

ANDROID BUS TICKETING SYSTEM

¹NIKITHA PATIL, ²ADARSH K

^{1,2}UG Students, Department of Electronics and Communication Engineering, Maharaja Institute of Technology, Mysore

Abstract - This Manuscript delineates the design & development of a user friendly Online Bus Ticketing System based on Android platform. In current Public transport system, Every Bus needs a conductor to collect money and issue ticket to each passenger; it is time consuming, manual error like improper distribution of ticket, passenger travelling without ticket & currency exchange many other problems. To overcome this many systems have proposed such as ticket vending machine, Electronic ticketing system, and Smart ticketing system using RFID; even they had drawbacks too. The main idea is to provide more convenient, cashless ticketing system i.e. an app is developed to generate digital ticket and the intelligent electronic door system with alarm is incorporated at the entrance of the bus. This system eliminates the Man power, Smart card usage and Paper tickets are eliminated, on that account it will make the passenger comfortable to travel.

Keywords - Android app, digital ticket, intelligent electronic door system, Alarm.

I. INTRODUCTION

The Public transport system is a major source of income in developing countries like India. Earlier to reserve a ticket people had to waste a lot of time by standing in a long queue. As technology proliferated automation is ingrained in our daily life. To book ticket instantly “The Online Bus Ticket Reservation System” came into existence. It is a web-based application that allows visitors to check the bus ticket availability, book the bus tickets and payment transactions are done through online. It provides facilities like reservation; cancellation of seats and various types of information’s regarding buses etc. These types of reservation are suited for longer journeys. When passenger needs to travel within a city, online booking would long hectic procedure to book a ticket online and generate a ticket and show that to a conductor. Ascertaining the same situations in a mall to book movie tickets ‘Bookmyshow’ Android application is used. The QR code will be generated as ticket; this is scanned at the entrance and

allowed inside the theater. By this got an idea to develop a system to book tickets for passengers who travel within the city.

The app is developed, passenger needs to login by providing necessary credentials. The user must enter the destination place and the number of passengers in the fields provided by the app and then the respective amount is been deducted directly through paytm account or bank account which is registered at the time of login and the ticket will be generated that will be unique. This will be scanned at entrance and valid passengers are allowed to get in and IR sensor will count the no of passengers, database is also managed.

II. ARCHITECTURE

There are three parts in door opening system in bus. In below fig you are observing a special mechanism door is placed inside the bus, that door is called inlet door. Code scanner is placed at the center, there are 2 code scanners one is while entering the bus and another while alighting the bus.

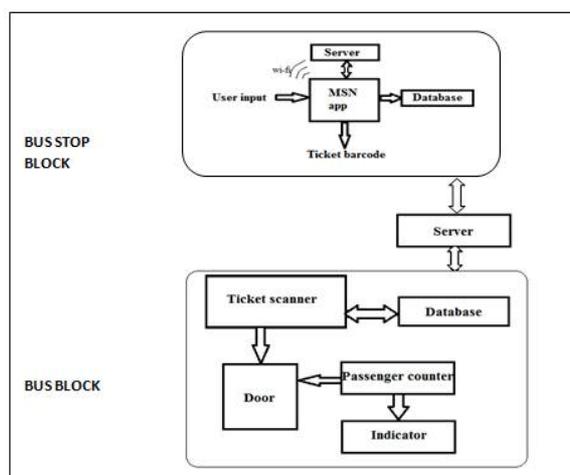


Fig.1. Basic Block diagram

Required hardware components are

- Infrared sensor

- ARM-7 LPC2148
- DC motor 12v,100rpm
- Motor driver circuit – L293D
- Alpha numeric LCD 16 x 2
- Bluetooth HC-05 module
- Finger print sensor – R305
- Buzzer circuit

