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IoT Based Smart Cashless Ticketing bus system

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Abstract: The Public delivery machine is a first-rate supply of earnings in growing nations like India. Earlier to order a price price tag humans needed to waste a whole lot of time with the aid of using status in an extended queue Bus wishes a conductor to accumulate cash and problem price price tag to every passenger; it's time consuming, guide blunders like flawed distribution of ticket, passenger visiting without ticket, foreign exchange and plenty of different troubles occur. To triumph over this problem's, we're going to recommend a gadget referred to as Smart cashless ticketing gadget for bus (without conductor without stop).. This machine elaborates the set up of Smart Card reader circuit in every and each bus to calculate the price price tag charges Depending upon the distance (quantity of stations) travelled; the corresponding price is mechanically deducted From the user's money owed and via GSM module message is ship on passengers mobile. This makes the cashless ticketing system.

I. INTRODUCTION

Buses are supplied via way of means of the Government as a public service, exceptional of so as to without delay decide the ease of public travel. It is an vital criterion for quality-of-provider requirements that bus reaches the station on time and reviews which station it's miles positioned accurately. As there are devoted team of workers contributors on the begin and on the cease the punctuality may be guaranteed.

So, for center stations, punctuality can't be assured and locate the precise region of the bus. So, for center stations, punctuality can't be assured and locate the precise region of the bus. It is probably a great concept the usage of the GPS device for tracking the bus. Using GSM sending message to PMT office, additionally test man or woman be counted number in bus. In everyday existence we typically face hassle of public delivery system. It's like someone is anticipating a few bus for an hour, when bus arrives at his/her stop, it may be absolutely loaded and he/she can be able to now no longer even get a danger to go into into it. Sometimes motive force could now no longer hassle to prevent the bus. So that hour is wasted that he/she waited.Hardware module will continuously track its location by using GPS technology and IR sensors will give us count of passengers in bus. Location of modern prevent is likewise huge troubles for passenger.. In public transport they all three factors are important poor reply of customer call, inquires, emergency of bus passengers.

The monitoring and ticketing structures the usage of Smart Card may be merged to remedy the problems. Even aleven though the GPS primarily based totally machine may be designed, we advise the SMART CARD primarily based totally Eco friendly.. Public wearing SMART CARD primarily based totally digital tickets may have get admission to to any bus provider of the town simplest getting into his present day region and his vacation spot at the keypad connected to each bus door The statistics will immediately be transferred to the server major database and the equal credit score may be saved in bus account Also, each bus forestall can be notifying the passengers, the departure time of the final bus of any path of travelling.. This automatic machine will store time. So that hour is wasted that he/she waited.

II. PROBLEM STATEMENT

There is increased burden on public transportation like bus just because of population. The problems identified in the current bus system are due to lack of proper bus tracking system passengers has to waste their precious time by waiting for the bus. Therefore, the user needs a smart system which provides real time information of bus.

So, our system handles all the data like current location of bus, management of buses and its schedule. The real time tracking of bus can be done by our proposed system and this information is then given to remote user who want to know the real time bus information.

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III. LITERATURE SURVEY

A literature review stated that there were many researches which uses Radio Frequency identification (RFID) as a key feature [1]. This system has an RFID reader and an RFID tag. A microchip which is present in RFID which is connected to an antenna; this chip has the capacity of 2 KB which includes data and product's information. Further, this paper states that, the performance of the reader field reduces with the increase in the distance. By using VHF 860-930 MHZ, the maximum area of reading is limited to 45 meter.

In [2], the author proposes a model that monitors whether the people inside the bus is safe. It combines various techniques i.e., RFID, GPS (Global Positioning System), and GPRS (General Packet Radio Service) technologies [3]. Each person will be provided a unique RFID. While the corresponding person entering the bus, the circuit will record the date, time, and location and the same will be stored in a database. In Dubai, A new technology is being incorporated for upgrading the transport services for increasing the safety in the transport and family members can able to track their children at any moment [4] [1].

