



A BLOCKCHAIN IN BANKING APPLICATION

Harsha Gandhi

Harsha Gandhi, Dept. of Computer Engineering, St. John College of Engineering & Management, Maharashtra, India.

Rupali More*

Rupali More, Dept. of Computer Engineering, St. John College of Engineering & Management, Maharashtra, India. *Corresponding Author

Nainisha Patil

Nainisha Patil, Dept. of Computer Engineering, St. John College of Engineering & Management, Maharashtra, India.

ABSTRACT

Blockchain in banking application will provide a powerful tool for bank transaction using Blockchain technology, such as making transaction faster and transparent. This system will provide an efficient, reliable and user-friendly interface in banking and has no chance of losing data while processing user data i.e. customer account transactions using the secure hash algorithm (SHA-256). This application will provide a good user interface such that client have basic computer knowledge can operate the application. In addition to enabling trade in the banking sector, Blockchain store data using sophisticated math and innovative software rules that are extremely difficult for an attacker to manipulate. It eliminates errors and duplication. The Blockchain is ideal for transforming a host of a digital process by storing data in blocks and using a tamper-proof hash format. Tamper-proof is achieved by consensus protocol that is processed by which the block in the network validates by the hash function. Also, banks can improve the security of the stored identity using public key encryption, improve portability of data and reduce the time taken for a transaction.

KEYWORDS : Blockchain, Block, Hash function, SHA-256, Bitcoin, IOT, Spring MVC**1. INTRODUCTION**

The Blockchain is the world's leading software package for digital assets. We are using new technology Blockchain to build a better financial system. The term "Blockchain Technology" typically refers to the clear, trusted, the in public accessible ledger that allows us to securely transfer the possession of unit's important exploitation public key encryption and proof of work methods. The technology uses suburbanized agreement to keep up the network, which means it is not centrally controlled by a bank, corporation or government.

The financial sector has become part of our daily life interaction the lure of Blockchain was its method of verifying and tracking transactions. Instead of a trustworthy third party or a financial organization, it depends on agreement among a peer-to-peer network of computers supported complicated algorithms. Blocks of time-stamp transactions are decentralized on all systems.

2. LITERATURE SURVEY

In [1], The Blockchain provides communication and coordination services through transactions, smart contracts and specific facilitation services including permission management, cryptography-based payment and transaction validation.

In [2], Blockchain is a digitized system of accounting records which records in detail all transactions according to a mathematical set of rules to prevent illegal interference. The information is automatically recorded and monitored during the transaction process makes the transaction more transparent, which supports the fight against financial crime such as money laundering. The digitization and verification of records not only reduce necessary procedures and save paper but also ease the follow-up process of trade agreements.

In [3], explains the concept of Blockchain, characteristics, a need for Blockchain and how bitcoin works. It attempts to highlight the role of Blockchain in shaping the future of banking, financial institution and adoption of Internet of Things (IoT). The Blockchain is a transaction database which contains information about all transactions, for making any changes to the existing block of data, all the nodes present in the network runs algorithms to gauge, verify and match the dealings data with Blockchain history. The individual blocks are identified by a hash which is generated using a

hash (SHA-256) cryptographic hash algorithm on the header of the block.

In [4], smart contracts allow us to automate complex multi-step processes. The devices within the IoT system square measure the points of contact with the physical world. When all of them are combined we get to automate time-consuming workflows in new and unique ways, achieving cryptographic verifiability, as well as significant cost and time savings in the process. Tangential to the current is that the issue of the arithmetic means of tokenized assets. Block-chains are used to trade those tokens because they are associated with some value. However, if your device assumes ownership of a token on the chain, and you wish to redeem that token in the real world.

In [5], the transaction process is too slow since it has to be authorized through different departments, this issue can be eliminated using Blockchain technology which divides transaction process into blocks and each block verifies it separately.

In [6], a global Swiss digital health startup takes a radically new approach when it comes to the handling of the data transaction and sharing of personal health data. This startup offers its users a platform on which they can store and manage their health information in a secure environment. Until now, a trusted third party was necessary for the settlement of market services. With Blockchain, direct transactions suddenly become possible, whereby a central actor, who control data, earned commission or even intervened in a censoring fashion, can be eliminated.

In [7], Blockchain technology solves the problem of trust with cryptography. Even if without the participation of the central authority, there is also a way to ensure that financial behavior and transaction behavior are all stored in a common database. Owing to the mechanism that the data cannot tamper in Blockchain.

