A Decentralized Web Application on Token Exchange

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Abstract*— Blockchain technology is being used in many areas, during last few years. Furthermore, different application opportunities have still been investigated. Blockchain relies on and permits to implement the concept of Decentralized Application (DApps). This makes the applications more transparent, distributed, and flexible. The complexity of blockchain and its integration problems require expertise that differs from traditional application development approaches. Within this context, this paper presents us experience in building a DApp with one of the most popular blockchain based platforms called Moralis.

Keywords*— Blockchain, Decentralized Application, Next.js,
Moralis platform, Web3

I. INTRODUCTION

Recently, blockchain has been gaining interest from both industry and researchers. The concept of blockchain was first introduced by Satoshi Nakamoto in 2008. Blockchain's first field of application has been lash coins. After the implementation of smart contracts, blockchain applications are now being implemented in all areas.

As more and more companies and developers try to discover new business models by using the blockchain infrastructure, decentralized applications and smart contracts are becoming more and more on the agenda. A large amount of data was generated with the use of DApp. There are also some difficulties in creating an application based on the Blockchain platform. Many different development environment options are offered separately on the internet. In this paper, we aim to provide our experience to newcomers who plan to develop applications with Moralis Server and Web3 Development Platform.

In the ever-growing world, where several transactions need the approval of a third party vendor or can only be done in their presence is becoming a slowing factor in these negotiations. In blockchain, there is no need for a central authority to approve of these transactions or execute the operations. Blockchain is a peer to peer based network which is run by all the nodes that are participating. Because of this, not only we have a zero trust network but also all the structural information is kept within the blockchain network. The devices connected to the network are called nodes and they keep a copy of the blockchain and all the transaction history in the form of a distributed ledger. To make a transaction on the blockchain, a node must have some incentive for the other nodes to trust this node. This incentive can be in the form of the blockchain's money; Ether gas in the case of Ethereum blockchain. The gas value is required to execute, publish, or make transactions on the Ethereum blockchain. Ethereum blockchain consists of smart contracts which reside in the data logic layer of the blockchain. Nodes can read other smart contracts and can read and execute them. Each smart contract needs to have a maximum cost of execution which lets the fellow nodes the know how much gas is required to execute the smart contract so that it gets uploaded to the network and be available to every other node.

This type of power offered by blockchain is very suitable in various important government level or high security projects such as e-Voting, Bank Transfer and Token Transfer. In Token Transfer token is a virtual currency token or a denomination of a cryptocurrency. It represents a tradable asset or utility that resides on its own blockchain and allows the holder to use it for investment or economic purposes.

II. DESIGN CONSIDEARTION AND MOTIVATION

Modern web applications are based on an infrastructure in which single point of failure naturally exist. DApps aims to alleviate these issues by distributing critical components that store data or parts of infrastructure between various peers or nodes. That's why, when designing DApp, security, cost, usability features should be taken into consideration.

Our motivation here is to provide a platform for people where they can completely trust the system, carry out the transactions, not just for the people who will use this benefit them also the newcomers who are willing to learn how to build a decentralised web application. There are several methods to build a DApp and we have used one of them using Next.js , Moralis Platform and Chakra UI. You will learn basic knowledge to use Moralis SDK & API to work on any kind of decentralised application you want without any complexity related to the Web3. Also learn some basic styling with Chakra UI.

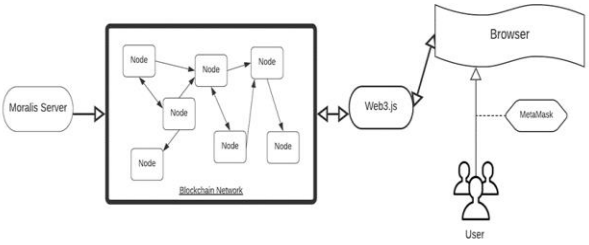
III. LITERATURE REVIEW

Cryptocurrency, an encrypted, peer-to-peer network is a technology developed fourteen years ago. Bitcoin, the first

and most popular cryptocurrency, is technology to long standing and unchanged financial payment systems that have been in place for many decades. Cryptocurrencies may revolutionize digital trade markets by creating a free flowing trading system without fees.

