IOT BASED ADVANCED E-VOTING SYSTEM

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Abstract: **Every citizen or voter of India is allowed to exercise their right to express their choices regarding specific issues, pieces of legislation, citizen initiatives, constitutional amendments, recalls and/or to choose their government and political representative's through casting their votes. To allow the exercise of this right, almost all voting systems include the following steps: voter identification and authentication, voting and recording of votes cast, vote counting, publication of election results. Voter identification is required during electoral process. Security is a heart of e-voting process. Therefore the necessity of designing a secure e-voting process is very important. A secured electronic voting machine using unique identification number i.e. AADHAR number has been developed. To provide additional security along with the AADHAR number biometric identification is used. At the time of voting in the elections, the voter authentication can be done through biometric pattern. If the biometric information of the voter matches the database of the AADHAR then the person is allowed to cast their vote. Transparency is additional advantage for the above system.**

Keywords: **Secured voting, Transparent voting systemTemplate Matching, Aurdino.**

1.INTRODUCTION

We are fascinated by the fact that the World's Largest Democracy implements elections electronically, while on the contrary it is discouraged by the western countries even now. When we did a comprehensive we came around following facts which are not a part of Indian EVM's driving as motivation for us to implement them in our design .Election Transparency: All the processes of handling and counting ballots to be completely open to public view.

Nothing to be hidden or secret – except, of course, each individual's voting choices. Trust of the voter in the EVM registering the vote : We plan to implement voter verifiable paper record (vvpr) to which voter can look up instantly and decide on whether the vote he casted is registered correctly in the system increasing the reliability of the system. We have made a module which interfaces with the voter and directs to the procedure of voting. The Liquid Crystal Display unit provides the voter friendly interface guiding through the procedure of voting. The keypad is used to enter the details and other actions to be taken by the voter, which are integrated with the display unit. We learnt a lot many aspects of design and especially SD card interfacing is the most interesting part. Also the product can be used for several types of elections not only just the State or Assembly Elections, discussed in later sections.

2. LITERATURE SURVEY

[1]Ch.Jaya Lakshmi & S.Kalpana 'secured and transparent voting system using biometric'(ICISC 2018).

There are many types of problems with EVM which is currently in use they are: Accuracy, Security Problems, Illegal Voting, Privacy, Verifiability. To allow the exercise of this right almost all voting systems include the following steps: voter identification and authentication, voting and recording of votes cast, vote counting, publication of election results. Voter identification is required during electoral process

[2]Rahil Rezwan, Huzaifa Ahmed, M. R. N. Biplob, S.M. Shuvo,Md. Abdur Rahman 'Biometrically Secured Electronic Voting Machine'(Dec 2017). IEEE region 10 humanitarian technology conference(R10-HTC)21-23 DEC 2017,dhaka Bangladesh.

In this project, They have developed a system which will be suitable for elections in countries like Bangladesh. The proposed system is more digital, technology-based and secured system.

[3]D.Ashok Kumar and T.Ummal Sariba Begum(2012)'Electronic voting machine' (march2012).

international conference on Electronic voting machine.This is long,time consuming process and very much prone to error.This situation continued till election scene was completely changed by electronic voting machine.No more ballot paper, boxes,stamping etc.All the condensed into a simple box called ballot unit of electronic voting machine.

[4]Taban Habibu,konde sharif sebwato Nicholas ' Implementation of Electronic voting machine'(2017).

Electronic voting comprises the use of a computer rather the traditional use of ballot at polling centers or by postal mail.Several security measures were integrated into the E-Voting system in order to achieve an enhanced,speedy and accurate performance.

[5]Yekini,N.A, Oyeyinka I.K, Oludipe O.O, Lawal O.N 'Automated Voting Machine for election in nigeria'(2012).

