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A smart way to handle bush tickets

B. Mamta[1], A . Arti[2], W. Vaibhavi[3]
Assistant Professor[1,2,]
ENTC Engineering Sangamner, Maharashtra, India.

Abstract

In this study, we suggest a smart bus payment system that doesn't need cash. As part of this method, a Smart Card reader circuit is installed in every bus to figure out how much each ticket costs. The cost is immediately taken out of users' accounts based on the distance (number of stops) traveled, and a message is sent to riders' phones through the GSM module. This is what the cashless entry system looks like. Also, women who are abused, kidnapped, or harassed while riding public transportation can be helped by sending a message about their trip to a parent's cell phone. This makes the smart bus payment system better for everyone.

Keywords **-** IoT, GPS, GSM, RFID module, ARM7 microcontroller.

INTRODUCTION

On the other hand, the SMART CARD app has become a popular way to track public transit buses and use the public fare system. To reach big places like London, China, Shanghai, the USA, Istanbul, Canada, Australia, the UK, and many more has already been an amazing accomplishment. Smart help for public transportation is one of the best new technologies of our time. The government runs buses as a public service. The ease of public transportation depends on how well the buses are maintained. An important part of service quality standards is that the bus gets to the station on time and gives the correct name of the stop it is at. As there are committed staff members at the beginning and end, the schedule will always start and stop on time. So for medium stops, you can't be sure that the bus will arrive on time and find its exact location. The GPS system could be a good way to keep an eye on the bus. Using GSM to send a message to the PMT office and count the number of people on the bus.

The public transportation system often gives us trouble in our daily lives. It's like someone waiting for a bus for an hour, but when it finally comes, it might already be full, and they won't even be able to get on. The bus driver wouldn't always stop when it was necessary. So the hour he or she spent waiting was a waste. IR scanners will tell us how many people are on the bus, and a hardware part will keep track of its location using GPS technology.The location of the present stop is also very important to passengers. All three of these factors are important in public transportation: not answering calls or questions from customers; bus riders having emergencies; and slow response times. Tracking and booking systems that use Smart Cards can work together to fix the issues. It is possible to make a system based on GPS, but we suggest one based on SMART cards. Good for the environment. People who have electronic tickets on a SMART CARD will be able to use any bus service in the city. All they have to do is enter their current address and route on the keyboard that is attached to each bus door. The information will be sent straight to the server's main database, and the credit will be saved in the bus account. Another thing is that every bus stop will let people know when the last bus on any route will leave. It will save time to use this automatic method.

LITERATURE REVIEW

The public transportation in many countries is being used as a means of bus transport for travelling people would prefer this public transportation to be scheduled properly. Earlier to reserve a ticket people had to waste a lot of time by standing in a long queue. 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 and many other problems occur. To overcome these problems we are going to proposed smart bus ticketing system.

OBJECTIVES

- This idea is to provide more suitable, cashless ticketing system which eliminates paper tickets, which will increase thecomfortness of passenger while travelling.
- Saves the time and manpower.
- The systems also include modules such as women‟s safety and security, healthcare and emergency alerts.
- Reduce the currency exchange problem.

