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Finger Print and RFID Based Intelligent ATM

K. SATHEESH KUMAR, M. SANDHIYA

Assistant Professor, Gnanamani College of Technology, Namakkal, India

PG Student, Gnanamani College of Technology, Namakkal, India

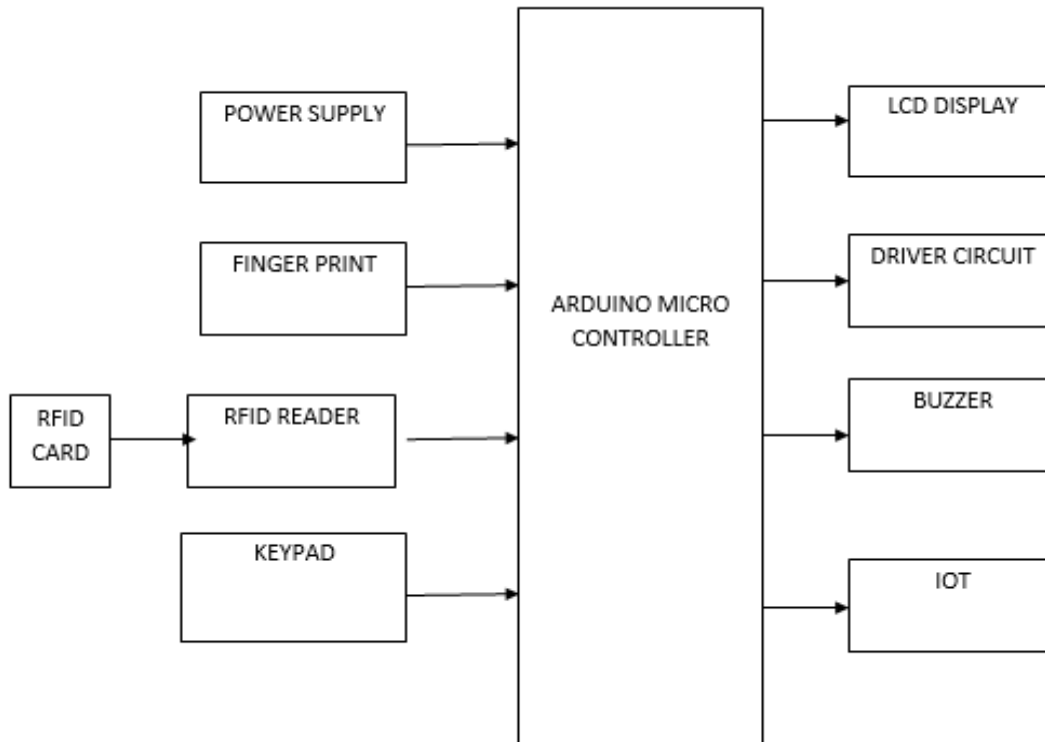
ABSTRACT: Now a day, peoples have multiple bank accounts so money transactions play a vital role in the nature of trade. Today, ATMs and Credit cards are used for this purpose, the authentication of these transactions are unsecure. To overcome this shortcoming of money transactions, we proposes the idea of using fingerprints of customers as login multiple banking password in place of traditional pin number. Here, if the fingerprint is recognized, then it display the multiple banking screen. Then we can choose the bank which we need for transaction. The remaining feature are same as i.e., a reference fingerprint of the nominee or a close family member of the customer can be used if the customer is not available in case of emergencies. This proposed business model helps the society, mainly the rural people, by enhancing the security using Fingerprint recognition in Digital image processing. As the fingerprint of every person is unique and unchangeable, this biometric feature is used over the others

I. INTRODUCTION

The main objective of this system is to develop a system, which is used for ATM security applications. In these systems, Bankers will collect the customer finger prints and mobile number while opening the accounts then customer only access ATM machine. The working of these ATM machine is when customer place finger on the finger print module when it access automatically generates every time different 4-digit code as a message to the mobile of the authorized customer through GSM modem connected to the microcontroller. The code received by the customer should be entered by pressing the keys on the screen. After entering it checks whether it is a valid one or not and allows the customer further access.

Now-a-days, in the self-service banking system has got extensive popularization with the characteristic offering high-quality 24 hours service for customer. Using the ATM (Automatic Teller Machine) which provide customers with the convenient banknote trading is very common. However, the financial crime case rises repeatedly in recent years, a lot of criminals tamper with the ATM terminal and steal user`s credit card and password by illegal means. Once user`s bank card is lost and the password is stolen, the criminal will draw all cash in the shortest time, which will bring enormous financial losses to customer. How to carry on the valid identity to the customer becomes the focus in current financial circle. Traditional ATM systems authenticate generally by using the credit card and the password, the method has some defects. Using credit card and password cannot verify the client`s identity exactly. In recent years, the algorithm that the fingerprint recognition continuously updated and sending the four digit code by the controller which has offered new verification means for us, the original password authentication method combined with the biometric identification technology verify the clients` identity better and achieve the purpose that use of ATM machines improve the safety effectively.

