



Security System and Access Control with Arduino and RFID

by **BIGDOG1971** on June 9, 2013

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Author:BIGDOG1971 Arduino By Myself

I am a 42 years old, I live in Brazil and I am a Telecommunication / Electronics Engineer. Sixteen year acting in the industry of "Telecommunication and Networking". I like everything that engages Technology and I have a personal interest in the "hardware/software" open source platform.

Intro: Security System and Access Control with Arduino and RFID

Security System and Access Control with Arduino and RFID

This project is an evolotuin of my first project called "Arduino - Security System and Access Control"

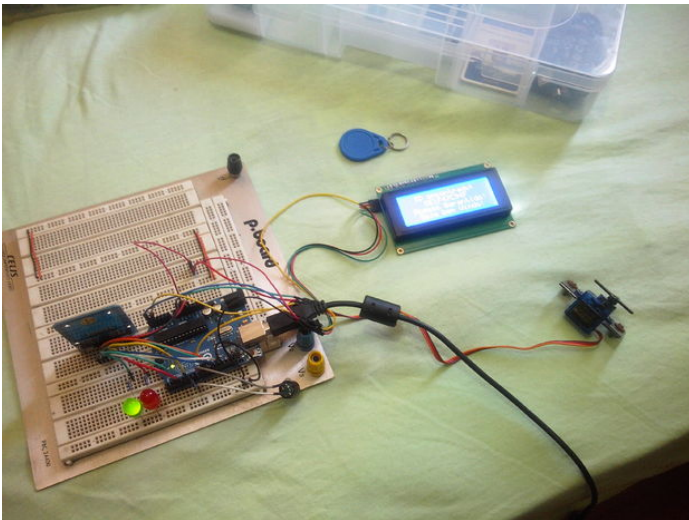
As you can see at the blog <http://arduinobymyself.blogspot.com.br/2012/03/arduino-sistema-de-seguranca-controle.html> (sorry but this project still be in Portuguese).

Instead of using a matricial keyboard, to enter passwords and to allow access to a door or to drive an electronic device, now we will use a RFID (Radio Frequency Identifier Device).

We also will use a LCD Display with 20 character and 4 lines to show some messages from the system, besides a servo-motor to drive an mechanical device like (door's locks, turnstile, etc...).

The electronic device used it is the MFRC522AN RFID (13.56MHz MiFare RC522AN with SPI communication) which can be easily found on electronics shop or on the internet sites at an affordable price.

Like this: <http://www.fystore.com/p42892/RFID-module-Kits-S50-13-56-Mhz-6cm-With-Tags-SPI-Write-amp-Read-for-arduino-uno-2560.html>



Step 1: Operation

OPERATION:

Users will have cards or tags registered to access the system.

When approaching the card/tag to the RFID sensor (approximately 6 cm), the serial number of this card/tag is detected and so compared with a serial number that are recorded in the software or in a database on a memory card; if it is a registered serial number, the system will release the entry of this user. A green LED will be lit and some messages will be appearing in the LCD display (user recognition and user welcome), besides that a servo will be driven to release a mechanical device.

Otherwise, the system does not release the user access, and a warning red LED will be lit and will be showed a message on the LCD advising the user to contact the account manager.

During this process of release or rejection of users, characteristics beeps will be played on a buzzer (just like a sound announcement).

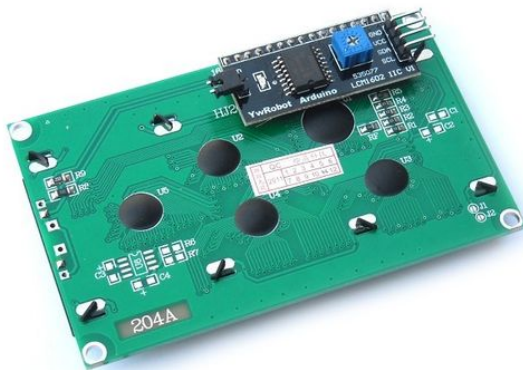
See the explanatory video at the "Video and Picture" section.

