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Decentralized Voting Using Blockchain

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ABSTRACT: Election could be an important event during a trendy democracy however massive sections of society round the world don't trust their election system that is major concern for the democracy. Even the world's largest democracies like Republic of India, US, and Japan still suffer from a blemished legal system. Vote rigging, hacking of the EVM (Electronic vote machine), election manipulation, and booth capturing square measure the key problems within the current electoral system. During this system, we tend to square measure work the problems within the election vote systems and attempting to propose the E-voting model which might resolve these issues. The system can highlight a number of the popular blockchain frameworks that provide blockchain as a service and associated electronic E- voting system that is predicated on blockchain that addresses all limitations severally, it additionally preserve participant's obscurity whereas still being hospitable public examination.

In the proposed method the concept of e-voting application is created using Ethereum Blockchain and Django python framework. The authentication is done through the face recognition through the mobile camera application. In this method the voter has to register using the application and the face recognition will be provided once the registration is successful. On scanning the face, the voter will be asked for their registered email-id and private key provided by Ganache (running a local blockchain on one's system). Once the authentication is done the voter is made to proceed with the voting process where to vote. The main purpose of implementing this concept is to increase the voting percentage. So that the voter is not required to visit the voting center to cast their vote and also to avoid fake voting.

KEYWORDS: E-voting, Ethereum, Blockchain, Face recognition, Mobile Number, Electronic Voting System, Decentralized, and Election.

I. INTRODUCTION

Extensive research has been done on electronic voting systems that enable voters to vote at their convenience using a mobile phone, computer or any other electronic device. Still, none of these technologies have been incorporated on a larger scale due to inherent security threats/concerns that these systems might pose to the integrity of the voting process. In this paper, we discuss electronic voting system using blockchain , a secure and robust system that ensures anonymity of the voter, transparency, and robust functioning.

- **What is Blockchain?**

A blockchain is a peer-to-peer network of computers, called nodes, that share all the data and the code in thenetwork. So, if you're a device connected to the blockchain, you are a node in the network, and you talk to allthe other computer nodes in the network. You now have a copy of all the data and the code on the blockchain.There are no more central servers. Just a bunchof computers that talk to one another on the same network.Theblockchain is anetwork and adatabaseall in one.

It can be utilized to create applications, for example, for the purpose of authentication, identification,

socialnetworks,messaging,financialsmanagement,security,andonthebasiclevelforotherledger-basedimplementations The data recorded on a block in the blockchain can take any form and a block can be used to store atransaction,entry or anyotherchunk ofdata.

II. LITERATURE SURVEY

Inthispaper[2],ithashighlightedaboutthemajorprobleminvotingsecuritywherein the2016USPresidentialElections,EVM'swerelikelytobeinterceptedandvoteswere tampered. The study found that this old voting equipment is not only more prone to failures and crashes but is also notoriously easy to hack and tamper with. In thisstudy

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[3] by Ayed, Ahmed, et al., it has been proposed an electronic voting system based on the Blockchain technology. The system is decentralized and does not rely on trust. Any registeredvoterwillhavetheabilitytovoteusinganydeviceconnectedtotheInternet. The Blockchain will be publicly verifiable and distributed in a way that no one will be able to corrupt it. Rifa and Budi has come to a conclusion that if we use of hash values in recording the voting results of each polling station linked to each other makes this recordingsystemmoresecureandtheuseofdigitalsignaturesmakesthesystemmore reliable. The use of the sequence proposed in the blockchain creation process in this system considers that in an electoral system not required for mining as in the Bitcoin systembecausethevoterdataandnumbersareclearandarenotallowedtoselectmore thanonce,theproposedsequenceensuresthatallnodesWhichislegallyconnectedand canavoidcollisionintransportation[4].Bin,Joseph,etal.,hascometoaconclusionthat the current blockchain voting system cannot provide the comprehensive security features, and most of them are platform dependent, we have proposed a blockchain- based voting system that the voters' privacy and voting correctness are guaranteed by homomorphic encryption, linkable ring signature, and PoKs between the voter and blockchain [5].

III. PROPOSED METHODOLOGY

The study of this paper originates from a need to design a more secure and practical e-voting system, since it has becoming a popular topic in the area of industry and infor- mation security. Blockchain is based on DLT and invented by Satoshi Nakamoto in 2008. Blockchain is a growing list of blocks. Each block except the first block stores its previous block's hash value. It synchronizes the ledgers replicated among multiple nodes by using community val- idation, which is adopted to serve as the public transaction ledger of the crypto-currency Bitcoin. We present techniques to exploit blockchain to improve the security of e-voting. Compared with the original
blockchain, the improvements are as follows: (1) We design a synchronized model of voting records based on DLT to avoid forgery of votes. (2) We design a user credential model based on ECC to provide authentication and non-repudiation.
(3) We design a withdrawal model that allows voters to change their vote before a preset deadline. By integrating the above designs, we propose a blockchain-based e-voting scheme, which meets the essential requirements of e-voting process.
We illustrate the blockchain-based e-voting scheme as follows:
(1) The blockchain-based e-voting scheme is public, distributed, and decentralized. It can record votes from voters across many mobile devices and computers.
(2) The blockchain-based e-voting scheme allows the
voters to audit and verify the votes inexpensively.
(3) The database of votes is managed autonomously and is using a distributed server of timestamp on a peer-to- peer network.
(4) Voting on blockchain is a workflow where voters' regarding data security is marginal, which removes the characteristic of infinite reproducibility from e-voting.
Based on the illustration above, the scheme is depicted in and is designed as follows:
(1) Voting blockchain: it is a growing list of voting blocks.
(2) Voters: the person who casts a ballot for his/her chosen candidate is voter. The voter can vote or withdraw a vote.
(3) Voting office: it is the organization of voting. It can query the public key of the voter, verify the votes, and query the votes.
(4) Public key infrastructure (PKI): it is a set of procedures that manage public-key encryption.
(5) Vote database: it is a database according to the statistics of votes that updated by voting office.
(6) Miners: the responsibility of miners is to deal with accepted votes and adding them to the public voting blockchain.

