Online Digital Cheque Clearance and Verification System Using Block Chain

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ABSTRACT:

Cheque Truncation System is utilized for clearing cheques. Because of the restrictions of this semi-manual procedure, it can take up to three business days for a national interbank check to clear in Sri Lanka. In light of these drawbacks, it is evident that both cheque users and large financial institutions want a more streamlined and protected system, one that can clear a check in under 24 hours while maintaining the system's security and privacy. To address these concerns, this study presents an automated approach that is within the reach of every financial institution in Sri Lanka. To provide its customers with the faster cheque clearance, the suggested system is built on the blockchain, and all banks that are interested in that structure must link to it. A comprehensive framework was proposed, with answers split into four distinct phases: (i) the traditional paper check clearing process, (ii) the digital cheque producing and cleared process, (iii) the detection and prevention of fraudulent cheque transactions, and (iv) the safeguarding of cheque transactions. The main programming languages and frameworks utilized to build the system were Python and Flutter, while the main distributed ledger used was Ethereum. Because Ethereum adds extra security, the suggested system may become very large very quickly. Both the consumer and the bank benefit from the method, since the clearing of cheques is made easier and faster while also being made more secure. Paper check fraud detection is made easier and more accurate as a consequence.

INTRODUCTION:

Cheques have one of the greatest rates of duplication and are also one of the least frequently disclosed types of transactions between banks. The value of checks, the most used non-cash payment method, was estimated at $96.8 billion worldwide last year. It takes a lot of time and effort to clear a check. In the island nation of Sri Lanka, cheque clearance is currently only semi-automated. The settling and clearing procedure was drastically sped up when the Cheque Images and Removal (CIT) System was implemented on May 11, 2006. This was possible by removing the requirement for postal delivery and increasing system efficiency. T+1 (where T is the specific day wherein the

settlement center receives the item being cleared on settlement and 1 represents a day starting from T) is the new standard for the time it takes to clear the check, which is which is lower than the previous standard of three days of work. The current cheque clearing system is cumbersome and unsafe, and consumers and commercial banks need a replacement. Due to advancements in technology, it is becoming increasingly difficult to identify counterfeit checks. In Sri Lanka, a counterfeit check can usually be identified by its tellers by using these telltale signs. In addition, software development kits (SDKs) and scanners are crucial tools for many commercial banks. Due to their complexity and length, these procedures would be impractical to adopt in all banks. The suggested solution would alleviate the remaining issues with present CIT based transaction clearing systems, such as the slow procedure, by creating a trustworthy and effective technology that winds a cheque in under five minutes and incorporates a method for hardcopy cheque fraud detection. The revolutionary block chain technology will enable the transition from traditional paper checks to digital cheques. The author of this piece advocates for the Checkmate system to be implemented in business banks in the country of Sri Lanka in order to streamline the country's cheque clearing procedures. The system is mostly made up of the items that follow: Check processing and fraud detection software accessible through smartphone and the internet. Reasons for a rejected check may be predicted with 80% accuracy using the provided approach. is a state-of-the-art method for verifying the legitimacy of a paper check's signature using Electric Ink Character Retrieve (MICR) data in real time.

RELATED WORK:

"An Evaluation of the Value of Unused Energy to the Private Sector in Sri Lanka"

Electricity customers require investments in the grid system to strengthen its reliability in order to satisfy their energy demands. It is essential to gain an accurate appraisal of the Value of Unserved Energy as a contributor to the electric system preparation process. Based on information from the manufacturing sector, the current Cost of Idle Energy in the Republic of Sri Lanka was calculated in 2002. This must be corrected right now. In this research, the cost of wasted energy was determined by polling consumers. Surveyed and studied are three different sorts of buildings: industrial, commercial, and private. The results for the Economic sector are presented below, separated into three categories: unplanned, scheduled, and unplanned but lengthy outages. With the conclusions of this study in mind, the power sector may better serve its customers by taking into account their needs and the significance of energy as an aggregate component for economic development.

