

Bus Pass and Ticket automation System

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Abstract: The rapidly aging population causes long waiting times for taking bus pass. Diagnosing record of real-time data of each who are all using bus passes, Bus pass automation would be beneficial for government to implement proper and better rates for passes and also it would be useful for people who forget to renew their bus passes. Also taking tickets in an MTC bus is a tedious process now-a-days. Giving exact change for tickets to a large crowd is also a tedious process for conductors in the buses. In this paper, we propose a facility to take bus tickets and bus passes using android mobile application. This system provides a facility for taking tickets on the go, by just scanning the QR code user can book a ticket and pay online. This system also provides a facility to remind when the bus pass is about to expire. The app is also used to take print out of the pass, so that it can be shown to the conductors who are unfamiliar with android phones. The system is also provided with digital wallet where the user can load money as a whole and use it in each buses the user travels.

Key Words: GPS, GUI, BPAS, QR, SPOOFING, 'ON THE GO'.

I. INTRODUCTION:

As technology starts growing we need to update ourselves to current trends and our upcoming generations looking forward for necessary services in one touch. The current system of taking tickets in the buses and applying or renewing for bus pass is a tedious process. It takes long time for taking bus tickets and for bus passes it involves a long queue in Depo and it is a time consuming process [1]. The current system of taking tickets for larger crowd leads to stop the bus for long time before the stage closing for a long time. This increases increase in time delay for passengers and it hurts more for employees due to time delay in peak hours. Bus Pass and Ticket Automation System (BPTAS) can be used to book tickets on the go and can be used to apply/renew the bus pass through smart phone, which helps all generation people. This system provides connection between government server, where data is managed and android app, which provides a GUI for the user[15]. This helps in avoiding bus delay due to ticketing and queues in bus stands and helps in reminding user about bus pass expiry. In addition, providing a user tracking facility, this helps to determine how

efficiently users use their bus passes and helps in planning new rates for bus passes.

In Chapter I we propose BPAS Structure. In Chapter II we propose methods for booking bus ticket online using QR Code. In Chapter III we propose methods for applying bus pass online. In chapter IV we propose methods for implementation of Bus pass renewal. In chapter V we propose details on security of the app. In Chapter VI we provide details on Data analysis using GPS. In Chapter VII we propose Conclusion of BPTAS.

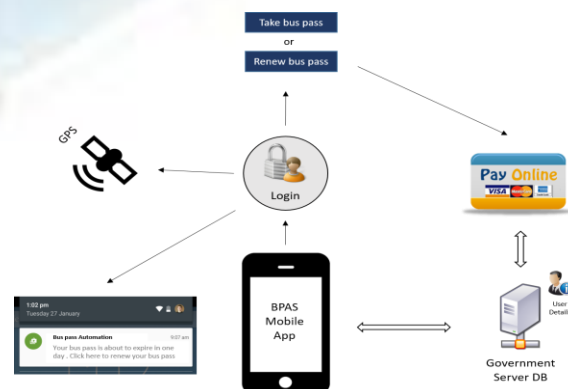


Fig. 1 System Architecture

I.BPTAS Structure

In this system, at first the user gets registered using Aadhar number and phone number. The aadhar number is used to collect information about the user from NIC database to BPTAS database and used for authentication of ticket/pass. Then the user logs into the app [7]. The user is displayed with options whether he/she has to apply for new bus pass or else renew his/her existing bus pass or book an 'On the go ticket'. [2]. When the user selects the option, he/she is displayed with travelling options and atlast with payment dialog where he/she can use online payment options like Credit card / Debit Card [1]. As soon as payment is completed, for 'On the go tickets' the user is provided with the soft copy of ticket containing a QR code containing encrypted information. For the bus pass booking a soft copy of bus pass is printed with QR Code [14]. He can take a print out of it and show to authorities when he is checked [1],[2],[3]. Fig.1 shows our proposed system's Architecture. The BPTAS application also displays notifications when the bus pass is about to expire. Online ticket booking reduces the time delay for waiting before the stage closing. The app is also powered with digital wallet which can be used to load money as a bulk and spend it in each bus he/she travels. This reduces the frequent online transaction with banks.

