ONLINE VOTING SYSTEM USING BLOCKCHAIN

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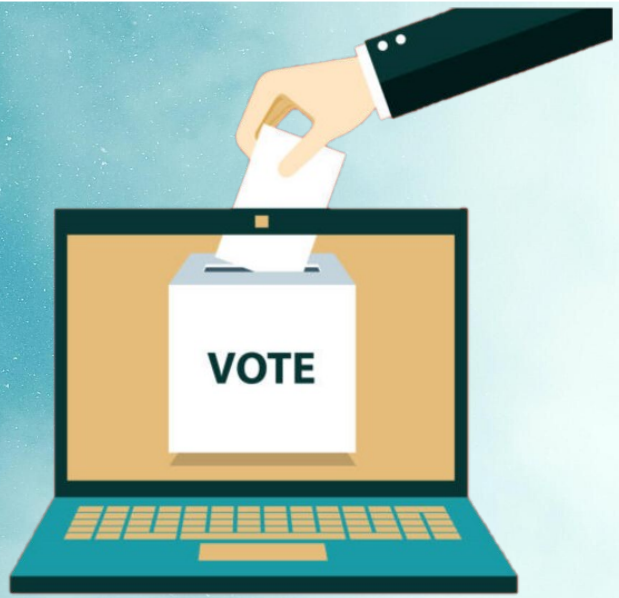

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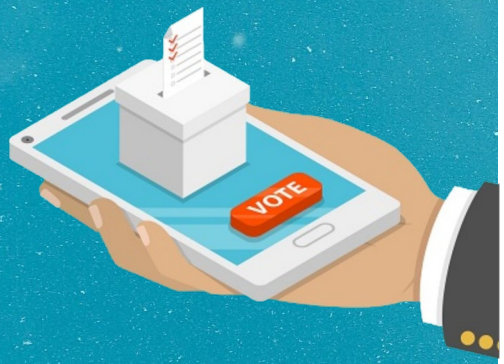
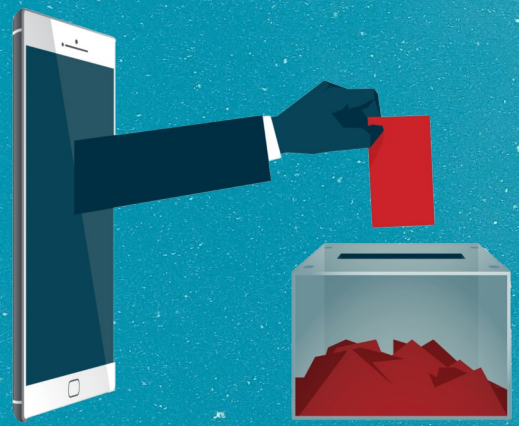


Abstract

An online Voting System is an application for conducting elections using any internet-enabled device and without a traditional paper ballot system. Various concerns arise regarding the reliability and security of this system. Using blockchain, we secure transactions of the online voting system. Making the system decentralized and immune to modifications. This system will overcome most of the disadvantages of the Balloting System and traditional Electronic System which include lack of transparency, fake votes, political manipulation, physical presence to vote, etc.

We aim to develop interface through which an authorized user can cast his/her vote from anywhere in the world. Which will be stored as blocks and form a blockchain making the system decentralized and secure. Through this system, we can reduce costs, improve convenience, security, and reliability.

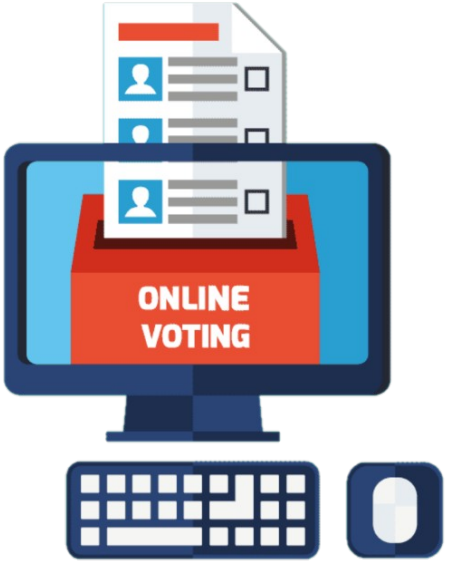


Introduction

- Elections have always been a controversial topic in India, starting from the balloting system to the electronic voting system.
- There have always been loopholes in the system like counting errors, fake votes, lack of transparency, vulnerability to hacking, political manipulations and other.
- These problems can be solved by making the entire in online voting system.
- In this modern-day, almost everyone has access to an internet-enabled device, using any of the identification documents, an eligible voter can authenticate themself and cast their vote.
- Storage and counting of votes are done automatically so the results can be announced as soon as possible.

Problem Statement

- Elections are a requirement by any organization to select a person among a group of people.
- Not every organization can afford additional hardware and efforts to conduct simple internal elections.
- Using an online voting system, eligible voters of an organization can access the election portal through an internet-enabled device login and authenticate them self and cast their vote.
- Storage and counting of votes are done internally so, after elections, anyone can view the results, making the entire election system transparent.