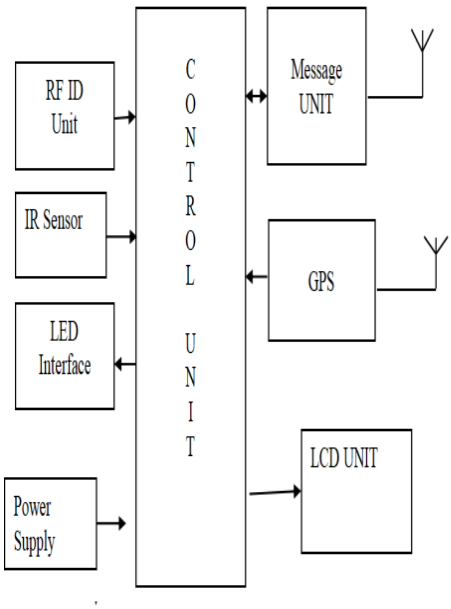
R. Anil Kumar, G, Jyothirmayi and K. Ramesh Babu Proposed Vehicle positioning System Based on ARM with combination of GPS and GSM can upload the information of the vehicle such as the position and speed to the monitoring center in time and make it easy and convenient to control the traffic. The car role device has gain of small size, scalable, dependable and effective expansibility which makes this device unique.
Data Acquisition through standard internet protocol suite (TCP/IP) can be used for real time embedded application [2].

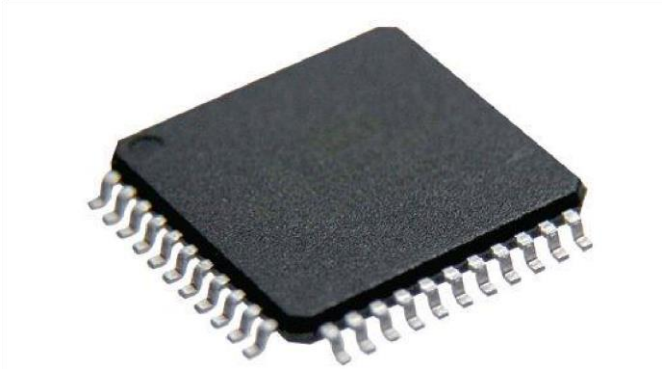
A. Physical digital identification Technology: The digital identification techniques are generally used by the technologies of

I. RFID identification- The smart card is used in various applications for digital identification. Magnetic strip card or inductance is used for data communication medium were used.

C. GPS positioning Position and timing information is sent to server for proper location coordinates of a vehicle. This records in addition processed to view automobile area on google map [1].

IV. METHODOLOGY





The discription of the Proposed System is explained below.

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I. MICRO CONTROLLER

The LPC2141/42/44/46/forty eight microcontrollers are primarily based totally definitely totally on a 16-bit/32-bit ARM7TDMI-S CPU with real-time emulation and embedded traceSupport, that integrate microcontroller with embedded excessive pace flash reminiscence starting from 32 kB to 512 kB.A 128-bit wide memory interface and a unique accelerator architecture enables 32-bit code execution at the maximum clock rate. For vital code length applications, the opportunity 16-bit Thumb mode reduces code through greater than 30 % with minimum overall performance penalty.

II. GLOBAL POSITIONING SYSTEM

The Global Positioning System (GPS) is a space-primarily based totally worldwide navigation satellite tv for pc system (GNSS) that provides dependable region and time data in all climate and always and everywhere on or close to the Earth whilst and wherein there may be an unobstructed line of sight to 4 or greater GPS satellites. Our new GPS package is patch antenna-primarily based totally GPS with RS232 extension for as much as 5mts cable. Due to damages in outside antenna (SMA connector) we're now switching to patch antenna.

