



Universal e-Ticketing System Using Barcode

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Abstract: The e-ticketing system is a new conceptual approach in which the particular city will be able to collect and analyse a large volume of data about passenger profiles, strengthen the collection of money in advance, limit the number of fraudulent passengers and optimise the routes. The system will also facilitate the collection of detailed financial data for each public transport mode. The system makes use of barcode for verification and identification of the user. A unique barcode will be generated for each customer that is registered to the system. Using this barcode, the customer will be able to make transactions and also add money into its account. The project is developed using java programming language and MySQL is used for storing information related to the user. The Adhaar card number of the user is used which provides the information of the user. This project provides an efficient way of travelling while maintaining the security.

Keywords: Barcode reader, Serial Program, JtextAPI, Shared Database, Universal E-Card

I. Introduction

Universal e-ticketing system using barcode is a system which helps passenger to travel from source to destination using barcode. This barcode will help in storing information about the passenger or the customer of this system. The information, that will be stored regarding the passenger, will be the information provided in the Adhaar card of the user. This information can be name, Adhaar card number, phone, address, date of birth etc. and the in the database we will also store the amount that the user is currently having in its account. E-Tickets is a natural trend and is an effective and practical method for the Ministry of Railway and Long-distance Passenger Transport to improve its quality of service. Passenger line flow in India is huge, and when it comes to peak periods such as festivals, holidays etc., there is a lot of inconvenience to the passengers. And worse, there is a high chance of criminal activities that can occur and can lead to crimes.

In public transport, e-ticketing systems are not only means of payment but process huge amount of information which offer a large range of possibilities to make public transport easier to use, to manage and to control. They offer as well opportunities to introduce integrated pricing structure that are not easy to implement with traditional payment tools. Mining on the public transport data collected through the e-ticketing system provides valuable information on network usage and travel patterns which could be used for planning, operation and marketing purposes e.g.- monitor capacity utilisation and loading on different routes, monitor bus headways and punctuality, monitor boarding and alighting at stops and estimate passenger volumes at stops, estimate ridership per operator and ticket types, analyse travel patterns for different groups of passengers, introduce incentives, estimate time, cost, modes, transfer information, related to any journey. On the other hand, restrictions imposed by individual freedom related regulations will limit the potentialities of exploiting passenger related data.

In the present situation communication is a big issue in different cities. The passengers sometimes do not know whether they should travel by bus or by train so that they can reach their destination as soon as possible. Their decision is affected by the time also i.e. in rush hours they are not able to easily choose the more efficient and convenient mode of transportation. What more sometimes they forget to bring change which creates difficulties for all. This paper would help in help in overcoming such kind of ambiguities by developing a system that will provide the freedom of a malleable mode of transportation to the public transport passengers.

II. Brief survey on barcode

A barcode is the small image of lines (bars) and spaces that is affixed to retail store items, identification cards, and postal mail to identify particular product number, person or, location. The code uses a sequence of vertical bars and spaces to represent numbers and other symbols. A barcode symbol typically consists of five parts: a quiet zone, a start character, data characters (including an optional check character), a stop character, and another quiet zone. A barcode essentially is away to encode information in a visual pattern that a machine can read. The combination of black and white bars (elements) represents different text characters which follows a set algorithm for that barcode type. If you change the sequence of elements you get different text. A barcode scanner reads this pattern of black and white that is then turned into a line of text your computer can understand. We will be using this barcode to identify and verify the users that are willing to travel to different locations. A barcode will be generated during the registration of the user using the Adhaar card number that will be provided

by the user. A unique barcode will be generated for every user being registered into the system. Using this barcode the user will be able to book tickets for their travelling. The database is composed of the tables that stores the information regarding admin and customer and also there are tables which are used for barcode.

III. Proposed work

First of all a controller will register different admins into the system by providing them a user id and password. These admins will register different customers. They will also manage the account of the customers and also add amount to the user's account. First the controller will register admins. Then the admins will register new customers using their Adhaar card number. Whenever any new user will be registered by the admin, a new barcode will be generated for that user. The admin also deals with the existing users and adds amount to the existing user's account. Also if the barcode of the user gets stolen or lost then also the admin will deal with this issue and try to resolve it.

The project is divided mainly into two modules-

3.1 Admin Module

3.2 Customer Module

A. Admin module

The first module is the admin module. The admin module works in the following manner-

1) In the case of new customer-

In the case of new customer, the customer is not registered, so we first need to register the customer and generate barcode regarding the customer. For this, the admin will proceed in the following manner-

- The admin will first add a new customer by selecting add new customer.
- The admin will then enter the UID i.e. Adhaar card number in this case.
- Then the customer details will be generated corresponding to the customer.
- Now unique barcode will be generated for the customer.
- And the starting amount will be allocated to the user.