Literature Review

Sl No.	Name	Author's Name & Year	Technology Used	Advantages	Disadvantage
1	Development of Microcontroller Based Electronic Voting Machine(EVM)	Meharaj Unnisa Mr.Soumen Ghosh (January 2014)	Microcontroller Based Electronic Voting Machine.	Data storage capacity is More.	Complexity in Hardware Implementation .
2	Smart wireless authenticating voting machine	Devendra Vijay Naik Firas I. Hazzaa (2015)	Fingerprint Technology and Web Based.	Security and Accuracy is More.	Complexity in Implementation.
3	Design of GSM Based Electronic Voting Machine with Voter Tracking	Vaibhav Bhatia, Rahul Gupta (June 2015)	GSM Technology	There is no need to go to the Polling Booth for voting.	Range problem can occur in GSM Technology

Literature Review

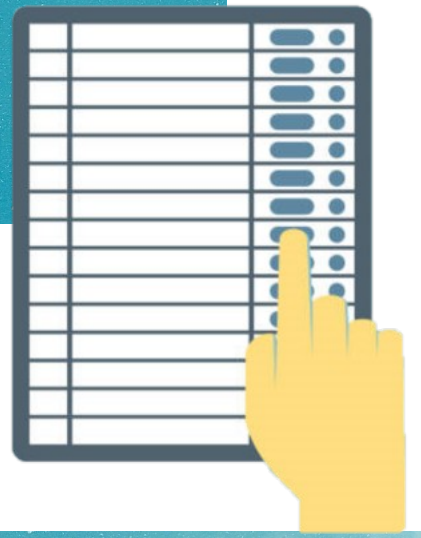
Sl No.	Name	Author's Name & Year	Technology Used	Advantages	Disadvantage
4	Aadhar based Electronic Voting System	R.Murli Prasad M.Venkata Rao Ankita R. Kasliwal (June 201**6)**	Aadhar Card Based Electronic Voting System	There is no need to create new database.	Aadhar Card data is confidential.
5	Raspberry Pi voting system, a reliable technology for transparency in democracy	Dimesh Bommisetty Md.Maminul Islam G.Keerthana (December 2016)	RFID, Image Processing Technology and IOT Based	Because of IOT Technology data is securely stored in the Cloud	RFID/ Smart Card can be misplaced and because of Raspberry Pi cost is more.
6	Electronic Voting Machine using Bio-metric Finger Print with Aadhar Card Authentication	Shekhar Mishra, Firas Hazzaa (March 2017)	Biometric Technology	Because of Fingerprint identification Security increases and Rigging stopped	Person has to present In the voting booth for voting. Because of this time and money is waste.

Existing System

- In EVS issued a national ID card to all its citizens. These cards are encrypted files, which uniquely identify the owner.
- For the voter to cast vote, must insert their card into a card reader, then voter will be granted access to the voting website.
- The eligibility of voter is verified after the voter enters their when prompted on the website interface.
- Once authenticated, the voter has time until four days before election day, within which the voter can cast vote, and also modify the casted vote.
- Once the vote has been submitted, the vote is passed through the publicly accessible vote forwardingserver to the vote storage server.

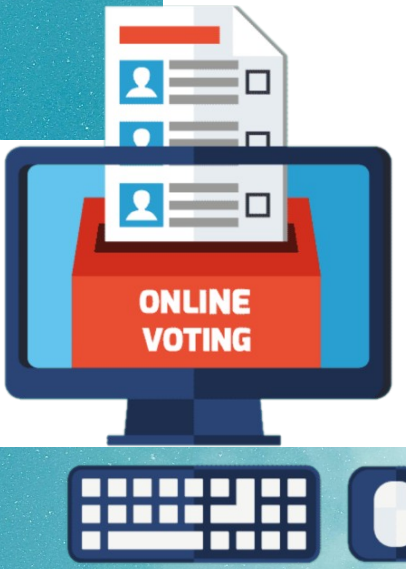
DISADVANTAGE OF EXISTING SYSTEM

- Vote information is transferred to an isolated vote counting server through DVDs. This server decrypts and counts the votes, and produces the election results.
- There is a possibility of malicious attacks that compromise the client-side machine.
- Votes can be manipulated.
- Attackers may directly infect the servers through malware being placed on the DVDs used for the transfer of votes.
- Concerns of security due to the presence of a vulnerable centralized authority.



Proposed System

- Ethereum is platform that allows programmers to build decentralized applications using blockchain technology. It is a permission-less (public in nature) blockchain network. In public blockchains there are no restrictions such that anyone can read or write on blockchain ledger database.
- Ethereum has two account types:
  - An externally owned account is a user-controlled account.
  - A contract account is a smart contract which is a collection of code that regulates blockchain.
  - The e-voting system should verify the identity of voters and authenticate only eligible voters.
  - The e-voting system should not allow access to invalid candidates. Any voter should get only a single chance to vote



