

RFID BASED BUS TICKET GENERATION SYSTEM

Aman Kaushik¹, Kumar Sanu², Kajol Singh³, Aayush Raj⁴, Sumitra Kumari⁵

¹Assistant Professor, AIT-CSE, Chandigarh University, Mohali, Punjab, India

^{2,3,4,5}Student, AIT-CSE, Chandigarh University, Mohali, Punjab, India

Abstract - This paper is based on ticketing and identification of the passenger in the public transport. In the urban city we have a severe malfunction of public transport and various security problems. Firstly, there is a lot of confusion between the passengers regarding fares which lead to corruption. Secondly, it is used to authorize the passenger travelling in bus. Thirdly passengers do not have to carry money with them. All the record of transaction will be updated automatically. Moreover, the doors of bus will be opened only when passengers had generated their ticket. This paper deals with identification, bus ticket generation and bus ticket checking using IOT.

Key Words: IOT, RFID, ARDUINO, WIFI MODULO, SERVOMOTOR.

1. INTRODUCTION

Now days the public transport system needs to be smart. However, public transport buses in India have always been an area where such new advances have turned their faces out. Passengers convenience needs to improves the performance of existing public transport is driving, demand for intelligent system in market. Also there are no methods to authenticate a passenger travelling in the bus. Automatic fare collection system is currently being used in many urban cities around the world. In addition, this system integrates ticketing system inside the public transport only. This project is implemented fully on IOT. Today in world of IOT we are going to decrease use of paper and will use smart technology for bus fare system. This project shows the beauty of IOT. It defines how IOT can be used effectively to generate the ticket automatically. It eases the pressure on passenger of buying a ticket in rush to travel in local buses. The project also shows that how we can ensure that a passenger with valid ticket can only be allowed to travel in a bus. The project is implemented using RFID card and Arduino and servomotors. The system uses Arduino microcontroller, as it is very much advance so certain applications such as automatic opening and closing of doors on basis of RFID cards can be easily implemented. This paper shows how RFID cards can be used to generate bus ticket. Also with the help of this RFID cards a passenger can be authenticated, leading to an effective step toward security of passengers. In this system passenger will carry RFID cards which will be scanned at respective bus and asked for destination. Passenger will choose their destination and automatically respected amount will be deducted from their respective account and their ticket will be generated. As, the

ticket will be generated doors of the bus will be opened for 30 seconds for passenger to enter in bus.

2. PROBLEM IDENTIFICATION

In present system ticket is issued by conductor. In present system handheld machines are used to print tickets. This system has also many disadvantages such as passengers have to carry their ticket until they reach their destination. Moreover, sometimes conductor charges extra money from the passengers who are unknown to the fares. Also sometimes passengers misuse this system by not buying tickets and travelling for free in bus. This ticket system also shows the wastage of papers as in a day about millions of paper tickets is generated. Sometimes cash issues occur in this kind of system. In this system there is no way of authorizing the passenger who are travelling in buses. Also while travelling in local bus there is lot of rush of tickets which create problems for passengers. Moreover, there is lot of confusion between the passengers regarding fares which lead to corruption. This system will give solution to above problems. RFID cards will be linked with Aadhar card thus authorizing passenger thus ensuring the security of passengers travelling in the bus. Also, this system will be integrated in the bus, the passenger only has to scan their cards to generate a ticket which take very less time comparing to present system preventing the rush of buying a ticket. Doors of the bus will be opened only when passengers had generated a ticket ensuring that there is no such case in which passenger travel in a bus without ticket.

3. LITERATURE SURVEY

Literature review was carried out throughout whole project to gain knowledge and skills needed to make this project. In paper [1] the authors explained the advantages of RFID cards about its low cost, it also explains how a RFID Reader will be there in the bus which is connected to main server which is used for automatic fare collection. In paper [2] the fare is automatically deducted according to distance travelled using GPS in the system. A database is created which is used to hold unique RFID Card number issued to a passenger. In paper [3] passengers count is done with the help of IR sensors and distance is calculated using motor and u slot sensor. After calculating distance, the amount is deducted from passengers account. It is also accompanied with the system that if any accident is occurred then nearest hospital get automatically notified to it using GSM and GPS. In paper [4] RFID cards and reader is used to read card number which is send to database using WIFI and a fair

amount is deducted from person's account. Other sources are books, online tutorials which are being used to gain knowledge throughout the project

4. PROPOSED SYSTEM

The proposed system consists of 3 parts:

4.1 Issuing RFID Cards.

4.2 Ticket Generation Using RFID Cards.

4.3 Ticket Checking.

4.1 ISSUING RFID CARDS

RFID cards can be issued to passenger at counters of bus stand by filling a registration form. The counter manager has a website on which he will fill the registration form with all details of passenger and issue them a RFID card with unique tag on it.

