ELECTRIC VOTING MACHINE

A PROJECT REPORT

Submitted by

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BACHELOR OF ENGINEERING

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ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY,

PALKULAM

ANNA UNIVERSITY: CHENNAI 600 025

1. INTRODUCTON

1.1 Project overview:

The goal of this project is to develop a secure and transparent voting system by leveraging blockchain technology. The system will ensure the integrity of the voting process by recording votes on an immutable and transparent ledger. It will prevent double voting, protect against tampering or manipulation, and increase voter trust in the

electoral process. The system will be user-friendly, accessible to all voters, and prioritize the privacy and security of voter data. Through the implementation of smart contracts and encrypted transmission of voting data, the system will provide real-time vote tracking and transparency. Overall, this project aims to revolutionize the voting process, increase voter turnout, and restore trust in elections.

1.2 Purpose:

The purpose of the project is to create an electronic voting system using blockchain technology to address concerns about the integrity, security, and transparency of the voting process. By leveraging the immutability and transparency of blockchain, the system aims to prevent tampering, ensure accurate vote counting, and provide a secure platform for voters to cast their ballots. The ultimate goal is to increase trustl in the electoral process, enhance voter engagement, and promote fair and reliable elections.

2. LITERATURE SURVEY:

2. 1.EXISTING PROBLEM:

The existing problem with traditional voting systems is the potential for fraud, tampering, and lack of transparency. Paper-based systems can be vulnerable to human error, manipulation, and inaccuracies. Additionally, centralized electronic voting systems have faced security breaches and concerns about data privacy. By implementing a blockchain-based voting system, these issues can be addressed through the immutability, transparency, and decentralized nature of the technology. This ensures that votes are securely recorded, protected against tampering, and visible to all participants, increasing trust in the electoral process.

2.2 REFERENCES:

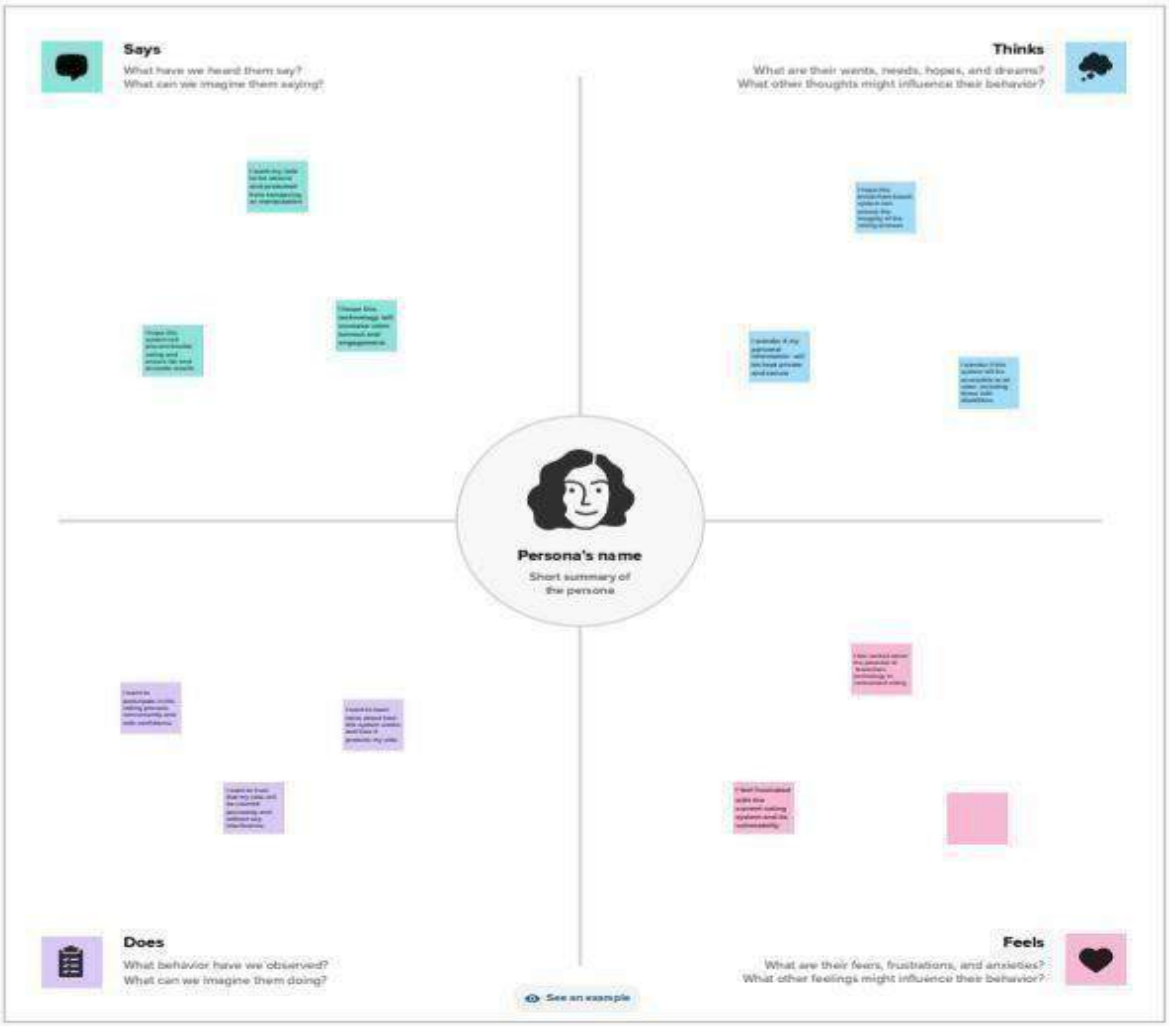
1. “Blockchain-Based Secure Voting System” by N. Sharma, S. Jain, and S. Tyagi.
2. “A Survey on Blockchain-Based Voting Systems” by S. Zohrevand, M. R. Rasti, and S. S. Kanhere.
3. “Blockchain Voting Systems: A Survey” by M. Stavrou and L. Mancini.
4. “Blockchain Voting Systems: Challenges and Opportunities” by R. Matamoros, A. Ferrer, and J. L. Ferrer.
5. “A Blockchain-Based Voting System for the Future” by A. O. Adewumi and S. Misra.

