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Inspecting Reserved Metro Train Tickets Using QR Codes Using Blockchain

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Abstract

There are now no limits to the virtual world thanks to technological progress. This development has led to the widespread use of digital money in place of traditional forms of payment. While smart cards are now less often used before purchasing a ticket, the customer should nonetheless always bear in mind to have the smartcard with him. A revolutionary new digital ticketing network based on the blockchain is presented in this article. Using insights gained from studying both the traditional ticketing system and the earlier effort at digital ticketing, IBM's Hyperledger Fabric technology is used to construct a structural architecture for the distribution of tickets across all participating organizations. Each organization that is taking part in the event receives a portion of the tickets. The platform's potential benefits are not lost on us. The governing bodies of the platform have access to the data in order to make policy decisions and provide statistical analyses. Vending firms help pay the right of entrance immediately before the same essential ticket price, all while keeping competition alive. Travelers may get reimbursement and access to their ticket via a variety of channels, both conventional and novel. We further emphasize the platform's ability to reduce or eliminate the need for paper tickets and extra voucher cards.

Keywords: digital currency, physical currency, blockchain, statistics, Hyperledger Fabric platform.

1.Introduction

A. Shakeela Joy and R. Ravi (2021) proposed using metrics like detection rate, latency, and throughput for varied numbers of rounds to analyse ECC-based authentication schemes [1]
According to K. Praghash, M. Masthan, and R. Ravi (2018) the method provides a full barrier against DDoS at several levels while causing no overhead [2].R.Binisha, M. AnishaVergin, and R. Ravi (2021) reported that the SCTP standardisation process was progressing in the Internet Engineering Task Force and provides a summary of the initiatives and difficulties in the concurrent multi-way transport and security domains [3].
According to V. Sindhiya, M. Navaneetha Krishnan, and R. Ravi (2016) the AES algorithm is recommended for protecting

against side channel attacks by attacker modules. As a result, in AES, the key will be used to encrypt the text multiple times before it is sent, and the same key will also be used to decrypt the file. Utilizing a variety of implementation strategies, this novel strategy has been put forth to defeat the side channel attack [4].N. Parthiban, R. Ravi, and Beulah Shekhar (2014) discussed the use of the Code Review Testing technique to detect these vulnerabilities. These applications are only employed for educational purposes[5].According to A. Shakeela Joy and R. Ravi (2017) an enhanced endorsement method using elliptic curve cryptography offers higher security, confidentiality, and privacy.

The technique is vulnerable to offline password guessing attacks including spidering, stolen-verifier, and keystroke dynamics [6].S. Surya and R. Ravi (2018) proposed that the fault tolerance mechanism, the energy consumption, and the lifetime of the sensor nodes be enhanced. The outcomes of the experiment highlight the benefits of implementing a fault tolerance mechanism [7].G. Prince Devaraj, J. Zahariya Gabriel, R. Kabilan, J. Monica Esther, U. Muthuraman, and R. Ravi (2022) suggested a display design for accessible home control, emphasising on the use of home area networks to foster the independence of disabled individuals at home [8].R. Kabilan, R. Ravi, J. Monica Esther, U. Muthuraman, J. Zahariya Gabriel, and G. Prince Devaraj (2022) claimed that a reusable and resilient verification environment was necessary because it teaches people how to validate intellectual property and create an effective verification environment. Traditional verification and UVM-based verification were compatible in a SoC case study [9].Shakeela Joy and Ravi (2015) claimed that the PGAE scheme is used for encryption, and the PGAD scheme is used for decryption. Elliptic curve cryptography-based systems like the PGAE and PGAD offer superior security, privacy, and usability [10].Due to rapid technological development in recent decades, transportation forces are now able to make advantage of these innovations. A new initiative, "DIGITAL INDIA," has been launched by our beloved Prime Minister of India,. The ultimate goal of STUB is to create an equivalent digital ticket that can be used by every passenger on any train in the United Kingdom, regardless of where they bought their ticket, how they got it, or who sold it to them.

A. Existing Digital Tickets: Is the Issue solving :

While mobile tickets are a step in the right direction, there is room for improvement in this digital approach. There are several downsides to ticketing that need to be considered. To employ m-tickets, a traveler must have a mobile phone, access to the internet while on the go, and be prepared to pay utilizing a digital means of expenditure. Twenty percent of India's population does not have internet access, say Grant. Hence, this digital approach leaves out a sizable proportion of the passenger population that does not have access to or use of smartphones, the internet, or would rather pay with cash. Those who go down this path also face some peculiar difficulties. The passenger will be unable to verify the ticket is legitimate and will be punished if the phone used to submit the information becomes useless (due to a level series, hardware responsibility, etc.). Furthermore, ticketing companies limit the use of digital tickets to their applications. In the event of an outage, the ticket will be invalid and the passenger will be charged a fee. For those who are unable to utilize mobile tickets, smartcards provide a workable alternative. There will be restrictions on the functionality of the forthcoming smartcards in India. Each smartcard has a maximum capacity of five

tickets, and it may take up to two hours to load a ticket onto the card. Hence, the current digital ticketing system is not a suitable replacement for traditional tickets at this time.

