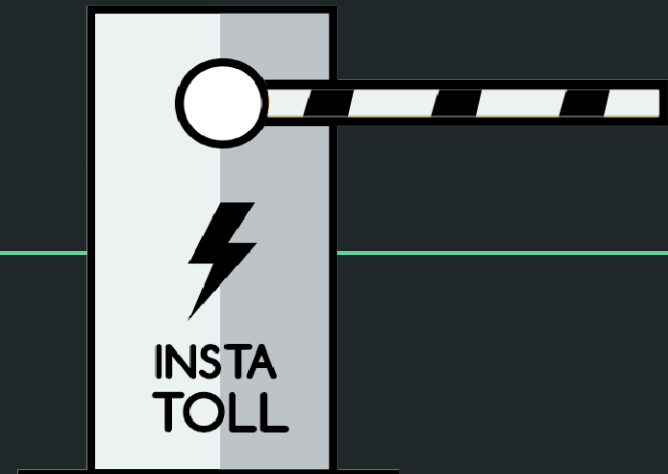


# INSTA TOLL



## Drawback of Current System:

Suppose, If there are 100 manual toll-taxes system and everyday 100 vehicles cross through each system, then No of vehicle that pass through one system yearly=  $100 \times 30 \times 12 = 36,000$ . No of vehicle that pass through 100 system yearly=  $100 \times 36,000 = 36,00,000$

Assuming cost of 1 liter fuel = Rs.75 Total cost of fuel consumed by 36, 00000 vehicles =  $75 \times 36,00,000 = \text{Rs. } 270,000,000/-$

The above is the money wastage under the consideration that the vehicle stops for 60 second at the toll system, and 100 vehicles pass through the toll plaza each day and there are 100 toll plazas.

---

# Benefits of our System

Minimum dependency on Internet

Can be used for Non RFID cars(Image Processing).

No need to open separate Bank account

Public Convenience Services like Petrol Pump, toilets etc.

Less Manpower Required.

Notification to the police in case of any criminal offense.

Seperate wallet for the app

---

## Benefits of our system(Contd..)

Fewer or shorter queues at toll plazas

- Faster and more efficient service (no exchanging toll fees by hand)
  - The ability to make payments by keeping a balance on the card itself
  - The use of postpaid toll statements (no need to request for receipts)
  - Lowered toll collection costs
  - Better audit control by centralized user account
  - Expanded capacity without building more infrastructures
-

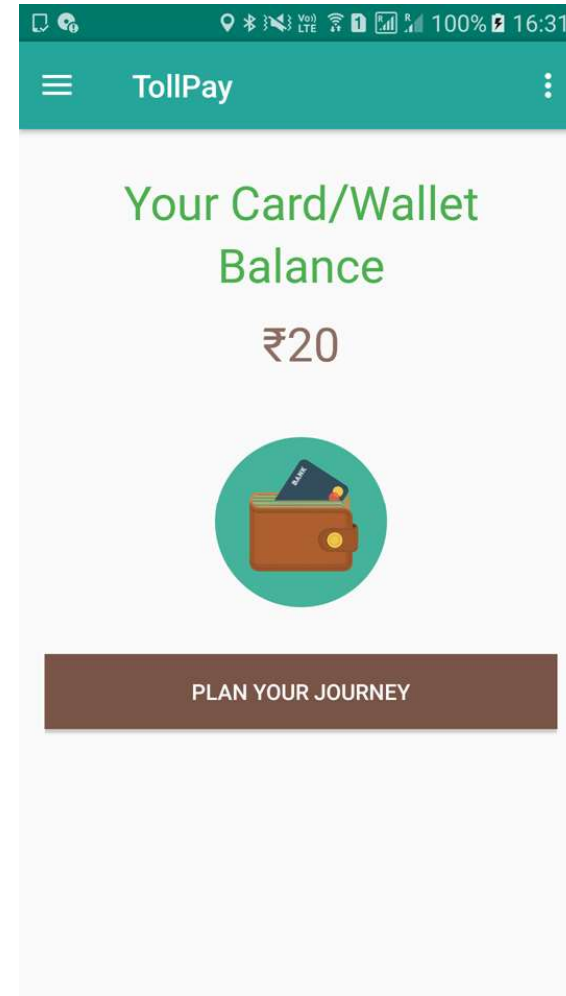
## Our system includes:

1. User will pay through his toll through **Android Application** .
  2. After paying the toll when the user reaches the toll, its number of axles will be checked through **IR sensors**.
  3. The vehicle having the RFID chip is uniquely identified by reading the chip and the RTO data.(on the back-end)
  4. The vehicle not having the RFID chip is uniquely identified by **Image Processing System** and the RTO data.(on the back-end)
  5. Other services like **notification** to the **police**, Emergency services are also provided on the app.
-

# ANDROID APPLICATION

## Simple Card/Wallet System:

Through Card/Wallet balance, users of our app i.e. customers/public passing from tolls can easily pay their tolls without filling multiple times information of their cards which makes our app experience better

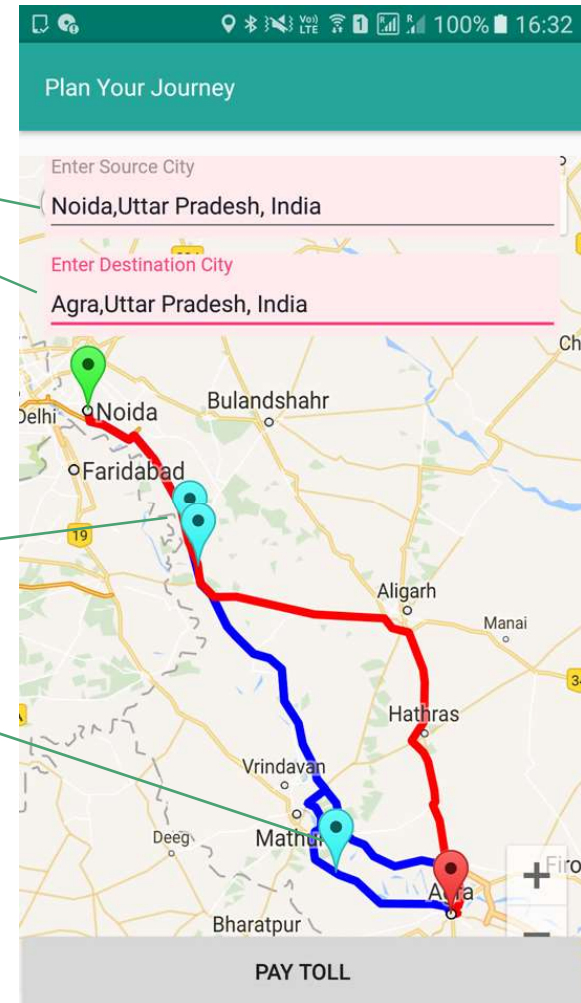


Multiple Paths From Source to Destination will Present to the user in the Map Polyline form.

**Innovative:**

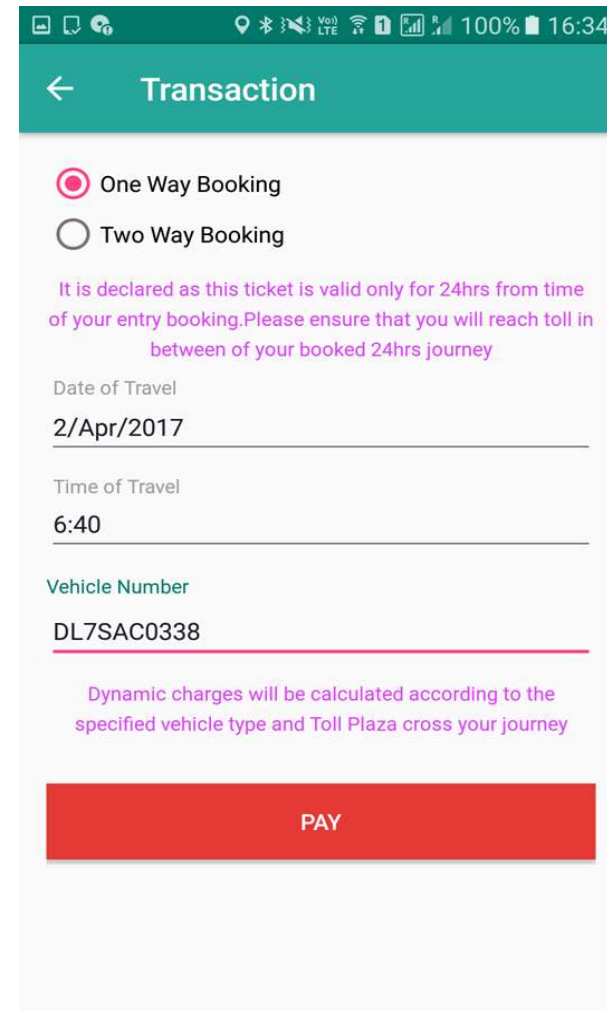
Also Toll with their accurate latitude and Longitude will be shown to the user in between these Paths.

