

Efficient Real Time Railway Ticket Management System

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Abstract: Indian Railways comprises a large infrastructure and are lifelines of a country. Our project is to give a chance for the waiting list passenger and booking the tickets by using SMART CARDS very easily. There is no such a system that presently in Indian railways gives accommodation to waiting list passengers during their journey. This paper shows the seat allocation for the waiting list passengers by the railway department. Through activating the SMART CARD, the WL ticket will be confirmed before 1hr 30 minutes or else before chart preparation. The empty seat numbers are sent by the TTR to the department through SMS and conformation message will be sent by the department to the passenger's. SMART CARDS are similar that of an ATM so that they can be recharged and can be reused often. SMART CARD reader reads the SMART CARD for automatic door open and closes purpose and displaying the entry tickets in the display board.

Keywords: smart cards, smart card reader, Motor driver circuit, GSM

1. Introduction

Railways are one of the safest and cheapest modes of transportation preferred over all the other means of transport. It is one of the world's biggest networks under single management. It is the backbone of nation's transport system. Indian Railways has more than 25,000 Wagons, 45,000 different types of coaches and 8000 locomotives. Here, the berth reservation on trains is complex for the Waiting list passengers. Every man since came into existence, the thrust for knowledge and invention has been an unquenchable process, thanks to which man has giant leaps in technology which could not have been ever thought before.

2. Existing methodology

Though the existing method has advantage, there are many SERIOUS problems, some are to book a general class ticket, one has to go to the railway station or book from the authorized agents, but this process is quite time consuming and people don't like to stand in queues because in every important junctions and platforms due to arrival of trains there may be a lot of crowd. Due to this reason, some people are afraid of losing the train. So people travel without ticket. More number of passengers is ready to attempt SUICIDE during their journey. And also more number of waiting list passenger's

tickets will not be conformed during their journey. This has become the most serious issue for our country's development.

3. Proposed methodology

The proposed advancement of our project is the introduction of smart cards. The smart cards are type of ATM cards, by which the passengers may travel from one place to another simply by swiping the card in the vending machine. The more number of the vending machine placed in every railway station helps to verify the codes and prints the ticket for the Passenger. We may also recharge the card at any times and may use often, this is the most advantage of our proposed ticketing system. This is the hottest development in Indian Railways. The codes can be verified by the driver machine and we may also check the remaining balance also.

This proposed system is very much useful for the Waiting List Passengers. Here, waiting list passenger's tickets will be conformed during their journey. Reducing the frauds and accidents, Automatic door open and close methodology be followed. The work burden of travelling ticket examiner will reduce and easily identify the missing, vacant and cancelling tickets using the display board. Activating the smart cards by Railway Department for getting their journey of waiting list passengers

There are many application smartcards that are widely being used. This project aims at smartcard based ticketing system and confirms the ticket of waiting list passenger on journey will carry all modes of ground transport nationwide including railways. In future improved assessment of the above method is that we may debit the amount required to recharge the smart card directly from our personal account. This smart card payment is efficient for revenue management. This is the best solution project for reducing FRAUD and SUICIDE. By displaying the tickets of reserved passengers in display board, it will be very useful for the TTR to identify the absence tickets and also useful for the waiting list passengers to get a chance.

4. Hardware description

A. Block diagram

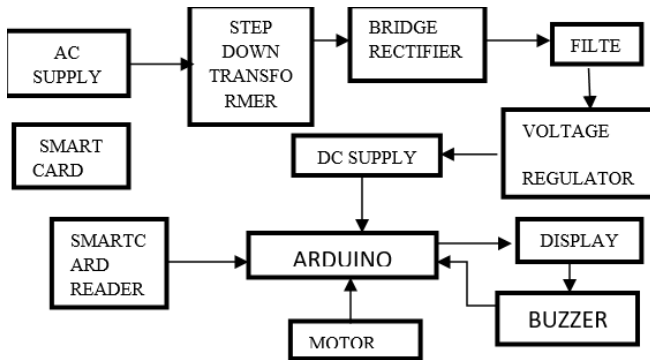


Fig. 1. Smart card-based ticketing system

B. Smart card

Smart Cards are secure portable storage devices used for several applications especially security related ones involving access to system's database either online or offline. For the future of smart card to be bright, it is important to look into several aspects and factors especially those related due to the rapid advancement in information and communication technology. This shows the current trends in smart card technology and highlights what is likely to happen in the future. The another aspect in order to identify the core concepts that are attentive to smart card developers and researchers. More emphasis is given to four key characteristics of smart cards; probability, security, opens platform, and memory management, as they are believed to be heart of many smart card applications.

C. Smart card reader

A Smart card is an electronic device that reads smart cards and can be found in following forms: Some keyboards have a built in card reader. External devices and internal device bat card reader devices exist for personal computers. Some laptop modules contain a built in smart card reader and or utilize flash upgradeable firmware.

D. Arduino

Arduino is an open source electronics platform based on easy to use hard ware and software. Arduino boards are able to read inputs light on a sensor, finger, on a button, or a twitter message and turn it into an output activating a motor turning on a LED publishing something online. Arduino Nano is a small, complete and breadboard friendly board based on the ATmega328 or ATmega168. It has more or less same functionality of the Arduino Duemilanove, but in a different package. It lacks only a DC power jack and works with the mini USB cable instead of standard one. The Nano was designed and is being produced by Gravitech. This will show in the Fig. 1.

