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QR-CODE BASED STUDENT BUS PASS SYSTEM

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Abstract— In recent decades, there has been a significant increase in the utilization of public transportation, particularly among students who rely on bus passes for their regular commuting. The conventional bus pass system primarily relies on paper, where each student carries a physical pass. This traditional approach consumes a substantial amount of paper resources. However, in response to this issue, an innovative solution has emerged in the form of an online bus pass system. Unlike the complexity associated with maintaining users online in the traditional online bus pass system, the QR-based student bus pass system offers a simpler and more efficient alternative. This system provides students with a QR code instead of a physical pass, greatly reducing the reliance on paper. Given that approximately 80% of students own smartphones, this system operates without requiring an internet connection. Consequently, students no longer need to worry about internet access and the inconvenience of carrying a physical pass. Moreover, this system addresses the problem of passes getting wet during the rainy season. In this QR-based system, students

merely need to fill out a form and make the necessary payment. The system's administrator collects essential student information such as name, mobile number, email address, and a photo. This information is securely stored in a database, assigned a unique ID, and linked to a QR code. Subsequently, the administrator sends an email to the student containing the QR code. This QR code encompasses crucial details, including the student's ID, name, source, destination, and the pass's validity period. This feature proves immensely valuable in swiftly identifying the correct passenger, reducing the burden on bus conductors and eliminating the need for students to carry physical passes.

Keywords— Bus pass system, QR code, Smartphone, Online system, Student transportation.

I. INTRODUCTION

The QR code-based student bus pass system is a modern and effective solution for managing student transportation services. This innovative system utilizes QR codes, smartphones, and online technology to simplify the process of issuing and using student bus passes. Traditionally, students have

relied on paper-based bus passes, which had several drawbacks, including high paper consumption, vulnerability to damage in adverse weather, and the need for students to carry physical passes. In response to these challenges, the QR code student bus pass system was developed. Instead of paper passes, students receive a unique QR code containing essential information such as their identification details, travel route, and pass validity period. This system takes advantage of the widespread use of smartphones among students, allowing them to easily access and display their QR codes without requiring an internet connection. This not only reduces paper usage but also eliminates the inconvenience of carrying physical passes.

Moreover, the administration of this system is simplified. Students complete an online form and make the necessary payments, after which the system's administrator securely stores their information in a database. Each student is then assigned a unique QR code linked to their data. In practical terms, this QR code serves as both a digital bus pass and a quick means of identification. Bus conductors can easily scan the QR codes to validate passes and identify students, significantly reducing administrative overhead and minimizing the potential for errors. Overall, the QR code student bus pass system offers an eco-friendly, convenient, and efficient solution to address the limitations of traditional paper-based bus passes while enhancing the experience of students using public transportation.

II.LITERATURE REVIEW

A. Dhokrat Nilesh, V. Gaikwad Akshay, V. Nikam Saurabh, B. Shinde Roshan,Over the

last few decades, there has been an increase in the use of public transport like social travel (ST). Also many student use the bus pass for their regular traveling. The traditional system of bus pass system is fully depends upon paper means every student carry the paper pass. Means this system has use huge amount of paper. Rather than traditional system, there is invent in this and people create online bus pass system but it is very complex to maintain the users online. To overcome this problem QR based student bus pass system get use. This system provide only QR code to the student, means the use of paper is reduce. There are 80% of student use the smartphone, so without internet need this system working. Means student does not need to internet, and reduce the headache to carry pass. Sometimes student pass get wet in rainy season also, so this problem also overcome by this system. In this system simply student should fill up the form and pay money. Admin get all the information of student like name, mobile and email id and photo. Admin store this all the information in database by creating new id and QR code. Admin send the mail to customer or student. This QR code contain the id, name, source to

destination and validity of the card this will helpful to find perfect person in small amount of time. This system minimize conductors overhead for identify the person and students overhead for carry paper pass.

III.METHODOLOGY

This section will introduced us the architecture of the system and modules of system. It also contain what is actual input and generated actual output. The development of the system in briefly.