3.Problem Statement Definition:

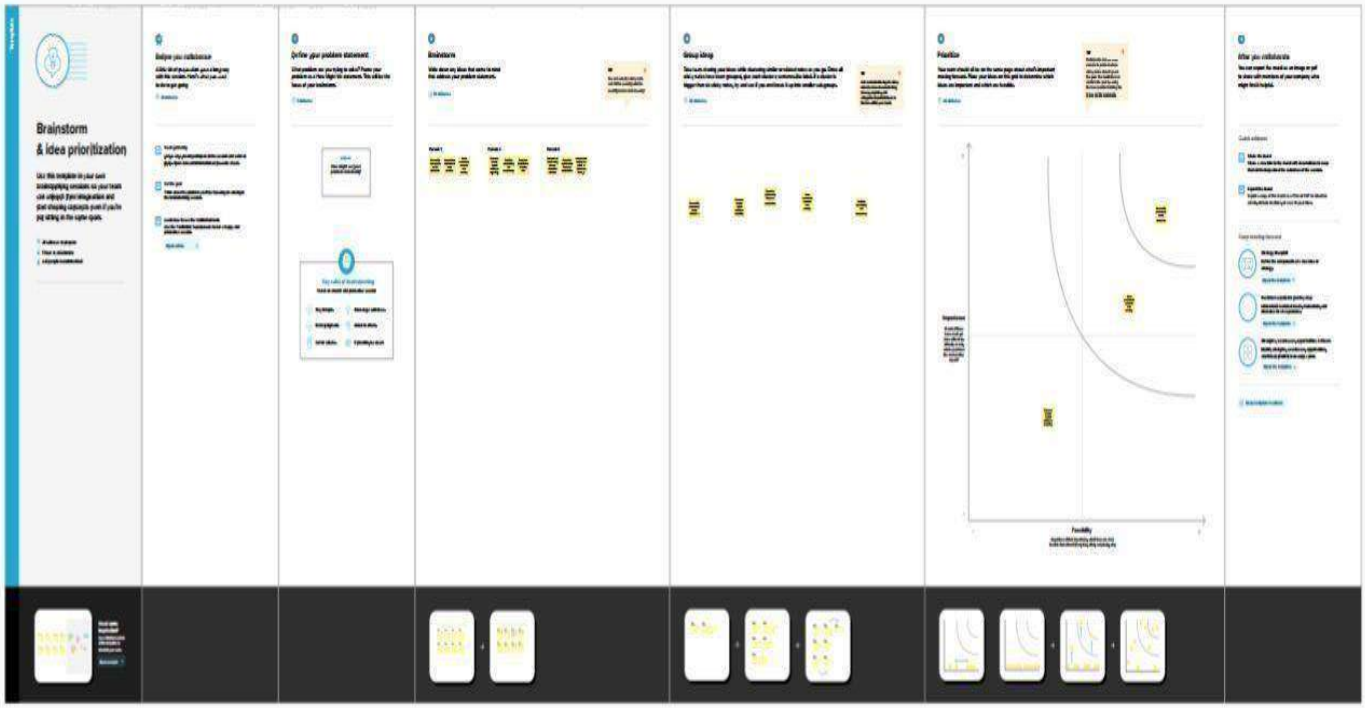
The problem statement for an electronic voting system using blockchain is to address the existing concerns of fraud, tampering, and lack of transparency in traditional voting systems. By leveraging blockchain technology, the goal is to develop a secure, transparent, and tamper-proof voting system that ensures the integrity of the voting process. This system should provide a decentralized platform that allows for accurate vote counting, prevents double voting, and safeguards the privacy of voter data. Ultimately, the aim is to restore trust in the electoral process and promote fair and reliable elections.

