

Decentralized Token on Ethereum Blockchain

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Abstract –

The main benefit of this system is that it solves the biggest problem of the monetary system that is the depreciating nature of it. The value of currency is decreasing every year due the overprinting of the traditional currency as it is centralized therefore so the policy makers decide how much to print but with this project this problem is solved as the given token has fixed supply so it can be made more hence it wouldn't depreciate and therefore create a system which would help the society by controlling the inflation of various products. In this project, I have created the backend using smart contracts on the Ethereum blockchain. For the frontend, I used the Remix. The project covers basic operations - creating a token and linking into the blockchain using Web3 Ethereum wallets, transferring token from one account to another. I used Solidity programming language to write the smart contracts and wrote tests in JavaScript. To deploy and test the project, I used Truffle, Metamask and Ganache. It gives a basic idea of how Decentralized Token work in a real-time environment along with its various function.

Key Words: Blockchain, Ethereum, Decentralized, Token, Dapp, Smart Contract.

INTRODUCTION

An unknown person/group behind Bitcoin, Satoshi Nakamoto, described how distributed blockchain technology, a peer-to-peer link-structure, was used to maintain the order of transactions and solve the double-spend problem. can be avoided (Nakamoto, 2008). Bitcoin orders transactions and groups them into a finite-sized structure called blocks that share the same timestamp. The nodes (miners) of the network are responsible for interconnecting blocks in chronological order, with each block containing the hash of the previous block to form the blockchain (Crossbitel., 2016). Thus, the blockchain structure manages to include a huge and auditable registry of all transactions. As the title suggests, the token will be used as alternative to the fiat currency and further increasing the security,

privacy and solving the issues in the modern monetary system. In future the token can also be used for various

other purposes such as, in a pre-build system this token can be integrated easily and providing various functionalities such as rewards, payment etc.

Need of the Study-

Fiat currencies, known as paper money or government-issued money, have always been the primary means for any monetary transaction around the world. This legal tender is not backed by any commodity such as gold and other precious metals but is instead reliant on its issuing government's economic and financial stability. Since fiat money is printed, issued, and distributed by the central banks, the government regulates its circulation and value. However, as it is considered the dominant player in every country's monetary system, a vast number of people trust and are confident using it for any financial transactions. There are a lot of benefits of using cryptocurrency, over traditional fiat currencies.

This includes having a decentralized system, privacy and security for users, and fast and cheap transactions, among others. To overcome the issues such as the depreciating nature of fiat currency this project has been taken up.

Scope of the Study

Ethereum is an open source, decentralized blockchain with smart contract functionality. The native cryptocurrency token of the Ethereum platform is Ether (ETH). It is the second largest cryptocurrency by market capitalization. We aim to develop a simple token with all the necessary functionalities and use the Solidity smart contract for the Ethereum blockchain. The project will serve as a foundation for understanding how tokens can be created, deployed, and eventually published.

(Example: - Creating a DApp to exchange our tokens with Ether) can be combined and a fully decentralized crypto exchange can be generated from this project.

Objective of the Study-

To further demonstrate the use of tokens as an alternative to fiat currency, increasing security, privacy and resolving issues in the modern monetary system. In the future the token may also be used for various other purposes, such as in pre-creation System This token can be easily integrated and can provide various functionalities such as rewards, payments etc.

Methodology-

Blockchain provides a way to establish trust in a decentralized trust less network. Ethereum is a blockchain that supports the Turing complete programming language for developing smart contracts.

The design of this project is divided into five phases as described below:

1. Token Design: Outlines the key features and characteristics of the token architecture.
2. Token Building: Creation of Tokens based on the attributes and its characteristics
3. Token Testing- Testing the token and its various features using Chai.
4. Token Deployment: Deploying the token on the test network.
5. Token Publishing – Publishing and listing a token created on the blockchain network an exchange.

I have used Solidity to write smart contracts on Ethereum to deploy decentralized social networks. The tests are written in JavaScript. I used Remix, Ganache (personal blockchain), Truffle (development suite) and . have also used

Metamask (Ethereum Web 3 Wallet).

