SECURE DIGITAL VOTING SYSTEM USING BLOCKCHAIN TECHNOLOGY

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AGENDA

# Summary of Stage I

- Developed an online voting platform for voting purpose.

- Designed various pages like home page, user login, admin login using html, css, javascript.

- We have used SHA-256 Algorithm tool for generating the address that is unique hash value for each voter.

- We have worked with blockchain technology by using Solidity to build smart contracts and tools like Ganache, Metamask, and Truffle for testing purpose.

Architecture
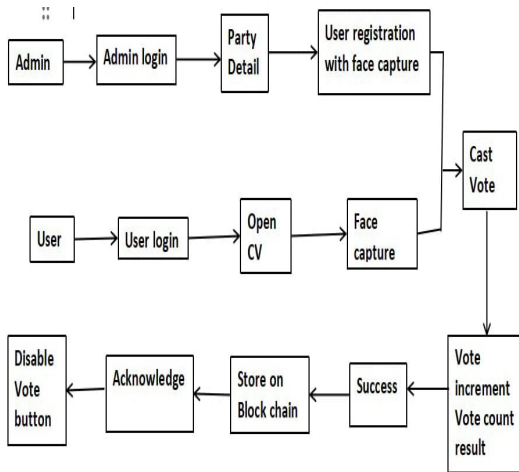
USING OPEN CV APPLICATION
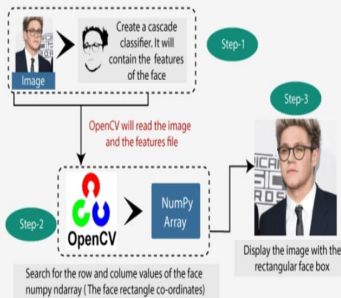
Modules

- **Admin module:** In admin module it is the responsibility of adding the party details and registering the voters and validating the vote count. Admin login to system by using username as 'admin' and password as 'admin'.

- **User module:** In user module the user has to sign up with the application by using username as his ID and then upload his face photo which capture from webcam. After registering user can go for login which validate user id and after successful login user can go for casting the vote.

Functionality of the project

- **Register:** The voter must first register on the website using the user's basic information, including user name, password, address, contact number, email id, profile image.

- **Face-Capture:** After Entering all the basic details for registration the user will be redirected to the face capture page where the user's face will be captured and then the captured image will be converted in base64 string. The face is captured for avoiding the risk of fake voters.

Functionality of the project

- **Login:** The voting system requires users to log in with their username and password, which are encrypted using SHA-256 Encryption, and upon successful verification, redirects them to the voting page.

- **Vote Casting:** After logging in successfully, users access the voting page to select a candidate from a dropdown list and cast their vote by clicking the "Vote" button. Once the vote is cast, the button is disabled to prevent multiple votes from the same user.

Functionality of the project

- **Face Proctoring:** The system will be able to detect faces by using the camera on the user's device. We are utilizing the Face-API library to detect faces. If the camera detects more than one face, the system will display an alert to the user and also sent the user back to the home page and stop their voting process.

- **Display Result:** A real-time update of the vote total will be shown. Thus the transparency will be maintained and user can also verify their vote is getting counted.

Implementation

- We have defined function to manage all Voting system like voter details, party details and user registration details.

Figure: Deploying Blockchain Contract

Implementation

- First go inside 'hello-eth/node-modules/bin' folder and then double click on 'runBlockchain.bat' file to get below screen.

Figure: Running Blockchain

Implementation

- In above screen Blockchain started with default private keys and account and now type command as 'migrate' and press enter key to deploy contract and get below output.

Figure: Blockchain Truffle Suite Output

Implementation

- In above screen Voting contract deployed and got contract address and this address need to specify in python code to call functions from Blockchain. Click on 'run.bat' file to start python web server.