III. WIFI

Then we apply this voltage to the power supply circuit. Note that we do this test without microcontroller because if there is any excessive voltage, this may lead to damaging the controller. We check for the input to the voltage regulator i.e., are we getting an input of 12v and an output of 5v. This 5v output is given to the microcontrollers' 40th pin. Hence, we check for the voltage level at 40th pin. Similarly, we check for the other terminals for the required voltage. In this way we can assure that the voltage at all the terminals is as per the requirement.

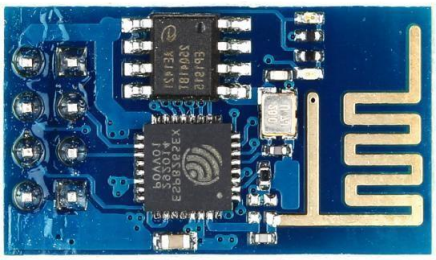

Fig: ESP 8266 Wifi Communicator

II. Radio Frequency Identification

(RFID) is a generation that makes use of conversation through radio waves to change information among a Reader and an digital tag connected to an object, for the cause of identity and tracking.Some tags may be examine from numerous meters away and past the road of sight of the reader. The application of bulk reading enables an almost parallel reading of tags. Some tags may be examine from numerous meters away and past the road of sight of the reade Most RFID tags comprise at the least parts. One is an included circuit for storing and processing information, modulating and demodulating a radio-frequency (RF) signal, and different specialised functions. The different is an antenna for receiving and transmitting the signal.

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IV. IR Sensor

The purpose of the transmitter is to transform the information we want to send into a signal that can be propagated by the channel. In the case of our wired copper channel, this means we want the information to be transformed into a modulated voltage level, something like the pulse train. For a wireless channel, however, the transmitter needs to encode the information onto an EM wave that can be easily propagated.

V. Liquid Crystal Display

In current years the LCD is locating large use changing LEDs. This is due to following reasons

1) The declining fees of LCDs
2) The capacity to show numbers, characters and graphics.This is in contrast to LEDs, which are limited to numbers and few characters.
3) Incorporation of a refreshing controller in to LCD, there by relieving the CPU of the task of refreshing the LCD. In contrast LCD must be refreshed by CPU to keep displaying the data.

V. RESULT

The proposed device is greater person pleasant than present device.And it also gives greater performance. And the outcome of this

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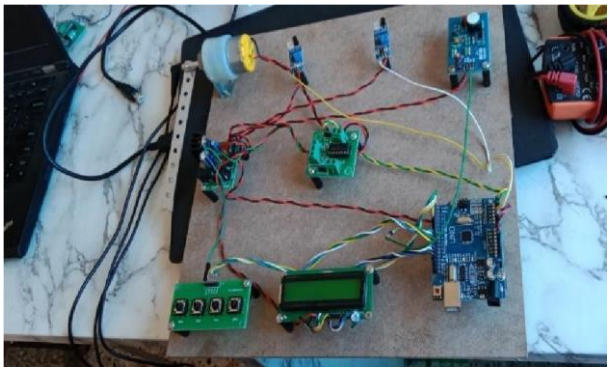

VI. CONCLUSION

The proposed system provides passengers real time location of the bus. Thus, saving their time which would otherwise, be wasted while waiting for bus. Ticketing system in the proposed system is completely Cashless and problem free.Papers which were wasted in printing tickets are saved as the proposed system provides tickets to passengers in the digital form. The analysis which was created based on simulation of the system can aid the bus management for proper planning of the bus schedule. Bus management can use the analysis to reveal some useful information from data such as frequency of passengers on each day, peak time and most used route which will help them in planning the bus schedule to increase their revenue as well as to fulfil passengers' demand.

VII. FUTURE SCOPE

A machine learning model which will analyse the past data and predict the required frequency of bus and bus schedule can be created. This model will help the bus management to efficiently plan the bus system to fulfil passenger's demand. Also, all the transaction details can be stored in blockchain network to make them tamper proof and immutable.

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