"MudraChain: A distributed ledger technology (DLT) platform for automated check clearing in financial institutions,"

Due to the ever-increasing volume of unpaid bank checks, it is time for a change to the antiquated check truncation system (CTS). Using Magnetic Ink Symbol Detection (MICR), scanned checks are sent to the clearing house for further processing in a manual process. The present CTS has various shortcomings, including problems with being able

to see of the recipient name and the value on a cheque and the illicit duplication of cheque images. The development of block chain, a public, time-stamped, and irreversible database, is one novel approach to fixing the aforementioned issues with the present CTS. Once a snapshot of a cheque has been obtained, it can't be changed, making it difficult to fake a cheque throughout the clearance process. This guarantees that all nodes in the network are consistent and agree with one another. Based on these considerations, the authors of this paper propose a new framework in automated cheques clearing called MudraChain, where the public ledger network handles the clearance operations in place of the present CTS. It includes one-time password (TOTP) based on time for secure money transfers; (ii) an algorithm for produce quick-response (QR) numbers that can be used for digitally signing a check; and (iii) a multi-level identification scheme to make the blockchain technology arrangement secure and tamper-proof among the various financial stakeholders. Results are compared with current best practices to demonstrate the superior efficacy of the proposed methodology. Because of this, Mudra Chain does away with the requirement for a middleman in the clearance process by utilizing a block chain directly between the payer and the recipient. Finally, it considers the importance of safeguarding information in the extendepps and outlines the steps that must be taken to build a foolproof application for clearance checks.

The "Block chain-based E-Cheque clearance framework,"

In this research, we present a novel and comprehensive architecture for the processing of electronic cheque transactions. The suggested approach is secure and free from potential threats including electronic check forgery, double spending, and counterfeiting. The proposed system will issue digital checks that may be deposited electronically or physically at ATMs. Because of this ease, the financial system provides its customers with additional freedom. The proposed method incentivizes expert miners financially for their participation in the electronic check settlement service through mining activities. Every transaction in the system that's being suggested uses a digital signature and cryptographic hashes, making it completely secure from the consumer's perspective. Instead of the current one-day minimum and two- or three-day maximum for a cheque clearance request based on CTS, the suggested solution would only take 1.65 seconds to clear an electronic check.

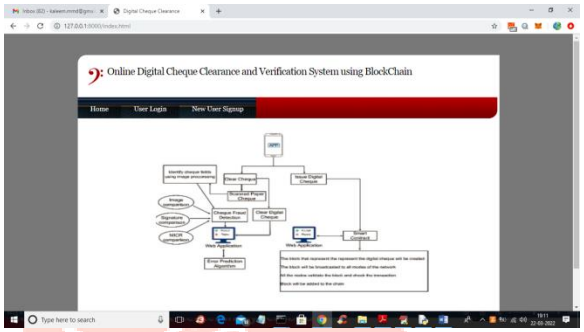
The study's findings suggest that in order to improve their leadership quality to intentionally impact employee performance, industry managers should pay attention to human resource management indicators like collaboration, involvement [7], actualization, perception, and teamwork. This is primarily because of the inherent limitations of IoT devices and the distributed ledger architecture of the blockchain technology. There is potential for IoT to provide many advantages if blockchain capabilities can be optimized for it.

