DAYANANDA SAGAR COLLEGE OF ENGINEERING
(An Autonomous Institution affiliated to VTU, Accredited with NAAC 'A' Grade)

PROJECT SYNOPSIS

DEPARTMENT	COMPUTER SCIENCE & ENGINEERING			
TITLE OF THE PROJECT	E-STAMPING IN DIGITAL VOTING SYSTEM USING BLOCK CHAIN AND CLOUD TECHNOLOGY			
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PROJECT TIMELINE (Tentative Start date- End Date)	Oct 2021 to June 2022			
PROJECT GUIDE	ABHINAV R B, Asst. Professor			
PROJECT - DOMAIN	Block chain and Cloud			
INTRODUCTION	Election is a process of establishing democracy in the country. It is also one of the most challenging tasks, one whose constraints are remarkably strict. Each voter should receive assurance that her vote is cast as intended, recorded as cast and tallied as recorded. Democracy and voting are pillars of modern society, but the traditional paper ballots are prone to fraud and failure; ballots can be miscounted, or ballots sent via mail might get lost in transit. The traditional voting system also carries the costs of human resources, ballot deployment, and security measures. A massive amount of money is usually spent every election in every country. Blockchain technology is supported by a distributed network consisting of a large number of interconnected nodes. Each of these nodes have their own copy of the distributed ledger (information) that contains the full history of all transactions the network has processed. There is no single authority that controls the network. If the majority of the nodes agree, they accept a transaction. This network allows users to remain anonymous. A basic analysis of the blockchain technology (including smart contracts) suggests that it is a suitable basis for e-voting and moreover, it could have the potential to make e-voting more acceptable and reliable.			

APPLICATION/S	The applications of Electronic Voting System are: • Used in National Elections. • Used in Television shows. • Used in taking mass opinions. • Used in University Elections. • Electronic voting technology results in increased efficiency and speed when counting ballots. • There is less chance of voter fraud which is implemented with identity verification and up to date cyber security practices.
SHORT LITERATURE SURVEY	1. Adida, B., Helios (2008). "Web-based open-audit voting.", in Proceedings of the 17th Conference on Security Symposium, ser. SS'08. Berkeley, CA, USA: USENIX Association, 2008. → This paper proposes to justify an adequate security model and criteria to judge comprehensibility. It additionally describes a web ballot theme, Pretty graspable Democracy, showing that it satisfies the adequate security model which it's a lot more graspable than Pretty smart Democracy, presently the sole theme that additionally satisfies the planned security model.

	2. Chaum, D., Essex, A., Carback, R., Clark, J., Popoveniuc, S., Sherman, A. and Vora, P. (2008). "Scantegrity: End-to-end voter-variable optical-scan voting.", IEEE Security Privacy, vol. 6, no. 3, pp. 40-46, May 2008. → This paper describes Scantegrity that minimally impacts election procedures and is the first independent E2E verification mechanism that preserves optical scan as the underlying voting system and doesn't interfere with a manual recount. 3. Dalia, K., Ben, R., Peter Y. A, and Feng, H. (2012). "A fair and robust voting system by broadcast.", 5th International Conference on E-voting, 2012. → This paper proposes a recovery round to enable the election result to be announced if voters abort and also added a commitment round to ensure fairness. In addition, it also provided a computational security proof of ballot secrecy. 4.Bell, S., Benaloh, J., Byrne, M. D., Debeauvoir, D., Eakin, B., Kortum, P., McBurnett, N., Pereira, O., Stark, P. B., Wallach, D. S., Fisher, G., Montoya, J., Parker, M. and Winn, M. (2013). "Star-vote: A secure, transparent, auditable, and reliable voting system.", in 2013 Electronic Voting Technology Workshop/Workshop on Trustworthy Elections (EVT/WOTE 13). Washington, D.C.: USENIX Association, 2013. → This paper describes the STAR-Vote design, that may preferably be the next-generation electoral system for Travis County and maybe elsewhere.
CHALLENGES IN THE CURRENT WORK	**>Expensive elections:** In India, elections are very expensive so the common man cannot afford this. Therefore, only rich people can fight elections. Also, they make use of political power and money through illegal methods. **>Misuse of official machinery:** The election laws have to check the misuse of official machinery during the elections. But then also the ruling party makes use of government vehicles and servants in their favor. **>Use of caste/religion in election:** In India, many votes are cast on the basis of caste and religion. As a result of this people get divided on the basis of caste which is very harmful for the election process. So, to avoid these inconsistencies we propose the online voting system through photo recognition and OTP generation. It also overcomes the above challenges. Current voting systems like ballot box voting or electronic voting suffer from various security threats such as polling booth capturing, vote alteration and manipulation, malware attacks, etc. and also require huge

	amounts of paperwork, human resources, Money and time.
	Some of the disadvantages are:
	    Long Queues during elections.
	    Security Breaches like data leaks, vote tampering.
	    Lots of paperwork involved, hence less eco-friendly and time-consuming.
	    Difficult for differently-abled voters to reach the polling booth.
	    Cost of expenditure on elections is high.