3.1 IDEATION & PROPOSED SOLUTION

3.1a**Empathy Map Canvas:**



a.Ideation & Brainstorming



2 REQUIREMENT ANALYSIS

a. **Functional requirements**

S/NO	Functional Requirement(Epic)	Sub Requirement (Story / Sub-Task)
FR1		User Registration The system should allow eligible voters to register securely and verify their identity.
FR2	Vote Casting	Voters should be able to securely cast their votes using the system, ensuring that each vote is recorded accurately and cannot be tampered with.
FR3	Vote Counting	The system should automatically and accurately count the votes, ensuring transparency and eliminating the possibility of human error or manipulation.
FR4	Transparency	The blockchain-based system should provide a transparent and auditable record of all votes,

		allowing for verification and scrutiny by relevant stakeholders.
FR5	Security	The system should employ robust security measures to safeguard against hacking, tampering, or unauthorized access.

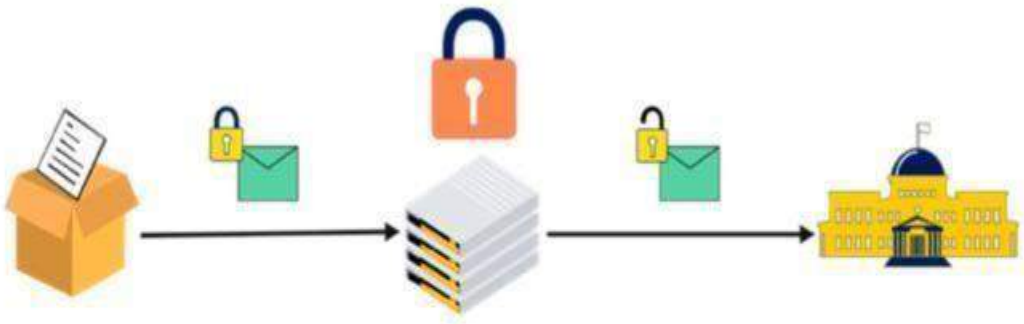
4.2 Non-Functional requirement

S/NO	Non-Functional Requirement	Description
NFR1	Scalability	The system should be able to handle a large number of voters and transactions without compromising performance or causing delays.
NFR2	Reliability	The system should be

