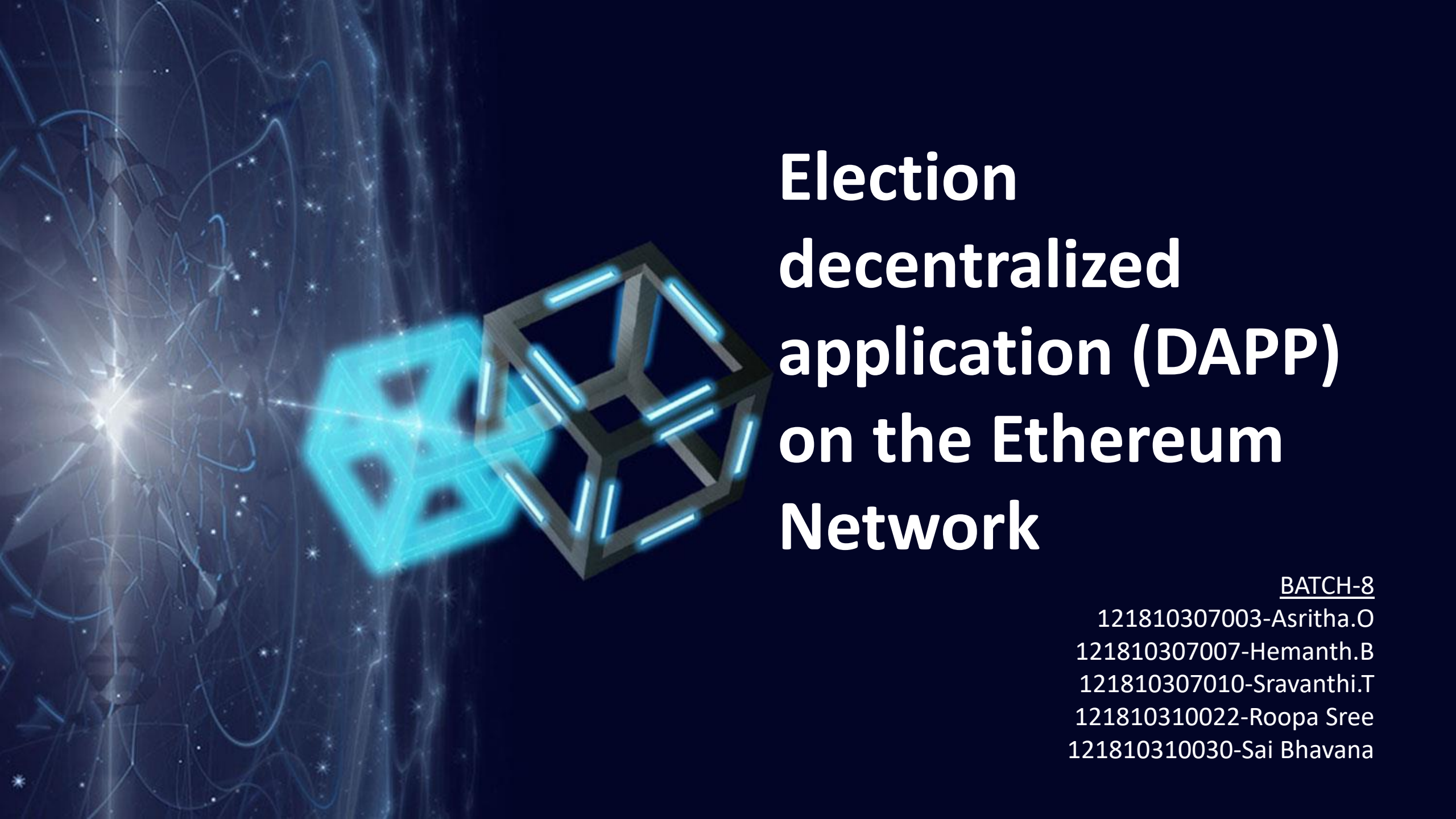


Election decentralized application (DAPP) on the Ethereum Network

BATCH-8

121810307003-Asritha.O

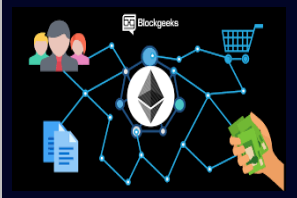
121810307007-Hemanth.B

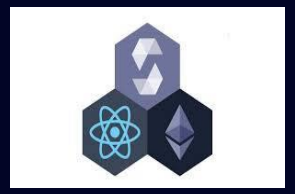
121810307010-Sravanthi.T

121810310022-Roopa Sree

121810310030-Sai Bhavana

CONTENTS





Why Blockchain voting system?

