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Real Estate Sector Using Blockchain

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ABSTRACT: The current state of real estate transactions in China is examined in this study, along with several flaws. In response to these flaws, a blockchain-based real estate transaction platform has been developed. Hyperledger Fabric is used in this platform. Fabric is a platform that connects buyers, merchants, financial institutions, and government agencies. departments. To begin, the entire platform transaction process is proposed. Then comes system's design framework is proposed, as well as an implementable scheme. Finally, This paper discusses some of the program's highlights while also pointing out its flaws. Work will be harder in the future.

I. INTRODUCTION

With the continual growth in worldwide housing prices in recent years, the house has become the main goal of each family and the focal point of society. The State Council's executive meeting in 2013 voted to merge the real estate registration obligations and build a consolidated real estate registration system. The Interim Regulations on Real Estate Registration were issued by the State Council in 2014. As a result of all of this, real estate has become a hot subject around the country. The first-hand house transaction and the second-hand house transaction are the two most common types of real estate transactions. There are a lot of processes involved in buying a used house. The general transaction steps of second-hand housing are signing the second-hand housing sales contract, paying taxes, and applying for real estate transfer registration once real estate registration is established. If a loan is required, the second-hand house can be used to complete the transaction. The bank or other financial institution should process the contract of house sale or the certificate of non- moving property right. The real estate registration department handles the mortgage requirements. Prior to that, the majority of buyers and sellers had to locate each other through middlemen.

They can ultimately sign a contract in the transaction department after a series of conversations. The reform to streamline administration, devolve powers, and improve regulation and services has resulted in a reduction in the number of links and time spent on them. However, both parties face numerous hazards. To begin with, the two parties' transaction is an intermediary transaction. The market has an unequal distribution of intermediary service agencies. The buyer and seller have very unequal information. In the midst, the intermediary might be able to make a profit. Second, the seller will have a tough time ensuring that the information offered by the house is accurate. It's also possible that one house sells faster than the others. At the same time, the general purchaser is rarely paid in whole, allowing the seller to refuse the remaining after the real estate transfer is completed. Furthermore, unless the purchaser inquires with the real estate registration agency, it is difficult for the purchaser to know whether the real estate has restrictions, such as seizure or mortgage. Of sure, there's a chance. posing a danger in subsequent bank-to-financial-institutions loans This, however, is not the main problem to be tackled in this work, which will not be detailed. As a result, we require a decentralised, traceable, and transparent data transaction platform in order to make the real estate business more benig

II. METHODOLOGY

What is Blockchain?

Satoshi Nakamoto presented the blockchain technology when he initially introduced Bitcoin in 2008 [7]. Later on, it drew the attention of governments and a number of significant corporations. As a result, blockchain technology has advanced quickly and is already being used in a variety of businesses. The blockchain is essentially a distributed database of records, or public ledger, of all completed and shared transactions or digital events [8].

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Hyperledger Fabric (Hyperledger)

is a distributed ledger technology that Hyperledger Fabric is a Linux Foundation initiative that can be used as the foundation for a blockchain platform. It's open-source and standards-based, and it's used to run user-defined smart contracts. Strong security and identification features are included, and the system is built on a modular design with pluggable components.
Protocols for achieving consensus [9].

A blockchain-based platform for real estate transactions

We'll go over how to create a real estate transaction platform based on blockchain in this section. blockchain. The Hyperledger Fabric platform provides the foundation for this technology. The fundamental purpose of This platform is used to facilitate the distribution of real estate transaction information and transactions. It's also possible to Look up previous transactions.

