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CONSTRUCTION OF A BLOCKCHAIN WEB 3.0 DAPP WITH NFT'S USING SMART CONTRACT

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Abstract - *In Today's world breaches of modern technology can happen at any time at any place by a fraudster. To overcome this fraud and insecure activities, We use the so-called Technology Blockchain. For instance, An unknown identity or a group of unknown organizations can claim the protected data or properties of an individual one. To overcome such situations implementing Blockchain Technology which could avoid fraud or identity theft, Misuse of data, and illegal activities. The main focus of this project is to implement a digital assets (NFT) platform to protect data by using DAPP Web 3.0 Smart Contract. NFTs (Non Fungible Tokens) are unique cryptographic tokens that exist on a blockchain and cannot be replicated. Blockchain technology can be pretty complicated and easy at the same time because we are dealing with the securing of digital assets, the complication part here is to ensure look into the unauthorized accessibility from unknown sources and fraudsters trying to steal the data that are in the form of digital assets. Tokenizing these real-world tangible assets makes buying, selling, and trading them more efficient while reducing the probability of fraud. The main motive for selecting Blockchain as the main medium is because is not much implemented in India, most of the transactions happening in India are done through the typical and traditional way of doing a transaction which is through a bank or a server which may sometimes experience a malfunction. To overcome such flaws we go for blockchain and NFTs. So we have taken it as an initiative to achieve a secured technology for customers and stored it in a secured Ledger.*

Key Words: Blockchain, Non-Fungible Tokens, Buy and Sell, Transaction, Marketplace, Digital Assets.

INTRODUCTION

A blockchain is a distributed, peer-to-peer database that hosts a continuously growing number of transactions. Each transaction, referred to as a "block," is secured through cryptography, timestamped, and validated by every authorized member of the database using consensus algorithms (i.e., a set of rules). A transaction that is not validated by all members of the database is not added to the database. Every transaction is attached to the previous transaction in sequential order, creating a chain of transactions (or blocks). A transaction cannot be deleted or edited, thereby creating an immutable audit trial. A transaction can only be changed by adding another transaction to the chain.

EXISTING SYSTEM

In the traditional marketplace, intermediaries such as brokers, agents, and other third-party service providers play a crucial role in facilitating transactions between buyers and sellers. They help to bring buyers and sellers together, negotiate the terms of the transaction, provide advice and guidance, and ensure that the transaction is completed smoothly. However, there are still situations where intermediaries may be necessary, such as for complex transactions or in cases where legal and regulatory compliance is required. In these situations, intermediaries can still play an important role in facilitating transactions and ensuring that they are completed in a compliant and secure manner.

1. PROPOSED SYSTEM

Digital assets platforms that use DAPP Web 3.0 Smart Contract technology offer several advantages, including enhanced security, efficiency, and transparency. Non-fungible tokens (NFTs) are unique cryptographic tokens that provide an additional layer of security to digital assets. They are ideal for representing physical assets such as real estate, art, and other tangible items on a blockchain. By tokenizing physical assets, buyers and sellers can efficiently transfer ownership without the need for intermediaries. This streamlined process reduces the likelihood of fraud and ensures that the transaction is secure and transparent. In India, blockchain technology is still in its infancy, and there are several challenges in implementing it. However, by taking the initiative to implement a secure digital asset platform using blockchain technology, you are paving the