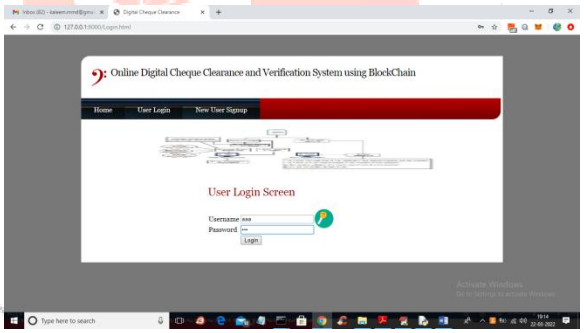
METHODOLOGY:

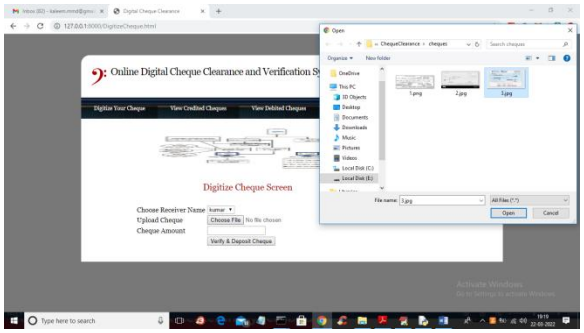
In Sri Lanka, cheques are cleared using the Cheque It Technology (CTS). Due to the limitations of this semi-manual process, clearing a national financial check in the island nation of Sri Lanka can take up to three working days. There is an urgent need for a more rapid and secured alternative one can clear a draft in under one day without retaining its secrecy and anonymity for both check clients and commercial financial institutions that are conscious of the system's flaws. The research results provide a technology solution that may be used by any bank in Sri Lanka. In order to deliver their consumers fast cheque clearance, all of the participating lenders will need to link to the envisaged blockchain-based system. There was a detailed outline provided, with answers broken down into four separate sections: (i) the standard paper check cleared process; (ii) the computerized cheque issuing and clearing processes; (iii) the detection and prevention of stolen cheques; and (iv) the safety of cheque transactions. the language of Python, the Zephyr mobile app framework, and the Ethereal graphics library were the main tools of the trade for the actual implementation. The proposed system might rapidly grow in size thanks to Ethereum's enhanced security features. Customers and financial institutions alike will appreciate the simplified, quicker, and more secure check clearing that results from using this technology. In addition, it contributes to a more reliable means of identifying fake paper cheques. The proposed system satisfies the demand for a secure, reliable, and environmentally friendly system, benefiting both the customer and the bank. at last Checkmate eliminates the necessity for a middleman by enabling the payer and the payee to clear checks in a never-ending cycle.

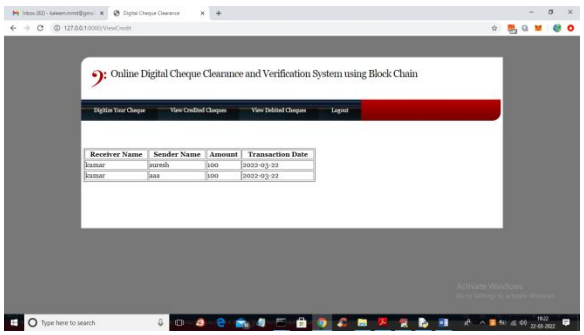
RESULT AND DISCUSSION:

The predictive model will help identify the most likely causes of a denied check, which may then be evaluated in order of increasing likelihood. Furthermore, the system provides a practical, malleable approach to detecting counterfeit bank checks.









CONCLUSION:

The study concludes that a blockchain-based mechanism for conducting and verifying checks should be implemented. There is potential for efficiency gains and expanded use of the cheque through the use of automated processes. In addition to the obvious environmental benefits, digital checks can save money by eliminating the need for paper checks. The security of the check cutting mechanism will be improved by the use of smart contract technology based on the blockchain in this part of the study. Saving money from paper and labor costs, transitioning to digital checks is a no-brainer. There are restrictions to the proposed system. The approach analyzes clearance based on the three types of checks (order payments in cash, cash checks, as well as dated checks). The CheckMate mobile app and website currently only offer support for the English language. Compared to private or federated blockchains, Ethereum may be more susceptible to privacy breaches and transaction delays due to its public nature. The key restriction is that the procedures must be consistent with the different bank cheque designs and color palettes used by both public and private banks. In future research, we hope to learn

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