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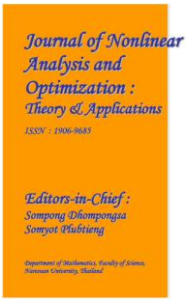

DATA SECURITY OVER BLOCK CHAIN TECHNOLOGY FOR REGISTERED PROPERTY AND TRANSACTIONS

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ABSTRACT

Nowadays, a lot of business is done every day including things like land. Traditional database systems serve as the foundation of the vast majority of these transactions. The database is susceptible because it is a centralised system. Since the data in database systems is changeable, the records can be changed. A better option might be to construct a property register utilising a block chain technology. The block chain contains immutable data. A block chain transaction cannot be changed once it has occurred. The immutability of a block chain network increases the security of the transactions. Without the assistance of a reliable third party, a block chain ensures the security and fidelity of a data record.

Key Words: Block chain, Property, Immutable, Secure and Transaction.

1. INTRODUCTION

"Property registry and transaction utilising Block chain" is the title of this paper. Property registration requires a variety of information, including ownership, property specifics, property size, etc. Property transactions are now carried out utilising the conventional database techniques. The fact that the data can be changed makes traditional database systems insecure as well. It leads to fraudulent activity, illicit activities, etc.[4]. Given that block chain networks' records are immutable; they are the ideal solution to this issue. Unlike databases where the data can be changed or destroyed, we can only read and write the data. There can be no involvement of dependable third parties because the block chain is a decentralised, peer-to-peer network. This project's goal is to provide a platform where anyone may use block chain technology to conduct property-related transactions.

Present paper is intended to explore the potential that the block chain system has in the area of property transactions. It is intended to explore the immutability, security of the records and how a block chain system performs in this field. There are many approaches have been made to automate the property registry data maintenance in order to eliminate the process of keeping bookish records or on paper. Initially databases are used to store this huge data. But it is not efficient in terms of data security as the data contents can be breached easily and poorly maintained data bases can lead to data tampering.

2. LITERATURE SURVEY

2.1 EXISTING PROPERTY TRANSACTIONS SYSTEMS.

In current times the properties like land and other entities are being sold and the transactions are being made using conventional database systems where the records present in one central server and maintained by a single administrative entity[1]. The payments involving in transaction may be traditional paper based currency or can be digital payments involving internet banking. The payment

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transaction can also involve third party commercial organizations like Paypal, Amazon , Google, etc but the commission these organizations charge for every bulk transaction is high[2].

2.2 BLOCKCHAIN AND CRYPTOCURRENCIES

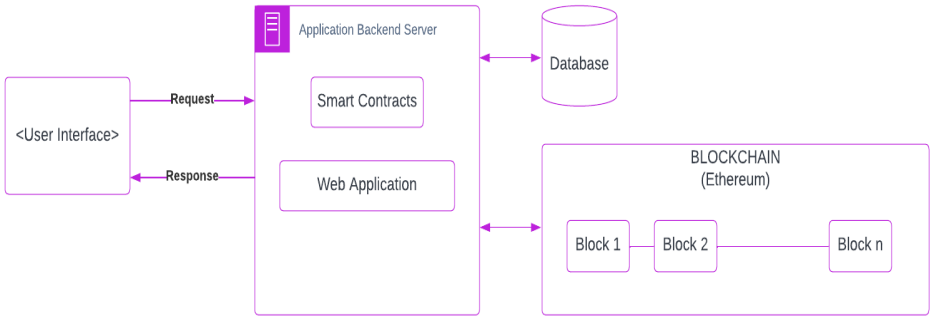
Over the years the Blockchain evolved as center for digital payments since the evolution of cryptocurrencies[3]. This has created a system where the transactions are made without involvement of any third party entity or governing body. As a relatively new technology, blockchain is designed to achieve realtime peer-to-peer operation,decentralization, transparency, anonymity, integrity and irreversibility in a widely applicable manner. However, there are still challenges vulnerabilities and vulnerabilities related to this technology that should not be neglected. Performance can be on of its limitation. The verification of every transaction requires the acknowledgement of every node in the network, which substantially will take more time than the centralized system.

3. PROPOSED METHODOLOGY

3.1 PROPOSED SYSTEM

In the Proposed System, to solve the existing problems and issues with the current system, we implemented a software platform where anyone can register themselves and can sell or buy their lands which are connected through a blockchain network. The proposed system includes user registration, which can be done by providing the public key of their wallet for blockchain transactions. User must provide their details along with their Aadhaar card or social security card or any kind of identity proof. Users can upload their lands and their related documents and proceed with selling. They can buy land by exploring different lands in the land gallery. The transactions happen through blockchain.

