

# AN IOT BASED AUTOMATED TOLL COLLECTION SYSTEM USING RFID

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**Abstract** – An automatic toll assortment system in high-tech cities is associate economical step towards the overcrowding of town. Transportation is that the main strength of our country's economy. one amongst the protocols in wireless sensing element network like RFID is employed by sanctioning reduction operating prices and motivating cashless transactions. Just in case of manual toll assortment system time consumption is worse and most significant is that the setting, the number of pollution that's created at the toll booth website, thus this system can scale back time needed and additionally scale back pollution however additionally conserve fuel. the only purpose of this project is to cut back the hardships caused by manual toll assortment system and pass the subject's vehicle through toll barrier in a very matter of few seconds while not halt.

**Keywords:** RFID, Arduino, Internet of Things (IoT), congestion, E-Wallet, Digital India

## 1. INTRODUCTION

Each and each day additional and additional vehicles are increasing speedily and also the graph of the speed for vehicles is exponential, that has become a serious drawback at the location of toll booths thanks to significant traffic inflicting endless range of issues like high petrol/diesel consumption resulting in depletion of organic compound deposits below earth's crust and additionally death casualties thanks to significant traffic. the only purpose of this paper is to encourage cashless transactions by putting in machine-driven e-toll assortment system and also the technology that we tend to use is that the use of RFID readers/tags. so as to beat this drawback, the utilization of RFID tags should have got to be unambiguously mounted onto subject's vehicle and RFID reader module must be mounted at e-toll booth. Once a vehicle passes through the gate, the reader can notice associate incoming frequency of a hundred twenty five on the RFID tag and browse a singular range that has been appointed by govt. authority and also the toll fee are going to be subtracted from coupled checking account or the e-wallet system. this method is capable of saving time similarly as fuel that saves plenty of individual's economy. This explicit system is way far better and really economical towards individuals as {they can|they're going to|they'll} not keep in a very long and prolonged queue therefore machine-driven e-toll system will eliminate the hardships of individuals parking vehicles in a very long queue. RFID includes a capability of eliminating corruption at native level and additionally scale back prices similarly as errors in

human operations. WSN's i.e. wireless sensing element networks are employed in totally different situations like home, office, healthcare, agriculture and additionally at toll assortment plaza that captures and transmits information from all incoming vehicles and outgoing vehicles as a result of their consistent and distinctive properties

## 2. EXISTING PROBLEM

The methodology of grouping tax presently used is that the ancient manual method wherever one person collects cash and problems a receipt.

### Drawbacks of Existing System:

- This methodology for grouping tax is time intense methodology.
- There are few probabilities of escaping the tax payment.
- It additionally results in the queuing of following vehicles.

## 3. PROPOSED SOLUTION

Here the open-end credit methodology wherever the person must show the open-end credit to the system put in at the toll tax department to open the Gate. The RFID readers read the postpaid RFID tags mounted on vehicle's screen and mechanically several quantities are going to be subtracted. If the vehicle owner doesn't pay comfortable toll quantity then the engine speed is step by step remittent to zero, when giving associate alert message to vehicle owner. This feature is employed for the safety purpose.

#### 4. BLOCK DIAGRAM

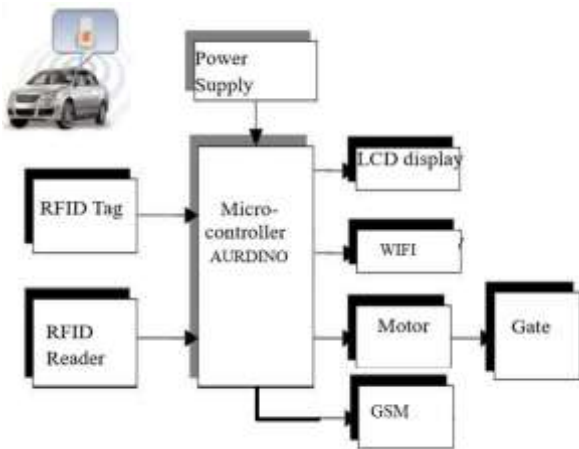


Fig -1: Block Diagram

#### 4.1 Arduino

The vital and also the most helpful a part of the system is Arduino Uno. All the output devices are controlled by Arduino. At constant time it reads and manipulates the input from sensing element. Alphanumeric display show receives varied messages from Arduino.