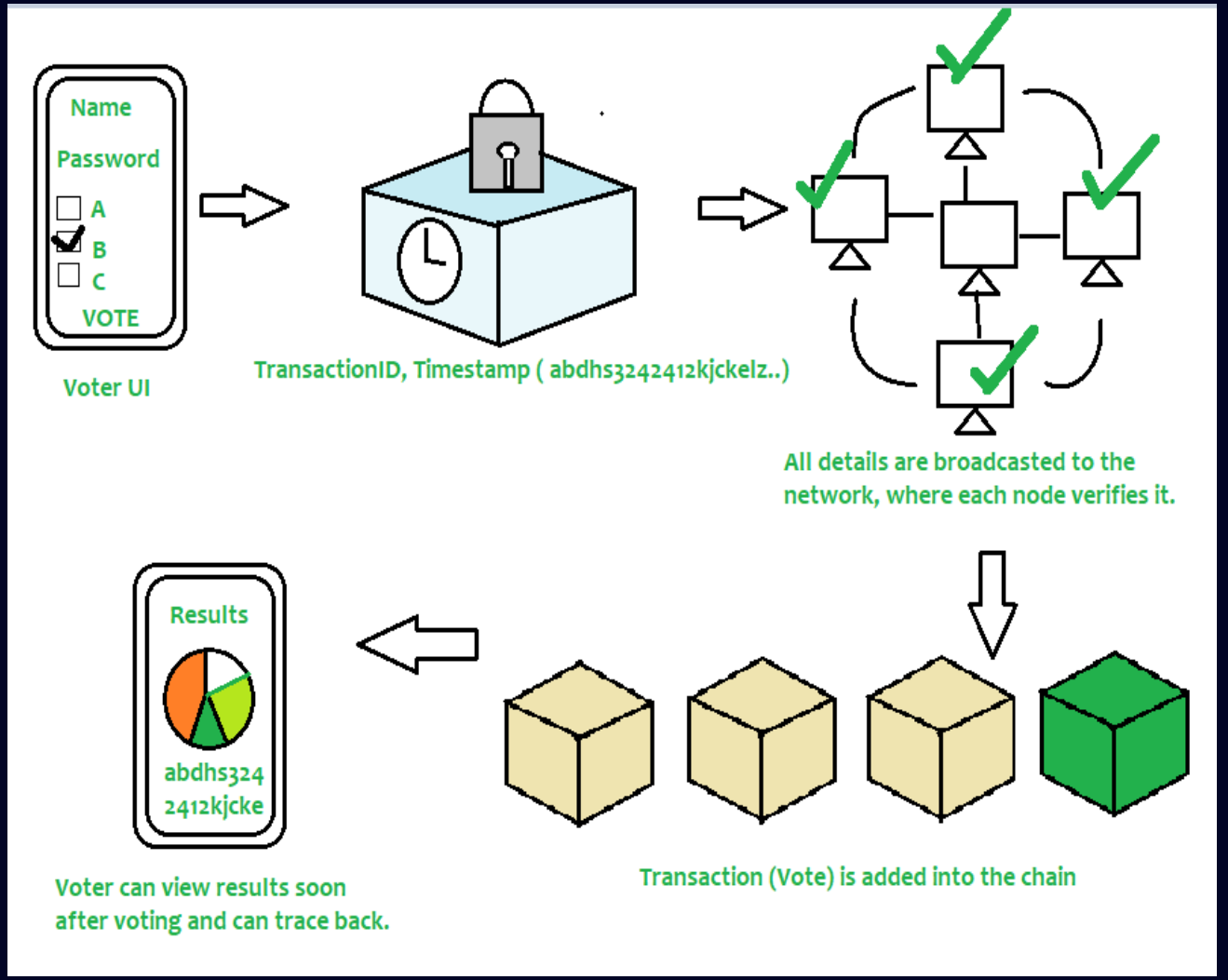
- Current voting systems like ballot box voting or electronic voting suffer from various security threats such as DDoS attacks, polling booth capturing, vote alteration and manipulation, malware attacks, etc, and also require huge amounts of paperwork, human resources, and time.polling booth capturing, vote alteration and manipulation, malware attacks, etc, and also require huge amounts of paperwork, human resources, and time.
- Long Queues during elections
- Security Breaches like data leaks, vote tampering.
- Lot of paperwork involved.
- Difficult for differently-abled voters to reach polling booth.
- Cost of expenditure on elections is high.