Software Requirements

Operating System

Visual Studio Code 

Node.js

Ganache 

Truffle-suite

Remix IDE 

Metamask

Metamask

Hardware Requirements

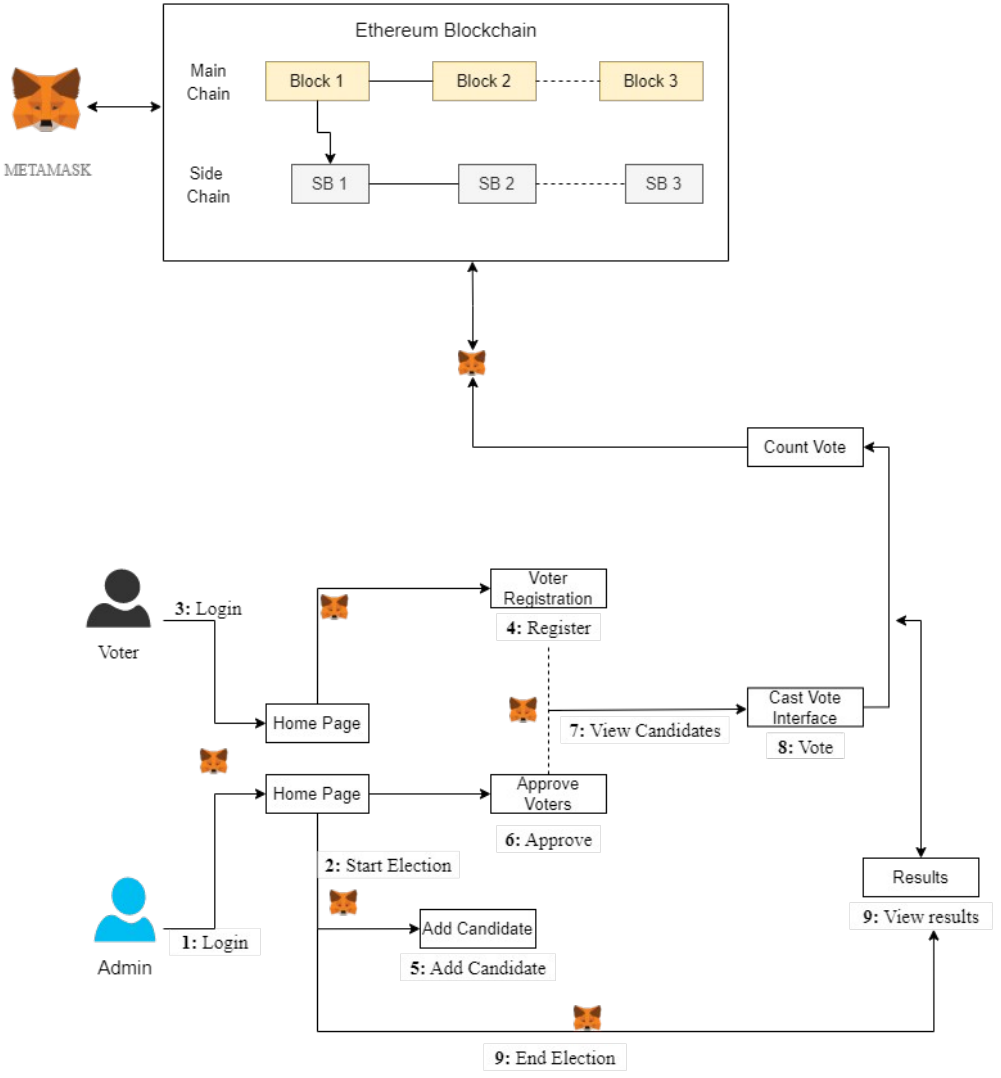
Processor : Minimum 1.7 GHz; recommended 2GHz(or more)

Ethernet Connection(LAN or Wi-Fi)

