PROJECT REPORT ON

PREVENTION OF VOTER FRAUD USING BLOCKCHAIN TECHNOLOGY

Submitted in partial fulfillment of the requirements

of the degree of bachelor's in engineering

by

DHANANJAY DESAI	BE-5 25
VATSAL DOSHI	BE-5 30
SALONI MEHTA	BE-5 42

Under the guidance of

MS. SMITA BANSOD

DEPARTMENT OF INFORMATION TECHNOLOGY

SHAH & ANCHOR KUTCHHI ENGINEERING COLLEGE

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Certificate

This is to certify that the report of the project entitled

"Prevention of voter fraud using blockchain technology"

is a bonafide work of

DHANANJAY DESAI	BE-5 25
VATSAL DOSHI	BE-5 30
SALONI MEHTA	BE-5 42

submitted to the

UNIVERSITY OF MUMBAI

during semester VIII in partial fulfilment of the requirement for the award of the degree of

BACHELOR OF ENGINEERING

in

INFORMATION TECHNOLOGY

Smita

(Ms. Smita Bansod)
Guide

Signature valid
Digitally signed by SWATI SUNIL NADKARNI
Date: 2022.05.05 14:06:36 +05:30
Reason: Approved
Location: Mumbai

(Ms. Swati Nadkarni)
Head of Department

Signature valid
Digitally signed by BHAVESH VALJI PATEL
Date: 2022.05.07 12:35:31 +05:30

(Dr. Bhavesh Patel)
Principal

Approval for Project Report for B. E. semester VIII

This project report entitled *"**Prevention of voter fraud using blockchain technology**"* by ***Dhananjay Desai, Vatsal Doshi, Saloni Mehta*** is approved for semester VIII in partial fulfilment of the requirement for the award of the degree of Bachelor of Engineering.

Guide:

1. Smita

Examiners:

1. _____

2. _____

Date:

Place: Mumbai

DECLARATION

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Dhananjay Desai (BE5-25) Dhananjay

Vatsal Doshi (BE5-30) Vatsal

Saloni Mehta (BE5-42) Slm

Date: 30/04/2022

Attendance Certificate (from college)

To,
The Principal
Shah and Anchor Kutchhi Engineering College,
Chembur, Mumbai-88.

Subject: <u>Confirmation of Attendance</u>

Respected Sir,
This is to certify that Final year (BE) students
DHANANJAY DESAI BE5-25
VATSAL DOSHI BE5-30
SALONI MEHTA BE5-42

have duly attended the sessions on the day allotted to them during the period from 07/01/2022 to 30/04/2022 forperforming the Project titled "PREVENTION OF VOTER FRAUD USING BLOCKCHAIN TECHNOLOGY".

They were punctual and regular in their attendance. Following is the detailed record of the student's attendance.

Attendance Record:

Date	Dhananjay Desai	Vatsal Doshi	Saloni Mehta
14/01/2022	Present	Present	Present
21/01/2022	Present	Present	Present
28/01/2022	Present	Present	Present
04/02/2022	Present	Present	Present
11/02/2022	Present	Present	Present
18/02/2022	Present	Present	Present
04/03/2022	Present	Present	Present
11/03/2022	Present	Present	Present
18/03/2022	Present	Present	Present
25/03/2022	Present	Present	Present
01/04/2022	Present	Present	Present
06/04/2022	Present	Present	Present
18/04/2022	Present	Present	Present

Smita

Ms. Smita Bansod
(GUIDE)

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Abstract

As a technology, blockchain is quickly becoming unrivalled. In its most basic form, blockchain is a digital ledger. The technology draws its power from the peers — or nodes — on its network to verify, process, and record all transactions across the system. This ledger is never stored, but rather exists on the "chain" supported by millions of nodes simultaneously. Thanks to encryption and decentralization, blockchain's database of transactions is incorruptible, and each record is easily verifiable. The network cannot be taken down or influenced by a single party because it doesn't exist in one place. E-voting system using blockchain works as a step towards creating transparent environment for elections where the users will be able to cast their votes only once and will be able to view the total votes casted in real time without having permission to edit the same after elections get over. The working of blockchains will ensure the votes are maintained and the systems are not rigged by any third party. The secure electronic voting system uses blockchain which is a decentralized peer-to-peer transaction ledger. Every vote that is casted will be considered as an individual transaction. These votes will be counted and the result will then be announced. The result will be announced without knowing who voted for which party.

