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Fingerprint Based Voting System

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Abstract: *Biometric Finger print devices are used in the Electronic Voting machine for voter verification. We have designed a finger print based voting machine where there is no need for the user to carry their government ID. The voter at the polling booth needs only to place their Finger on the device, thus allowing the acquisition of an on-spot fingerprint from the voter which serves as an identification. This Finger print reader reads the details from the tag. This data is passed onto the controlling unit for the verification. The controller fetches the data from the reader and compares this data with the already existing data stored during the registration of the voters. If the data matches with the pre-stored information of the registered fingerprint, the person is allowed to cast his vote. If not, a warning message is displayed on LCD and the person is barred from polling his vote. The vote casting mechanism is carried out manually. LCD is used to display the related messages, warnings and ensuing results.*

Keywords: Voter ID; Finger Print Module;LCD

I. INTRODUCTION

Biometrics is the science and technology of measuring and analysing biological data. For the aim of authentication, DNA, fingerprints, eye retinas and irises, voice patterns, facial patterns, and hand measurements are used. Since its inception, the discipline of biometrics has grown to encompass numerous physical identifying methods. Human fingerprints continue to be a popular form of identification and the biometric technique of choice for law enforcement. These ideas about human identification have sparked the creation of fingerprint scanners, which allow for the fast identification of people and the granting of access rights.The basic point of these devices is also to examine the fingerprint data of an individual and compare it to a database of other fingerprints .In our initiative, voter identification or authentication has been accomplished using fingerprints. Everybody has a different thumb impression, which helps to reduce error.As needed, a database containing all of the voters' fingerprint pictures is constructed. This technique uses precise coding to check for invalid votes and repeated votes. Therefore, elections could be made fair and free of rigging with the use of this fingerprint-based EVM technology. Additionally, conducting elections is no longer a time-consuming and expensive task.

II. PROPOSED SYTEM

This system uses an Arduino board consisting of a screen and a fingerprint module. This project used fingerprints for voter identification or authentication purposes. Thumbprints are very unique, so errors can be minimized. Created a database to store data including voter details and fingerprint images. The system identifies and reports any fraudulent votes or re-votes. This system allows administrators to add names and photos of candidates nominated for the election. Administrator verifies the user's identity and authenticates the user, and the administrator registers the voters. Any number of candidates added to the system by the admin will be automatically removed once the election is completed. Admins should add a date when the election will be scheduled. Users can login and vote for the candidates after receiving a login id from the administrator. Admin can view election results using the election id. Users can also see election results.

III. TECHNOLOGIES USED

3.1 VS Code

Visual Studio is the code editor redefined and optimized for building and debugging modern web and cloud applications. VS Code is a great editor for PHP development. It offers syntax highlighting, bracket matching,

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IntelliSense (code completion), out of the box snippets, and much more, and you can add even more with community-made VS Code extensions.

3.2 Arduino IDE

Arduino is a open-source electronic prototyping platform enabling users to create interactive electronic objects. Arduino IDE is used for registering thumbprints of the voters and save it in the databse.[2]

3.3 Xampp

Xampp[1] is a software distribution which provides the Apache web server, MY SQL database (actually MariaDB),PHP and Perl(as command-line executables and Apache modules) all in one package .It is available for Windows, MAC and Linux system. No configuration is necessary to integrate PHP with MYSQL.

3.4 Fingerprint Module

The fingerprint module is one of the most prominent devices of the project. We use this module to acquire the fingerprint of a voter. The module used in this paper is R307. This module captures a high-quality image, resulting in a better matching process. The comparison process is very efficient as we could check every ridge, whorl, and valley with the already existing fingerprint.[3]

