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The Automated System to Restrict the Entry of Unreserved Passengers Into Train

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Abstract: ***As it is generally observed that many people who do not have reservation will be getting into the reserved compartments and that disturbs the environment of the reserved compartment. To avoid these disturbances, a system is designed in which the details of train ticket of a particular person is scanned and that helps us to check whether the person has a seat reserved in the compartment or not. This process is done by scanning the details such as PNR number provided to the individual and that allows us to confirm that the person has a reservation. The process can be developed further by making it an automated systems by scanner, where the scanner scans the ticket and allows the passenger to proceed. This system generally helps to restrict the unreserved people by entering the reserved compartment. The system includes all the information of a journey from the source of start to the destination including the details of a person's ticket details, total number of seats booked, waiting list, unreserved seats etc.***

Keywords: User, TC (ticket collector).

I. INTRODUCTION

Indian railways systems have a great impact on the economy of our country. As India is the fourth largest railway network, whose operations include over 22,593 trains travelling every day. Among which 13,452 are passenger's trains and 9141 are freight(goods) trains, with a daily passenger count of about 24millions and about 203.88 million tons of freight. The total revenue of the railway reservation is about 1,96,128 crores. With respect to passenger's train, the main consideration is it involves a ticket collector who has to go through all the reservation compartment and check every passenger's ticket. The overall cost of a particular ticket collector for one year is 432000 for validating the tickets and fining the person who does not have tickets the process of validating of tickets can generally be replaced by an automation system. The main objective of our project is to develop a system that restricts the entry of unreserved people into reserved compartments of train. This process is generally achieved by scanning the ticket and allowing the passenger to enter train if the ticket is valid and contain the right information of the passenger and helps to easy validate the tickets The purpose of this automation system is to reduce the human involvement in validation process. Enables to create a friendly environment without any disturbances among the reserved passengers. This automation system makes use of the ticket scanner to scan the ticket and check whether the user has a reservation or not. This reduces the labor effort and restricts the unreserved passenger into the train.

II. LITERATURE SURVEY

In Paper [1], The authors have discussed a method which verifies a tickets through facial recognition could make a convenient and smooth way of verification process which reduces the time using the OpenCV and facial recognition algorithms. Which was highly accurate for passenger verification and if the ticket is booked using a face with multiple seats then if the one who reserved was unable to come then the other seats reserved on that facial id cannot be travelled too. This can be overcome with the use of system developed by using a QR code.

In paper [2], The implementation of a security gate system for medium-level companies. Each employee is given a separate QR code pass to enter without any triggering process. Hence the same method is used in our system where the details of the passenger is stored in the ticket.

Then the ticket is scan by the system and allows the passenger to enter into train if he has a reservation done.

In article [3], the author developed a system which validates the ticket using fingerprint and Aadhar card of a passenger. This process includes the human interaction and contains fingerprint scanner that has to be carried out during evaluation. Our system is developed in such a way that it doesn't not require any human interaction and this can be generally scanned using scanner. Easy automation for the entry of passenger.

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In paper [4], The author discussed about railway ticket verification which is done through the details of Aadhaar card generally the fingerprint will be scanned form the passenger and the details will be matched with the Aadhaar card details which would require human source ticket collector and a hardware component to be carried throughout the train and which the disturbs the passengers in unusual times for ticket verification and the tickets are allocated dynamically. The automated system that is developed by us does not need any human resource and hardware components to be carried the scanner which will be fitted at the door entrance validates the ticket.

In paper [5] The author proposed a method used to reduce the pen and paper work in the management system. The management systems in college, flats, and communities use pen and paper to record the timing of in and out of the particular person. This is reduced by creating an app that automates and digitalizes the manual task at gated premises. The same is advanced in our project. This reduces the manual work of ticket collector and automizes the quick entry of the passenger to allow into the train by scanning the ticket without any paper documentation.

In paper [6] The author developed a system to maintain student's presence. This is implemented by a generating QR code where the QR code is generated in lecturer's laptop and it is displayed on the projector students scan the QR code using their android devices. It also uses IMEI to validate mobile phone so that single android device can't be used by other students which reduces proxies. The system develops a QR code for each passenger on booking their ticket. This QR code is then scanned at the time of passenger entering the train. And it is validated. If the QR code matched with the data, then the passenger is allowed to enter the train, else the passenger will not be allowed to enter.