II. On the go Ticket booking:

The user first registers and logs in with the app. A sticker containing QR code is scanned by the user through the app. The QR code is pasted in different areas of buses. The QR code contains encrypted information of the bus where it is pasted. When it is scanned the app queries the bus route to the database in the cloud and gets the bus route data and lists the available bus stops to the user. The user chooses a bus stop with no of passengers and pays online through the wallet where money is already loaded. If the

wallet does not have enough money, then the user can proceed with online pay using Credit/Debit card [12]. Once payment is successful the user is provided with a soft copy of the ticket with a QR containing encrypted information about the ticket, which can be useful in authenticating the user by checking inspectors [16]. The flow of booking ticket "On the go" represented in Fig.2



Fig. 2 Book ticket "On the go"

II. GETTING BUS PASS

The person has to first apply for BPTAS registration using his/her aadhar card and phone number. An OTP is generated which is used to authenticate the user. The user is provided with a username and password.

Then the user logs in with the credentials and clicks on Take bus pass option. He is displayed with set of plans. User chooses the plan that suits for him/her, and then the app directs the user to payment screen [7]. In that the user selects his preferred payment mode and the fund is transferred to the government. The user is given a soft copy of bus pass, which contains a QR code. The user can print it or can show that as a soft copy when verified [8],[9],[10],[11]. The flow of Getting Bus Pass represented in Fig.3.

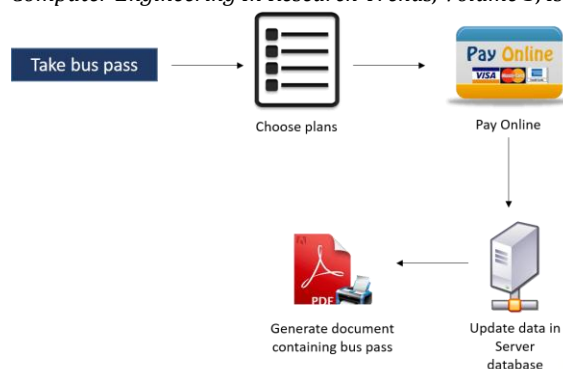


Fig. 3 Getting Bus passes

III. RENEW BUS PASS

Most users forget the date of expiry of their bus passes. They get into the bus with expired bus pass. This system provides an efficient way for renewing the pass [2]. When bus pass is about to expire, an android notification appears to the user. On viewing, the user may renew his bus pass online or take a ticket. The user clicks on the renew button for confirmation of plan and the app directs the user to payment screen where the user pays online using Credit/Debit card. The renewal process takes just a few seconds to pay and the app connects to the government server and updates the renewal data. The renewal of Bus pass explained in the Fig.4.



Fig. 4 Renewal Data flow diagram

IV. SECURITY CHECK

More the technology growth, more the vulnerability. There are many ways of showing a fake printout or even spoofing the BPTAS[6]. To

overcome such thing, the ticket is provided with a QR code which is scanned by the checking inspector to verify the identity of the passenger. The QR code contains the link to the government server in an encrypted form which contains the identity of the passenger as gathered from aadhar card[3],[4]. The app contains a specific module visible only to the ticket checker which scans the QR code and shows the identity behind it[13],The Security Check Flow is described in Fig.5.



Fig.5 Security Check using QR Code

V. DATA ANALYSIS USING GPS:

The government can offer good plans to the consumers by analysing the data given by the GPS on where the user travels [12]. The user travels to various locations with bus pass app. The app uses GPS if available to track the data where and all user travels and report it to the server. With the data Transport Corporation can bring nice plans that fit for the passenger.

VI. CONCLUSION AND FUTURE WORK

In the current mode of Buss Pass, providing system the passenger has to go and wait in a queue to get the pass and he/she has to remain about renewal but we proposed BPAS makes the process of taking bus pass easier, efficient and secure. It also helps in digitalising India. The app is also used to collect information about the travel of the passenger and helps government in bringing new plans helping the passenger [5].