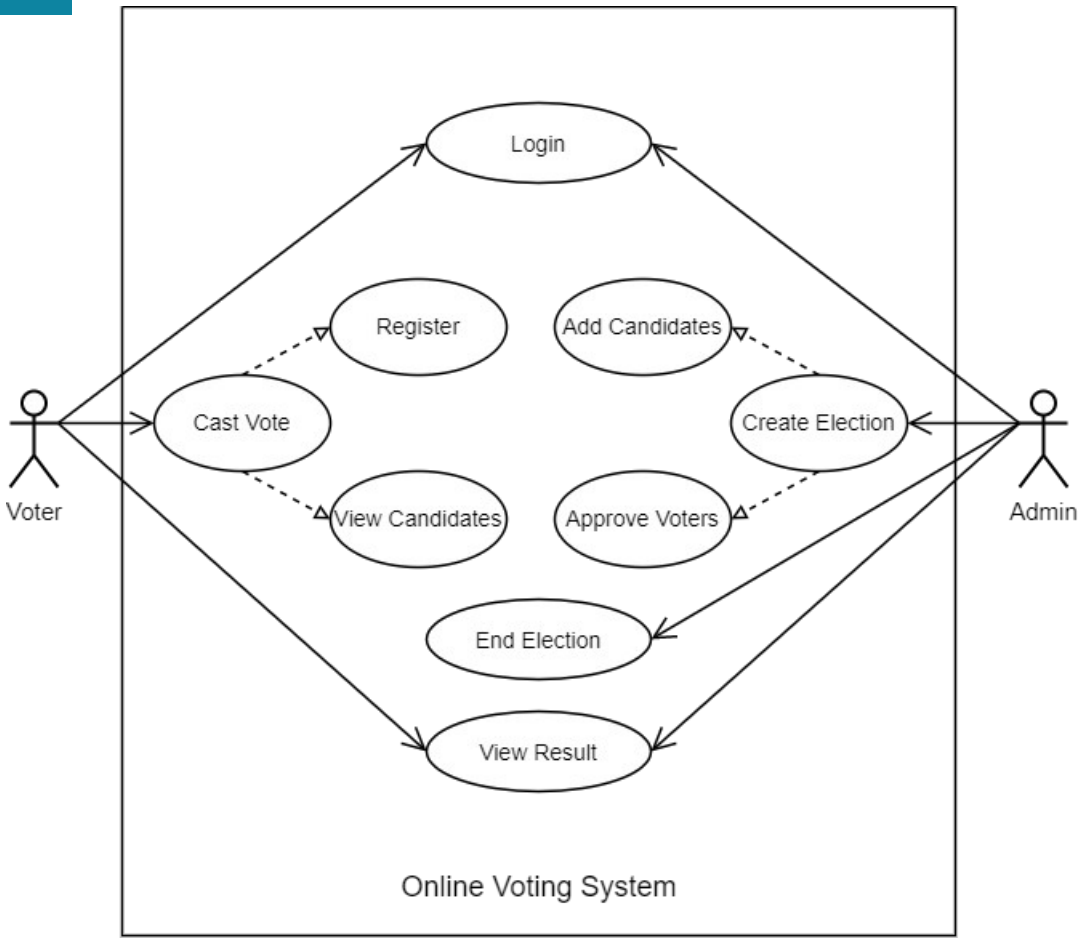
Hard Drive : 100GB or more

Memory(RAM) : 4GB or more

Architecture



UML Representation

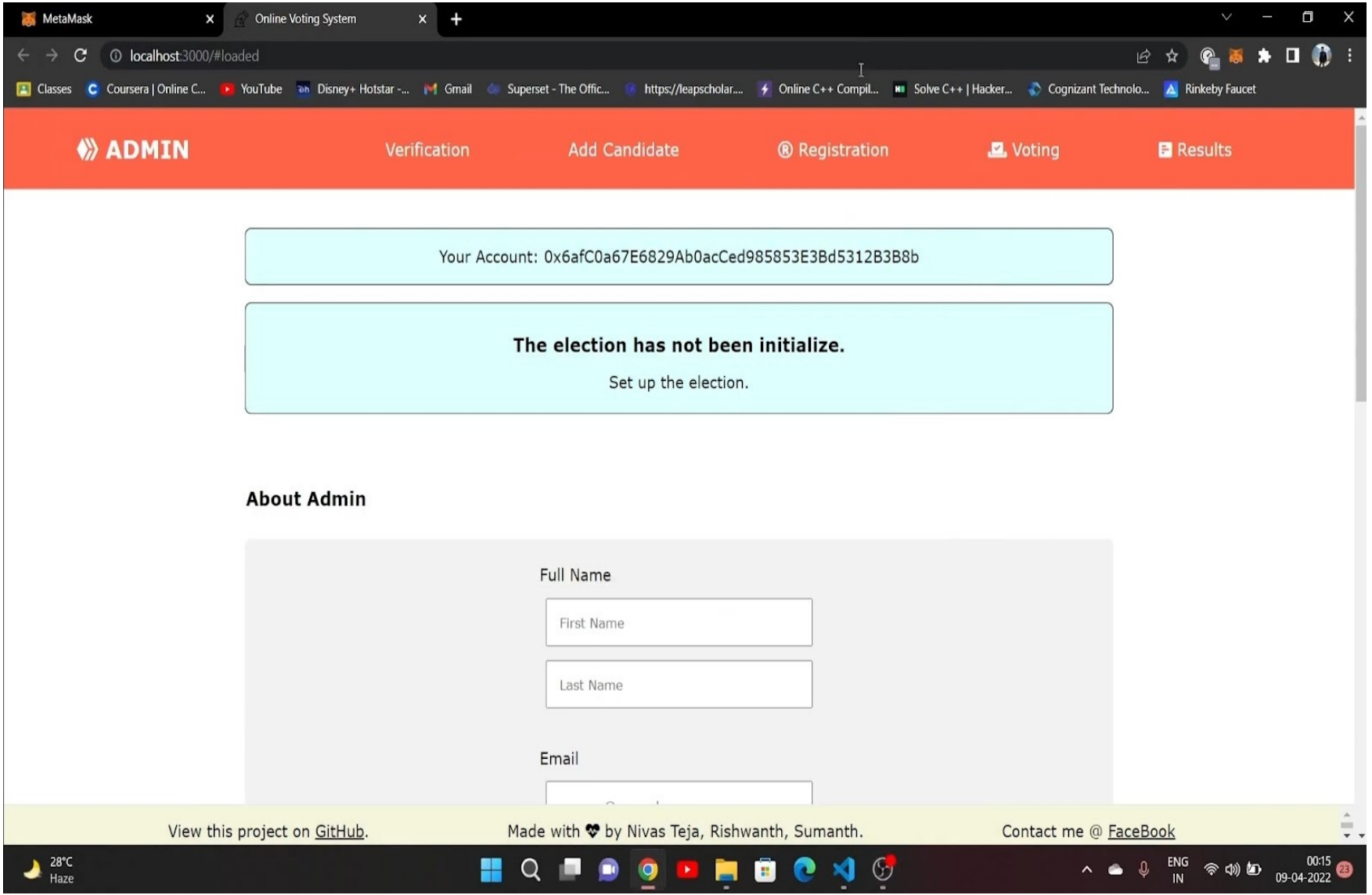


Implementation

We have implemented 8 modules

1. Log In
2. Create Election
3. Add Candidates
4. Voter Registration
5. Approval of Voters
6. Cast Vote
7. View Result
8. Log Out

