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Yield Farming Staking Dapp for Banking System

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ABSTRACT: Blockchain technology is considered as a significant development after the invention of the internet. Blockchain technology records the transactions on database which are encrypted and distributed over many computer networks like a digital ledger of online transactions.Blockchain is a tamper-proof digital ledger which can be used to record public or private peer to peer network transactions, and it cannot be altered retroactively without the alteration of all subsequent blocks of the network. A blockchain is updated via the consensus protocol that ensures a linear, unambiguous ordering of transactions. Blocks guarantee the integrity and consistency of the blockchain across a network of distributed nodes. Different blockchain applications use various consensus protocols for their working.This technology can be utilized in the banking system to develop a decentralized online depositing and withdrawing. Banking system presently facing many unique challenges like security, transparency, and trust, efficiency, etc. These challenges can be answered by the implementation of blockchain technology in the banking system.This project is an attempt for using blockchain technology in the banking system.Blockchain applications are used for various aspects of banking like deposit, withdraw, Security, Supply chain, Work automation with Smart contract, Ethical practices for transparency in banking transactions.This System deals with all the drawbacks of the existing system and increases the security and trans parity in the payment process.

KEYWORDS:Blockchain ·Ethereum ·Ethers · Banking System ·Smart Contracts

I. INTRODUCTION

In recent years, the concept of decentralized banking has gained significant attention and recognition. At the heart of this transformative approach lies a revolutionary technology known as blockchain. The decentralized banking system is built upon a public ledger, ensuring the secure and transparent storage of data, impervious to tampering.

Blockchain, a distributed database, serves as the foundation for numerous applications, with Bitcoin being one of the most prominent examples. Back in 2008, Satoshi Nakamoto introduced Bitcoin through a paper titled "Bitcoin: a peer-to-peer electronic currency system," which brought the idea into the mainstream consciousness. Transactions within the blockchain are recorded in immutable digital ledgers that are distributed across network nodes. Blockchain finds applications beyond cryptocurrencies, with examples ranging from land asset management to supply chain systems.

In the world of blockchain, trust is established through cryptographic proofs that validate transactions among network nodes. Each node's transaction is verified through digital signatures, eliminating the need for centralized control or authority to oversee and track data. These interconnected nodes collectively form a decentralized network, where data is propagated and shared globally. Every node possesses a copy of the data, making it tamper-proof and visible to all validating nodes. Miners play a crucial role in the system, as they verify and store transactions in blocks. To verify transactions, miners solve complex cryptographic puzzles and are rewarded for their contributions.

Beyond Bitcoin, another notable player in the decentralized banking space is Ethereum. Ethereum's decentralized applications (Dapps) resemble traditional centralized programs, consisting of a back-end powered by smart contracts (which encapsulate the logic) and a front-end powered by web3 (enabling the visual interface).

As decentralized banking systems continue to evolve, they hold the potential to revolutionize traditional financial systems by offering increased transparency, security, and autonomy. With the foundations laid by blockchain

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technology, we stand on the cusp of a new era in banking, one that empowers individuals and communities alike through decentralized control and trust.

II. RELATED WORK

Blockchain, the underlying technology behind Bitcoin, is an emerging technology in industry. Blockchain has thepower to reform the existing business processes more democratic,transparent, secure, and efficient. Banking industries are the firstmovers that capitalize the disruptive potential of this technology.The Indian banking system is one of the complex bank paymentsystem in this world. The current infrastructure that is used by Indian bank system is real time gross settlement system basedand it follows a centralized architecture. Due to this centralizedarchitecture the processing of transactions are slow and cumbersome. It also causes large amount for security and recoverypurposes. The real time gross settlement based system demandshigh need for security, resilience, and performance. Moving fromtraditional system to blockchain platform is not the prior concernbut making a system that provide security, confidentiality, anddecentralized money lending mechanism is the core idea. Hereproposed a novel system that enable a decentralized Bankingsystem and services based on Ethereum blockchain platform.The system support different services including money deposit,money transfer and loan checking etc. using the distributedledger technology.

