iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** IV **Month of publication:** April 2023

DOI: https://doi.org/10.22214/ijraset.2023.50142

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue IV Apr 2023- Available at www.ijraset.com

Online Voting System Using Block Chain

Mandala Sowmya[1], Mandadi Dileep Reddy[2], Kanakam Shiva Kumar[3], Kasireddy Saketh Reddy[4]
[1] *Assistant Professor, CSE Department, Vardhman College of Engineering , Hyderabad*
[2, 3, 4] *Department of CSE, Vardhman College of Engineering, Hyderabad*

Abstract: ***New opportunities to create new kinds of digital services are being provided by blockchain. Although research on the subject is still in its early stages, it has largely concentrated on the technical and legal issues rather than making use of this novel idea and developing advanced digital services. In order to develop a new electronic voting system that could be used in local or national elections, we will make use of the open source Blockchain technology. The Blockchain-based system will be safe, dependable, and anonymous, and it will contribute to a rise in voter turnout and public confidence in their governments. In order to be accessible to voters while being guarded against outside influences preventing votes from being cast or preventing a voter's ballot from being tampered with, an e-Voting system must have enhanced security.***

Voting systems with blockchain technology have the potential to be transparent and secure. This paper suggests a Python-based voting system that is built on the blockchain. The voting process is managed by the system using smart contracts, and the votes are recorded on the blockchain. Voters can cast their ballots from any location with an internet connection thanks to the voting process's ease-of-use and simplicity.

The system is set up to protect voters' anonymity and privacy while discouraging any fraudulent activity. The suggested system provides a tamper-proof and auditable voting process that improves the electoral process's integrity. The use of blockchain technology also promotes greater transparency and lessens the possibility of mistakes or manipulations. overall, the suggested system presents viable option for a secure and transparent voting process.

Keywords: Block Chain, Electronic Voting System, E – Voting, Django Python.

I. INTRODUCTION

Any democratic society must prioritise voting. It gives people the ability to pick the representatives who will act on their behalf. However, problems with voter fraud, ballot tampering, and inaccurate vote tallying frequently plague traditional voting systems. Citizens no longer have confidence in the electoral process as a result of these problems.

These problems may be resolved by blockchain technology, which offers a safe and transparent voting system. In this project, Python will be used to implement a voting system based on the blockchain. The majority choice method of polling increased public confidence in the decision. It has contributed to further democratising the democratic process and the electoral process for choosing representatives and governments. Out of about two hundred countries, 167 are democratic in 2018. The remaining 167 are either fully corrupt or hybrid. Since the beginning of the legal system, the key choice model has been used to increase trust in democratic systems.

It is crucial to verify that voter confidence remains unaffected. According to a recent study, the traditional voting process wasn't entirely hygienic, and the type of government makes it difficult to adequately measure and comprehend fairness, equality, and the will of the people.

New voting procedures have been developed by engineers around the world that provide some anti-corruption protection while still guaranteeing that the voting process will be fair. New electronic voting methods and strategies were made possible by technology; these are crucial and have revealed significant problems with the democratic system. Comparing electronic voting to manual voting will increase election accountability. It has increased the effectiveness of voting compared to the conventional method as well as the process's integrity.

Due to its adaptability, simplicity, and affordability when compared to general elections, the electronic vote is frequently utilised in many elections. Despite this, the risk of excessive authority and manipulated information limits the basic fairness, privacy, secrecy, anonymity, and transparency within the voting process. For a clear vote system, it may be disadvantageous in and of itself that the majority of processes are currently centralised, approved by the appropriate authority, controlled, measured, and monitored in an electronic electoral system.

©IJRASET: All Rights are Reserved

II. LITERATURE SURVEY

Due to its potential to improve voting process accuracy, security, and transparency, blockchain voting has attracted attention. Here are a few current publications and websites that offer a literature review on voting with Python and blockchain. By Muhammad Tariq et al. (2020), "A Comprehensive Literature Analysis of Blockchain Technology in Voting Systems": A thorough review of the literature on voting systems based on blockchains is presented in this study. It investigates several voting systems that leverage blockchain technology, including ones implemented in Python, and considers the benefits and difficulties of doing so. A survey of blockchain-based voting systems is provided in the paper "Building Secure and Transparent Elections Using Blockchain Technology: A Survey" by Ana Isabel González-Tablas Ferreres et al. (2020). The paper also analyses the prospects and challenges of blockchain-based voting systems.