Advantages of Blockchain

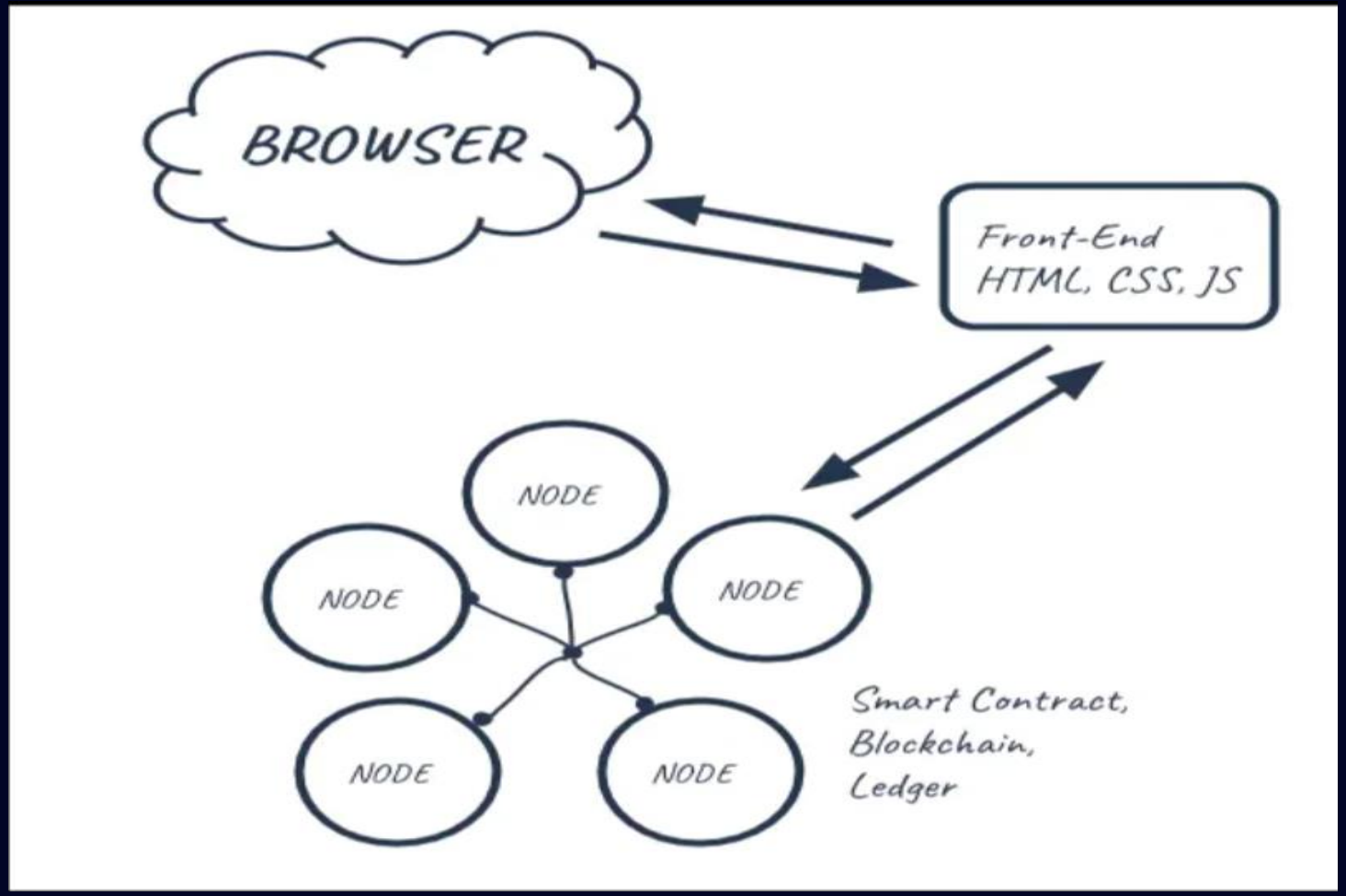
- Consider SQL, PHP, or any other traditional database systems.
- You can insert, update, or delete votes.
- But in a blockchain you can just **insert data** but cannot update or delete.
- You can vote anytime/anywhere (During Pandemics like COVID-19 where it’s impossible to hold elections physically)
- Secure
- Immutable
- Faster
- Transparent

How blockchain voting works?

- According to diagram, voter needs to enter his/her credentials in order to vote.
- All data is then encrypted and stored as a transaction. This transaction is then broadcasted to every node in network, which in turn is then verified.
- If network approves transaction, it is stored in a block and added to chain.
- Users can now see results and also trace back transaction if they want.



