

Fingerprint Starter Vehicle Using Arduino

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ABSTRACT

Frequent locking of the vehicle does not adequately protect the vehicle owner. By providing easy access to the vehicle's functional systems, biometric systems can be used to reduce the risk of theft or robbery. Each person's fingerprint is unique, so it can be used in a variety of security options. These systems activate data using algorithms for specific results, usually based on positive identification of the user or others. Arduino generates the signal in the corresponding module circuit. Tags: fingerprint mode, arduino, gsm mode, relay

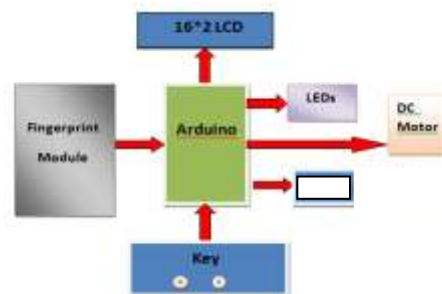
Keyword:

- fingerprint sensor, GSM Module , Arduino Uno , Relay Module

1. INTRODUCTION

This study focuses on biometric applications in the automotive industry. Investigations have since begun to increase safety and prevent unauthorized use of the vehicle. The main purpose of this study is to improve the starter of the engine and to develop a high safety based on the starter path. This study focuses on the design and use of fingerprint motor triggers to protect vehicles. It has been found that starting a vehicle's fingerprint engine is safer than a modern electric motor starter.

2. BLOCK DIAGRAM



2.1 Arduino

Arduino is an open source platform used to create electronic projects. Arduino consists of a physically programmable circuit board and an integrated development environment (IDE) running on a computer and is used to write the computer code and load it on the physical board. There is a good reason why the Arduino platform has become so popular with newcomers to electronics. Unlike most previous programmable circuits, Arduino does not require any additional hardware (called a programmer) to download the new code to the board. Just use a USB cable. Arduino also uses a simplified version of the IDE C ++ language, which makes programming easier to learn. Finally, Arduino offers a standard form factor that breaks down ARDUINO functionality into usable packages. Arduino hardware and software are designed for artists, designers, amateurs, hackers, beginners, and anyone interested in creating interactive objects or environments. Arduino can communicate with buttons, LEDs, motors, speakers, GPS devices, cameras, internet and even a smartphone or TV. This flexibility, the Arduino software is free, the hardware boards are quite cheap and both the software and the hardware are easy to learn, which resulted in a large community of users that included published code and instructions. for a wide range of versions. Various projects based on Arduino

2.2 LED

LCDs typically have 14 data pins and 2 for LED backlighting. The labeled LCD uses a standard 14-pin interface, and the backlight uses a 16-pin interface. It has one backlight pin and the other is connected to the ground or VCC pin. The two rear lighting pins may be in front of the first. When using a VDD 5V compatible model, the backlight voltage is approximately 4.2 V at 25°C. Labeled LCDs can operate on either 4-bit or 8-bit. In 4-bit mode, pins 7-10 are unused and the entire byte is sent to the screen through pins 11-14, sending 4 bits at a time.

2.3 fingerprint sensor

The R305 FP + PIC MCU card combination is a fingerprint sensor that can read various fingerprints and store them in flash memory.

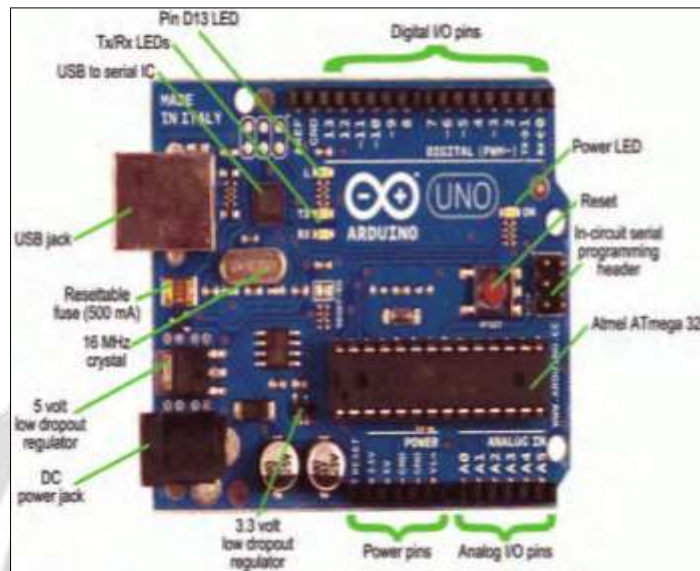
2.4 relay driver

In our project, the mobile charger should be ON or OFF. The power supply is operating at high voltage, so a relay must be used. To run a relay, you must use a transistor as a switch to power or disconnect the relay.