3.Proposed Methodology:

The platform makes use of the framework developed by Hyperledger Fabric. Figure 1 shows the network architecture of the ticketing platform to achieve decentralized data sharing while guaranteeing individual and corporate security. The first step is for one of the organizations to take the initiative and launch the network. The most likely candidate to function as the launching organization is the body responsible for the oversight of rail networks. 2 As can be seen in Figure 1, this group uses red as its primary color. There are three nodes that make up the network after it has been set up (shown with the outside brave row inside Figure 1). Borderer node3 is responsible for order prospect transactions based on blocks prior to the agreement; MSP provides the starting organization administrative privileges to the network; official document power issues digital identity to approved users within the initiating organization. When the first network has been set up, the launching organization opens a way for other organizations to join. (In Figure 1, the dotted line represents this channel, whereas the extra groups are shown in green and blue.) These businesses can function in the channel since they don't need specialist knowledge of network management. Members of a network form a "channel" to exchange resources like ledgers and smart contracts.

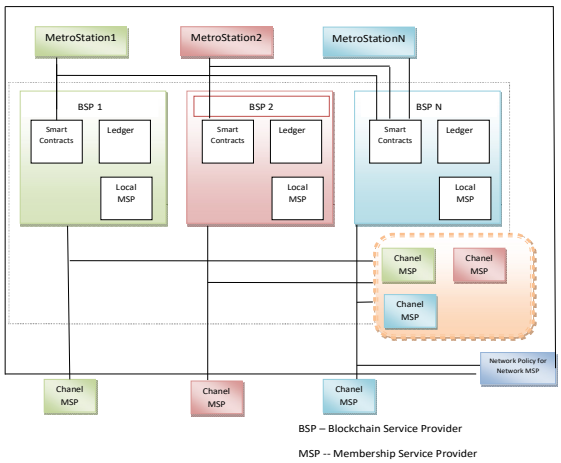

Figure 2: Proposed workflow

The basic advantage (the ticket) is transferred from the seller to the passenger because of the vendor's uniqueness. Information on purchasing tickets is included in the package. Certain companies in the channel demand the ability to verify tickets. The company's software takes in passenger information on demand, then utilizes a smart contract to check the blockchain for valid tickets that meet certain criteria.

4. Results and Discussions

We developed a set of container experiments to evaluate the system's performance. These container studies must be developed from the perspectives of the platform's various users, including the passenger trying to purchase a ticket, the companies looking to sell and verify the ticket, and the organization responsible for the platform's governance. In order to simulate the inputs and outputs required to understand the behavior of potential applications and technologies, tests seem to be of extremely challenging.

It's safe to say that this system relies heavily on the internet. A database kept in the cloud is housing the data. Before entering any personal information, including his required adhaar number, the user must first download and install

Android on his device. Upon registration, the user is required to provide data that will be stored in the firebase. This data includes the user's aadhaar number, username, and phone number. An individual's credentials (username and password) are sent securely to the database whenever he makes a ticket purchase, and if his credentials are valid, a ticket is generated. If you happen to lose your phone and have its unlock code, you are not stuck without access to other phones. If the user puts his data into the database, it will be sent to the firebase.

References:

[1] A. Shakeela Joy and R.Ravi, "Smart card authentication model based on elliptic curve cryptography in IoT networks", International Journal of Electronic Security and Digital Forensics, vol. 13, no. 5, pp. 548-569, 2021.

[2]K. Praghash , M. Masthan and R. Ravi, "An investigation of security techniques for concealed DDOS exposure attacks", ICTACT Journal on communication technology, vol. 09, no. 01 pp.1681-1685, 2018.

[3] R.Binisha, M.AnishaVergin, and R.Ravi, "An efficient security in stream control transmission protocol" , International Journal On Engineering Technology and Sciences, vol. 8, no. 9, pp. 19-22, 2021.

[4] V. Sindhiya, M. Navaneetha Krishnan, and R.Ravi, "Analyzing and improving the security of cryptographic algorithm against side channel attack", International Journal of Computer Science and Mobile Computing, vol. 5, no. 4, pp. 491-498, 2016.

[5] N. Parthiban, R. Ravi , and Beulah Shekhar, "Generation of security test to find injection attacks by code review", International Journal of Computer Science and Mobile Computing, vol.3, no. 3, pp. 336-343, 2014.

[6] A. ShakeelaJoy andR.Ravi, "Enhanced Endorsement Scheme for Smart Card Using Elliptic Curve Cryptography", International Journal of Advanced Research in Basic Engineering Sciences and Technology, vol.3, no.9, pp.17-22, 2017.

7] A. Shakeela Joy and R.Ravi, "Protecting Password From Hackers In Smart Card Using ECC", International Journal of Advanced Research Trends in Engineering and Technology (IJARTET), vol. 4, no. 3, pp. 371-381, 2017.

[8] G. Prince Devaraj, J. Zahariya Gabriel, R. Kabilan, J. Monica Esther, U. Muthuraman, and R. Ravi, " Multipurpose Intellectual Home Area Network Using Smart Phone", IEEE Proceedings of the Second International Conference on Artificial Intelligence and Smart Energy, pp.1464-1469, 2022.

[9] R. Kabilan, R. Ravi, J. Monica Esther, U. Muthuraman, J. Zahariya Gabriel, and G. Prince Devaraj, "Constructing Effective UVM Testbench By Using DRAM Memory Controllers", IEEE Proceedings of the Second International Conference on Artificial Intelligence and Smart Energy, pp.1034-1038, 2022.

[10] A. Shakeela Joy and R.Ravi, "Defense against password guessing attack in smart card", International Journal of Advanced Research in Biology, Ecology, Science and Technology, vol. 1, no. 6, pp. 26-31, 2015.