Chapter 1

INTRODUCTION

Chapter 1
Introduction

Voting is a way for a group, along with an assembly or an electorate, so one can make a collective choice or explicit an opinion generally following discussions, debates or election campaigns. Democracies elect holders of excessive workplace with the aid of using balloting. Residents of an area represented by an elected reliable are called "constituents", and those constituents who cast a ballot for his or her selected candidate are called "voters". There are distinctive structures for accumulating votes, at the same time as a few of the structures utilized in choice-making also can be used as electoral systems, any which cater for proportional illustration can only be utilized in elections. In smaller organizations, voting can occur in distinctive ways. Formally through ballot to elect others for instance inside a workplace, to elect participants of political institutions or to pick roles for others.

Informally balloting could occur as a spoken settlement or as a verbal gesture like a raised hand or electronically. Electronic voting is regularly seen as a tool for making the electoral system more efficient and for growing believes in its management. Properly implemented, e-voting solutions can boom the security of the ballot; accelerate the processing of outcomes and make voting easier. However, the demanding situations are considerable. If not cautiously deliberate and designed, e-voting can undermine the confidence in the complete electoral system. This coverage report outlines contextual elements which could have an effect on the fulfillment of e-voting solutions and highlights the significance of taking these completely under consideration before selecting to introduce new voting technologies.

Chapter 2

LITERATURE REVIEW

Chapter 2
Literature Review

- This report proposes associated justify an adequate security model and criteria to judge comprehensibility. It additionally describes a web ballot theme, pretty graspable Democracy, show that it satisfies the adequate security model which it's a lot of graspable than Pretty smart Democracy, presently the sole theme that additionally satisfies the planned security model. Scantegrity minimally impacts election procedures and is the first independent E2E verification mechanism that preserves optical scan as the underlying voting system and doesn't interfere with a manual recount.

- A recovery round to enable the election result to be announced if voters abort and also added a commitment round to ensure fairness. In addition, a computational security proof for ballot secrecy.

- STAR-Vote design may preferably be the next-generation electoral system for Travis County and maybe elsewhere.

Chapter 3

PROBLEM STATEMENT

Chapter 3
Problem Statement

We are trying to come up with a model that focuses on depicting the technical and analytical study of certain stocks along with an extent of algorithmic trading in them. The model will have a certain set of technical tools that will help the user to identify which points were suitable for buying/selling in the stock and what trend is followed. It will have a section of algorithmic trading and money market sentiment analysis that will project the status of that specific stock. Technical analysis of historical data of stocks will help the user to predict or analyze the direction or scope of the future of that particular stock.

Chapter 4

OBJECTIVES

Chapter 4

Objectives

1) Design a model that includes prediction of futuristic price and tweet sentiment analysis, that will help the user to make a comprehensive decision.

2) Including the real time data of the stocks and the tweets.

3) Design a system that is accurate and faster at the same time.

Chapter 5

PROJECT DETAILS

Chapter 5
Project Details

A.} Identification of Need

Identification of need is a procedure of figuring out what and how an end-user might anticipate a product to carry out after the deployment at production level. There're additionally nontechnical desires of an end-user or a business client which displays the users' perception of the product and now no longer the real technical workaround, however they're carefully associated with the technical want at times. By imposing a desires identity system, the organization facilitates to make sure the right allocation of belongings to distinct project inside the organization.