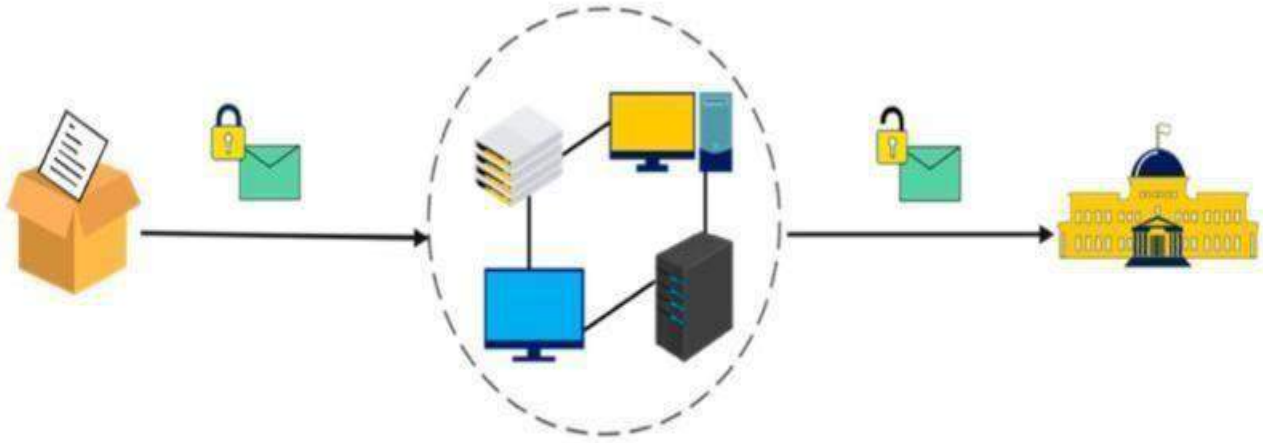
		highly reliable, ensuring that votes are accurately recorded and preserved without any loss of data.
NFR3	Compatibility	The system should be compatible with various devices and operating systems to ensure widespread accessibility for voters.
NFR4		Privacy The system should prioritize the privacy of voter data, implementing encryption and anonymization techniques to protect sensitive information.
NFR5		Interoperability The system should be able to integrate with existing voting infrastructure and systems, facilitating a smooth.