IV. WORKING

4.1 Flowchart

A. Voter Enrollment:

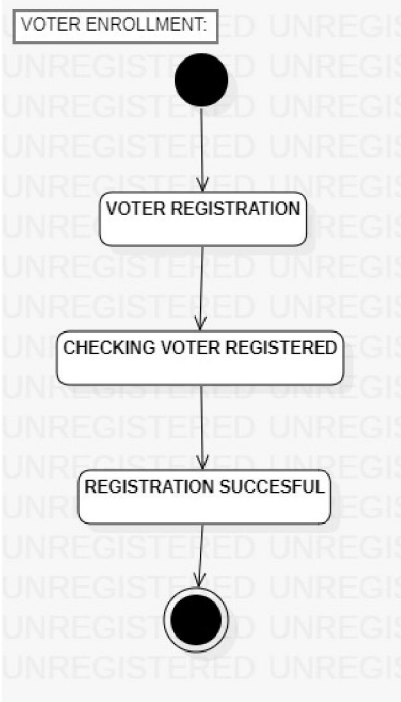

Fig. 1: Voter enrolment

B. Vote Casting:

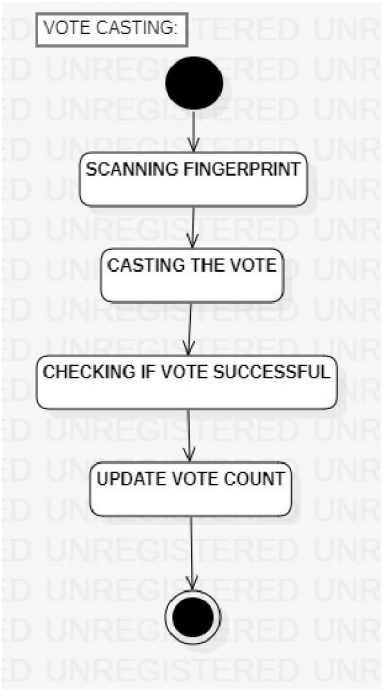

Fig. 2: Vote casting

4.2 Methodologies

This is implemented using both hardware and software using different tools as

Software

- VS Code
- Xampp
- Arduino ide

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Hardware

- Fingerprint module
- Arduino

V. RESULTS

5.1 Admin[4]

A. Admin login:

This is admin login page, that is used by the admin to login and create election details.

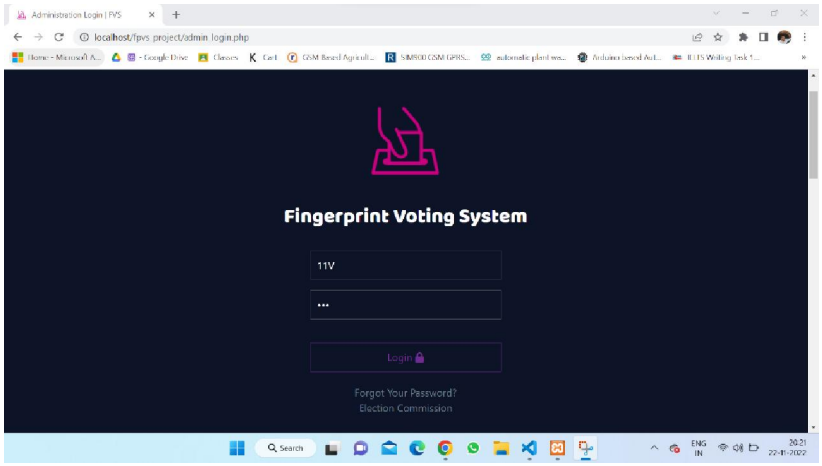

Fig. 3: admin login page

B. Admin dashboard

Admin Dashboard is used by admin to enter all details required for election.