IV. ALGORITHM

The Design goals consist of various designs which we have implemented in our socialdistancingdetectionusingcomputer vision.Thissystemis builtwithvariousdesigns suchasdataflowdiagram,sequencediagram,classdiagram,usecasediagram,component diagram, activity diagram, state chart diagram, deployment diagram. After doing these various diagrams and based on these diagrams we have done ourproject.

We have designed our system in such a way that whenever user execute our model by default it will get connected to the webcam which is available in the system. After that it will detect the peoples in the frame and check

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whether they are maintaining social distancingornot.Ifpeoplesaremaintainingdistancethentheyaredisplayedingreenframe otherwise in red frame. Here are the things that this system canperform.

I. Execution of model

II. Violation prediction

Execution of model: Once a user successfully execute our model in to the system then it will connected to the webcam.

Violation prediction: This model first detect the humas in frame and display whether the detected peoples are violating the social distance or not.

V. RESULTS AND DISCUSSIONS

We have achieved a decentralized electronic voting system built on top of Ethereum blockchain that enable the voting result to be immutable so it cannot be tampered by any malicious actor while making it easy to use for the voter by not requiring the voter to have an Ethereum account or have any ether to vote. Figure are screen capture of the look and feel of the nished system. And thus we have built a decentralized electronic voting system using the Ethereum blockchain which can be accessed from it's users own electronic device it will eliminate the needs to distribute voting papers to each voting stations that can be spread over a wide area. The system that we have build is also open source, where each parts of the system can be audited and veri ed by the public, which in turn can open a layer of transparency for the voters