WORKING OF DApp



COMPONENTS OF ETHEREUM

- Smart Contracts act as the back-end logic and storage. A contract is written in Solidity, a smart contract language, and is a collection of code and data that resides at a specific address on the Ethereum blockchain.1. Code on blockchain, Like a micro service, Written in solidity
- The Ethereum Virtual Machine(Ganache): handles the internal state and computation of the entire Ethereum Network. Think of the EVM as this massive decentralized computer that contains "addresses" that are capable of executing code, changing data, and interacting with each other.
- Node.js:As it is an asynchronous event-driven JavaScript runtime,Node.js is designed to build scalable network applications.
- Metamask brings Ethereum to your browser. It is a browser extension that provides a secure web3 instance linked to your Ethereum address, allowing you to use Decentral ized Applications.

WHAT WE ARE GOING TO BUILT

- Display the Name of each Candidate.
- Check if the User-entered ID is unique.
- Allow new Candidates to be added.
- Require Users to have an Ethereum Address to vote

OTHER TOOLS USED

- **Truffle** is a popular testing development framework for Ethereum. It includes a development blockchain, compilation and migration scripts to deploy your contract to the Blockchain, contract testing, and so on. It makes development easier!

- **Truffle Contracts** is an abstraction on top of the Web3 Javascript API, allowing you to easily connect and interact with your Smart Contract.

Decentralized Voting Application (DApps)

Dapps are built on solidity language.

1. **Contract:** A contract is just like a class in Solidity which consists (its functions) and data (its state) that resides at a specific address on the Ethereum Blockchain. In each Contract, we can define State Variables, Methods, and Events, etc. A smart contract runs exactly as programmed without any possibility of downtime, censorship, fraud, and third-party interference.

```
contract Election {
// Model a Candidate
struct Candidate {
 uint id;
 string name;
 uint voteCount;
 }
```

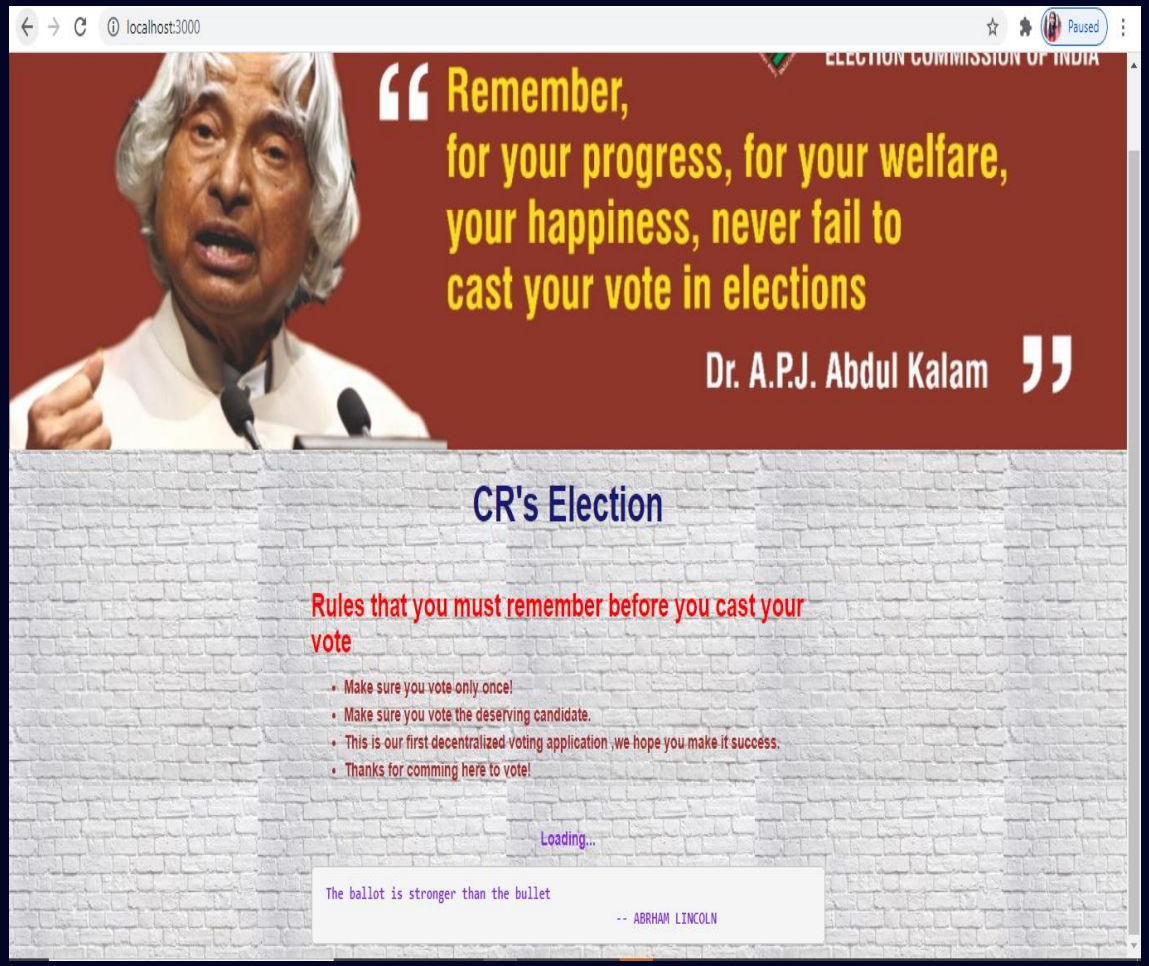
2. Structure: The Structure is Collection of different type of Data Types same like C