This feature currently unavailable with google maps and even it doesn't work in **NHAI website**



**One-Way or Two Booking** can be selected by the users for **affordable chargers**.

**Date and Time of Journey** will be asked by the users so that users can book their toll journey with **future dates**.



The screenshot shows a mobile application interface for a toll booking transaction. At the top, there is a teal header bar with a back arrow and the title "Transaction". Below the header, there are two radio button options: "One Way Booking" (which is selected) and "Two Way Booking". A purple text message states: "It is declared as this ticket is valid only for 24hrs from time of your entry booking. Please ensure that you will reach toll in between of your booked 24hrs journey". Below this, there are three input fields: "Date of Travel" with the value "2/Apr/2017", "Time of Travel" with the value "6:40", and "Vehicle Number" with the value "DL7SAC0338". A purple text message below the vehicle number states: "Dynamic charges will be calculated according to the specified vehicle type and Toll Plaza cross your journey". At the bottom, there is a large red button labeled "PAY". The status bar at the very top shows various icons and the time "16:34".

Transaction

☒ One Way Booking  
☐ Two Way Booking

It is declared as this ticket is valid only for 24hrs from time of your entry booking. Please ensure that you will reach toll in between of your booked 24hrs journey

Date of Travel  
2/Apr/2017

Time of Travel  
6:40


Vehicle Number  
DL7SAC0338

Dynamic charges will be calculated according to the specified vehicle type and Toll Plaza cross your journey

PAY



100% 16:35





**TollPay**  
Order #123456  
₹ 100


Phone  
9643156229


Email  
abhisinghania14@gmail.com

SELECT PAYMENT METHOD

  
Card

  
Netbanking

  
Wallet


  
UPI

## PAYMENT GATEWAY

Simple Payment Gateway for payment through **card, netbanking, wallet and UPI.**


It will also **linked with our mobile number** and email id so that next time we **can pay from Saved cards.**

