

File Management and Transparency System using Blockchain



Samjana Acharya, S. Sreethar, Pramod Thapa, Shweta Shah Sonar, M. Aarthi

Abstract: Modern India has had a strong focus on technology. There exists technology in all the field including government sector. The main objective of this paper is to provide the method to secure the file monitoring system. This application is to monitor every file movements of all the employee and timely informed via SMS, emails. For this purpose, each file contains the barcode and whenever file move out of the warehouse then the barcode are scanned to update its status. This system is build using blockchain technology. One of the reasons to choose the blockchain is because a blockchain is distributed, decentralized, secured, digital playscript which is use for recording the transaction over many computers so that records cannot be altered. The aim of this experiment is to provide file transparency and should provide estimated turnaround time at each stage.

Keywords : Barcode, Distributed, Files, Security.

I. INTRODUCTION

Blockchain technology has to be one of the biggest deviations in 21st century. People came to know about the blockchain in 1991 but no one could tamper with chunk of documents. However, it is in 2008 the history of blockchain starts by Satoshi Nakamoto. Blockchain for bitcoin was the first digital currency to solve the double spending problem without central server or trusted authority. Blocks contain the batches of valid transaction that are hashed. Each block holds the cryptographic hash of previous block in the blockchain. Hash codes are created by a math function that change the digital signature into a letter and a string of numbers. If the information is edited then the hash code changes as well. When the new generated block is chained with the other block it replicates itself with the other node present in the fabric network. The blockchain is the decentralized, distributed database solution that maintain the constantly growing list of

data records. In file transparency system a blockchain is used. In this system, an individual department is a node of the distributed fabric network which contain the copy of the blockchain. The employee needs to register using their unique employee id for verification. Each file contains the barcode and whenever file move out of the warehouse then the barcode are scanned to update its status. The validation of the block is easy, we simply have to associate with the hash key. Once the block reveals the valid block it will be securely connected with the previous block.

II. SECURITY IN BLOCKCHAIN

It is important to be aware of the fact when judging whether the technology you've selected will have the security you require. There are two types of blockchain i.e. **public and private**. Public and private blockchain vary in a couple of key ways that can affect the security level. The most apparent difference is that public blockchains use computers connected to the public internet to validate the transactions. On the other hand, private blockchain only permit known origination to join. In a blockchain each block is connected to all the blocks before and after it. This makes it difficult to interfere with the single data because hacker need to change the block containing that data as well as those linked to it to avoid collision. The data on a blockchain are secured through cryptography. Network participants have their own private keys that are allocated to the transaction they make and behave as a personal digital signature. If a data is changed, the signature will become invalid and network will know right away that something has happened. The system that we are going to develop will prevent from all the security threads.

III. PROPOSED METHOD

The workflow to maintain the security and file transparency in the file management system are as follows:

The employees will have to register to the user interface, this will act as protector so that we can confirm them. The employees will have the EMPLOYEE_ID so that the verification can be done in a better way. The employees' detail will not be disclosed to anyone except admin. Once the registration is completed employees can do the following task.

- Whenever file arrives at the warehouse the barcode is scanned to update its status.
- After completion of the work file move out of the warehouse and goes for evaluation and to put the signature.

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- Higher authority will provide intimation to the employees who are supposed to take action on them on a dashboard.
- It provides estimated turnaround time, if they delay taking action provide notification by SMS/email.



Fig. 1. Use Case Diagram

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- After completion of the work file move out of the warehouse and goes for evaluation and to put the signature.
- Higher authority will provide intimation to the employees who are supposed to take action on them on a dashboard.
- It provides estimated turnaround time, if they delay taking action provide notification by SMS/email.

IV. SYSTEM ARCHITECTURE

The goal of the Ethereum is to create a different possible protocol for creating decentralized applications, providing a different set of trade-offs that we believe will be very useful for a large class of decentralized applications, with fast development time and security for small and infrequently used applications. The parts of the Ethereum protocol should be sketch to be as compatible and separable as possible. Over the course of development, main goal is to create a program where if one wants to make a tiny protocol modification in one place, the application heap would continue to work without any further modification. Ethereum provides an internal Turing-complete scripting language, which a developer can use to develop any smart contract or transaction type that can be mathematically described. The protocol should not strive to actively obstruct or prevent specific categories of usage.

All regulatory apparatus in the protocol should be designed to directly control the harm and not attempt to oppose specific nasty applications. As long as programmer are willing to keep paying the per-computational-step transaction fee they can

run an infinite loop script on top of the Ethereum. An Ethereum account contains the following four fields:

- The **nonce**, a counter make sure that each transaction can proceed only once.
- The account's **either balance**
- The account's **contract code**, if its present