paper-based voting system originated as a system where votes are casted and counted by hand,using paper ballots.This paper then proposed a computer based E-Voting system for future election in Nigeria. The system imitates the ATM machine used by financial institutions for financial transcations.
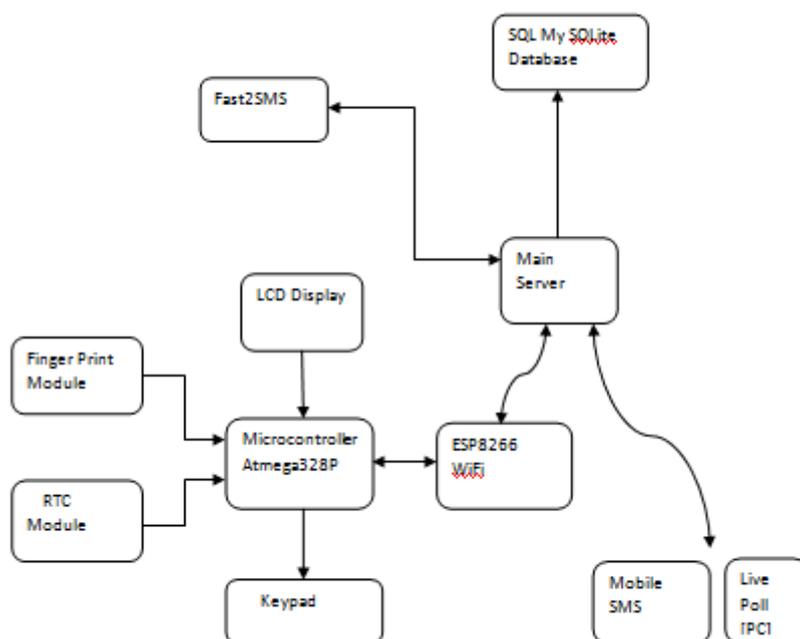
3.BLOCK DIAGRAM

Fig.1 System Architecture Diagram

Block Diagram Description

A.Fingerprint Module:For this the R305 has high voltage module as a scanner. This module has in-built ROM, DSP and RAM. This can stop up to 100 users fingerprint. The Master mode is used to register the fingerprints which will be stored in the ROM present on the scanner with a unique id. This mode verifies the scanned images with the stored images. when coming to our application the images of the students will be stored the module with a unique id.

B.RTC Module: This is DS1302 l. Real time Clock Module (With CR2032 Battery).2. Backup battery CR1220, voltage 3V, current 260mAh, non- rechargeable batteries. DS1302 8-pin SMD homemade chips. Operating temperature: 0 degree — 70 degree. The DS1307 serial real-time clock (RTC) is a low-power, full binary-coded decimal (BCD) clock/calendar plus 56 bytes of NV SRAM. Address and data are transferred serially through an I2C, bidirectional bus. The clock/calendar provides seconds, minutes, hours.

C.Microcontroller Atmega328: The ATmega328 is a single-chip microcontroller created by Atmel in the megaAVR family. 32 kB ISPp flash memory with read-while-write capabilities, 1 kB EEPROM, 2 kB SRAM, 23 general purpose I/O lines, 32 general purpose working registers. The device operates between 1.8-5.5 volts. The device achieves throughput approaching 1 MIPS per MHz.

D.Liquid Crystal Display (LCD): A liquid crystal display (LCD) is a thin, flat display device made up of any number of colour or monochrome pixels arrayed in front of a light source or reflector. The Liquid Crystal Display unit provides the voter friendly interface guiding through the procedure of voting.

E.Matrix Keypad:A very simple circuit to experiment with AT90S2313, 2x16 LCD display and 3x4 keypad.The clock based on 4 MHz crystal, but you can use anyone crystal between 1-4 MHz. Operating Temperature -40°C to +70°C (-40°F to +160°F) Current draw 20 A at 5 VDC or 12 VDC. The keypad is used to enter the details and other actions to be taken by the voter, which are integrated with the display unit.

F.ESP8266 Module:ESP8266 is Wi-Fi enabled system on chip (SoC) module developed by Espressif system. It is mostly used for development of IoT (Internet of Things) embedded applications. ESP8266 comes with capabilities of 2.4 GHz Wi-Fi (802.11 b/g/n, supporti WPA/WPA2),general-purpose input/output (16 GPIO),Inter-Integrated Circuit (I²C) serial communication protocol,analog-to-digital conversion (10-bit ADC)Serial Peripheral Interface (SPI) serial communication protocol, ESP8266 module is low cost standalone wireless transceiver that can be used for end-point IoT developments.

G.FAST 2 SMS: Fast2SMS provide multiple ways to send Bulk SMS via RestAPI. You can send Single SMS, Bulk SMS, OTP.Transactional SMS, Promotional SMS using Fast2SMS fast and Reliable API. successful voting is done then message is send to voter mobile through FAST2SMS Server.