III. PROPOSED METHODOLOGY

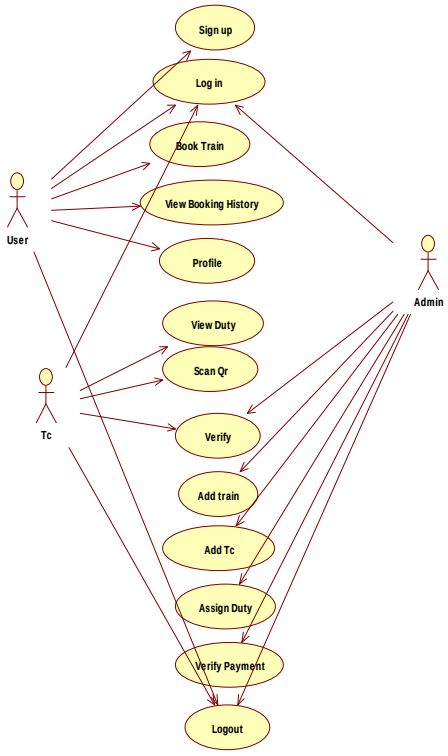


Figure 1: Use Case for train ticket booking & verifying

The proposed is methodology is carried out by the following steps:

1) Generation of QR code tickets
2) Allocation of reserved chart
3) Verification of QR Generated tickets

The proposed system can be used by users for booking tickets and TC(automated system) for verifying tickets.

A. Generation of QR Code Tickets

This automated system is allowed to let the user signup with their credentials only for the first time. The user will then be redirected to the login page after signing up. The user will be requested to enter the journey details such as from station and to destination with their travel date and mode of booking(i.e tatkal, general, premium tatkal etc). It redirects the user to the next page where the list of the trains are specified according to the user details. Now the user has to select the train according to his/her convenience. Then the user will enter the number of passengers and their details. Then the system will direct the user to the payment page. Then he/she should select the mode of payment. And complete the transaction. Later the user will be presented with the QR generated ticket. Along with this user can also view his/her own profile and also their booking history so far.

B. Allocation of Reserved Chart

TC is an automated system which is used to verify the user tickets with a QR code. The TC is the system where the admin provides the details of the train and passengers details of that particular train by using these details the TC system verifies the passengers at the time of onboarding. The TC is a system that captures the QR code present in the users ticket and then matches with the details provided by the admin, once the details are matched it allows the passengers to get in else they are not allowed. Whenever the train is one station behind the passengers boarding station the TC system sends the acknowledgement (or) confirmation message to the users in the upcoming station.

C. Verification of QR Generated Tickets

The admin is given the whole rights to manage the automated system where admin is responsible to assign the tasks to TC and specify details of trains and passengers. The admin is allowed to add the trains on to the automated system and assign TC for each specific train. The users and their login credentials are maintained by the admin. Whenever the user tries to book the ticket the payment details are verified the by the admin and all the details are stored in the system.

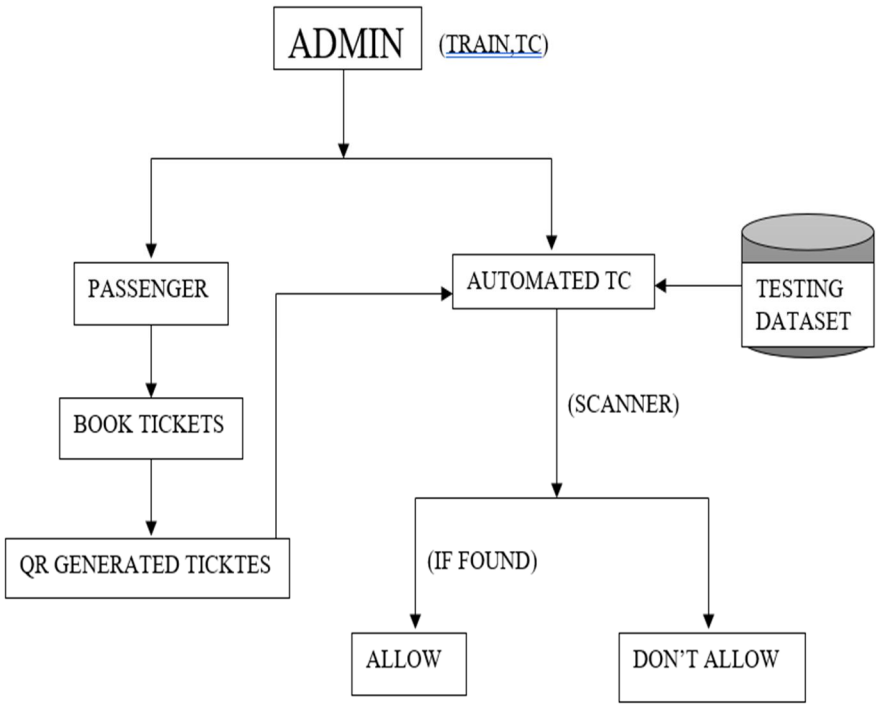


Fig 2: Architecture Diagram

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IV. RESULT AND CASE STUDY

The proposed methodology is studied and implemented for the betterment of the verification process. The results of the outcomes were satisfactory. The system verifies the falsity of the QR code tickets. This was implemented and tested true.