REFERENCES

- [1] Parashuram Baraki , Sandhya Kulkarni , Spurthi Kulkarni , Arpita Goggi , Keertipriya I "Development of an Effective Online Bus Pass Generation System for Transportation Service in Karnataka State" Parashuram Baraki et al, / (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 6 (3) , 2015, 3115-3118(ISSN:097-9646).
- [2]N.Nandhini, S.Pavithra, E.Sangavi,K.Aravindhana "Online Buspass Renewal System Using Web Application" International Conference on Explorations and Innovations in Engineering & Technology (ICEIET - 2016).
- [3] Akshay K, Abhisek Chowdhury, Keerthana D, Manjula K, Rajeswari S" A Survey on Online Bus Pass Generation System using Aztec code" International Journal of Innovative Research in Computer and Communication Engineering (An ISO 3297: 2007 Certified Organization) Vol. 4, Issue 2, February 2016. ISSN(Online): 2320-9801 ISSN (Print): 2320-9798.
- [4] K. Ganesh, M. Thrivikraman, J. Kuri, H. Dagale, G. Sudhakar and S. Sanyal, "Implementation of a Real Time Passenger Information System", CoRR abs/1206.0447 (2012).
- [5] B. Caulfield and M. O'Mahony, "An examination of the public transport information requirements of users", IEEE Transactions on Intelligent Transportation Systems, vol. 8, no. 1, (2007), pp. 21–30.
- [6] S. Kim, "Security Augmenting Scheme for Bus Information System based on Smart Phone", International Journal of Security and Its Applications, vol. 7, no. 3, (2013), pp. 337-345.
- [7] J. Lee, K. Hong, H. Lee, J. Lim and S. Kim, "Bus information system based on smart-phone Apps", in Proc. of KSCI Winter Conference (2012), pp. 219-222.
- [8] S. Chandurkar, S. Mugade, S. Sinha, M. Misal and P. Borekar, "Implementation of Real Time Bus Monitoring and Passenger Information System", International Journal of Scientific and Research Publications, vol. 3, no. 5, (2013), pp. 1-5.
- [9] K. G. Zografos, K. N. Androutsopoulos and V. Spitadakis, "Design and assessment of an online passenger information system for integrated multimodal trip planning", Trans. Intell. Transport. Syst. vol. 10, (2009), pp. 311–323.
- [10] D. M. Bae, "An analysis on the efficiency of bus information systems in Bucheon city", Journal of Korean Society of Transportation, vol. 20, (2002), no. 1, pp. 7-18.
- [11] Piyush Chandra, Prakhar Soni, Rakesh Kumar Keshari "RFID-based Ticketing for Public Transport System: Perspective Megacity" International Journal of Advance Research in Computer Science and Management Studies, Volume 2, Issue 5, May 2014, ISSN: 2321-7782 (Online).
- [12] 1. Arun Das .S .V , K. Lingeswaran "GPS based Automated Public Transport Fare Collection Systems Based on Distance Travelled by Passenger Using Smart Card" International Journal of Scientific Engineering and Research (IJSER ISSN (Online): 2347-3878 Volume 2 Issue 3, March 2014.
- [13] Kinjal H. Pandya, Hiren J. Galiyawala "A Survey on QR Codes: in context of Research and Application " International Journal of Emerging Technology and Advanced Engineering (ISSN 2250-2459, ISO 9001:2008 Certified Journal, Volume 4, Issue 3, March 2014).
- [14] Abhijeet Boob, Ajinkya Shinde, Dhiraj Rathod, Amruta Gaikwad "Qr Code Based Mobile App and Business Process Integration" International Journal of Multidisciplinary and Current Research(ISSN: 2321-3124).

[15] Tushar Dongare, Akshay Babar, Mahendra Nivangune" Android Application for Ticket Reservation with GPS as Ticket Validation" International Journal of Emerging Research in Management &Technology ISSN: 2278-9359 (Volume-3, Issue-3).

[16] M.Bhuvaneswari¹ , S.Sukhumar² , N.Divya³ , S.Kalpanadevi⁴ , N.SuthanthiraVanitha⁵ "Embedded System Based Automatic Ticket Vending Machine for Modern Transport System" Embedded System Based Automatic Ticket Vending Machine for Modern Transport System.



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