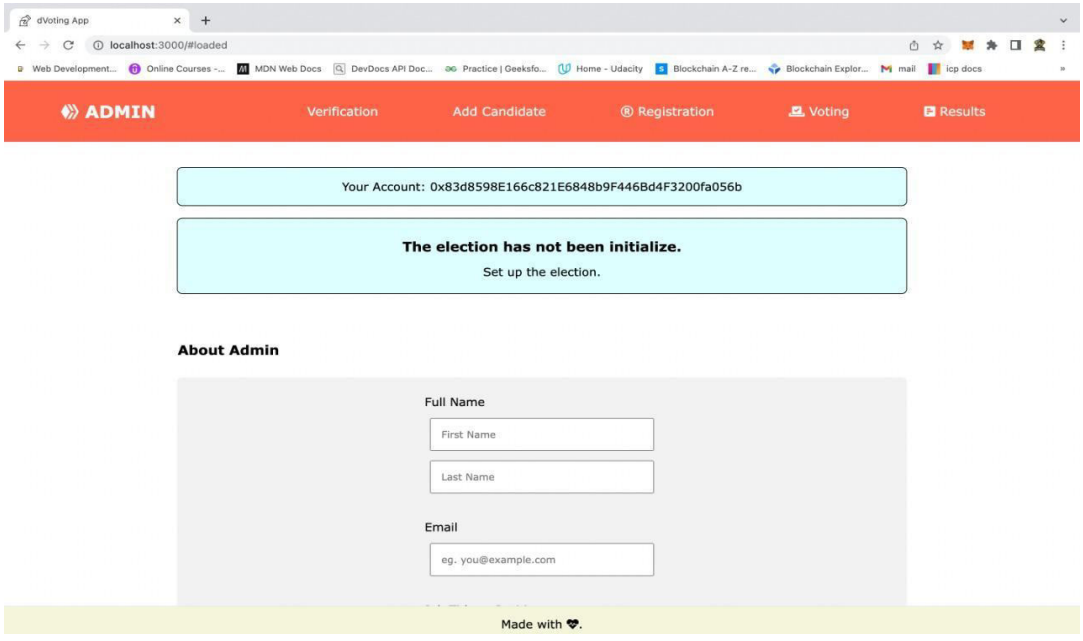

Figure 1

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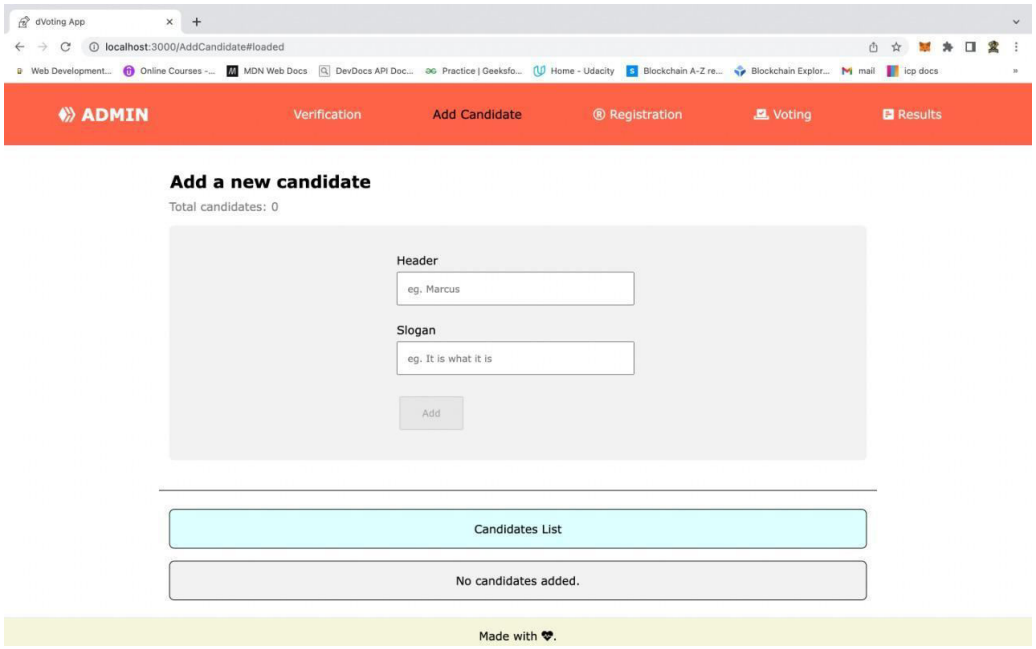