5.PROJECT DESIGN

5.1 DATA FLOW DIAGRAM



Traditional Voting System

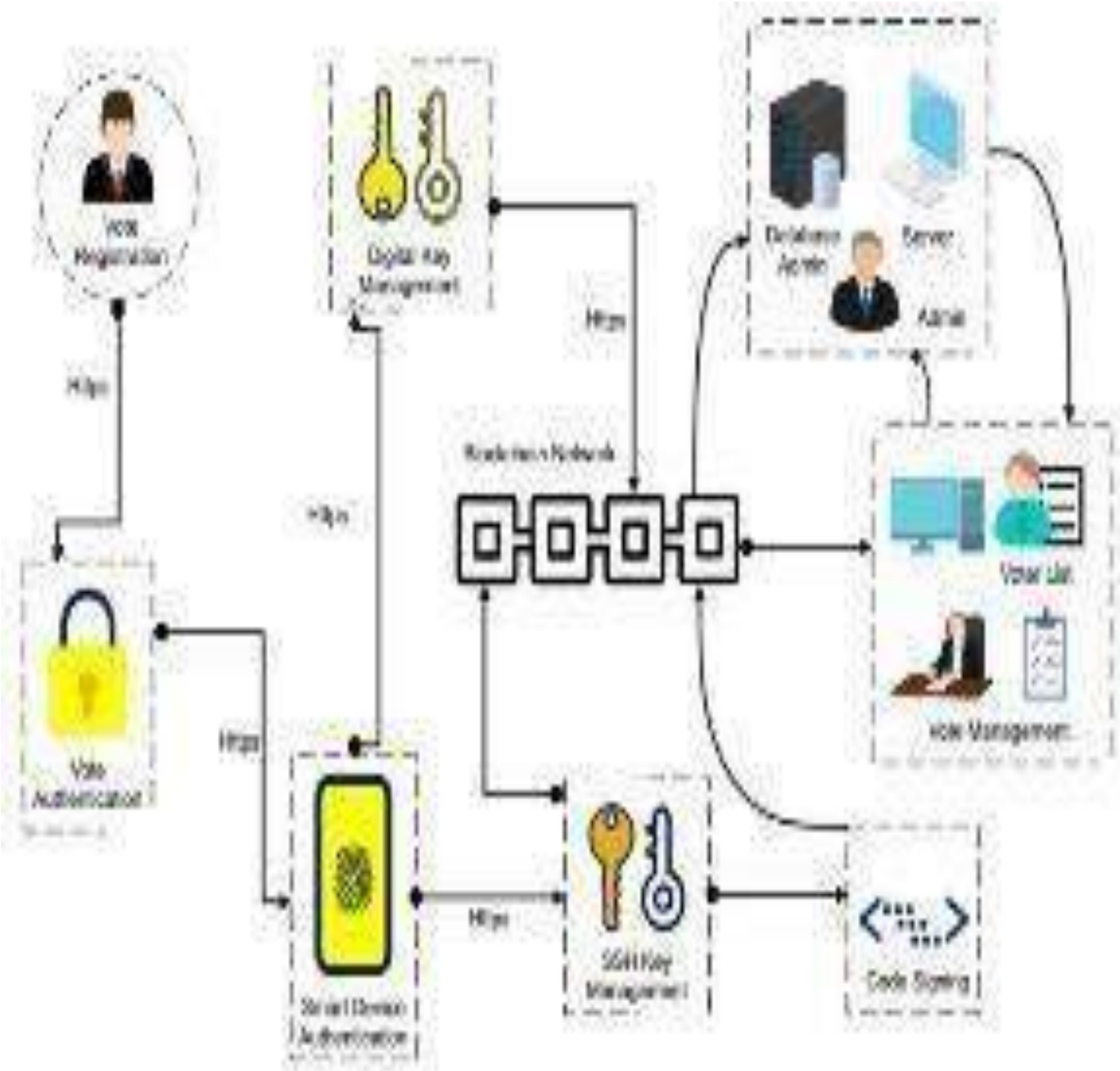


Blockchain Voting System

USER STORIES

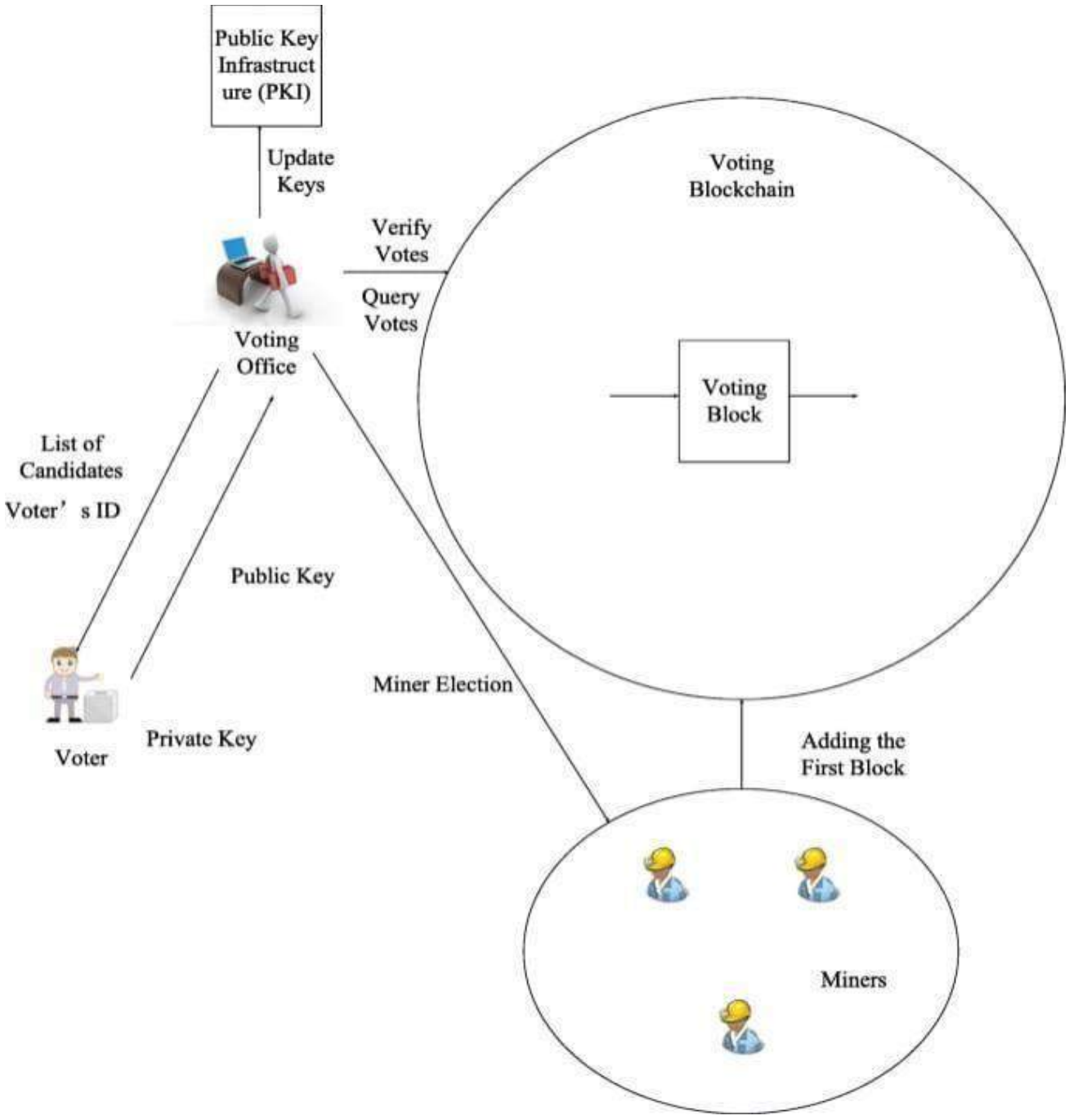
User story	Functi on/ emen ts	User story number	User Acce ptan ce	rity	memb er	Acce requir crite ria	Prio num	Team Task	story onal ce
Vote securely	Clarit y	USN 1	I want to cast my vote	Secu rity	High	S	Siva r	y	1
Elect to Verify officials	Availa bility	USN 2	I want to verify the authenticity	Me diu m	S Pra esh	ion			
Candidates	Scala bility	USN 3	I want a electoral process		Clear ance		Low	G.K.Yo gesh	