Blockchain technology was adopted to develop several information systems. There are many opportunities of utilization of blockchain technology. Cryptocurrencies gain trust in users by publicly disclosing the full creation and transaction history. The current web 2.0 is about connecting people. In which the social media platforms were invented. There are different approaches to think about web 3.0. To think in different direction about the future web development called the decentralized web.

IV. BLOCK DIAGRAM



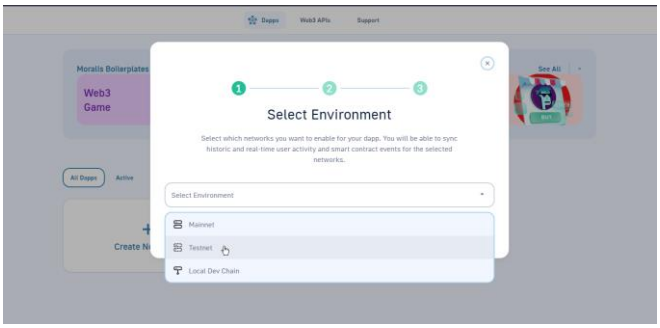
V. SOFTWARE REQUIREMENTS

- Visual Studio
- Moralis Server
- MetaMask Wallet
- Tokens

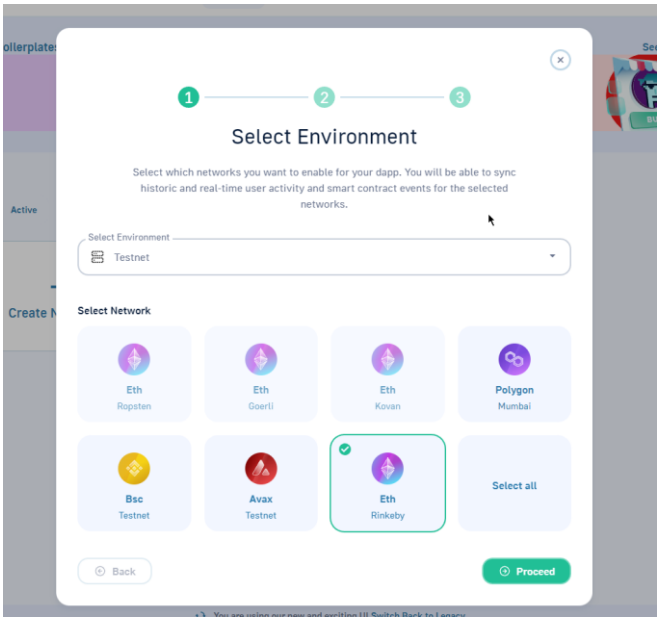
VI. IMPLEMENTATION

For implementation, Next.js and chakra-UI is used as it is one of the widely used and open source platforms for developing and deploying web applications. Moralis Server is used for all Web3 functionality inside the Next.js Application. They are the firebase for the Web3 Applications as they have been used by various Web3 communities and developers.

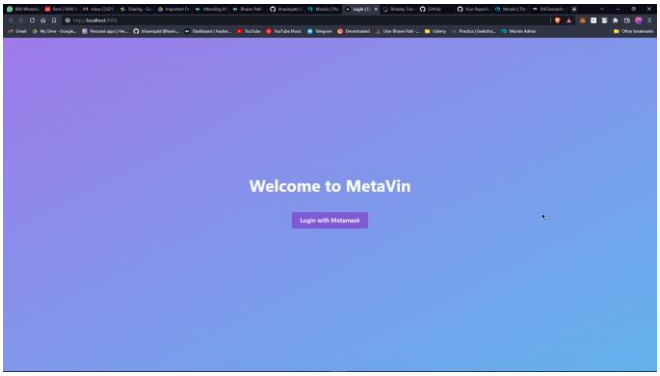
Firstly, we have set up the Moralis Server for the web3 application. This will provide us all the require dependencies and plugins for the web3 applications.