Towards blockchain-based secure and transparent elections. A survey by Saif Ur Rehman et al. (2020): This paper provides an overview of blockchain-based voting systems, including their benefits and limitations. It also includes a discussion of a blockchain-based voting system developed using Python, which allows for secure and transparent elections. Blockchain-Based Secure and Transparent Elections: A Comprehensive Survey by Tariq Aziz et al. (2021): This paper provides a comprehensive survey of blockchain-based voting systems, including those developed using Python. It discusses the advantages and limitations of using blockchain technology for voting, and provides an overview of various voting systems that use blockchain.

"A blockchain-based voting system using Python" by A. Kumar et al. (2020): The Hyperledger Fabric blockchain platform and Python are used to propose a blockchain-based voting system in this paper. The voting data is verified and stored by the proposed system using a distributed network of nodes. Smart contracts are also utilised by the system to guarantee the validity of the voting process.

"Blockchain-based secure e-voting system using Python" by S. S. Sahoo et al. (2019): This paper suggests a smart contract and Python-based blockchain-based electronic voting system. The proposed system makes use of the Ethereum blockchain platform to guarantee the voting process's security and transparency. Using a mobile app, the system enables voters to cast their ballots anonymously and securely.

"Blockchain-based e-voting system using Python and smart contracts" by M. A. Rahman et al. (2019): This paper proposes a blockchain-based electronic voting system that uses smart contracts and Python. The proposed system ensures the security and transparency of the voting process by utilising the Ethereum blockchain platform. The system enables voters to cast their ballots securely and anonymously using a mobile app.

III. METHODOLOGY

The following steps are required to implement a voting system in Python using blockchain technology:

Design the system: Creating the system and determining its primary requirements is the first step. The system's various roles, including those of the voter, candidate, and administrator, should be accounted for in the design. The voting regulations, such as the requirements for eligibility, the voting period, and the number of votes permitted, should also be specified in the design.

Create the blockchain: The blockchain that will be used to store the voting data must be created next. The voting process should be transparent, secure, and honest thanks to the blockchain's design. The names of the candidates, voter IDs, and the vote's timestamp should all be included in each block of the blockchain.

To prevent data tampering, the blockchain should also include a proof-of-work algorithm. the creation of a user interface Voters should be able to cast their ballots securely and effectively thanks to a well-designed user interface. Any device with an internet connection should be able to access the user interface with ease.To ensure that only eligible voters can cast ballots, the user interface should also have authentication mechanisms.

Voters are given a voting interface by the user interface. It may take the form of a desktop, mobile, or web application. The user interface ought to be simple to use, open to everyone, and safe. A system for confirming voters' identities is required to avoid fraud and guarantee that only qualified voters cast ballots. Digital signatures, biometric identification, and other techniques may be used to accomplish this.

The voting data must be stored on a blockchain network to guarantee its security and immutability. Depending on the needs of the voting system, the blockchain network can be either public or private. The voting process can be automated and made transparent by using smart contracts. To guarantee the validity and accuracy of the vote data, the consensus process is required. The blockchain network can reach consensus via a variety of consensus procedures, such as Proof of Work, Proof of Stake, or Delegated Proof of Stake