The account's **storage**

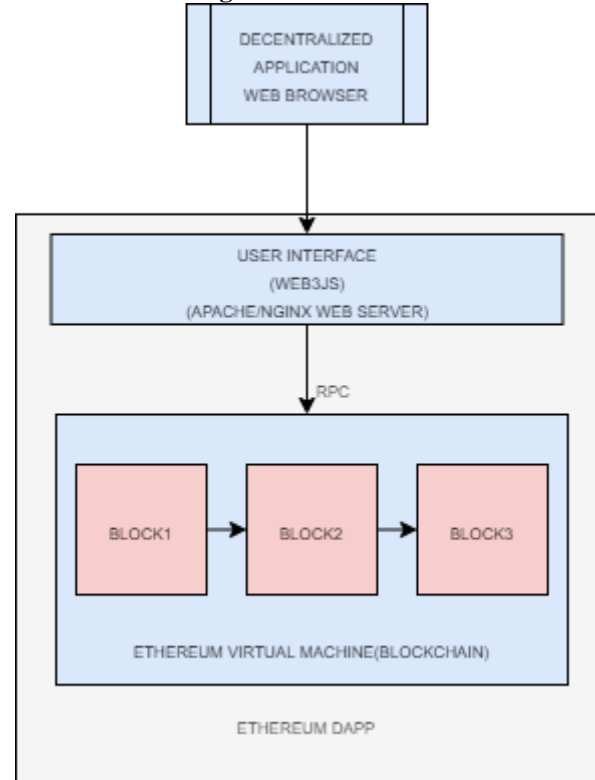


Fig. 2. System Architecture

"Ether" is the main internal fuel of Ethereum, and it is used to pay transaction fees. In widespread, there are two types of accounts: **externally owned accounts**, that is controlled by a private key, and **contract accounts**, which is controlled by their contract code.

V. LITERATURE REVIEW

The studies on the blockchain technology are still new, mirroring of this on the education are at the beginning of the age of groveling. Therefore, some of these studies of the field are shortly summarized below.

In reference [1] the authors identify a fully transparent decentralized system for the supply chain which is called TRADE, which display that it is feasible to apply blockchain technology to obtain traceability. Consumer can view all the system information verify the product. The authors focus on the transparent, decentralized traceability system for the supply chain. The application of blockchain technology in the internet of things sector is inquired in Reference [2]. The scalability and the high cost issues of IOT sensors are mentioned and blockchain is suggested as a solution.

The advantage of connecting IOT sensors to the blockchain include, the access to the suitable billing layer, which covers the way for a marketplace of data sharing and service between devices. According to the study, there are various restriction and issues still to be solved. One of the issues is that a blockchain solution will generally underachieve, resulting in lower transaction processing throughput and higher latencies. The commerce platform ZERV in reference [3], enabled by an asset-based token and blockchain technology, aim to be a decentralized trading platform. It allows for effortless transactions between all key participants within the industry including manufacturers, suppliers and consumers. In this paper [4], the author talks about the importance of blockchain in the medical area. The data in the medical field is getting exploit this incapacitated the data integrity. The introduction of DAPP was mention in paper [5]. There are blocks in Ethereum blockchain, these blocks are connected together and each block have list of transaction. Inside these transactions it contain timestamps and other parameters. Ethereum blockchain gets stored in every computer which is called node. The block contains the agreement which has the code scrap that runs in each block, when the code evaluation is successfully executed in each computer. It is sent to entire network so that the other can agree. The successful confirmation of the block will be attached to the chain. The author did a rigorous study about the IPFS [6]. As stated by the author they want to make the web entirely distributed by flowing it top of the peer to peer networks, it will work as same as the bit-torrent works. In the present scenario when we want to download the data from the web, we have to administer the exact location which we called URL. In the current scenario, the model that is followed to download the data is centralize which is govern by a particular organization – this is known as location-based addressing, but if the server goes down then we won't be able the get the content. To overcome this problem IPFS works from location-based addressing to content-based addressing. All files have a unique figure print in the internet. We have to compare the hash value whenever we want to download the file and after that content will be available. In the paper [7] the author speaks about decentralized crowd-based platform which will recognize the racket in internet and it will also provide notification to the other people about the racket in the internet, due to the extension of the cryptocurrency the racket has also increased. For example, phishing website, fake projects and various racket scheme have grown nowadays. When a person have done any transaction through the internet then there will be a flag which will come into view in the browser which will say whether the website is safe or not if these notification does not come into view then that person can give them a report about the website and the crypto police will give them a reward. In this paper [8] the author talks about electronic voting system which can be used for local and national election. By the use of authentication, anonymity and accuracy a secure platform is developed. In this paper the author [9] wants to create the examination rating self-supporting without the need of centralize authority and to get the certificate or a degree the candidate has to prove their knowledge over the subject. The questions and answer are hashed together and keep in the blockchain based network to

make blockchain transparent. Last but not least, a continuing discussion is taking place besides the technical aspects to secure the FIR system [10]. This introduces to the necessary principal of blockchain technology in the police department of India. In this system the end-user needs to register from their mobile to file a complaint, to register the complaint an individual should have their unique AADHAAR number for confirmation. This app requires the location so that the complaint can accurately be transferred to the nearby police station.

VI. CONCLUSION

We are proposing this system to secure the file and provide transparency in the file. We are trying to make the system simple and well organized.

The decentralized network which we are building does not depend on any trust. The blockchain will make the network more secure, unchangeable and decentralized, we can even say that it will be a corruption free network. Finally, although much care was taken in the collection of the search terms used in our research, we admit that our choice may have keep out certain blockchain articles from this review. As blockchain evolution is still developing, our discussion of future research golden opportunities are manly conceptual.

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