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Electronic Voting Machine using Biometric Finger Print with Aadhar Card Authentication

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Abstract:
Electronic voting system are being used in Indian general and state elections to implement electronic voting but the major drawback is the security issue.During the voting period one person who is not eligible to vote in an election does so by voting under the name of another eligible vote then it is known as voter impersonation.ARM 7 which is a 32 bit processor is used as a host in our project because it is simple to manufacture and easy to assemble. In this process the Aadhaar number along with the biometric information of aadhaar number is saved in ARM7 microcontroller which verifies on the basis of the information available with it. This will be used to take fingerprint of the citizens. If the person is valid to vote then he/she is allowed to submit his/her vote.

Index Terms: Electronic voting machine, ARM7, GSM Module, finger print, EEPROM.

I. INTRODUCTION

In Developing countries the number of voters are increasing day by day. And a corruption free voting system is a burning question at present. There is hude scope of corruption in these countries due to manual voting system. During the voting period one person who is not eligible to vote in an election does so by voting under the name of another eligible vote then it is known as voter impersonation. These type of corruptions can be stopped only through automated voting system. By this trust can be gained through a transparent voting system like ours one.This project is designed for electronic voting machine by using the fingerprint identification method. Here voter thumb impression are used for identifying the votes During voting when the voter keeps his/her thumb in the scanner the system will check whether it matches pre-stored impression in the aadhar card.If it match then system will allow the voter to poll his vote and otherwise prevent the voter from polling.

II. PROJECT OUTLINE

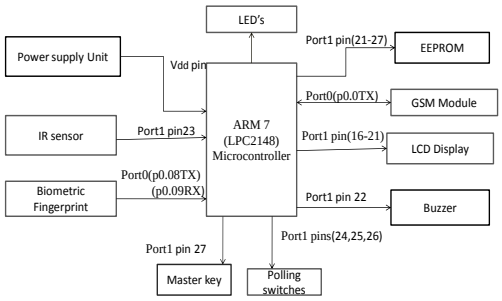


Figure.1. Project outline

This voting machine networked with GSM module.From GSM module voting machine receives and transmits data.

III. COMPONENTS DESCRIPTION

a) ARM7 Microcontroller

The LPC2141/2/4/6/8 microcontroller sare based on a 32/16bit ARM 7 TDMI-SCPU with real-time emulation and embed dedtrace support, that combines the micro controller with embedded high speed flash memory ranging from 32kB to 512kB. A128-bit wide memory interface and aunique accelerat or architecture enable 32-bit code execution at the maximum clockrate. For critical code size applications, the alternative16-bit Thumb mode reduces code by more than 30% with minimal performance penalty.

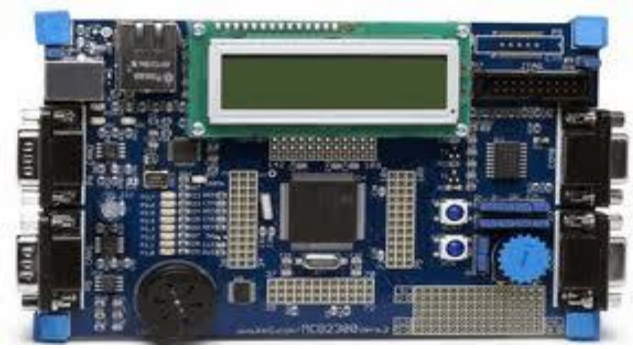


Figure.2. ARM 7 Microcontroller

b) GSM Module

GSM is Global system for mobile communication.It is used to establish communication between a mobile device or a computing machine and a GSM or GPRS system. It transmits or decode data from a cellular network in order to establish communication. It requires a SIM (Subscriber Identity Module) card to activate communication with the network. It also have IMEI Number (International Mobile Equipment identity) for their identification

Figure.3. GSM Module

c) Biometric finger print

Fingerprint biometric is one of the efficient, secure, cost effective, ease to use technology for user authentication.It is based on ultrasonic sensors which avoids fake authentication.

Figure.3. Biometric finger print

d) EEPROM

Electrically Erasable Programmable Read Only Memory (EEPROM pronounced as "double E prom) is like a ROM But data can be erased from it electrically without removing it from the computer A basic ROM chip can only be programmed once whereas an EEPROM can be programmed again and again.The interfacing of EEPROM with microcontrollers is mostly done through **I2C**. I2C is known as the master-slave protocol.There are two signals of I2C, a clock signal and a data signal.

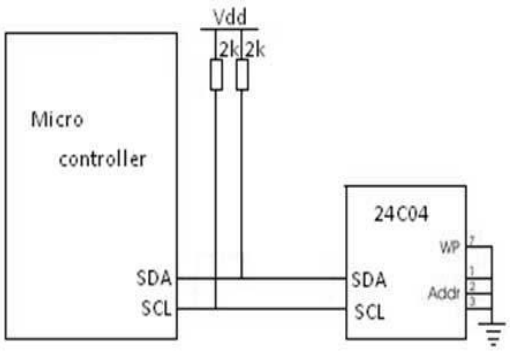


Figure.4. EEPROM

e) IR sensor

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. It is also capable of measuring the heat being emitted by an object and detecting motion.

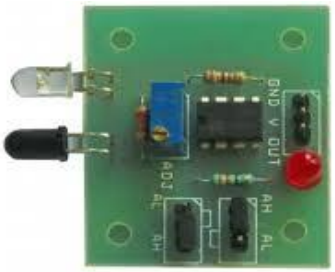


Figure.5. IR sensor

CIRCUIT ANALYSIS

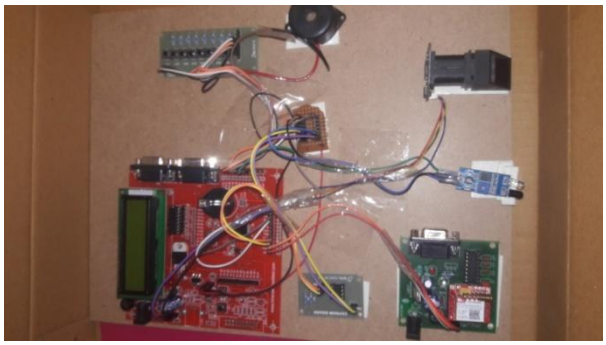
The circuit is mainly consisting of LPC2148 microcontroller, GSM module, fingerprint scanner, EEPROM, LCD display, buzzer, LED, IR sensor and master key. The LED display connected to the pin 32 of LPC2148 and enable pin of LED is connected to the pin 40 of LPC2148, only 4 data pin LED display are used. The fingerprint scanner is connected to port of LPC2148. GSM module is connected to transmitter and receiver of LPC2148. The buzzer is connected to pin 44 of LPC2148 and master key is connected to pin 60 of LPC2148. IR sensor is connected to pin 48 and polling switches are connected to pin 28, 24, 64.

IV. MAIN TECHNOLOGY USED

KEIL µ Vision IDE:

KEIL µ Vision is an IDE (integrated development environment) which is used to develop an Applicationprogrammer compile and run it even the code can be debugged it. It is a simulator where we can check the application code even in the absence of the hardware code.

V. HARDWARE IMPLEMENTATION



VI. FURTHER APPLICATION

- Automated train ticket system
- Automated bus ticket system
- Vehicle detection system
- Traffic signal breaking detection system
- Parking lot automation

VII. ADVANTAGE

- Simple and flexible to use
- Reduces the chance of invalid votes
- It provides security

VII. CONCLUSION

Conclusion can be minimized through honesty and sincerity. This voting system is a small contribution for a fair election but corruption in voting system cannot be completely erased through this system if there is no sincerity.

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