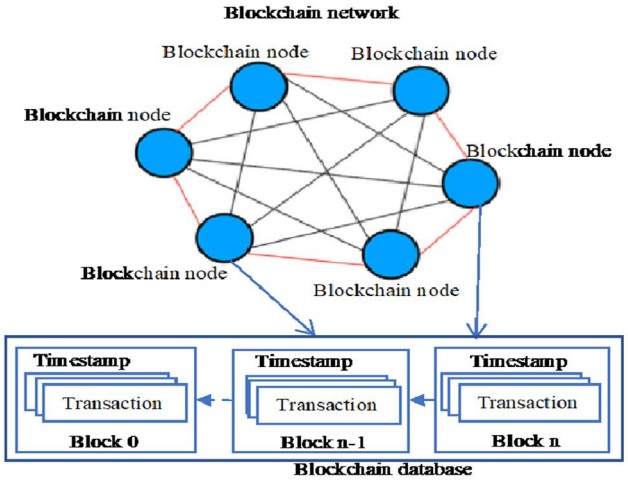


Figure 1 : Architecture Of Block Chain Enabled E – Voting

Implement the voting process: Fairness, transparency, and confidentiality should all be guaranteed during the voting process. Mechanisms to stop multiple voting, ballot stuffing, and other types of fraud should be included in the procedure. The voting procedure ought to include a system for confirming the outcomes and settling any disagreements.

Once the system has been put into place, it should be thoroughly tested to make sure it complies with the specifications and operates as intended. To guarantee that it is available to all eligible voters, the system should also be deployed in a secure and dependable environment, such as a cloud-based server Following is how the voting procedure is carried out:

Using their specific voter ID, the voter logs into the system.

The voter makes their choice of candidate and casts their ballot.

The system updates the candidate's vote total and logs the vote in the blockchain.

To avoid multiple voting, the voter is logged out of the system. After the voting period is over, the system tallies the votes cast for each candidate to determine the final results.

To make sure that it is usable by all eligible voters and that the voting process is fair, open, and private, the system is tested and put into place on a secure server

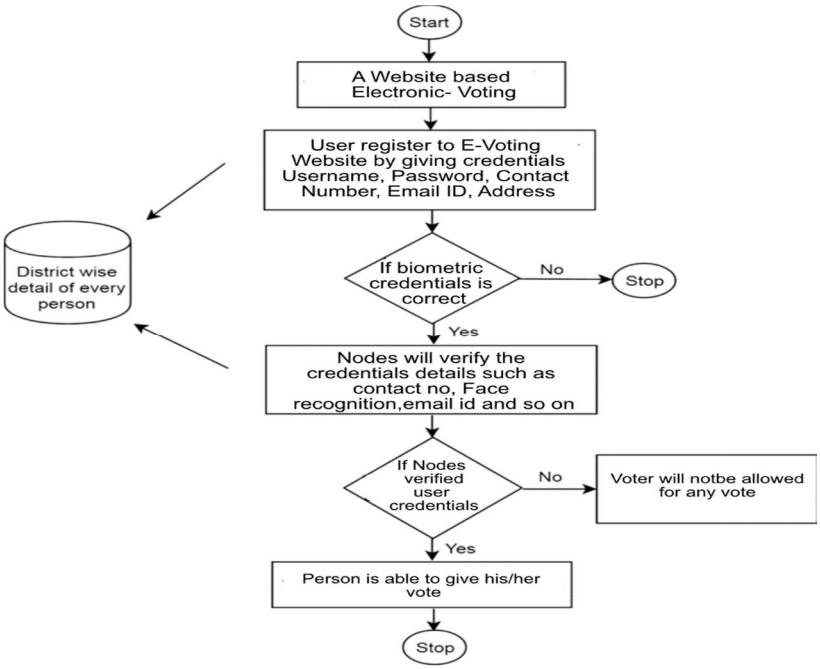


Figure 2 :Flow chart of proposed Block Chain Enabled E –voting

IV. RESULTS

Python-based blockchain voting systems would produce the following results:

A blockchain that records every vote's specifics, such as the candidate's name and the vote's timestamp. The voting process would be transparent and honest thanks to this publicly accessible blockchain. Total votes cast for each candidate, which would be used to choose the election's victor.