A. System architecture :

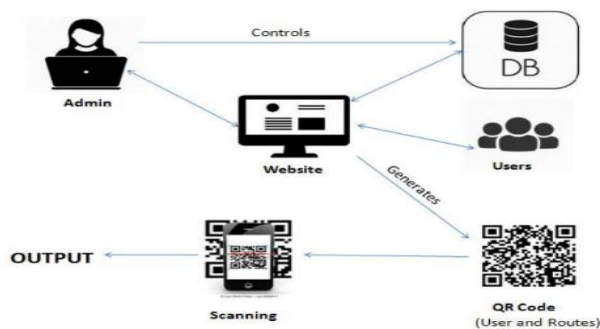


Fig-1

The system architecture show the brief working of the system. All the data of student will store on the cloud.

B. Modules of system

This system consist the modules like QR Code generation, QR Code scanning and data validation. architecture

C. QR code generation After submitting the registration form by student. The required data will store on cloud and generate QR Code. For QR Code generating purpose we are going to use the python inbuilt tool. Python has inbuilt tool like pyqrcode. This will help for generating

Whenever QR Code get scan by the system, the system access all the data from QR Code and show on display. After scanning all the data QR id attribute is get selected and transfer to cloud via internet. It will perform all the operation like validation and finally show the validate student. Fig. 1. System

D. QR code scanning For QR Code scanning purpose, this system is used the Simple CV library for python and raspberry pi 3. The Simple CV and Z bar library is compatible for python and raspberry pi 3. Intension to use python for performing operation is python provide more and more feature like camera interfacing with raspberry pi.

E. System features The paper use in traditional bus pass system is most problematic issue now a day. Also carry the physical bus pass is heavy headache for student. This system overcome all the problems.

QR Code. This generated QR Code is held the all the necessary information of the student like name, pass validity, source and destination. 1) QR code QR Code is “Quick Response” code. Which is open source and highly fault tolerance. These features are attract us to use.