5.2 SOLUTION ARCHITECTURE



PROJECT PLANNING AND SCHEDULING

6.1 TECHNICAL ARCHITECTURE



7.CODING AND SOLUTIONING

7.1. FEATURES 1

1. Transparent and Immutable: The blockchain technology ensures that all votes are recorded in a transparent and tamper-proof manner, providing a high level of integrity and trust.
2. Decentralized Network: The system can be built on a decentralized network of nodes, allowing for distributed consensus and reducing the risk of a single point of failure.
3. Secure Identity Verification: Implement robust identity verification mechanisms to ensure that only eligible voters can participate in the election.
4. Privacy Protection: Utilize cryptographic techniques to protect the privacy of voters, ensuring that their identities and voting choices remain confidential.
5. Auditable and Verifiable: Enable election officials and stakeholders to audit and verify the voting process, allowing for transparent verification of the results.

7.2 FEATURES 2

1. Accessibility: Design the system to be user-friendly and accessible to a wide range of voters, including those with disabilities or limited technological proficiency.
2. Real-Time Results: Provide real-time updates on the vote count and results, allowing for timely reporting and analysis.
3. End-to-End Encryption: Implement strong encryption protocols to secure the transmission of votes from the voter to the blockchain network.
4. Scalability: Ensure that the system is capable of handling a large number of votes without compromising its performance or security.
5. Integration with Existing Systems: Enable seamless integration with existing electoral infrastructure, such as voter registration databases and result reporting systems.

8.PERFORMANCE TESTING

S/NO	PARAMETER	VALUE	SCREENSHOT
1	Information gathering	Setup all the Prerequisite:	
2	Extract the zip file	Open to vs code	
3	Remix Ide platform explorting	Deploy the smart contract code Deploy and run the transaction. By selecting the environment – inject the MetaMask.	
4	Open file explorer	Open the extracted file and click on the folder.	

		Open src, and search for utiles. Open cmd enter commands 1.npm install 2.npm bootstrap 3. npm start	
5	LOCALHOST IP ADDRESS	copy the address and open it to chrome so you can see the front end of your project.	