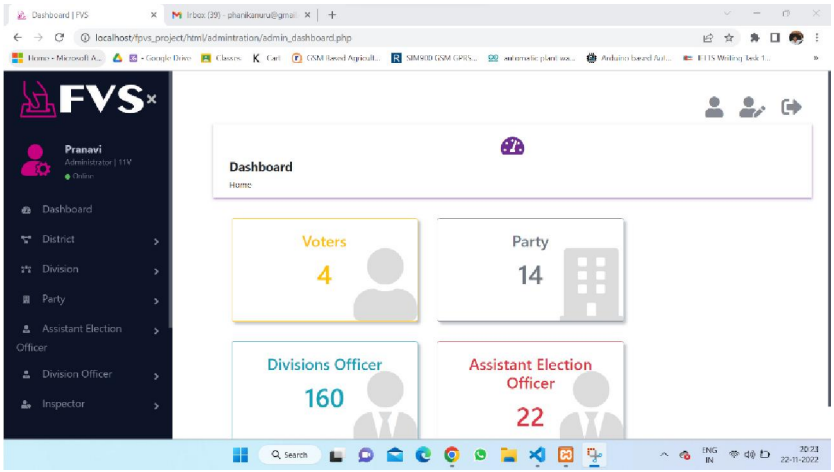

Fig. 4: admin dashboard page

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5.2 Election schedule

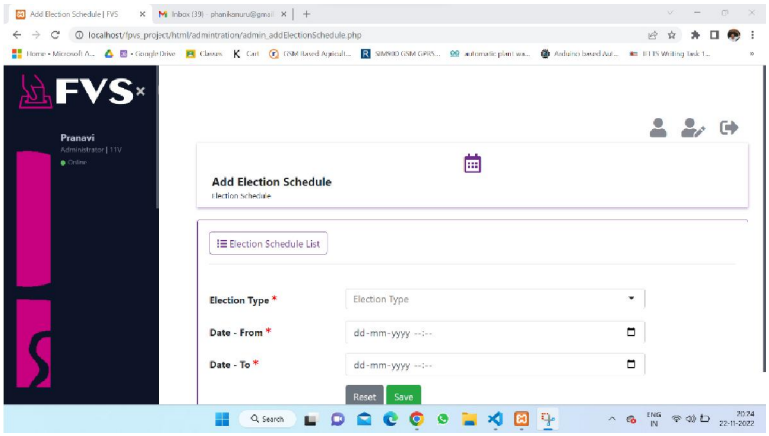

Fig. 5: election schedule page

5.3 Inspector page:

A. Inspector login:

This page is displays inspector login allocated to the correspondent inspector.

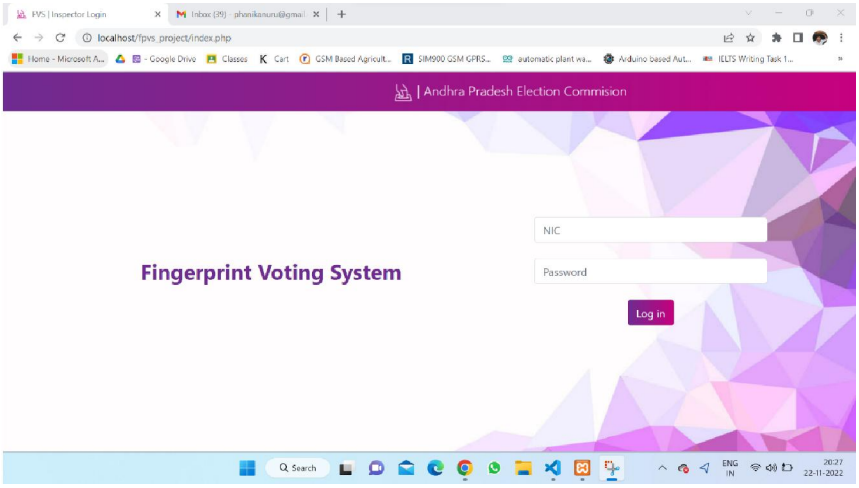

Fig. 6: Inspector login page

B. Inserting finger with a pin

This page allows the voter to enter the required fingerprint pin given to them and cast their vote.

