

A Secured Healthcare System for User Using Blockchain Technology

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Abstract - Block-chain, one of the most well-known examples of Distributed Ledger Technology, has been heralded as the key to the financial services industry's future success. Block-chain is a platform that may be used to revolutionise a variety of activities in the financial services industry, including peer-to-peer payments, trade settlements, and supply chain monitoring. All of these use cases rely on one thing: participant or user identification and verification. This is referred to as "Know Your Customer" (KY-C). Before making any transactions, one of the most important things that develops confidence between the parties is user verification. In order to remain compliant with anti-money laundering (AML) rules and other data protection regulations, many financial institutions have implemented lengthy, expensive procedures. This approach solves the problem by utilising Hyperledger Fabric, a blockchain based framework that includes crucial capabilities such as a permissioned network, data secrecy, and programability. These characteristics create a sense of trust, transparency, and accountability.

Index Terms - AML, Block-Chain, KY-C, Machine Learning.

I. INTRODUCTION

Bit-Coin was the inspiration for Block-chain. As a result, it is critical to comprehend Bit-Coin. The Bit-Coin a participant network underpins the system, in which dealings are carried out directly between users without the involvement of a middleman. These transactions are validated by network nodes and stored in a Block-chain, a public distributed ledger. The Block-chain is the backbone of the whole cryptocurrency system. The participants' security and anonymity are ensured by Block-chain technology. Block-chain is a verifiable, non-editable ledger that records transactions between two parties in an open,

dispersed, or recirculate manner. There are several use cases for Block-chain in Financial Services, including participant payments, commercial settlements, and supply chain monitoring, all of which need confidence between the parties. As long as the parties are known to one another or can atleast identify one another, KY-C is the only way to develop trust. This may be performed by saving the knowledge of Block-chain network participants. However, there are several restrictions, such as privacy, confidentiality, and security, that make this difficult. Hyper-ledger Fabric, a Block-chain framework, takes care of these issues. Establishing trust, secrecy, and security are some of the qualities that make Hyper-ledger Fabric appropriate for KY-C solutions.

II. RELATED WORK

José Parra Moyano et al [1] The know-your-client (KY-C) due diligence measure is out of date and costs each bank up to USD 1.5 billion every year. The authors offer a new framework based on distributed record innovation (DLT) that lowers the costs of the core KY-C check for financial institutions while also improving the client experience. The suggested framework directs the central KY-C check measure just once for each customer, regardless of the number of financial institutions with whom that client wishes to cooperate. Because of D-LT, the aftereffect of the center KY-C check can be safely imparted by clients to every one of the monetary foundations that they expect to work with. This framework considers effectiveness gains, cost decrease, further developed client experience, and expanded straightforwardness all through the most common way of on boarding a client.

Mauro Isaja and John Soldatos et al [2] Disseminated Ledger Technology (D-LT) is likely going, soon, to upset B2B and B2C associations much more than the approach of the World Wide Web, because of the exchange of trust from individual and business connections to registering calculations. Notwithstanding, a less ordinarily saw property of D-LT is that of empowering agent of decentralized registering. In this work, creators investigate the utilization of D-LT to improve Industrial Cyber-Physical Systems.

Liehuang Zhu et al [3]Lately, there have been endeavors to send Block-chain in a wide scope of utilizations and in various areas, like the basic framework areas. For the most part, Block-chain can be utilized to build up a reasonable and straightforward information sharing climate, where unapproved adjustment to the information can be inspected and followed. There are, in any case, known constraints of Block-chain-based arrangements, for example, an altogether debilitated systems administration control ability because of the conveyed idea of such arrangements. Moreover, choices recorded on a Block-chain can't be changed and there is the danger of larger part assault .Trying to moderate these impediments, in this work, creators propose a controllableBlock-chain information the executives (CB-DM) model that can be conveyed in a cloud climate. They assess its security and execution, to exhibit utility.

Fatimah Alkhudhayr et al [4] Presently, enterprises are more into utilizing circulated frameworks and depending on organizations and correspondence offices for communicating basic and significant data that should be gotten. Accordingly, ensuring partnerships' data turns out to be more significant, and data security is fundamental to keep up with. Data security is characterized as ensuring the data, the framework, and the equipment that utilization, store and send the data, to guarantee trustworthiness, secrecy and accessibility of information and activity strategies are ensured. In this work, creators show the components that sway data security in various fields; digital protection, Internet of Things and organization security from different investigations and diagram the security necessities to lessen this effect.