2) In the case of existing customer-

In the case of existing customer, the customer is already registered and there is an option for recharging or adding amount to the user's account. It is accomplished in the following manner-

- First the admin will select add amount.
- Then it will scan the barcode of the user that is being generated earlier when the customer was first registered.
- Now it will enter the amount details.
- It will now select the amount that has to be added based on the demand of the customer.
- Recharge is successfully completed.

B. Customer module

The other module is the customer module that gives the process of booking a ticket by the customer. The module is completed in following steps-

- First the customer will select its starting location.
- Then it will enter the destination where it wants to go.
- Then the bill, providing the details such as amount to be paid by the customer, is generated.
- Now the barcode is scanned and the amount that is to be paid according to the distance between the selected stations, which is decided by the ministry of transportation, is deducted from the customer's account.
- Now the ticket is successfully booked by the customer.

The system is also composed of recharge outlet where the travellers can recharge their smart card tickets. When any traveller comes to the recharge outlet the administrator will login to the admin panel. If the traveller does not have the smart card, then the administrator will issue the new card. While issuing a new card the admin adds a new account and then he is presented with the UID details of the traveller. The traveller can choose the amount of the recharge and the admin will select the recharge options on the application menu. Once the traveller had paid the amount the smart card is printed containing the BARCODE which contains the details of the amount and personal details of the traveller.

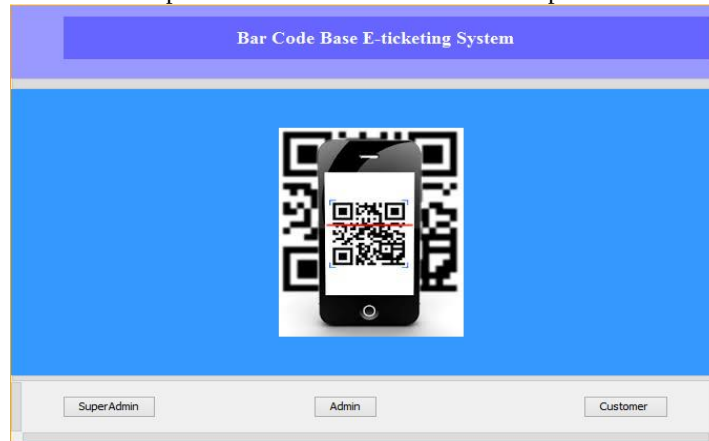
After the recharge the traveller can use this smart card for any type of transportation. The traveller only have to show the card on the validation device and the amount is deducted from this prepaid smart card. If the amount of fare exceeds the amount present in the smart card, then the traveller have to recharge the amount. When the traveller had completed his journey the amount will be deducted by the validation device at the ending station.

There is also a functionality of antitheft. There is a possibility that the barcode that is uniquely generated for the user may get lost by any means possible. So we have to consider such case also where the barcode of the customer may get become extinct. Now when the barcode of the customer gets stolen then the customer will reach to the admin and then it will tell the admin about what happened to the user's barcode. If the admin will find it reasonable then it will deal with the complaint. It will search the user's Adhaar card number in the

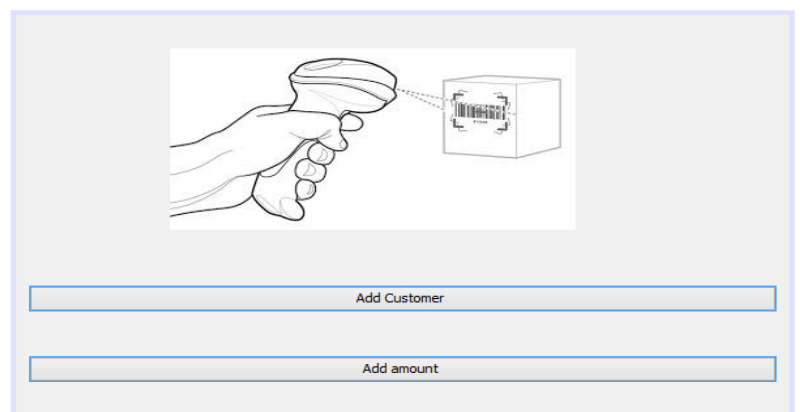
database and then it will delete the user's barcode that was lost from the database. Then it will again register the user using the Adhaar card number of the user and will generate a new barcode for the customer. The customer can now use this new barcode for its own purpose.