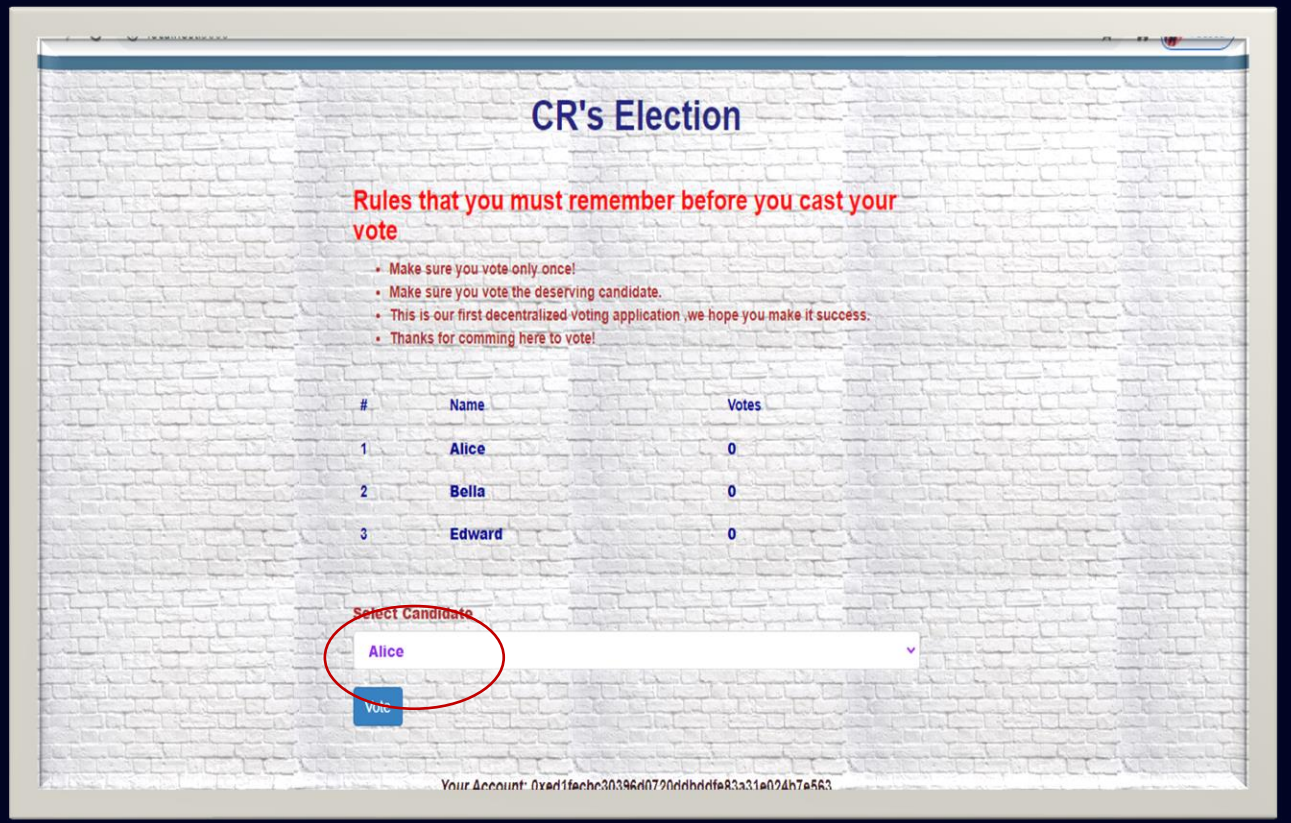
```
struct Candidate {
        uint id;
        string name;
        uint voteCount;
    }
```