- a) WEBSITE - A website is made from where passengers will register themselves and can issue RFID cards. Website is made with the help of HTML (HYPER TEXT MARKUP LANGUAGE) and PHP. PHP is Hypertext Preprocessor(PHP) is used to create dynamic web pages that connects with database.



Fig 1-Website

- b) THINGSPEAK-It is an open source platform which is used to retrieve and store data. It uses HTTP protocol for sharing of data. It acts as a database for our system.

4.2 TICKET GENERATION USING RFID CARDS.

This system works upon RFID cards system. After a passenger had issued a RFID card. He or She only had to scan this card under RFID Reader attached at the entry of bus. The RFID Reader will read data and send it to web server through WIFI modulo. The web server will authenticate the passenger. If passenger is authenticated, then the passenger is asked to choose his/her destination. According to the chosen destination the bus fare will be

deducted from passenger account. If passenger do not have sufficient balance, then a message "Insufficient balance" will be shown to passengers. This system will ensure that there is no unfair means in ticket generation such as bus conductor demanding more money than the actual bus fare for particular destination.

- a) Hardware Description-

RFID CARDS AND READER - RFID reader is used to read RFID tags which are embedded with RFID cards Radio frequency identification(RFID) uses electromagnetic to automatically identify and track tags attached to the objects. RFID cards (card number) contain electronically stored information. RFID reader to read the information encoded on a tag consist a two-way radio transmitter-receiver which emits a signal to the tag using antenna. The tag responds with the information written in its memory bank.

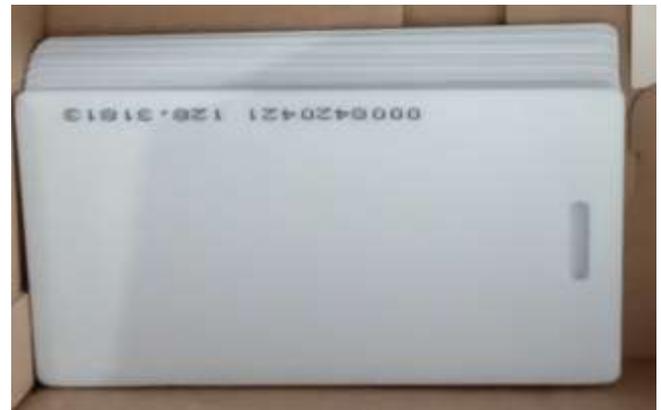


Fig 2-RFID Cards



Fig 3-RFID Reader

ARDUINO - It is a microcontroller based upon ATmega328P.It act as a heart of all kinds of IOT projects. Even in this system it is the heart of system. It consists of 14 input/output pins,6 analog pins, a 16 MHZ (Mega Hertz) quartz crystal. It consists a USB connection through which code is uploaded on it and a power jack to supply power to it.

Arduino has its own compiler to upload code on Arduino. The name of compiler is "Arduino IDE".



Fig 4-Arduino UNO

LCD - Liquid Crystal Diode(LCD) of 16*2 size is used to display all the information to passengers. In other words, it acts as a user interface.



Fig 5-LCD

KEYPAD - A 4*4 Keypad will be use by passengers to select the destination displayed on LCD.



Fig 6-Keypad(4*4)

WIFI Modulo - The ESP8266 is integrated with TCP/IP protocols which is used to send and receive data to or from computer. RFID reader reads data and send it to database for authentication with the help of this MODULO only.