Figure: Run Server output

Implementation
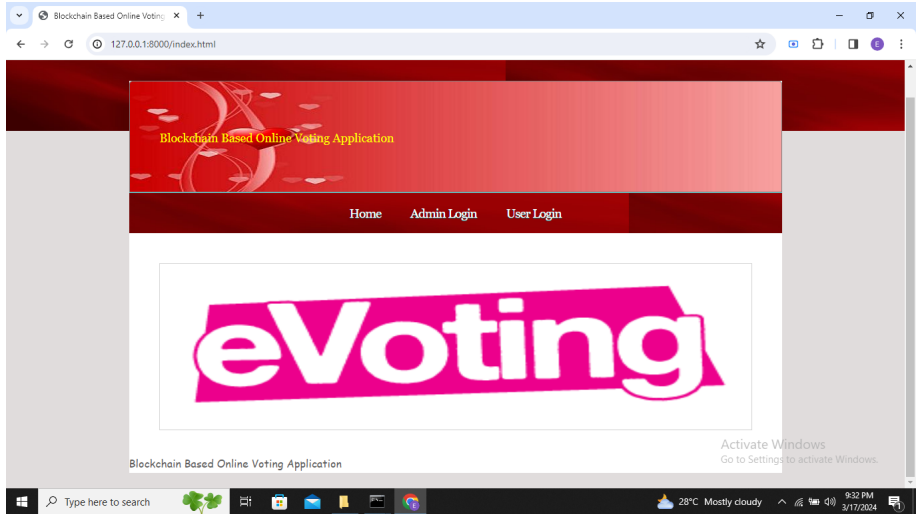
Figure: Home Page

Implementation
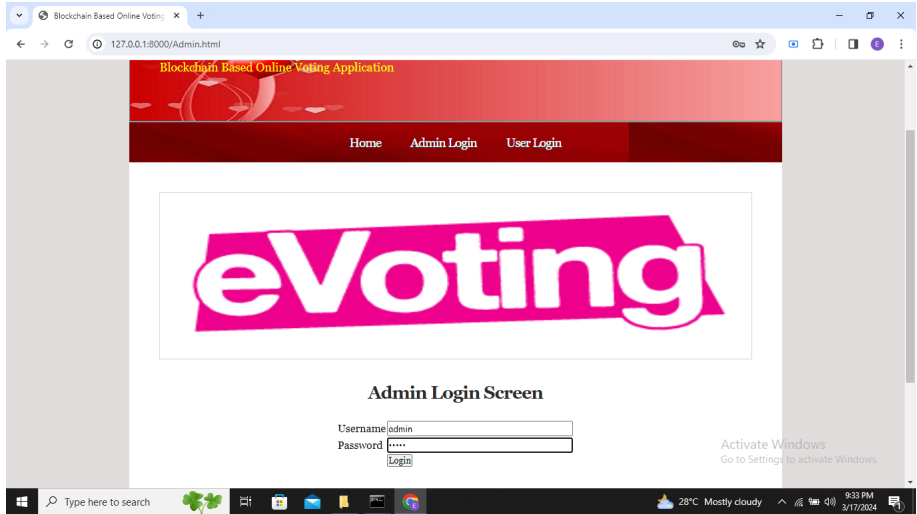
Figure: Admin Page

Implementation
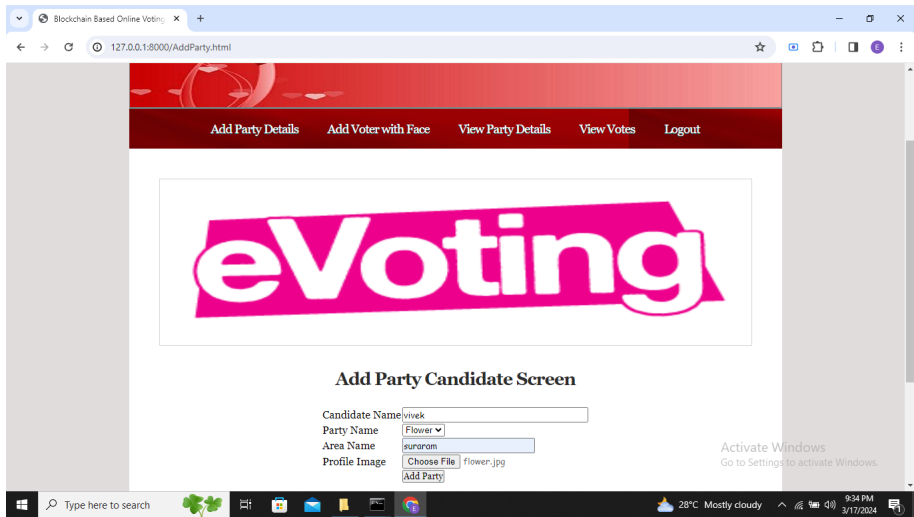
Figure: Adding Parties

Figure: Party Details

Implementation

Figure: Initial Vote Count

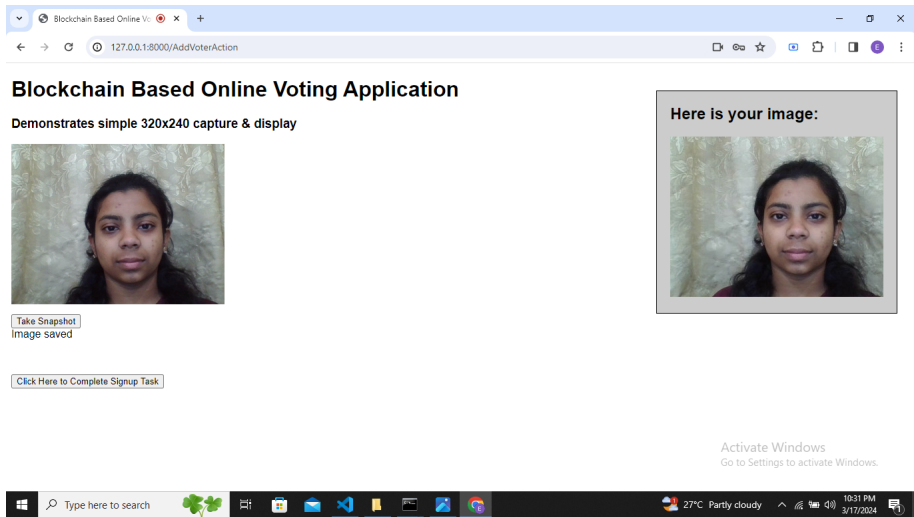# Implementation

Figure: User Register

Implementation