In [8], an attacker trying to generate an alternate (fraudulent) chain faster than the honest chain. Even if this is often accomplished, it does not throw the system open to arbitrary changes, such as creating value out of thin air or taking money that never belonged to the attacker. Nodes aren't planning to settle for an invalid dealing as payment, and honest nodes will never accept a block containing them. An attacker can only try to change one of his own transactions

to take back cash he recently spent.

3.PROPOSED SYSTEM

Several traditional financial services firms have now initiated strategic partnerships and investments in the space. A variety of Blockchain systems have emerged, though it is too early in the innovation and development cycle to determine which of these systems will become sustainable, scalable and successful in the future. Probably, an enormous amount of co-operation between key player including banks, technology firms, stock exchanges, regulators, developers, programmers and entrepreneurs will be required for a Blockchain driven financial ecosystem to emerge.

This system is used to improve the facility and provide a great level of security by using Blockchain technology.

3.1 Steps:

In Figure 1, the sender will log in with his/her username and password. If the sender wants to transfer the money he will first add a beneficiary. Then the sender starts the transaction and SHA-256 algorithm will be applied on the original details through Spring MVC (Model View Controller) which is inbuilt in it.

Then the token is added to details. In our scenario, we are multiplying the value by 4 and pass it to the first block. Then the rules will be validated through an external file. All the rules are stored in this file. The rules may be:

1. Block1 will validate Bank Name and amount to transfer.
2. Block2 will validate receiver bank name, IFSC code, receiver account number, receiver name.

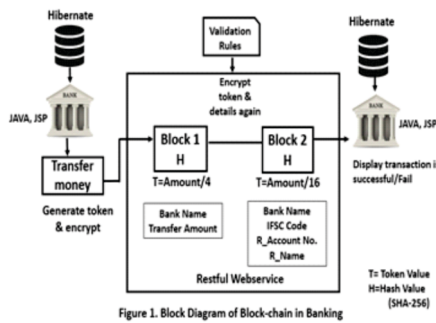


Figure 1. Block Diagram of Block-chain in Banking

If the rules are satisfied then only it will be passed to the next block, unless the transaction will be failed. The same mechanism will be followed for all the blocks. If any rule is not satisfied then the transaction gets failed and the user will get the notification of it.

3.2 SHA-256

A cryptographic hash function (digest) is a kind of signature for a text or data file. SHA-256 generates an almost unique 256 bit (32 bytes) signature for a text.

3.3 Jackson Message Converter

```
<bean
id="jacksonMessageConverter" class="org.springframework.http.converter.json.MappingJacksonHttpMessageConverter">
<property name="supportedMediaTypes"
value="application/json" />
</bean>
```

```
<bean
class="org.springframework.web.servlet.mvc.annotation.AnnotationMethodHandlerAdapter">
<property name="messageConverters">
<list>
<ref bean="jacksonMessageConverter"/>
</list>
</property>
</bean>
```

3.4 Random Number Generator

A random number generator (RNG) may be a mathematical construct, either computational or as a hardware device, that is designed to generate a random set of numbers that should not display any distinguishable patterns in their look or generation, hence the word random. Typically within the kind of operate or blocks of code utilized in computer code applications like games whenever a component of likelihood is needed. The aggressor will solely attempt to modification one among his own transaction.

4.EXISTING SYSTEM

TABLE – 1
CURRENT SYSTEM AND PROPOSED SYSTEM COMPARISON

Parameters	Current System	Proposed System
Messaging	Through central infrastructure	Peer to peer
Processing	Centrally	Distributed in blocks
Efficiency	Low efficiency	High efficiency
Safety	Centralized data storage can be temper.	Distributed data storage cannot be tamper
Auditing	Required	Not required

5.CONCLUSION

We can say that the Blockchain is going to bring a serious transformation within the banking sector. A secure distributed database of client information should be developed and shared by the different bank which will help in reducing time, effort and cost in inter-bank transactions. The information on that may be verified and audited at any time. All of the transaction data that is integrated with a Blockchain is verified by miners and consensus rules. In a bid to evolve towards cashless society this is an appropriate time for initiating suitable efforts towards digitizing the Indian rupees through Blockchain technology.

In the coming years, Blockchain will evolve as a disruptive force in transforming the Indian banking sector by making banking transaction faster, transparent. We can powerfully advocate that point is ripe for adoption of Blockchain in the Asian nation.

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