Figure 2

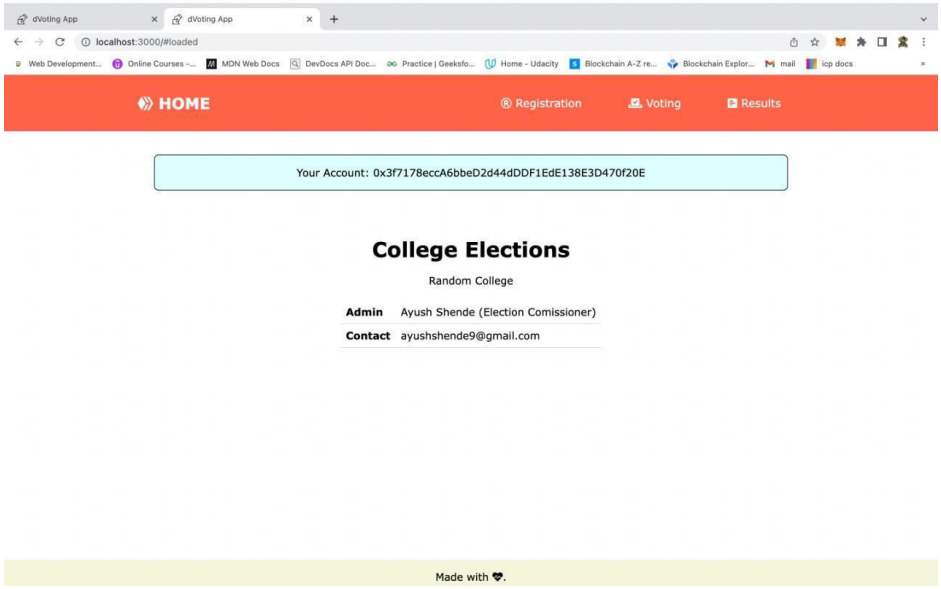

Figure 3

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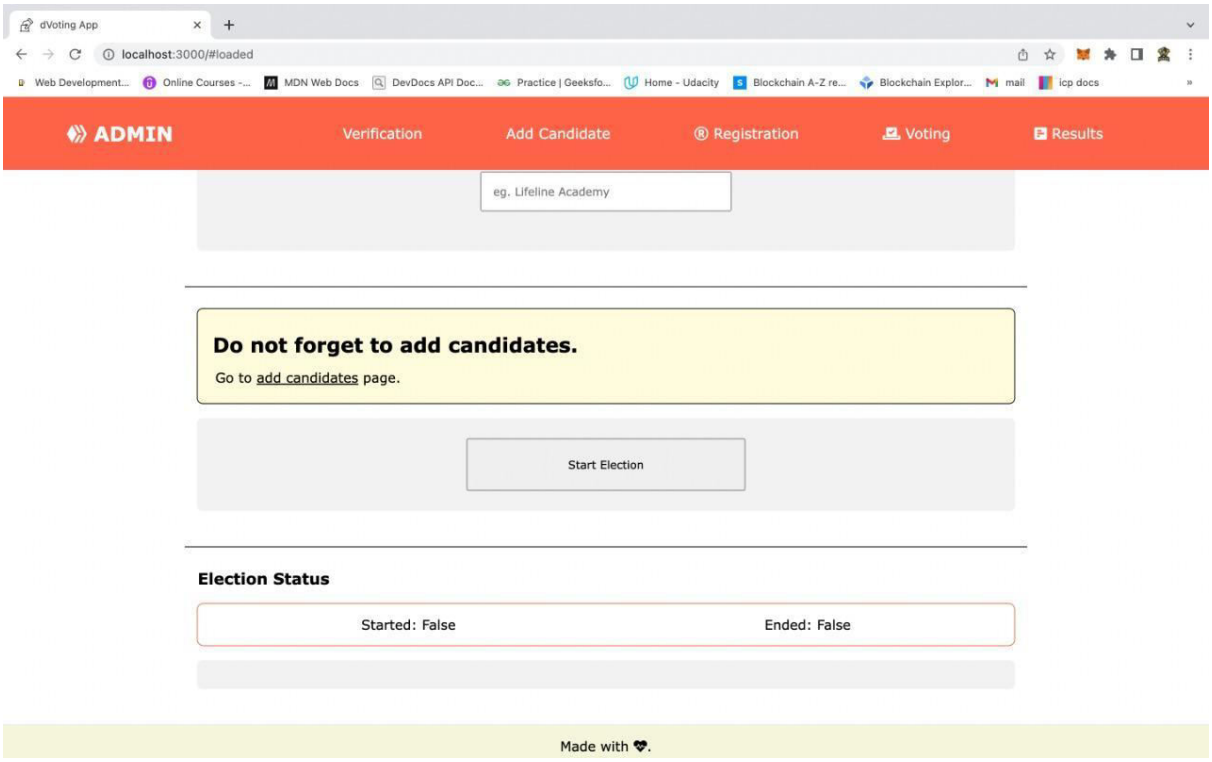