Natalia A. Popova et al [5] This work examines the operation of Block-chain novelty without tokens to ensure data about monetary exchanges, in particular,

move sums, card subtleties, names of members, and so forth This theme is important, since the computerized economy is turning into a basic piece of present day life. The prepared data goes through the information base of banks and installment frameworks, which conceivably makes it accessible to the assailant. The essay looks at the security aspects of borrowed data sets, suggests a solution to the problem of keeping up with the unique of data in them that isn't reliant on tokens, and offers recommendations for integrating Block-chain technology into existing fiscal frameworks.

PasuPoonpakdee et al [6]Our worldwide market is arising change procedure that can have the effect among progress and disappointment. Brilliant agreement frameworks through advancements of mechanical developments are progressively seen as elective advances to affect value-based cycles essentially. Block-chain is a savvy contract convention with trust offering the potential for making new exchange stages and accordingly shows an extreme difference in the current basic belief creation in outsiders. These outcomes in tremendous expense and time reserve funds and the decreased danger for the gatherings. This review proposed a technique to work on the proficiency of circulated agreement in Block-chains utilizing plague calculation. The outcomes showed that plague conventions can appropriate the data like Block-chain.

Proposed System

Machine Learning may be used to identify treatments, provide tailored recommendations to patients, and predict outbreaks, among other things. The user can obtain an illness summary based on the symptoms supplied. Machine learning models may be used to forecast future events. Block-chain technology's consensus ensures that data is valid and safe. In terms of security and dependability, the combination of two technologies, namely machine learning and Block-chain, may produce very precise results. Machine learning is utilised to forecast patient illness, while Block-chain is employed to provide distributed computing with security. The best result obtained has a 98.51 percent accuracy rate. Machine learning models may be used to forecast future events. With the security and dependability of Block-chain Technology, the confluence of these two technologies can provide very accurate machine learning outcomes.

Advantages of proposed system

The adjustable anonymity mechanism offered by Bit-Coin improves user safety and anonymity. By utilising this technology, we may, for example, use the feature of Block-chain to create identification cards that not only preserve our privacy but also authenticate our identity.

System Architecture

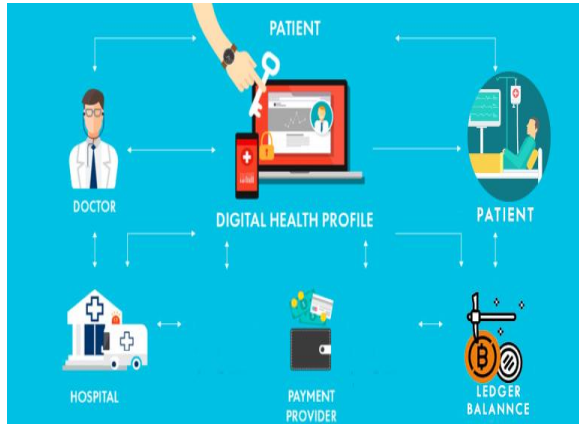


Figure 1: System Architecture

III.METHODOLOGY

The Bit-Coin crypto-currency, which was presented in “Satoshi Nakamoto's” whitepaper in 2007-8, helped to popularise Block-chain Technology. If someone on the Block-chain network begins a transaction, this is what happens. The transaction will be disseminated over a participant network known as nodes. The transaction will be validated by the nodes. The transaction will be merged with other valid transactions to make a block if it is confirmed. The preceding block's hash and timestamp are included in this block, which will be added to the current Block-chain. The block is unmodified and permanent. There is no single point of failure, and the network is not managed by a central server.

Block-chain Technology has gone a long ways past Bit-Coins. Medical services are one of its application regions. The given framework depended on Bit-Coins approach was addressing data client's need and ensuring patient's security.

