Design of Smart Bus Fare Collection System Using RFID

M.V.S. ROJA RAMANI[1], P.B.S.S.K. SWETHA[2], P. SREEBAMA. V[3], A. RAMKUMAR[4], S. RAMESH NAIDU[5]

Associate professor, Department of ECE, N S RAJU INSTITUTE OF TECHNOLOGY, SONTYAM, VISAKHAPATNAM, A.P. INDIA
U.G. Scholars, Department of ECE, N S RAJU INSTITUTE OF TECHNOLOGY, SONTYAM, VISAKHAPATNAM, A.P. INDIA

ABSTRACT: *Now-a-days in public transportation we are facing too many problems with ticket fare collection. There are almost 65% of the public using the public transportation for their daily works. So, to overcome these issues a smart fare collection system is to be implemented. In this paper we have implemented the smart bus fare collection system using RFID module. The passenger's details and the amount is stored in the RFID tags allocated to each user. The GSM modem is used to send the information to the user's registered mobile. All the inputs and details are displayed on the LCD display for the user's verification at that instant.*
KEYWORDS: *Arduino UNO, RFID tags, RFID module, GSM modem, keypads and LCD display.*

I.INTRODUCTION

The journey in the public transports is very difficult, noisy and are corrupted. Around 65% of the public transports are bus transportation and almost complete population use these transportations for their works. The paper-based ticketing system which is used is not reusable and also is time consuming. So, the public transportation system needs to be smart. To avoid this paper-based ticketing, the time consumed and also the corruption the designing of smart bus fare collection system is needed to be implemented. A database is created in this project which is used to hold unique RFID Card number issued to a passenger. The passenger's count is read by the driver through his RFID. After calculating distance, the amount is deducted from passenger's account. RFID cards and reader is used to read card number which is send to database and fair amount is deducted from person's account.

II. 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 passenger's 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
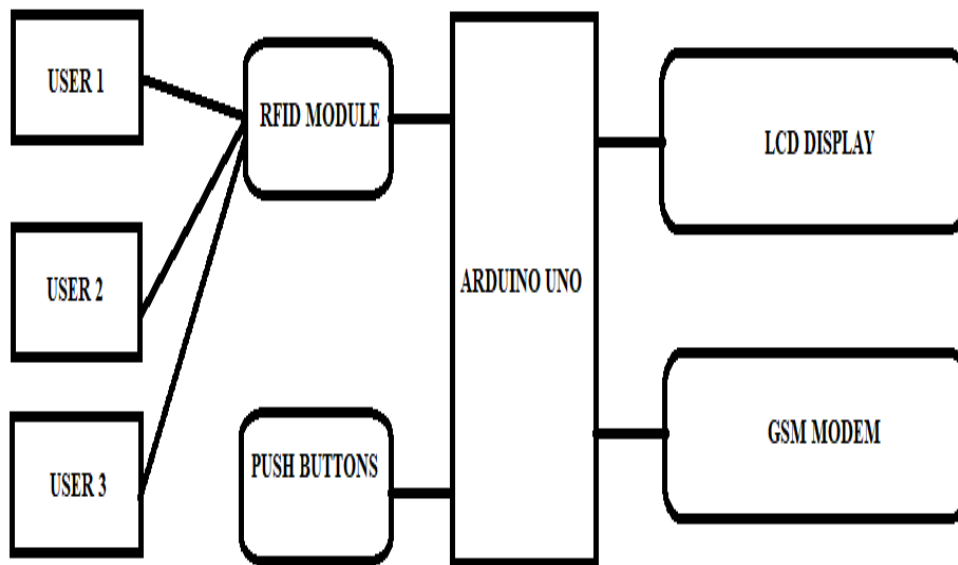
III. IMPLEMENTATION