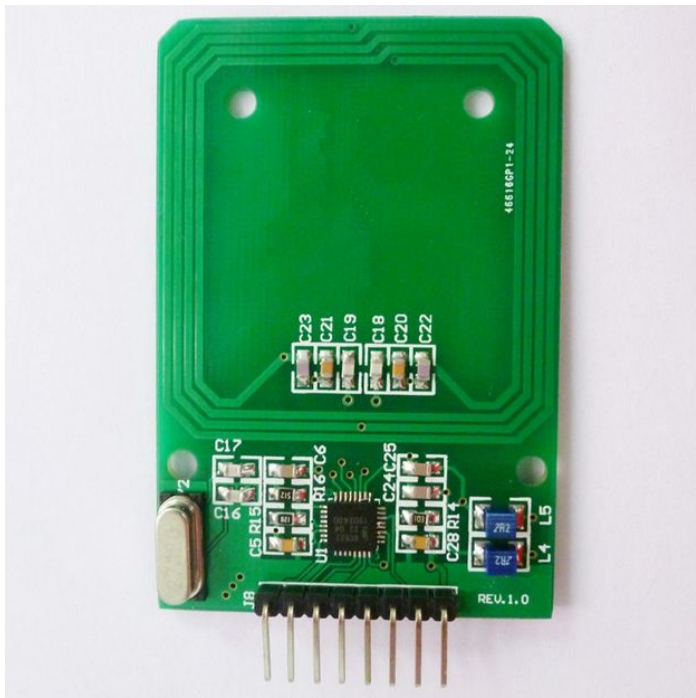


Step 2: Stuff and Materials

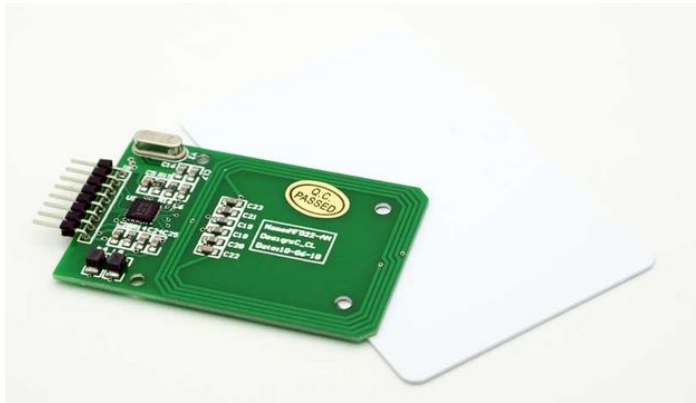
STUFF and MATERIALS:

- 1 x Arduino UNO, MEGA, Duemilanove ou Teensy, etc...
- 1 x RFID MFRC522AN (SPI communication)
- 1 x servo-motor 9g
- 1 x LCD 20x4 (I2C communication)
- 1 x green LED
- 1 x red LED
- 2 x 220 Ohm resistor
- 1 x Buzzer
- 1 x Bread Board
- wires and cables to the connection





MISO	SCK	SS	MOSI	GND	3.3V	RST
pin 12	pin 13	pin 10	pin 11	GND	3.3V	pin 5
pin 50	pin 52	pin 53	pin 51	GND	3.3V	pin 5





Step 3: Device Interconnections

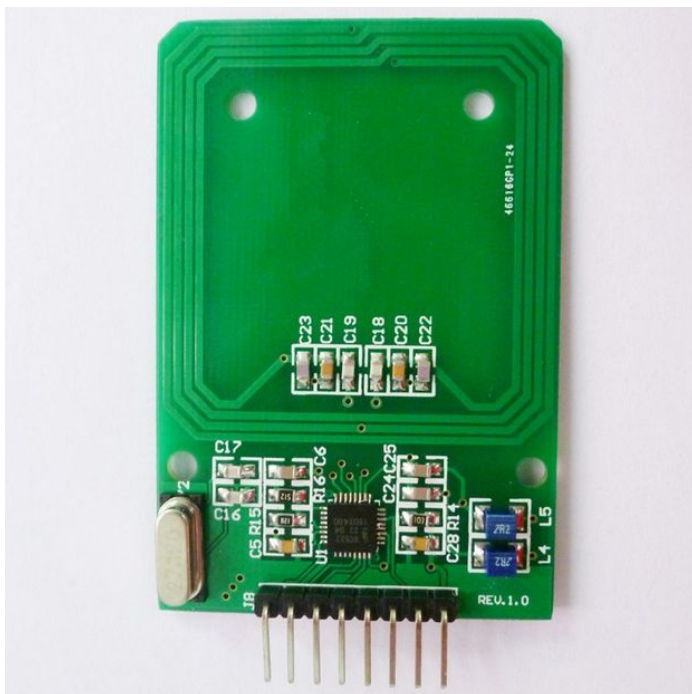
INTERCONNECTIONS:

Interconnections from the RFID to the Arduino pins:

Reset > Pin 5
 SS > Pin 10
 MOSI > Pin 11
 MISO > Pin 12
 SCK > Pin 13
 Ground > Ground
 3.3v > 3.3v

Interconnections from the LCD (I2C) to the Arduino pins:

GND > GND of the Arduino
 VCC > +5V of the Arduino
 SDA > A4 pin of the Arduino
 SCL > A5 pin of the Arduino