TERMINOLOGY

Blockchain

A blockchain can be explained as a public database that is updated and shared across multiple computers in a network. "Block" means that data and state are stored in sequential batches or "blocks". "Chain" implies that each block cryptographically refers to its parent. The data in one block cannot be changed without changing all subsequent blocks, which would require the consent

of the entire network. Each new block and chain must be agreed upon by each node in the network as a whole. This is because everyone has the same data. For this to work, the blockchain needs a consensus mechanism. Proof-of-Work and Proof-of-Stake are two widely used consensus algorithms.

Ethereum

Ethereum is an open source, decentralized blockchain Contains smart contract functionality. Ether (ETH) is Ethereum's native cryptocurrency token Decentralized platform. Ethereum is the second largest. Is Cryptocurrencies in the world. it is most popular Blockchain platform in the world. it was proposed late 2013 by cryptocurrency researcher and programmer Named Vitalik Buterin. development of Ethereum was funded by a crowd-sale that took place between July and August 2014. The system went live on 30 July 2015. The Ethereum Virtual Machine (EVM) is a decentralized Replication virtual machine, which can execute Turing-Complete the script and run the decentralized application.

Ethereum has been used for several initial coin offerings (ICOs) and is also used in decentralized finance. It is currently being actively developed and plans to implement a series of upgrades called Ethereum 2.0 with the proposed transition to a proof-of-stake consensus mechanism with specifications and transaction throughput using sharding technology. includes growth.

Dapps

Traditionally, participants do not write new code each time a computation is requested on the Ethereum Virtual Machine (EVM). Instead, application developers upload reusable snippets of code, also called programs, to EVM storage, and then users request these code snippets to be executed with mixed parameters. Programs uploaded and executed on the network are called smart contracts or decentralized apps (dApps). Thus, any developer can create a dapp and make it public to the network, using the blockchain as its data layer, for a fee paid to the network. Any user can then call the dApp to execute their code again for a fee paid to the network.

Smart Contracts

A smart contract is a transaction protocol or a computer program whose purpose is to automatically execute, control or document legally relevant events and actions in accordance with the terms of a contract or agreement. Using smart contracts, developers can build and deploy arbitrarily complex user-facing apps and services: marketplaces, games, financial services, etc.

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IMPLEMENTATION

For this project, I used truffle (development suite), Ganache (personal development blockchain), Metamask (Ethereum Web3 Wallet), VSCode. i made smart Contracts in Solidity on the Ethereum Blockchain. Together, Smart contracts work as a basic decentralized token. The following tasks have been implemented in the project.

TotalSupply: This function allows enumerating and returning an instance of the contract The total amount of tokens in circulation.
BalanceOff: This function allows a smart contract to

store and return balancesThe provided address function accepts an address as a parameter, so it must be known that the remainder of any address is public. Approve: When calling this function, the contract owner authorizes, or approves,The address given to withdraw token instances from the owner's address. Transfer: This function allows the owner of the contract to send a certain amount of tokens Just like traditional cryptocurrency transactions to another address. TransferFrom: This function allows a smart contract to automate the transfer process And send a certain amount of tokens on behalf of the owner. The first smart contract was named "command.sol". And the name of the token is "ashtar". The test and deployment code was written in JavaScript. Tests can also be written in Solidity. , To use functions, we Using Remix has to select Metamask Wallet. It will integrate Metamask Ethereum Wallet with Remix and we will see the unique public address of the wallet and in the upper right corner of the web Page. This means that we have successfully logged in.

