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Title **FINGER PRINT BASED VEHICLE LOCK SYSTEM USING ARDUINO**

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FINGER PRINT BASED VEHICLE LOCK SYSTEM USING ARDUINO

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Abstract –

In this project, we have developed a smart Vehicle lock system using a fingerprint sensor to open and close the Vehicle. We used Arduino Uno microcontroller and fingerprint sensor, L293D driver IC to drive the dc gear motor and the motor is coupled with the Vehicle lock. When the fingerprint match than only the Vehicle open or close. Who has authorized person only can open the Vehicle If any unauthorized person trying to open the Vehicle means they can't open the Vehicle because the fingerprint sensor never accepts the fingerprint there is no response from the microcontroller side. Normally in human life safety is very most. In this, we used a fingerprint sensor to open the Vehicle lock and close the Vehicle lock. These processes are controlled by Arduino Uno microcontroller. In this method who is an authorized person they only can open the Vehicle.

Key Words: Vehicle, Biometric System, Security System, Automobile Industry, arduino

INTRODUCTION

Theft is one of the major problem in today's world places like in offices and other public places should not be secured so that issues to make secure our documents and precious things so we have decided to make this type of security system that will be more usable to all the people . This system assures the perfect use on the fingerprints for Vehicle opening and closing. Through the project we can provide high security to users. The fingerprint most of the banks have lockers such that one key is with the user and the bank has a master key. They also have password which the user has to tell the bank before going in the locker room, now if the user loses the key then, it is a big security risk. there are many thieves around us that they can easily or forcefully break our lockers so we can lost our property so to overcome this problem we are creating this type of security system Many of the bank lockers do not guarantee full safety of the user. In the fingerprint bank locker system we can easily add more than 1 fingerprint in the system so we can add our family member fingerprint as a nominee. And we can insert our multi hand fingerprint if we are facing accident and if we wound or a cut in our finger so we can use our nominee fingerprint or other multi hand fingerprint. If we are away from our house and we required urgent document or property so our family members can also use our lockers. this is a very a unique idea instead to keep keys or to protect that keys. Biometric devices are highly secured security identification and authentication device. Such devices use automated methods of verifying and recognising the identity of a living person based on a physiological behavioural characteristic. These characteristics include fingerprints, facial images, iris and voice recognition.

EXISTING MODEL

This paper is about solving the problem regarding security of unauthorized people trespassing in our home, shops or offices. Security issues can be fixed using traditional locks but there is always possibility of someone opening the lock even without breaking it with the use of duplicate key. Using these kinds of locks also create problem if we lose keys and also we have to carry keys along with us always. Again, using patterns in the locks can increase security but again it can be opened if somehow the passwords or patterns are known. So, leaving every system in this project we will implement a system using biometrics. In case of biometrics, the pattern which will be used as key will be unique. Here, to implement the project we will use fingerprint as the key. This arduino project will make use of different devices for the implementation of the security lock where there will be different features to increase the security level. In simple words, we can say that we are implementing a Vehicle access system using arduino which make use of fingerprints to identify whom to allow and who not to allow inside our homes, offices, shops, etc. We are trying to implement it using a normal and simple Vehicle lock which is fitted in every home so as to minimize the cost of the device as a product.

PROPOSED MODEL

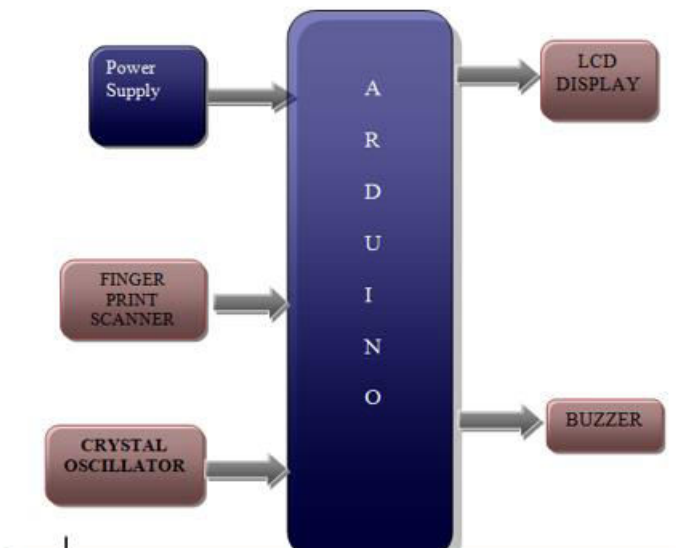


Fig - 1: Block Diagram

1. Power Supply

All digital circuits require regulated power supply. In this article we are going to learn how to get a regulated positive supply from the mains supply.

