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Banking System Using Blockchain

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Abstract: Blockchain is a distributed ledger technology which aids in recording transaction and tracking capital in any business network. The main feature of blockchain is transparency. Our project is going to help these banks because we will be implementing blockchain ledger for creating a banking system in Linux. Blockchain will boost trust, security, translucence, and the traceability of data shared across a banking system and will be cost saving with new efficiencies. Because it provides rapid, shareable, and entirely clear information recorded on an immutable ledger that can only be viewed by authorised network users, blockchain is the ideal option for distributing data. This network can locate orders, capital, users, creations, and much more, and because participants share only one view of transparency, you can see all the details of a capital transaction from beginning to end, providing you with a greater sense of trust as well as new efficiencies and opportunities. Banking systems are transferring from their older methods to more recent ledger methods. Banking sector has started experimenting with blockchain ledger by copying current asset transactions on the blockchain. This enables the banking sector to have some space for the effectiveness of the blockchain solution. In infrastructure terms, Blockchain is software that is open source designed to support the transfer of digital capital among market participants in real time. Using any chosen blockchain APIs, one may exhibit big decrease in asset transfer costs and timelines. Today's banks are developing and operating their business models with the help of a trusted third-party service provider. As a result, Blockchain technology will be able to reconstruct the banking model since it can handle transaction records via a peerto-peer network between trading partners without the need for a trusted third party.

Keywords: Blockchain, Ledger, API, Transaction, P2P.

I. INTRODUCTION

The blockchain is a public ledger that records all Bitcoin transactions ever made. It continues to grow as miners add fresh blocks to it, and it now contains the most recent transaction data. In a linear, chronological manner, the blocks are uploaded to the blockchain. When a miner joins the Bitcoin network, a copy of the blockchain is automated to download to each complete node. From the block to the most recently completed block, the blockchain contains complete information regarding addresses and balances. In all jurisdictions, the banking business is heavily regulated, and banking industry officials are known for their conservative viewpoints. However, due to the widespread adoption of blockchain technology in recent years, the growth in popularity of cryptocurrencies, as well as the ICO boom, many banks and financial institutions' management no longer reject the technology's promise. The Blockchain Technology concept is quite similar to how banks work. Blockchain, as the name implies, "a chain of blocks" can be defined as the decentralized network (chain) of informative blocks which are highly secured using Encryption processes. Thousands of transactions take place per day in a Bank and a Blockchain can very easily process all these transactions using its powerful algorithms. When it comes to bank, the first factor which strikes a person's mind is "Security" and the most secured technology is Blockchain. Hence, we can say that Banks and Blockchain are a perfect match! Harvard Business Review claims that Blockchain will do to Banks which Internet did to Media. Moreover, Blockchain is less expensive yet powerful comparatively to other processing technologies and processes fastest transactions. We used blockchain to create a banking environment where the users can securely transfer money and have a track on the transaction.

II. REVIEW OF LITERATURE

According to Fabian Schär decentralized finance is a blockchain-based financial architecture that has exploded in popularity recently. The term refers to a stack developed on public smart contract platforms, such as the Ethereum blockchain, that is open,

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permissionless, and highly interoperable (see Buterin, 2013). It is a more transparent and open version of the traditional financial services. A standard function market maker (CFMM) is a smart contract liquidity pool that keeps (at least) two crypto assets in reserve and enables anyone to deposit tokens of one type and withdraw tokens of other type in his research paper Decentralized Finance: On Blockchain- and Smart Contract- Based Financial Markets in 2021. [1]

According to Jayanth Rama Varma only a few pilot applications of blockchains to other aspects of finance have been seen even a decade after the debut of Bitcoin. The blockchain is an append- only, decentralised, replicated, tamper-resistant (immutable) ledger of transactions. Because blockchain is currently a developing and hence immature technology, it's difficult to say how successful it would be outside of its sole known application domain of cryptocurrencies. History shows that it takes decades for substantially innovative technology to reach their full potential. As a result, despite its spotty success thus far, it is very feasible that blockchain will prove revolutionary in the years to come. What is certain is that corporations should be looking at and understanding this technology because the underlying concepts are powerful and likely to have an impact as said by him in his research paper of Blockchain in finance published in 2019. [2]

According to Dusko Knezevic by combining the Peer-to-Peer (P2P) network with the decentralized server that tracks leasehold transactions, a database that is independent and available to all network users has been created. Blockchain has also been regarded a part of the fourth industrial revolution since the steam engines, energy, and information technology. The transaction record is combined with some other transactions in a single block, just like in a typical computer database. There is a time limit on each transaction. The block is given a time stamp once it is completed.. To eliminate duplication, all of the data is organised in a sequential order. The finished block is transferred through the network and added to the chain sequence. At the same time, other participants might contribute their blocks. The time stamp, on the other hand, ensures that the information is entered in the proper sequence and that all attendees have access to the most recent product. The hash is the most important aspect of blockchain security. The SHA-256 hash function is used to prevent data tampering by third-party users, and blockchain uses specialized hardware to create a huge number of cryptographic data chains in his research paper Impact of Blockchain Technology Platform in Changing the Financial Sector and Other Industries in 2018. [3][5]

III. PROPOSED SYSTEM/METHODOLOGY

3.1 Proposed System

Firstly, the user will login and the system will check the credentials. If the credentials are correct, he will get access to the banking system. Else the user will be required to sign up and then he can access the banking system by logging in. If it is a bank, it will be able to add different transaction to business and individuals. The amount transferring is saved in peer to peer connecting blocks. Changing one block will change the entire blocks in all the computers. We have used hyper ledger fabric for framework. It is an open source blockchain framework hosted by Linux foundation. We will use docker to run a chain of commands on ubuntu to create new users.