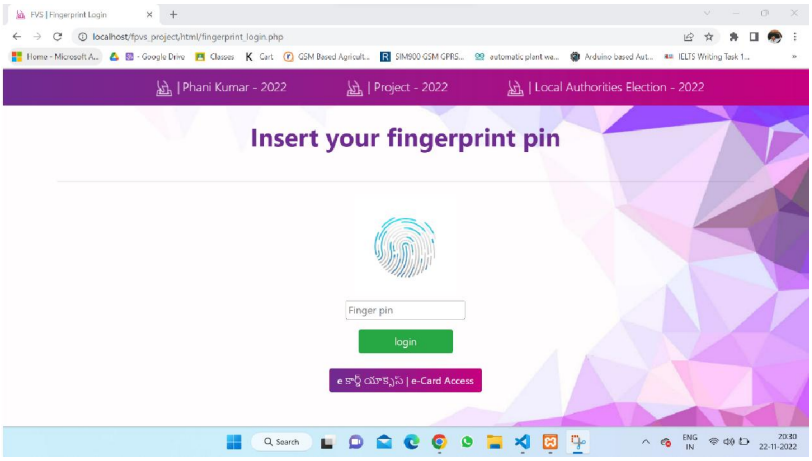

Fig. 7: inserting finger with a pin

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C. Casting the vote:

This page allows the user to cast their vote.

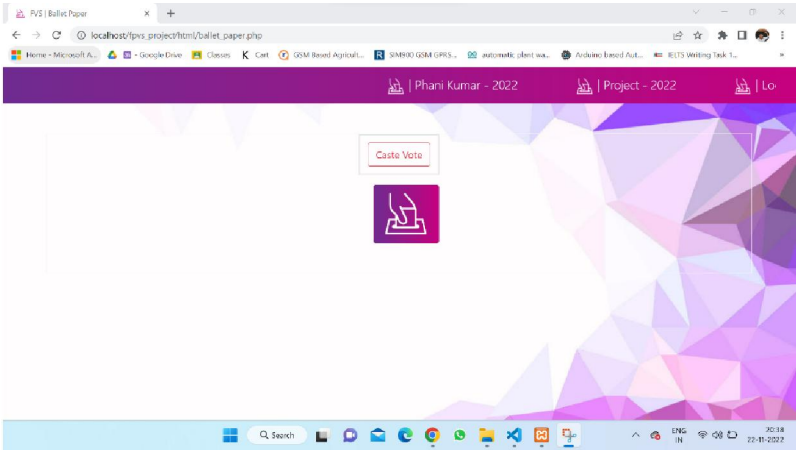

Fig. 8: Vote casting

D. Vote successful casted:

This page displays the final voting result.

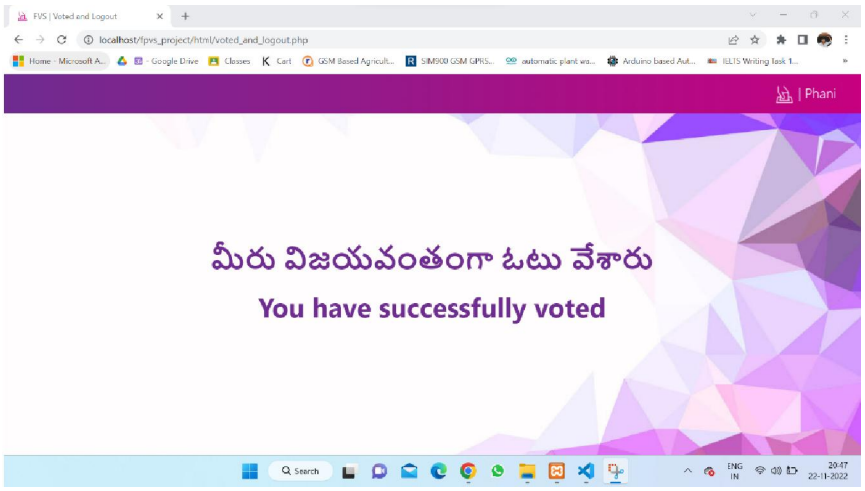

Fig. 9: vote casted successfully

VI. SCOPE OF FUTURE USE

The prototype device could be further enhanced by done using numerous fingerprints at a later stage of development modules for each side to increase security and also a inbuilt camera is fixed to capture the image that provides more security.

VII. CONCLUSION

Through this project, we provide a perfect electronic voting system that manages all operations with a microcontroller. In comparison to the traditional paper-based voting system, this system is simple, practical, and affordable. As greater security is guaranteed in the suggested machine, it may be employed in place of the voting method. The key benefit of this technique is that because everyone's fingerprints are distinct and individual, duplicate votes can be prevented.

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[4]. https://easychair.org/publications/preprint/7PKx