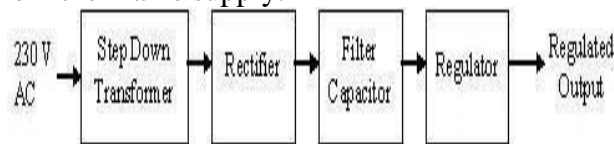


Fig - 2: Shows the basic block diagram of a fixed regulated power supply. Let us go through each block.

2. CIRCUIT DIAGRAM

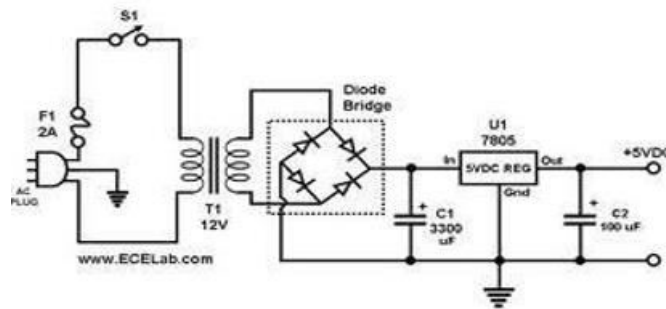


Fig -3. Circuit Diagram of power supply

3. LCD DISPLAY

LCD Background:

One of the most common devices attached to a micro controller is an LCD display. Some of the most common LCD's connected to the many microcontrollers are 16x2 and 20x2 displays. This means 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively.

Basic 16x 2 Characters LCD

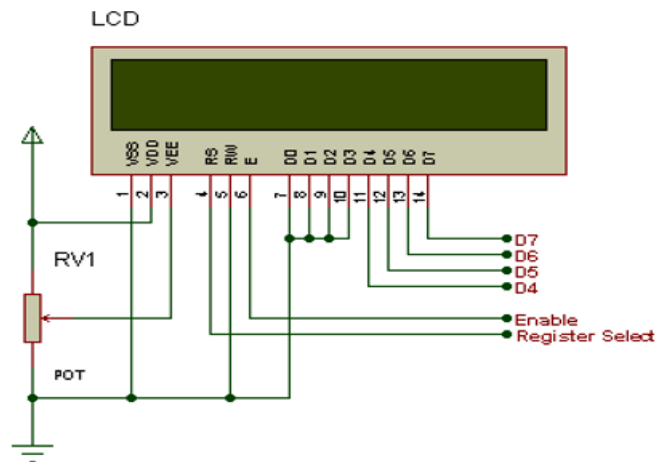


Fig - 4: LCD Pin diagram

4. BUZZER

Basically, the sound source of a piezoelectric sound component is a piezoelectric diaphragm. A piezoelectric diaphragm consists of a piezoelectric ceramic plate which has electrodes on both sides and a metal plate (brass or stainless steel, etc.). A piezoelectric ceramic plate is attached to a metal plate with adhesives. Applying D.C. voltage between electrodes of a piezoelectric diaphragm causes mechanical distortion due to the piezoelectric effect. For a misshaped piezoelectric element, the distortion of the piezoelectric element expands in a radial direction. And the piezoelectric diaphragm bends toward the direction. The metal plate bonded to the piezoelectric element does not expand. Conversely, when the piezoelectric element shrinks, the piezoelectric diaphragm bends in the direction. Thus, when AC voltage is applied across electrodes, the bending is repeated, producing sound waves in the air.



Fig-5: Picture of buzzer.



