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Fingerprint based Voting System using Arduino

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Abstract: *In Democratic country like India, the voting system plays a major role during elections. Traditionally, the election commission in India uses electronic voting machines which need more manpower, time-consuming and also they are less trustworthy. In the field of bio-metric identification, we can get the better results and it is also trustworthy. The finger print module was already stored in the government database. The electronic voting machine was connected with the computer. Transparency of voting follows through in all phases of an election process to assure the voter that his/her vote went in favor of his/her candidate of choice. To verify the robustness and reliability of the proposed system, intensive computer simulations were run under varying voting environments. Results of the simulations show that security and performance of the system are according to expectations.*

Keywords: Arduino, Figerprint module, LCD16*2, Switches.

I. INTRODUCTION

Democracy principles depends upon the people's decision. So, to have great vision we need to take correct decision. This can be made by "voting". The conventional voting mechanisms follows the issue of voter id and other details which is generated manually.
So, there are chances of parallax errors.
It may be misused. To avoid this automation had been developed.
Fingerprint Based Voting Project is a application where the user is recognized by his finger pattern. Since the finger pattern of each human being is different, the voter can be easily authenticated. The system allow the voter to vote through his fingerprint. Finger print is used to uniquely identify the user. The finger print minutiae features are different for each human being. Finger print is used as a authentication of the voters. Voter can vote the candidate only once, the system will not allow the candidate to vote for the second time. The system will allow admin to add the candidate name and candidate photo who are nominated for the election.
Admin only has the right to add candidate name and photo who are nominated.
Admin will register the voters name by verifying voter. Admin will authenticate the user by verifying the user's identity proof and then admin will register the voter.
The number of candidate added to the system by the admin will be automatically deleted after the completion of the election. Admin has to add the date when the election going to end.
Once the user has got the user id and password from the admin the user can login and vote for the candidate who are nominated. The system will allow the user to vote for only one candidate. The system will allow the user to vote for one time for a particular election.

II. LITERATURE SURVEY

Due to worldwide ratio in computer and the underlying infrastructures, e-Voting is no longer a North American or Western phenomenon.
This newest high tech method of casting a votes has spread far beyond the **United States**, expanding throughout the entire world.

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E-Voting, along with its benefits and features, can now be found from the developed nations of Europe to the developing countries of Asia and South America.
The introduction of e-voting has been the biggest change to the Irish electoral system since the establishment of the state over 80 years ago.
E-Voting may become a worldwide reality or a worldwide nightmare. Besides reliable e-Voting techniques, there is a dire need for international standards to govern the technology, the software reliability, hardware reliability and accuracy the processes and techniques deployed within the techniques, and the checking of all hardware, software, and protocols involved.
Such standards will allow elections to proceed in any part of the world without the need for maintaining bodies.

III. OBJECTIVE

There are some of the important problems High man power, takes lots of time to give count, long distance communication is not available, less accuracy, less security etc. According to the current system, votes could be counted manually so that there is more opportunity for occurring errors, such as duplicates counting and completely missed counting.
Design an secure authenticated based voting system as well as Understanding the use of E-voting in the election system, which type of algorithms are used in this system, Applications and future uses of E-voting.
There are some of the important problems High manpower, takes lots of time to give the count, long-distance communication is not available, less accuracy, less security etc. these problems motivate us to design and developed such innovative project.

IV. TOOLS AND TECHNOLOGY

Due to hardware project we use embedded C

4.1 Hardware Description

Arduino:
Arduino is the main part or brain of our system. Arduino is a simple microcontroller board that used to make computers that drive all the function and creative projects alike.
Now we can use Arduino for voting machine with database matching. After completion of all the voters then all the record send to PC for generate the voting result.

Fingerprint Module
Biometric identification from a fingerprint made by an impression of the ridges in the skin of a thumb or finger is often used as evidence in criminal investigations. Now we can use the same biometric identification technique to build our own hobby projects like as biometric authenticate and control system with the help of readily-available Fingerprint Identification Modules.

LCD 16*2
LCD screen functions as interface between the voter and Arduino, which displays messages. Also voter ID and also whether their vote is valid or not. Also it displays “welcome” messages initially and we can set other messages as per our requirement.