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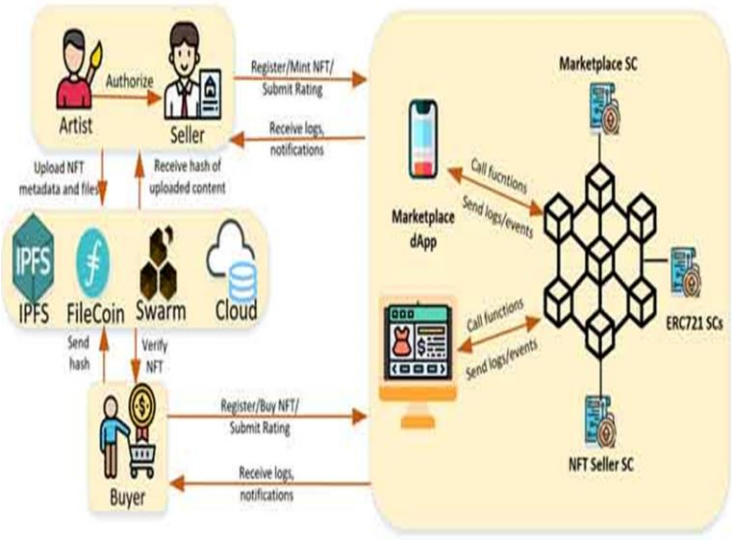
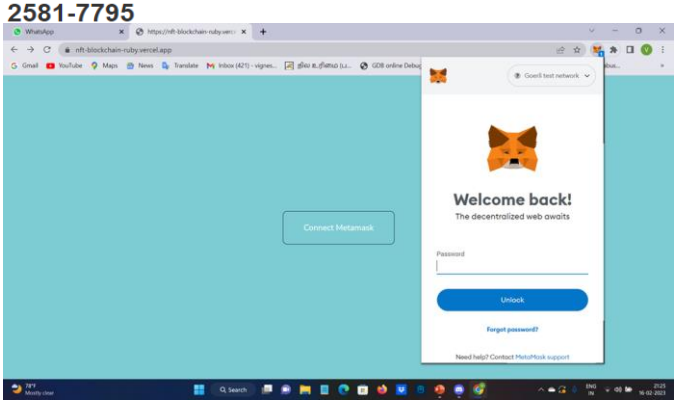
way for future innovation and growth in the field. By storing data in a secure ledger, you are ensuring that it is tamper-proof and cannot be altered without permission. This is especially important in industries such as finance, healthcare, and government, where security and privacy are paramount. In conclusion, implementing a digital asset platform using blockchain technology and NFTs is an innovative and forward-thinking approach. By providing a secure and efficient platform for buying, selling, and trading assets, you are creating a safer and more transparent environment for your customers.

ARCHITECTURE DIAGRAM

1.1 E-WALLET SETUP

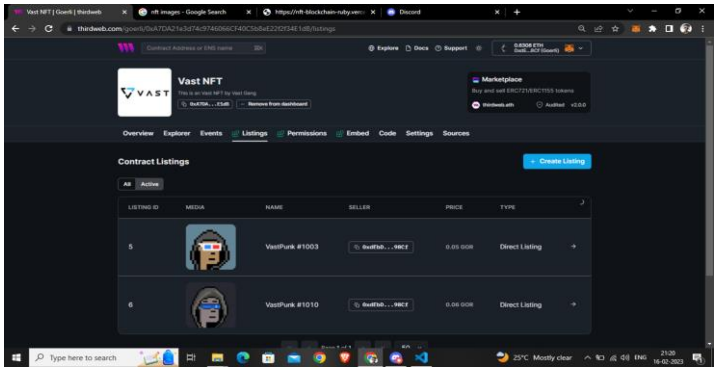


The setting up of an e-wallet is a very simple process and has to be done individually in order to connect your wallet to the dapp to continue with transactions. First of all, the wallet we prefer or suggest is metamask, which is available for free in the chrome store and the extension can be added to your browser with a single click. Once the metamask is installed, agree to the terms and conditions and set up your account and update your e-wallet name. Now redirect to the dapp and click on the metamask via connect option, a pop-up will occur from the previously added extension. Using that sign into your account into dapp and once everything is set up, your username will start to reflect in the database, and you can go ahead with the transactions in a secure manner.