E. LCD

Liquid Crystal Displays have materials, which combine the properties of both Liquids and Crystals. Rather than having a melting point, they have a temperature range with in which the molecules are almost as mobile as they would be in a liquid, but are grouped together in an ordered from similar to a crystal. An

LCD consists of two glass panels, having the liquid crystal material of sand witched in between them. The inner surface of the glass plate is coated with transparent electrodes, which define the character, symbols or patterns are to be displayed. Polymeric layer is present in between the electrodes and the Liquid Crystal molecules are to maintain a verified orientation angle. When sufficient voltage is applied to the electrodes in the liquid crystal molecules would be aligned in a particular direction. The light rays are passing through the LCD would be rotated by the polarizer, which would results in activating the desired characters. The power supply should be 5v, with maximum allowable transients of 10mv. To achieve a better/suitable contrast for the display the voltage at pin 3 should be adjusted properly. A module should not be removed from a live circuit.

F. Servo motor

A servomotor may be a mechanism or linear actuator that enables for precise management of angular or linear position, speed and acceleration. It consists of a suitable motor coupled to a sensing element for position feedback.

G. Buzzer

A buzzer is an audio signaling device which may be mechanical, electrochemical, and piezoelectric. Typical uses of buzzers and beeper sound used for identifying the invalid card. If any invalid card read by the smart card reader it beeps the sound

H. Power supply

All the basic household electronic circuits need to be an unregulated AC is converted into constant DC, in order to operate an electronic device. All the device will have a certain Power supply limit. Power Supply is a reference to the source of an electrical power. A device that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit. Small step down transformer is used to reduce the voltage level to the device needs. The output of the transformer is a pulsating sinusoidal AC voltage which is converted to pulsating Dc with the help of a rectifier. This output is given to the filter circuit which reduces the AC ripples, and passes the DC components. But here is certain disadvantage in using an unregulated power supply. Power supply of 230v, 50 HZ ac signal from main supply board is given to a Step down transformer. The transformer is selected such that its output ranges from 10v to 12v, which is supplied to the power.

5. Software description

Embedded program be dumberd in Arduino using Arduino software. C++ code is dumberd in Smartcard reader.

6. Hardware used

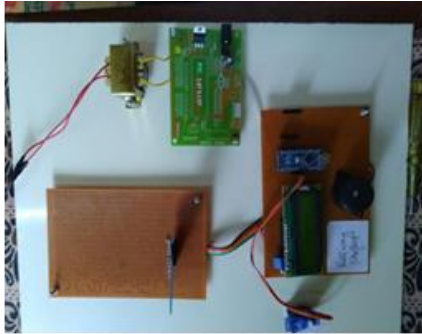


Fig. 2. Hardware assembly

7. Result shows in the hardware module

In this project, we achieved that the Passenger smart card is in activation state, the display board shows "PASSENGER A-YOU ARE WELCOME". If it is not in activation state, the display board shows "YOUR TICKET IS NOT CONFIRMED".

8. Conclusion

The goal of our project is attained the aim, using this system the passenger can easily get the train ticket without wasting their time to wait in a long queue. This system is mainly used to get the general tickets and the card can be recharge by yearly basis. Newly smartcard technology is being used in a number of ways around the world. On the other hand, security has become important in information technology especially in those applications involving data sharing and also transactions. These features make this as a real time project with good commercial and social value. This system is mainly used for the waiting list passenger tickets be conformed during their journey.

9. Future work

The cost of the project can be effectively reduced by mass

production. By utilizing VLSI technology, the size of the device can be more compact. In future we can implement the ticket reservation and cancelling in this system. In future we can implement the recharge system by directly transferring the amount from our bank balance. SMS alert system using mobile applications can implement in future.

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References

- [1] Ohyun Jo, "Internet of Things for Smart Railway Feasibility and Applications" "IEEE Internet of Things Journal," 2017.
- [2] Wang Zongjiang, "Railway Online Booking System Design and Implementation" International conference on medical physics and biomedical engineering 2012.
- [3] Seema Agarwal, "Computerized Passenger Reservation System for Indian Railways is Development and System Architecture," (JEC & AS) Journal of Engineering, Computers and Applied Sciences, volume 2, no. 6, June 2013.
- [4] Amith Kumar Gupta, "Railway Train Ticket Generation through ATM machine: A Business Application for Indian Railways" International Journal of Computer Applications, volume 22, no. 7, May 2011.
- [5] Velmurugan K, "Advanced Railway Safety Monitoring System based on Wireless Sensor Networks" (IJCSET), volume 6, February 2016.
- [6] Omprakash Yadav, "Online Reservation System using QR code based Android application system," International Journal of Scientific and Research Publications, volume 4, no.12, Dec 2013.
- [7] Chetan Singh Vidawat, "Automatic Railway System" "Article in International Journal of Computer Applications, February 2017.
- [8] AkhtarKhan, "WaitingTicket Optimization using Reservation Chart Cluster for Indian Railway Reservation System" International Journal of Advanced Research Volume 8, no.5, May-June 2017.