In this proposition assuming the data client needs to see the evidence of the tolerant, they need to pay expense with Bit-Coins. The drawback of this is abuse of patient's record and paying expenses each time make it troublesome as far as cost. The research took

an abandon Public Block-chain Network to Private Block-chain Networks. In medical services, many gatherings need to get to same data. Pearl Health system was dispatched which depended on Etheireum Block-chain expertise. With this foundation, the data can be divided between various substances. Most recent treatment data is accessible to forestall utilization of obsolete data straightforwardly. It likewise shows past cooperation among patient and all doctors.

Another assessment in this area was conducted by "Estonia's" computerised well-being framework, which was created to assist insurance companies in reviewing all of a patient's clinical care. Drug duplication was used in the Counterfeit Medicines Project, which was based on Hyper-ledger Technology. The drug was generated and timestamped before being uploaded to the Block-chain, which cannot be changed. This additionally helps in recognizing the proprietorship move accordingly securing misrepresentation. Wellbeing bank, then again concocted a thought of statistics is new Gold. Here wellbeing information like heartbeat, pulse, rest designs and so on can be taken from different wellbeing applications accessible or from wearables or doctor visit. This information was put away in Block-chain. The patient's consequently will get monetary advantage and information can be used by scientists. The Block-chain configuration design was made well known by Bit-Coin however Bit-Coin is a use of Block-chain innovation. The Block-chain innovation has gone a long ways past. In Bit-Coin exchanges any hub can join the organization with next to no consent. To take on the decentralized advantages of Block-chain innovation, business undertakings likewise required specific degree of security. Numerous associations can go to a typical common stage where they may exchange company data in a secure and shared manner. The medical care business benefits greatly from a decentralised information base where trades are documented in a single common record. When it comes to clinical care, the patient's entire medical history is crucial, and it adds value when the same information is gathered by different groups.

SHA-256 Algorithm: A hashed work converts any length data string (integer, letter sets, media data) into a correct length. Depending on the hash work being used, the appropriate piece length can change (for example, 32-digit, transitional, 128-cycle, or 256-bit).

A hash is a yield with a set length. This hash is also a cryptographic by product of the hash calculation. The following graph helps us understand it.

The calculation to make another square

1. Verify the hashes of the multitude of past blocks
 2. Build another square with an irregular nonce
 3. Hash the new square. Does it have N zeros?
- ›No? Return to Step 2
- › Yes? Send your new square to everybody!
- A hash work (like SHA-256) takes a square of information in and produces a viably irregular fixed size whole number.
 - Any change to the info randomizes it.