III. CIRCUIT DIAGRAM

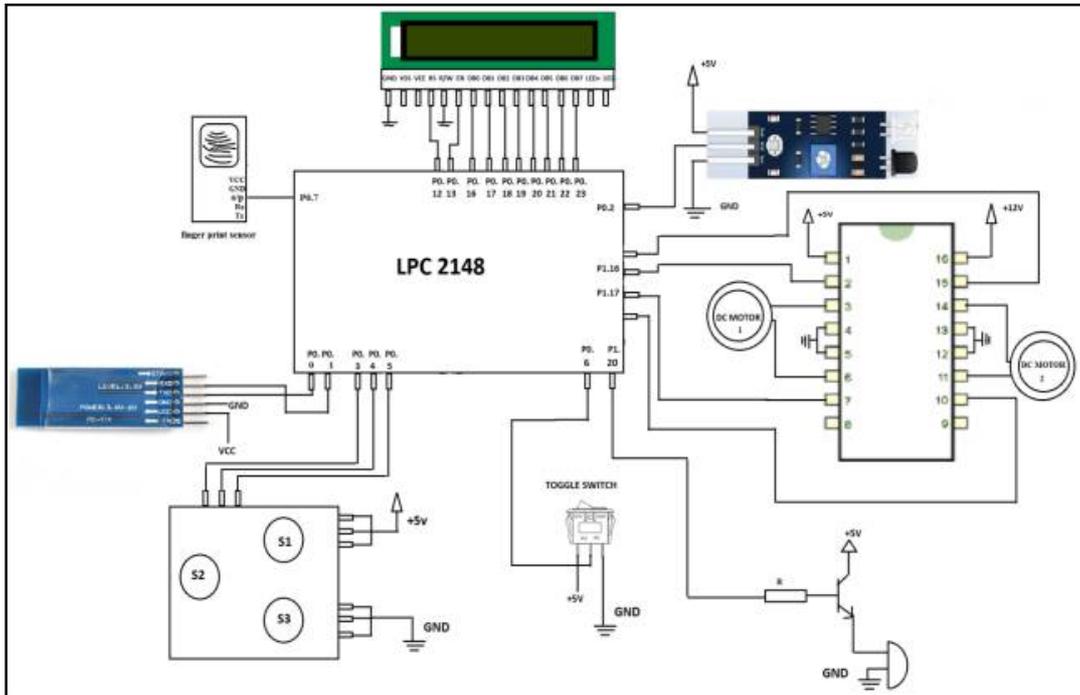
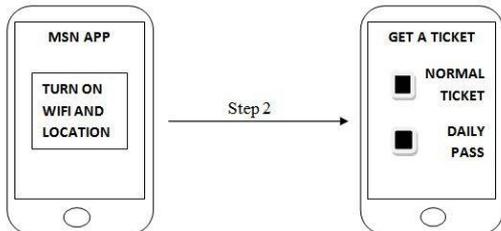


Fig.2.Hardware implementation circuit diagram

Ticket generating app

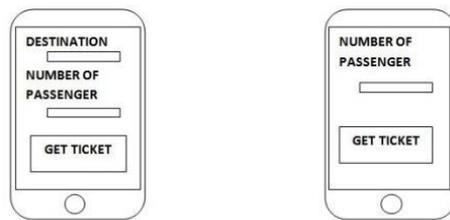
This app is developed to generate the unique barcode for each passenger. As soon as the app is opened it asks to turn on the Wi-Fi and location on your mobile. Wi-Fi is connected to the internet at each bus stop and with the help of the location turn on we get the source address of individuals. Before implementing the project to Real time, the prototype model is designed to test and validate. The app called MSN is developed to generate the ticket whose screens are shown below in fig.

Screen 1:



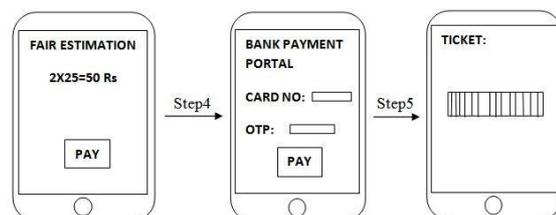
After selecting the type of ticket, then passenger has to enter the destination stop and no of passengers

Screen 2:



In the next screen fair estimation bill is displayed which contain the destination stop and fair amount for that stop depending on the number of the passenger. The next screen the user has to enter the bank credentials for payment.

