

MICROPROCESSOR BASED AUTOMATIC TOLL SYSTEM

Meenu, Vaishali Gupta, Tushar

Electronics and Communication Engineering; Dronacharya College Of Engineering, Gurgaon

ABSTRACT: This paper concentrates on an electronic toll accumulation (ETC) framework utilizing radio recurrence distinguishing proof (RFID) innovation. Explore on ETC has been around since 1992, amid which RFID labels started to be broadly utilized as a part of vehicles to mechanize toll forms [1]. The proposed RFID framework uses labels that are mounted on the windshields of vehicles, through which data inserted on the labels are perused by RFID perusers. The proposed framework kills the requirement for drivers and toll powers to physically perform ticket installments and toll expense accumulations, respectively. The transmitter will be charged by the administrator of the corner office and the information will be stored. It will be get sensed by the IR collector mounted at the toll court, the charge will get deducted automatically as indicated by the toll charged and the remaining amount will be shown. Stepper engine is utilized to open and close the entryway. Information data are additionally effortlessly traded between the drivers and toll powers, subsequently empowering a more proficient toll accumulation by diminishing activity and disposing of conceivable human errors. Get opened for the authentic client and for others it will remain close. This framework is planned keeping in mind the end goal to control congestion, convenience and wellbeing of a benefactor.

I. INTRODUCTION

Electronic toll accumulation (ETC) is an innovation empowering the electronic gathering of toll installments. In this framework we will distinguish every vehicle interestingly with a RFID-TAG. We will connect a RFID-TAG as a sticker with each vehicle amid the enrollment process. That RFID-TAG will bear the extraordinary distinguishing proof number for that specific vehicle. Amid the enrollment handle the vehicle's holder will be asked to give the accompanying data: enrollment no, manager's national id, telephone number, financial balance no and the name of the bank. In each one mechanized toll stall we will have a RFID sensor and a heap sensor set up

alongside the control corner which will house a machine and an administrator. At whatever point a vehicle will pass through the corner the RFID sensor will read its ID number from the sticker it conveys. Also the heap sensor will measure the vehicle's weight and the measure of toll to be paid will be demonstrated in a LCD show. The toll cash will be found from the vehicle holder's financial balance and he will be informed of the exchange by means of a SMS. On the off chance that the manager's ledger is out of cash then this installment will be checked as pending and he will be asked to pay it at the earliest opportunity by means of a SMS. On the off chance that a pending installment is not cleared inside 15 days then that vehicle will be boycotted. On the off chance that such a vehicle goes to the stall that doesn't have a RFID-TAG or hasn't been enrolled yet or the RFID-TAG has been crushed some way or another, then the entryway will be naturally shut and the vehicle will be demonstrated the bearing to go to the counter after an alternate path. In the counter the vehicle can enlist giving all the data required and can have its own particular RFID-TAG joined or it can simply pay the money and pass by.

II. WORKING

Reading Card:

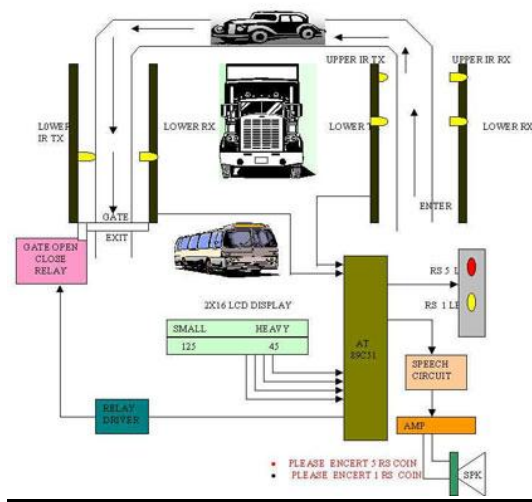
We are utilizing a RFID tag as a special ID module of a vehicle. As RFID works in radio recurrence, when a vehicle having TAG verges on a toll stall the RFID sensor discovers it. When it catches the vehicle with a TAG, it sends the located ID read from the TAG to our server through Max232 serial correspondence.

