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Blockchain-Based Smart Contract System For Secure Land Registration

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Abstract:

Traditional land registration systems are often plagued by issues such as lack of transparency, dependency on intermediaries, risk of document tampering, and inefficiencies in record management. The involvement of brokers and manual verification processes can lead to delays, increased costs, and potential fraud. Ensuring the security, authenticity, and accessibility of property records remains a significant challenge in such centralized systems. This paper proposes a blockchain-based land registration system that leverages smart contracts to provide a secure, transparent, and tamper-resistant platform for managing property transactions. Blockchain technology enables the creation of a decentralized digital ledger where all transaction records are securely stored and distributed across the network. Smart contracts automate the verification and execution of property transfers, eliminating the need for intermediaries and reducing the risk of human error and manipulation. The proposed system ensures that once data is recorded, it cannot be altered without network consensus, thereby enhancing trust and integrity. Additionally, it provides improved accessibility, faster processing, and better traceability of ownership records. The solution offers a reliable and efficient alternative to conventional land registration methods, contributing to increased security, reduced fraud, and streamlined property management processes.

Keywords: blockchain, smart contracts, land registration, decentralized systems, data security, digital ledger

I INTRODUCTION

Block chain technology was founded by the scientist Stuart Haber and W. Scott Stonrnetta in 1991. They developed this system by using a cryptographic chain of blocks. SatoshiNakamoto introduced bit coin in the year 2008. It is a type of digital currency which uses cryptographically concepts. Bitcoinis part of the scope of crypto

currency and has become the most valuable digital currency in this era [1].Block chain is a new platform for creating decentralized apps and storing data amongst shared parties, which keeps a record of all transactions. All transactions in the public ledger are validated using consensus processes, which include most of the system's members [2]. A block of fresh data is produced each time a new transaction occurs, and this block is then encrypted using a hashing method. A new block of data is produced each time a new transaction occurs, and this block is then encrypted using a hashing method [3]. Block chain enables us to build a record of transactions, events, and data safeguarded by sophisticated cryptographic safeguards. For immutability and tamper-proofing, this log is disseminated and copied over the network [4]. Block chain permits a single block of data to enlarge as new blocks are attached to it, with each block comprising the transaction recorded in a carefully structured formation. The Blocks are connected cryptographically. Using the SHA-256 Algorithm, the unique hash code has been established [5]. Block chain has a block chain with relevant information regarding the assets that cannot be manipulated.

II LITERATURE SURVEY

Before bringing Block chain to this property-based application, such as a land registry system, we must first comprehend the seven major conditions for a clearer understanding. These seven needs consist of identification solutions, a private block chain, reliable data, substantial internet access, and training in an executive community that contacts with property registration are all required. A flexible block chain architecture with a block chain registry, smart workflow, and peer-to-peer transactions is suggested to avoid intermediaries and interoperability. Examples of blackcap in systems for property and registry implementation includeBitfury, Comaway, and Consensus. [1].

Furthermore, altering the standard land register system with block chain technology makes it simpler, more effective, and more efficient. Delays in ownership verification, transaction slowdowns, and the possibility of fraud during a purchase. Research and Case studies in Honduras and Georgia show that permanent time-stamped digital recordings were adopted to solve these issues. [2]

To maintain immutability, this technology's design refers to building a chain of blocks. The consensus model will select which blocks are added to the chain, while taxonomy will define who may use the block chain network and how rights are allocated. This technology's major uses are in finance and taxes, asset management, business domain, and technical challenges. Today's emphasis is on validating the

correctness of stored data and identifying the appropriate implementation[3].

III EXISTING SYSTEM

Land registration involves collection of details like ownership and size of the property. Currently the entire process of land registry maintenance is too tedious since it involves safekeeping of large volumes of registers in written form. The main issue with the above-mentioned method of land registry maintenance is that any future reference that needs to be taken from these hard copies will involve too much labour. This process is time consuming. Current system is not secure since majority of the process is not transparent, system is slow, and selling a property more than once needs to be recorded accurately. Several approaches have been made to automate the land registry data maintenance by eliminating the process of keeping bookish records. This is initially done by storing the data in huge databases. But such a method is not efficient in terms of data security as the data contents are breached easily as data tampering can happen in case of poorly maintained databases.

Disadvantages:

- Current systems are not secure since majority of the process is not transparent.
- The data can breach easily as data tampering can happen in case of poorly maintained databases.

IV PROBLEM STATEMENT

The simple meaning of land/property registration is to store the true ownership details respectively or transfer the ownership from seller to buyer along with the total verification. It is quite true that the property or land will not perish, but the owner, who is a person, can. So we need a persistent record mandatorily to track the true ownership of a land/property along with its past transfer history. Block chain allows the end-user to keep all records unchanged and updates related to specific records.

V PROPOSED SYSTEM

We suggest a solution that takes advantage of the concept of smart contracts, which is a self-consensus code contained in block chain technology. This code outlines the regulations that all parties participating in the land registration process must follow. This eliminates the need for third parties and streamlines the registration process. Smart

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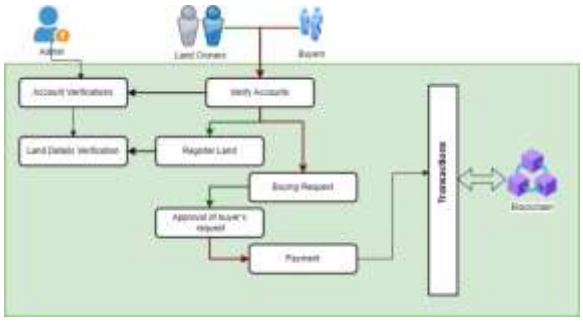
contracts are deployed using distributed servers like the Ethereal public block chain server. Due to decentralization, no single entity manages these contracts; instead, they are dispersed throughout a common database shared by many systems. As a result, they need to have control over the information. In other words, it's almost impossible to hack.

Advantages:

- Excellent transparency
- Enhanced safety
- True accountability
- Cost savings

VI IMPLEMENTATION



Admin

Login

Verify Accounts

Land details verification

Land Owners

Signup

Login

Register Land

Approve Buyer' request

View payment details

Buyers

Signup

Login

View registered land details

VII RESULTS

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VIII CONCLUSION

We successfully provide a solution to our existing problem we suggest a solution that takes advantage of the concept of smart contracts, which is a self-consensus code contained in blockchain technology. This eliminates the need for third parties and streamlines the registration process. Smart contracts are deployed using distributed servers like the Ethereum public blockchain server. This code outlines the regulations that all parties participating in the land registration process must follow. Due to decentralization, no single entity manages these contracts; instead, they are dispersed throughout a common database shared by many systems. As a result, they need to have control over the information. In other words, it's almost impossible to hack.

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