Available online at http://www.advancedscientificjournal.com
http://www.krishmapublication.com
IJMASRI, Vol. 1, issue 10, pp. 340 - 345, Dec. -2021
https://doi.org/10.53633/ijmasri.2021.1.10.015

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY ADVANCED SCIENTIFIC RESEARCH AND INNOVATION (IJMASRI)

ISSN: 2582-9130 **IBI IMPACT FACTOR 1.5** **DOI: 10.53633/IJMASRI**

RESEARCH ARTICLE

BLOCKCHAIN-BASED COMPETITION PLATFORM

Vaishnavi Gupta, .Amita Goel, Nidhi Sengar and Vashudha Bahl
Department of Information Technology, Maharaja Agrasen Institute Of Technology, Rohini, Delhi

Abstract

Blockchain is a distributed, digitized and consensus- based secure information storage mechanism. The present article provides an overview of using blockchain to create a secure and reliable voting system. The primary purpose of this is to make a simple and easier way to put up online contests which use voting. The methodology gives a glance at the features used in this. Following an introduction to the basic structure and features of the blockchain in relation to voting, we provide a conceptual description of the desired blockchain-based e-voting application. I have also implemented the application using Near blockchain using ReactJs and Typescript. The contract covers all the necessary function necessary for the voting system. This review aims to understand about the near blockchain technology which can be used to create decentralized apps.

Keywords: Blockchain, Dapps, Near Blockchain, ReactJs, Smart Contract

Introduction

In our common day to day life online contest were not so popular yet after the times have changed, we cannot say the same. The contests which are held online have become a small part of us like a leisure activity in our free time. While participating in these contests, we all want that the system to vote is a secure and fair one.

The goal of my project is to make an easier system for the writing contest which can avoid fraudulent votes for the contest. Blockchain Technology has features which are yet to be explored and are being researched.

Even though many may believe that e voting system may not be a safe one. Blockchain ensures a "smart contract" which allows users to have more security. The transaction records ensure that there is no duplicity.

A system for online contest which can reduce the fraudulent votes as well ensure the security of the platform will solve the problem .It will aim to encourage online contests which are held in more secure and transparent manner.

The objective of this project is to see that we can create a new voting system for online contests which can reduce the fraud and encourage people to participate more in this activities

- It allows people to have an easier and a secure voting method
- It allows helps in expanding the knowledge of blockchain in real time applications
- It aims to gives an opportunity to encourage online contests in an easier way and allow the users to easily organize and participate in such activities.

Terminology

Blockchain

A blockchain can be described as a public database that is updated and shared across many computers in a network. "Block" means that data and state is stored in sequential batches or "blocks". "Chain" means that each block cryptographically references its parent. A block's data can't be altered without altering all subsequent blocks, which would require the consensus of the entire network. Each new block and the chain must be agreed upon as a whole by every node in the network. This is so everyone has the same data. For it to work, blockchains need a consensus mechanism. Proof-of-Work and Proof-of-Stake are the two widely used consensus algorithms.

DApps

Conventionally, participants don't write new code every time they want to request a computation on the Ethereum Virtual Machine (EVM). Rather, application developers upload reusable snippets of code, also called programs, into EVM storage, and when users make requests for the execution of these code snippets with assorted parameters. The programs uploaded to and executed by the network are called smart contracts or decentralized apps (Dapps). Thus, any developer can create a dapps 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 dapps to execute its code, again for a fee paid to the network.

Smart Contracts

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

ReactJs

React is a declarative, efficient, and flexible JavaScript library for building user interfaces. ReactJS is an open-source, component-based front-end library responsible only for the view layer of the application.ReactJs also has many different operations which makes it easier to use.

Near Blockchain

NEAR Protocol is the product of two brilliant minds: Alexander Skidanov and Illia Polosukhin. The pair met in 2018 thanks to the famous Y Combinator startup accelerator program. For those unfamiliar, Y Combinator is responsible for kickstarting some of the largest projects in tech and crypto including Coinbase, Dropbox, Airbnb, Filecoin, and even Reddit.

NEAR is a cryptocurrency native to the NEAR blockchain. It is used for staking by validator nodes and delegators on the network. Although block rewards for validators and delegators come from a 5% annual inflation rate, NEAR tokens are burned to pay for network fees.

Implementation

The project has been implemented with the help of React Js and Near Blockchain. I also designed the front end and the logo with the help of the Figma website. For this project, I worked on Visual Studio Ide and for the smart contract, I used

typescript to establish a smart contract with near blockchain. I also implemented React router for this project.

In this project, I have made various methods that allowed me to run the project smoothly. I made a form that allowed anyone to create a poll for themselves and show it on the homepage. The homepage links directly to the place where we have to put our votes. The polling station shows the no. of votes that have been given to the user.