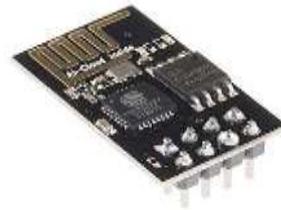


Fig 7-Wi-Fi Modulo

4.3 Ticket Checking

The proposed system to check tickets are automatic opening and closing of doors. The proposed system says that after generation of ticket by the RFID cards doors of bus will be opened for 240 seconds in which the person must enter in the bus. The gates of bus will be opened only if a valid ticket is generated otherwise doors of the bus will remain closed. This can be approached using servomotors.

a) Hardware Description-

SERVOMOTOR- Servomotor Sg90 model is used. It can rotate from 0 to 180 degrees. It is responsible for opening and closing of doors.



Fig 8-Servomotor(Sg90)

5. SCREENSHOTS

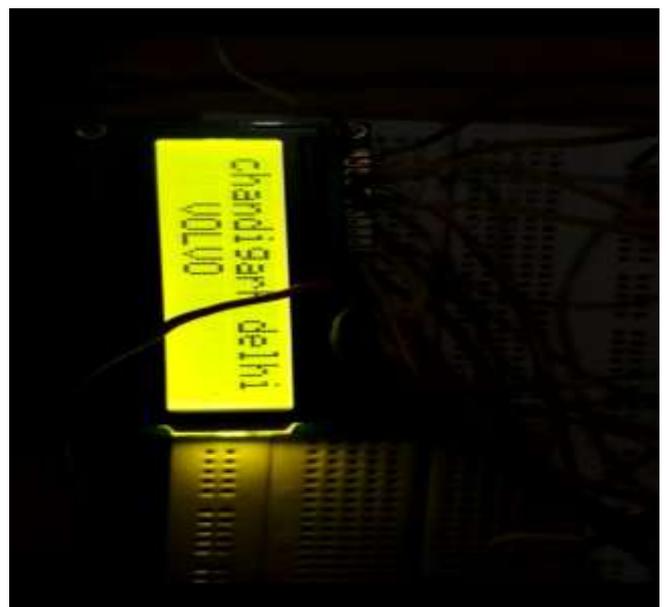


Fig 9- Snaps of Ticket Generator

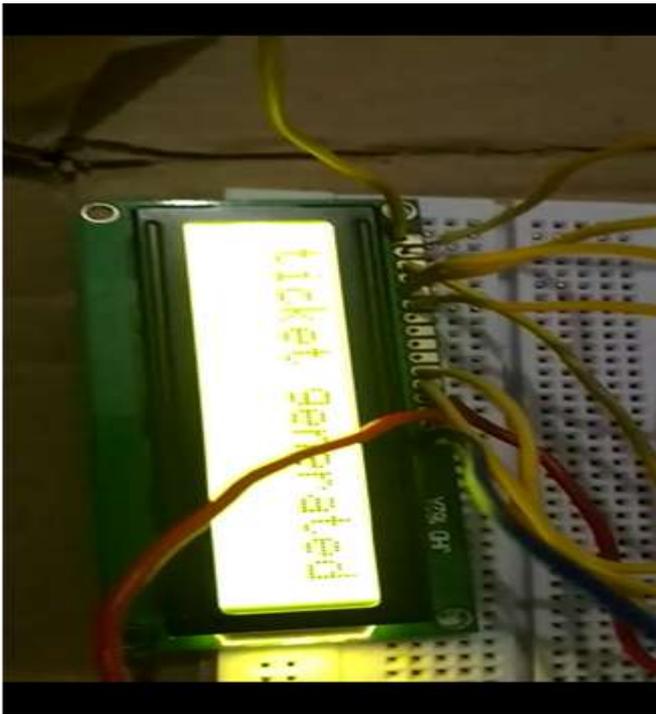


Fig 10-Snaps of Ticket generator

Advanced Research In Computer Science & Technology (IJARCET) Vol. 6, Issue 3, March 2017.

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3. CONCLUSION

This paper shows the power of IOT. This paper presents the most convenient and reliable way of generating tickets. This paper shows how effectively one can use this system to generate tickets. This paper also shows how one can provide security to the travelling passengers. Also checking of tickets become easy by automatic opening and closing of door. Moreover, automatic fare collection ensures conductors does not overcharge to the passengers. WIFI modulo is used to send data wirelessly to database for authentication thus making whole system wireless and fully automated.

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