Measuring Weight:

After the location of ID of a vehicle passing through a toll booth will need to experience a stage where a heap sensor has been preinstalled. At the point when a heap cell gets a weight, it

yields anmili voltage. This little measure of voltage is difficult to discover, that is the reason we intensified this voltage with the assistance of Ad620 IC and sent this opened up voltage to the ADC pin of our first microcontroller. At that point weight has been ascertained with the ADC in the microcontroller and afterward the weight and comparing toll sum is shown in the LCD show. The figured weight and comparing toll sum is additionally sent to the server through serial correspondence .

AUTOMATIC TOLL TAX



III. GATE & DIRECTION:

RFID peruser yields a voltage in one of its sticks when it catches a TAG. Here the voltage yield by the RFID peruser is sent to the ADC pin of the second microcontroller. When we get a weight, we keep a pin of our first microcontroller high. This is sent to a pin of the second microcontroller as info. At the point when a vehicle with both TAG and weight seems then two pins of the second microcontroller gets to be high and green light will be on showing to the vehicle that you are protected and prepared to experience this tollbooth without holding up a solitary second. The two sticks that got to be high in second microcontroller go to the third microcontroller which controls a spot grid. This dab lattice demonstrates the course to the vehicle that which way it ought to take after. We utilized an alternate microcontroller that controls a stepper engine that is utilized to bolt and opening the entryway of the corner. At the point

when an enrolled vehicle comes, entryway is opened consequently and secured the same route to an unregistered vehicle.

WHEN NO CARD :

At the point when a vehicle goes to the tollbooth which has no TAG that implies an unregistered one , then one pin of the second microcontroller gets to be low which makes the course demonstrated in the speck lattice to wind up inverse than in the recent past. Stepper engine will close the entryway and red light will turn on. So the vehicle needs to experience an alternate way where he will need to pay the toll physically to somebody doled out for accumulation. In the event that the vehicle holder needs to enroll his auto with a TAG, he can do so here yet it is nonobligatory. In the wake of paying toll, the vehicle can go. There is an alternate door which will be opened physically by pressing a switch. Unregistered vehicles will experience this entryway.

IV. DATABASE

We have a server where we keep a database of the vehicles. Its frontend is composed with C#.net and Oracle database runs in the backend. At the point when a vehicle performs its enrollment, versatile number and financial balance number of the manager is put away in our database. At the point when RFID TAG is caught and relating weight is measured then the sum as per the weight of the auto is deducted from the auto manager financial balance. A SMS is sent to the manager's cellular telephone about the procedure.

V. SENDING SMS

In our framework we inform the vehicle managers of any exchange produced using their vehicle comparing ledger through SMS. These SMS are sent consequently from the framework utilizing a GSM modem. We have utilized .NET serial correspondence and general AT-Commands to send these SMS. This framework can be tremendously utilized on the extensions and flyovers the nation over. It can change and convey for auto stopping carports, shopping centers and private flats.

VI. CONCLUSION:

The executed ETC based framework altogether help enhance travel conditions by tending to postpone brought on by both repeating and nonrecurring congestion. People despise the postponement at tollbooths. This framework gathers toll from the vehicles driving on toll streets without making the vehicle stop at Tollbooths. This has been fulfilled by introducing a remote in both vehicles and tollbooths to trade toll related data utilizing diverse information exchange strategies like by means of link, infrared, radio recurrence, Bluetooth, and so forth.. These frameworks incorporate profits to both toll powers and office clients, as far as time and expense sparing, enhanced security, increased limit and more noteworthy comfort. This framework gives an expansive review to gathering toll and accordingly gives playing point to toll administrators and motorist. The proposed ETC framework talked about in this work applies inactive RFID engineering. Thusly, expanded productivity will be ensured since RFID is known as a very steady innovation. With the end of human cooperation in the whole toll gathering procedure, we can make a finer ETC framework to be actualized in Malaysia. It can likewise fundamentally enhance the productivity of toll stations and the movement capacities of the toll street.-