100% 16:35



**TollPay**  
Order #123456  
₹ 100

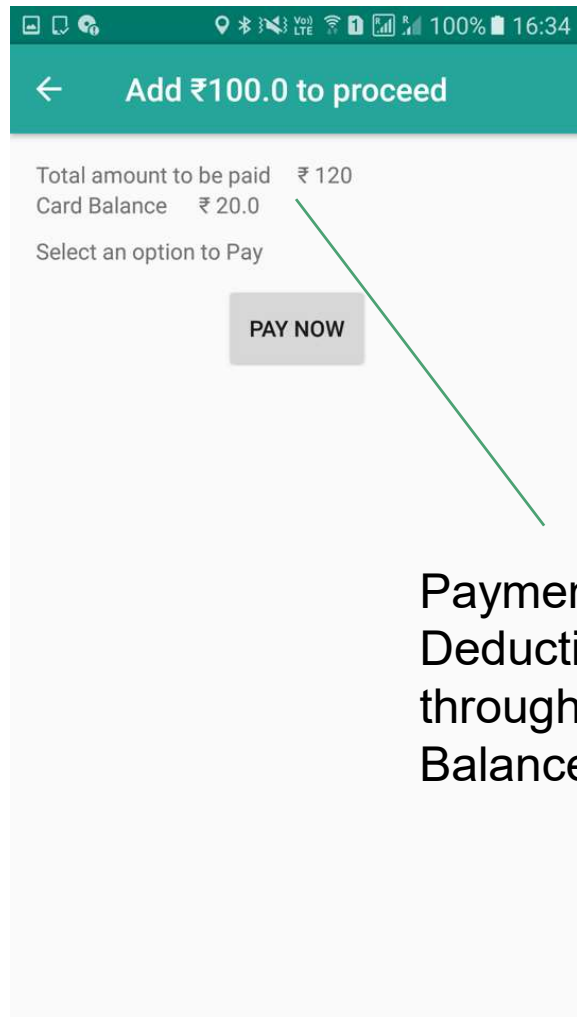
< Card 9643156229

Card Number 4111 1111 1111 1111  Expiry 10 / 19

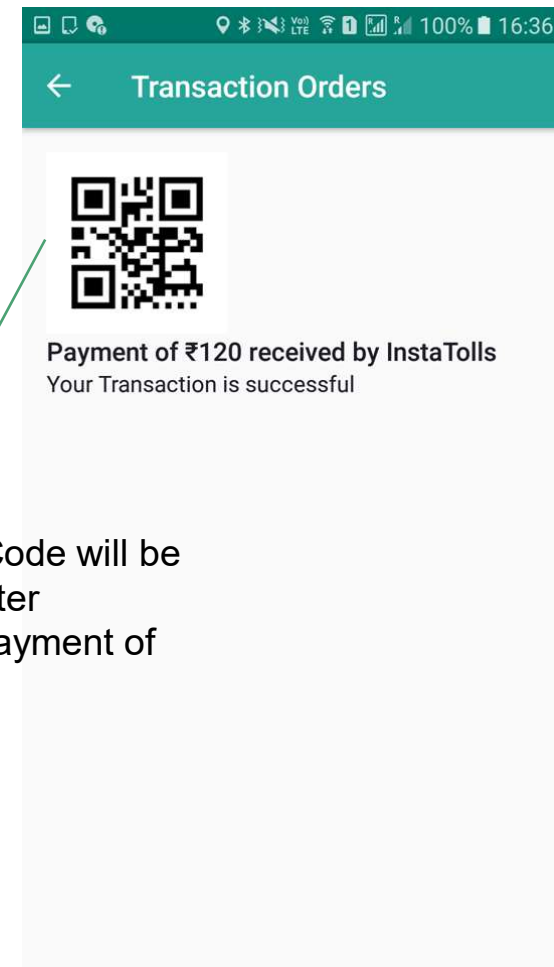
Card Holder's Name Testing Account CVV ...