3.1.1 ARCHITECTURE



The proposed system architecture has the following components.

User interface: This is where the user interacts with the platform. This is where users add, sell and buy properties on the platform. They will use their metamask wallet or their wallets private key to login to platform.

Smart Contracts: These are conditions for a transaction to occur in a blockchain. These are written in solidity and deployed in Ethereum network.

Web Application: This component handles the server side logic that acts as an mediator between user interface, blockchain and database.

Database: Database is used to store metadata and other required data.

Blockchain: The blockchain here is ethereum and we will make API calls to blockchain to make a transaction happen or to get transaction details.

3.2 TECHNOLOGY AND TOOLS USED TO BUILD PROPOSED SYSTEM

Technologies used for Development : HTML5, CSS3, Java Script ES6, Flutter 3.0.1, Node.js 12, Solidity 0.6.0 or above.

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HTML: It is standard mark up language used to design document and display in web. HTML stands for Hyper Text Markup Language

CSS: Its a styling language used to describe the style of the documents that were written in mark up languages like HTML.

Java Script: Java Script is a programming language used to develop webpages, servers. Majority of the client side websites are written in javascript.

Flutter: It is an opensource UI software. Flutter uses to hybrid model to design UI for android, IOS, websites, etc using a single codebase.

Node js: Node.js is an open-source, cross-platform, back-end JavaScript runtime environment that runs on the V8 engine and executes JavaScript code outside a web browser.

Solidity: Solidity is an object-oriented programming language for implementing smart contracts on various blockchain platforms, most notably, Ethereum.Programs in Solidity run on Ethereum Virtual Machine.

Tools used for Development : Truffle 5.5, Ganache 7.2, Metamask 10.12 .

Truffle: Truffle is a development environment, testing framework and asset pipeline for Ethereum. With Truffle, you get: Built-in smart contract compilation, linking, deployment and binary management.

Ganache: Ganache is a personal blockchain for rapid Ethereum and Corda distributed application development. You can use Ganache across the entire development cycle; enabling you to develop, deploy, and test your dApps in a safe and deterministic environment.

Metamask: MetaMask is a software cryptocurrency wallet used to interact with the Ethereum blockchain. It allows users to access their Ethereum wallet through a browser extension or mobile app, which can then be used to interact with decentralized applications.

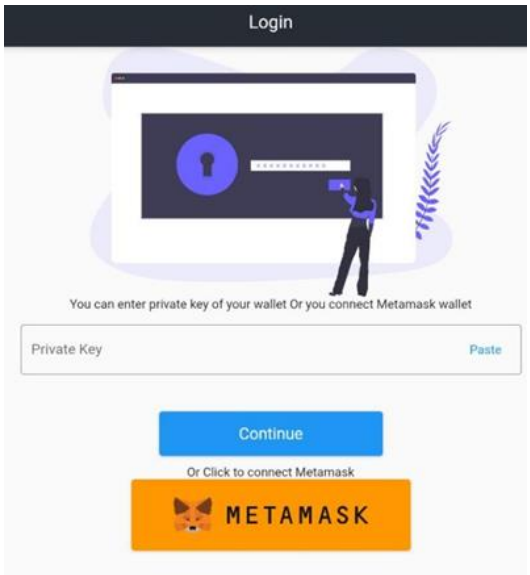
3.2.1 ETHEREUM BLOCKCHAIN AND WEB3

The proposed system is built using the ethereum blockchain which is an opensource blockchain used to build enterprise level applications. To connect to ethereum blockchain web3 framework provides the required API's to interact with ethereum blockchain. We deploy smart contracts into ethereum blockchain network which are written in solidity.

4. RESULT

The following screenshots are the results of the platform tthat is built to serve the purpose of making land transaction using ethereum blockchain as a proof of concept to the proposed system.