3. Mapping: Mapping is just like Hash tables It stores the value based on key.

```
// Store accounts that have voted
    mapping(address => bool) public voters;
```

OUTPUT


localhost:3000
Paused
Remember,
for your progress, for your welfare,
your happiness, never fail to
cast your vote in elections
Dr. A.P.J. Abdul Kalam
CR's Election
Rules that you must remember before you cast your vote
Make sure you vote only once!
Make sure you vote the deserving candidate.
This is our first decentralized voting application ,we hope you make it success.
Thanks for comming here to vote!
Loading...
The ballot is stronger than the bullet
-- ABRHAM LINCOLN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Make sure you vote only once!
Make sure you vote the deserving candidate.
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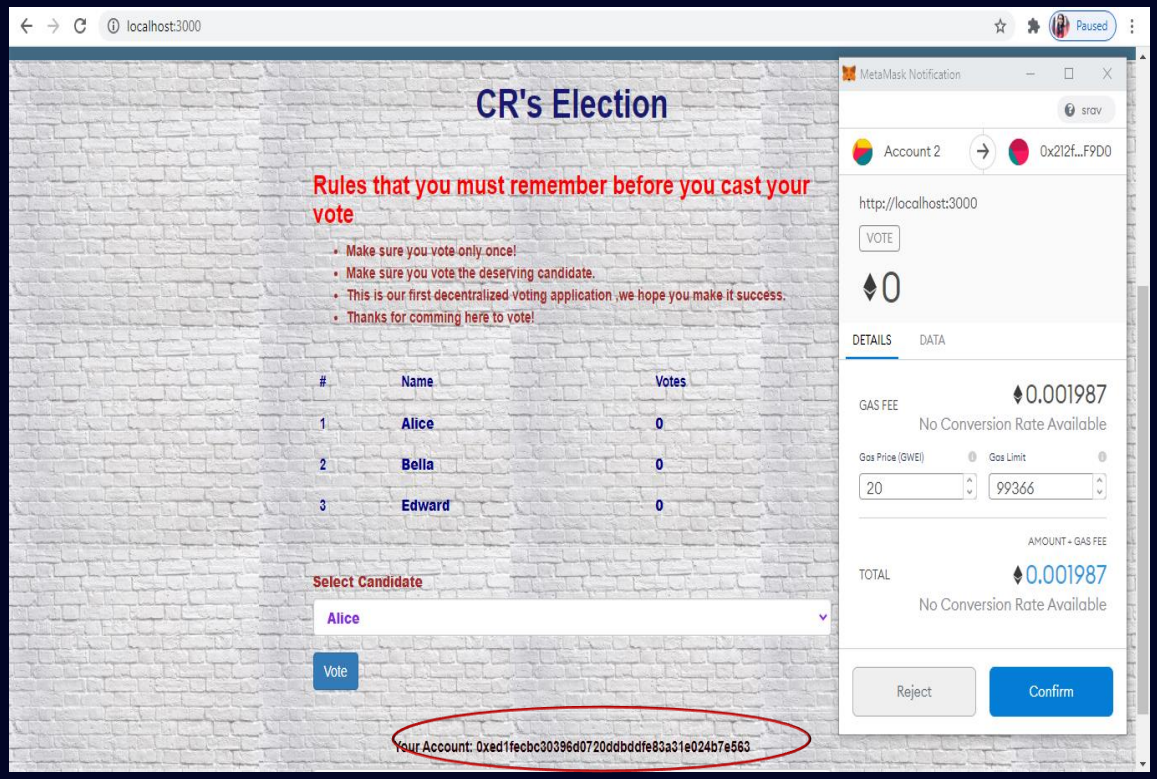
Thanks for comming here to vote!
Name Votes
1 Alice 0
2 Bella 0
3 Edward 0
Select Candidate
Alice
Vote
Your Account: 0xed1fecbc30396d0720ddbddfe83a31e024b7e563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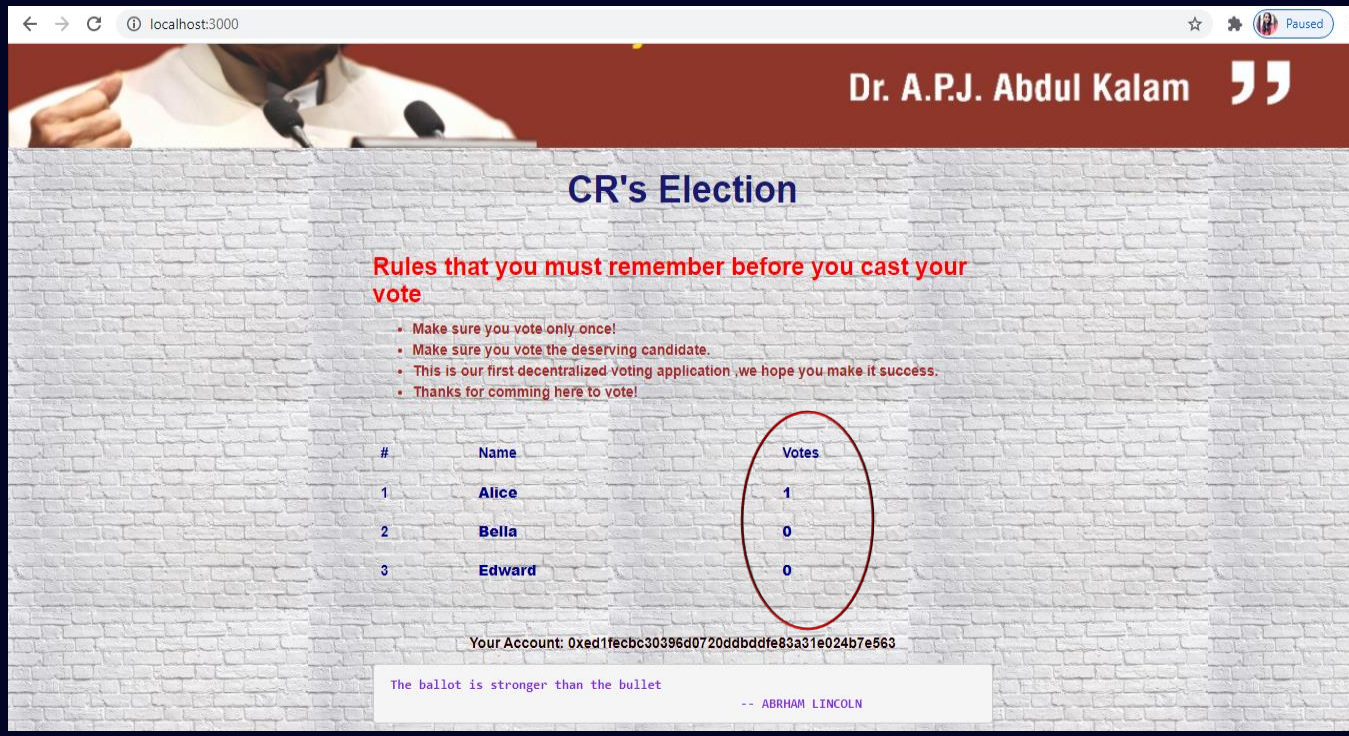
1 Alice 0
2 Bella 0
3 Edward 0
Select Candidate
Alice
Vote
Your Account: 0xed1fecbc30396d0720ddbddfe83a31e024b7e563
MetaMask Notification
srav
Account 2
0x212f...F9D0
http://localhost:3000
VOTE
0
DETAILS
DATA
GAS FEE
0.001987
No Conversion Rate Available
Gas Price (GWEI)
Gas Limit
20
99366
AMOUNT + GAS FEE
TOTAL
0.001987
No Conversion Rate Available
Reject
Confirm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-- ABRHAM LINCOLN