Switches
In this undertaking, rather than EVM (Electronic Voting Machine), changes are utilized to make choice by voters. Here four switches have been given named as SW1, SW2, SW3 and result catch. Every last change has a place with their individual political gathering aside from result catch. Additionally, in creator's undertaking for selecting voters, Enroll Button is given.
While making choice, the client needs to press a catch named as Authentication Button. On the off chance that the individual is already selected one, at that point just vote throwing happens.

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At the point when voter press a catch named as SW1, the vote is surveyed for the individual political gathering. Like this, the whole casting a ballot procedure finishes.
After the casting a ballot procedure finishes, when the race commission opens the outcome by utilizing specific private secret key, at that point the main rundown of surveyed votes to a specific political gathering will be appeared on the LCD screen. In view of that data, the client needs to choose who the winner is.

And for web we use jsp front end and java backend
Java™ servlets and Java server pages (JSPs) are Java programs that run on a Java application server and extend the capabilities of the Web server.
Java servlets are Java classes that are designed to respond to HTTP requests in the context of a Web application.
You can look at JSPs as an extension of HTML that gives you the ability to seamlessly embed snippets of Java code within your HTML pages.
These bits of Java code generate dynamic content, which is embedded within the other HTML/XML content. A JSP is translated into a Java servlet and executed on the server. JSP statements embedded in the JSP become part of the servlet generated from the JSP. The resulting servlet is executed on the server.
The HTTP Server does not run Java Web applications directly.
HTTP requests for Java applications are forwarded by the HTTP Server to Java application servers.