☒ Remember Card

PAY ₹ 100



Payment  
Deduction  
through card  
Balance



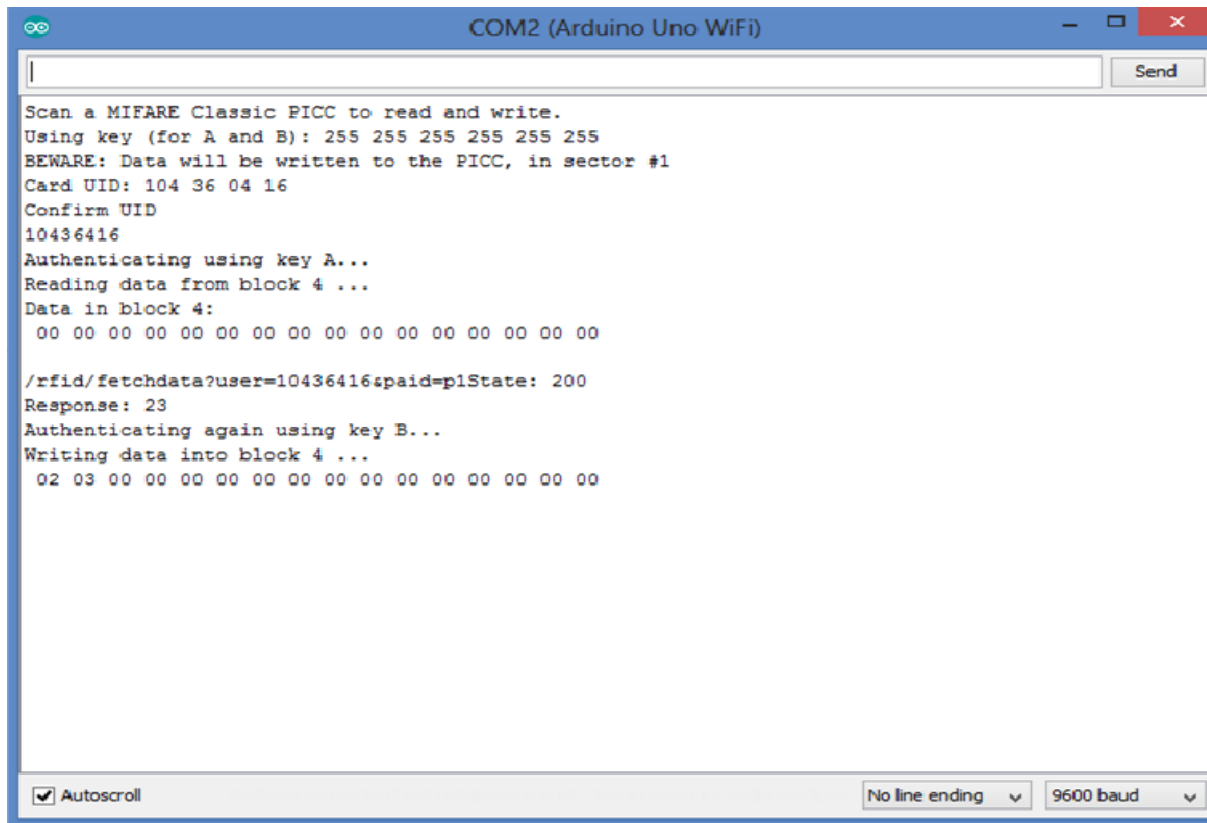
Simple QR Code will be  
generated after  
successful payment of  
Tolls.

# RFID Mechanism

- When the user reaches toll , his RFID card is read by the reader at the toll plaza.
- If the user has not paid, he will be notified to pay. If paid, the ID of the user would be sent to the server.
- The server responds with the toll ID's for which the user has paid and the time of entry.
- These details are then written on the RFID



