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Bus Pass Approval System using Cloud

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Abstract— The Real-Time Cloud-Based Bus Pass System Project serves as a convenient solution for commuters who are encountering difficulties with the current manual bus pass system. Passengers are afforded the convenience of seamless travel through the utilization of a mobile ticket QR code, serving as a safeguard in case of ticket loss during inspections. The QR code can be checked by the Bus and the system administrator to verify its authenticity. The unique identification system ensures that each passenger is assigned a distinct number, effectively eliminating the possibility of duplication. In addition, the system prolongs the validity duration and issues timely notifications to commuters via SMS or email prior to the expiration of their pass. The renewal or registration process offers flexibility with multiple payment options, such as credit cards or debit cards. Initially, passengers are required to register on the application by providing personal information, which includes a photo and proof of address, through an online platform. The system undertakes a thorough assessment of the provided information and subsequently either approves or declines the bus pass application based on its findings. Customers have the option to purchase bus tickets online, round the clock, seven days a week, thereby resolving the problem of lost or stolen bus tickets. Users have the ability to recharge using either credit cards or debit cards. The website may experience overload as a result of a large volume of users accessing it simultaneously. Hence, the system is constructed using cloud infrastructure to enhance its performance. Moreover, the online system allows customers to verify the availability of bus tickets prior to making a purchase. Additionally, customers are relieved from the necessity of paying cash for bus tickets as they have the option to use their Credit Card for payment (e.g., Master Card, Visa Card).

Keywords—Proxy re-encryption, proxy invisibility, searchable encryption, QR Code, Approval.

I. INTRODUCTION

In our project main audience is individuals who are struggling to obtain a bus pass manually at the moment. They can obtain it in this project with the aid of an E-platform. Users must register their information. After viewing their information, the Administrator will be able to approve the bus pass. The bus pass will then be produced. Users can examine information by logging in with their special IDs and obtaining a bus pass. They can renew the bus pass if it expires. With the aid of UPI, they can make the payment. The use of AI in creating an E-transport pass system represents a cutting-edge approach that leverages advanced technology to enhance the effectiveness and efficiency of the transportation pass system. There are various downsides to the regular 2 transport pass framework, like the potential for extortion, botches in the manual information section, and the shortfall of constant information examination. The E-transport pass framework utilizes AI calculations to approve tickets consequently, upgrade information section precision, and recognize and stop false movement.

II. LITERATURE SURVEY

The core aim of this project is to reduce the work load of both the government and the beneficiaries/passengers who are accessing the service and also the reduction of documentation process in the renewal and registration of the bus passes in the transport department is also a time reducing work, user convenient, helps to pay the beneficiaries for the services what they are accessing in a safe and reliable process. To get a new bus pass the user has to register in the prescribed application format, and for the students, who are all accessing this service have to upload the relevant documents such as address proof, photos to be uploaded, after the process got completed, they are directed to do the payment mode. Once the verification process got completed either by the admin/depot officer. The bus pass based on the selected category what they have opted has been sent to their registered mail id. They can get print out of their bus pass from e-mail. The android-based application also consists of a module to get the user feedback based on the feedback facility. There is a high risk of the pass getting

malpractice i.e, a forged editing can take place. Further the smart pass consists of all the user details which are linked to the web host servers.

A. *Existing Paper*

In Smart mobile devices becoming common and some stated it as necessity. Brand like Samsung and Apple been pushing the smart mobile devices to becoming more powerful device and useful device in people everyday life. It is fun, magical, and some already replaces their laptop for a small compact phone. These smart mobile devices popular because many developers make interesting application for it. It manages to turns mobile devices into like a computer device that could do more functions. Private and comfortable is what people looking for in their life. People prefer private vehicle instead of the other such as public transport, and this is because of how people perceive private vehicle as functional, psychological and cultural values. This resulting in tremendous increase in motorized vehicles from 75 million to 675 million between 1950 and 1990. With that said, it is important to reduce the usage of private transport by introducing a better systematic public transport in a country. In this paper, we present the related literature where it discusses specific and general solutions of the project.[1]