Ganache

ACCOUNTS | BLOCKS | TRANSACTIONS | CONTRACTS | EVENTS | LOGS

SEARCH FOR BLOCK NUMBERS OR TX HASHES

CURRENT BLOCK	GAS PRICE	GAS LIMIT	HARDFORK	NETWORK ID	RPC SERVER	MINING STATUS	WORKSPACE		
24	20000000000	6721975	MUIRGLACIER	5777	HTTP://127.0.0.1:7545	AUTOMINING	QUICKSTART	SAVE	SWITCH

MNEMONIC

rural joke upon clerk blade off gown pill pupil canal garlic scrub

HD PATH

m/44'/60'/0'/0/account_index

ADDRESS	BALANCE	TX COUNT	INDEX
0×ED1fecBc30396D0720DDBddFE83A31e024B7e563	99.93 ETH	22	0
0×A633c672e73bb0F74F46ebb9dDe95B9Ca4A4bA7f	99.37 ETH	2	1
0×e915cDdC30CF463a0c4805E3e12EEe794970ECec	100.00 ETH	0	2
0×B4a175a2A732BaeD650344829Bd813c7B848c353	100.00 ETH	0	3
0×7B40B0F4c1e56d8Fec1085C8F07937736835d409	100.00 ETH	0	4
0×E0f6F1Dc6552a62e4A7ec44B78a5C8e7DF658bDb	100.00 ETH	0	5

