

For more Project details visit:

<http://www.projectsof8051.com/fingerprint-based-security-system/>

Code	Project Title
1901	Fingerprint based security system

Synopsis for Fingerprint based security system

1.Introduction

Finger print based security system can be used at many places like Industries, Offices, and Colleges or even at our home. Fingerprint sensor is the main part of this system. It is also called as Biometric sensor. User has to place his/her finger on the optical sensor part of fingerprint module. We have seen Password based security system RFID based security system. The main feature or specialty of fingerprint is that it is unique. It gives this project the high level security than other security systems.

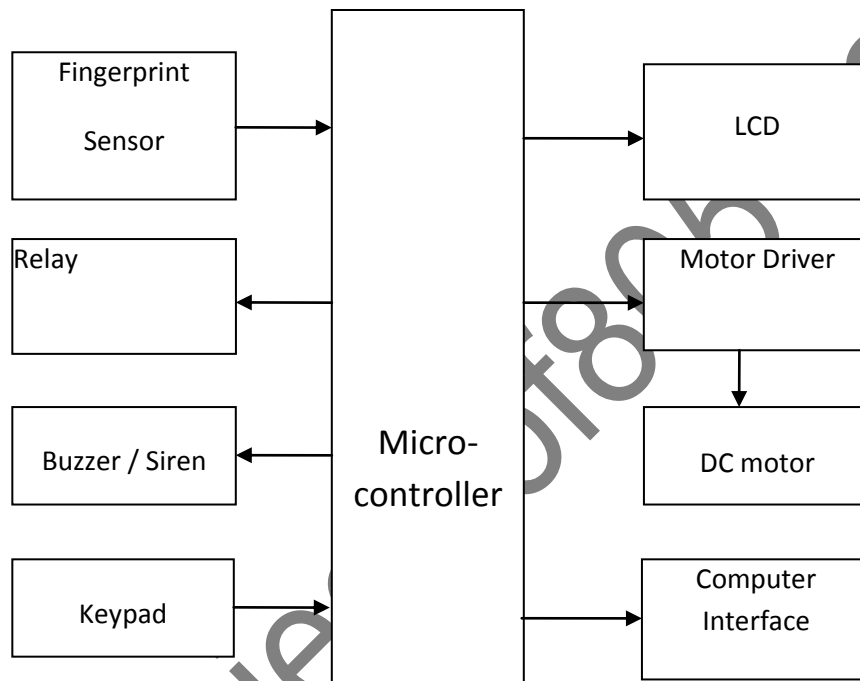
To operate this project first we have to enter data into the database of finger print sensor, for this we have to take impressions of fingerprints of those person whom we want to give access to our security system. This can be done once or whenever a new entry has to be added in the system.

Then this project has to be used in search mode. In this mode the system compares the fingerprint input received at its optical plate with the previously stored fingerprint from its flash memory. If the entry matches with the memory then it gives out ok signal along with the identity number of that person. But if the entry does not match with the memory then it gives out error signal.

The output received from fingerprint sensor is given to the microcontroller. Microcontroller then compares these output data. Function of microcontroller is to turn on the respective device depending

upon the input received. In case of OK signal from fingerprint module, microcontroller turns on Relay and a Motor. However if the error output is received then it turns on the Buzzer.

2. Block Diagram



3. Block Diagram Description

Following are the important blocks of this system

1) Fingerprint sensor: We have used R305 Finger Print Sensor. It has an Optical biometric fingerprint reader. It also has inbuilt flash memory. It performs the function of image processing and gives out data on its output pin.

2) Microcontroller: This is the CPU (central processing unit) of our project. We are going to use a microcontroller of 8051 family. The various functions of microcontroller are like:

I. Reading various digital input signals from fingerprint sensor

II. Sending this data to LCD so that the person operating this project should understand the status.

III. Giving the respective signal to the various output devices. Relay and DC motor for valid access and buzzer for the invalid access.

IV. Sending the data to the computer using serial port. This data consist of the status of valid or invalid access

3) LCD: We have used 16x2 alphanumeric Liquid Crystal Display (LCD) which means it can display alphabets along with numbers on 2 lines each containing 16 characters.

4)Buzzer: We are going to use a buzzer to indicate the invalid access to open the door.

5)Keypad: User will enter various commands using the keypad. Various keys of keypad are as following,

I. Add fingerprint entry II. Search fingerprint III. Empty the database of fingerprint module

Application and Advantage:

1. Can be used in various industries like Automobile industries, manufacturing industries, Software development companies.
2. The project can be used to automate the door locking process at our home, so the user need not to carry the door lock keys along with him, he can just use his/her finger to open the door

Future Development:

1. We can send this data to a remote location using mobile or internet
2. We can implement other related modules like fire sensor, wind sensor.

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