcontroller. For the proper working of the Dc motor we have to a Quadruple half-H Drivers is used. We are also investigated about how this project will work for reduce the traffic,finance problem and human error.



Fig. Rfid system

Microcontroller:

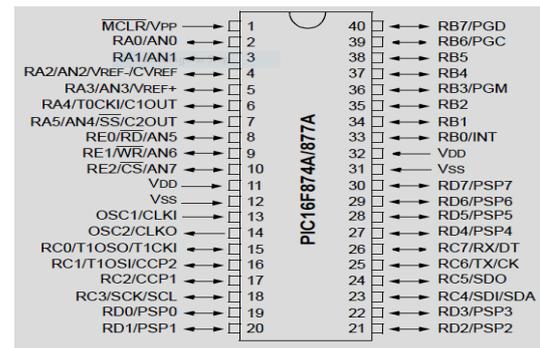
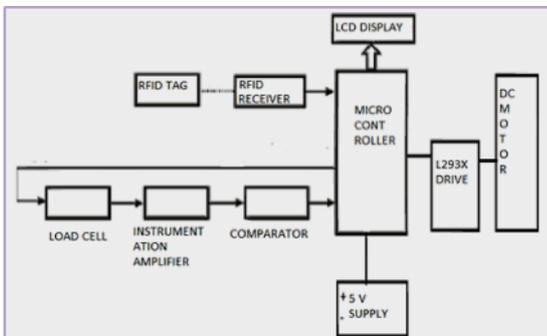


Fig. PIC16F87XA Microcontroller

III.Block diagram



component:

Rfid:

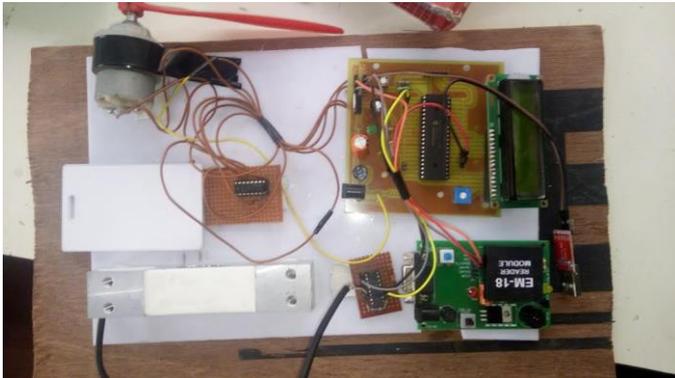
Rfid conatin the Rfid Tag, Rfid Reader etc. when the vehicle reach the on the Toll the Tag will prent on the vehicle. Tag contain a vehicle information. Tag is a type of a memory which can read-only and once write.

This Tag information will read by Rfid reader. Rfid reader is a scanning device that will have capability of the read the Tag. After reading the information of tag. This information will goes to Microcontroller and after that vehicle detected is display on the Lcd display. In the tag, active tag lack a power source and passive tag lack no internal power source.

As soon as we give power supply to microcontroller (pic16f87xa), then all parameter of within microcontroller will reset. In em-18 reader, there are various codes of variable are set for different numbers of swap card for its respected vehicles, So when vehicle comes before toll plaza then driver will swap the card and then em18 reader will sense the cards signal and converted into binary form '1011'and gives to (pins no 18-tx) microcontroller. Then microcontroller serially send binary data to computer, through series transform code (ttl) to port of computer (usb) . Then we use java language, actually it is html page which contents various condition like 'if and else', if then' So java application get various code from microcontroller then according codes various person information will display on screen (which contains name of vehicle owner ,and bank details etc.)Then vehicles go to the load sensor, before microcontroller gives signal to load sensor and it will be activated.(before and after of vehicles comes ,load sensor will not work, it leads to saving of power)And after vehicles sensed by load sensor , and if a weight of vehicles is cross the max. Threshold value set by microcontroller, so microcontroller will not be given signal to l293 half h drive, so motor will not work ie. Gate will not be opened and if weight of vehicles is less

than threshold value, then L293 will enable and motor will rotate 180 degree.

IV. HARDWARE



Hardware design photo

V. CONCLUSION

By doing Smart toll plaza we can have the best solution over money loss at toll plaza by reducing the man power required for collection of money and also can reduce the traffic indirectly resulting in reduction of time at toll plaza. In our project we have introduced the techniques such as Radio Frequency Identification. This technique will include the RFID tag & reader which in coordination with each other can be used to detect the vehicle identity. The load cell plate which is introduced for weighing the vehicles so as to classify them in different categories as light & heavy vehicles. This is useful for faster operations of the Toll system.

ACKNOWLEDGEMENT

We would like to express my deepest sense of gratitude to my Guide Prof. S.L.Sarwade, who offered his continuous advice and encouragement throughout the course of this project work.

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