Admin Page


MetaMask
Online Voting System
localhost:3000/#loaded
Classes
Coursera | Online C...
YouTube
Disney+ Hotstar -...
Gmail
Superset - The Offic...
https://leapscholar...
Online C++ Compil...
Solve C++ | Hacker...
Cognizant Technolo...
Rinkeby Faucet
ADMIN
Verification
Add Candidate
Registration
Voting
Results
Your Account: 0x6afC0a67E6829Ab0acCed985853E3Bd5312B3B8b
The election has not been initialize.
Set up the election.
About Admin
Full Name
First Name
Last Name
Email
View this project on GitHub.
Made with ❤ by Nivas Teja, Rishwanth, Sumanth.
Contact me @ FaceBook
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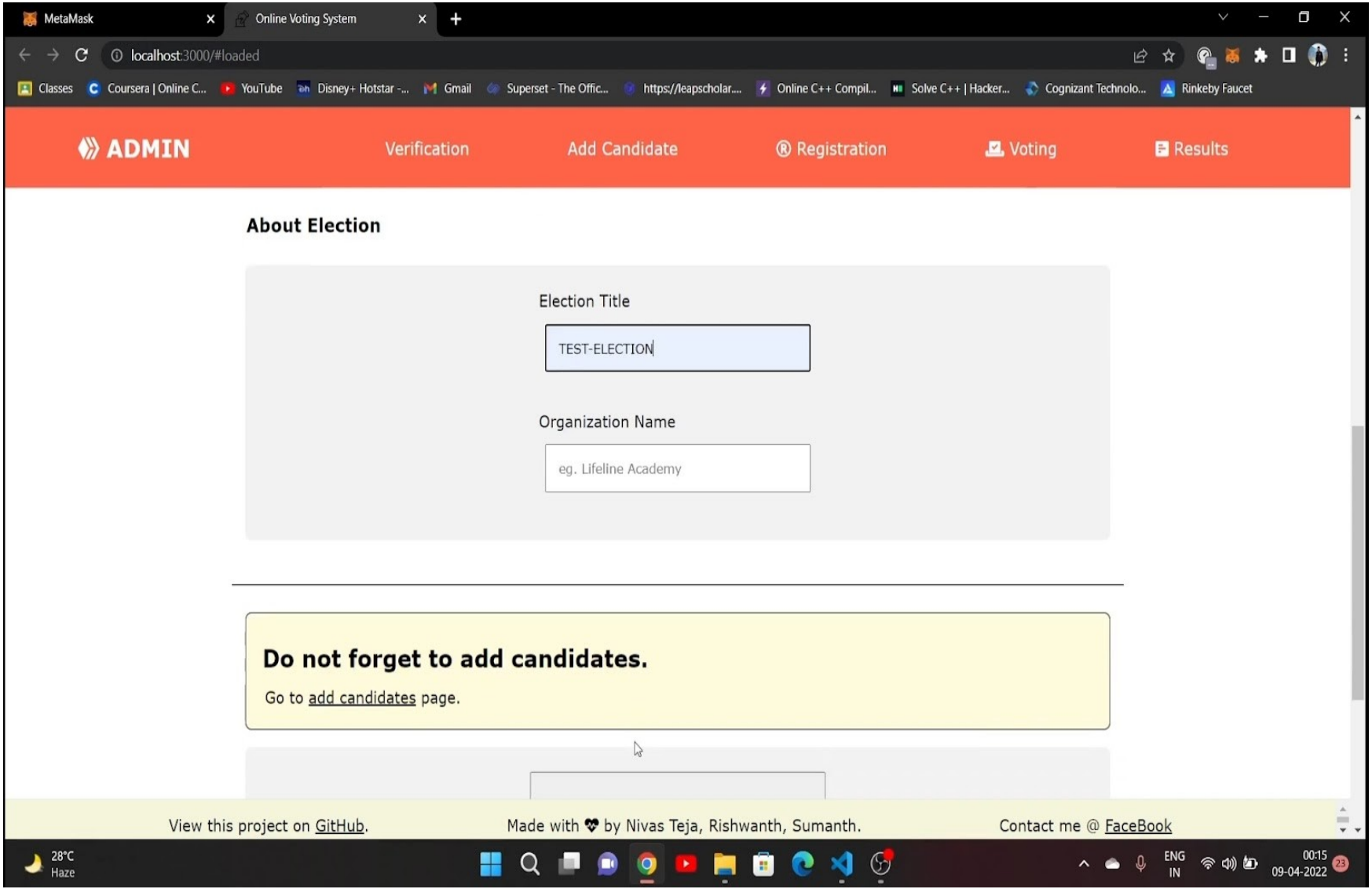
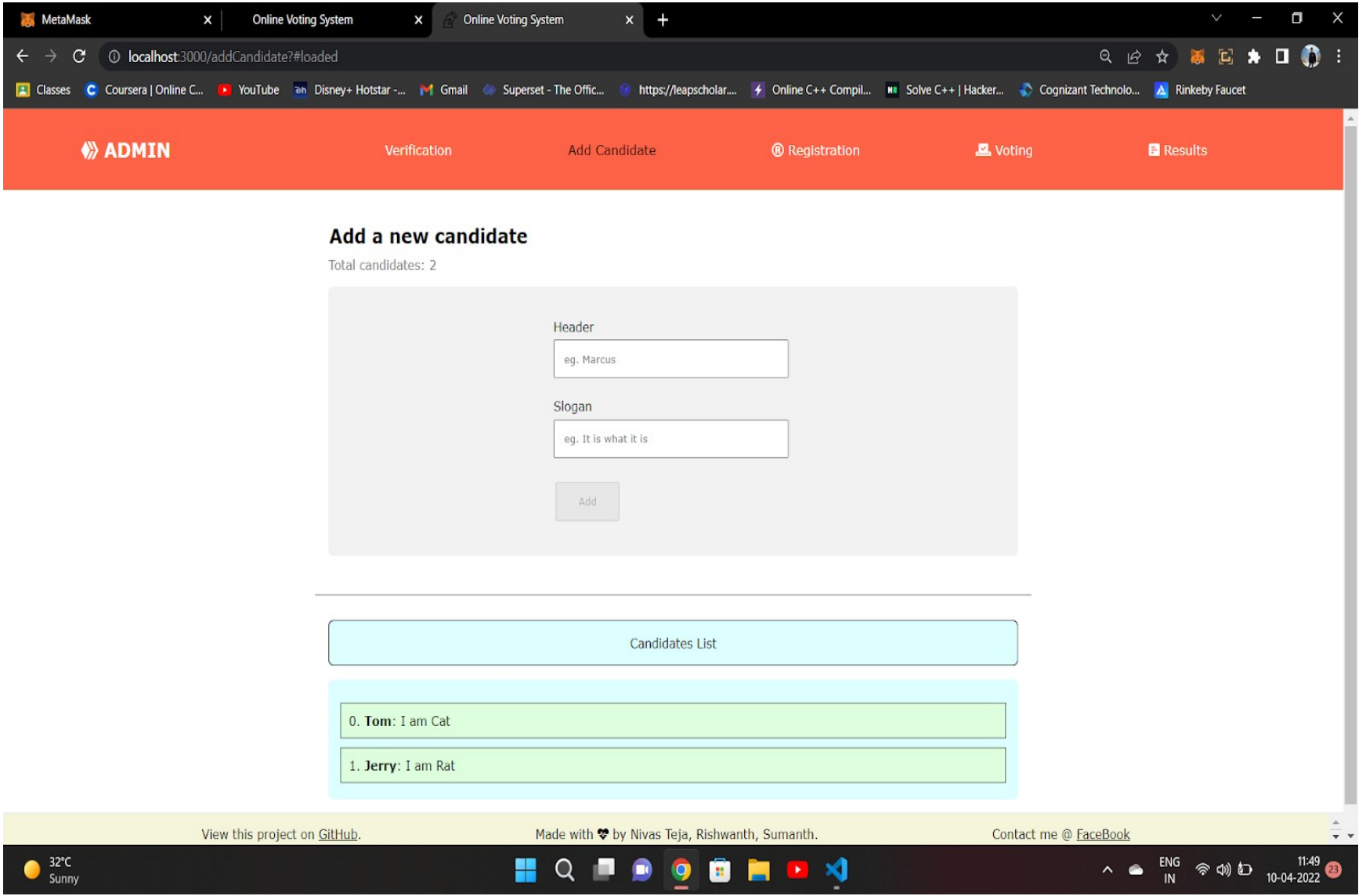
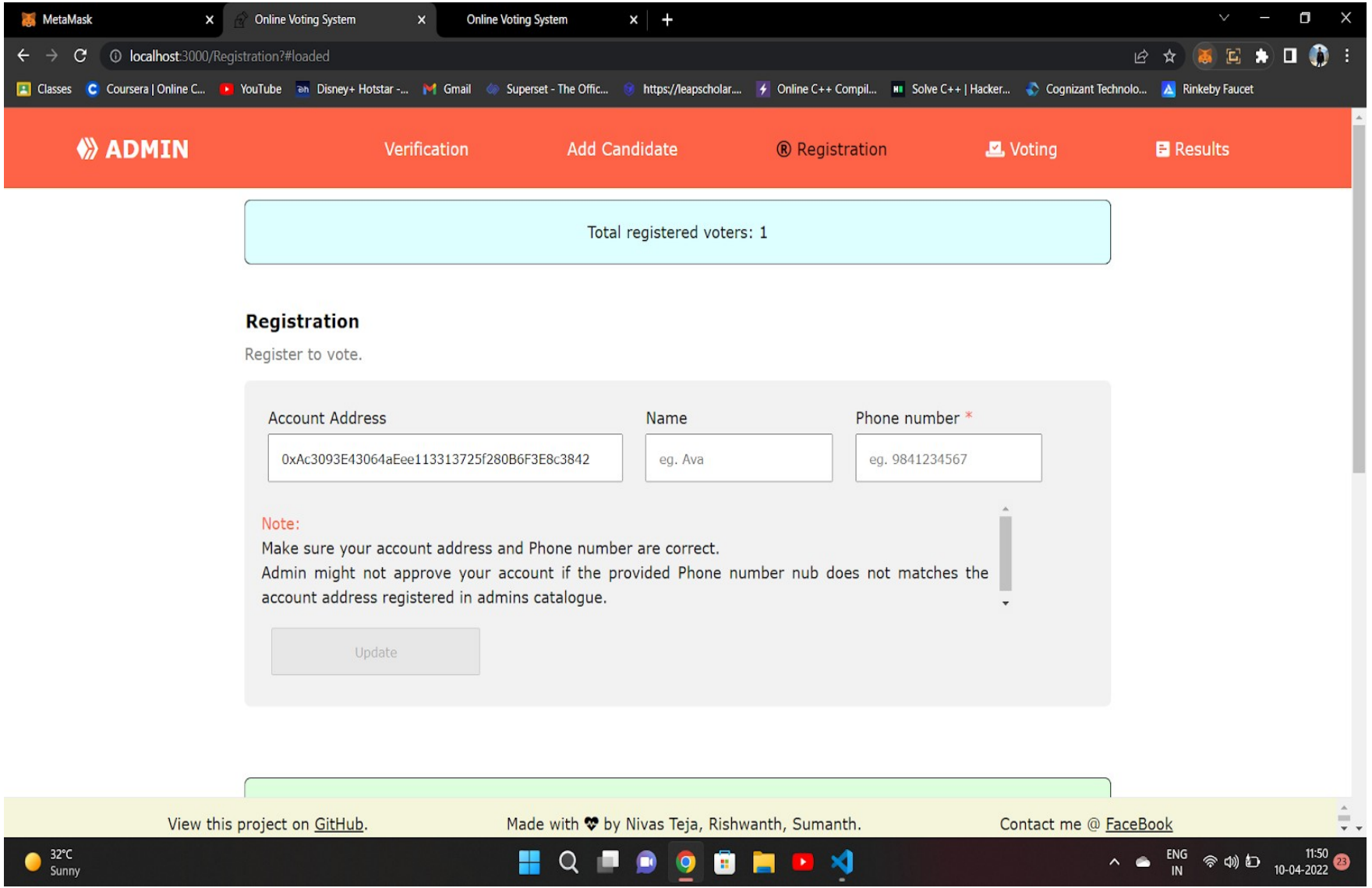