IV. Experiment

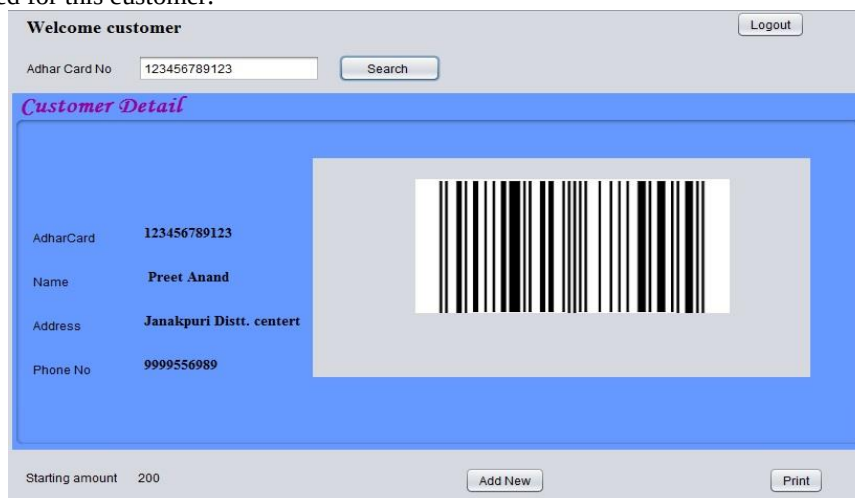
The project starts from the homepage that contains two options that are controller and admin. Controller is selected if we want to register the admin and then its admin's username and password is entered. When the admin is registered we select admin option and then enter the user id and password and then login.



The admin after logging in will have the functionality of registering the new customers and also adding amount to the existing customers.



If there is a new customer that needs to be registered then admin will select the add customer tab and then it will enter the customer's Adhaar card number to register the user and then a starting amount and a unique barcode will be generated for this customer.



The customer can use this barcode for travelling to various locations. The customer will enter the starting location and ending location and then corresponding to it, the amount that is to be paid, is generated and then the user will show its barcode to the barcode reader and then that amount will be deducted from the user's account.

This system can be implemented into various types of transportation systems and then the corresponding tickets can be generated using the same barcode that is generated while the user was being registered into the system. The system also helps in tracking any passenger that is being travelling into different stations. This can help in tracing criminals and also reducing criminal activities.

V. Conclusion

This paper provides an effective and efficient concept for booking tickets and using barcode for achieving this goal. This paper covers up various reasons which make do not let us support the existing ticketing system and then design and develop a ticket booking system that is secure, more convenient, unbiased using barcode to sufficiently increase the efficiency of the ticket booking system in transportation. A brief introduction of the whole system includes- can support online transactions, primarily passengers do not feel any difficulty, reducing the pressure on passenger line flow, effective ticket booking process, secure and safe, will save a lot of time that is wasted in long queues.

The information regarding the travel of the passenger will also be transparent and it provides quick and easy ticket booking. This concept can be extended to include all the transportation on land and various other online buy and pay services which will be very efficient and convenient for the customer which can access these different types of services using this single concept.

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REFERENCES

- [1] Dong Li, Yuhao WANG, Linli Hu, Jing Li, Xuezhao Guo, Jiance Lin and Jie Liu, Client/Server Framework-Based Passenger Line Ticket System Using 2-D Barcode on Mobile Phone, Available: ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=5591392&url=http%3A%2Fieeexplore.ieee.org%2Fiel5%2F5589107%2F5590383%2F05591392.pdf%3Farnumber%3D5591392
- [2] Linli Hu, Yuhao Wang, Dong Li, Uniticket: A Third Party Universal E-Ticket System Based on Mobile Phone [online], Available: www.scirp.org/jjournal/PaperInformation.aspx?PaperID=5927
- [3] Akshatha R, Dr. J Meenakumari, Enhanced & Integrated E-Ticketing-An One Stop Solution [online], 3(6), pp. 400-403, Available: www.ijarcms.com/docs/paper/colume3/issue6/V316-0101.pdf
- [4] Mohamed Mezghani, "Study on electronic ricketing in public transport", EMTA, May 2008.
- [5] "Barcode", Available: www.searchmanufacturingerp.techtarget.com/barcode.
- [6] "General barcoding and related concepts", Available: <https://www.barcodesinc.com/faq/>