Once the user has voted, the vote button is disabled so that only one vote is limited to each user for that poll. In this I have also created a function in the contract to record all the users who have voted for that poll so that they cannot vote again. This gives an assurance that there is no fraudulent voting taking place

Code for the contract

```
import { logging, PersistentMap } from 'near-sdk-as'

const CandidateURL=new PersistentMap<string,string>("CandidateURL");

const CandidatePair=new PersistentMap<string,string[]>("CandidatePair");

const PromptArray=new PersistentMap<string,string[]>("array of prompts");

const VoteArray=new PersistentMap<string,i32[]>("stores votes");

const UserParticipation=new PersistentMap<string,string[]>("stores user records");


//View Methods

//Does not change state of blockchain

//does not incur a fee

//Pulls and reads information from the blockchain

export function getUrl(name:string):string{
  if(CandidateURL.getSome(name)){
    return CandidateURL.getSome(name);
  }
  else{
    logging.log('cant find that user');
    return '';
  }
}


export function didParticipate(prompt:string,user:string):bool{
  if(UserParticipation.contains(prompt)){
    let getArray=UserParticipation.getSome(prompt);
    return getArray.includes(user);
  }
  else{
    logging.log("prompt not found")
    return false;
  }
}


export function getAllPrompt():string[]{
  if(PromptArray.contains('AllArrays')){
    return PromptArray.getSome('AllArrays');
  }
  else{
    logging.log('no prompt found');
    return [];
  }
}


export function getVotes(prompt:string):i32[]{
  if(VoteArray.contains(prompt)){
    return VoteArray.getSome("AllArrays");
  }
```

```
    else{
      logging.log('prompt not found for this vote');
      return []
    }
  }
  export function getCandidatePair(prompt:string):string[]{
    if(CandidatePair.contains(prompt)){
     return CandidatePair.getSome(prompt);
    }
    else{
      logging.log('prompt not found ');
      return []
    }
    }
  //Change Methods
  //Change state of blockchain
  //Costs a transaction fee to do so
  //adds or modifies information to a blockchain
  Export functionaddUrl(name:string,url:string):void{
    CandidateURL.set(name,url);
    logging.log('added url for'+ name);
  }
  export function addCandidatePair(prompt:string,name1:string,name2:string):void{
    CandidatePair.set(prompt,[name1,name2]);
  }

  export function addToPromptArray(prompt:string):void{
    logging.log('added to prompt array');
    if(PromptArray.contains('AllArrays')){
      let tempArray=PromptArray.getSome("AllArrays");
      tempArray.push(prompt);
    }
    else{
      PromptArray.set('AllArrays',[prompt])
    }
  }
  export function addVote(prompt:string,index:i32):void{
    if(VoteArray.contains(prompt)){
      let tempArray=VoteArray.getSome(prompt);
      let tempVal= tempArray[index];
      let newVal= tempVal+1;
      tempArray[index] =newVal;
      VoteArray.set(prompt,tempArray)
    }
    else{
      let newArray=[0,0];
      newArray[index]=1;
      VoteArray.set(prompt,newArray);
    }
  }
  export function recordUser(prompt:string,user:string):void{
    if(UserParticipation.contains(prompt)){
      let tempArray=UserParticipation.getSome(prompt);
      tempArray.push(user);
      UserParticipation.set(prompt,tempArray);
    }
    else{
      UserParticipation.set(prompt,[user])
    }
  }
```

Result

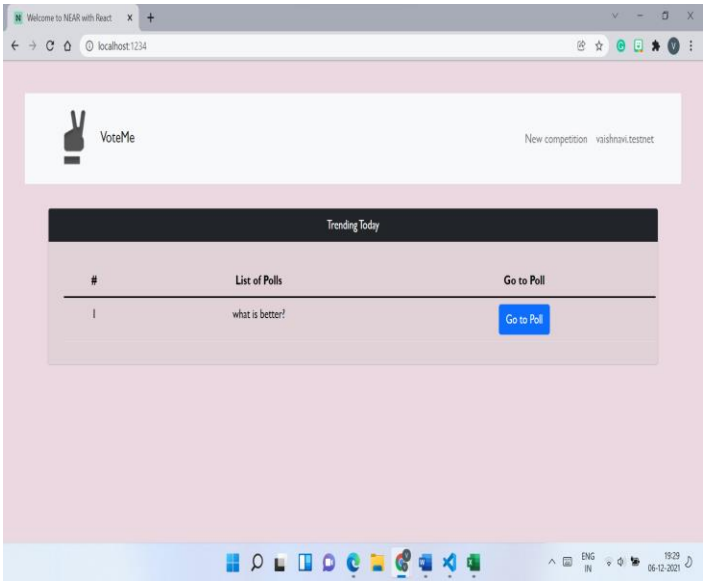

Fig. 1. The above image shows the homepage of the competition app.