Figure 4

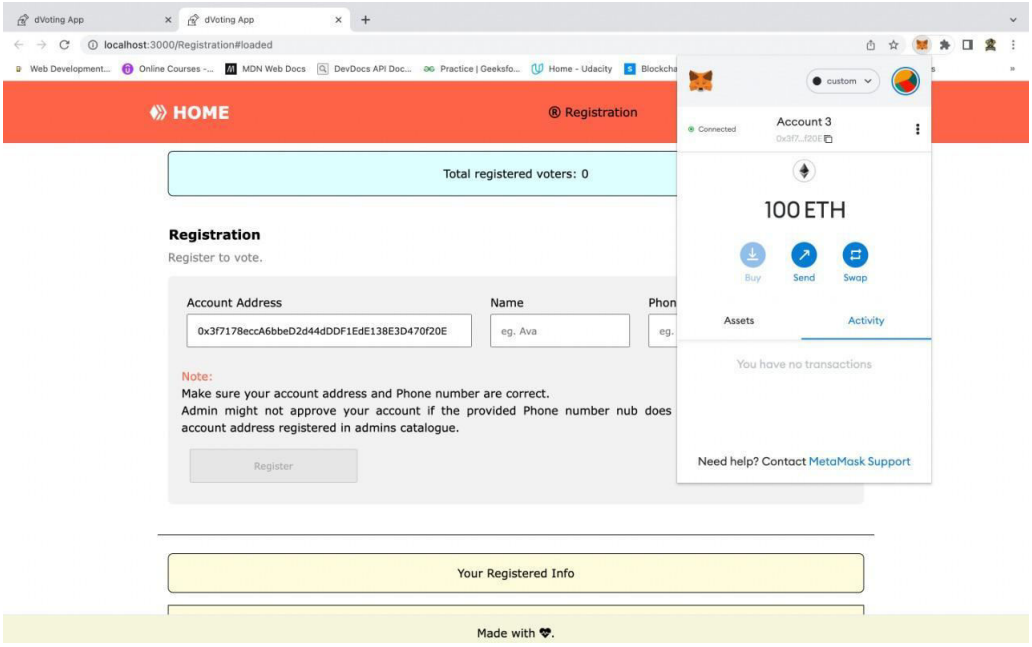

Figure 5

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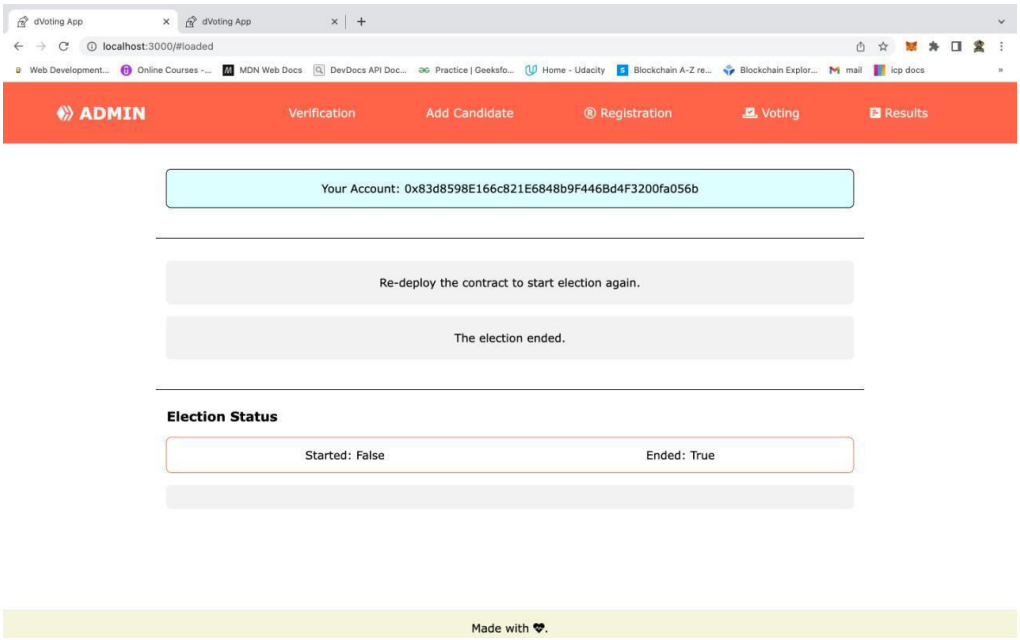

