CASHLESS TRANSPORT SYSTEM USING RFID

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Abstract - Public transport is preferably used as primary transport system in India. Buses are the most popular and convenient mode of transportation in urban cities. More than 1 million registered buses in India, and 170,000 buses are operational in public sector carrying roughly 70 million people per day. However, the growing travel demand has not been catered by the bus transportation. Growing population demands modification and digitization in public transport sector. This paper talks about significance of cashless system for public transportation. The paper introduces a RFID and IOT based system for payment of fare in public transport vehicles while traveling.

Key Words: RFID, Cashless, Public transport, IOT

1.INTRODUCTION

Cashless transport system is a key to hassle free transportation. Carrying cash, waiting in the ticket counter queue and wastage of paper is all eliminated using this project. A RFID tag is used instead of convention ticket. Tag is use to pay the fair charge and also as a ticket. RFID tags are a type of tracking system that uses smart barcodes in order to identify items. It is the radio frequency identification. Radio waves transmit from the tag to a reader, which then transmits the information to an RFID computer program. The passenger will have to choose the desired location or the stop manually at the bus door the according to the distance the fare will be deducted from his RFID tag. Here the RFID tag is act like a Debit card. This IOT based system is easy to use for passenger and will be easy for admin to collect the passenger's data.

2. Literature Review

Literature review was carried out throughout the whole project to gain knowledge and improve the skills needed to complete this project. The main sources for this project are previous related projects, research thesis, books, journals and online tutorials. This chapter focuses on the basic concepts and all fundamental theories which related to this project and the drawbacks of the current system. Sana Said Al-Ghawi [10] in automatic toll E-ticketing for transportation system the RFID tag is used to collect the toll for transportation of vehicle. The tag act asa E-ticket. And vehicles are able to pay toll while in motion. The same concept is currently used in Fastag. Prashant Sharma [7] the paper shows use of RFID system differently. There are other places where RFID we can use to pay the bill. In RFID based canteen cashier system, the amount of bill can be paid using RFID technology. This RFID card is prepaid. Students or costumer can use this card to buy the meal and to pay the bill, RFID tag is used. This system proposes that every student will have RFID card which will be used instead of money.

3. Body of paper

For the most part, in the transportation framework, the technique of the ticket is for the most phase taken care of through the conductor. He used to acquire the sum from the visiting man or woman and offers the ticket to them. Fundamentally, the whole technique is completed by using paper-based, the printed papers are issued as tickets. Now a days conductor-less buses are used for transportation. For these buses a ticket counter is provided at the bus stop. Passengers have to stand in queue to buy the ticket and this process is very time consuming.

To avoid all the hassle, we need a smart system. So here is the IOT based smart solution that will ease the ticketing process. System will consist of hardware and software part. The hardware will be placed or fixed near the bus door on a bus. The passenger who wants to travel and want to buy the ticket can skip all the orthodox method of buying ticket which is paper based and to buy that need hard cash. One can buy the ticket without the hard cash payment, they just need a RFID tag to do so. The paper-based tickets are eliminated using the RFID tag. The tags are going to use to pay the fare and also as a ticket. The passenger's details along with the other details can be stored and monitored easily by admin. Data is stored using cloud.
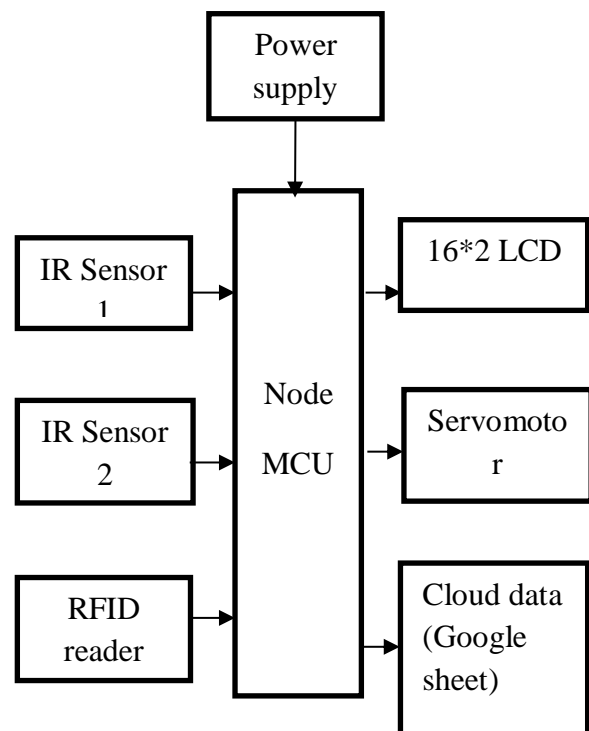
Fig -1: Block Diagram

The above shown is the block diagram of this project. The main component of this project is RFID that is radio

frequency identification. Other components are IR sensors, servo motor and a LCD display. The node MCU is the microcontroller used to process the data and also transfer the data as it is IoT platform. Two infrared sensors input is given to the node MCU. One sensor is used to count the passenger going in to bus and another sensor for passenger coming out from bus. Using this sensor we get total passenger count in the system. A RFID reader is attached to the system where passenger can tap their RFID card to select the bus sop and pay the fare charge. The power supply input is given to the microcontroller along with the three other inputs. The main component of the project is RFID card which every passenger will have. This RFID card will be first use to select the the desired stop by just tapping on the RFID reader which will be installed on the bus near the door. After the stop selection, for payment again the RFID card will be used. For doing so just a tap of RFID card will be required by the passenger on the RFID reader. By the one tap amount will automatically get deducted.

A LCD will show the list of the stations and one have to select the destination from the list. The fare charge will automatically calculate in the system according to the desired location and will be displayed on the same LCD after the passenger choose the stop.

The IR sensor can be used as counter. Sensor will be helpful to count the passengers count and the occupied seats can be track using that. The project is beneficial as it will reduce the time consumption of passenger as every time they have to stand in the queue to buy the ticket. There are many cases of fraud passengers where people travel without buying the ticket. The system will help to reduce this fraud as unless and until the ticket is buy the door remained closed. A Ticket system based on RFID technology is better than conventional ticketing system. It uses RFID technology in which passengers will have a RFID tag, with unique ID and linked data. When Passengers enters inside the bus it hits on the RFID reader. Thus data is fetched from database and E-Ticket is generated. RFID Reader will collect the data from the RFID tag and pass it to the Computing Device. This computing device consist of GPS module which will track record the location and with the help of GSM module it will access the database. when the passenger gets off the vehicle the computing device compute the fare as per the distance travelled by the passenger and deduct the corresponding amount from the account. It support digital India, cashless transaction and save paper. An online payment system will be made using IOT technology which will have its own keypad and thus helpful in secure and quick transaction. The system overview diagram gives the brief summary of the proposed system. The system has hardware setup which is supported by the software.

3. CONCLUSIONS

As we know that the old system was completely manual and thus needed to be updated. This system provides hassle free travelling and ticketing experience for passenger. Manual work of transportation industry personnel is reduced and tracking of passenger data made easier using this project. Moreover, this system plays a big role towards digitization of public transport system by making it cashless. Also, this system plays an efficient role in reducing paper consumption from the public transportation.

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