

SCTR's Pune Institute of Computer Technology
Dhankawadi, Pune

A MINI PROJECT REPORT ON

D-app for E-Voting System

Under the guidance of
Prof. Sumit Shevtekar

Submitted By

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DHANKAWADI PUNE-43.**

CERTIFICATE



This is to certify that Gouri Gupta(41227) , Sakshi Harode (41228) and Pratik Kadale (41235) student of B.E. (Computer Engineering Department) Batch 2022-2023 Under the guidance of Prof. Sumit Shevtekar, have satisfactorily completed a report on “ **D-app for E-Voting System**” towards the partial fulfillment of the fourth year Computer Engineering Semester VIII of SPPU.

**Head of Department,
Computer Engineering**

Date:

Place:

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Abstract

For long, different e-voting systems have been provided with the goal of increasing security and minimizing cost. Blockchain is a major breakthrough in the technological industry that provide immense secured platform. With the launch of Ethereum, a decentralized platform which runs decentralized applications (DApps) on it, a secured voting system now seems possible. Many organizations have now shifted their focus on voting through blockchain platforms. There's a very high chance that a normal voting method won't lead to a clear majority. There can be many ways to deal with this issue which includes another voting process to take place which can be quite expensive in terms of time and resources. Here, we introduce the vote-trading concept where the votes can be redistributed to other candidates in case if there is no clear majority and also this 'majority' factor can be set by the organization according to their requirement. We discuss the design for the blockchain based preferential e-voting system using the Solidity programming language where instead of one vote per candidate, we provide the concept of giving preference to the candidates.

Introduction

Unlike nationwide voting where there are millions of voters, in an organization, there are very few voters, and very few nominees. There's a very high chance that a normal voting method won't lead to a clear majority. Thus, another voting process has to take place which can be quite expensive in terms of time and resources or the other option is to have some kind of vote-trading where the votes can be redistributed to other candidates. As many organizations are now shifting their focus to blockchain technology because of its immense security and other reasons as mentioned in , voting through blockchain has been one of the main applications in the blockchain world. We have introduced an e-voting system based on blockchain technology. The system utilizes smart contracts that make cost-efficient and secure election possible. Not only this, the voters privacy are also guaranteed by this system. We have discussed how the blockchain technology can overcome limitations of e-voting systems. We have discussed how blockchain based e-voting system have layed the ground for transparency and how these

systems ensures the election integrity and security. We have proposed a decentralized voting platform which is based on Ethereum Technology. Restriction of multiple votes per mobile (MSISDN) is the main contribution of this platform. The future work for this system could be to develop the system further to make it more suitable for nationwide elections using some of the technologies located in the voting centers such as fingerprint. We have proposed Votereum, an Ethereum-based E-voting system that utilizes blockchain technology and smart contract. We in our system have introduced the concept of verifiable E-voting platforms and have discussed the evaluation and security concerns to the system. Not only this, the authors have discussed the requirements, architecture and design of the system. We know that Ethereum platform provides immense security to the decentralized applications, thus our main focus have been on how can we deal with the situation when the voting process leads to no clear majority defined by the organization.

Problem Statement

Develop a Blockchain based application dApp for e-voting system.

Motivation

Blockchain being the new and interesting emerging field has paved the path for many developers to create secure immutable applications in trustless environment. Hence as part of our curriculum we decided to create a dApp for e-voting system that could be free from manipulation and facilitate easy data storage.

Objectives

- 1) To understand and explore the working of Blockchain technology and its applications.
- 2) To create a blockchain application d-App for e-voting system.