2.5 power supply

This device converts 230Vac to + 5V DC and + 12V DC. + Microcontroller 5V Atmega 328 Required for panel, LCD display, sensor and signal conditioning, etc. + 12V acoustic signal, relay etc.

3. PIN DISCRPTION



3.1 Power supply (USB / Barrel connection)

Every Arduino board needs a way to connect it to a power source. The Arduino UNO can be connected to a computer via a USB cable or through a wall-mounted power supply that plugs into a barrel socket. The image above shows the USB connector and the barrel connector. A USB connection is also a way to download code to your Arduino board

3.2 pins (5V, 3.3V, GND, analog, digital, PWM, AREF)

Pines (5V, 3.3V, GND, analog, digital, PWM, AREF)Arduino pins are where the wires are connected to form a chain (maybe a breadboard and some wires combined). There are usually black plastic "screws" that allow you to connect the wires directly to the board. Arduino has different types of pins, each pin marked on the board and used for a different function

3.2.1 sol (3)

Abbreviation for "earth". Arduino has several GND pins that can be used to ground the circuit.

3.2.2 5V (4) & 3.3V (5)

As expected, the 5 V pin provides 5 V, and the 3.3 V pin provides 3.3 V. Fortunately, most of the simple components used in the Arduino operate at 5 volts or 3.3 volts

3.2.3 analog (6)

Pin areas marked "Analog In" (UNO to UN0 to A0 to A5) are analog input pins. This pin can read the signal from the analog sensor and convert it into a digital value that we can read.

3.2.4 Digital (7)

Opposite the analog pins are the digital pins (0-13 for UNO). These pins can be used for digital inputs (for example, a button is pressed) and digital outputs (for example, turning on an LED light).

3.2.5 PWM (8)

You may have seen a tilde (~) next to some number pins (UN 3, 5, 6, 9, 10, and 11). This pin works like a regular digital pin, but can also be used for something called Pulse Width Modulation (PWM).

3.2.6 Aref (9)

Represents an analog reference. You can usually leave this pine alone. It is also used as the upper limit of the analog input pin to set an external reference voltage (between 0 and 5V).

3.2.7 reset button

Pressing it temporarily rotates the recovery pin at the bottom and restarts any code loaded in the Arduino. This can be very useful if your code is not repetitive, but you want to check it several times.

3.2.8 Power LED indicator

To the right of the board just below the word "UNO" is a small LED next to the word "ON". This LED should light up when connecting the Arduino to the power supply. If this light does not come on, there may be a problem. It's time to dump her and move on.

3.2.9 LED TX RXTX

means transmission and RX means reception. This symbol appears on electronic devices to indicate which pins respond to serial communication. In our case, Arduino UNO has two locations where TX and RX appear. One is through the 0 and 1 number pins, the second is next to the LEDs on the TX and RX indicators.

3.2.10 voltage regulator

It is good to know that there is and why. Imagine him as a goalkeeper. Prevents additional voltages that could damage the circuit Of course there are limitations so do not connect Arduino to a voltage higher than 20 volts.

3.2.11 basic IC

All black objects with metal legs are integrated circuits or integrated circuits. Imagine you are the brain of an Arduino. The basic integrated circuits for Arduino are slightly different types of boards, but especially the ATmega IC series from ATMEL. This may be important because you may need to know the IC type (along with the board type) before downloading a new program from the Arduino software. This information is usually written above the IC.

3.2.12 GSM modem

Very compact and easy to use as a plugin. The modem comes with a 5V TTL interface for direct connection to a 5V microcontroller / arduino. The baud rate is set between 9600-115200 using AT commands. GSM / GPRS TTL modems have an internal TCP / IP stack that allows you to connect to the Internet via GPRS. Suitable for SMS and DATE applications on the M2M interface. To connect to the microcontroller / arduino, you need 2 wires (Tx, Rx), not power. The built-in switched power supply allows you to connect a variety of irregular power supplies. This modem allows you to send text messages, send data, and read SMS via simple AT commands.

4. CONCLUSION

Arduino fingerprint launcher. This design ensures the safety of the vehicle. Uses a biometric system. This project is used to start a car with only fingerprints. If you insert your right finger, only the car starts and the owner receives a text message that the car has started successfully. The owner is an unauthorized person trying to start the car.

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