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Smart And Safely Compartments For Passengers

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Abstract

In this 21 st century, all the networks are being developing day by day. Indian railway stands as the longest network in the world connecting various places. People travel day-to-day in trains over short and long distance. As it is a primary source of transport, it must ensure the passengers that there is safe, comfort and secure in travel. There will be some abnormality in the reservation of tickets. Thus, we are going with electronic based service to tackle all the unnecessary failures in ticket booking and to move to a new way of lifestyle by providing tags. At present the reservation of tickets has become electronic based due to its ease. Here we are using GSM model where QR/Bar code technology is being used. This method is used to identify the concerned person where the ticket examiner need not check in person. Thus, we are able to avoid the reservation fraud during train reservation.

Keywords: GSM, RFID, Driver circuits, Buzzer

1. Introduction

Railways has always been an important mode of transport and has proved to be one of the most effective transport. It is the most trusted and preferred transport system in the industry. Following the rapid increase in economic development and updating in technology, the people using trains has increased along with the online ticket booking systems. The number of people using this mode of transport is increasing year by year and tickets are booked in browsing centers also. The traditional booking systems have been modified and replaced by with the help of technology. The online railway booking system is simpler, faster and easier to use and provides comfort for people. The seat allocation has not proved to be advantageous because of the unreserved people entering in reserved compartments which is unfair. The waiting list passengers are affected because of the reservation fraud. We need to simplify this system and we need more facilities to modify this reservation. The modified system uses the QR/Barcode for every reservation and prevents the reservation fraud. With separate codes being generated for each reservation the fraud can be prevented and is verified with the person's identity. With this technology the ticket verification need not be done in person.

There are many existing systems which we see one by one. Mostly, in Indian railways there will be a manual process where a ticket collector will be checked for each and every individual person. The process will be like that, the concerned passengers will book a ticket either through online or offline. If offline means, it is simple where he gets the ticket at that time and goes. While in the online case, he should download the ticket by paying via online and get a photocopy of it. Here many illegal entries at the time of travel occur. The ticket collector may not know that the unreserved person is traveling by the same train. But at times the ticket collector will issue the ticket illegally if the reserved person does not arrive there. These all are a complicated process. As we don't know on which side the error occurs. The uncomfortable situation starts when the passengers wait in a

long queue for a long time. Elderly people suffer a lot here. When tourists from other countries arrive, he should hold the passport as well as a card for assurance. The procedure will confuse and make time consumption. The checking will be done many times.

The alternative will be proposed as follows.

Tuo Wang already proposed a system where he used a method K-Means and FP- Growth algorithm which was altered further into the forest algorithm. Venugopal Prasanth analyzed the characteristics involved in the e-ticket process using RFID technology. In this technology, the ticket booking will be done digitally, and no man labor is required. Wèi Wei proposed a theory that when the ticket price decreases, the passenger flow rises. On the other hand, the rise falls when the ticket price increases. The other existing system has a need to verify the identity of the people allocated the seats, which may not be accurate and makes the reserved candidate stay in the waiting list. Thus, creates an uncomfortable situation due to the reservation fault. Therefore, the above proposed one is the solution for the previous error.

