

Smart Assistants for TC

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Abstract:

In this paper we describe the design and development of Smart Assistants for TC . It helps railway TC to check the ticket and identify fake tickets easily using QR code. Also it is useful for women security in train using emergency button. System contains other features like pay fine, reservation records, complaint forms with fingerprints authentication . This all features reduces manual work of current railway system.

Keywords — Arduino board, Wifi kit, QR code, Fingerprints

INTRODUCTION

Now a days in Railway System many frauds are happening regarding tickets. Froude carry fake tickets with him . TC checks the tickets manually by checking date and ticket number. In the crowd, checking the ticket of each passenger becomes difficult task for the TC[6]. TC cannot recognize fake ticket easily. This is lengthy and time consuming process[4]. Another problem in the current system is that, TC take fine and gives fine receipt manually for passengers who do not carry a ticket while travelling. For them paying a fine is punishment. Many complaints are their regarding train services. Registering those complaints is also one manual system[4][5]. To make this task easier we had built an android application which will detects fake tickets. For detecting fake ticket we are providing a QR code on tickets and TC can scan tickets. This helps ticket checker to recognize whether the ticket is valid or not. QR code contains the random number key and railway number . These data is encrypted using RSA algorithm[2]. If that ticket is fake then TC can capture photo of that ticket and person who is carrying fake ticket. Also there is provision of keeping records of the frauds . This could be further used for frequent caught frauds. To Reduce the paper work of complaint form, we provided complaint forms in app in which TC can fill various complaints of passengers with their thumb prints. Also provided reservation record in the form of pdf.

Today many women harassment cases are happening in trains. Women did not get help immediately. So to overcome this problem we added one more feature for women safety which deals with the emergency situations. In this we have provided an emergency button in the compartment[1]. The passenger can use the emergency button to inform the ticket checker about the situation. The emergency button send alert message to ticket checker which contains the location information.

PROPOSED WORK:-

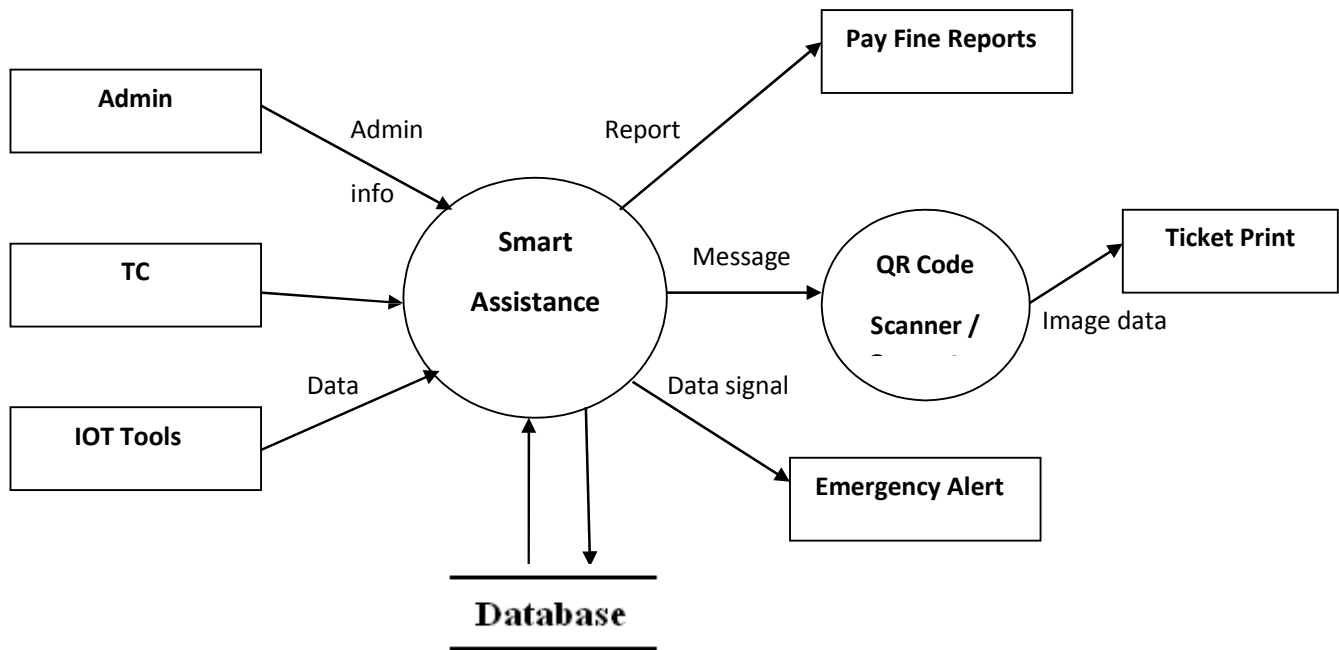


FIG. 1 - PROPOSED SYSTEM DIAGRAM

The system consists of various modules that reduces the manual work of Ticket Checker (TC). The system contains login and registration whereas TC and admin can login. The admin can generate a QR code. QR code generated by using railway ticket number and random key, these two numbers are combined together and encrypted by using public key and decrypted by using private key by using RSA algorithm. The admin can print the ticket with QR code.