- **Identifying Problems**

Identifying capability issues before the start of a project can store the organization great quantities of time and money. Problem evaluation is one of the most critical stages of assignment making plans because this level enables to guide all next evaluation and decision-making. If the project does not develop beyond this level with answers that the organization can implement, the project must not move ahead in its contemporary form.

- **Observations**

The needs for a project are diagnosed after the organization makes observations about the project. Observations are frequently subjective and therefore a person with knowledge about the proposed project must assist to make observations. A proper observer can discover the needs of the project through answering key questions on the project. If the observations think about the challenge itself and the final results of the project, the observations must meet all of the needs of the project.

- **Gathering Information**

Observation and gathering facts represent two techniques. Observations highlight what's needed. On the opposite hand, gathering facts highlights the techniques had to execute the proposed project. Both observations and the actual gathering of facts must consist of remarks from the institution that in the end will enjoy the finished project.

- **Objectives and Opportunities**

Once the organization has analyzed the desires and diagnosed the objectives, the organization desires to allocate budget to capitalize the project. By efficiently figuring out the desires, an organization can start to allocate assets to pay for the project. Additionally, a business desires to consider the capacity future cash flow of the project. This lets in the business to research potential cost savings to reduce fees and maximize the performance of the project.

- **Existing System**

In India, earlier than 2004 there has been a report-based totally balloting system. This is known as Ballot Report system. Voters needed to visit polling sales space and solid their vote through marking on seal in the front of the image of a candidate for which they desired to solid their votes on ballot report. Results have been introduced through counting the votes. The most vote gainer was declared as winner. India has populace more than 120 crores, so the ballot report balloting isn't always plenty reliable, time consuming and really hard to count the vote and there also are issues like replacement of ballot report containers with duplicate, damage of ballot report, marking stamp seal for multiple candidates consequently there's a sturdy need to overcome those issues. In order to conquer those issues Electronic Voting Machines were introduced. EVM's are internationally called DRE's (Direct recording Electronic). EVM's are universally

utilized in India considering the fact that the overall elections of 2004, whilst ballots had been absolutely out of trend. They were utilized in all of the meeting polls and popular elections of 2009. By the use of EVM's, Votes are effectively recorded and there's no trouble in counting, scalability, accuracy, rapid assertion of results and robustness of system. Main Problem lies in authentication, the person that is vote casting might not be the valid man or woman. Other issues like taking pictures of sales space through political parties, casting of votes through underage people and fraud vote casting can also additionally occur. A man or woman is supplied with the voter id card as a proof of identity, issued by Indian Government. Lots of issues are found in voter id card like name misprinting, missing of name, no clean image on photo id card.

- **Proposed System**

Several researches have been done on the usage of computer technology to enhance elections. These researches inform about the risks of adopting electronic vote casting system, due to the software challenges, insider threats, community vulnerabilities, and the demanding situations of auditing. We've proposed to layout the present online vote casting device that is included with the Blockchain technology. The proposed device has the subsequent blessings compared to the present device: • Users' can vote from everywhere in the international till he own a citizenship of the country. • The vote casting is saved in the Blockchain which makes it tamper proof. • As there's no standing in queue for casting vote it'll keep numerous times and lessen the workload.

B.} Project Planning

Project Planning is the most crucial issue in growing an undertaking. Its units out the phases, activities and task needed to deliver a project. Initially, the project scope is described and an appropriate strategy for finishing the project is determined. Following this step, the intervals for the diverse tasks necessary to finish the work are indexed and grouped into a piece breakdown structure. Project planning is frequently used to arrange unique regions of a project, consisting of project plans, workloads and the control of groups and individuals. A project plan is a version of the system that the project group intends to follow to understand the project objectives. It brings together some of the crucial elements of this system consisting of its scope, timing and related risks.

C.} Project Scheduling

It requires us to comply with a few cautiously laid-out steps, in order, for the agenda to take shape. It is a prepared approach of offering in formation on whilst activities need to be started, how long activities are deliberate to be completed. There are fundamental principles for project scheduling, such as follows:

• Defined responsibilities

Every challenge that is scheduled is assigned to a particular crew member.

