E - Voting System Using Blockchain And Advanced Encryption System (AES)

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Abstract- *For some years, online voting has emerged as a substitute for paper-based elections to reduce redundancies and anomalies. The recent point of view adoptedin the past two decades shows that it has not been as successful for some period because of the cloud encryption and privacy observed. This paper suggests aframework with the use of practicable hashing methods to maintain information protection. In this paper we present the idea of square creation and square fixing. Presenting a square repair concept let's make the block chain agile when addressing the problem of the survey process. This is recommended to use consortium blockchain, which means that an administrating entity owns the block chain (e.g., election commission), so therefore no unapproved access may be created from outside. The method presented in this paper discusses the feasibilityof the survey process, the usefulness of hashing calculations, the development and initialization of blocks, the collection of knowledge and the declaration of findings by the use of the modular block chain technique. This paper professes to catch the protection and details the problems confronting the executive in block chain, and gives an better explanation of the online voting process.*

Keywords- Online Voting, Encryption, Consortium Blockchain

I. INTRODUCTION

Electronic voting (also known as e-voting) is voting that uses electronic means to either aid or take care of casting and counting votes.Depending on the particular implementation, e-voting may use standalone electronic voting machines (also called EVM) or computers connected to the Internet. It may encompass a range of Internet services, from basic transmission of tabulated results to full-function online voting through common connectable household devices. The degree of automation may be limited to marking a paper ballot, or may be a comprehensive system of vote input, vote recording, data encryption and transmission to servers, and consolidation and tabulation of election results. Electronic voting technology can include punched cards, optical scan voting systems and specialized voting kiosks. It can also involve transmission of ballots and votes via telephones, private computer networks, or the Internet.

II. LITERATURE SURVEY

According to recent survey, Biometrics are used in E-Voting system for enhancing the security of the system.

Biometrics is the technique of using non transferable, physical characteristics, such as fingerprints, to earn entry for personal identification.

This paper deals with the accessibility of biometrics in a practical application like polling of votes using a physical entity like fingerprint, Voice Recognition etc. through computer network. Using biometric in this system prevents unauthorized user access and maintains the users records.

III. PROPOSED SYSTEM

In existing system vote is cast using electronics ballet. In this we cast our vote in an electronics machine. This is a group of some counter and registers. This voting system is quite easy, simple. It has advantage like mobility, secure, flexibility for election commission. But in today world all people are so much busy that they don't have time to vote. This paper presents a perspective in the electronic voting process.

The proposed system is an online voting system which is more secured by including encryption of keys for the users by AES (Advanced Encryption System) and by using blockchain technology for transparent, decentralized system with the absence of a third party for access and control, in the election procedure of casting and counting of votes. In this system the candidates are visible to the voters via web page so that all the voters can vote for their respective candidates in the voting process. Security is also incorporated in this system by adding encryption and decryption of unique QR codes send to the users before voting and blockchain technology is useful to identify the timestamp of the users login (i.e.The date and time of user login details). We can also add fingerprint recognition for future works to improve the usability of this system.The challenges of this system are , it needs a strong internet connection and the users requires a desktop or a laptop for the whole process.

IV. BLOCK DIAGRAM

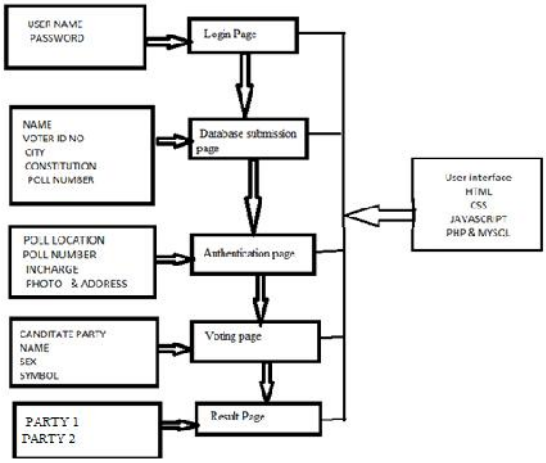

Fig1: Block diagram of E-Voting System

V. WORKING PRINICIPLE

The E-Voting system is a java based web application which allows the users to vote for their candidates through internet. The user must register an account in the system for voting. After registration, the user should login in the login webpage and he/she will be redirected to upload the QR code as an OTP sent to him by the system. The QR code is encrypted by an unique number for every user. After uploading the QR code , the user will be able to vote for their candidates and can logout from the website.The administrator of this system maintains the users details and activities with the help of blockchain and the administrator should add the candidates for the whole voting process. After the voting of users the final result will be displayed only to the administrator in his web page displaying the total number of votes and the details of the candidates.