4.1 Login



4.2 User Registration

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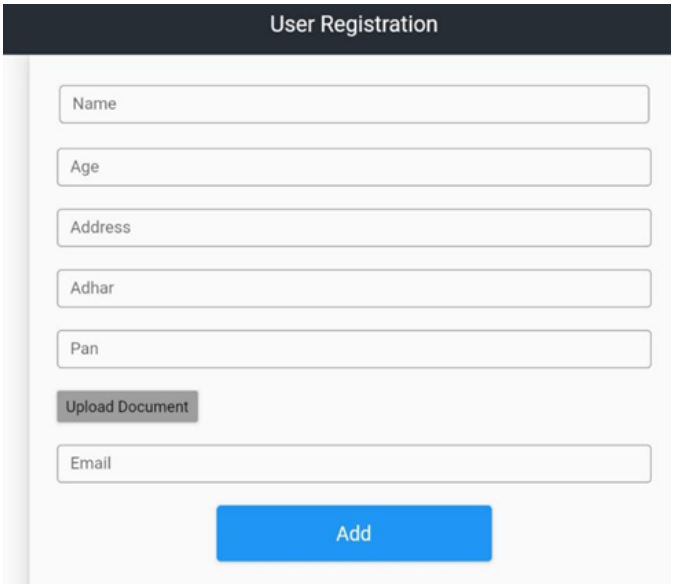
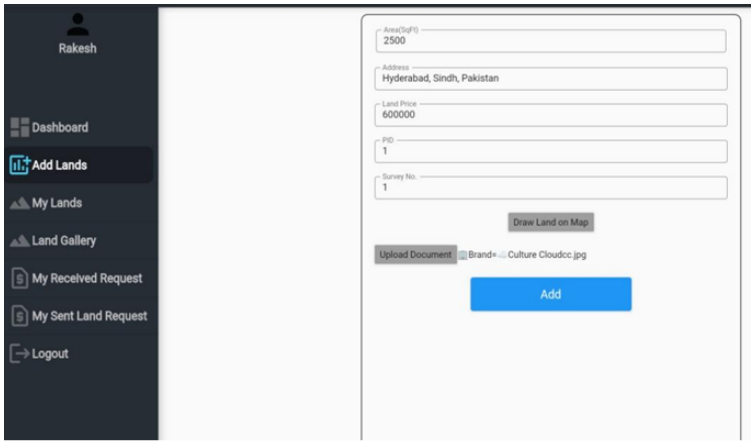
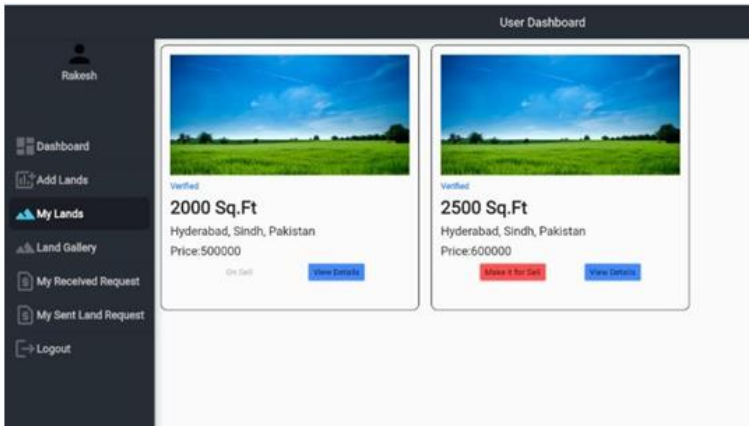


4.3 Adding Lands



4.4 Land Gallery



4.5 Payment

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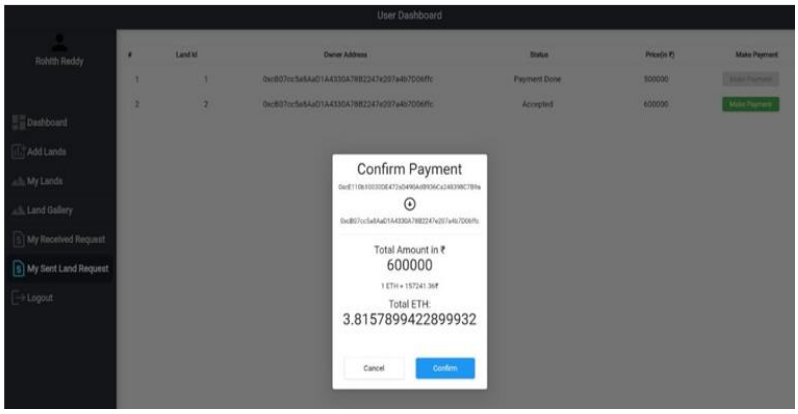

CONCLUSION

Following the completion of the proposed project, users will be able to post information about the land they wish to sell or purchase from other users who have contributed it to the platform. All land purchases, sales, uploads, and other transactions take place on the Ethereum Blockchain, which was used for this project's objectives. The properties are still owned by their original owners.

FUTURE ENHANCEMENTS

The platform is developed as a proof of concept to demonstrate the usage of Land as property and their transaction in a blockchain network. This can be further enhanced and upgraded for any other property related transactions. The major flaw of using a blockchain is the transaction speed is very low compared to databases. The concept of blockchain is in its seed state. There will be rapid growth in the future and this potential can be used for this project.

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