Fig –6: FINGER PRINT READER

5. FINGER PRINT READER:

Fingerprint - is unique and not similar to anybody and using fingerprint can provide more security .even illiterate people are also capable of using this security method. This method takes less time to be operated by the user. The fingerprint can also be used in forensic departments while catching the suspect who can be a murderer or a thief. Even the zoological experts use the fingerprint technique to check on the animals in the forest that if the animal is dead or alive by this way they carry on the census of the animals. The new species can also be discovered by using their fingerprint to check on to the new species and the already existing species



Fig 7: DC Motor

6. L293D MOTOR DRIVER WITH MOTOR:

D.C. Motor:

A dc motor uses [electrical energy](#) to produce [mechanical energy](#), very typically through the interaction of [magnetic fields](#) and [current- carrying conductors](#). The reverse process, producing electrical energy from mechanical energy, is accomplished by an [alternator](#), [generator](#) or [dynamo](#). Many types of electric motors can be run as generators, and vice versa. The input of a DC motor is current/voltage and its output is torque (speed).

ARDUINO CONTROLLER:

Arduino is an open-source hardware and software company, project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control both physically and digitally. Its products are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form or as do-it-yourself (DIY) kits.



Fig.8: Hardware image.

7. SOFTWARE EXPLANATION:

This project is implemented using following software's:

- Express PCB – for designing circuit
- Arduino IDE compiler - for compilation part
- Proteus 7 (Embedded C) – for simulation part

A. Arduino IDE COMPILING



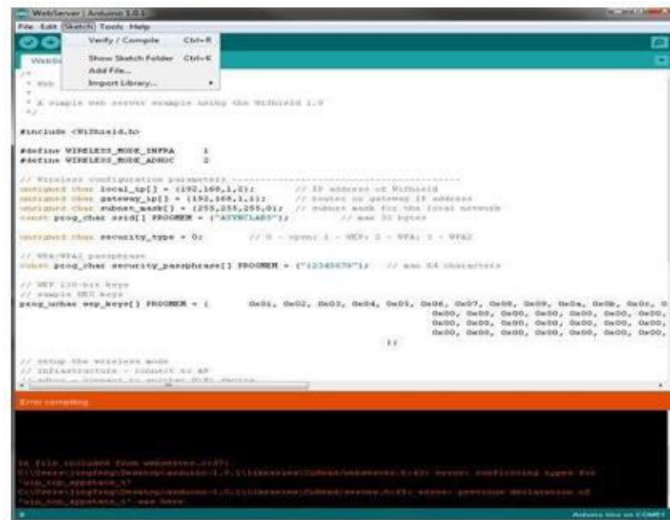
Fig - 7: Arduino Software.

8. METHODOLOGY WITH WORKING:



The core section of the project; software part utilizes two different programs-enroll and fingerprint. Get Fingerprint Enroll(int,id), Adafruit Fingerprint(&mySerial) and get Fingerprint Enroll(id) are some of the different functions syntax used in those programs. These are in-built functions found in library and they pass arguments when these functions are called at different locations of programs.

9. RESULT



```

#include <SPI.h>
#include <Adafruit_Fingerprint.h>
#include <Adafruit_NRF24L01.h>

#define WIRELESS_MODULE_ADDR 0x12345678
#define WIRELESS_MODULE_ID 1

// SPI interface
Adafruit_Fingerprint fp;

// NRF24L01 module
Adafruit_NRF24L01 nrf24l01 = Adafruit_NRF24L01(0x48, 0x57);

// SPI interface
void setup() {
  Serial.begin(9600);
  fp.begin(12345678);
  nrf24l01.begin();
}

// Read the fingerprint and return the ID
int get_fingerprint() {
  int id = fp.get_fingerprint();
  return id;
}

```

10. FUTURE SCOPE:

We can use this biometric system in bikes for antitheft system, this biometric system will use in bike locking and to ignite the engine of the bike to provide an advancement in car biometric system can be implement which is good idea for ignite the engine and to run the car so that only owner of the car can drive the car. Retina scanner can be implemented at the place of fingerprint.

11. CONCLUSION:

In this project, we reviewed some papers which have worked on this project. In our paper we introduced biometric based locker which provide high degree of security. Any authorized user will unable to access the locker. We use fingerprint as the verification system as duplication of fingerprint is like unable. The system is cheap and easy to use. This system can be mounted anywhere, where you need high degree of security the low cost of the project is very important factor in this project. This locker system is very reliable and safe.

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