\

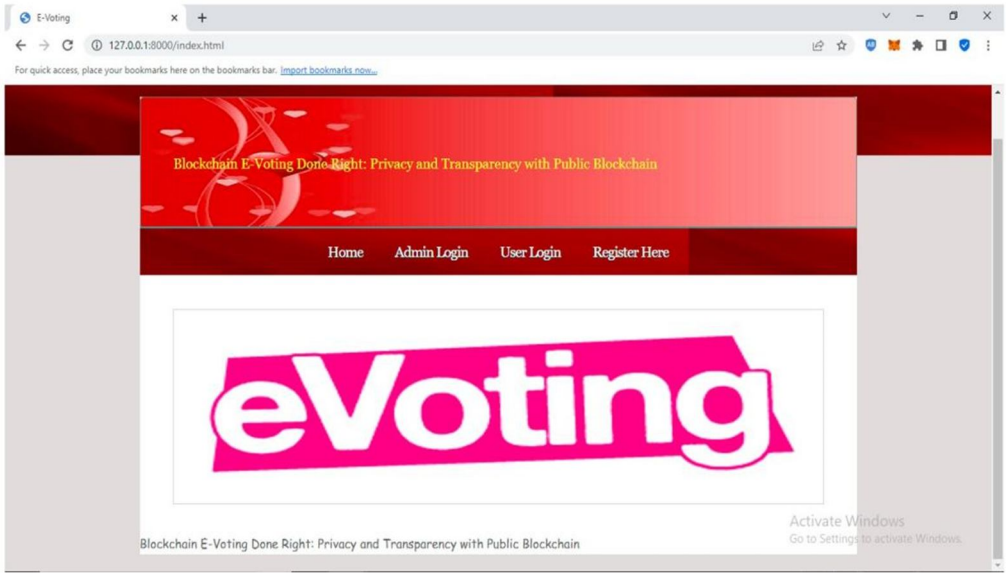


Figure 3: Home Page

In above screen click on 'Admin Login' to login as admin and get below screen

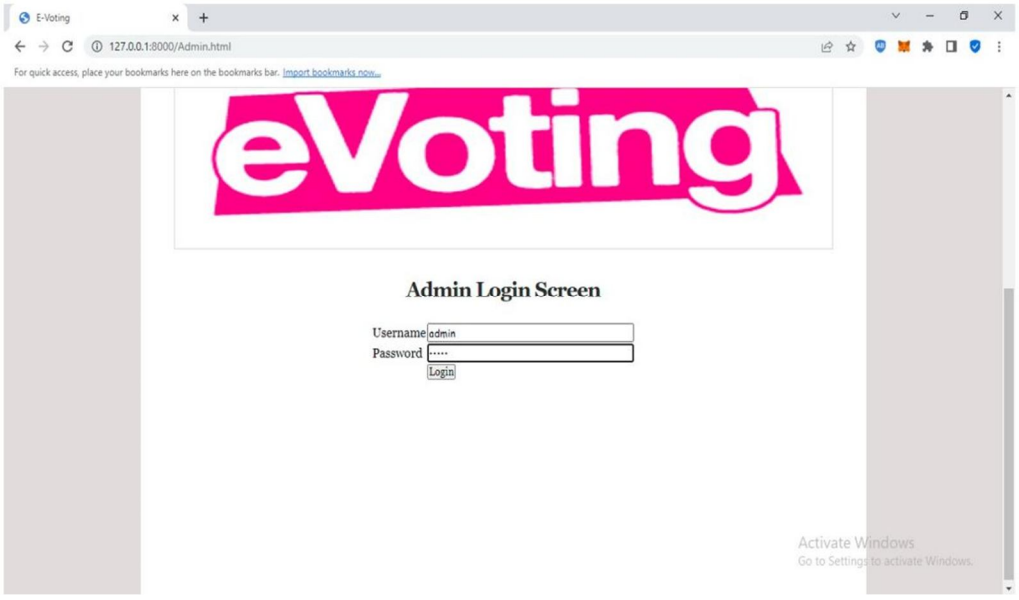


Figure 4 : Admin Login Page

After Admin login with his credentials, admin can add candidate details with party photo and press 'Add Party' button to add new party and now click on 'View Party Details' to view all parties