Figure 6

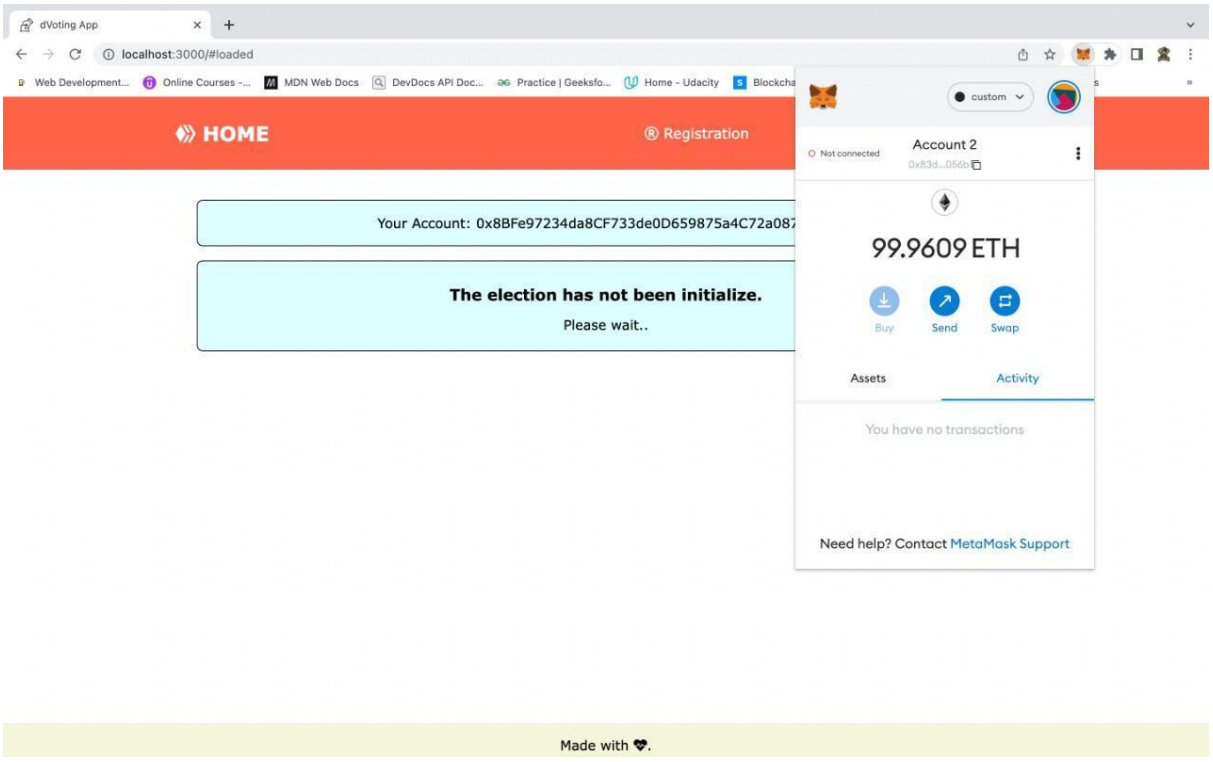

Figure 7

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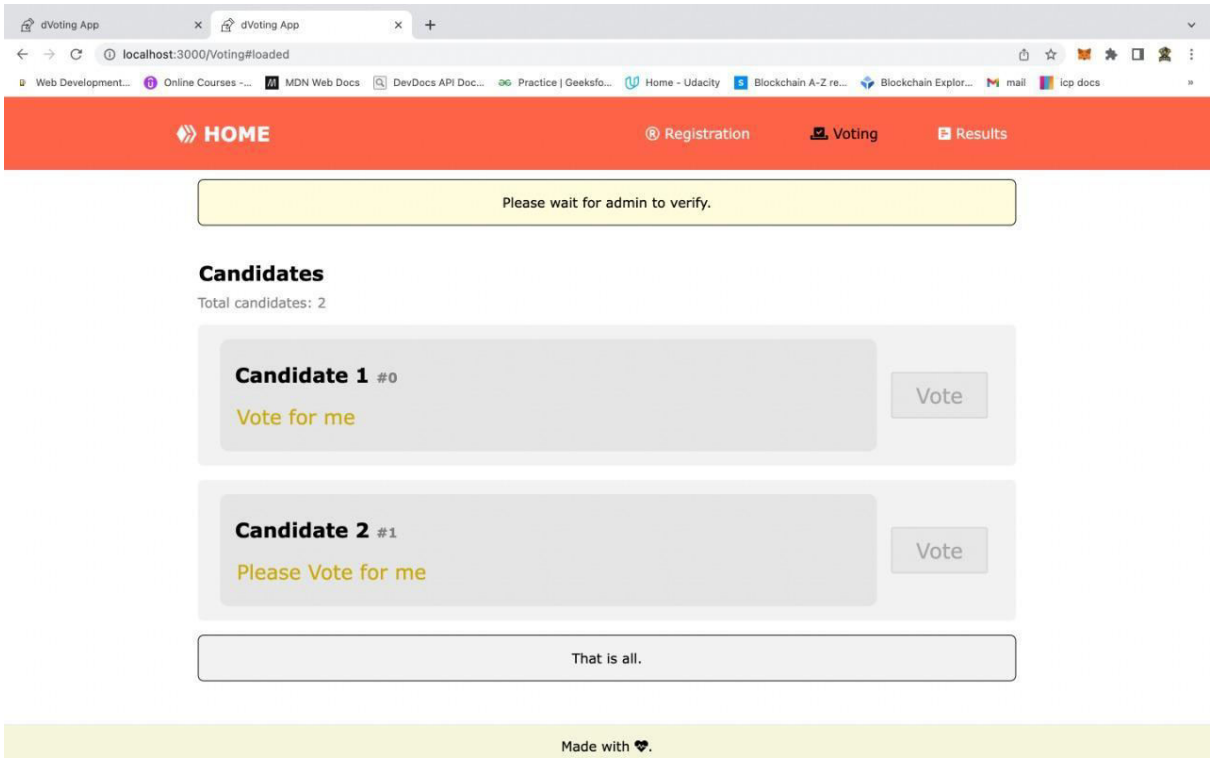