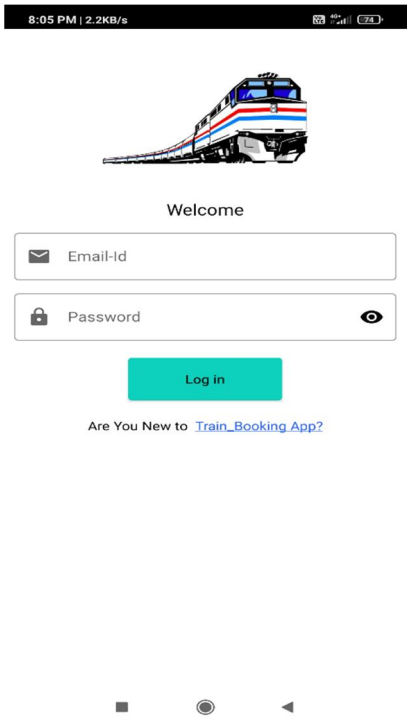


Fig 4.1 Login Page

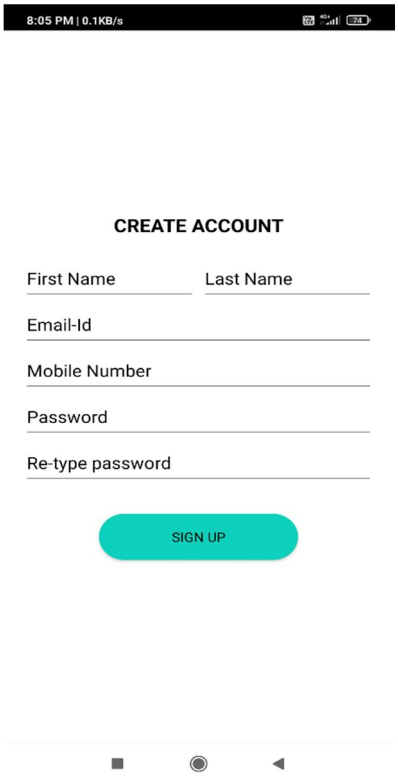


Fig 4.2 Creating New Account

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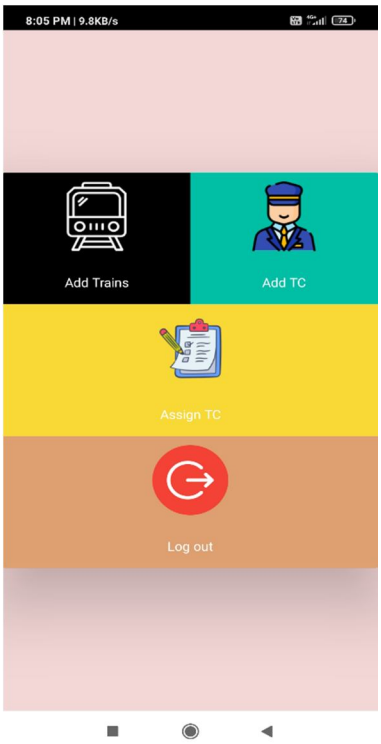


Fig 4.3 Admin Operations Page

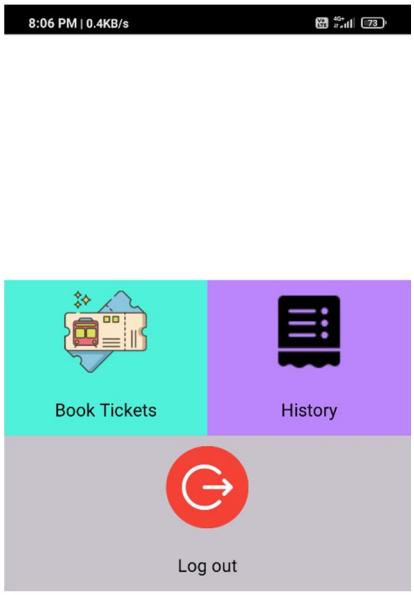
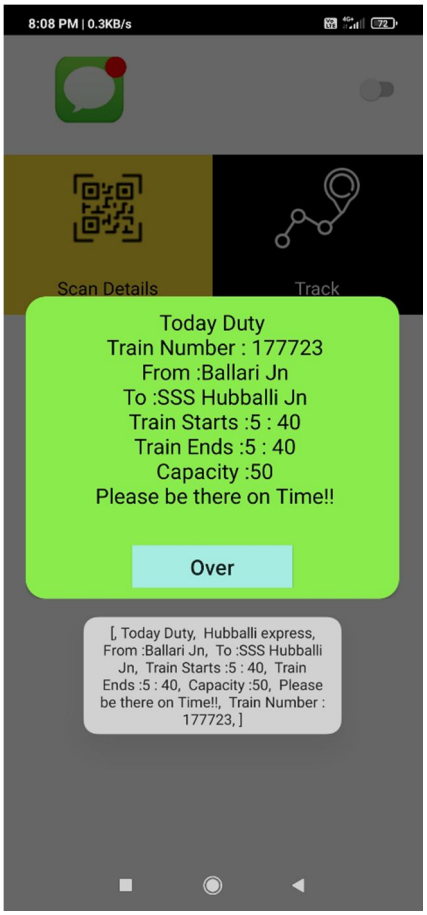