Design of the system

The procedure of releasing real estate transaction information and real estate transactions is depicted in Figure 1. each and every party involved in a real estate transaction First and foremost, both the buyer and the seller must register in order to access the system. Users who do not have a genuine name can just browse. Real name authentication is required for everyone who wants to buy or sell real estate. The seller submits an application for a real estate sale by providing the real estate ownership certificate number or the address of the property. The system examines the information from the transfer registration system to see if the applicant is the rightful owner of the property. The system publishes the sale information in the system as a result of the comparison. At the same time, some real estate information such as the real estate location, area, service life, and other details are available. The seller can choose to publish the information. However, if the real estate right has the status of mortgage and sealing up, it must be announced, and under the status of mortgage and sealing up, the real estate shall not sign a sales contract. The purchaser browses the real estate for sale through the system. After the real estate is selected, the smart contract is signed with the seller. Meanwhile, if there are others also own the property of this real estate, all the co-owners must sign the contract together. After the contract is signed, the data will be stored. Then the transaction information and contract will be pushed to the real estate registration institution. If the loan needs to be handled, the contract will be pushed to the financial institution selected by both parties of the transaction at the same time.

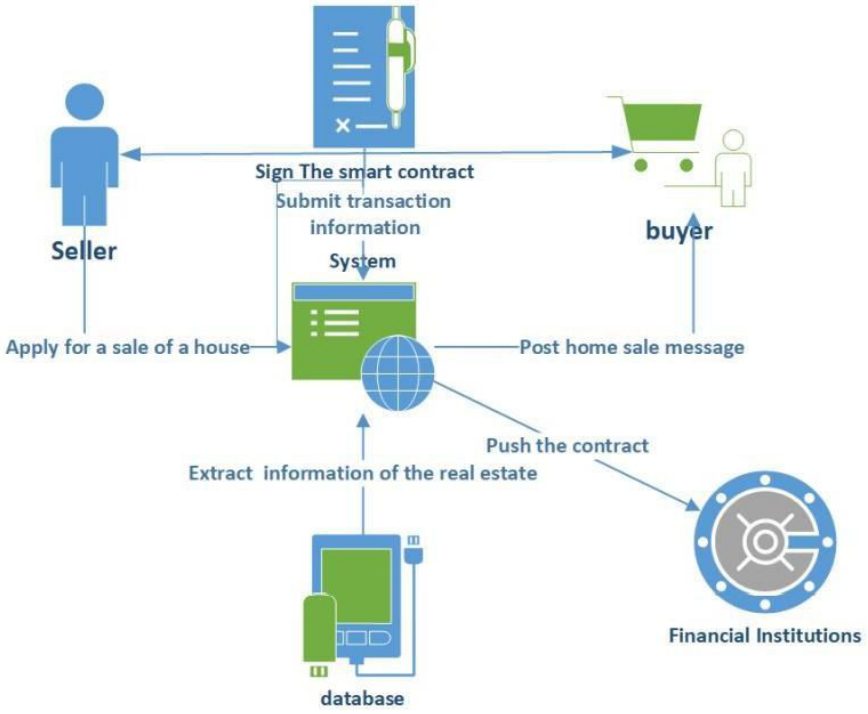

Fig.1 Flow Diagram of the system

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System architecture

DAPP has recently gained a lot of traction. However, due to the information needs of real estate transactions, Ethereum is not suited for usage as a worldwide public chain due to security and privacy concerns. For businesses and individuals Hyperledger fabric, with its modular and scalable design, can be applied to the platform by users. On To maintain the stability of this platform, all users must be authenticated and approved to join [10]. the system and the information's security From top to bottom, the system is separated into five layers: Smart web application layer Contract layer, Consensus layer, Network layer, and Data layer are the four layers that make up the contract layer (as Figure 2).

(1) Web application layer: The application layer caters to the needs of the user. It's the program's interactive interface.the framework Sign in / sign up, release message and cancel transaction modules, transaction module, and read data / push data module are all included. The underlying database can be accessed via the web page to read and store data. The data from the real estate system can be accessed through the gateway, as well as the data from the other systems. The transaction's content can be pushed back to ensure real-time data.