Algorithm

- 1. Start.
- **2.** Install Hyper ledger fabric.
- 3. Run commands to create new users.
- 4. Open a new terminal in Restapi directory. 5-Run commands to start api server.
- 5. Login.
- 6. Else Sign up.
- 7. Ask for transactions.
- 8. Check the transaction in transaction history 10-Stop



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Figure 1: Block diagram of the proposed system.



3.2 Sequence Diagram

Figure 2: Sequence Diagram

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A sequence diagram is a diagram that depicts how processes interact with one another and in what order they do so. A sequence diagram depicts item interactions in chronological order. It illustrates the scenario's objects and classes, as well as the sequence of messages sent between them in order to carry out the scenario's functionality. The system's sequence diagram is shown in Figure 2 below.

3.3 Component Diagram

Component diagrams are used to visualise how a system's components are organised and related. These diagrams are also used to create systems that can be executed. It does not explain the system's functionality; rather, it describes the components that enable such functions. A static implementation view of a system can alternatively be depicted as a component diagram. The grouping of the components at a given time is referred to as static implementation. Figure 3 depicts the system's component diagram.



Figure 3: Component Diagram

IV. METHODOLOGY

4.1 Agile Methodology

The Agile Software Development Life Cycle model has process models that are iterative and incremental, with an emphasis on procedure adaptation and customer experience through the rapid delivery of a functioning software package. Agile methods breakdown the project down into smaller, gradual steps. Iterations of these builds are given. Each iteration can last anywhere between 1-3 weeks. Every change contains cross- functional teams working on plotting a plan, requirements analysis, designing, programming, unit testing, and quality testing at the same time. A functioning product is presented to the client and key stakeholders at the end of each iteration.

4.2 What is Agile?



Figure 3: Agile Model

Every project should be handled differently, according to the Agile model, and existing methodologies should be customised in order to best meet the project's criteria To deliver a release's key characteristics, tasks are grouped into time boxes (short time frames) in agile. The technique is iterative, with each iteration delivering a viable software build. In terms of features, each build is Copyright to IJARSCT DOI: 10.48175/IJARSCT-3114 276 www.ijarsct.co.in



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progressive, with the final build containing every one of the customer's requirements. The Agile Methodology is depicted graphically in the following illustration.

Agile thinking began early in software development and grew in popularity over time as a result of its flexibility and adaptability. Rational Unified Process (1994), Scrum (1995), Crystal Clear, Extreme Programming (1996), Adaptive Software Development, Feature Driven Development, and Dynamic Systems Development Method (DSDM) are some of the most popular agile approaches (1995). Following the publication of the Agile Manifesto in 2001, these are now together known as methodologies of agile model. The Agile Manifesto's principles are listed below.

- Individuals and interactions Self-organization and commitment, as well as engagements like co- location and pair programming, are critical in agile development.
- Functioning Software Demo functioning programme is used instead of depending exclusively on documentation. regarded the greatest way to communicate with customers and understand their needs.
- Customer collaboration Because needs cannot be fully gathered at the outset of the project due to time constraints, a variety of variables, continuous customer involvement is critical to obtaining accurate product specifications.
- Responding to change Agile development emphasizes rapid change responses and continuous improvement.

4.3 Merits of Agile Methodology

- 1. Is a very realistic software development approach
- 2. Encourages collaboration and cross-training.
- 3. Functionality can be demonstrated and built quickly.
- 4. The amount of resources required is minimal.
- 5. Adaptable to a variety of requirements, both constant and variable
- 6. Provides partial workable solutions as soon as possible.
- 7. It's a good model for circumstances that are always changing.
- 8. There are few regulations, and documentation is simple to use.
- 9. Allows for concurrent development and delivery within a predetermined framework.
- 10. Planning is minimal or non-existent.
- 11. It's simple to use
- 12. Allows developers to be more creative.

4.4 De-Merits of Agile Methodology

- 1. It's not designed to deal with intricate dependencies.
- 2. Long-term viability, reliability, and scalability are all at risk.
- 3. It will not function without an overall plan, an agile leader, and an agile PM practise.
- 4. Strict supervision defines the project's scope, the function to be given, and the required adjustments to fulfil deadlines.
- 5. Because customer interaction is so important, the team may be led down the wrong road if the consumer is uncertain.
- 6. Due to the lack of documentation, there is a high level of individual dependency.
- 7. Due to a lack of documentation, transferring technologies to new team members may be difficult.

4.5 Approach

Once a week, the project team meets to discuss each member's progress and to share relevant information and documents that have been prepared. Since team members will have more time during vacations and the final semester, the number of meetings may increase. Once a week, at the team meetings, reviews are undertaken. At the conclusion of the Design Phase, a detailed technical evaluation will be done. At the completion of the each testing phase, there will be a review. The following are the important milestones that must be met:

- 1. Results of current system studies and talks with project team and project guide
- 2. The Design Phase's output that include a variety of modelling diagrams, such as flow charts.
- 3. The first coding process will provide an initial code, which will then be tested.
- 4. The code will be examined in the second coding phase based on the testing findings.

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V. CONCLUSION

Although understanding blockchains in the context of bitcoin is beneficial, you should not assume that all blockchain ecosystems require bitcoin mechanisms such as proof of labour, longest chain rule, and so on. Bitcoin is the first attempt to create a decentralised, public ledger with no central authority or governance. There are a lot of obstacles to overcome. Private distributed ledgers and blockchains, on the other hand, are frequently used to solve different types of problems. Every solution, as always, has tradeoffs and advantages and disadvantages, which you should consider for each use case separately.

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