Figure 9

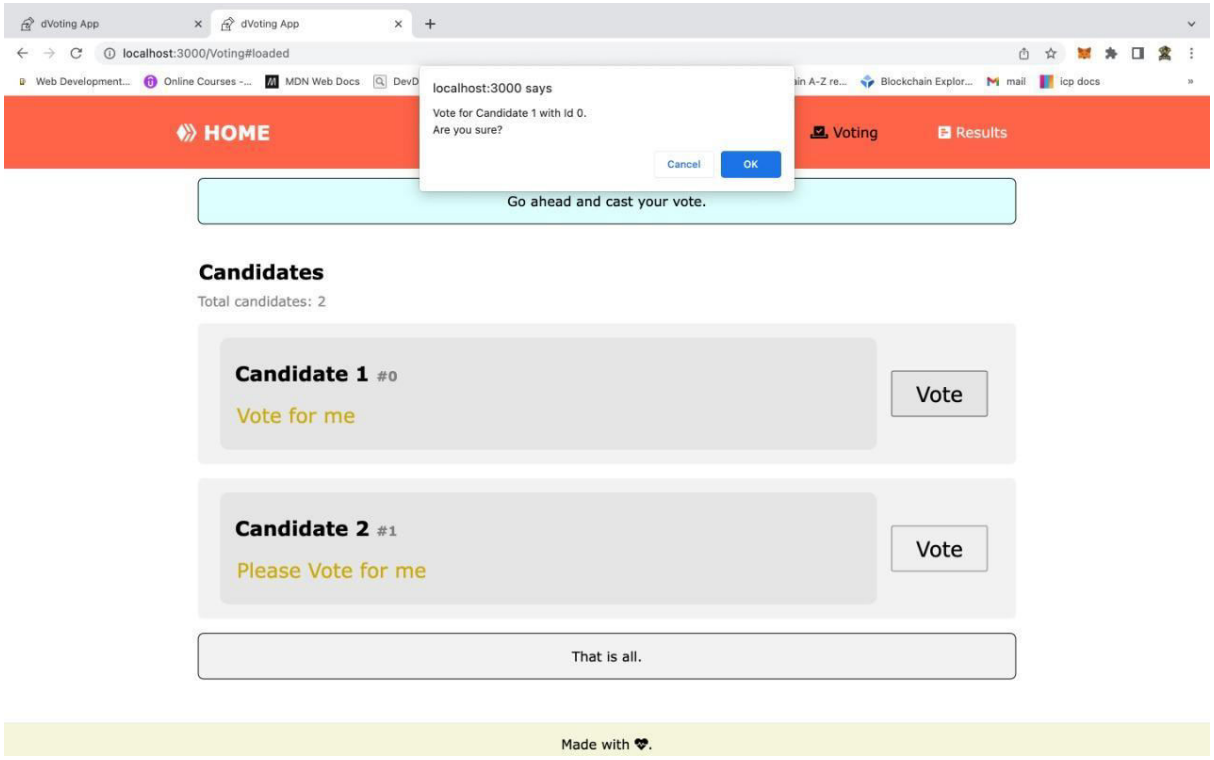

Figure 10

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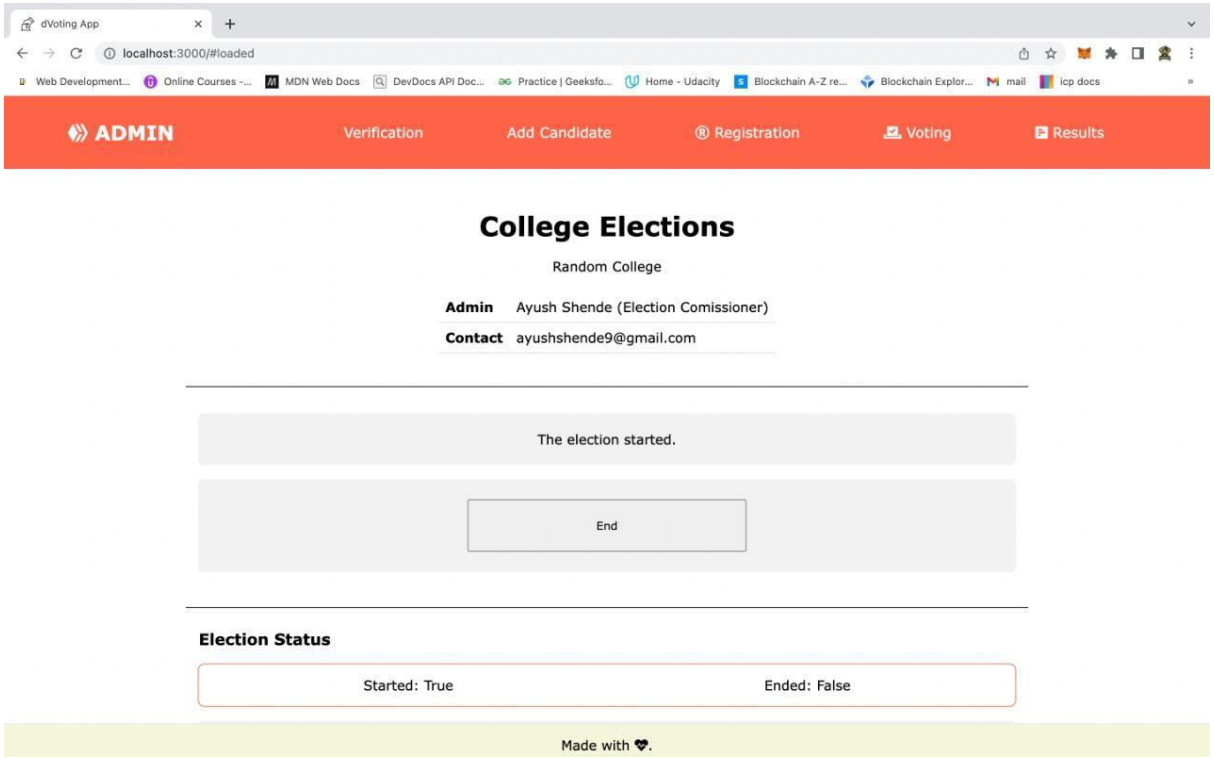