9.RESULTS


Election:
Back
Enter no. of hours:
Confirm

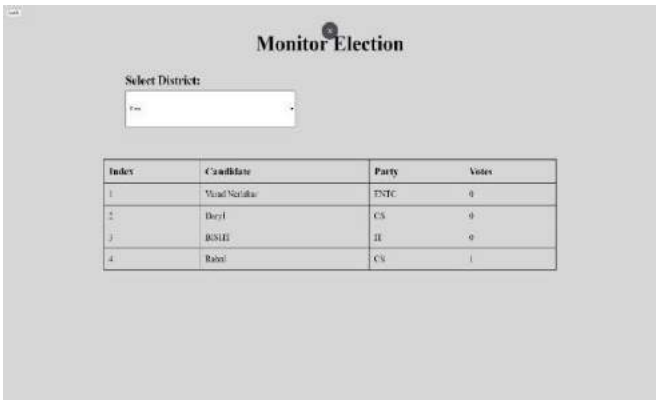

Welcome To E-Voting
इ वोटिंग म आपका स्वागत ह
Enter Your Card Number:
अपना कार्ड नंबर दर्ज करें::
Confirm


Main Election Page
Vote


Add Candidate:
Back
Name:
Party Name:
District Name:
Select District
Confirm


Scan Your Finger Now.
अपनी उंगली अब स्कैन करें।
कोड दर्ज करें::
Enter Code:
Confirm


Add Voter :
Back
Enter District :
Select District
Enter Voter ID :
Enter Aadhar Number :
Confirm


Monitor Election
Select District:
Index
Candidate
Party
Votes

10.ADVANTAGES AND DISADVANTAGES

Advantages:

1.Enhanced Security: The use of blockchain technology provides a high level of security and immutability, making it difficult for votes to be tampered with or altered.

1. Transparency and Trust: The transparent nature of blockchain allows for increased trust in the voting process, as all transactions are recorded and can be audited by stakeholders.
2. Improved Accessibility: An electrical voting system using blockchain can potentially increase accessibility for voters, allowing them to cast their votes remotely or through digital means.
3. Efficient and Accurate Counting: The automated nature of the system can streamline the vote counting process, reducing the likelihood of human error and providing faster results.

4. Reduced Costs: By eliminating the need for physical ballot papers and manual counting processes, an electrical voting system can potentially reduce costs associated with traditional voting methods.

Disadvantages:

1. Technological Barriers: Implementing and maintaining an electrical voting system using blockchain requires a certain level of technical expertise, which may pose challenges for some organizations or jurisdictions.
2. Privacy Concerns: While blockchain provides strong security measures, there may still be concerns about the privacy of voter information and the potential for de-anonymization.
3. Digital Divide: Not all individuals may have access to the necessary technology or internet connectivity required for participating in an electrical voting system, potentially excluding certain segments of the population.

4. Vulnerability to Cyber Attacks: Like any digital system, an electrical voting system using blockchain could be susceptible to cyber attacks, which could compromise the integrity of the voting process.
5. Lack of Paper Trail: Unlike traditional voting methods, an electrical voting system may not provide a physical paper trail that can be used for manual verification or recounting in case of disputes.

11.CONCLUSION

An electrical voting system using blockchain offers enhanced security, transparency, and efficiency. However, challenges related to technology, privacy, accessibility, cyber attacks, and the lack of a paper trail should be carefully considered before implementation.

12.FUTURE SCOPE

The future scope for an electrical voting system using blockchain is promising. It has the potential to revolutionize the way we conduct elections by providing a secure and transparent platform for voting. With further advancements in technology, we can expect improvements in accessibility, privacy, and scalability.

Additionally, integrating features like biometric authentication and smart contracts could enhance the overall efficiency and trustworthiness of the system. Continuous research and development will be crucial in addressing any challenges and ensuring the widespread adoption of this innovative voting solution.

13.Appendix

Source code:

```
Import java.io.*;

Import java.util.*;

Interface client

{

Void vote();

Void result();

}

Class server1 implements

Client
```

{

Private int count1=0;

Private int count2=0;

Private int count3=0;

Private int count4=0;

Private int total=0;

Public void vote()

{

Int b=1;

While(b!=0)

{

```
System.out.println(“welcome

To the voting of IIITN

General Secratory election”);

System.out.println(“\n” +

“Press 1 for Voting OR 0 to

Stop voting”);

Scanner s3 =new

Scanner(System.in);

B=s3.nextInt();

Switch(b)

{
```

Case 1 :

System.out.println();

System.out.println(“ENTER

YOUR COLLEGE ID in format of

BT21….”);

Scanner s=

New Scanner(System.in); String ID =

s.nextLine(); int temp=1; try

{

File tt =

New File(“temp.txt”);

FileReader fr1=new

FileReader(tt);

BufferedReader br1=new

BufferedReader(fr1);

String

St3;