Theory

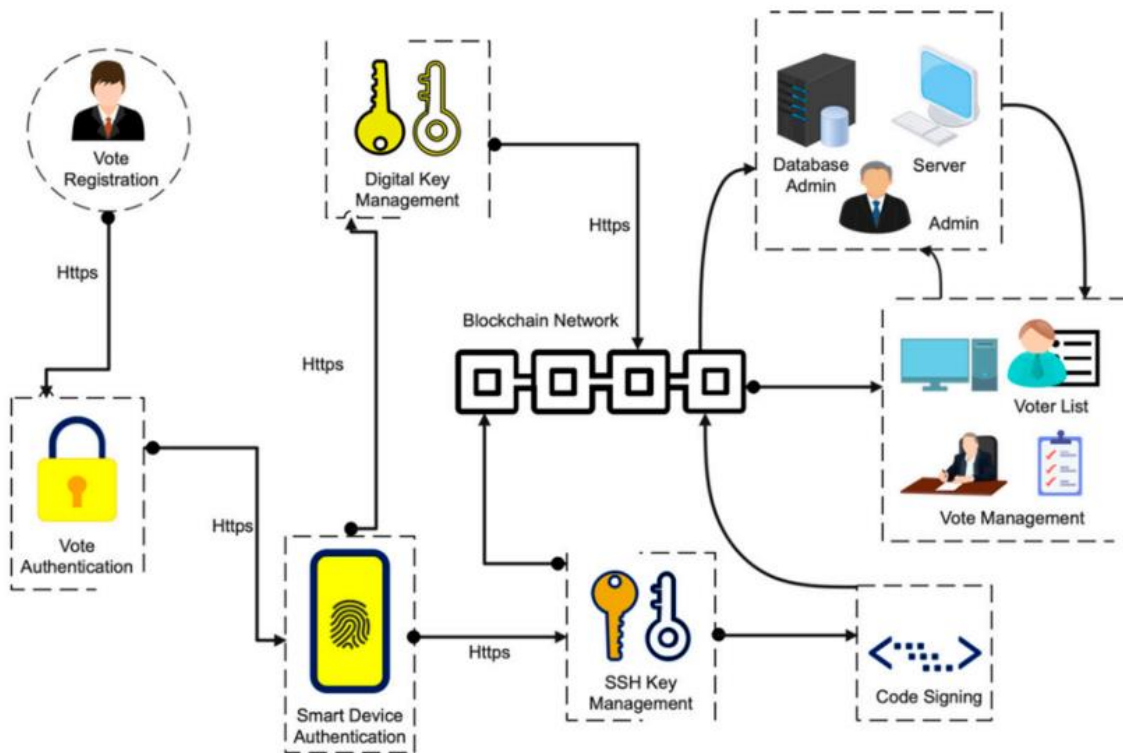
Blockchain works by creating decentralized distributed ledgers that are circulated over all devices participating in the system. It allows to share records based on peer-to-peer replication, and processing by all nodes in the network namely, transacting nodes and validating nodes. When records are placed in the ledger, all nodes in the network go through encryption procedures and are processed by all miners. The blockchain provides highly reliable storage of data and makes use of consensus strategy, digital signatures, and hash of each block.

Blockchain provides many features such as integrity, traceability, safety, and security for protection of data. Blockchain is applied in both private and government sectors. Usually, an organization has a database where it stores information about their employees and workers. The system will use information from this database so that we can have a list of valid voters and valid candidates in our system the system flowchart for user casting the vote. The user would be directed to a login portal where the user would need to enter some credential to authenticate the user. The user interface will be a web application. Once the user enters the credentials correctly, i.e., the user is successfully able to log in into system, the user would be directed to the voting portal.

In the voting portal, there would be a list of candidates. The voter needs to give preference to the candidates with the lowest number given to the most preferred candidate and the largest number given to the least preferred candidate. In our system , each preferred list by a voter is taken as one transaction.

Thus whenever a user or voter gives preference to the candidates and submit his list, a transaction is added to the blockchain network.

Thus, each voter would be able to cast only one vote.




Description :

- The authority must login first with the provided session ID.
- The voter can now begin the process of voting with proper authentication through OTP(one time password) on the respective linked mobile number.
- If the voter is valid then the system will check for the voters age and the address to which he can give vote.
- the voting pallette will be opned with candidate names,their parties and logos.
- Now the voter can give his vote by clicking vote button.
- one voter can give his vote only once,i.e after one time voting buttons are disabled and the vote is automatically logged out.
- Same process contiuiues for many more votters irrespective of their voting wards.

OUTPUT :

Aadhaar-Voting | Login

localhost:8080



सत्यमेव जयते
Welcome to Aadhaar-Voting


Login

Activate Windows
Go to Settings to activate Windows.