• Defined outcomes

Every challenge that is scheduled should have a described final result for software projects such as a work product.

• Define milestones

Every challenge or organization of responsibilities should be related to a project milestone. A milestone is performed whilst one or extra work products has been reviewed after which approved by the team leader.

Flowchart:

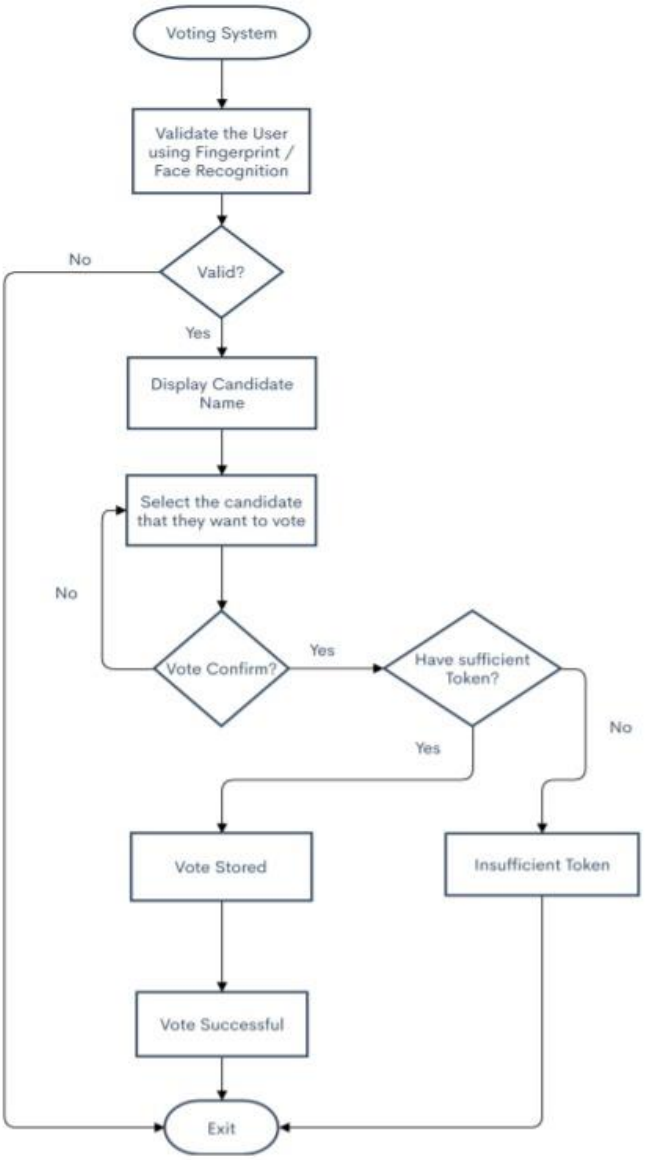

Fig1. Flowchart

Flowchart in fig.1 describes the work flow of the system.

Entity Relationship Diagram:

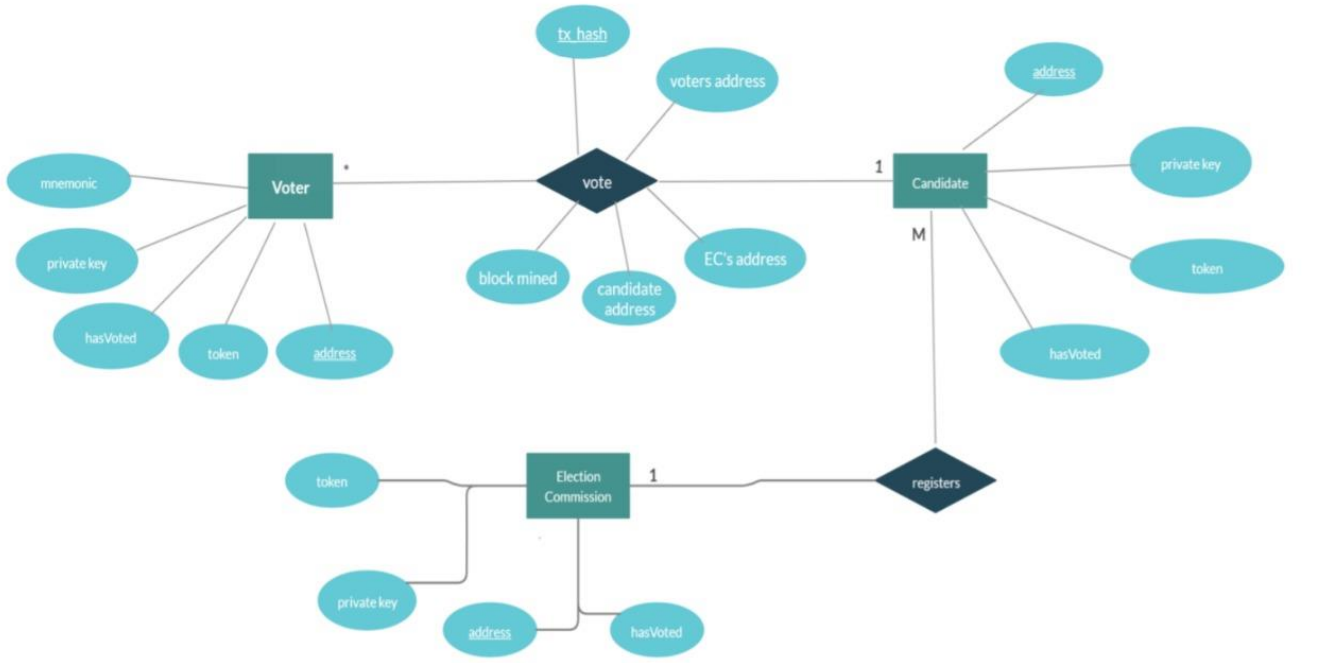

Fig2. ER Diagram

All the essential entities and their respective attributes are mentionedin the *fig.2* above.

Entities: Voter, Candidate & Election Commission. Attributes: HasVoted, Token, Address, etc.

Design Goals

Design goals are vital properties of the device to be optimized, and which might also additionally have an effect on the general layout of the device. There is a fine line among device layout and requirements. Requirements encompass precise values that ought to be met so as for the product to be proper to the client, while layout desires are houses that the designers attempt to make "as precise as possible", without precise standards for acceptability.

Modularization Details:

The project has been divided into many modules wherein for each functionality we've particular modules. Any software incorporates of many systems which includes numerous sub-systems and those sub-systems in addition consists of their sub-systems. So, designing a whole device ina single go comprising of each and every required functionality is a busy work and the method could have many mistakes due to its widespread size.

Effective modular design may be completed if the partitioned modules are separately solvable, modifiable in addition to compliable. Following are the project modules:

Election Commission:

In this module, an entity named Election Commission will be accountable to setup the smart contract and sign-up candidates, parties and start off an election.

Election Test:

This is the module to check our smart contract in which we use Mocha Framework to carry out unit check on our application.

Voter Module:

In this module, citizens who've been supplied with the personal ETH wallet will import onto the voting portal using the Metamask extension and cast their vote.

Chapter 6

IMPLEMENTATION

Chapter 6
Implementation

Starting with the system, a user needs to validate him/her so that he/she can proceed with the voting process. This validation will be done by fingerprint scanning or face recognition technology. Once the validation is done, user will be able to see the name of candidates participating in the election.

If the user decides to vote a particular candidate, the system will ask whether the user has sufficient tokens or not, if yes then vote will be counted successful and if no then the user will not be allowed to vote any candidate.