2. Proposed System

Now for system we use QR\Barcode as an input. QR means "Quick Response" which stores data. Though it contains lots of data inside, it gives instant information when scanned. Thus, it gives its name. In the act of ticket booking through online mode or offline mode via station we develop the code defining the person's seat number. This seat number is generated and stored in the system. Later it is transferred to the particular compartment's allotted seat. In each coach there will be a Barcode reader which reads the tag which the person possesses in their hand during travel. At the time of journey, the Barcode reader will convey the output message through the micro controller which will be the predefined message. Predefined message is nothing but digital code which consists of the seat number, passenger name, address, age, gender, destination of travel, time of travel etc., The output message will be made in comparison with the predefined message in order to check whether the seat number is correct. For checking purpose, the ID reader will check the passenger's specific number and allocate the seat for travel. The passenger ID means a QR\Barcode available in the form of tags. They will collect the tags from the nearest station. If it is not possible, they can also download the code and later convert to a tag at the date of journey before the time of arrival of the train. At the time of journey, the passenger scans the tag with the scanner which is placed right above the seat. The tag has a certain output code and the scanner has the predefined code. If these two conditions are met, the micro controller will be activated and as a result the seat will open. When the passenger does not able to reach the station, the micro controller will send the message to the concerned person's mobile using GSM. It is described as the protocols for 2nd generation cellular networks which is performed by gadgets like mobile phones, tablets worldwide. If the person has not responded to the message which is produced by the micro controller, then there will be cancellation of the reserved ticket of the concerned person. This cancelled ticket will be moved to the hands of another waiting list person. When the person replies "yes" then the micro controller will wait for another few minutes. Within that stipulated time, the person must scan the ID. Otherwise, the micro controller automatically switches to the person in the waiting list. When the destination is reached, there will be some vibration along with the closing of the seat. This is the indication given by the vibration motor attached in the seat. It ensures the passenger that the station has reached. The main goal is to avoid the fall of the person when the seat closes. After this process, the generated code will be expired and saved in the system.

3. Building Components

This GSM Modem can be accepted as any GSM networking which acts as subscriber's identity module. It behaves like a normal phone having a different notation i.e.., 10 digits. The boon of employing GSM is that, we may depend on RS232's port to interact as well as capable of developing the embedded system's applications. The SIM900A is a double-band GSM which possess a module of SMT attributing an industrial-standard interfacing. This provides GSM such as 900MHz or 1800MHz for audio, short message service, message and Facsimile in a minute form and with lesser consumption of electricity.

Fig 1: GSM Model

RFID

RFID is used for self-data Capturing. An RFID system involves 3 components such as a transponder, an antenna, transceiver. This antenna utilizes frequency of the radio signal to convey a signal which is then stimulate the transponder. When it is turned on, the tag conveys the signal to the antenna. Function of the reader is nothing but to question the tags. The communication is not wired, and the journey is very tiny. The angle of sight within the readers and passenger's tags aren't important. The reader consists of an RF module, that performs dual role which is nothing but the receiver and transmitter of the particular frequency. The transmitter has an in-built oscillator to send out the carrier's frequency. A modulator is used to store the data commands. Upon this carrier signal. An amplifier is used to boost the signal which is super good to awake the tag. We have a receiver, which have a demodulator that is attached within it to which extract the returned data. It also contains an amplifier to strength the signal for processing. A microprocessor forms the central control unit, which has an operating system, memory to filter and store the data. The data is now all set to give to the networking.
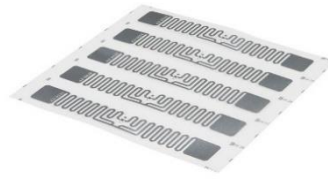
Fig 2: RFID TAG

TX & RX :

An RF transmitter model is a tiny PCB which is known for transmitting a signal(radio). This modulated the transmitted wave in order to carry over the data. Transmitter models are evaluated along a micro controller thus providing the result in form of data to the model. Then it should be transmitted. The transmitters then subjected to the certain needs. This gives the greatest transmittable power as output.

This receiver model gets the modulatable RF signal from the RF transmitter and then demodulates the wave. There will be two major types of RF receiver models namely the superheterodyne for receiver side and the super-regenerative for receiver side. Super-regenerative models are of lower price and has lesser chargeable designs by the series of amplifier in order to draw out the modulated result from the wave of carrier signal. They will be non-specific; the frequency of process differs from the surrounding conditions and the voltage to the power supply. Superheterodyne receivers possess an advantage over super-regenerative by means of performance. They charge high accuracy, as well as stability through higher voltage and also the surrounding conditions range.

Fig 3: RF TX AND RX

Power Supply:

The power supply is given as follows. The step-down transformer converts the 230voltage alternating current to 12voltge alternating current. Then the rectifier's usage is to convert 12voltage alternating c to 12voltage direct current. The filter reduces the harmonic signal. The regulator converting 12voltage direct current to 5voltage direct current using ic7805.