PROJECT PROBLEM STATEMENT	Current voting systems like ballot box voting or electronic voting suffer from various security threats such as polling booth capturing, vote alteration and manipulation, malware attacks, etc. and also require huge amounts of paperwork, human resources, Money and time. So, implementing E-stamping in a digital voting system using Block chain technology provides additional Security for Current Voting System.
OBJECTIVES OF THE PROJECT	Our objective is to solve the issues of digital voting by using blockchain technology. Blockchain enabled e-voting could reduce voter fraud and increase voter access. ● The election system must be openly verifiable and transparent. ● The election system must ensure that the vote cast by the voter has been recorded ● Only eligible voters must be allowed to vote. ● The election system should be tamper-proof. ● E-stamping allows the admin to verify whether the user is voted or not ,and track the voting records of the user. Using a Blockchain, the most important requirements are satisfied: **Authentication**: Only registered voters will be allowed to vote **Anonymity**: The system prevents any interaction between the votes casted by the voters and their identities. **Accuracy**: Votes once cast are permanently recorded and cannot be modified or changed under any circumstances. **Verifiability**: The system will be verifiable such that the number of votes is accounted for.
PROPOSED SOLUTION	We are trying to implement our system, starting from a simple blockchain implementation. The simple rationalization could be a 'chain' of blocks. A block is an associate degree mass set of information. knowledge square measure collected and Methods to suit in an exceedingly block through a process known as mining. every block may be known employing a science hash (also referred to as a digital fingerprint). The block shaped can contain a hash of the previous block, so blocks will kind a sequence from the primary block (known because the Genesis Block) to the shaped block. During this method, all the information may be connected via a connected list structure.
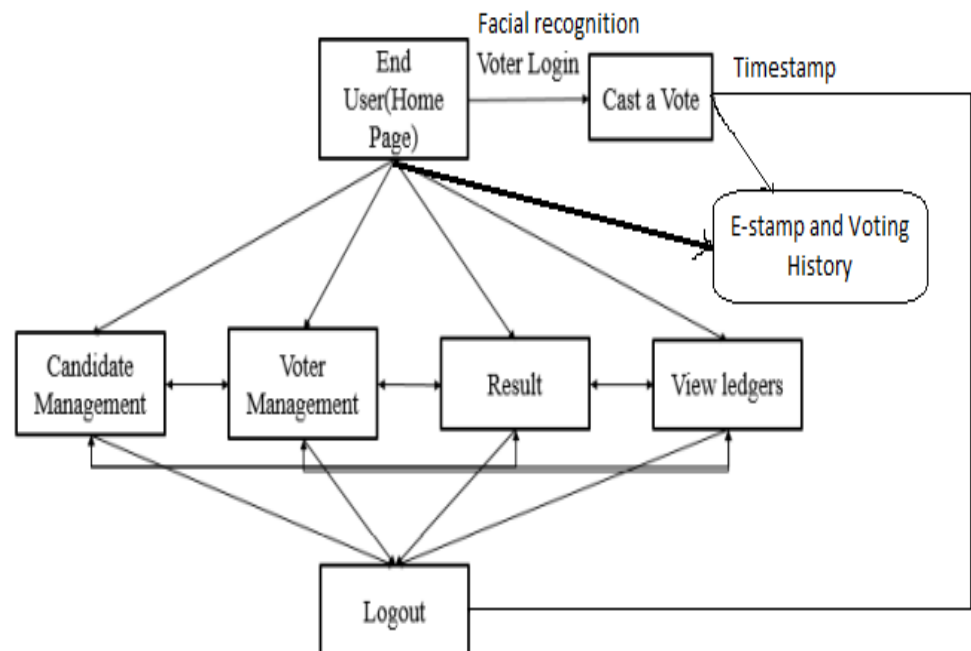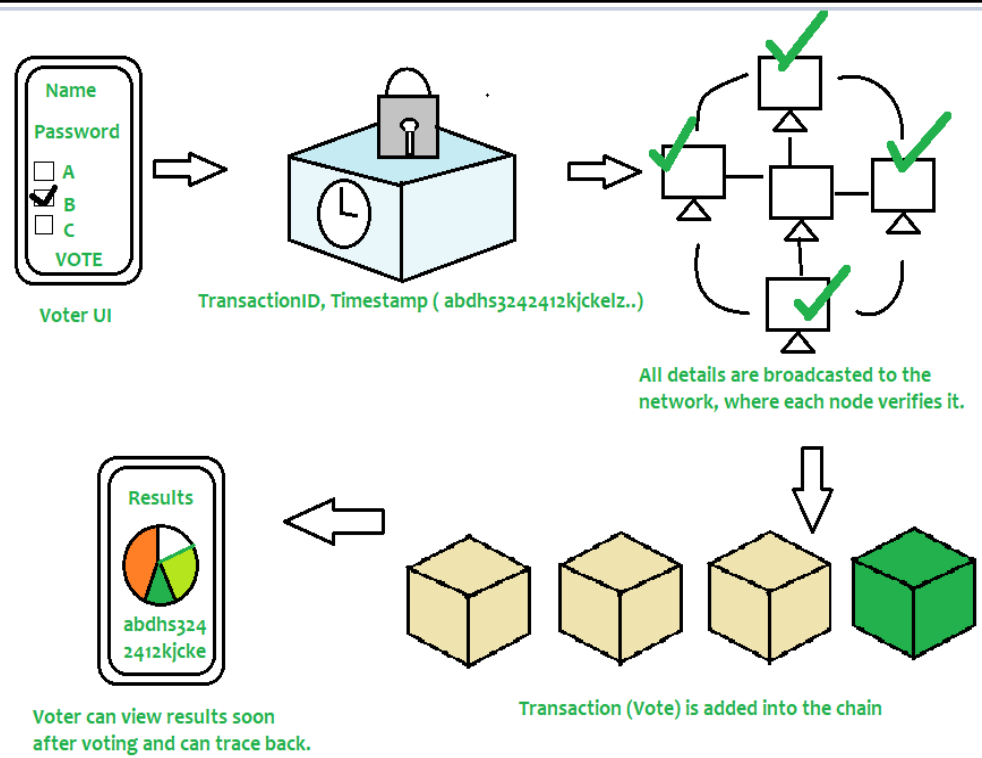
USER MODULE