Figure 5 : Add Party Details

Signup new user like below screen

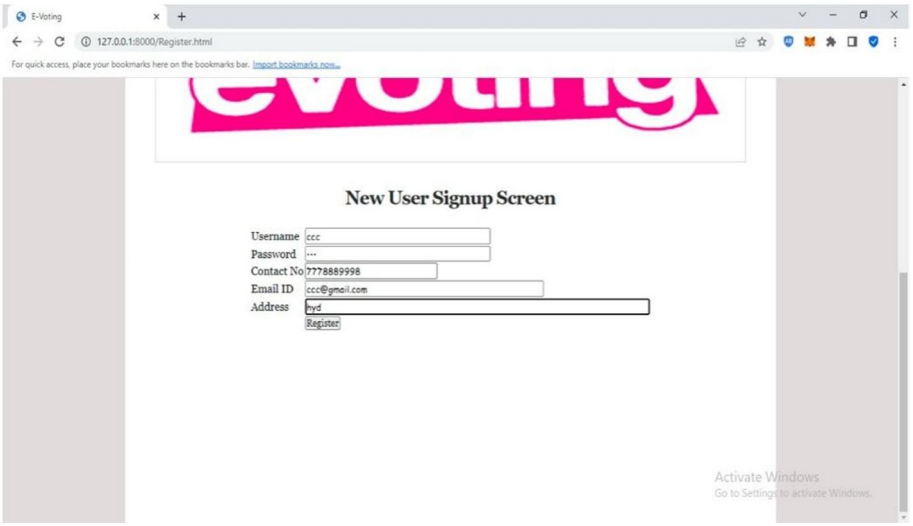
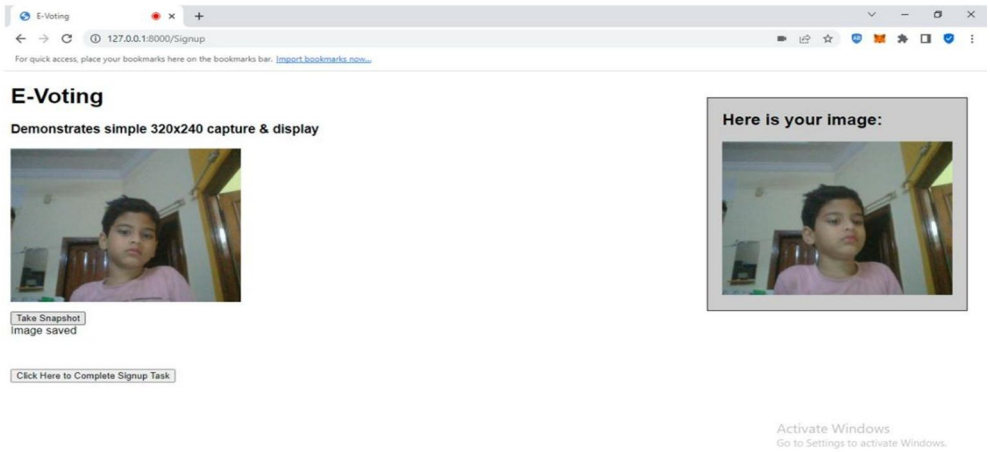
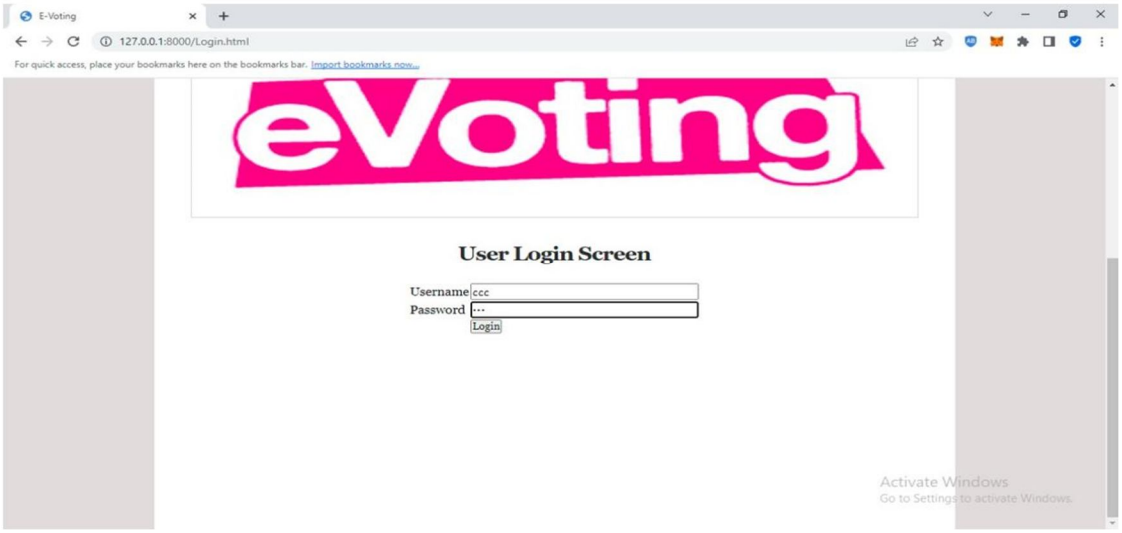