While((st3=br1.readLine())!=n

Ull)

{

If(st3.contains(ID))

{

```
Temp=0;

}

}

}

Catch(IOException i)

{

System.out.println(“ERROR”);

}

If(temp!=1)

{

System.out.println(“Already Voted ! “);
```

```
Continue;

}

Else

{

Try

{

FileWriter fw2 = new

FileWriter(“temp.txt”,true);

Fw2.write(ID);

Fw2.close();

}
```

Catch(IOException i)

{

System.out.println(“ERROR”);

}

Try

{

File

Input =new File(“list.txt”);

FileReader fr=new

FileReader(input);

BufferedReader br=new

```
BufferedReader(fr);

String

Str;

Int

Flag=0;

While((str=br.readLine())!=null)

{

If(str.contains(ID))

{

System.out.println(str);

Flag=1;
```

```
}

}

If(flag!=1)

{

System.out.println("SORRY Your ID is not in a voter

List, You can't vote");

Continue;

}

Fr.close();

}

Catch(IOException e)
```

{

System.out.println(“ERROR:-there would be some problem In reading of a file”);

}

System.out.println(“… -:Candidates are :- …” +“\n”);

System.out.println(“1- ADITYASINGH”);

System.out.println(“2- YASHMISHRA”); System.out.println(“3-ANSHUMAN DAS”);

System.out.println(“4-NOTA”+”\n”);

System.out.println(“please Select any one of them”);

Int a;

Scanner

```
S2=new Scanner(System.in);

A=s2.nextInt();

If(a==1)

{

Count1++;

Total++;

}

Else

If(a==2)

{

Count2++;
```

```
Total++;

}

Else

If(a==3)

{

Count3++;

Total++;

}

Else

{

Count4++;
```

```
Total++;

}

Break;

}

Case 0 :

Try

{

FileWriter fw = new FileWriter(“temp.txt”,False);

PrintWriter pw = new PrintWriter(fw, false);

Pw.flush();

Pw.close();
```

```
}

Catch(IOException i)

{

System.out.println(i);

}

Try

{

FileWriter fw =new

FileWriter(“votecount.txt”);

Fw.write(“votes for ADITYASINGH are :- “ + count1 +“\n”+”votes for YASH

MISHRAAre :- “+ count2 + “\n”+“votes for ANSHUMAN

DAS are:- “+ count3 +”\n”+”votes for NOTA are :- “+ count4 +”\n”);
```

```
Fw.write("voting percentages Are :- " + total*20+"%");

Fw.close();

}

Catch(IOException i)

{

System.out.println("ERROR:-ISSUE IN SECOND FILEbWRITING");

}

Break;

Default :

System.out.println("Invalid Input");

Break;
```

```
}

}

}

Public void result()

{

System.out.println("results Are");

Try

{

File res= new File("votecount.txt");

FileReader r=new FileReader(res);

BufferedReader B=new BufferedReader®;
```

```
String str2;

While((str2=b.readLine())!=null)

{

System.out.println(str2);

}

r.close();

}

Catch(IOException i)

{

System.out.println("ERROR:-Issue in a second file Reading");

}
```

}

}

Class VoterList

{

Void listcreation()

{

Try

{

FileWriter f=new

FileWriter(“list.txt”);

String

Arr[]={“BT21CSE171 DEEPAK SINGH CHAUHAN”,”BT21CSE179

AAYUSH PATIL”,”BT21CSE206 PRIYANSHU SINGH” ,”BT21CSE200 VAIBHAV TAYVADE”,”BT21CSE131 PRANAV CHANDAK”};

Int Length=arr.length;

For(intI=0;i<length;i++)

{

f.write(arr[i]+”\n”);

}

f.close();

}

Catch(IOException i)

```
{

System.out.println("ERROR:-there would be a problem in Voter list creation");

}

}

}

Class EVM

{

Public static void main(String args[])

{

VoterList obj2= new VoterList();

Obj2.listcreation();
```

```
Server1 obj=new Server1();

Obj.vote();

System.out.println("thanks For voting");

}

}
```

Github & Project Demo Link:

Github Link: https://github.com/Thesika02/NM-BC_NM2023TMID10692

ProjectLink:https://drive.google.com/file/d/1h80485G7ZzXolhpTHTXSea4ai-uus5go/view?usp=drivesdk