Our project is based on the concept of smart bus technology with the evolvement of digital INDIA. The project involves the use of smart card, a plain card programmed with QR code and E-wallet technology. The process is very simple, the passenger while travelling in a bus has to show his smart card to the conductor. The QR code is used for scanning. Once Scanned the passenger details pops up inside the app. The travelling details and fare is entered by the conductor and the money is deducted from the E-wallet of passengers. In addition to this we have also added beep sound technology wherein a beep sound is alerted when the passenger fails to buy the ticket within a given time and the conductor can check the beep and produce ticket to that passenger.[2]

Buses are the most popular and convenient mode of transportation in India. More than 1.6 million buses are registered in India, and the public bus sector operates 170,000 buses carrying roughly 70 million people per day. As per the details of expenditure on transport, buses are the most preferred mode of public transport in both rural and urban India, followed by auto rickshaws. In order to serve these many commuters daily, the ticketing facilities available in the existing system of public bus transport is manual i.e. purchasing the ticket from the conductor. However, bus transportation has not been able to meet the needs of the growing travel demand. Bus services suffer from the issue of unreliability. Several problems exist in the public bus transport sector which includes wastage of too much paper, use of cash for purchasing tickets, etc. Some other common problems faced by commuters in bus transport are undue waiting time, inadequate time for getting tickets, non-refund of balances, negligence of providing seat to other passengers, etc. To overcome all the above- mentioned problems, we have proposed a more advanced system for smart cities which provides e-ticketing and seat allotment facilities for the civilians. The problem of paper wastage can be overcome by the use of E-tickets whereas the use of cash can be reduced by using it.[3]

III. SYSTEM ARCHITECTURE

The architecture for an online bus pass system encompasses a user-friendly interface for registration, pass selection, and purchases, integrated with a secure payment gateway. It features a central server hosting a database for managing user profiles, transaction histories, and pass details, coupled with a pass management system for generating and validating passes. Essential components include a mobile app offering real-time bus schedules and notifications, a security layer ensuring data protection, and seamless integration with transit authority systems for comprehensive fleet management. Additionally, an analytics module analyzes usage patterns for continuous service improvement, while the entire system maintains communication through encrypted channels, safeguarding user information and transactions.

A. *Design*

To build the architecture required by a project, we use incremental process model in which we test each prototype and then clubbed with the actual model on observing a correct output. Each Prototype is built along each model and then clubbed together with an actual model. In this way project is built using incremental model.

B. *Requirement Analysis*

For any software project there are different kinds of requirements to be fulfilled in order to ensure smooth running of the processes. Clearly defined requirements are important markers on the road to a successful project. They establish a formal agreement between the customer and the service provider that both are working towards the same goal. The following are the different kinds of requirement for our project:

Hardware Requirements

- Windows 10 or latest version
- 8 GB RAM
- Intel i3 Processor
- 100GB free Hard Disk
- Wi-Fi Router

Software Requirements

- Visual Studio
- Operating System: Windows 10/8/7 (incl. 64-bit), Mac OS, Linux
- Framework: Cloud

C. *Proposed System*

The proposed Bus Pass Management E-platform represents a cutting-edge solution to the challenges faced by individuals struggling with manual bus pass applications. Through a seamless and intuitive user interface, applicants can effortlessly register their details, receiving unique special IDs for secure access. The system's hallmark feature lies in its automated approval workflow, significantly expediting the process compared to traditional manual methods. Administrators can efficiently review applications, granting approvals promptly. Transparency is ensured as applicants can track their application status in real-time, bolstering their confidence in the system. Moreover, the system offers a holistic approach by not only simplifying initial applications but also facilitating effortless renewals. Users receive timely reminders, eliminating the risk of service interruptions. The option for both digital and physical pass formats cater to diverse user preferences, enhancing flexibility. Security is paramount, with stringent measures in place to protect user data. Regular security audits and encryption protocols guarantee the confidentiality of sensitive information. In essence, this E-platform not only transforms the bus pass application process but also establishes a secure, efficient, and user-centered ecosystem, ensuring a seamless experience for both applicants and administrators alike. Furthermore, the proposed system fosters a sense of empowerment among users. Through the Eplatform, individuals gain control over

their transportation needs, eliminating the frustrations associated with manual application processes