II. BLOCK DIAGRAM



HARDWARE REQUIRED

- Power Supply
- Finger print sensor
- RFID module
- LCD display
- Buzzer
- IOT Module
- Keypad Strip

SOFTWARE REQUIRED

- Arduino IDE
- Proteus Testing Tool
- Embedded C
- Labview

III. LITERATURE SURVEY

TITLE: Fingerprint Based Biometric ATM Authentication System

AUTHOR: Dhiraj Sunehra, International Journal of Engineering Inventions e-ISSN: 2278-7461, p-ISSN: 2319-6491
Volume 3, Issue 11 (June 2022) PP: 22-28

ABSTRACT

This paper is about Biometrics technology which rapidly progressing and offers attractive opportunities. In recent years, biometric authentication has grown in popularity as a means of personal identification in ATM authentication systems. The prominent biometric methods that may be used for authentication include fingerprint, palm print, and handprint, face recognition, speech recognition, dental and eye biometrics. In this paper, a microcontroller based prototype of ATM cashbox access system using fingerprint sensor module is implemented. An 8-bit PIC16F877A microcontroller developed by Microchip Technology is used in the system. The necessary software is written in Embedded 'C' and the system is tested.

TITLE: ATM Transaction Using Biometric Fingerprint Technology

AUTHOR: Mr. Mahesh A. Patil Mr. Sachin P. Wanere Mr. Rupesh P. Maighane Mr. Aashay R. Tiwari,
International Journal of Electronics, Communication & Soft Computing Science and Engineering
ISSN: 2277-9477, Volume 2, Issue 6

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TITLE: Designing smart and secure ATM card for multiple bank accounts

AUTHOR: Mohanraj S. Rajalakshmi Engineering College, Chennai, Tamil Nadu

ABSTRACT

This project's main objective is to integrate multiple bank accounts into one single smart card. Many bank charges ATM usage fees from the customers for different transactions. At present day, every customer has an individual ATM card for each and every bank in which he/she maintains account. So, while handling the cards, many passwords are involved. In order to overcome these difficulties, we embedded more than one bank account of the user in a single ATM smart card, therefore letting the user to swipe the card so that the respective individual can select the bank from which he/she is interested to carry out transaction.

IV. HARDWARE DESCRIPTION

POWER SUPPLY

The potential transformer will step down the power supply voltage (0-230V) to (0-6V) level. Then the secondary of the potential transformer will be connected to the precision rectifier, which is constructed with the help of op-amp. The advantages of using precision rectifier are it will give peak voltage output as DC, rest of the circuits will give only RMS output.

FINGER PRINT SENSOR R307

R307 Fingerprint Module consists of optical fingerprint sensor, high-speed DSP processor, high-performance fingerprint alignment algorithm, high-capacity FLASH chips and other hardware and software composition, stable performance, simple structure, with fingerprint entry, image processing, fingerprint matching, search and template storage and other functions.

FEATURES

- Perfect function: independent fingerprint collection, fingerprint registration, fingerprint comparison (1: 1) and fingerprint search (1: N) function.
- Small size: small size, no external DSP chip algorithm, has been integrated, easy to install, less fault.
- Ultra-low power consumption: low power consumption of the product as a whole, suitable for low-power requirements of the occasion.
- Anti-static ability: a strong anti-static ability, anti-static index reached 15KV above.
- Application development is simple: developers can provide control instructions, self-fingerprint application product development, without the need for professional knowledge of fingerprinting.
- Adjustable security level: suitable for different applications, security levels can be set by the user to adjust.
- Finger touch sensing signal output, low effective, sensing circuit standby current is very low, less than 5uA.

RFID MODULE

Radio frequency Identification (RFID) is a wireless identification technology that uses radio waves to identify the presence of RFID tags. Just like Bar code reader, RFID technology is used for identification of people, object etc. presence.

In barcode technology, we need to optically scan the barcode by keeping it in front of reader, whereas in RFID technology we just need to bring RFID tags in range of readers. Also, barcodes can get damaged or unreadable, which is not in the case for most of the RFID.

RFID is used in many applications like attendance system in which every person will have their separate RFID tag which will help identify person and their attendance. RFID is used in many companies to provide access to their authorized employees. It is also helpful to keep track of goods and in automated toll collection system on highway by embedding Tag (having unique ID) on them.