Fig 1: Block Diagram

The user scans his/her RFID tag with the help of the RFID module to check the authorization of the user. Once the user's tag is authorized the user is permitted to select the destination using the keypad. These are connected to the Arduino UNO and the processed data is sent to the LCD display and GSM modem. The LCD display displays the deducted amount, the selected station and the balance in the user's account. This data is sent to the registered mobile number through the GSM modem. All the passenger's data is sent to the driver's account.
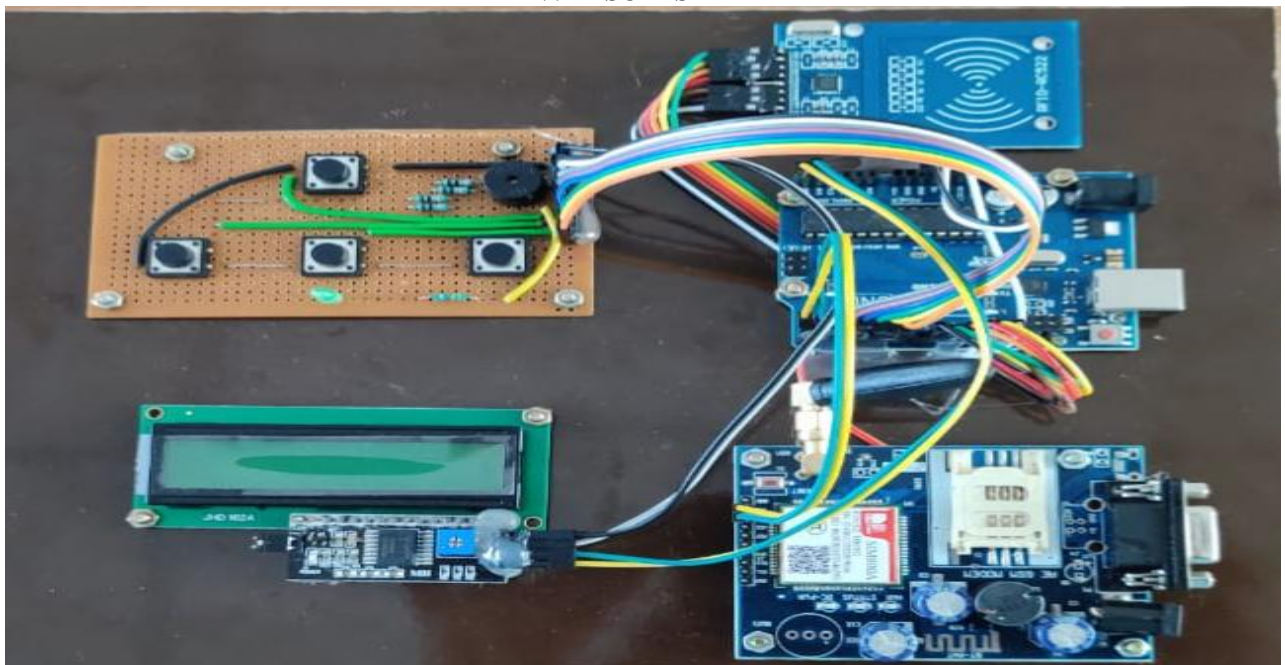
IV. RESULTS

Fig 2: Circuit diagram

The design of hardware components are done and processed by using RFID and Arduino UNO.
The software implementation is by Arduino IDE tool.

S.NO	DESTINATION	AMOUNT	STATUS
1.	V TO R	400	TICKET GENERATED
2.	V TO K	200	TICKET GENERATED
3.	K TO R	200	TICKET GENERATED

TABLE1: LCD display

V. CONCLUSION AND FUTURE SCOPE

5.1 Conclusion

In this thesis the difficulties faced during bus fare collection has been simplified using RFID and GSM modem. These RFID cards are economical and reusable. The RFID module reads the RFID tag and deducts the amount from the user's account based on the destination selected by the user and a message will be sent to the user's registered number with the help of GSM modem. This project "DESIGN OF SMART BUS FARE COLLECTION SYSTEM USING RFID" is designed with the hope that it is very much economical and helpful for passengers and as well as conductors during journey.

5.2 Future Scope

By using this project, it will provide an automatic collection of bus fare without any corruption. It is possible by using Arduino UNO, RFID and Push buttons. In this push buttons are used to select the passenger destination manually. So, for fully automated project install a voice-based automated device so that, if any passenger tells their destination location it will automatically detects and deduct the bus fare.

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