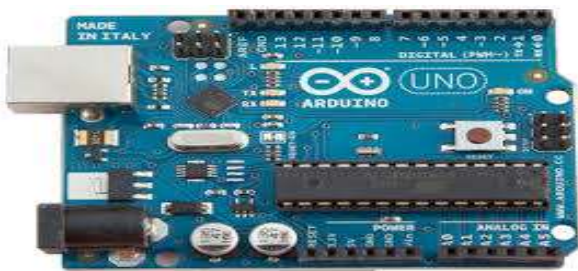


Fig -2: Arduino

#### 4.2 GSM Modem

A GSM electronic equipment may be a electronic equipment that accepts a SIM card, and operates over a subscription to mobile operator, similar to a movable. It is Consistent with the mobile operator, a GSM electronic equipment appearance similar to a movable.



Fig -3: GSM Modem

#### 4.3 LCD Display

This is to show varied messages that describe the actions happening presently. Liquid Crystal Display may be a display element that uses liquid crystals in its primary type of operation. Liquid show technology works by block light-weight.



Fig -4: LCD Display

#### 4.4 Buzzer

A buzzer is connected to the system employing a junction transistor circuit. This buzzer offers signal to the user. A buzzer is associate audio signalling device, which can be mechanical, mechanical device etc...



Fig -5: Buzzer

#### 4.5 RFID Tag

Rfid Tag is employed for the aim of car detection to deduct the number



Fig -6: RFID Tag

#### 4.6 RFID Reader

Rfid Reader may be a sensing element, Reads the Rfid Tag. Whenever a tag is browse the reverved quantity is subtracted.

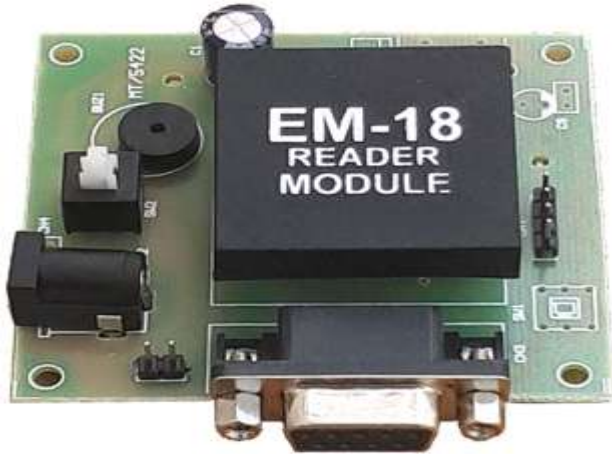


Fig -7: GSM Modem

#### 4.7 Motor

Motor is employed to open or shut the gate that is connected to small controller



Fig -8: Motor

#### 4.8 Connecting wires

A wire may be a single, versatile stand or rod of metal. Wires are to pass electricity and telecommunications signals. Connecting wires give a channel so they will travel from one purpose on a circuit to a different. All the wires are created out of copper as a result of it conducts electricity with high flexibility and really very little resistance.



Fig -9: Connecting wires

#### 4.9 Jumper wires

A jumper wire is associate electrical wire, or cluster of wires that kind a cable, with a connection or pin at every finish that is often wont to interconnect the parts of a board. They're manufactured from pure copper wire material for safety use.



Fig -10: Jumper wires

### 5. CONCLUSION

This system not solely controls the traffic bus additionally ne'er permit any vehicle to miss the tax. It's additionally time saving method.

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