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II. PROPOSED SYSTEM

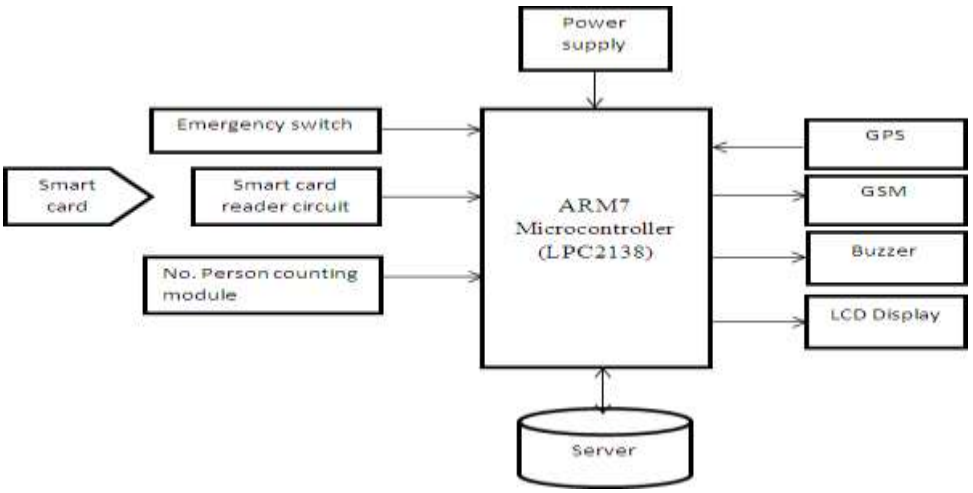

Fig. 1 System Block diagram

The design of the system includes an LPC2138 that will handle all of the managing tasks. As part of this system, we used an RFID gadget to handle the tickets. When we swap it for the first time, the payment counter will begin. When we swap it for the second time, the counter will end, and the amount immediately taken from our smart card will depend on how far we traveled. The SMS is then sent to that cardholder with the help of GSM. With GPS's help, GSM will also send SMS messages to any customer or in case of an emergency on the bus, telling them where the bus is right now. With GPS tracking, we can find out where we are at any given time. The panic buttons could also use GPS to find people and an IoT database to send that information to the right place, like the police office or the hospital. These all-important tasks will be carried out by IOT. It will show the current position of the bus and the total number of people who are on board. IR sensors will be put at the doors where people enter and leave the bus. These sensors will keep track of how many people are on board. All of the information about all the cars and their routes will be saved on the computer. At the next bus stop, the result should be shown on the 16x2 LCD in terms of the total number of people who are already on board.

DESIGN METHOLOGY

ARM7 (LPC2138): ARM7 is a 32-bit processor that can be used for real-time tasks and many other things. It has fast flash memory that ranges from 32kb to 512kb. With a special processor that has memory that is about 128 bits wide, we can also run code at a high clock rate. The LPC2138 can be used for many things because it is small and doesn't use much power. Plus, it has two serial ports that can connect to 2.0 high-speed devices, as well as on-chip RAM that can be anywhere from 4kb to 40kb, SSP to I2C, and more. This means that the device is good for communication, protocols, and a lot more. Plus, it has a 10bit ADC, a 10bit DAC, timers, GPIO pins, triggers, and more, which makes it easy to use in business settings. It also has RTC in it, which is an important part of our system.LCD (16x2): The 16x2 line LCD is what is being used here. Liquid Crystal Display, or LCD, is an Alphanumeric Display, which means it can show Alphabets, Numbers, and other special symbols. This makes LCD an easy-to-use Display device that can be used to show different messages, unlike seven segment displays that can only show numbers and some alphabets. The only thing that makes seven segment displays worse than LCD is that they are less durable and can't be seen from as far away. We used a 16x2 alphanumeric panel here, which means that on this screen. We can show two lines, and each line can have up to 16 characters.

IR sensor: Basically, an IR sensor is used to find objects or obstacles. Infrared light transmitters send out infrared light that humans can't see. An IR receiver, which is an infrared light receiver with a detector that picks up the reflected light, is also part of it. By using a variable, we can change the sensor's range and sensitivity. GPS is used to figure out where a car is right now by interpreting its numbers. The bus's location is kept track of by a computer that has GPS built in. For getting around in a car, a GPS tracking device or GPS sensor is used. It is the thing that can get information from GPS satellites and then figure out exactly where it is using that information.RFID Module: An RFID i.e. Radio Frequency Identification is some-what similar to barcode scanning system. Only the difference in both techniques is line of sight which does not matter in RFID system. RFID is a high frequency based technology in which a RFID reader and RFID tags are used. Passive RFID tags are used which does not need a battery source and it consists an antenna which transmits a high frequency which is matched with its reader.

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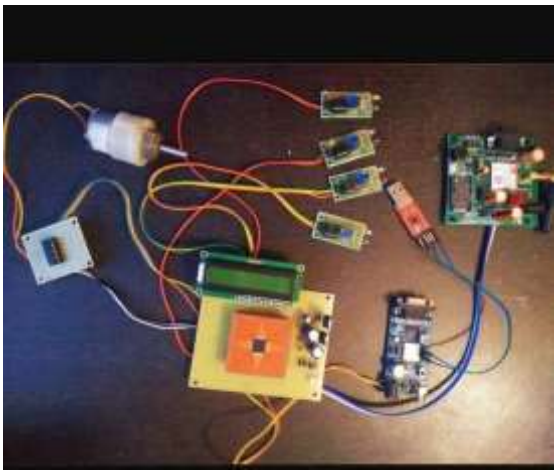
III. HARDWARE STRUCTURE OF SYSTEM



Fig,2 Hardware Structure of System

IV. RESULTS

When two passengers entered into the bus the count is incremented by two and displayed on LCD as shown in fig.1.Likewise when passenger leaved the bus, count was decremented and displayed on LCD shown in fig.2.

Fig.3 Result 1

Fig.4 Result 2

The ticket collected through RFID while passenger scans tag again while leaving the bus and amount deducted message is send on mobile will be like thisgiven in following Image

Fig.6 Result 4

In emergency, message of female passenger journey send on her guardian mobile number.

Fig.5 Result 3

Fig.6 Result 5

CONCLUSION

After looking at the whole system, it's clear that cashless ticket travel has many benefits. For example, people don't have to waste time waiting in a long line, and buses don't need conductors to collect money and give tickets to each passenger. This means that passengers don't have to fight with conductors over small change or look for missing passengers. It also greatly reduces corruption. There are also features in this system for things like girls' safety and emergency signals.

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