Figure 6 : User Registration

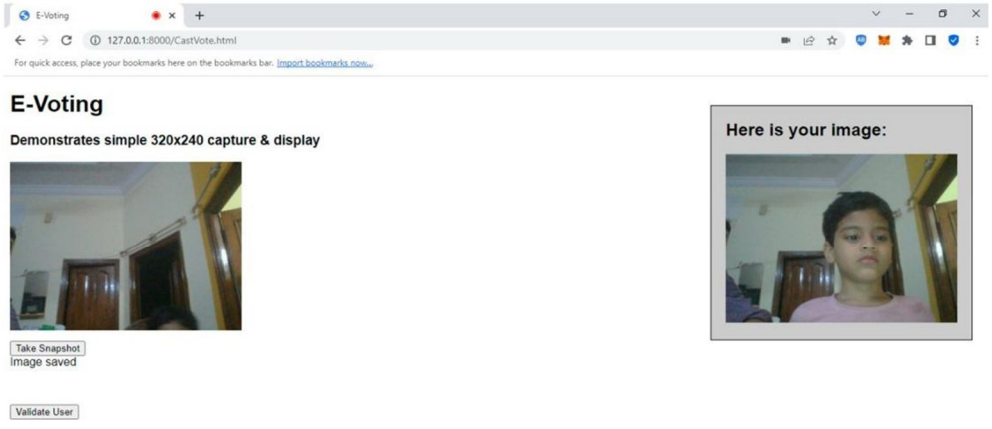
In above screen add new user details and then press ‘Register’ button to get below screen to capture user photo like below screen

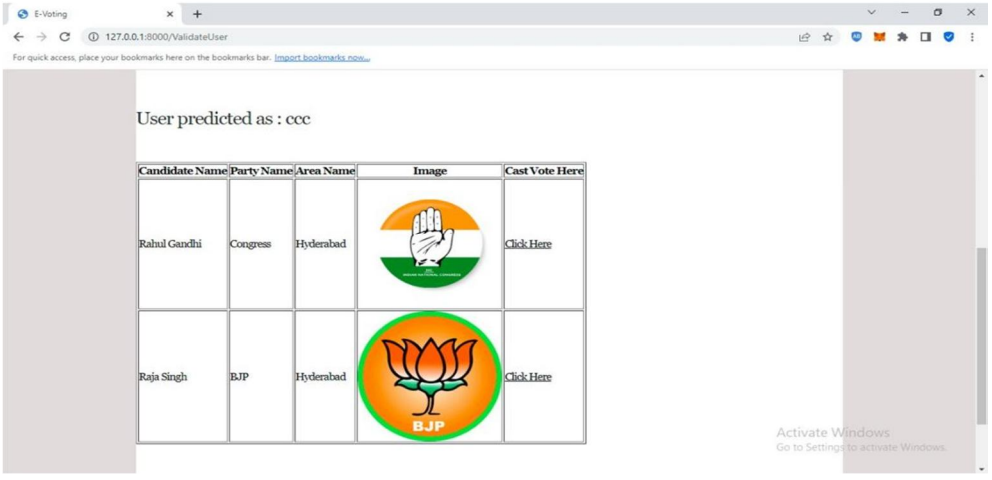


In above screen click on 'Take Snapshot' button to capture photo and get below output, user image is captured and now click on 'Click Here to Complete Signup Task' button to save image in database.