SOFTWARE

A. Atmel Studio: To Program the Atmega328 Microcontroller we used this IDE. Atmel Studio is use to   provides a large set of features for project development and debugging. The most features are listed below.
- Rich code editor for C/C++ and Assembly featuring the powerful Visual Assist extensiob.
- Atmel Software Framework allowing creation of modular applications and providing building blocks for a prototype on any AVR platform
- Debugging on actual devices using Debugging Tools

B. Arduino IDE: To Program the Atmega328 Microcontroller we used this IDE. Arduino microcontrollers are pre-programmed with a boot loader that simplifies uploading of programs to the on-chip flash memory. Some serial Arduino boards contain a level shifter circuit which is use to convert between RS-232 logic levels and transistor–transistor logic (TTL) level signals.

C. Xampp IDE: To Build the PHP web Server for PMC Corporation website using the XAMPP Local Host. XAMPP can Build PHP websites with the MySQL Data base and with Apache server.
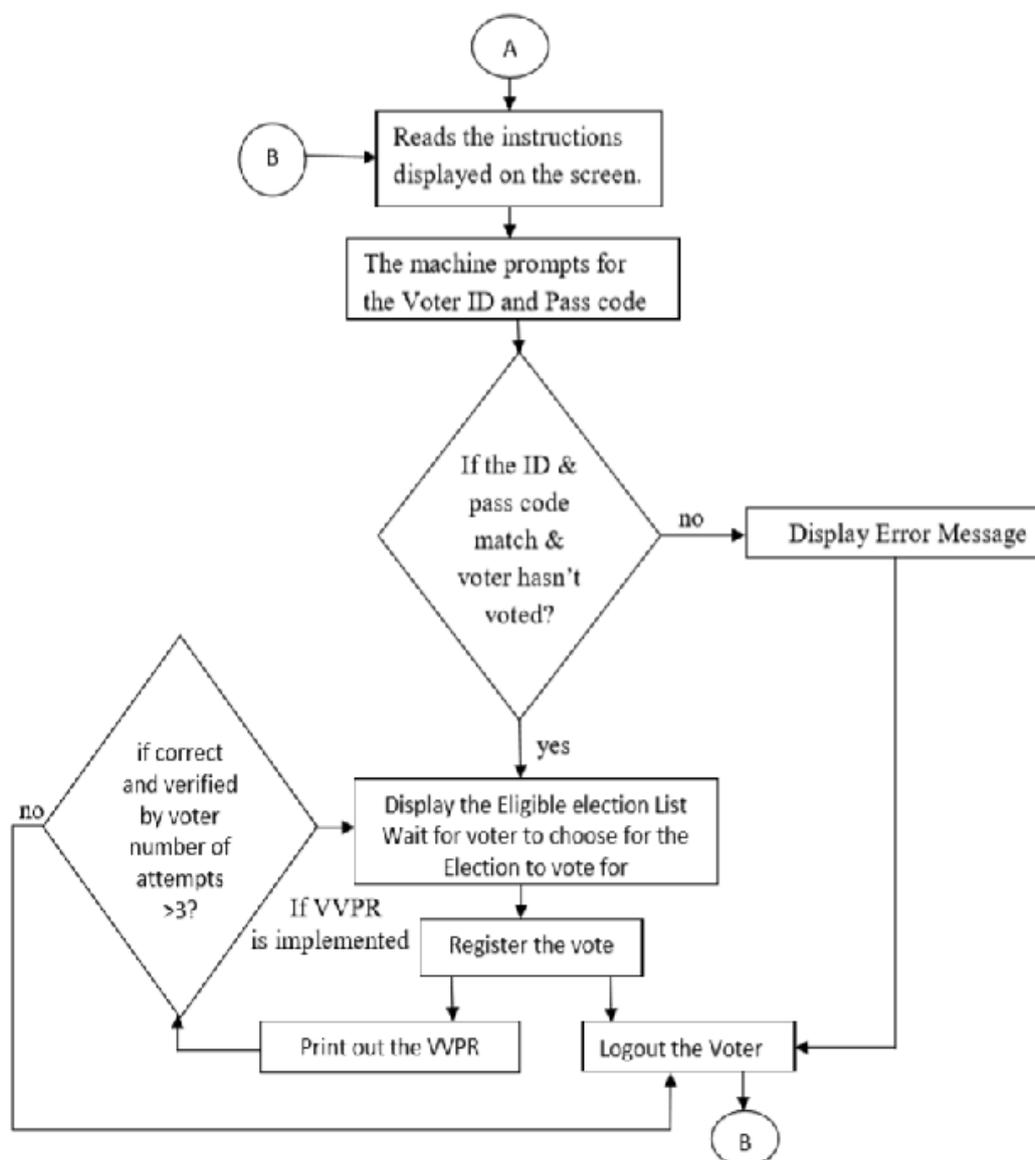
4.FLOWCHART