KEYPAD 4*4 STRIP

Keypad is used as an input device to read the key pressed by the user and to process it. 4x4 keypad consists of 4 rows and 4 columns. Switches are placed between the rows and columns. A key press establishes a connection between the corresponding row and column, between which the switch is placed

A 4x4 keypad has a total of 8 connections, where 4 of them are connected to the column and the remaining rows of the matrix of switches. When an individual button is pressed, a connection is established between one of the rows and columns

ARDUINO UNO

Arduino Uno is one type of microcontroller board, and it is designed by Arduino.cc. It can be built with a microcontroller like Atmega328. This microcontroller is also used in Arduino UNO. It is a small size board and also flexible with a wide variety of applications. Other Arduino boards mainly include Arduino Mega, Arduino Pro Mini, Arduino UNO, Arduino YUN, Arduino Lilypad, Arduino Leonardo, and Arduino Due. And other development boards are AVR Development Board, PIC Development Board, Raspberry Pi, Intel Edison, MSP430 Launchpad, and ESP32 board

LCD DISPLAY

LCD 16x2 is a 16-pin device that has 2 rows that can accommodate 16 characters each. LCD 16x2 can be used in 4-bit mode or 8-bit mode. It is also possible to create custom characters. It has 8 data lines and 3 control lines that can be used for control purposes.

BUZZER

An arduino buzzer is also called a piezo buzzer. It is basically a tiny speaker that you can connect directly to an Arduino. You can make it sound a tone at a frequency you set. The buzzer produces sound based on reverse of the piezoelectric effect.

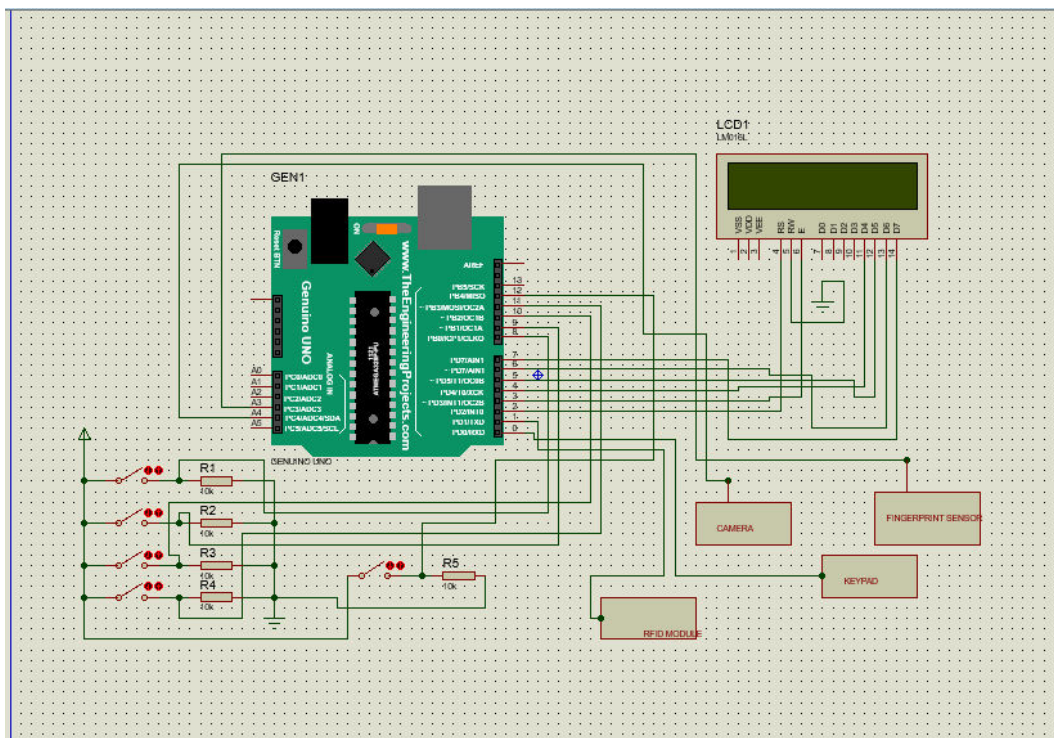
IOT MODULE

The ESP8266 WiFi Module is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.

HOW IT WORK

The RX and TX pins of the ESP8266 Module are connected to RX and TX Pins on the Arduino board. Since the ESP8266 SoC cannot tolerate 5V, the RX Pin of Arduino is connected through a level converter consisting of a 1KΩ and a 2.2KΩ Resistor. Finally the GPIO2 pin is connected to an LED to test the working of the program.

CIRCUIT DIAGRAM





V. CONCLUSION

This project is developed on the basis of more need of security in ATM banking system. Now-a-day's ATM is getting less secure with emerging ways to hack/crack ATM PIN or ATM card. The atm user's cash transaction is secured by adding the biometric and otp to the existing system along with this atm machine is secured by using the tilt sensor. Here we are even maintaining the sensors performance along with saving user time when smaller transaction are performed by setting the limit on maximum cash withdrawal. When more cash is being debited only then we will check authentication using biometric. Along with this atm system is also secured from the fraud attacks by using the tilt sensor and buzzer, if anybody try to move the ATM machine there will be buzzer alert. The results of this project along with all components connected to ARDUINO

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