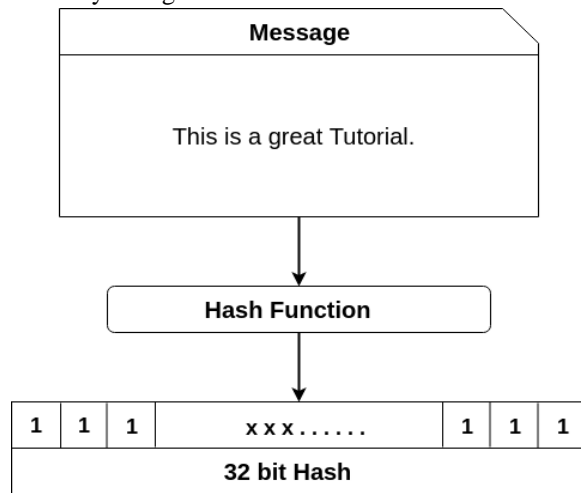


Figure 2. Algorithm Flow Chart

IV. IMPLEMENTATION OF RESULTS

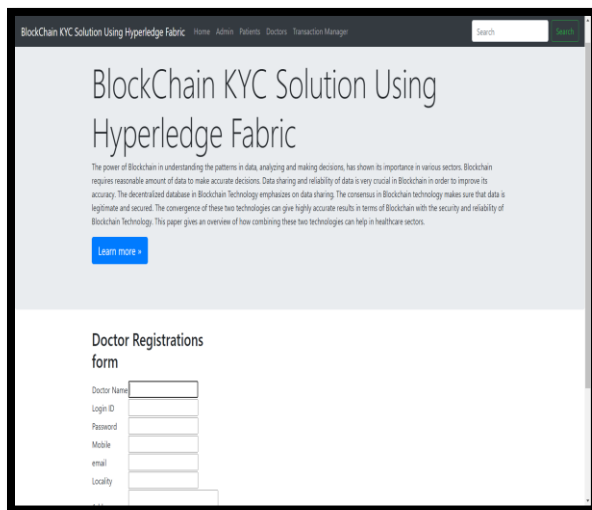


Figure 3:Home Screen

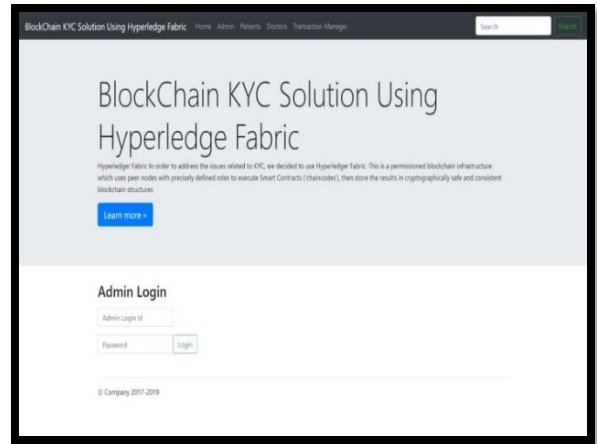


Figure 4:Admin Login page

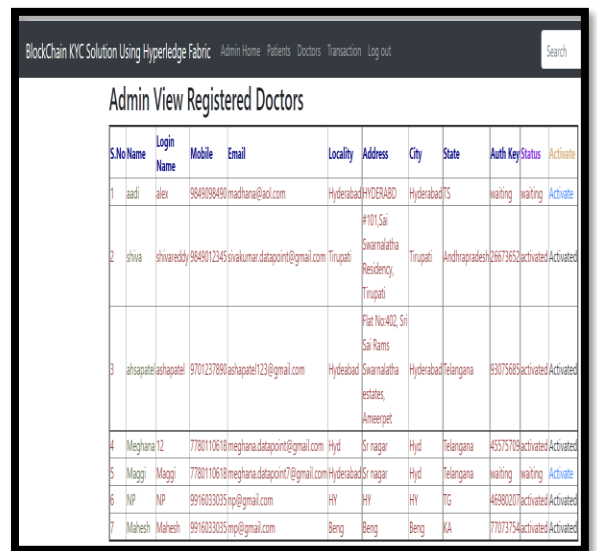


Figure 5:Registered Doctors page

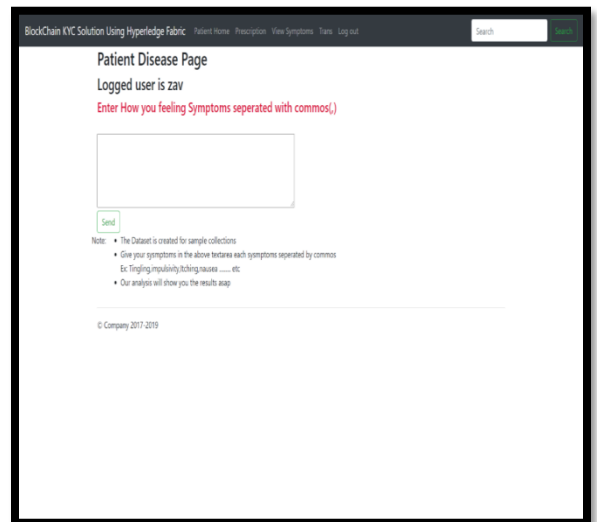


Figure 6:Patient Disease page

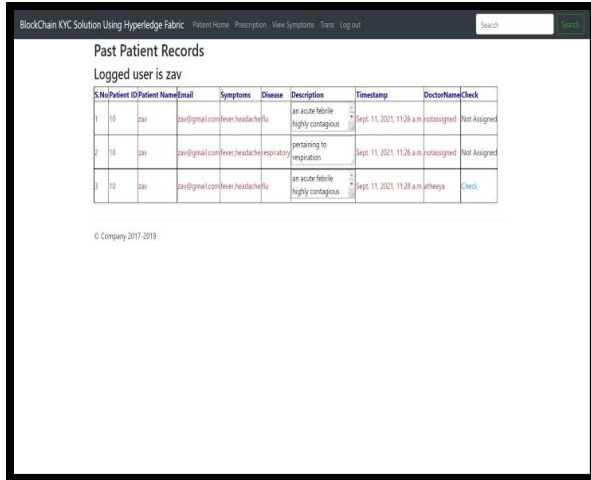


Figure 7: Past Patient Records page

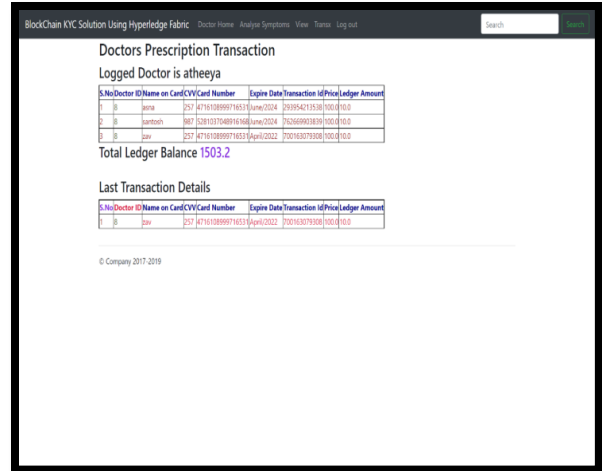


Figure 10: Doctor Prescription Transaction Page

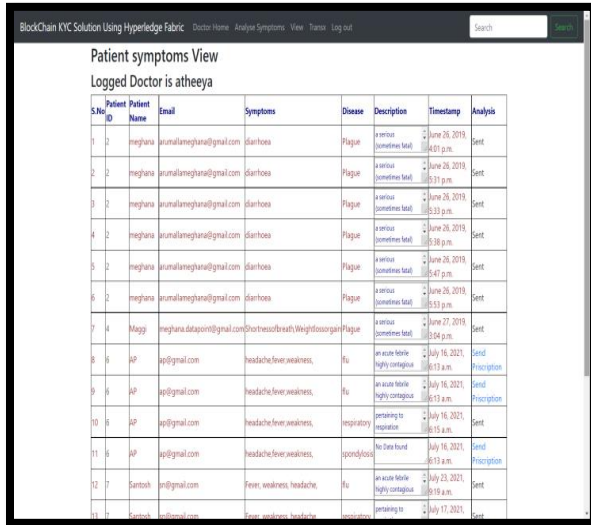


Figure 8: Patients Symptoms view page

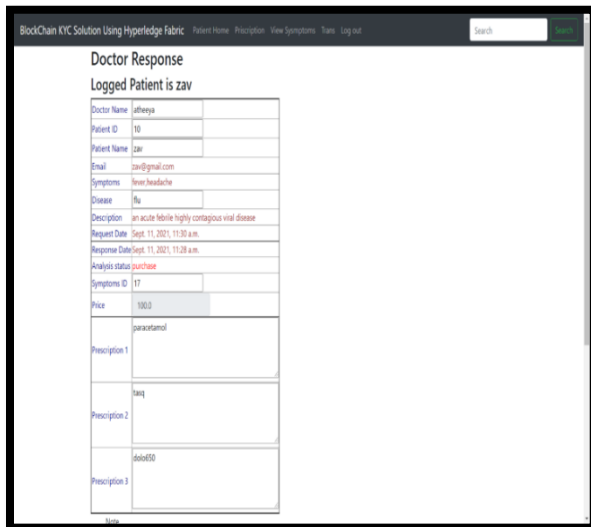


Figure 9: Doctor Response page

CONCLUSION AND FUTURE ENHANCEMENTS

Block-chain technology offers a lot of benefits that extend beyond bit-coin. The central authority's dominance, and hence the commission, might be removed with block-chain. Data can be easily loaded into Machine Learning models (however the rights will be managed by central authority). Machine learning models' accuracy and efficiency, as well as their usability, will improve as a result of this. The health-care industry is inextricably linked to one's life. Both patients and doctors could benefit from this. The actual application of this paradigm will be available in the future. To prevent fraud, this model can be expanded to include Inventory. Working with tiny size devices and sensors may be part of the system's future work. On the basis of the present medical status and medical history, the machine learning algorithm can also make lifestyle recommendations to the patient.

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