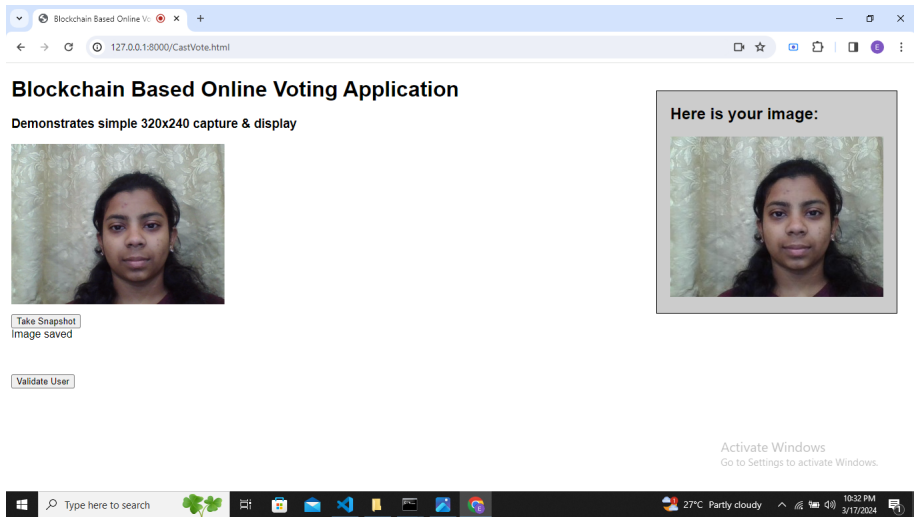Figure: Face Capture

Implementation
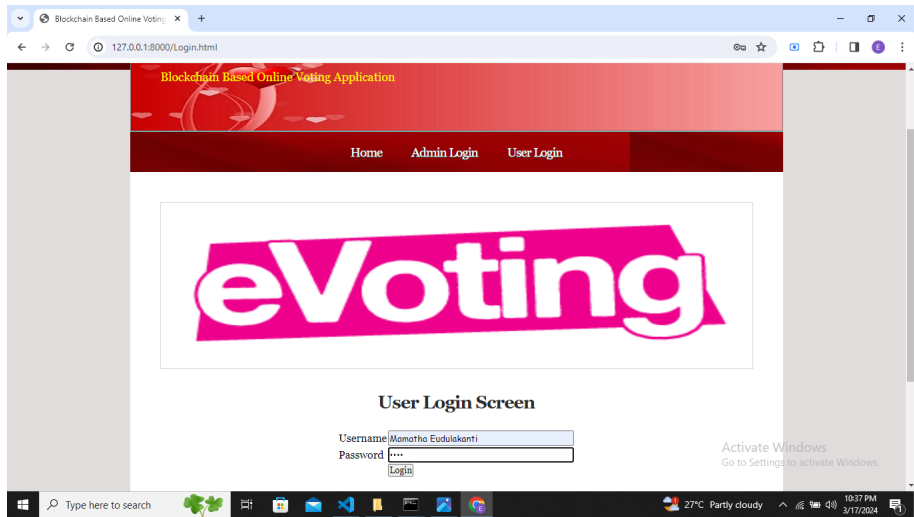
Figure: User login

Figure: Validate User

Implementation
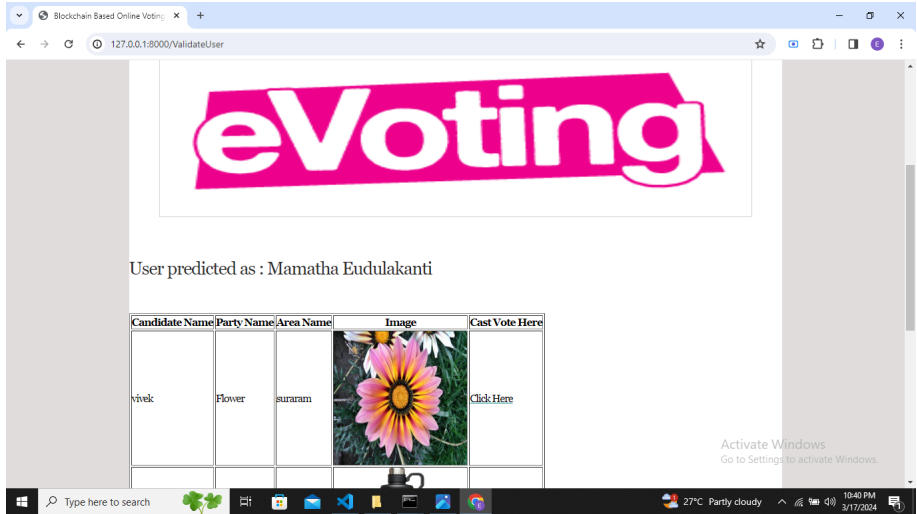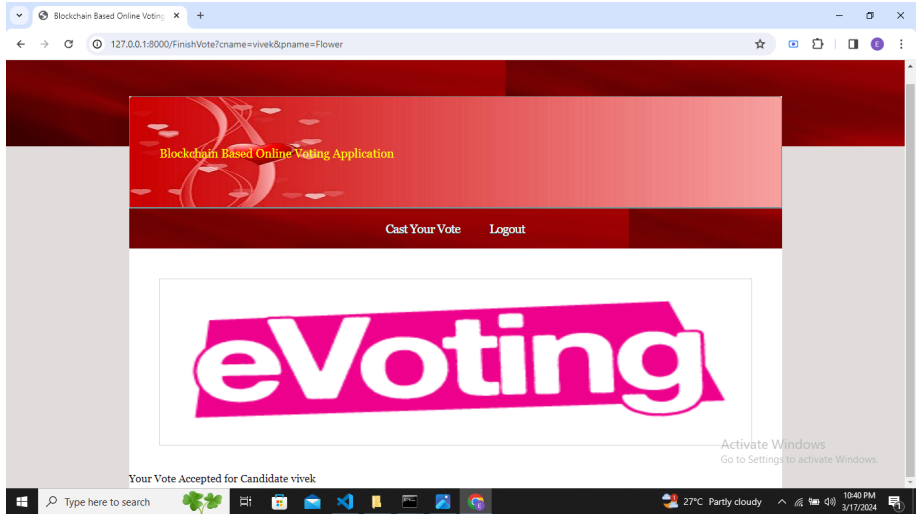

Figure: caste vote

Figure: vote casted

Implementation

Figure: final Vote count

Conclusion

- There will be very less chance that votes will be tampered with or altered because they will be stored on a blockchain.

- No single authority will therefore be able to exercise any type of control.

- Online voting can encourage more people to participate in elections, potentially increasing voter turnout and make it easier for citizens who are geographically distant.

- Industry, Innovation increases transparency and contributes efficiency in electoral process.

Thank you

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