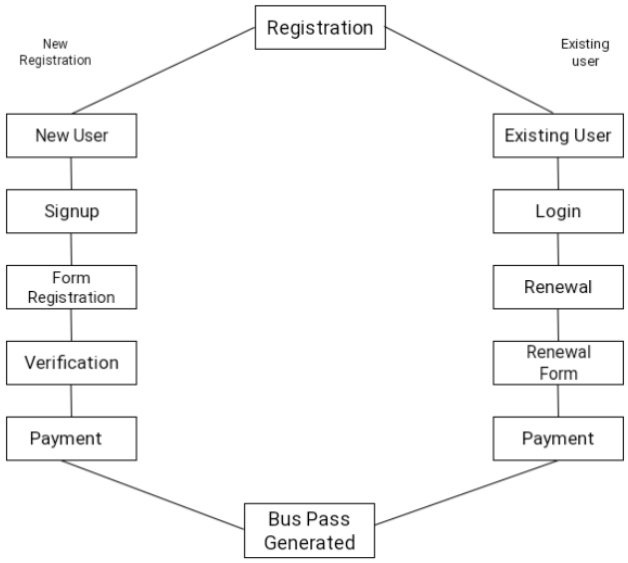

Fig. 1. Proposed System of Bus Pass Approval System Using cloud

D. System Process

The system design for the Bus Pass Management E-platform encompasses a user-centric approach, ensuring simplicity, efficiency, and security throughout the entire process. At its core, the design emphasizes an intuitive user interface, featuring user registration and login functionalities that allow applicants to securely input their information and obtain unique special IDs. The application forms are meticulously crafted to guide users seamlessly through the bus pass application and renewal processes, ensuring a hassle-free experience. Behind the scenes, a robust application logic design manages user authentication, authorization, and approval workflows. The automated approval system 14 streamlines the administrator's tasks, allowing for quick and accurate application reviews. Renewal reminders are sent through integrated notification services, enabling users to stay up-to-date with their pass status and renewal deadlines. The system's database design is pivotal, featuring secure storage of user profiles, login credentials, application details, and audit trails. Data encryption protocols ensure the confidentiality of sensitive information both in transit and at rest, enhancing overall security. Integration with external services such as SMS and email ensures real-time communication with users, providing timely updates on their application status and renewal reminders. For added convenience, optional integration with payment gateways facilitates secure online transactions, making the fee payment process seamless. Geo location services, if integrated, assist users in locating nearby bus pass distribution points. The system's modular architecture not only ensures scalability to accommodate a growing user base but also allows for future enhancements and the integration of emerging technologies, making it a robust, adaptable, and user friendly solution for bus pass management.

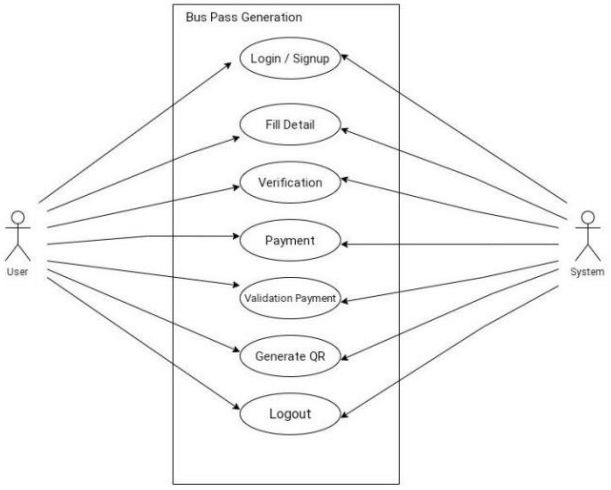

Fig. 2. Use case of Bus Pass Approval System Using cloud

E. Data Flow

Data flow diagram represents the data flow of a process or system and usually an information system and; through The DFD also provides information about the revenue and profit of each unit and the process itself. A data flow diagram has no control flow - it has no decision rules and no loops. A data flow diagram (DFD) is a graphic or visual representation that uses a standardized set of symbols and notations to describe the operation of a business through the transmission of information.

