

Fingerprint Sensor based Controlling and Operation of Power Supply

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Abstract: Fingerprint is a reliable biometric feature having a wide range of applications that require authentication. Person specific verification is needed in many scenarios such as access control, classroom attendance and financial transactions etc. The system relies on biometrics (fingerprint) to enhance the physical security of the lab and provides a demonstration of advanced technologies. Here we are Firstly person verify its finger print using controller. Controller check with stored database. If the person is unauthorised that time. System will off and buzzer will beep. Information will displayed on LCD like unauthorized person. If the person is authorised controller sends the signal to relay to switch on the mains supply. And all information related to load consumption will be updated on web server. You can verify the load consumption with time on duration graphically using IOT. Password based keypad is used here. We can set here time by RTC according to your practical timing. So after completion of the practical system will automatically get OFF. All related information will be displayed on LCD.

Keywords: Fingerprints, Organization and LCD

1. Introduction

In the real world, today people are concerned about their safety, for their valuable things. Old concepts and devices are getting modified as per requirement of people. In day to day life we need to seek new security system. So we develop to provide the maximum level security system. Money transactions play an important role in the nature of trade. Enormously growing banking technology has changed the way banking activities are dealt with. With an ATM, a client is able to conduct many banking activities such as cash withdrawal, paying electricity & phone bills, money transfer, beyond official hours and physical interaction with bank staff. An ATM (known by other names such as an automated banking machine, cash point, cash machine or a hole in the wall) is a mechanical system that has its roots embedded in the accounts and records of a banking institution. Today, Credit cards & ATM are used for this purpose, the authentication of these transactions are totally unsecure. Existing system of ATM client authentication example NCR personas series 77 & 86 ATMs there is a magnetic card reader, client using the ATM require Bank card and password which provide customers with the convenient banknote withdraw and other services. A newer high-tech method of operating sometimes called card cloning to entangle the installation of a magnetic card reader over the ATM's card

slot & the use of a wireless surveillance camera to keep the user's Personal Identification Number. Real Card data are then cloned into a duplicate card & the criminal attempts to cash withdrawal. To overcome this piracy in money transactions, I proposed the idea using fingerprints & AADHAARCARD of customers as password along with the traditional pin number. Fingerprint based security is well known for its reliability. To protect the entering of unauthorized person, only authorized person can enter. This project provides a facility of security. It is quite easy in installation and use.

2. Motivation and objective

A. Motivation

Motivation and Challenges Every organization whether it be an educational institution or business organization, it has to maintain a proper record of power supply and also a load consumption will updated over IOT. Designing a better controlling and operation power supply system for improving practical lab security. So that records to be maintained with ease and accuracy was an important key behind motivating this project. This would improve accuracy of a consumption of load records because it will remove all the human efforts and will save valuable time of the when the completion of practical then no need to off the system automatically turn off the power supply and fingerprint recognition are very advanced today in terms of technology. I try to make an application with this technology.

B. Objectives

- The devices will be controlled by manual operation.
- A reliable, compact, fast and low cost based on RTC we can extend practical timings also system.
- Quick response is achieved.
- Power consumption is low.
- Using IOT we can monitor last few months records of load. Which is updated over things speak.

3. Block diagram and working

A. Components used

- ARDUINO MEGA
- RELAY MODULE

- FINGER PRINT MODULE
- LCD DISPLAY
- LOAD
- POWER SUPPLY
- IOT MODOULE

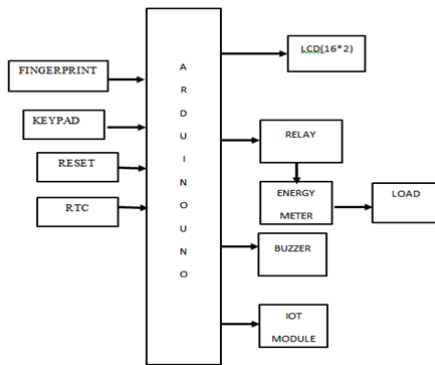


Fig. 1. Block diagram

1) Arduino mega

The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (of which 14 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a set button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Mega is compatible with most shields designed for the Arduino.