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
Verify Aadhaar

localhost:8080/app



सत्यमेव जयते
Verify Aadhaar

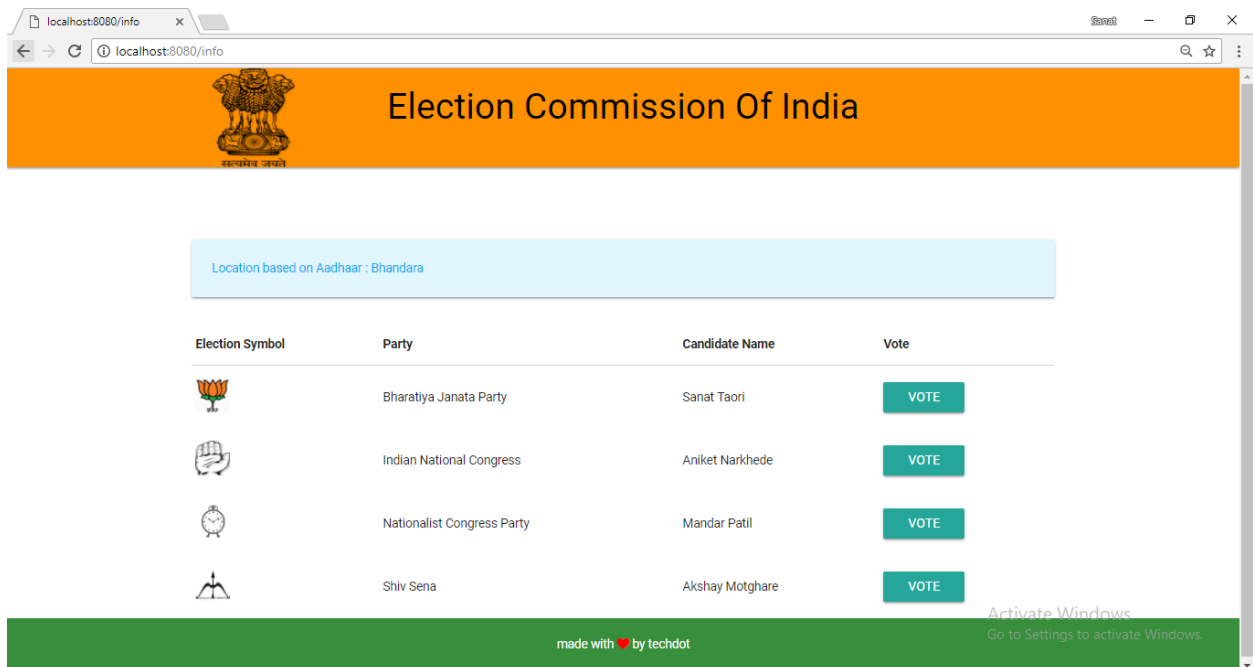
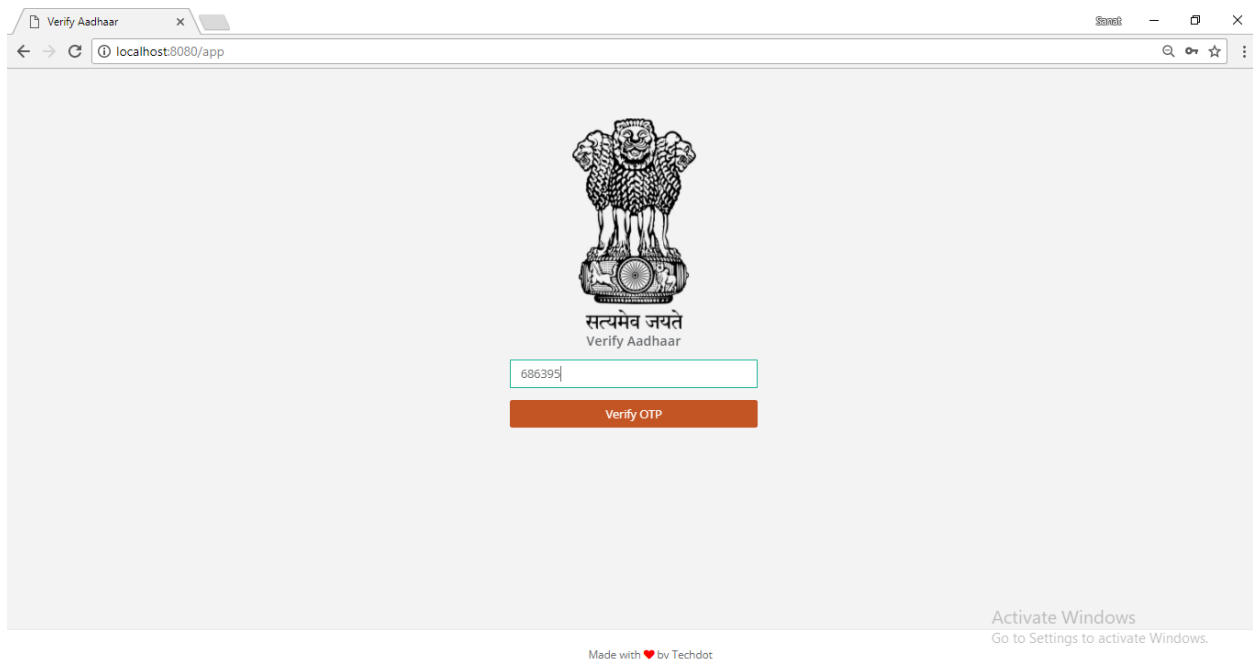
Get OTP



protected by reCAPTCHA
Privacy Terms


Activate Windows
Go to Settings to activate Windows.