Fig 4: POWER SUPPLY

Buzzer:

The buzzer's other name is called as a beeper. It is an audio device. It can be electromechanical and can be piezo-electric. It is used in alarm devices, timers and confirmation devices like mouse click and key strokes, computers, copiers, printers, telephones and other electronic equipment. When we apply D.C voltage it generates consistent single tone sound. It is a designed resonant system and is used where large volume sounds are needed. An active buzzer 5v rated power is connected to a sound and along with board connections it completes the simple circuit design.

Fig.5 : BUZZER

Driver Circuit:

The driver circuit is a switch which is powered by electrical current. The four-driver circuit consists of power supply, driver circuit, and isolation circuit. The driver circuit is built in this circuit and contains the transistors which are responsible for changing operations. The switching operations of the driver circuit is done by the transistor. The reverse voltage of driver circuit is prevented by the isolation circuit. The isolation circuit also protects the transistor and controller from damages. The i\p pulse is provided from the microcontroller and is used for changing a four device.
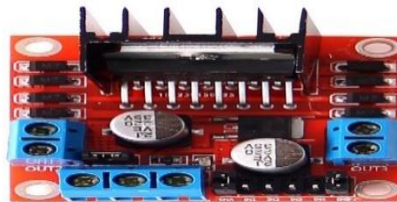

Fig.6 : DRIVER CIRCUIT

USB Barcode Reader

The QR-code reader or scanner is a device which is able to get the input and print the output codes to the computer. This contains lens, light source and sensors. All barcode readers consists of the decoder circuit. It is used to analyze the barcode's image and sends the content to the output port of the scanner. The commonly used ones are CODE39 and UPC. To enable the rarer standards we have to scan configure for enabling it.

Fig.7 Barcode Reader

Arduino micro controller:

Arduino boards consist of an Atmel 8-bit AVR microcontroller (ATmega8, ATmega168, ATmega1280, or ATmega2560) with varying amounts of flash memory, pins, etc. Arduino microcontrollers are pre-programmed one with a boot loader. This one makes our work very easy by transfer the codes to the memory. Always the microcontroller is known for its size which is nothing but a little computer. It is built in a mono rare oxide metals made of semiconductor with integratable chip. A microcontroller invloves more than one CPUs. These have inbuilt memory. Also, programmed input as well as output surrounding terminals.

Fig.8 ARDUINO MICRO CONTROLLER

4. Vibrating Motor

It is a tiny built-in vibration motor device. After we give 5V power, we are able to control ON / OFF or intensity of the vibration motor by means of a digital signal or the PWM signal. The module possesses the best quality mobile phone vibration motor, in which the vibration effect is of evident and amplified which works effectively and the intensity of the vibration motor can be made controlled by the PWM. The module completes the conversion of the electrical signal to the mechanical vibration easily. It is suitable for the production of interactive products which are sensitive to the vibrations and the portable intelligent device which vibrates in order to recall a small vibration motor that is suitable as a non-audible indicator. When we give high input, the engine starts vibrating like your phone in silent mode.

Fig.9 VIBRATING MOTOR

RFID scanner:

An RFID Reader is capable of transmitting and receiving radio frequency. This can also get input and communicate output result in the form of a data to an RFID tag. This reader can be fixed and portable.
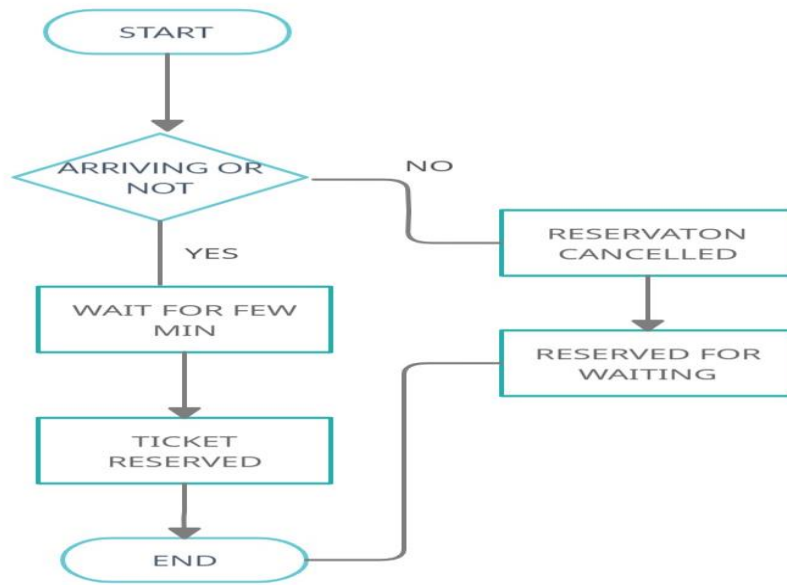
5. Flowchart

