AADHAR BASED ELECTRONIC VOTING SYSTEM AND PROVIDING AUTHENTICATION ON INTERNET OF THINGS

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***Abstract*—Flawless voting is ensured by Electronic voting machine. People should believe that their vote is secured and there is no malpractice. The main aim of this project is to develop a secure Electronic voting machine using Finger print identification method, for finger print accessing we use AADHAR card database. At the time of voting in the elections, the e-voting process authentication can be done using finger vein sensing, which enables the electronic ballot reset for allowing voters to cast their votes. Also the voted data and voter's details can be sent to the nearby Database Administration unit by using WIFI System. The finger print scanning is used to ensure the security to avoid fake, repeated voting etc. It also enhances the accuracy and speed of the process. The purpose of such system is to ensure that the voting rights are accessed only by a legitimate user and no one else. During elections, the thumb impression of a voter is entered as input to the system. This is then compared with the available records in the database. If the particular pattern matches with anyone in the available record, access to cast a vote is granted. But in case the pattern doesn't match with the records of the database or in case of repetition, access to cast a vote is denied or the vote gets rejected.**

1.INTRODUCTION

For conducting and controlling voting in India, a separate commission was introduced called Election Commission of India (ECI). This commission is not favorable or does not support any political party. Security is the heart of e-voting process. Therefore the necessity of designing a secure e-voting system is very important. Usually, mechanisms that ensure the security and privacy of an election can be time consuming, expensive for election administrators, and inconvenient for voters. There are different levels of e-voting security. Therefore serious measures must be taken to keep it out of public domain. Also, security must be applied to hide votes from publicity.

EVMs or electronic voting machines provide the voter with a button for each choice which is connected by a cable to an electronic ballot box.An EVM consists of two units--control unit and balloting unit--and these two are connected by a five-meter cable. When a voter presses a button against the candidate he/she wishes to vote for, the machine locks itself. The voter enters the polling booth and presses the button for the candidate of his or her choice. At the end of the poll, the presiding officer removes a plastic cap on the control unit and presses the CLOSE button, which prevents the EVM from accepting further votes.

ELECTRONIC VOTING MACHINE

On the counting day, the control units are delivered to a counting centre. In public view, an election official breaks a seal on the control unit and presses the RESULT button. The display on the control unit shows a sequence of outputs: which are - number of candidates, total votes, and number of votes received by each candidate.

Figure.1. ELECTRONIC VOTING MACHINE

Even though this system has been used since 1999, there are still a lot of issues regarding the security features. There are various political parties questioning whether EVMs are tamper-proof.

Some of the disadvantages in using EVM are:

- The current voting machine is not able to recognize the identity of the candidates
- The EVM has no means for the voter to verify that his/her votes have been tallied properly
- Vulnerability to hacking
- Susceptibility to fraud
- An EVM can be tampered during manufacturing stage, that too during the manufacturing of the Chip. After tampering the EVM, it's difficult to detect it by a third party

By our proposed system, these kinds of malpractices can be overcomed.

II.PROPOSED SYSTEM

In this system, first the voter will swipe his/her Aadhar Card on the Aadhar Card Reader Module. The Aadhar Card Reader Module is connected to the Microcontroller unit; hence, it will send the data obtained from the card to the Microcontroller. The Microcontroller (is connected to the central server where all information of Aadhar Card holders has been stored already) is programmed to access the data stored in its memory obtained from the code. Now, the voter can be subjected to finger print test to validate the details of the voter in case of any discrepancy found in the photo due to ageing etc. If the finger print is matched with his/her aadhar information the user is granted to cast his/her vote and the system creates that in fake id and updates it in the database. If the finger print does not match, the system denies permission to vote and hence illegal voting can be avoided.

III.BLOCK DIAGRAM

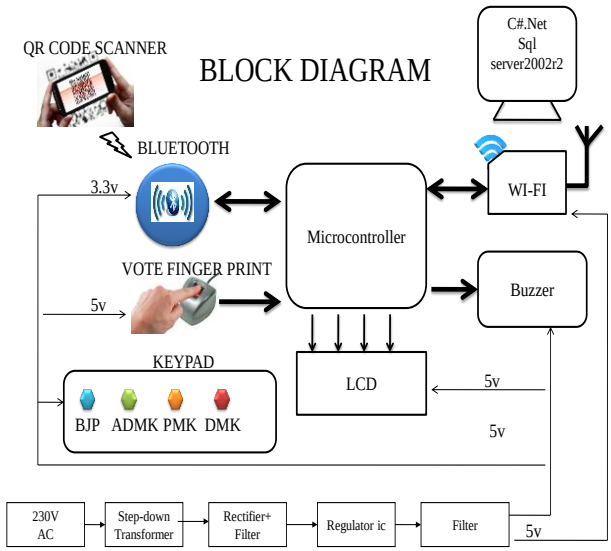

Figure. 2. Block Diagram of the Proposed System

COMPONENTS

A.PIC MICROCONTROLLER:

The PIC16F887 is one of the latest products from Microchip. It features all the components which modern microcontrollers normally have. For its low price, wide range of applications, high quality and easy availability, it is an ideal solution in applications such as to control different processes in industry, machine control devices, measurement of different values etc. Here, this PIC controller is used to store and compare the user's thumb impression with information in his/her aadhar database.

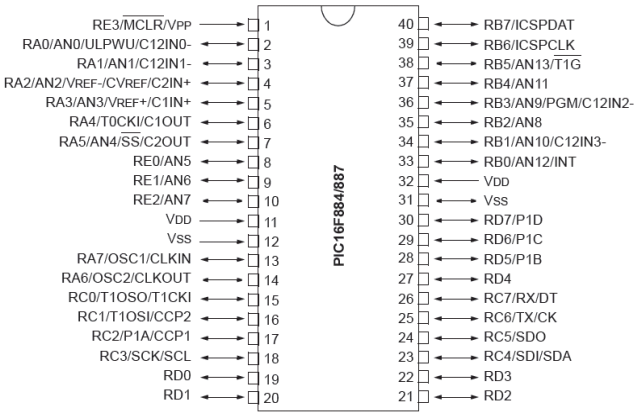

Figure.3. Pin Diagram of PIC16F887

B.FINGER PRINT SCANNER:

Finger print scanner is a type of technology that identifies and authenticates the fingerprints of an individual in order to grant or deny access to a computer or a physical facility. When a fingerprint is entered into the system, only a template of the fingerprint is stored, not an image of the fingerprint. The electrical signal created in response to the light hitting on the CCD forms pixels which are collectively joined to form an image. These pixels are converted using and ADC to make a digital image.

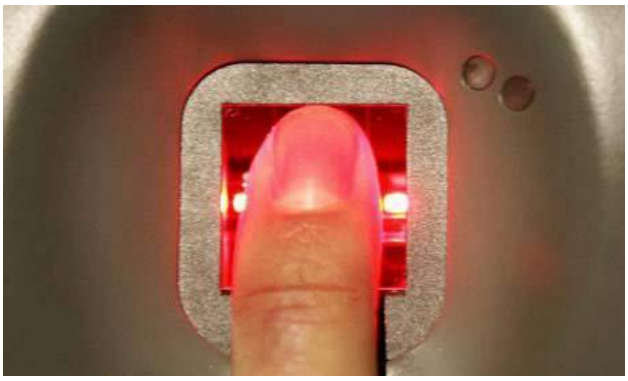

Figure.4. FINGER-PRINT SCANNER

The scanning device consists of a glass plate, on top of which you are supposed to place your finger. After the scanning takes place, an inverted image of the finger is stored. This stored finger print is compared with the database.

C.Bluetooth:

It is a standard for the short-range wireless interconnection of mobile phones, computers and other electronic devices. When the fingerprint of the user is impressed, we have to compare it with the aadhar database. In order to achieve that, first the QR code of the aadhar card is scanned using QR code scanner and then the scanned information is sent via Bluetooth to the kit.

D.LCD(Liquid Crystal Display):

It is an electronic display module and find a wide range of applications. This LCD has two registers which are command and data. The command register is used to store the command instruction given to LCD. This command is used to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc.
The data register stores the data to be displayed on the LCD. The ASCII value of the character which is displayed in LCD can be stored in data register.

E.Buzzer:

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers and

confirmation of user input such as a mouse click or keystroke. Buzzer is an integrated structure of electronic transducers, DC power supply, widely used in computers, printers, copiers, alarms, electronic toys, automotive electronic equipment, telephones, timers and other electronic products for sound devices.

F.ESP8266 WIFI Module:

ESP8266 is an impressive, low cost Wi-Fi module suitable for adding Wi-Fi functionality to an existing microcontroller project via a UART serial connection. The module can even be programmed to act as a standalone Wi-Fi connected device. In this system, Wi-Fi is used to transfer the collection of votes to the server so that vote information can be updated to the server.