Fig.2 Flowchart

5.RESULT:

Voter is requested to give the biometric and given biometric is cross checked with the database which i stored. If both the fingerprint and the UID number matches then the age of the voter is verified and if he/she is eligible. If the UID number entered by the voter is not present the Local Database then it goes for Central Database to check as shown in the Fig3:

Checks whether the UID number is present in the Center Database or not as shown in the Fig 4:

Now if the fingerprint and the UID number matches with the Central Database then the ballot box appears as shown in Fig 5:

Now the person is allowed to cast his/her vote according to their choice. The casted votes of the voters are also stored and displayed in the Central Database. The votes casted for a particular party are also displayed and the count is also updated automatically as shown in Fig6:
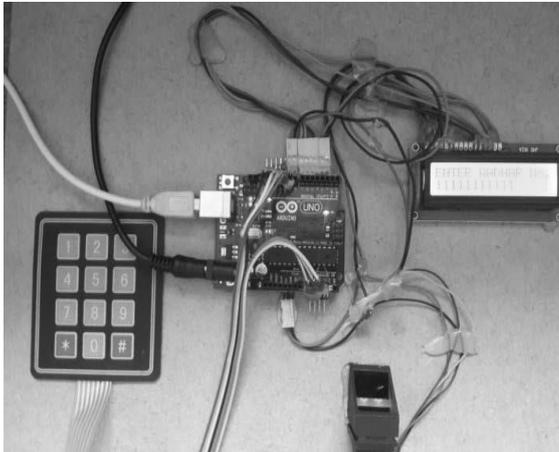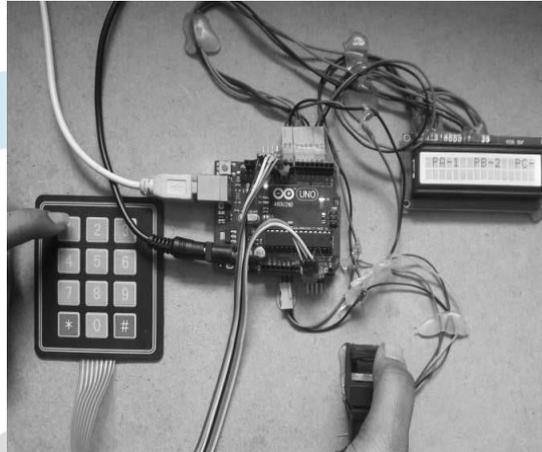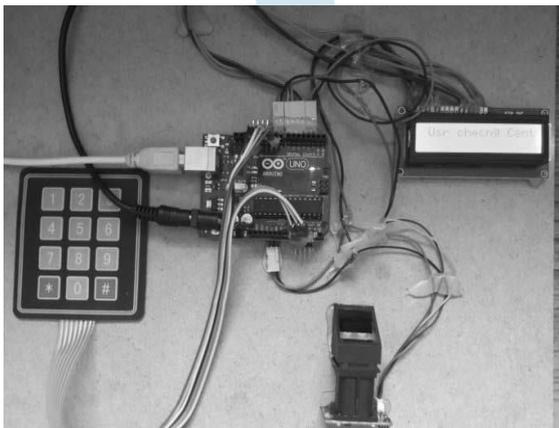

Fig.3

Fig.5

Fig.4

Fig.6

6. FUTURE WORK:

The proposed system is based on electronic voting machine. The system is able to identify each voter by getting their fingerprint. Whenever the system will receive a fingerprint, it will match the fingerprint from the database. According to the information given by the database, the system will decide if the person is registered or not. System is also able to distinguish second vote.

7. ACKNOWLEDGEMENT:

We would like to thank our guide prof S.P.Borate of E&TC department for the valuable guidance and constructive suggestions,this helps us in making our project.

8.CONCLUSION :

This system affords additional security by allowing voter to vote only once by imparting unique identification along with biometric. This system avoids fraudulent voting and illegal practices during the elections which is the key issue in the traditional voting system. This system provides transparency in the counting process. The advantages of this system are economic, faster tabulation of results, improved accessibility, greater accuracy, and lower risk of human and mechanical errors. Database consisting of the details like age, biometric of the people should be updated every time before election. Information about the casted vote can be sent to the voter through the messaging system.

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