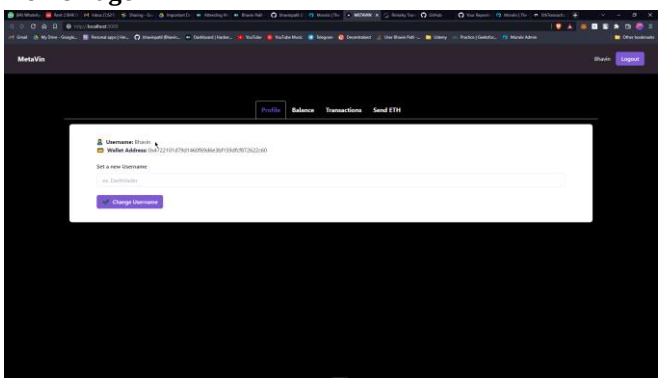
As this web3 application is in developer mode, so we have used testnet for the environment of application. For the network we have used Rinkeby Ethereum Testnet. Also, we must select the region for the server.



Index Page

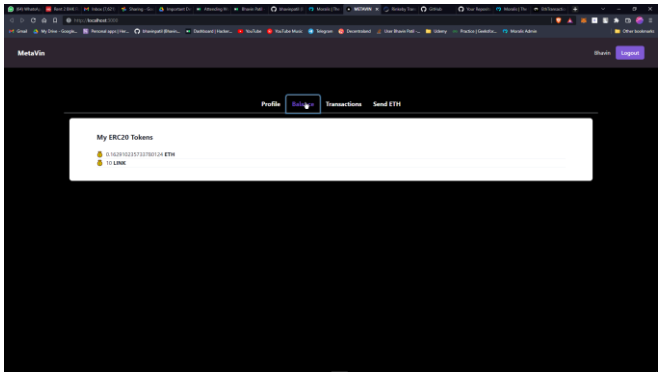


Home Page



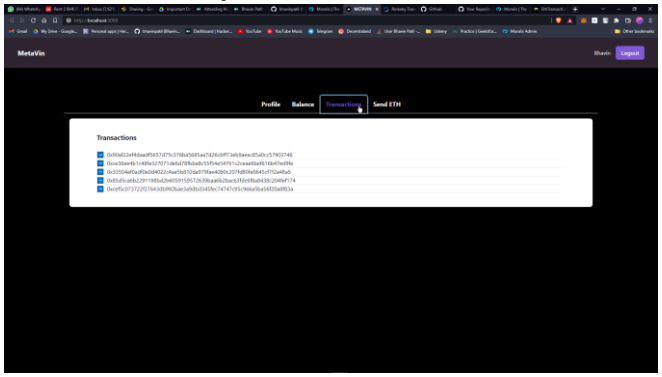
In the home page, we can see the wallet address which will be fetched from metamask wallet and also the name for the user. User can change his/her name anytime.

Balance Tab



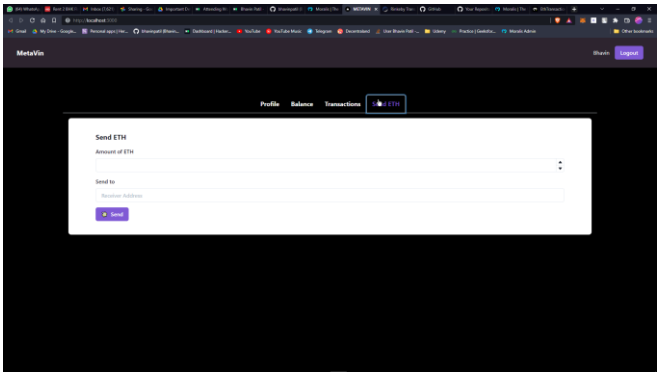
Balance tab shows the ERC20 tokens which are owned by the user.

Transaction History Tab



In this tab, user can see the transaction addresses of the transaction which he has done. Clicking on this address , user will be redirected to the etherscan website we show every detail about that transactions

Ethereum Token Transfer Tab



In the current application, there's only one token we can transfer now which is Ethereum and it will be done by web3Transfer module.

VII. Conclusions and Future Work

Upcoming trends such as blockchain use many new technologies that are not known or are quite difficult to be understood by the large masses without some strong technical background. This project aims to lift this notion by simply demonstrating and making it self-explanatory on how different things in blockchain work and look like, for example transferring of crypto, checking current balance, etc. All with a simple and easy to understand user interface.

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