# Writing Data Into RFID



```
Scan a MIFARE Classic PICC to read and write.  
Using key (for A and B): 255 255 255 255 255 255  
BEWARE: Data will be written to the PICC, in sector #1  
Card UID: 104 36 04 16  
Confirm UID  
10436416  
Authenticating using key A...  
Reading data from block 4 ...  
Data in block 4:  
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
  
/rfid/fetchdata?user=10436416&paid=p1State: 200  
Response: 23  
Authenticating again using key B...  
Writing data into block 4 ...  
02 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

COM2 (Arduino Uno WiFi)

Send

☒ Autoscroll

No line ending v 9600 baud v

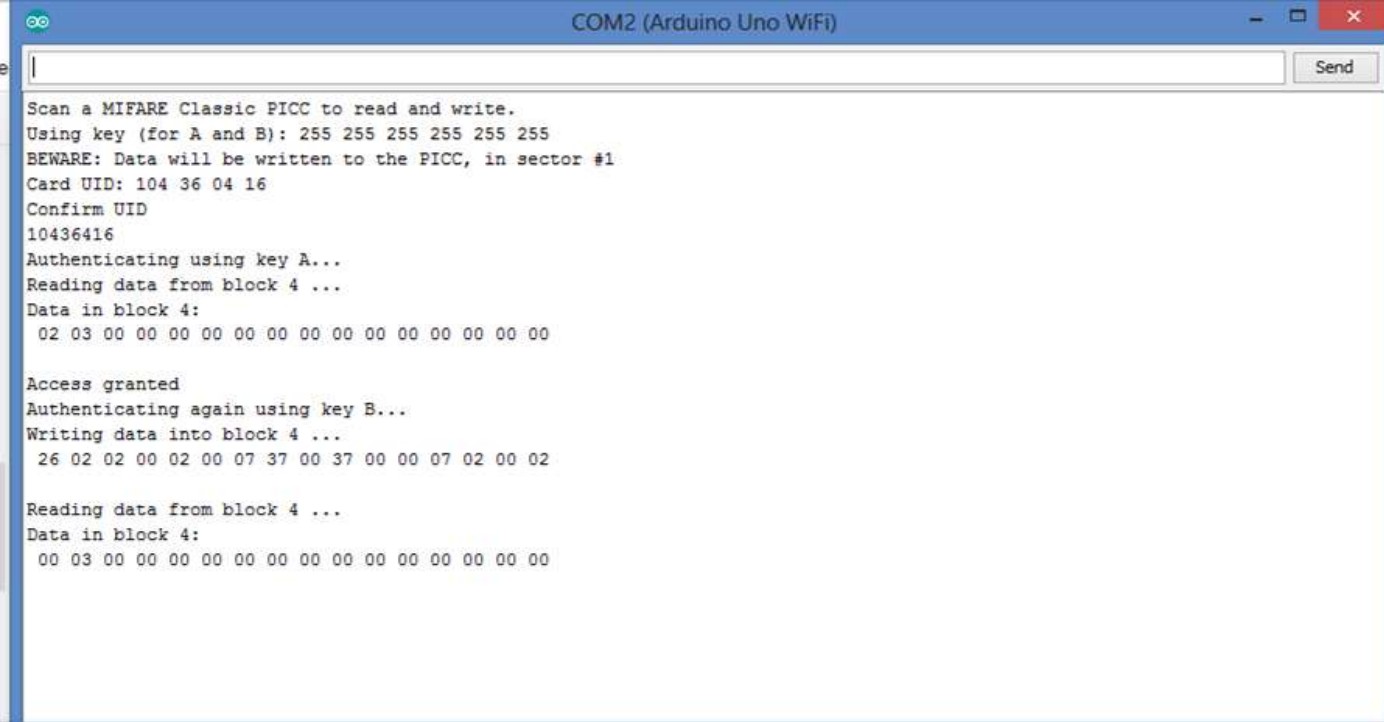
## During low connectivity

If the user reaches a remote location with less internet connectivity, there is no problem as the RFID contains information of paid tolls.

If that particular toll is paid for, access is allowed.



## REMOTE LOCATION TOLLS

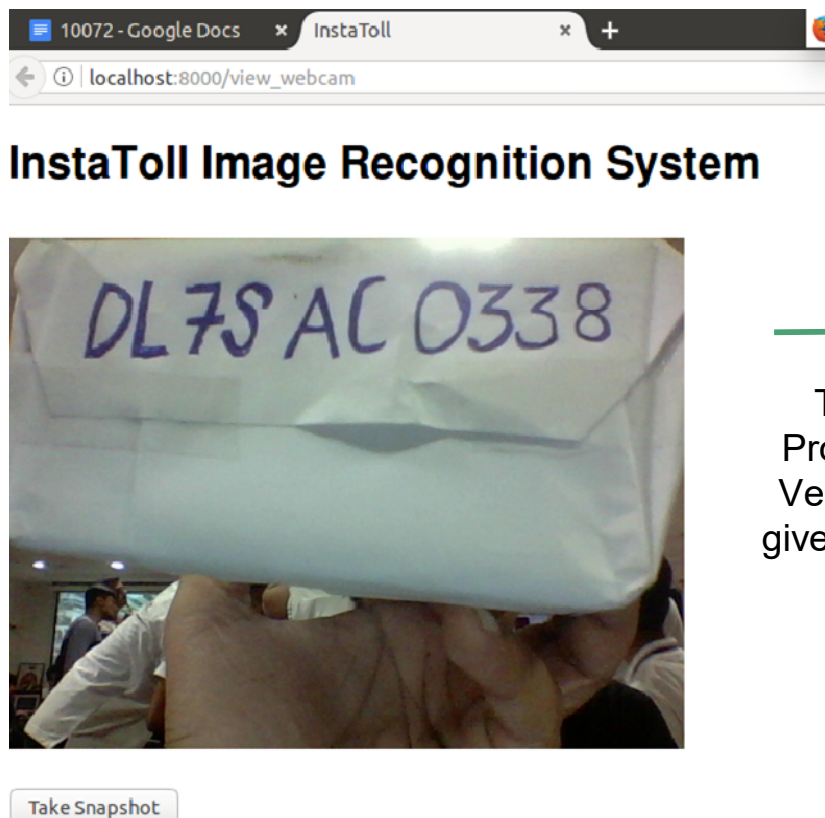