ALGORITHM

Initially, the aadhar card is swiped in the aadhar card module, which will extract the information about the particular voter such as fingerprint and retinal data. The aadhar card reader module is connected to the microcontroller unit, hence the obtained data will be sent to the microcontroller and stored.

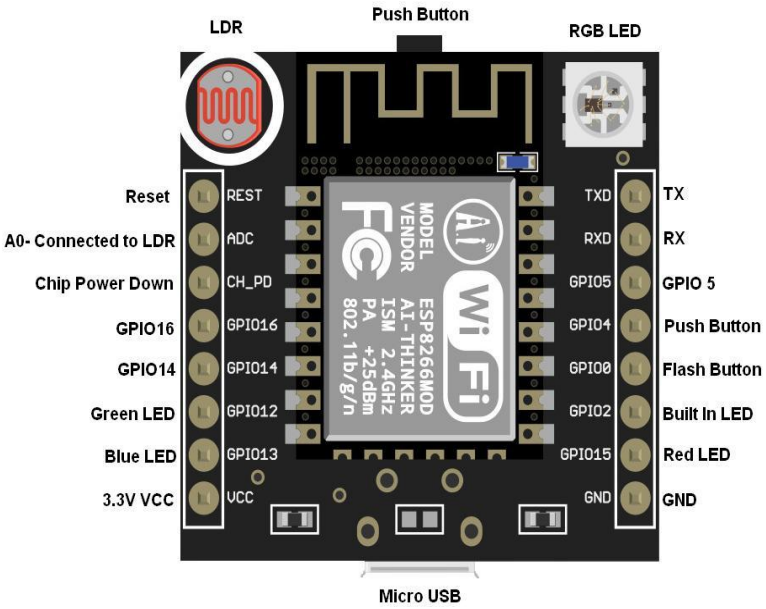

Figure5. ESP8266 WIFI Module

The microcontroller (is connected to the central server where all information of aadhar card holders has been stored already) access the data stored in its memory by using the code written.Now the voter is subjected to finger print test where the finger print scanner will send the scanned data to the server.
Now, the PIC microcontroller will compare the scanned datawith the aadhar card details in the server. If the details match, the microcontroller will send a signal to the LCD and the LCD displays a message “DETAILS MATCHED READY TO VOTE! “ and also the buzzer produces a sound indicating the success of match. After this, the system will create a temporary id and the

voter is allowed to cast his/her vote. After casting the vote, the LCD will display "VOTED SUCCESSFULLY, THANK YOU". These are updated in the database, which makes it very much useful and easier at the time of counting the votes.

IV.RESULT

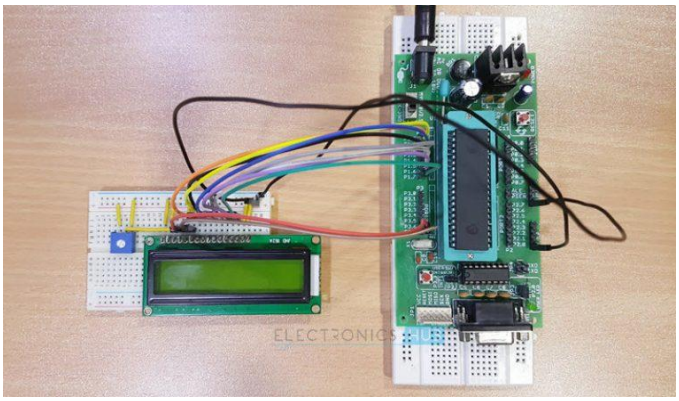

Figure.6. AADHAR BASED VOTING MACHINE

This aadhar based voting machine is very much simple and user friendly. Moreover it is more secure when compared to the existing system and can provide a reliable result. Reliability and trust are the two important factors which will make the citizens of a country satisfied.

V.CONCLUSION

In this paper, we have proposed an online voting system which is better and faster than previous systems. The new system prevents access to illegal voters, provides ease of use, transparency and maintains integrity of the voting process. The system also prevents multiple votes by the same person and checks eligibility of the voter. It also allows a person to vote from anywhere provided that the voter is within electoral limits. AADHAR based Electronic voting systems have many advantages over the traditional way of voting. Some of these advantages are lesser cost, faster tabulation of results, improved accessibility, greater accuracy, and lower risk of human and mechanical errors.

VI. REFERENCES

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