Screen 3:



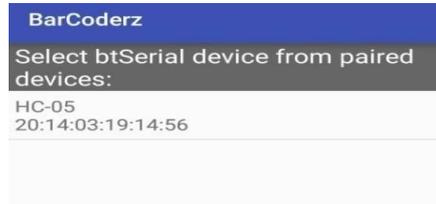
IV. BARCODE SCANNER

Instead of using the scanner, another app developed BARCODERZ which scans the ticket and via Bluetooth the data will be sent to processor for further validation.

STEP 1: The Bluetooth operation must be turned-on in the Smartphone .So the first screen of the BARCODERZ APK notifies to turn it on.

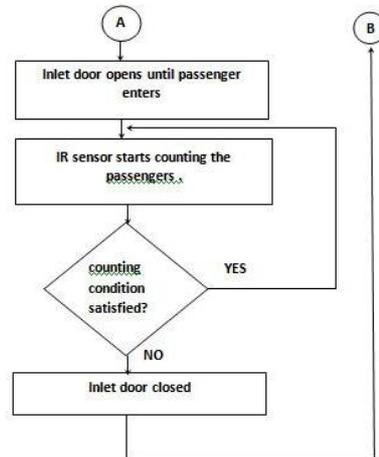
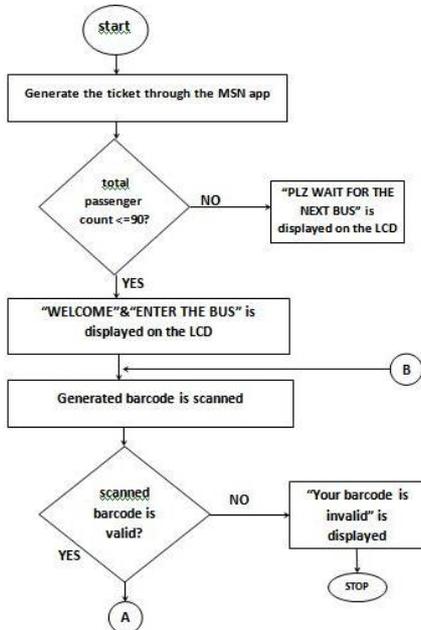


STEP 2: The apk shows the Bluetooth devices which exists in the surrounding range. The proper device needs to be selected. The module which we have used is named as 'HC-05'.



STEP 3: The device gets connected and option to scan is provided. If it's selected, the camera opens up and is ready to scan the code. Once the code is scanned, it transmits that data.

V. FLOWCHART



First we have to generate a ticket through app, then that ticket is scanned while boarding the bus. Bus in turns check for the number of passenger if bus contains more number of passenger, then it displays “wait for the next bus”. Once barcode is scanned processor check for the validity, if it is valid then door opens for passenger service and IR sensor helping for counting the number of passengers boarded. If ticket is invalid then door will remain closed and buzzer gets activated.

RESULT

The hardware structure is methodized as

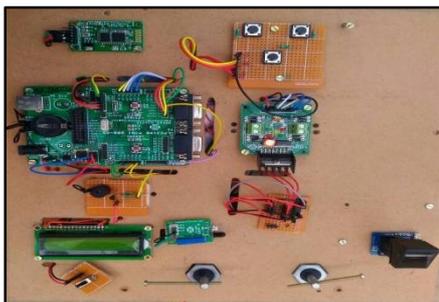


Fig . Total hardware components

The code generated by the passenger will be scanned by the scanner at inlet door of the bus; the generated code will be the following image



Fig. Generated code

Instead of scanner, here just for the model purpose we have created app called BarCoderz, which scans the generate ticket and this information will be sent to

processor through blue tooth module. The scanner as in the following image



Fig 5.3 Scanner app scanning for ticket

The processor checks for the validity of scanned ticket, verifying in all possible ways. If it is valid motor action takes place i.e. it turns clockwise, the inlet door will be opened passenger can board the bus. If not buzzer will be turned on indicating the passenger is fraudulent. To verify the valid there are set of cases which can be categorized. By considering the bus stops as City bus stand, Railway station, VNTKPL, Chammundi hills the different cases are as listed below.