```
COM2 (Arduino Uno WiFi)
|
|
|
Scan a MIFARE Classic PICC to read and write.
Using key (for A and B): 255 255 255 255 255 255
BEWARE: Data will be written to the PICC, in sector #1
Card UID: 104 36 04 16
Confirm UID
10436416
Authenticating using key A...
Reading data from block 4 ...
Data in block 4:
 02 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00

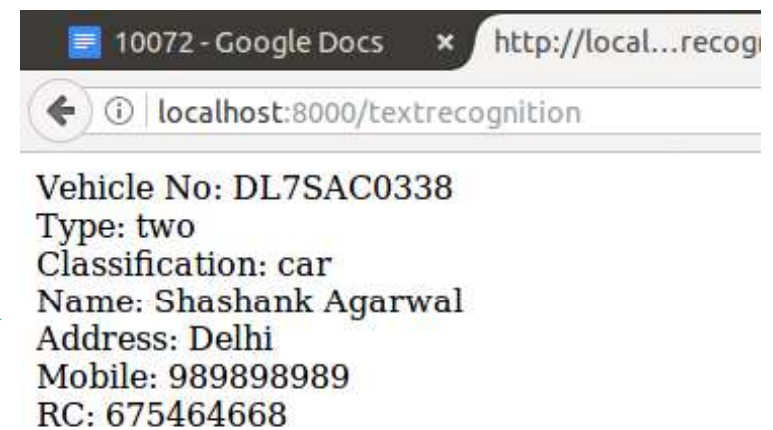
Access granted
Authenticating again using key B...
Writing data into block 4 ...
 26 02 02 00 02 00 07 37 00 37 00 00 07 02 00 02

Reading data from block 4 ...
Data in block 4:
 00 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

# Image Processing



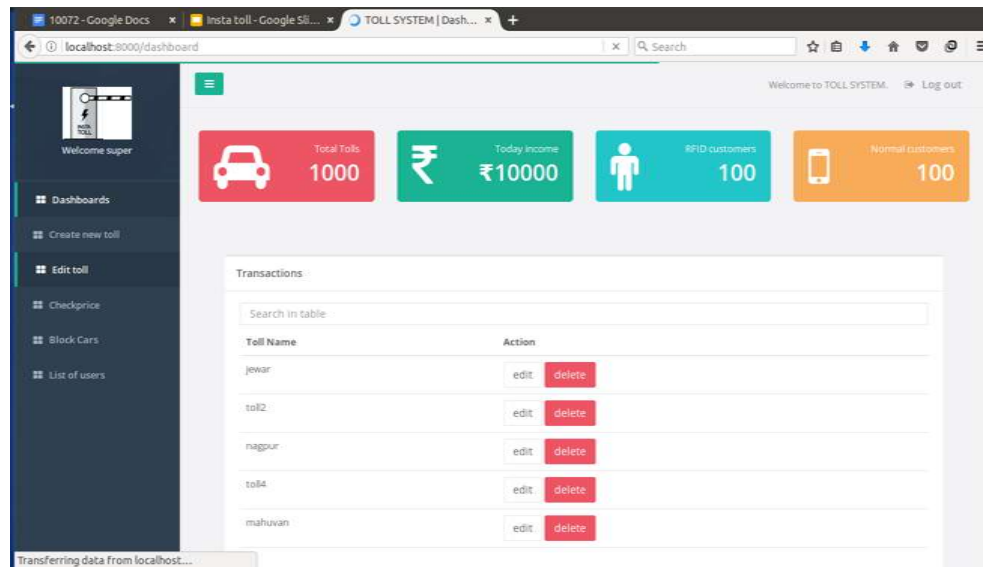
→  
The Image is  
Processed to get  
Vehicle No which  
gives us RTO data.