IV.IMPLEMENTATION

1. Project Initiation: Clearly define project objectives, roles, and responsibilities.

2. System Design: Create an architectural blueprint and choose the appropriate technology stack.

3. Database Setup: Design and set up a secure database to store student and transaction data.

4. User Registration and Authentication: Develop secure user registration and authentication processes.

5. QR Code Generation: Implement a reliable QR code generation module with essential student information.

6. Payment Integration: Integrate secure payment gateways to facilitate online payments.

7. Mobile Application: Develop a mobile app for conductors to scan QR codes and track buses.

8. User Interface: Design user-friendly interfaces for student registration and pass access.

9. Deployment: Launch the system on production servers or cloud infrastructure.

10. Ongoing Maintenance: Continuously maintain, improve, and provide support for the system.

V.RESULTS

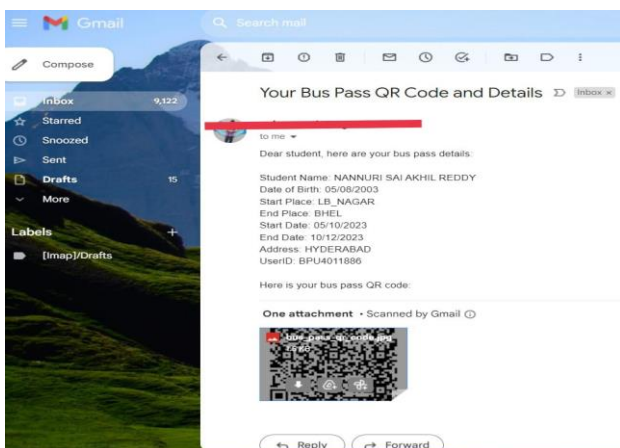


Fig2

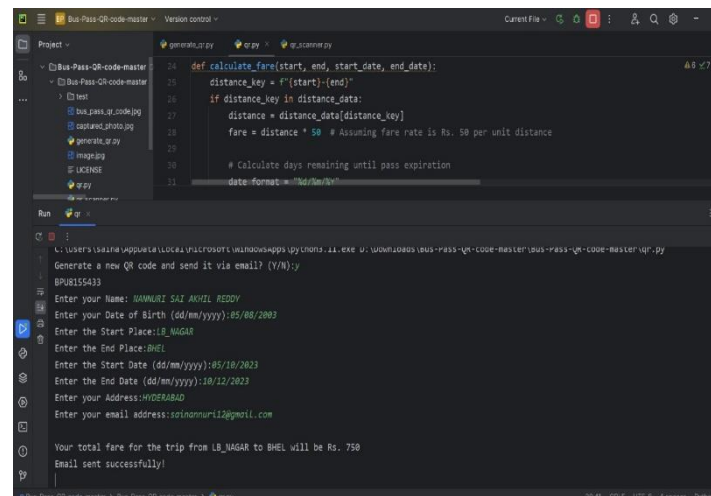


Fig3

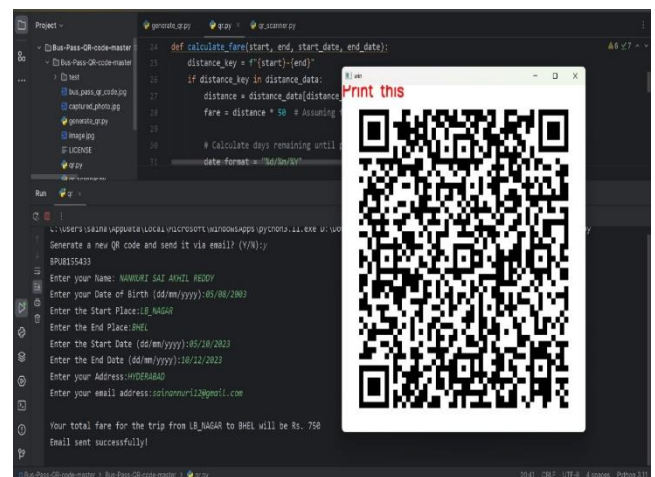


Fig4

VI.CONCLUSION

This is a real-time solution designed to address the challenges faced by students who encounter difficulties carrying physical bus passes, particularly during rainy seasons when passes can get damaged or torn. Additionally, it aims to reduce the significant paper consumption associated with traditional bus pass systems. In our system, we offer a QR code as a digital bus pass, which is delivered to students via email on their mobile phones. This innovative

approach effectively resolves both issues, providing students with a convenient and waterproof alternative to physical passes while promoting environmental sustainability.

VII. REFERENCES

- • October 1997 – AIM (Association for Automatic Identification and Mobility) International
- Y. Chen, T. Kunz, "Performance evaluation of IoT protocols under constrained wireless access network", 2016 International Conference on Selected Topics in Mobile Wireless Networking (MoWNeT), pp. 1-7,2016.
- Naveen Kumar G , Pavithra S, Pallavi J , Kalpana P , Hari Kumar P. "Smart bus pass ticket system using QR code in android application" International Journal Of Advancement In Engineering Technology, Management and Applied Science (Ijaetmas).
- Sumit Patel, "An Introduction to QR Code Technology" International Conference on Information Technology 2016.
- Lung-Chuang Wang a, Yu-Cheng Lin a, Pao H. Lin "Dynamic mobile RFID based supply chain control and management system" in construction University of St. Gallen RFID-Based Maintenance at Frankfurt Airport.
- Snehal Banale, Prajakta Dudhad, Rajshree Pal, and Sayali Patil, "Digital bus pass using QR-code," International Journal of Science, Engineering and Technology Research (IJSETR), vol. 6, no. 5, May 2017.
- Ching-Ling CHEN, Chi Lee and Chao-Yung Hsu, "Mobile device integration of a fingerprint biometric remote authentication scheme,"2011
- June 2000 – ISO/IEC 18004:2000 Information technology – Automatic identification and data capture techniques – Bar code symbology – QR code (now withdrawn) Defines QR code models 1 and 2 symbols.
- 1 September 2006 – ISO/IEC 18004:2006 Information technology – Automatic identification and data capture techniques – QR code 2005 bar code symbology specification (now withdrawn) Defines QR code 2005 symbols, an extension of QR code model 2. Does not specify how to read QR code model 1 symbols, or require this for compliance.
- 1 February 2015 – ISO/IEC 18004:2015 Information – Automatic identification and data capture techniques – QR Code barcode symbology specification
- Donghyuk Park, Hyunsung Kim, "Secure Urban Bus Information System based on Smart Devices ", International Journal of Security and Its Applications Vol.9,No.1(2015),pp.205-220
- Juanjuan Zhao, Fan Zhang, Lai Tu, Chengzhong Xu, Dayong Shen, Chen Tian, Xiang-Yang Li, "Estimation of Passenger Route Choice Pattern Using Smart Card Data for Complex Metro Systems", 1524-9050 2016 IEEE. Personal use is permitted, but republication/redistribution requires IEEE permission.