TC can check the ticket of the passenger by using scanner to scan the QR code on a ticket. Through the scanner TC can verifies passengers ticket quickly rather than manual checking. The scanner is attached to the database of the system which store all the information related to passengers ticket details, which helps to identify whether the ticket is duplicate or not. Once the TC found the duplicate ticket then TC can capture the photo of that ticket and the person, also take the fingerprint of that

person who carries the duplicate or fake ticket. There is one advantage is that system will stored the previous records of passengers information in the database. Hence it is helpful to find passengers who make the fraud frequently or carry duplicated tickets. Another service is TC can give is to pay fine receipt to the passenger who travel without ticket or make fraud frequently in the form of SMS rather than written format.

Another module is added that is emergency button for the women security which deals with emergency situation like women harassment. Women harassments cases are happening even there train is escorted by RPF. To prevent this situation system provides one button as buzzer which is attach in bogie especially in women bogie in train. When emergency situation happens any person can press that emergency button. When emergency button is pressed , signal is passed to arduino board . This board is connected to Wi-Fi kit, through which Wi-Fi signals are passed over. Then this information will be send quickly to the TC through the SMS that contains the location of the passengers, so that appropriate action will be taken. Next one is complaint forms for the passengers.TC can fill various complaints of passengers with their thumb print verification. Also system provides the pdf of the reservation records which is stored records of reservation in database.

ALGORITHM OF ENCRYPTION AND DECRYPTION:-

1. RSA ALGORITHM:-

RSA is an algorithm used by modern computers to encrypt and decrypt messages. It is an asymmetric cryptographic algorithm. Asymmetric means that there are two different keys. This is also called public key cryptography, because one of the keys can be given to anyone. The other key must be kept private. It is also a key pair (public and private key) generator. So we are using this algorithm for encrypting railway number and ticket number. This is used for QR code generation.

2. PSEUDO CODE FOR TICKET PRINTING :

1. Set railway time table.
2. Take random number and train Number .
3. Using RSA, encrypt the random number and train number.
5. Generate QR code for encrypted data.
6. Print QR code on the ticket.

3. PSEUDO CODE FOR TICKET CHECKING :

1. Using scanner TC scan the QR code of the ticket.
2. Decrypt the data and verify the ticket.
3. If ticket is fake then TC register the complaints.

4. SYSTEM SETUP FOR EMERGENCY BUTTON :-

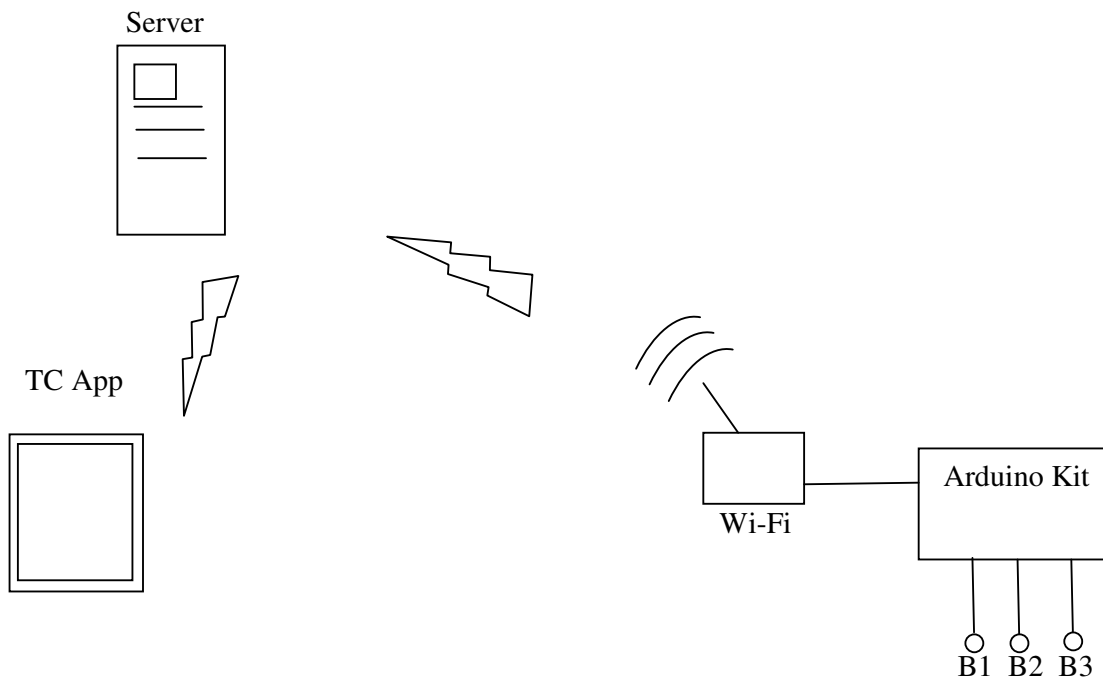


FIG.2 - WORKING OF EMERGENCY BUTTON

The hardware integration involves Arduino and Wifi kit. Emergency button is connected to arduino. When a button get pressed , arduino controller sends signal to the server through wifi. Then from server signal is transferred to TC. Signal contain the location of compartment of which emergency button is get pressed.

FURTHER WORK

In future we can provide more security to the passengers based on artificial intelligence. We can use a facial recognition system which will identify or verify the attackers using webcams. We can provide CCTV cameras in compartments so all footage can be capture. So that any suspicious activities will be easily detect.

RESULT:-

- Build the system to reduce ticket fraud in railway system.
- To reduce amount of time for ticket checking and avoid the manual fine receipt.
- To inform the TC about the emergency situation related to women and provides security to women. So that preventive measures can be taken.

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