# Web App

Toll Admin : Manage Toll Fares and Payments

Super Admin : Superwise all Tolls

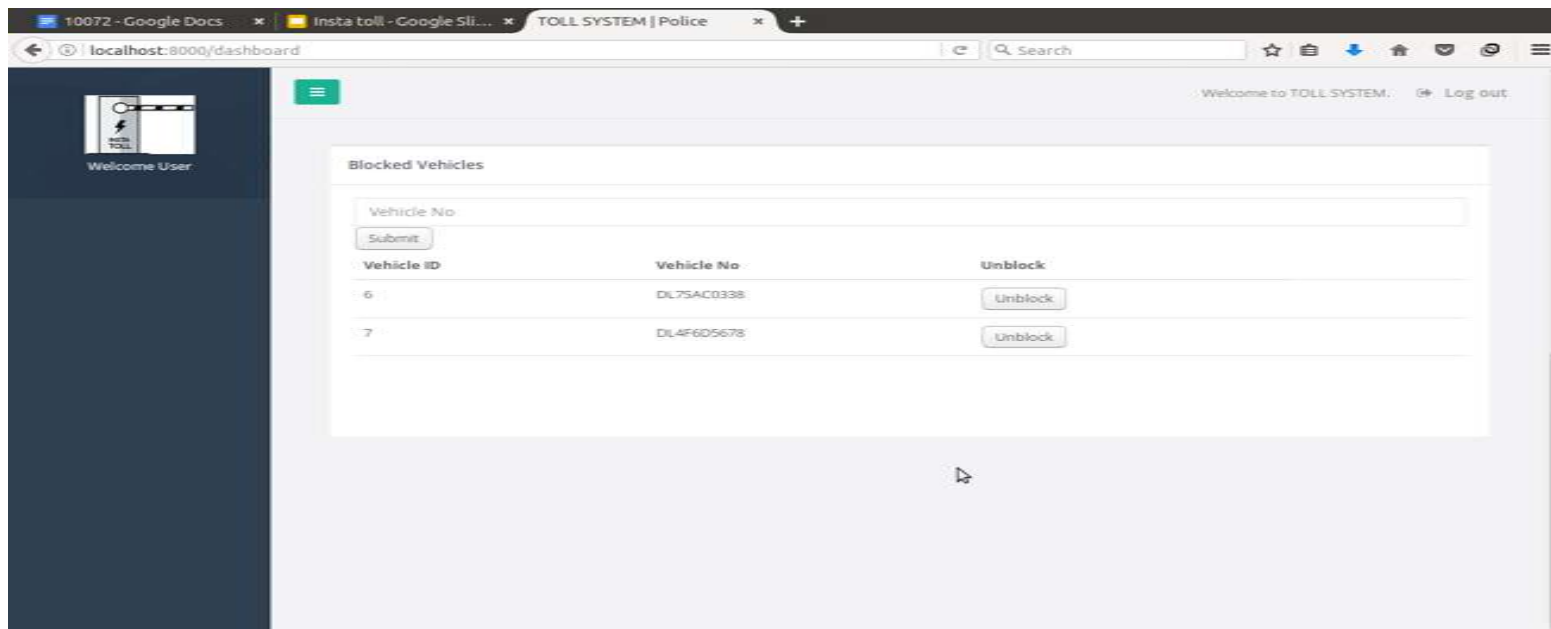


Vehicles

Super Admin Login  
Panel for Creating  
and Editing Tolls



# Blocking and Unblocking



Police can Login and Block Vehicles

## Technology used:

Laravel(Php framework)

Android Studio,Google Api client,Places API, Map API

Html,Css,Ajax

Razor Pay Payment Gateway,GeoFencing for Sending Notifications

MFRC 522 Reader /writer module

Arduino Uno wifi

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