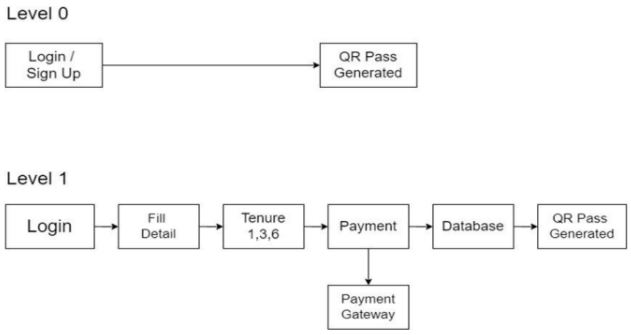

Fig. 3. Data flow of Bus Pass Approval System Using cloud

IV. RESULT

The implementation of the Bus Pass Management E-platform has led to transformative outcomes for both users and administrators. Previously faced with the arduous task of acquiring bus passes manually, individuals now experience a streamlined, efficient, and user-friendly process. With the help of the E-platform, users can effortlessly register their information, apply for bus passes, and view their pass details using unique special IDs. Administrators benefit from an automated approval workflow, significantly reducing processing times and enhancing accuracy. The system's proactive 23 renewal notifications ensure that users never miss their renewal deadlines, guaranteeing continuous access to public transportation services. In conclusion, the Bus Pass Management E-platform has not only resolved the immediate challenges faced by individuals seeking bus passes but has also set a benchmark for efficient, user-focused public service delivery. Its success highlights the transformative potential of technology in simplifying complex processes, improving user experiences, and ensuring continuous and uninterrupted access to essential public services

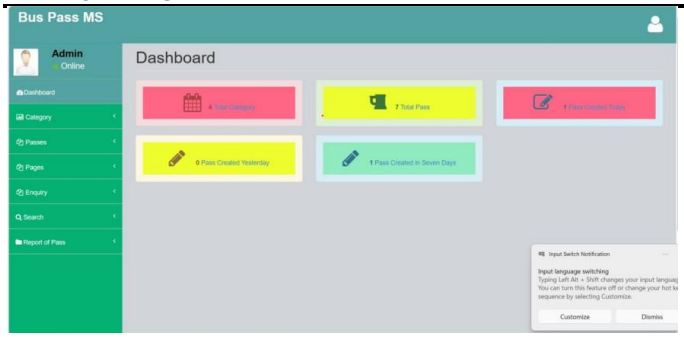

Fig. 4. Cloud Server Home of Bus Pass Approval System Using cloud

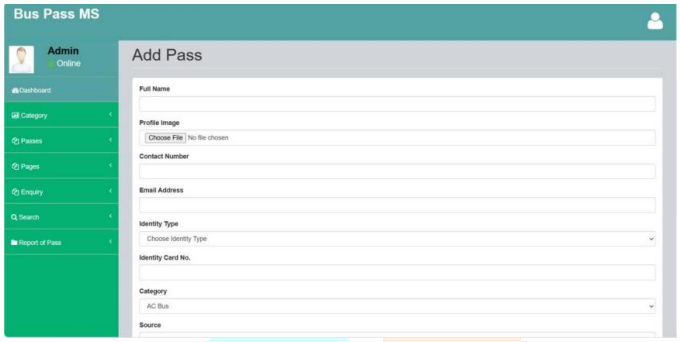

Fig. 5. New Pass details of Bus Pass Approval System Using cloud

V. CONCLUSION

The Real-Time Cloud-Based Bus Pass System Project presents a significant advancement in public transportation management, addressing the challenges faced by commuters using traditional manual bus pass systems. By leveraging mobile technology and cloud-based infrastructure, the system introduces a seamless and efficient solution for passengers. One of the key advantages of this system is its convenience. Passengers can easily travel with a mobile ticket QR code, eliminating the need for physical passes. This not only simplifies the ticketing process but also provides a backup option in case passengers lose their tickets, ensuring a smooth travel experience. The introduction of a unique QR code for each passenger minimizes the risk of duplication and fraud, 27 enhancing the system's security. The ability for Train Ticket Examiners (TTE) and administrators to verify the authenticity of QR codes ensures a high level of integrity within the system.

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