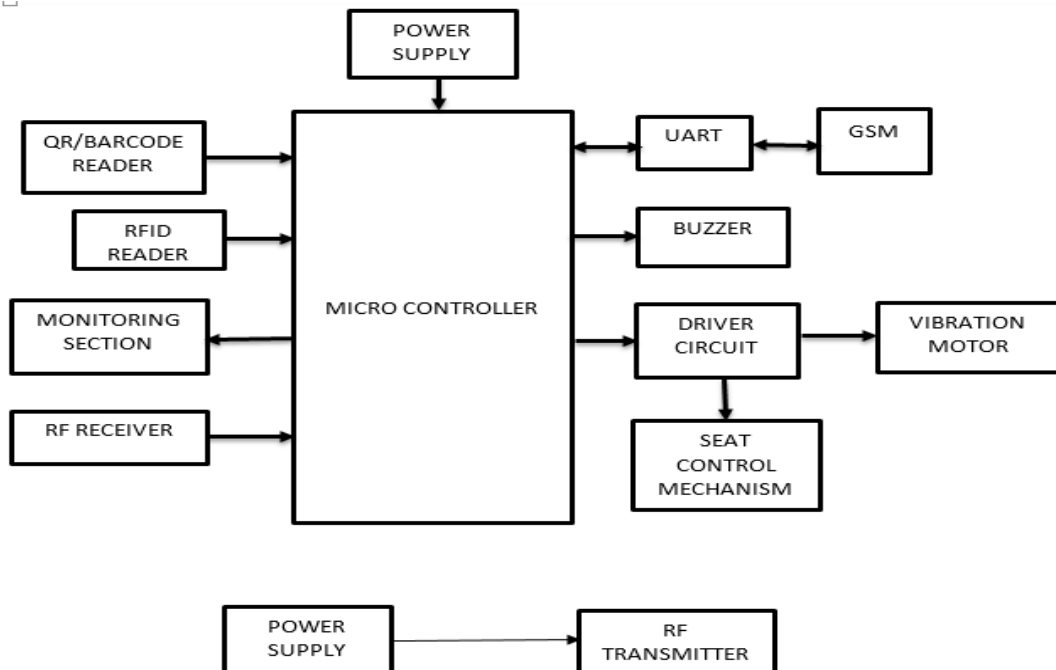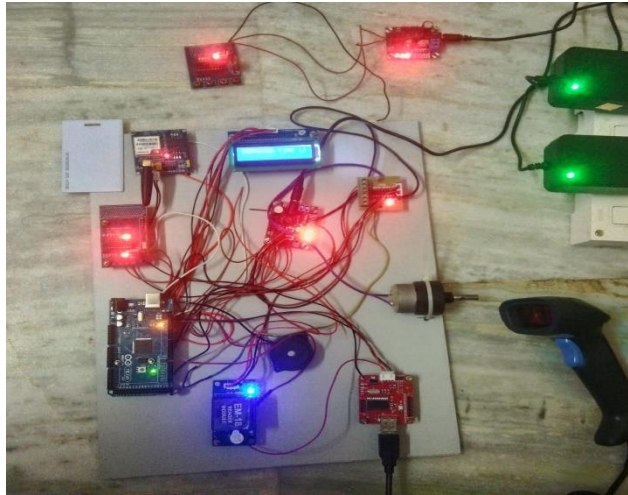**Fig.10** Flow chart of work progress

6. Block Diagram

Fig.11 Block Diagram

7. Result

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