Now click on 'User Login' link to get login screen and after login cast your vote to get below screen





In above screen 'User predicted as ccc' and he can view all the party list and cast vote by clicking on 'Click Here' link and vote is accepted and if same user try again then will get error output.

V. CONCLUSION

In conclusion, blockchain-based voting systems implemented in Python provide a safe, open, and decentralised method of conducting elections. Voting systems can guarantee the integrity and authenticity of the votes cast, prevent fraud and manipulation, and provide a tamper-proof record of the election by utilising the cryptographic principles of the blockchain.

Creating a blockchain network, creating smart contracts, and designing a voting interface are all necessary when implementing a voting system in Python that uses blockchain technology. The system may also have components for verifying eligibility, counting results, and authenticating voters.

Testing and validation techniques can be used to confirm the blockchain, digital signatures, voter eligibility, voting process, and results in order to ensure the system's dependability and accuracy. These precautions guarantee that the voting process is secure and reliable and that the election results fairly reflect the preferences of the electorate.

Overall, blockchain-based voting systems implemented in Python have the potential to revolutionise the way elections are held by enhancing their accessibility, security, and transparency.

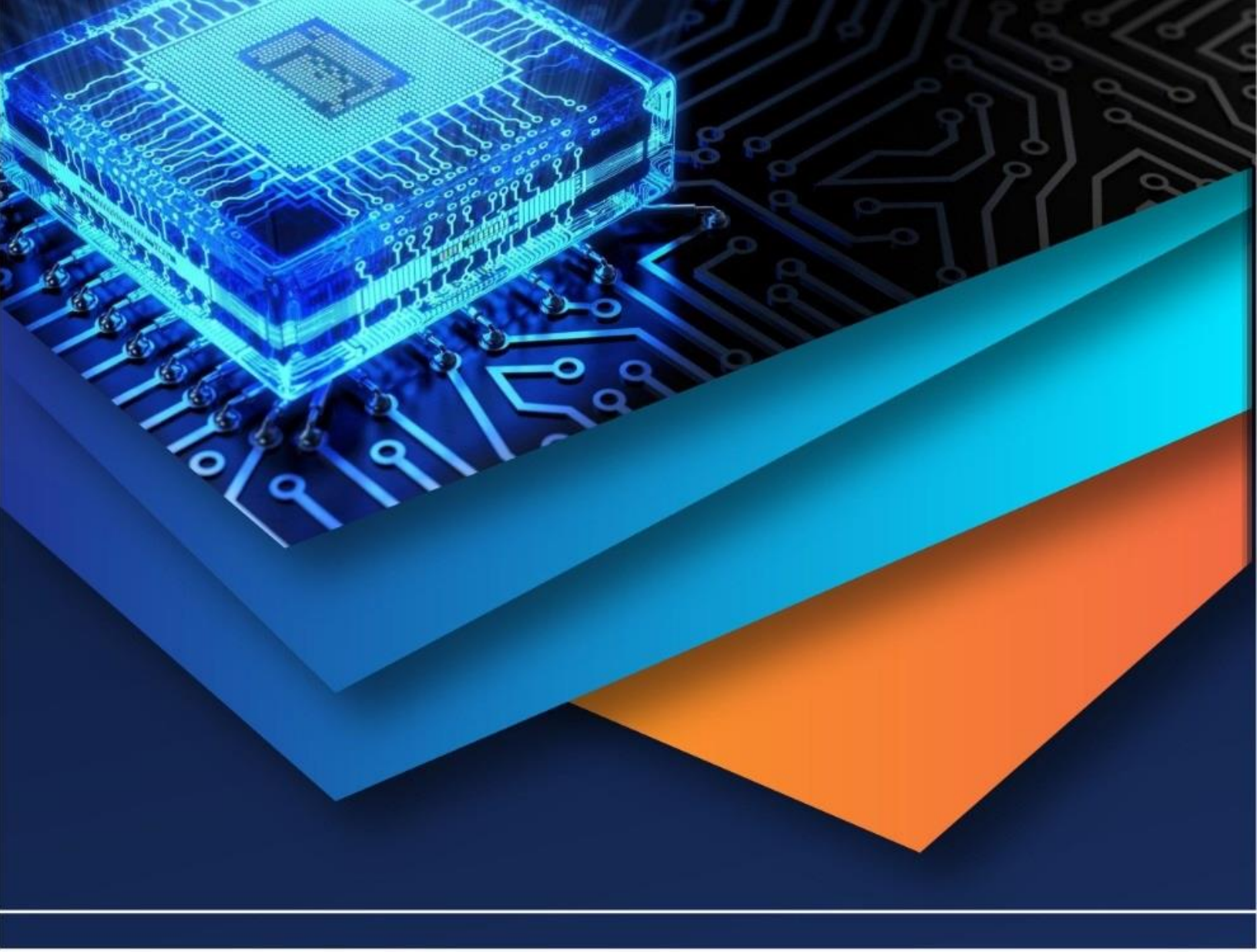
The ability of blockchain technology to provide transparency, security, and immutability has made voting using this technology a hot topic in recent years. This response will give a thorough explanation of how voting in Python works with blockchain technology.