Software required in making of this system are mentioned inthe table below:

Software	Type	Version
Ganache	Ethereum Blockchain Server	2.4.0
Metamask	Ethereum Wallet	7.7.9
Truffle	Development framework for ETH	5.1.31
Node	JavaScript Runtime	12.17.0
Visual Studio Code	Integrated development environment	1.46
Remix	Solidity's IDE	0.10.1
Windows 10	Operating System	1809

User Interface Design & Working:

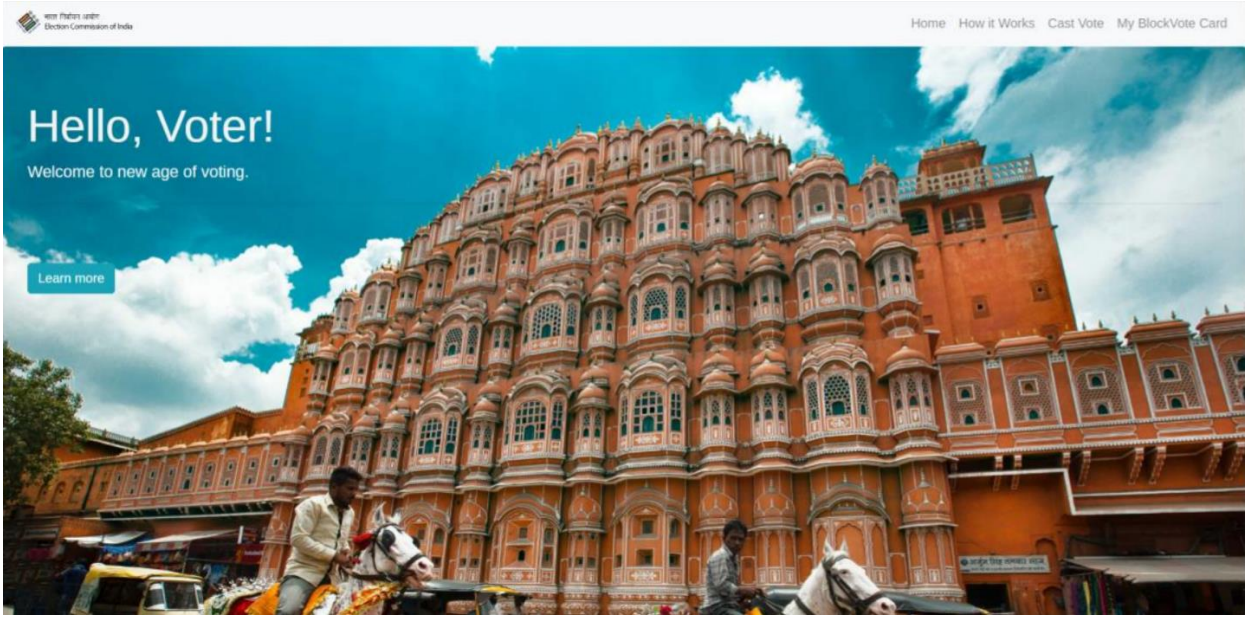

Fig3. Home Page

This is the home page of our Project, where a user comes to vote his/her favourite candidate. There are four sections on the navigation bar:

- Home- Brings user to home page
- How it works- Shows the user how to process works.
- Cast Vote- Section where user will actually vote his/her willing candidate.
- My BlockVote Card- A QR-based card which will be a proof of his/her vote towards the candidate.