V. ACTIVITY DIAGRAM

5.1 Activity Diagram

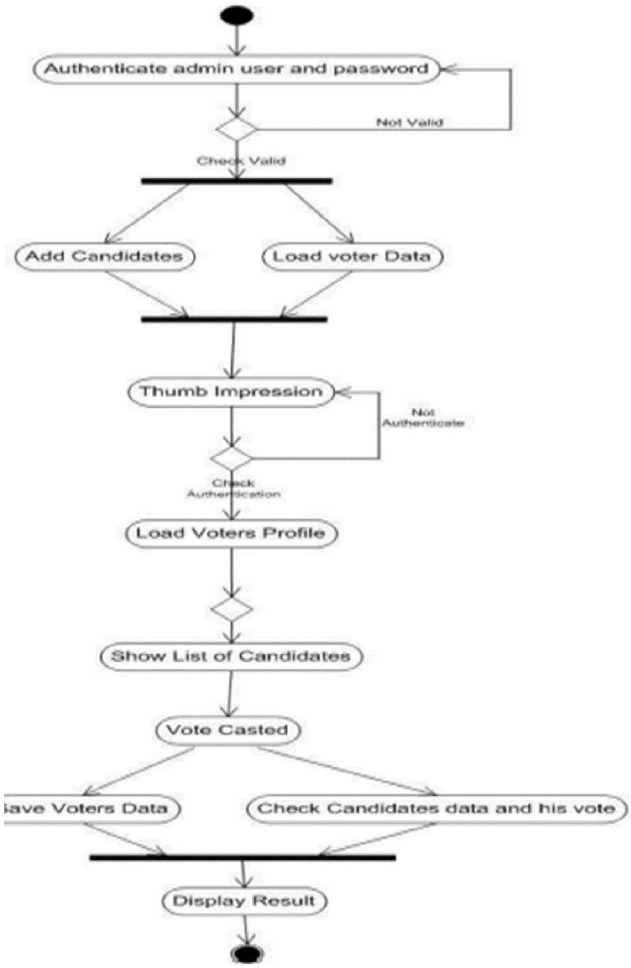

FIG. ACTIVITY DIAGRAM

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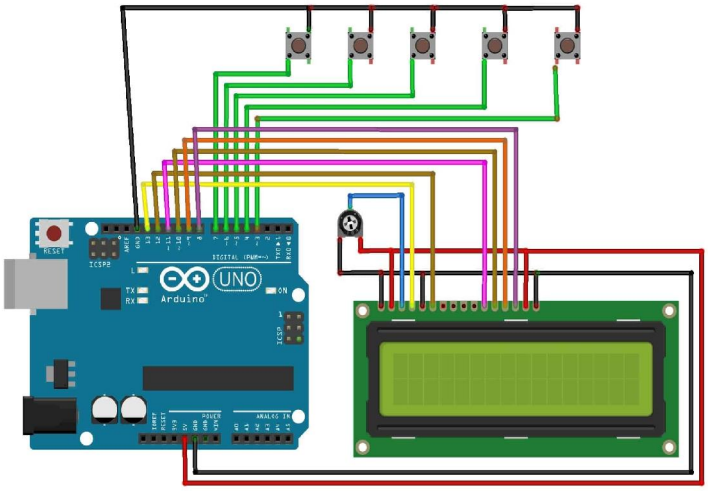
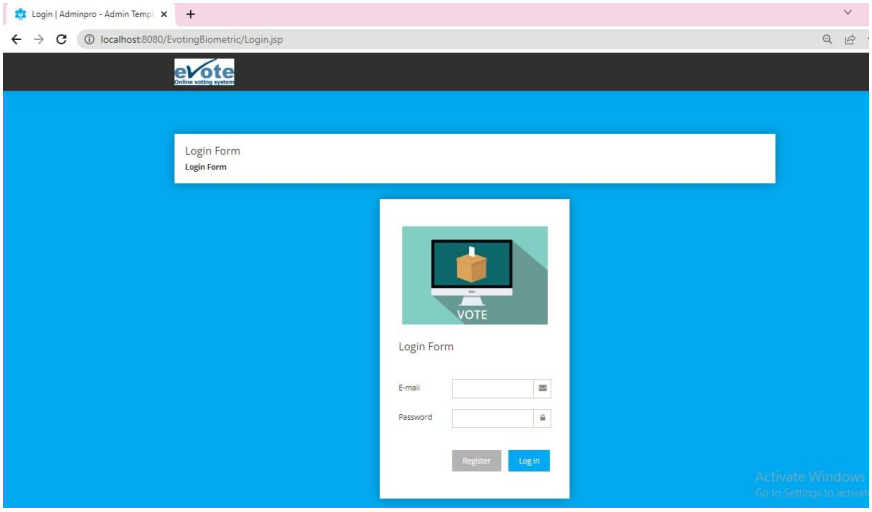
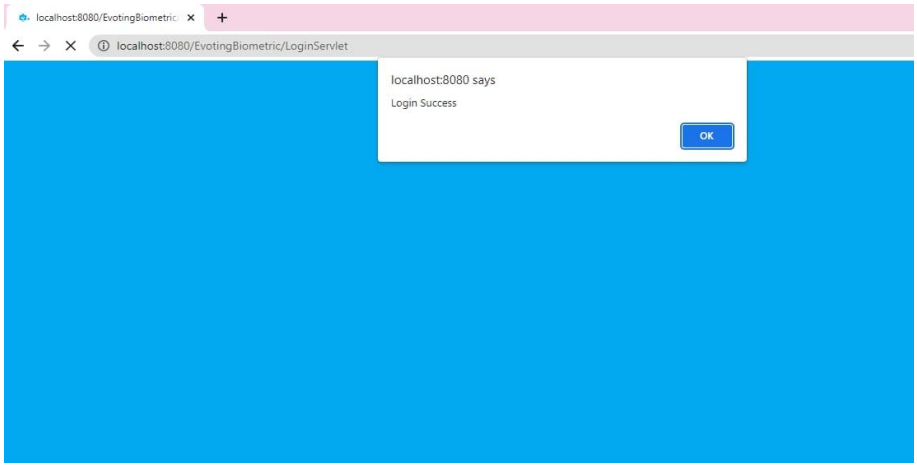
5.2 Index Page