First and foremost, it's critical to comprehend what blockchain technology is. A blockchain is a distributed, decentralised ledger that securely and openly records transactions. A set of transactions and a cryptographic hash of the previous block are both included in each block of the chain. The hash makes sure that the previous block's integrity is upheld and that any attempt to change the block's data will be caught.

REFERENCES

[1] 1. Liu, Y.; Wang, Q. An E-voting Protocol Based on Blockchain. IACR Cryptol. Eprint Arch. 2017, 2017, 1043
[2] Shahzad, B.; Crowcroft, J. Trustworthy Electronic Voting Using Adjusted Blockchain Technology. IEEE Access 2019, 7, 24477–24488
[3] Racsko, P. Blockchain, and Democracy. Soc. Econ. 2019, 41, 353–369
[4] Yaga, D.; Mell, P.; Roby, N.; Scarfone, K. Blockchain technology overview. arXiv 2019, arXiv:1906.11078.
[5] The Economist. EIU Democracy Index. 2017
[6] Cullen, R.; Houghton, C. Democracy online: An assessment of New Zealand government web sites. Gov. Inf. Q. 2000, 17, 243–267.
[7] Schinckus, C. The good, the bad and the ugly: An overview of the sustainability of blockchain technology. Energy Res. Soc. Sci. 2020, 69, 101614
[8] Gao, S.; Zheng, D.; Guo, R.; Jing, C.; Hu, C. An Anti-Quantum E-Voting Protocol in Blockchain with Audit Function. IEEE Access 2019, 7, 115304–115316
[9] Kim, T.; Ochoa, J.; Faika, T.; Mantooth, A.; Di, J.; Li, Q.; Lee, Y. An overview of cyber-physical security of battery management systems and adoption of blockchain technology. IEEE J. Emerg. Sel. Top. Power Electron. 2020
[10] Hang, L.; Kim, D.-H. Design and implementation of an integrated IoT blockchain platform for sensing data integrity. Sensors 2019, 19, 2228
[11] Chang, V.; Baudier, P.; Zhang, H.; Xu, Q.; Zhang, J.; Arami, M. How Blockchain can impact financial services–The overview, challenges, and recommendations from expert interviewees. Technol. Forecast. Soc. Chang. 2020, 158, 120166
[12] Wang, B.; Sun, J.; He, Y.; Pang, D.; Lu, N. Large-scale election based on blockchain. Procedia Comput. Sci. 2018, 129, 234–237.
[13] The Future of Democracy: Blockchain Voting Ryan Osgood Mentor: Ming Chow COMP116: Information Security December 14, 2016
[14] International Journal of Advance Scientific Research And Engineering Trends || Volume 4 || Issue 2 || February 2019 || ISSN (Online) 2456-0774
[15] Curran, Kevin. 2018. "E-Voting on the Blockchain." The Journal of The British Blockchain Association 1

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)