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localhost:8080/info

localhost:8080/info








Election India

localhost:8080 says
vote submitted to Aniket

OK

Location based on Aadhaar : Bhandara

Election Symbol	Party	Candidate Name	Vote
	Bharatiya Janata Party	Sanat Taori	VOTE
	Indian National Congress	Aniket Narkhede	VOTE
	Nationalist Congress Party	Mandar Patil	VOTE
	Shiv Sena	Akshay Motghare	VOTE

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Activate Windows
Go to Settings to activate Windows.

```
C:\WINDOWS\system32\cmd.exe
Ganache CLI v6.1.0 (ganache-core: 2.1.0)

Available Accounts
=====
(0) 0xa4611b4c9a06ba2148a2cda353da7e15375aa37a2
(1) 0xf7f18816dc5449e413c077c22d98eb1801d7a624
(2) 0x13960de6d578726774fbab18b09ffca2795375
(3) 0xe4b2ce1f12c5a4469ca631dcf81b848fb0ae99df
(4) 0x767e725b8a1677b14d7eff95eb655ff956d3074
(5) 0xbdb09a2482e10e09efcf6524bf49439df18ff99
(6) 0x3d0937d4b014a04fb12873a34ef83fc70033a8ed
(7) 0xee24fd5dc7832cce084cedb75ede7f651624db9
(8) 0xfec46e0ca71a8a33674d4cbf64f6196ff971d6a1
(9) 0xa2075a5893f5e7d287c32c95c67138b4cee2ff0a

Private Keys
=====
(0) 39a82fe5235d8ea77eb613e2b4fb404d54ee3a662e447e914274406dfee1830d
(1) 497472bbd81f1c6d2288ef2a93e67d415f603c5b5e2b8c57a69a9c01355d8cf6
(2) 3f53734b977b078384c59e86f680f1c9008c69d8261b1493c44aa4e956eac1
(3) 7b2cb7561bb9cfb9ed2d93a71d0580fc331e91500ae2dab0642f65d5d051f1ea
(4) c6183f186f7d30b47cc27092492c9482f90715a7ef542a639c2d3075fab22ab
(5) fc5cdb742ae237d9eb28f4801010bb6ae7d434031d050c0913970fcd305fe
(6) 22adfd7c45705ec563f89f430a4e67f4ed7a47ada5cd0d4bc3654fd19f9c65
(7) 130f6a8cce0095a430e2d0dc34bb8184b6c9905c2fd735adbcbdb4fae86320f9
(8) 03bc102323031e6f330fb0767016d5463446cfb839410aa06bbb53d458e7d47f
(9) 2c887b350b570d5bed3f68363bcd7574c812425113bd1e186e64b1a085591c27

HD Wallet
=====
Mnemonic:      dad vendor mixture riot vocal peasant stool powder twist crunch glide fold
Base HD Path:  m/44'/60'/0'/0/{account_index}

Listening on localhost:8545
eth_accounts
eth_sendTransaction

  Transaction: 0xa40a20fc26260077bc7c29f4945362c881de52aa5564431e084de1f6748d2049a
  Contract created: 0xb090aa47beb13f4f5f7bd28493ac166f350e09446
  Gas usage: 375444
  Block Number: 1
  Block Time: Wed Mar 21 2018 02:07:30 GMT+0530 (India Standard Time)

eth_newBlockFilter
```

Deployment :

The Aadhaar based voting system is developed to overcome the flaws of EVM system. So directly EVM will be replaced by touch screen interface having the great user interface and high security.

Conclusion :

Our voting system uses the concept of preference based voting, where instead of giving vote to particular candidate, the voters provide with preference for the candidates. The votes are counted, and if we have a clear majority as defined by the organization, then our system will declare the winner. But if we don't have clear winner, the votes of the last candidate are distributed according to the preferences given by the voters for that candidate. Thus, the last candidate is removed from the competition and its votes distributed to other candidates according to the preferences given in the votes of the eliminating candidates. This process continues as long as we don't get a clear majority winner. Ethereum platform has been used which runs smart contract on it and is known to be one of the immensely secured blockchain platform.

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