Fig 4.4 Passenger's Operations Page



4.5 TC Operations & Duty

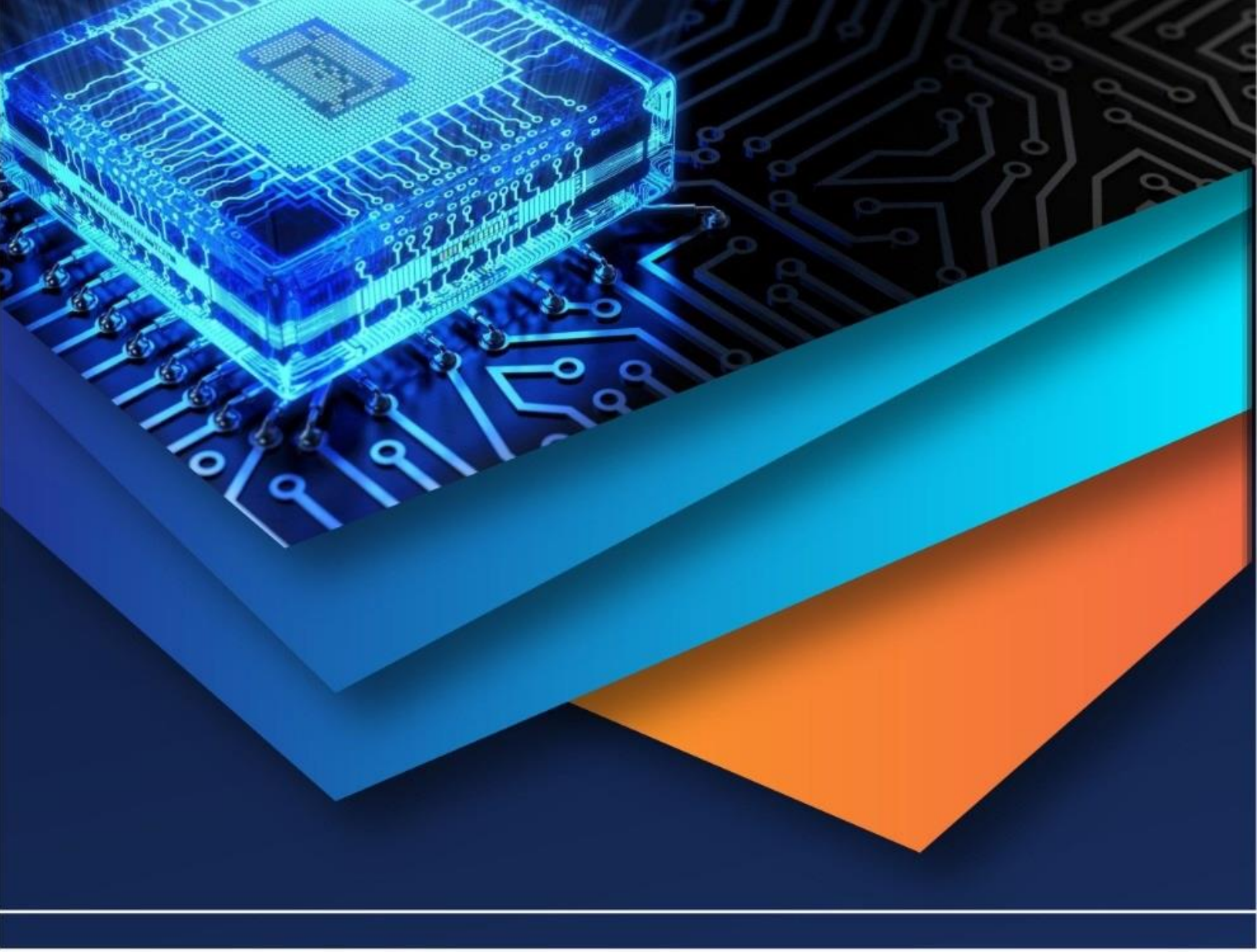
V. CONCLUSION

The most important thing to keep in mind is reduction of human interaction. Instead of spending time to check each ticket manually, it can be automated by using this system, passenger can generally scan the ticket and enter into train. This system uses a QR code and then the scanner is used to validate the tickets. This system is achieved to develop a user-friendly environment among the passengers in reservation compartment without any disturbances. And involves no human interaction.

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