5.3 Dashboard Pages





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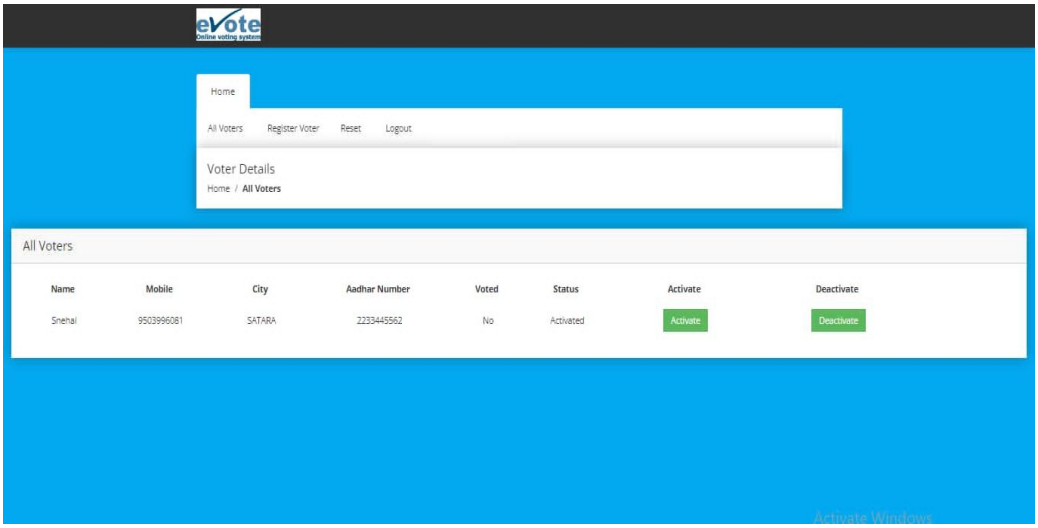

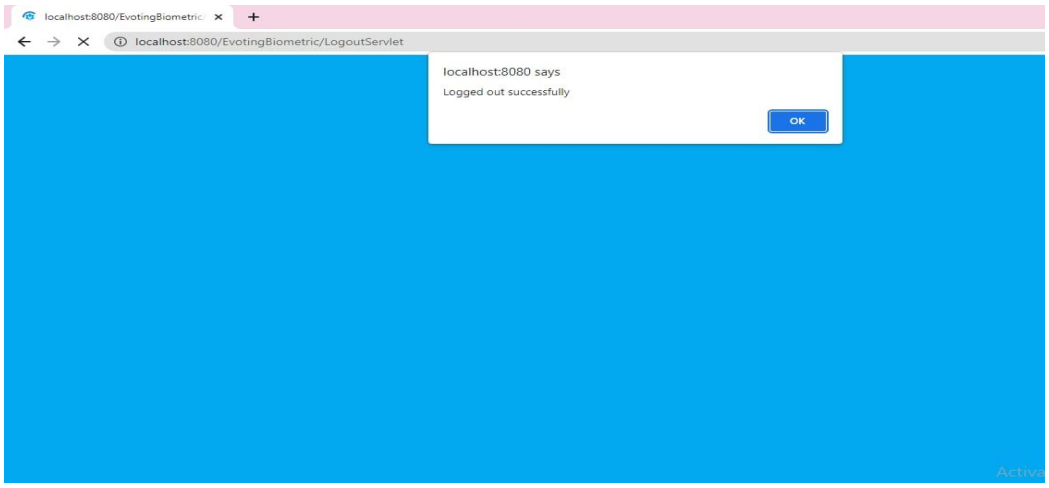

VI. ADVANTAGES AND APPLICATIONS

6.1 Advantages

- Digital Voting
- Reduces Manual Work
- Transparent Voting System
- Secure Voting System Through Finger
- Print Matching

6.2 Application

The system can be used in various areas where election will be held.

VII. CONCLUSION AND FUTURE SCOPE

The system is design based on latest technology is smart e-voting system. The existing system by using fingerprint recognition.

Systems are providing high performance and high security to voting system. Smart e-voting system is useful for voter because voter can vote any other city to their current city.

Developing Web-based Voting System using Fingerprint Recognition. Smart e-voting system may become the faster, better, and the most efficient way to administration election and counting vote as well as it consists of simple process or

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procedure and require a minimum election officer within the process The framework additionally keeps numerous votes by a similar individual and checks the authentication of the voter.
It additionally enables a man to cast a voted from anyplace given that the voter is inside discretionary cutoff points.
The unique mark based voting system has given an opportunity to evade invalid votes, It decreases the surveying time, Easy to conveying to surveying focus from the surveying box, Reduce the staff of the casting a ballot focus, It gives simple and exact tallying with no inconveniences, Provisioning of voting preventive measures. The system voting data are quickly transferred to the centralized databases. After the voting finishing the system display result quickly.

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