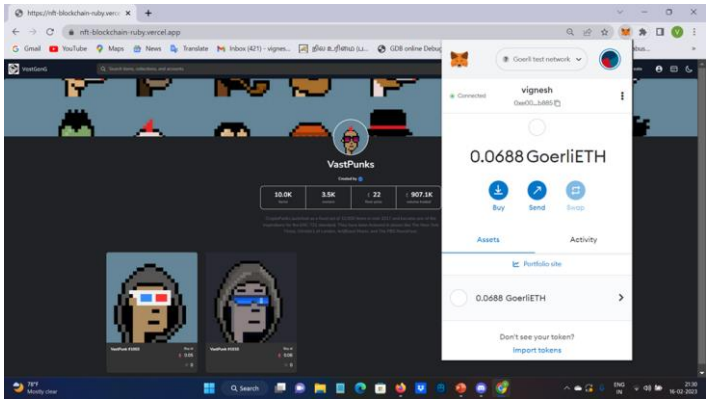


1.2 NFT LISTING MODULE

In this Module, User interface is created so that the data and the NFT to be sold or bought in the auction. This is like a graphical user interface where the user can interact with the web page easily and effectively. The main motive of this UI is



to be user-friendly and efficient, so we provide service with the utmost concern for our users. The creator can create their NFT and they can log in with their Metamask credentials.



1.3 TRANSACTION MODULE

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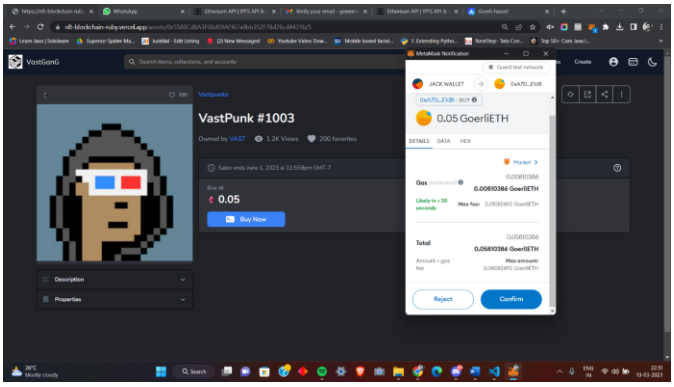
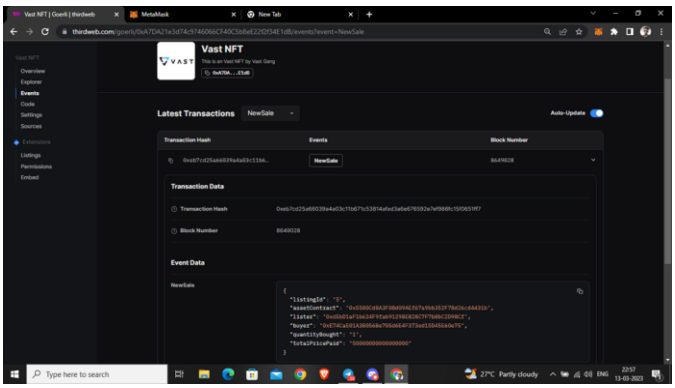
In this module, we will provide a service for customers to buy and sell their digital assets (Non-Fungible Tokens). Creator creates their NFTs and deploys their NFTs In our ThirdWeb framework. Every NFT which is being stored will get a unique contract address assigned to it. By using this the process will be protected and in a secure way Where no one can attack or change any of the details because all the details are transparent to everyone.



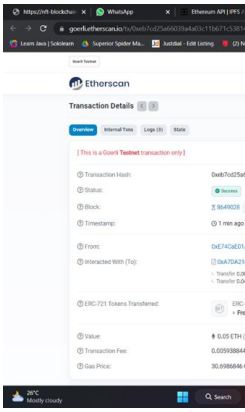
1.4 DEPLOY SMART CONTRACT

We will deploy the contract written in Solidity . Solidity is an object-oriented, high level language for implementing smart contracts. We will also be utilizing an Ethereum development environment which runs on Node.js that allows you to run Solidity locally. An interface that can issue NFT tokens. The implementation inherits ERC721, but some have their own implementations.



1.5 BILL AND PAYMENT

Ethereum blockchain solution streamlines P2P transactions by eliminating intermediaries, time, and money on legal fees and processing. Smart contracts settle the payments quickly. The record of all transactions in the network reduces the fund management and credit risks. The data immutability improves wholesale, retail, and cross-border payments with high reliability.