Ganache

ACCOUNTS | BLOCKS | TRANSACTIONS | CONTRACTS | EVENTS | LOGS

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CURRENT BLOCK	GAS PRICE	GAS LIMIT	HARDFORK	NETWORK ID	RPC SERVER	MINING STATUS	WORKSPACE		
24	20000000000	6721975	MUIRGLACIER	5777	HTTP://127.0.0.1:7545	AUTOMINING	QUICKSTART	SAVE	SWITCH

TX HASH
0×6d73f6802fa547d36d99111a963e4bb50d4b3e211cc5698027a0b3cf22bb6c6e
CONTRACT CALL

FROM ADDRESS	TO CONTRACT ADDRESS	GAS USED	VALUE
0×ED1fecBc30396D0720DDBddFE83A31e024B7e563	0×212f554b21de6ea2db2Be382e176dc9063C9F9D0	66244	0

TX HASH
0×0e533ca3c2f6c33306b204c3cd8ec5647fad1cd15b28fc5c5298f1ff0e86cc52
CONTRACT CALL

FROM ADDRESS	TO CONTRACT ADDRESS	GAS USED	VALUE
0×ED1fecBc30396D0720DDBddFE83A31e024B7e563	0×d6Aa923776033929c23E0e667D537B2dCAe5c131	26490	0

TX HASH
0×c24b001a690c78a589abb065d34090416b613c435e37409b1b9119dc59805d9f
CONTRACT CREATION

FROM ADDRESS	CREATED CONTRACT ADDRESS	GAS USED	VALUE
0×ED1fecBc30396D0720DDBddFE83A31e024B7e563	0×212f554b21de6ea2db2Be382e176dc9063C9F9D0	431763	0

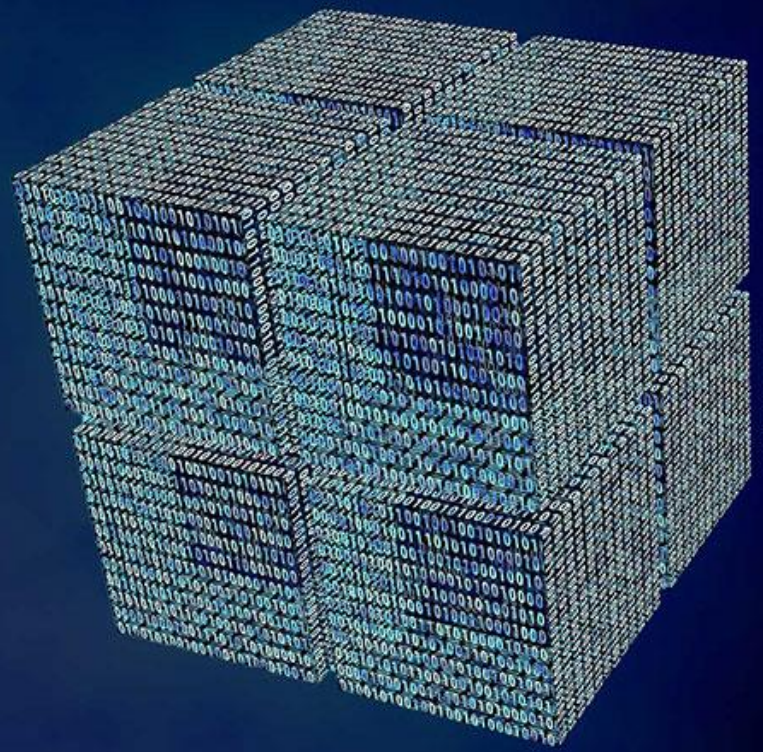
TX HASH
0×bce94ebb83b315d2db6f59dfbcc9b052545c261fa22e321180def25ae524c316
CONTRACT CALL

FROM ADDRESS	TO CONTRACT ADDRESS	GAS USED	VALUE
0×ED1fecBc30396D0720DDBddFE83A31e024B7e563	0×d6Aa923776033929c23E0e667D537B2dCAe5c131	41490	0

LIMITATIONS

- It could be possible to enter fake data into a blockchain especially when the data describes actions outside the online universe, like voting.
- If citizens are to vote from their personal phone, precautionary steps need to be taken to protect the devices from hacking.
- Election cybersecurity experts, warn that any kind of online voting will introduce new risks and security vulnerabilities and that protecting connected devices are already hard.

REFERENCES



01 Github- https://github.com/dappuniversity/election

02 DApp University


THANK YOU!