II. ETHEREUM, A PLATFORM FOR BLOCKCHAIN TECHNOLOGY

The blockchain enables developers to create a variety of Dapp's on a variety of platforms. We'll use the Ethereum platform to create a decentralized application.One of the most essential platforms for executing arbitrary code on Ethereum projects. The distributed infrastructure may be able to finish many sorts of projects on Ethereum with the aid of smart contracts. Ethereum enables us to create decentralized and fault-tolerant apps by eliminating intermediates and ensuring that all network nodes are transparent. Ethereum, which may be used as a cryptocurrency, can be used to produce a new tradable token. Tokens a standard API are used by wallets that are compatible with the Ethereum blockchain. To create a blockchain-based organization, the nodes must be members of the network and the limits must be agreed upon. Only when all of the limitations are met will smart contracts execute the contracts automatically. Before diving into Ethereum, it's important to understand the basics. Now we'll study a little more about the Blockchain - Ethereum platform and how it works. The client, server, and Ethereum nodes are all discussed in the architectural diagram. Where the customer must have an ether wallet with specific amounts of ethers in order to sell or acquire the required items. The front end is made up of JavaScript files that communicate with the network's other nodes. Next.js and React.js are the two frameworks. The truffle server hosts the truffle process, which serves as a smart contract development framework. The Ethereum nodes that make up the main network are being used as a public network for contract development. Ganache is used to store ether.

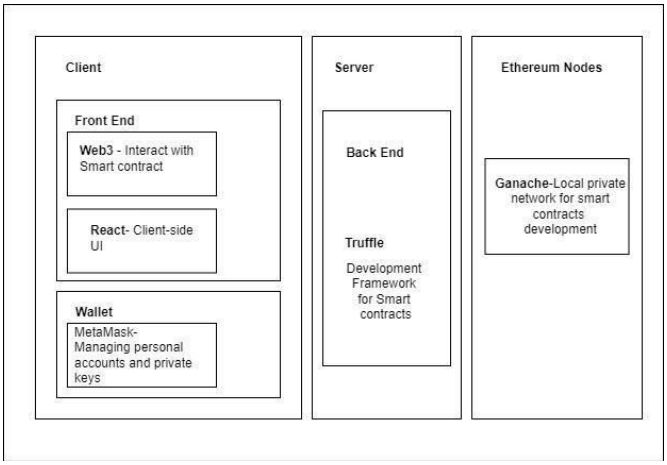

Figure1:Architecture

2.1 Ethereum Virtual Machine (EVM): Ethereum virtual machines are given by the Ethereum platform, which executes instructions utilizing the distributed network's nodes. The machine manages all of the node's information,

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including its location, balance, current gas price, and block information. It is written in a variety of computer languages, including C++, Java, JavaScript, Python, Solidity, Node.js [6], and others. Anyone on the network may use this to run code that is guaranteed and predictable.

2.2.Gas: Miners on the Ethereum blockchain process smart contracts, which results in the introduction of a new block to the Ethereum blockchain.The miners are rewarded for their work through smart contracts on the Ethereum virtual computer, which demand certain payments known as GAS.The quantity of gas that the miners would need was calculated in their smart contracts. If the smart contract becomes more intricate, the gas fee will rise as well.

2.3.Solidity language: Ethereum uses the Solidity language to create smart contracts . On top of the Ethereum virtual computer, a programming language has been built.Solidity's major goal is to store all of the states of the tokens that are sent and received by the nodes. Programmers who are familiar with JavaScript, C++, and Python will have little trouble understanding the Solidity language.If you're familiar with the Solidity programming language, writing a program for an Ethereum smart contract should be simple.

2.4.Algorithm: The newly formed blocks in the blockchain are appended to the preceding block. It is included in the work proofing process.The hash value of each block is created during the addition process, and that hash value becomes the value for the following block. For instance, the hash value of block 3 will be used in block 4, and the hash value of block 4 will be used in block 5, and so on. If one of the nodes tries to edit or modify any of the data in the block, the hash value for that node will be updated, and the data will be updated as well.

Proof of Work (POW): If we wish to add a new block or edit an existing block, we must validate it in the public blockchain; otherwise, we will be unable to add or modify data in the blockchain network.

III. PROPOSED ALGORITHM

1) **Create a blockchain:** A decentralized banking system can be built on top of a blockchain, which is a distributed ledger technology that enables secure and transparent transactions without the need for a central authority.
2) **Generate addresses:** Users can create a public and private key pair to generate a unique address on the blockchain. This address can be used to receive and send funds.
3) **Verify transactions:** Each transaction on the blockchain is verified and validated by multiple nodes in the network using consensus mechanisms such as proof of work or proof of stake.
4) **Store transaction data:**All transaction data is stored on the blockchain, ensuring transparency and immutability.
5) **Access to funds:** Users can access their funds using their private key, which ensures that only they have control over their funds.