Login Module (Home Page):
The main activities in the application are the user login page for users. The other modules are followed by this login page. This module records only the user and password of the user.

OTP Module:
Another main function of our proposed system is registration, in order to register with the OTP and Login for voting.

Facial Recognition for Verification:
While users login to the app, they need to verify their photo using their android device which is registered with voter id.

Select Candidate & Submit Vote:
Users can select the candidate listed within the ward and submit the vote.

E-stamp in digital voting :
Users can verify that their vote is casted,and if the user has voted already in the ongoing election, they can't access the current ongoing voting procedure until it ends. Also they can check their previous votes in which election they voted with a timestamp..

ADMIN MODULE

Create Voting Candidate & Voters:
The voter's name, voter date and other information is first entered in the application. After the successful registration, the voters sign in into the application. Then the photo of the voters is taken and then sends it to the centralized database. Voter's list will be uploaded using excel sheet to the database to create credential to the voting system.

Election Candidate:
Admin will update the candidate details with voter id, date and ward of election going to participate.

Allocate Voting Data with candidate:
Provides the detailed information about the Voting, such as Voting name, voting date, and Voting department and Voting disc.

Modify the data:
Modifying if any voters list will be uploaded using excel sheet to the database to create credential to the voting system.

See Voting user report:
Admin can see the Voting report and candidate votes count from the admin panel.

PLATFORM THAT WILL BE USED FOR IMPLEMENTATION (Name the hardware and Software tools and Development Environment that you will be using for implementation)	HW: Processor, Windows operating System
	Programming Language: HTML, CSS, Python, Java
	Front End/Back End Tools: Visual Studio Code,Ethereum
	Database: MySQL Server: Localhost
Demonstration Details	In the first step the registration process is done by the voters through an application. Then in the second step the application will start its process. Here we use an already existing database or centralized database, which contains voter's information with a linked mobile number. Server sends the OTP (One-Time Password) to the voter's registered mobile number. Then the voter enters that OTP, then the database again verifies that entered OTP by voter and if it is correct that means it is a valid user. After that the candidate's list will appear. This list contains the candidate's name and in front of that name the button named 'Vote' is provided. Voter should have to press that button then only the voting is done and the voting procedure is completed.

ARE THERE ANY STANDARD DATASETS AVAILABLE	NO
PROJECT RISKS (IF ANY)	● For electronic voting systems to be viable, we consider it necessary that they are easier to use and at least as secure as traditional elections, and must be able to eliminate human error. ● Electronic voting systems need strong encryption to guarantee security, integrity, and anonymity of the vote, while still being auditable. This must be ensured and still result in a user-friendly application ● Increasing security problems: Cyber-attacks pose a great threat to the public polls. No one would accept the responsibility if any hacking attempt succeeds during an election. The DDoS attacks are well known and mostly not the case in the elections. The voter integrity commission of the United States gave testimony about the state of the elections in the US recently.

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