Figure 11

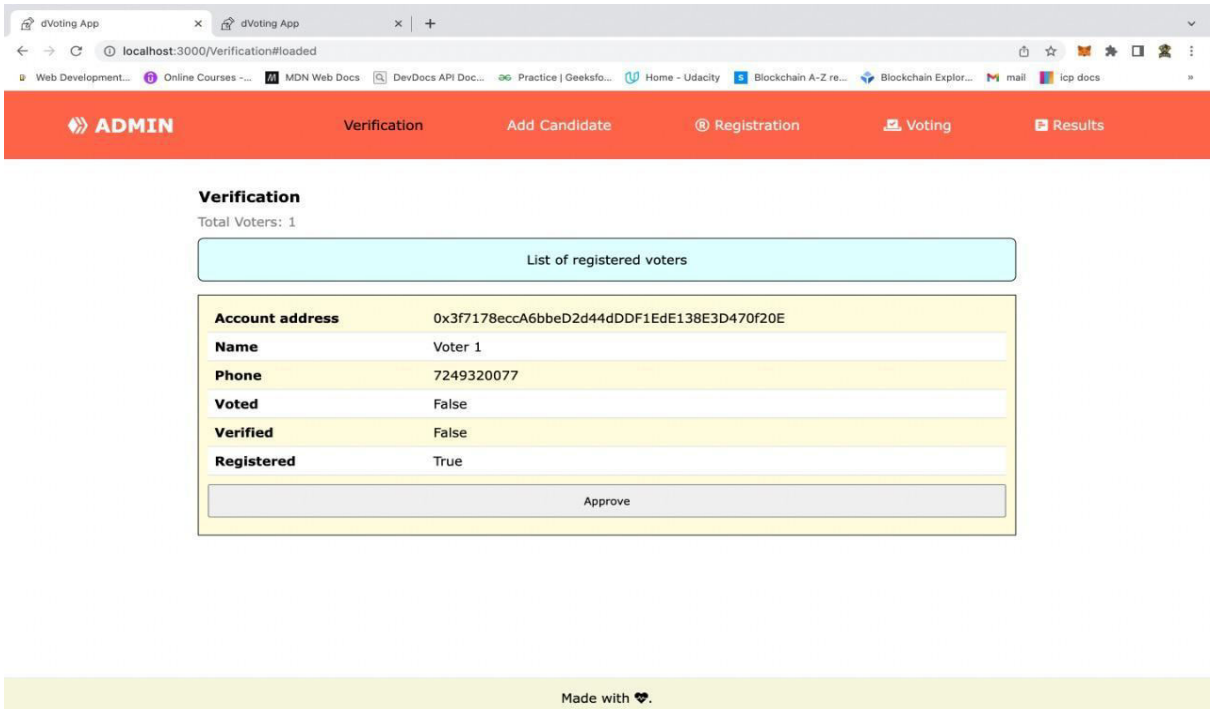

Figure 12

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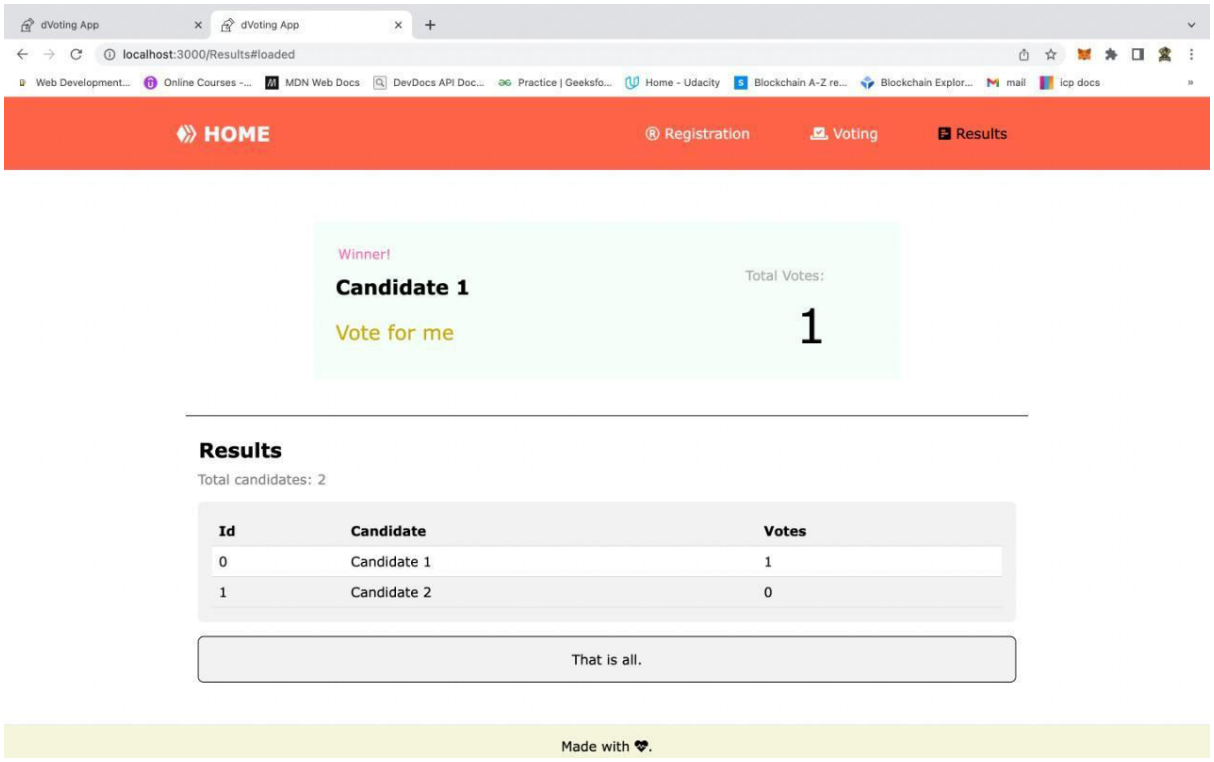

Figure 13

VI. CONCLUSION AND FUTURE SCOPE

CONCLUSION:-

In this project, we introduced a blockchain-based electronic voting system that utilizes smart contracts to enable secure and cost-efficient election while guaranteeing voters privacy. We have shown that the blockchain technology offers a new possibility to overcome the limitations and adoption barriers of electronic voting systems which ensures the election security and integrity and lays the ground for transparency. Using an Ethereum private blockchain, it is possible to send hundreds of transactions per second onto the blockchain, utilizing every aspect of the smart contract to ease the load on the blockchain. For countries ofgreater size, some additional measures would be needed to support greater throughput of transactions per second.

The transparency of the block-chain enables more auditing and understanding of elections. These attributes are some of the requirements of a voting system. These characteristics come from decentralized networks, and can bring more democratic processes to elections, especially to direct election systems. For e-voting to become more open, transparent, and independently auditable, a potential solution would be to base it on blockchain technology. This project explores the potential of blockchain technology and its usefulness in the e-voting.

FUTURE SCOPE

- Withthesystemwecurrentlyhave,movingthecryptographytoalibraryinSolidityculdlargely improveour individual ballotverifiability.
- LinkingapplicationwithGovernmentvotingsystemdata.
- Thecurrentprojectisbuiltforsmallorganization,butinfuturewewouldbuilditasanationalvoting system.
- Increasethesecurity fromuserinterfaceprototype.
- AddingAadharnumber verificationsystem.
- LocalLanguagescan beincluded whichwillplayavital roleforpeople livingin ruralareas

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- Afeedbacksystemshouldalsobeincluded,thatallowsthepeopletofilethecomplaintaswellasreviews.

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