IV. PSEUDO CODE

```
pragma solidity ^0.8.0;

contract DecentralizedBank {
mapping(address =>uint) balances;
   function deposit() public payable {
      balances[msg.sender] += msg.value;
   }
   function withdraw(uint amount) public {
      require(balances[msg.sender] >= amount, "Insufficient balance");
     balances[msg.sender] -= amount;
      payable(msg.sender).transfer(amount);
   }
   function balance() public view returns (uint) {
      return balances[msg.sender];
```

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```
    }
}
```

V. SIMULATION RESULTS

Login :- User selects a particular account from the Metamask wallet interface and logs in into its respective account.Once a user has successfully registered, they should be able to log in to the site using their credentials. The login process involves verifying the user's credentials against the system's stored user data. If the user enters incorrect credentials, the system should display an error message explaining the issue.

Deposit Approval:- This provide approval for depositing money into users account.When the user initiates a deposit transaction, the deposit module handles the process. The module prompts the user to enter the amount they want to deposit and then verifies the transaction to ensure it's valid. The verification process includes checking that the user has sufficient funds to complete the transaction and that the transaction meets any other necessary requirements, such as a minimum or maximum deposit limit.

Withdraw:- User can withdraw money form his metamask account.When the user initiates a withdrawal transaction, the withdraw module handles the process. The verification process includes checking that the user has sufficient funds to complete the transaction and that the transaction meets any other necessary requirements, such as a minimum or maximum withdrawal limit.

Transaction:-The transactions made by a user will be displayed in the transactions block of the Ganache server.

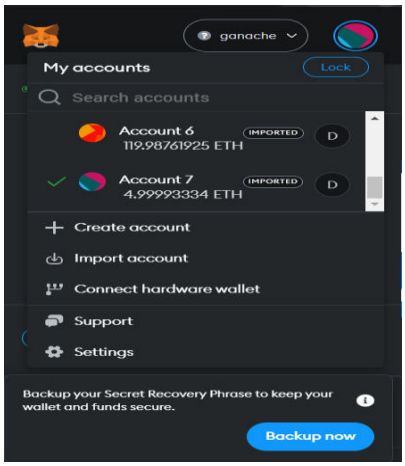

Fig.1.User Account Login

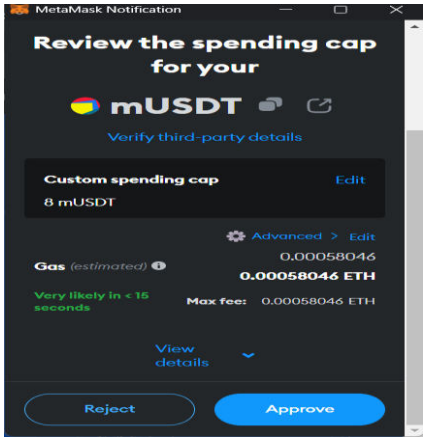

Fig. 2. Deposit Approval

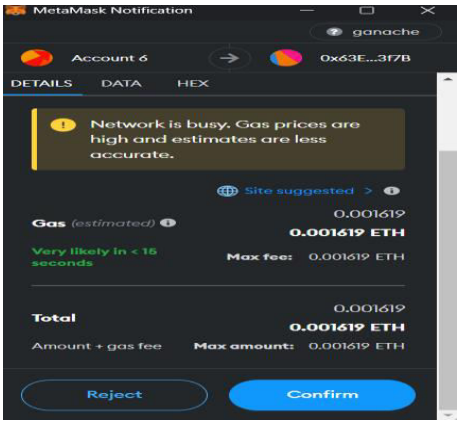

Fig. 3. Withdraw Tokens

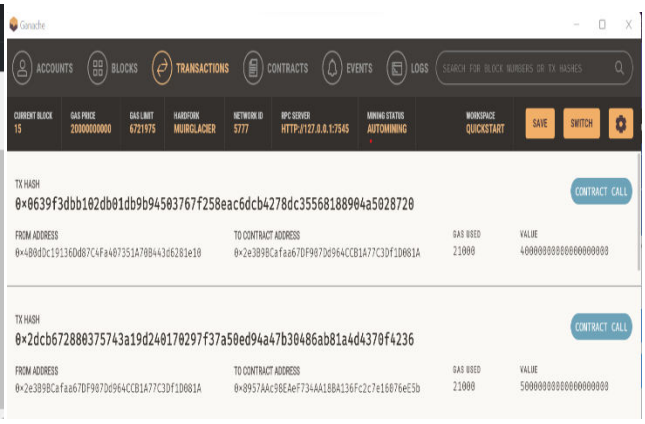

Fig 4. Transaction history along with hash keys

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VI. CONCLUSION AND FUTURE WORK

By this project we are proposing smart contract based decentralized banking system.Deposit and withdraw in this proposed system will be done using Ethereum (ETH)Smart contracts will be used which will be made using solidity.For front-end design React will be used.This proposed system will solve a lot of drawbacks which is present in the current traditional banking system including insecurity of users data.

The facilities of getting a loan from the proposed banking system may be implemented and hence, will be included in the near future.In the current System airdrop activates when user tries to deposit more than 50 token in future we will adopt a methodology to restrict the user transactions when the airdrop starts.

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