VI. SOFTWARE DESCRIPTION

MySql(Heidi Software):

MySQL is an open-source database system with which we can do the following things:

Design the structure of the tables (called schema) and how they relate to one another
Add, edit and delete data
Sort and manipulate data
Query the database
Produce listings based on queries.

To interact with MySQL, we enter commands on a command line. These commands, such as CREATE,INSERT, UPDATE, etc. are based on a more general language called SQL (Structured Query Language).

Apache Tomcat Server:

Apache Tomcat is a server container developed by apache software foundation.

Apache tomcat 6.0 implements servlets 2.5 and JSP 2.1 specification for unified expression language.

Apache tomcat includes tools for configuration and management.

NetbeansIDE:

NetBeans is an integrated development environment (IDE) for Java. NetBeans allows applications to be developed from a set of modular software components called modules. NetBeans runs on Windows, macOS, Linux and Solaris. In addition to Java development, it has extensions for other languages like PHP, C, C++, HTML5, and JavaScript. Applications based on NetBeans, including the NetBeans IDE, can be extended by third party developers.

NetBeans IDE is an open-source integrated development environment. NetBeans IDE supports development of all Java application types (Java SE (including JavaFX), Java ME, web, EJB and mobile applications) out of the box. Among other features are an Ant-based project system, Maven support, refactorings, version control.

Java Server Pages (JSP):

Java Server Pages (JSP) is a server-side programming technology that enables the creation of dynamic, platform-independent method for building Web-based applications. JSP have access to the entire family of Java APIs, including the JDBC API to access enterprise databases. Features of JSP are,

High quality tool support
Separation of dynamic and static content
Support of scripting and action.

Java Platform:

A platform is the hardware or software environment in which a program runs. The most popular platforms areMicrosoft Windows, Linux, Solaris OS, and MacOS. Most platforms can be described as a combination of the operating system and underlying hardware. The Java platform differs from most other platforms in that it's a software-only platform that runs on top of other hardware based platforms. The Java platform has two components:

The Java Virtual Machine
The Java Application Programming Interface(API)

***Application Programming Interface (API)*:** The API provides the core functionality of the Java programming language. It offers a wide array of useful classes for develop the applications. It spans everything from basic objects, to networking and security, to XML generation and database access.

VII. DATA FLOW DIAGRAM

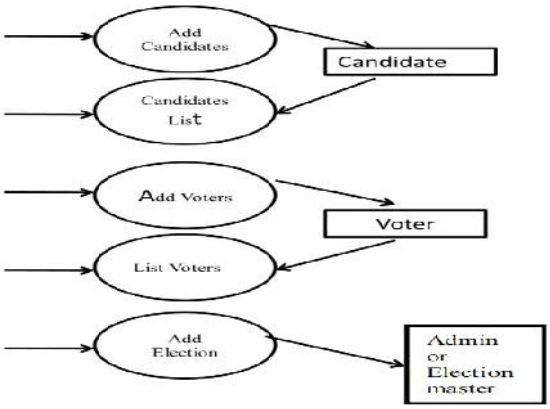

Fig2: Data Flow Diagram

VIII. ADVANTAGES

The proposed system E- Voting provides the following advantages:

- Some people are usually very busy with their works and they don't have time to participate in the election, so for them this system would be very useful as they can participate through online.
- It is a quick process and the results can be obtained faster than the traditional method.
- It is highly secured.
- As per COVID-19 pandemic situation , it will be very safe for the people to vote with no human contacts.
- It can be easily maintained or it can easily track the user's activities.

IX. RESULTS

The voting system in our India is still lagging from many technologies. Due to lack of time, many voters can'tvote to choose their leaders. The E-voting system allows the users to vote online and security module has beenimplemented for protecting the users data. Blockchain technique is incorporated for keeping track of the user'sactivity and hence again improves the security of the system. E-Voting system was implemented successfully withthe working modules.

Fig3: Voting Screen for the users

Fig4: Result after polling

X. CONCLUSION & FUTURE SCOPE

This project focuses on implementation of E-Voting system as a web development project using Java, JSP andMySQL programs. The total population of our nation as of year 2019 was nearly 136 Crores and population in theyear 2020 was approximately 138 Crores. If the population increases in this manner, then in future definitely thepopulation is going to be very enormous in numbers . The traditional election method will not be very useful in thenear future, as the amount of people are increased definitely the data associated with them will also increase.

For future development in this project, we can add technologies like Biometrics to enhance the security of thesystem. Biometrics technologies like fingerprint sensor , facial recognition or iris recognition can be incorporated inthe system during registration of the user and it can be checked in the login screen to ensure whether the same useris voting or not.

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