(2) Smart contract layer: Transactions for data storage queries and real estate transactions are handled by the smart contract layer. When a page requests data query or storage, the data storage query smart contract is invoked, and the data query or storage can be completed. The transaction smart contract is invoked when real estate is traded, and the two parties sign the contract to conclude the transaction.

(3) Layer of Consensus: The blockchain is made up of many nodes. However, there is scepticism among the nodes. Byzantine Fault Tolerance must be supported to ensure the network's overall reliability. The Proof of Elapsed Time (PoET) mechanism and the PBFT algorithm are used in the system.

(5) Data layer: The underlying data layer stores data generated by transactions in blocks, such as real estate transaction time, buyers and sellers, real estate related information, and other data. In order to make future transactions more convenient, past data will be queried.

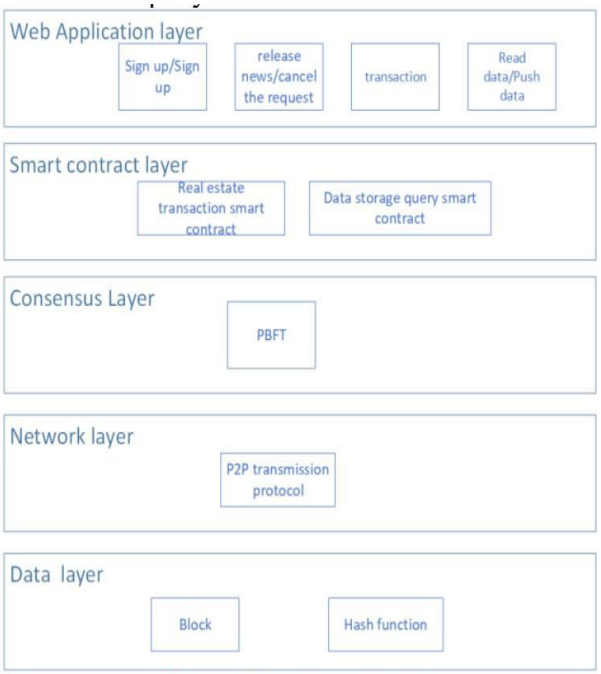

Figure 2.Systemstructure

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III. CONCLUSION AND FUTUREWORK

The following are the special advantages of this model:

(1) The seller can directly disseminate information about the real estate sale through the platform. The information about the real estate is received from the registration department's system database, ensuring the correctness and comprehensiveness of the data accessed by the buyer via the platform. Purchasers and sellers can deal directly thanks to the blockchain's decentralisation, which eliminates the need for middleman links and fees.
(2) After completing the genuine name certification, the applicant can use the smart contract to execute the commercial housing sales contract. The traceability and irreversibility of the contract may be maintained thanks to the blockchain's properties, making it possible to locate the real estate in the future. There is no way to change any of the transactions on the site, and the message is 100% accurate.
(3) The platform database and the real estate registration database can communicate with one another. Through the platform, the real estate transaction office and the registration authority can share information and update data in real time, meeting the needs of the Internet + government service. According to the requirements, a tax department interface can be created, allowing sales contracts to be pushed in real time.
(4) The finance department can take part in it, directly query the lender's commercial housing sales contract through the platform, and handle second-hand housing loan registration on this basis. It ensures the correctness of the information, which helps the bank's loan approval process go more smoothly.

Future job difficulties:

(1) Because real estate transaction data is large and complicated, and data interchange between departments, internal and external networks is required, the system's security needs are rather high.
(2) If the system intends to ensure data correctness throughout the early stages of operation, it relies heavily on the registration department's back-end data. It's difficult to operate on your own. However, its historical transaction data can directly call relevant real estate information for a period of operation. The reliance on background data has been reduced.
(3) A time of investigation and strong data support from multiple departments is still required to completely actualize a system's overall function. It could be necessary to create a platform to test in a specific building or a small region first. Then, through particular operation, continue to improve and add system functionalities.

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