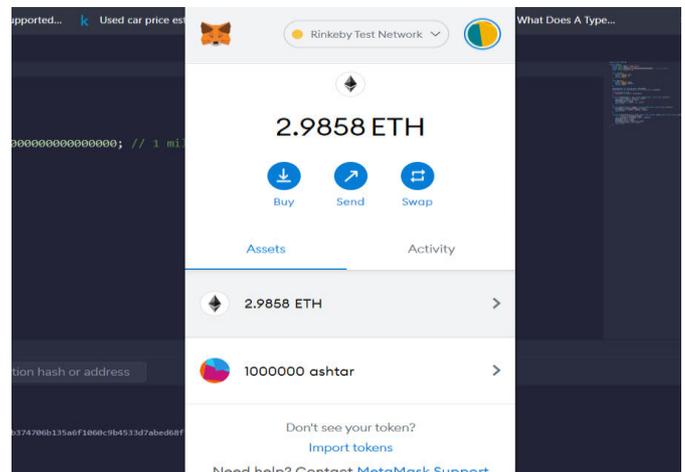
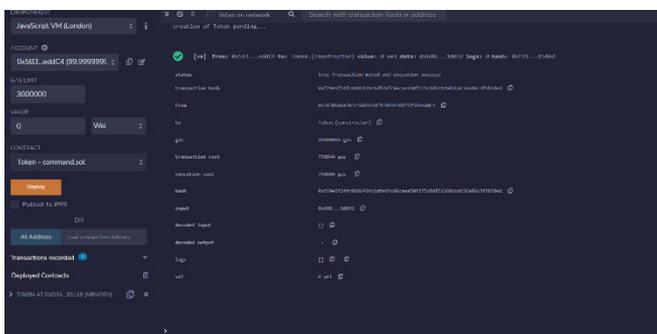


Fig 2: Connecting Token with Metamask

EXPERIMENTAL RESULTS

Fig 1: Deploying smart contract

Fig 3: AshTar token in wallet

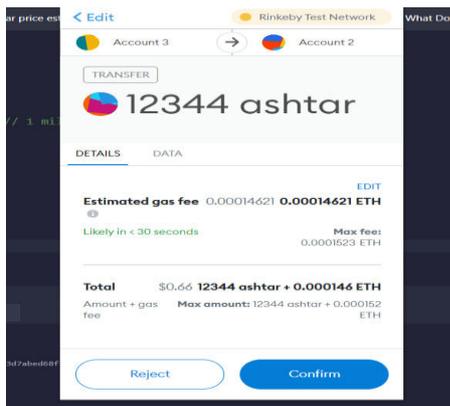
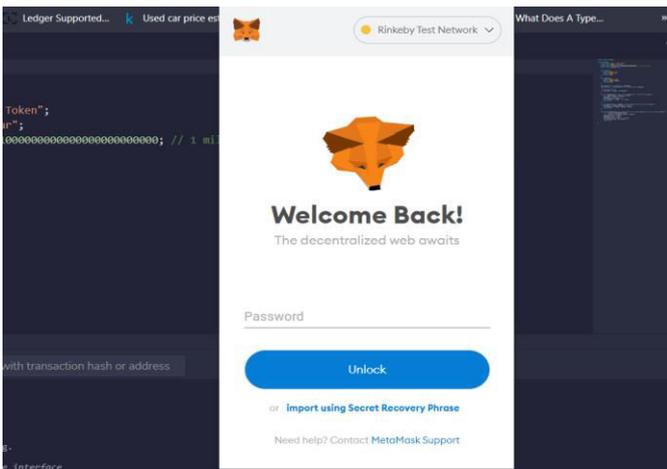


Fig 4: Transferring Token to another account



CONCLUSIONS & FUTURE SCOPE

By working on this project, I learned a lot about Blockchain, Ethereum and how it works. In addition, I received Valuable Experience in Integrating Ethereum Blockchain I learned a lot by creating tokens

About writing, performing smart contracts Cryptocurrency Trading, Solidity Programming Language and Remix. Our goal is to develop a simple token with all the necessary functionalities and for the Ethereum blockchain using the Solidity smart contract. The project will serve as a foundation for understanding how tokens can be created, deployed and eventually published. Later, advanced features (Example:- Creating a DApp to exchange our tokens with Ether) can be linked and a fully decentralized crypto exchange can be generated from this project.

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