RELATED WORKS

a) Incorporating Registration, Reputation, and Incentivization Into the NFT Ecosystem, Haya R.Hasan, 2022

They use the decentralized storage of the InterPlanetary File System (IPFS) to store the NFTs' metadata, whereas their hash is stored on the chain. They present algorithms along with their implementation, testing, and validation details. We demonstrate how our solution, as well as smart contract code, is secure enough against common security threats and attacks. They make our smart contract code publicly available on the GitHub repository

b) SmartCon: A Blockchain-Based Framework for Smart Contracts and Transaction Management, Muhammad Muneeb, 2021

This paper presents a multi-organizational smart contract management system in which a user can create, deploy, and execute smart contracts. This paper consists of two parts; in the first part, we have compared existing smart contract management systems based on different characteristics that can play a vital role in selecting a particular system for a specific business need. In addition, each smart contract has some terms and clauses necessary for some event execution. Various components of the framework and their implementation have been described in detail with the help of relevant use-cases.

c) Ethereum Smart Contract Analysis Tools: A Systematic Review, Satpal Singh, 2022

Blockchains are immutable means if some transaction is deployed or recorded on the blockchain, it becomes unalterable. Thus, smart contracts must be analyzed to ensure zero security vulnerabilities or flaws before deploying the same on the blockchain because a single vulnerability can lead to the loss of millions. For analyzing the security vulnerabilities of smart contracts, various analysis tools have been developed to create safe and secure

smart contracts. This paper presents a systematic review on Ethereum smart contracts analysis tools.

d) Defining Smart Contract Defects on Ethereum

A Contract defect is an error, flaw, or fault in a smart contract that causes it to produce an incorrect or unexpected result, or to behave in unintended ways. The detection of contract defects is a method to avoid potential bugs and improve the design of existing code. Since smart contracts contain numerous distinctive features, such as the gas system. To validate if practitioners consider these contracts harmful, they created an online survey and received 138 responses from 32 different countries. Feedback showed these contract defects are harmful and
removing them would improve the quality and robustness of smart contracts

FUTURE GOALS

As of now, we have implemented a one on one digital exchange asset transactions in our marketplace, in future we would like to implement multiple sellers and buyers in our digital marketplace will provide more opportunities for customers to transact and interact with each other, leading to greater liquidity and NFT volumes. It will also increase the diversity of assets available for buying-selling and facilitate the development of a vibrant and active ecosystem for digital assets. To enable multiple sellers and buyers to do their digital transactions, we will need to expand the functionality of our marketplace to allow for multiple transactions to occur simultaneously. This can be achieved by implementing a peer-to-peer trading system that allows buyers and sellers to directly transact with each other without the need for intermediaries. To achieve this, we may need to upgrade your platform's infrastructure and introduce new features such as a more sophisticated order-matching engine, real-time trade execution, and multi-currency support. We may also need to implement new security measures to ensure that the transactions are secure and the assets are protected from theft or fraud. To encourage more sellers and buyers to use our marketplace, we will also need to develop a user-friendly interface that allows for easy navigation and streamlined transactions.

CONCLUSION

The main motive for selecting Blockchain as the main medium for digital transactions is to introduce a new, secure and efficient way of conducting transactions in India. Blockchain technology offers a decentralized and transparent ledger system that allows for secure and tamper-proof record keeping of transactions. By implementing blockchain technology, the project aims to address the challenges of security and privacy that are often associated with traditional digital transaction methods. Blockchain technology offers a high level of security and integrity by using cryptographic algorithms to ensure that transactions are secure and cannot be tampered with. The use of blockchain technology also enables the project to provide greater confidentiality to customers by allowing for the storage of transaction data in a secure and private manner. This ensures that customer data is not vulnerable to unauthorized access or theft. The ultimate objective of the project is to carry out digital transactions in an efficient, secure and transparent manner. By leveraging blockchain technology, the project aims to achieve this objective by providing a secure and reliable platform for digital transactions that is free from the limitations and risks associated with traditional digital transaction methods. Overall, the project seeks to create a more secure and efficient digital transaction ecosystem in India by leveraging the benefits of blockchain technology. It is a positive initiative that has the potential to transform the digital transaction landscape in India and enable the country to keep pace with the rapid advancements in digital technology across the world.

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