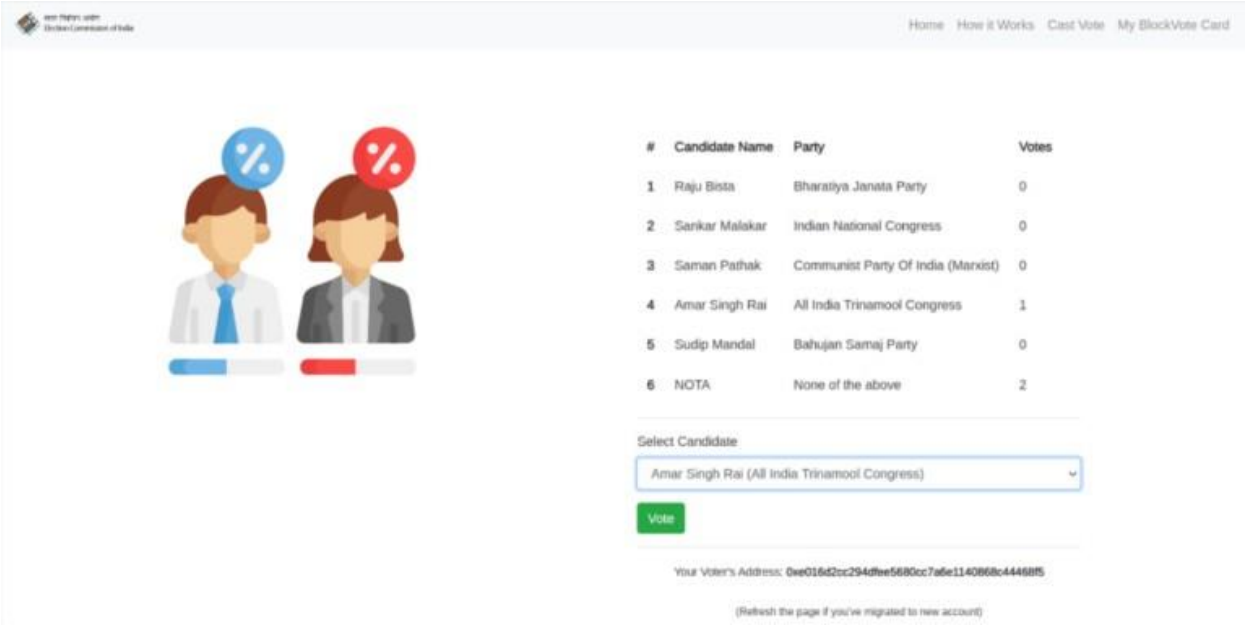

Fig4. Casting the vote

- This page shows all the details of the candidate i.e., Name of candidate, The party he/she is standing for & total number of votes he/she has got till now.
- A particular user can select his/her willing candidate from the list and votes by clicking the vote button below.