- Microcontroller ATmega :-2560
- Operating Voltage:- 5V
- Input Voltage (recommended):-7-12V
- Input Voltage (limits):- 6-20V
- Digital I/O Pins:- 54 (of which 14 provide PWM output)
- Analog Input Pins:- 16
- DC Current per I/O Pin:- 40 mA
- DC Current for 3.3V Pin :-50 mA
- Flash Memory:- 256 KB of which 8 KB used by bootloader
- SRAM :- 8 KB
- EEPROM :- 4 KB
- Clock Speed :- 16 MHz

2) Relay module

Relay that can handle the high power required to directly control an electric motor or other loads is called a contactor. Solid-state relays control power circuits with no moving parts, instead using a semiconductor device to perform switching. Relays with calibrated operating characteristics and sometimes multiple operating coils are used to protect electrical circuits from overload or faults; in modern electric power systems these functions are performed by digital instruments still called "protective relays".

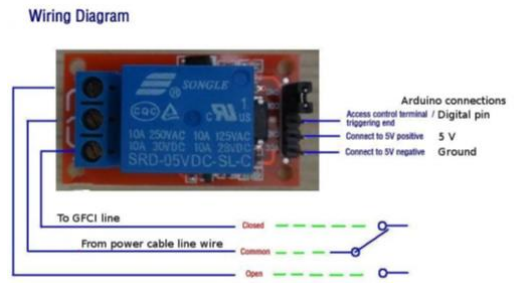


Fig. 2. Connections with Arduino

3) Fingerprint module FP-SDK-3935

This is a finger print sensor module with TTL UART interface for direct connections to microcontroller UART or to PC through MAX232 / USB-Serial adapter. The user can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the person. The FP module can directly interface with 3v3 or 5v Microcontroller. A level converter (like MAX232) is required for interfacing with PC serial port. Optical biometric fingerprint reader with great features and can be embedded into a variety of end products, such as: access control, attendance, safety deposit box, car door locks

4) LCD (liquid crystal display)

CD stands for Liquid Crystal Display. LCD is finding wide spread use replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the following reasons:

- The declining prices of LCDs.
- The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters.
- Incorporation of a refreshing controller into the LCD, thereby relieving the CPU of the task of refreshing the LCD. In contrast, the LED must be refreshed by the CPU to keep displaying the data.
- Ease of programming for characters and graphics.

These components are —specialized for being used with the microcontrollers, which means that they cannot be activated by standard IC circuits. They are used for writing different messages on a miniature LCD.



Fig. 3. LCD Display

B. Working

- Switch on the power supply.
- Here finger print database will be created.
- Firstly person verify its finger print using controller.

- Controller check with stored database.
- If the person is unauthorized that time. System will off and buzzer will beep. Information will displayed on LCD like unauthorized person. If the person is authorized controller sends the Signal to relay to switch on the mains supply. And all information related to load consumption will be updated on web server. You can verify the load consumption with time on duration graphically using IOT.
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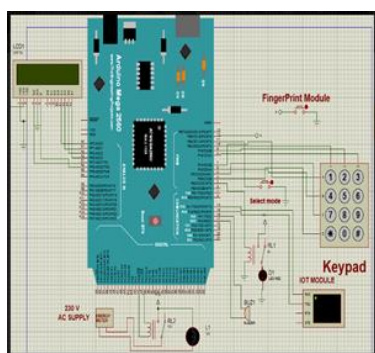


Fig. 4. Circuit diagram

4. Future work

The purpose system is more secure and transparent than normal existing system. The entry of wrong data in finger print module system can be prevented by the use of finger print module and also additional security is provided by the biometric confirmation. The authorized person is only responsible for uses system.

5. Conclusion

This paper presented the operation of fingerprint sensor based controlling and operation of power supply

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