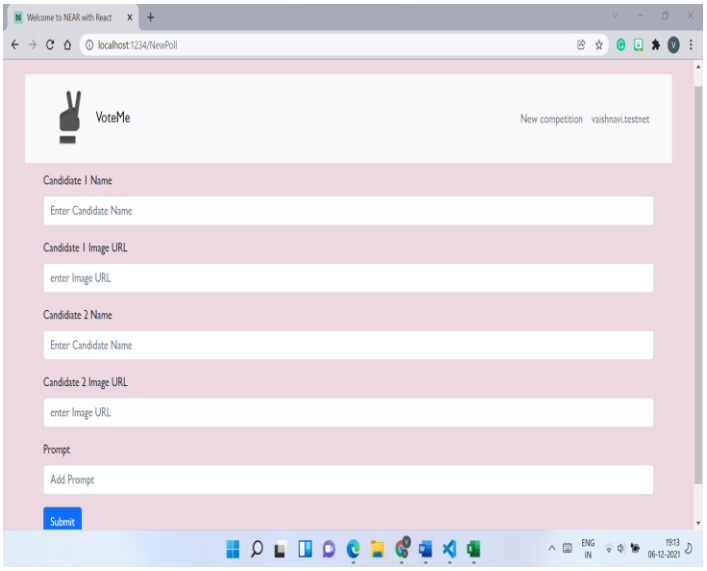

Fig. 2. The above image shows how a new poll can be created for it to be displayed on the homepage

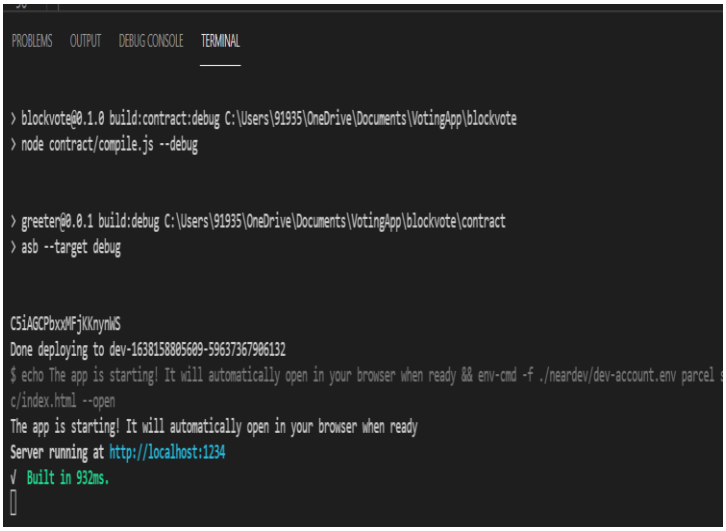

Fig. 3. The above figure shows the successfully running terminal for the given project

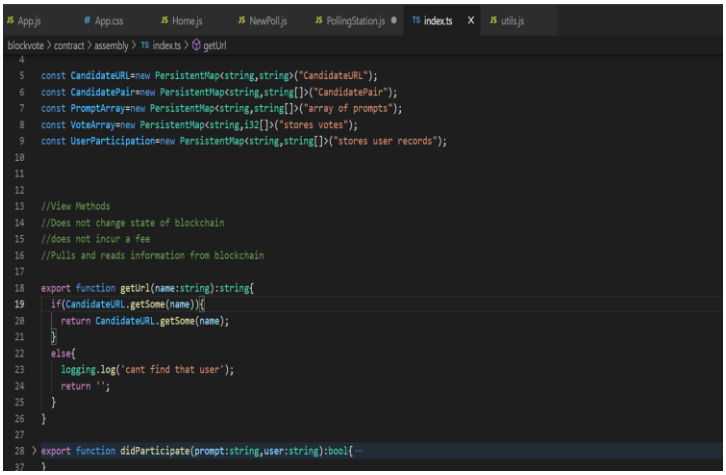

Fig. 4. The above figure shows some snippets of the code for the project

Conclusion

Blockchain is a technology that is rapidly gaining momentum in the era of industry 4.0. With high security and transparency provisions, it is being widely used in supply chain management systems, healthcare, payments, business, IoT, voting systems, etc.

This project allowed me to undertand this technology to expand my knowledge further in this field. This project helped me to understand the greater need for security and development in or

voting system. It also helped me in learning how to create Dapps using near blockchain.

Online contests have been held throughout the covid 19 situation to put our minds at ease. Through this project, I believe that it would be easier to organize as well as participate in these contests.

In conclusion, I would also like to thank my teacher who encouraged me in this project and helped me in choosing this topic.

Acknowledgment

I am highly indebted to Ms. Nidhi Sengar,Ms.Vasudha Bahl and Ms. Amita Goel for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project. I would like to express my gratitude towards my parents & member of Near organization for their kind co-operation and encouragement which help me in completion of this project.

Reference

1. https://www.pluralsight.com/resource-center/guides/javascript-and-blockchain
2. https://www.geeksforgeeks.org/decentralized-voting-system-using-blockchain/
3. https://core.ac.uk/download/pdf/155779036.pdf
4. https://www.google.co.in/webhp?tab=rw&authuser=0
5. https://www.youtube.com/watch?v=Law7wfdg_ls&t=0s
6. https://scrimba.com/learn/learnreact
7. https://wallet.testnet.near.org/
8. https://skemman.is/bitstream/1946/31161/1/Research-Paper-BBEVS.pdf

******