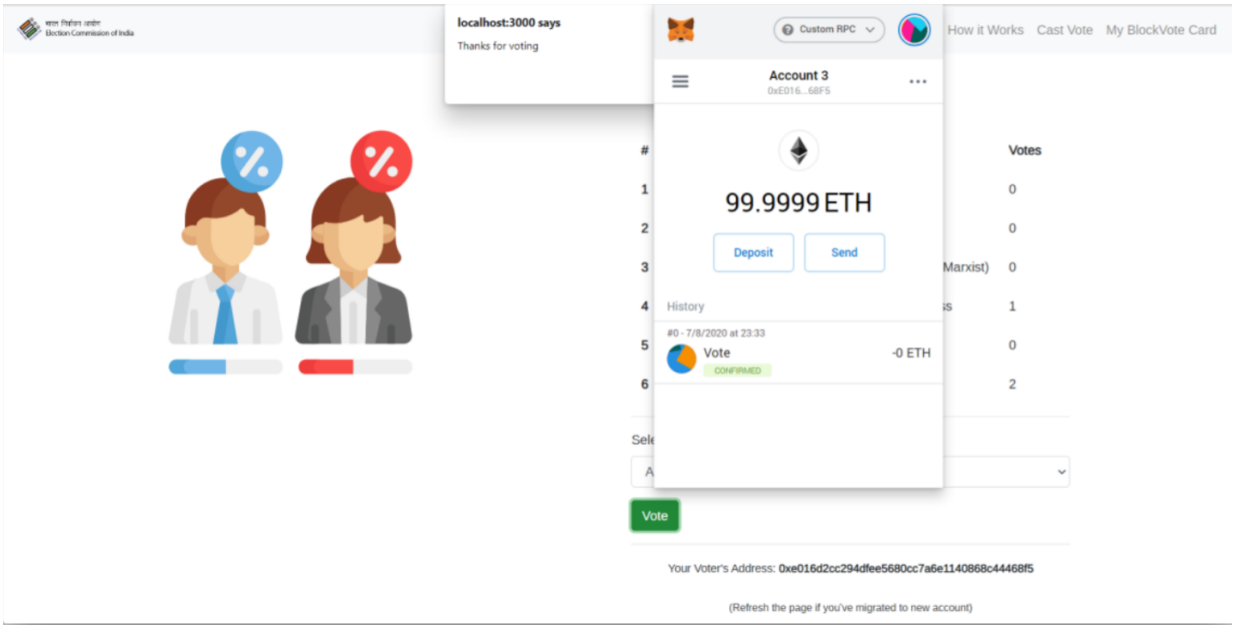

Fig5. Transaction confirmed by the miners

- This page appears once the user has casted his/her vote.
- It shows the balance of the crypto-wallet used to cast that particular vote.

Chapter 7

RESULT & DISCUSSION

Chapter 7
Result & Discussion

Benefits from online voting system:

Online voting allows people in today's mobile and digitally advanced society to participate in the democratic process over the internet. The online voting system offers the highest levels of transparency, control, security and efficiency of election processes. Online voting provides voters with a comfortable and secure voting experience and allow election organizers to save resources in planning their next election.

- **Simplified election organization**

For election organizers, planning postal or ballot box elections is synonymous with high costs: you need to find an appropriate physical space to hold the election, inform eligible voters, prepare postal voting forms and organize the vote count. Give yourself maximum flexibility and efficiency in election planning and create ballots easily online. Send out election invitations and reminders conveniently via email. Observe voter turnout in real-time and engage voters with a few mouse clicks. Easy ballot creation and personal election invitation design, as well as automatic vote counting, greatly simplifies election organization. Complex voting procedures can also be easily be mapped out in the POLYAS online voting system.

- **Online voting is an environmentally friendly and resource-efficient type of participation**

Paper-based voting are both cost-intensive and burdensome for the environment. One of the benefits of online voting is that they don't require many resources: compared to postal elections, online voting reduce CO2 emissions by 98%. Conduct an environmentally friendly election and save paper, printing and delivery costs by shifting online. Additionally, save on personal and time expense and skip the drawn-out manual vote count process by choosing online voting.

- **Minimize mistakes**

By eliminating the use of physical post and manual vote counting you can avoid result-distorting mistakes such as loss of voting documents and miscounted votes. Automatic vote counting with online voting allows you to access results shortly after the election. Results can also be verified using an external tool.

- **Increase voter turnout with convenient online voting**

Voting should be simple, location-independent and accessible. Reduce barriers to participation and offer your eligible voters secure online voting in order to boost turnout. Adding the option to vote online allows eligible voters to cast their votes at any time within the election period and from any location.

- **Election marketing at a mouse click**

Offer a comfortable, barrier-free online election and engage voters by sending election invitations and reminders by email. Further engage voters by creating an election website and containing an overview of all important information relevant to the election. Benefit from the the advantages of online voting!

Chapter 8

CONCLUSION

Chapter 8
Conclusion

Democracies rely on trusted elections and residents ought to trust the election machine for a sturdy democracy. However conventional report-primarily based totally elections do now nolonger offer trustworthiness. The concept of adapting virtual voting structures to make the general public electoral system cheaper, quicker and easier, is a compelling one in present day society. Making the electoral system reasonably-priced andquick, normalizes it in the eyes of the electorate, gets rid of a sure strength barrier among the voter and the elected official and places a sure quantity of stress at the elected legit. Itadditionally opens the door for a extra direct form of democracy, permitting electorate to specific their will on man or woman payments and propositions. This project has been evolved to a blockchain-based digital voting machine that makes use of smart contracts to allow stable and cost-green election while making certain voters privacy. It outlines the systems architecture, the design, and a security analysis of the machine.

Chapter 9

REFERENCES

Chapter 9
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