Create Election

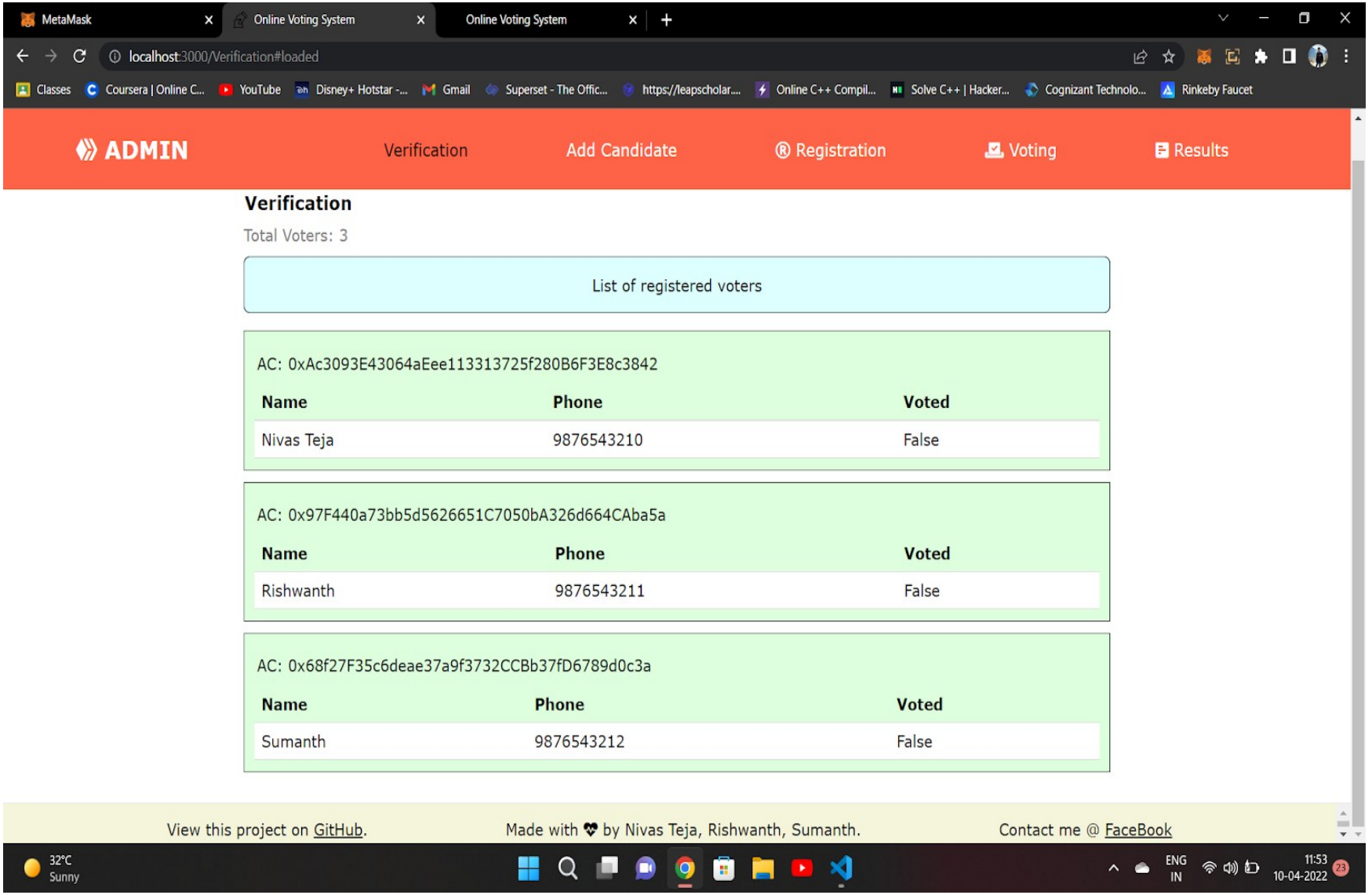
Add Candidate

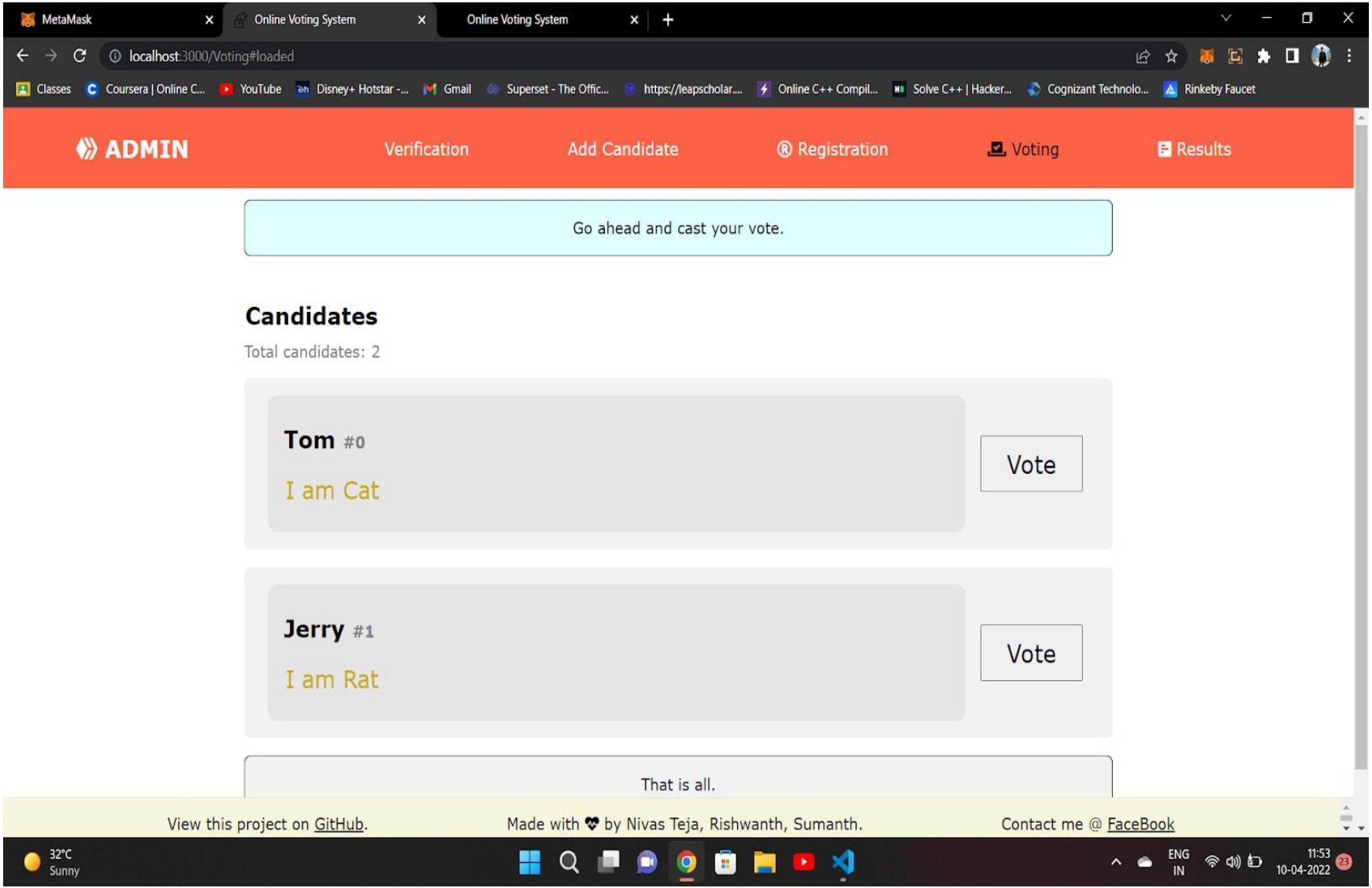




Vote Registration

Approve Voter




MetaMask
Online Voting System
Online Voting System
localhost:3000/Voting#loaded
Classes
Coursera | Online C...
YouTube
Disney+ Hotstar -...
Gmail
Superset - The Offic...
https://leapscholar....
Online C++ Compil...
Solve C++ | Hacker...
Cognizant Technolo...
Rinkeby Faucet
ADMIN
Verification
Add Candidate
Registration
Voting
Results
Go ahead and cast your vote.
Candidates
Total candidates: 2
Tom #0
I am Cat
Vote
Jerry #1
I am Rat
Vote
That is all.
View this project on GitHub.
Made with by Nivas Teja, Rishwanth, Sumanth.
Contact me @ FaceBook
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ENG
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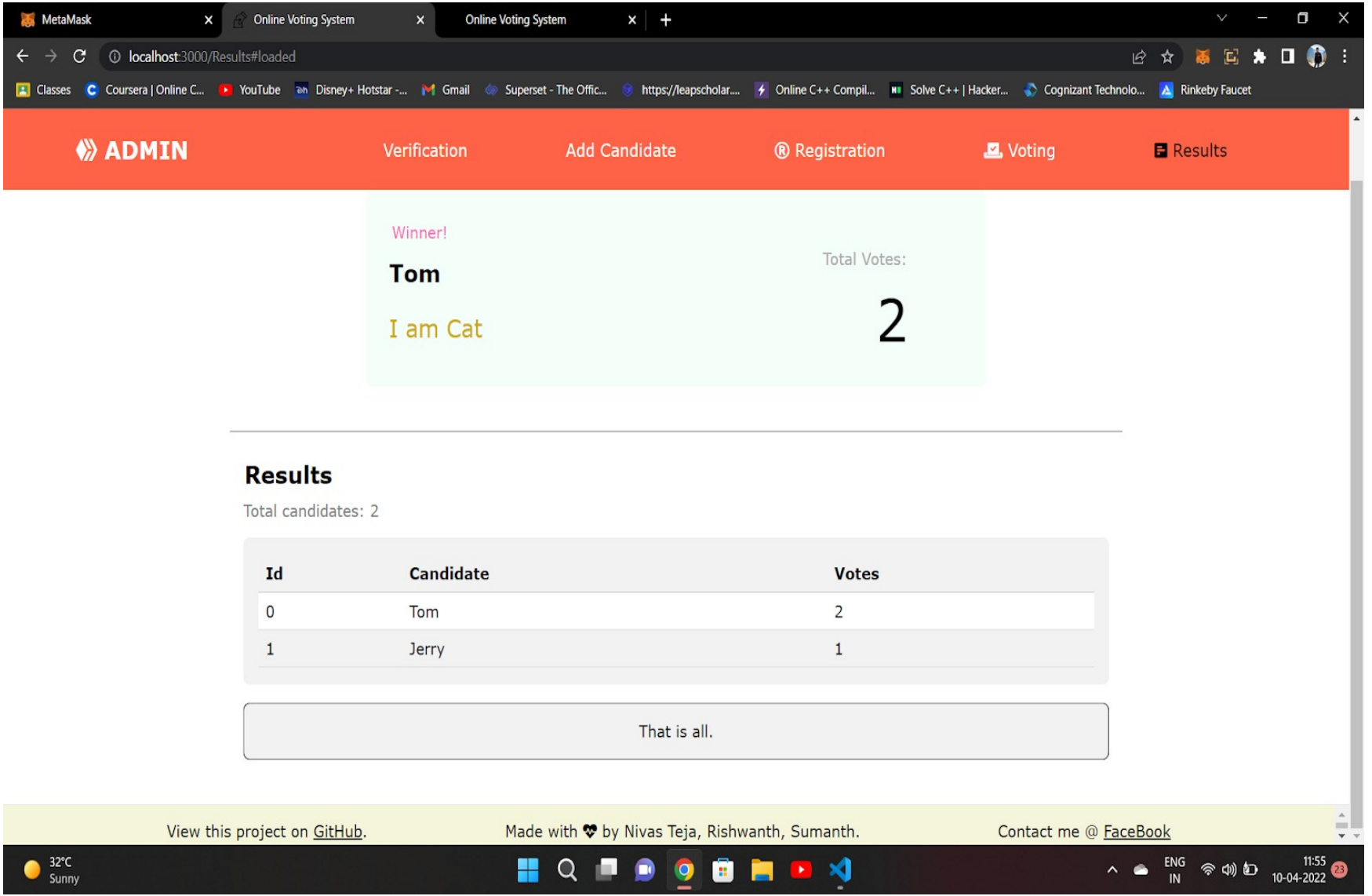
Cast Vote

View Result


MetaMask
Online Voting System
Online Voting System
localhost:3000/Results#loaded
Classes
Coursera | Online C...
YouTube
Disney+ Hotstar -...
Gmail
Superset - The Offic...
https://leapscholar....
Online C++ Compil...
Solve C++ | Hacker...
Cognizant Technolo...
Rinkeby Faucet
ADMIN
Verification
Add Candidate
Registration
Voting
Results
Winner!
Tom
I am Cat
Total Votes:
2
Results
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Tom
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1
Jerry
1
That is all.
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CONCLUSION

To solve the problem of traditional voting systems, e-voting systems using blockchain is a promising research venture. Blockchain systems guarantee security, reliability, decentralized storage and anonymity. As a result, designing and implementing e-voting systems using blockchain ensures public and individual verifiability, dependability, reliability, consistency, auditability, anonymity, transparency, scalability, eligibility, authentication and fairness through principles of consensus, cryptography, digital signatures, and various blockchain mechanisms

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Thank you

QUERIES