TESTING AND VALIDATION

Sl.no	Cases	Required output	Expected output	Test result
1.	A Passenger generates the ticket to travel from CBS to VTKPL.	Scanned Code is valid Passenger is allowed to board the bus	ticket should be accepted Inlet door has to be opened	Access granted is display & inlet door is opened.
2.	Same ticket which is generated in case 1 scanned by other passenger at same source address	Passenger should not be allowed to board the bus	Invalid code & buzzer should be activated, Inlet door should remain close	Access denied is display & buzzer will be turned on. Door remain closed
3.	Same ticket which is generated in case 1 scanned by other passenger at some other source	Passenger should not be allowed to board the bus	Invalid code & buzzer should be activated, Inlet door should remain close.	Access denied is display & buzzer will be turned on. Door remain closed
4.	A Passenger needs to travel from VTKPL to RS, but if he tries to board in previous stops	Passenger should not be allowed to board the bus	Invalid code & buzzer should be activated, Inlet door should remain close	Access denied is display & buzzer will be turned on. Door remain closed
5.	A Passenger needs to travel from CBS to RS, but if he tries to board in next stop i.e.VTKPL	Passenger is allowed to board the bus	ticket should be accepted Inlet door has to be opened	Access granted is display & inlet door is opened
6.	If passenger alighting at the same stop for which he has generated the ticket	Passenger is allowed to alighting the bus	ticket should be accepted outlet door has to be opened	Access granted is display & outlet door is opened
7.	If passenger alighting at the previous stop. i.e. before the original stop arrived.	Passenger is allowed to alighting the bus	ticket should be accepted outlet door has to be opened	Access granted is display & outlet door is opened
8.	If passenger alighting at the next stop. i.e. after the original stop arrived.	Passenger should not be allowed to alighting the bus	Invalid code & buzzer should be activated, outlet door should remain close	Access denied is display & buzzer will be turned on. door remain closed
9.	All daily ticket passenger can board and alight at any stops	Passenger is allowed to boarding & alighting the bus	ticket should be accepted outlet & inlet door has to be opened	Access granted is display & outlet & inlet door is opened
10.	All yearly ticket passengers can board and alight at their given stops.	Passenger is allowed to boarding & alighting the bus	ticket should be accepted outlet & inlet door has to be opened	Access granted is display & outlet & inlet door is opened

Distinguishing the above scenarios we can clinch that passengers have to board the bus at the stops for which passengers generated the ticket. Each passenger has unique ticket and that ticket can access only once. The count of passengers is done so no fraudulent can step into the bus. Daily pass ticket, where passenger can board the bus at any stops.

CONCLUSION

This project may rectify many disadvantages in ticket collecting system such as fare is debited from the recharged amount, hence cash is no longer necessary and also passengers no longer need to carry the correct change to buy the tickets. The tickets are generated directly on passenger's mobile phones so smart card usage and paper tickets are eliminated. On that account it will make the passenger comfortable to travel with this User-friendly system.

FUTURE SCOPE

If aforementioned project is incorporated with present ITS system then it will be manifest to figure out the passenger movement at each stops. Depending on passenger density at a circumstantial time the

authority can assign ample number of buses for that route and when passenger count is less the unnecessary stops can be cancelled, by this we can decrease the trip time. And here we assert the database of all individuals as it is essential for security purposes. As technology is proliferating, each and everything is stepping toward smartness. Hence our project can be best suited for the looming smart cities.

REFERENCE

- [1] Paul Hamilton, "Mobile enable bus tracking and ticketing system", IEEE transaction, vol.13, 2014, pp.768775.
- [2] S.Sukhumar, M.Bhuvanewari, "Embedded system based automatic ticket vending machine for modern transport system", issue 11, vol.2, 2013, pp.51-63.
- [3] Saurabh Chatterjee, Prof.Balram Timancl, "Public transport ticketing system using RFID and ARM processor", International Journal of Electronics and computer science Engineering, issue 3,vol.1, 2012, pp.1619-1622.
- [4] Arun Das.S, Lingeswaran.K, "GPS based Automated public Transport Fare collection systems based in Distance Travelled by passenger using Smart card", issue 3, vol.2, 2014, pp.93-107.
- [5] Prajash Chara, Rakesh Kumar Keshari, Prakhar Soni, "RFID based Ticketing for public transport system", issue 5,vol.2, 2014, pp.58- 97.