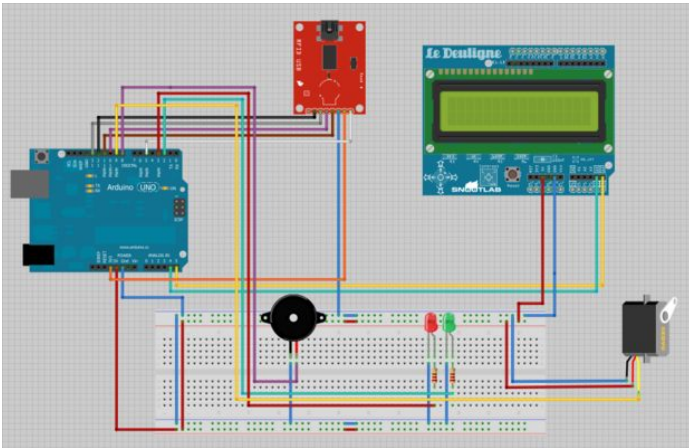


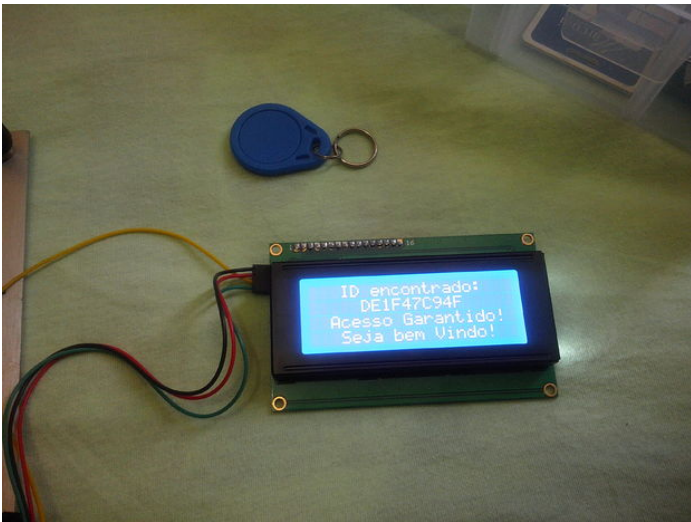
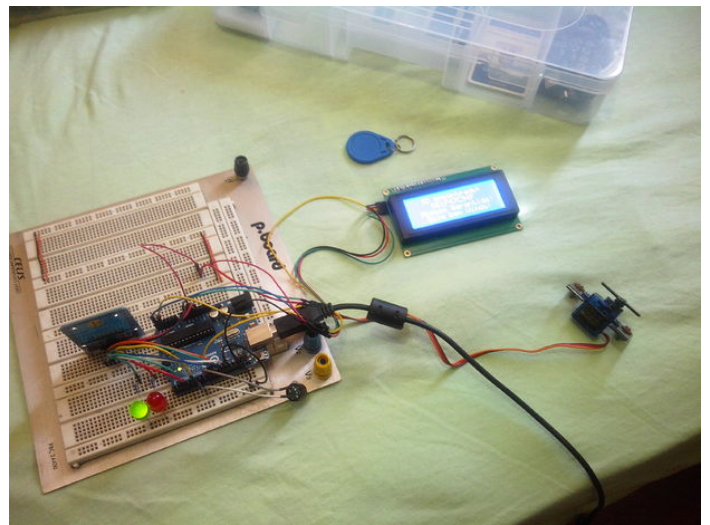
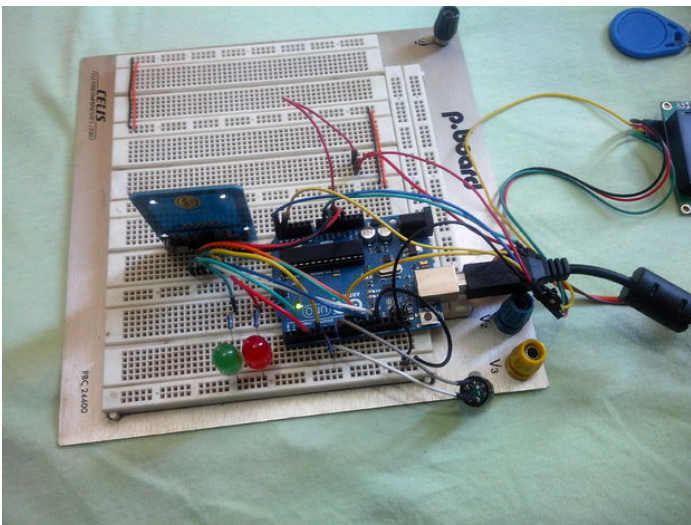
MISO	SCK	SS	MOSI	GND	3.3V	RST
pin 12	pin 13	pin 10	pin 11	GND	3.3V	pin 5
pin 50	pin 52	pin 53	pin 51	GND	3.3V	pin 5

Step 4: The Whole Project interconnections

The whole project:

Remember that the LCD is a 20x4 display and the RFID is the MRFC522AN device. The Buzzer and the servo motor are general purpose devices.





Related Instructables



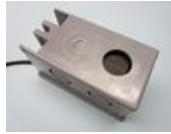
Arduino RFID Lock by WouterK



How to block/kill RFID chips by m1k3y



RFID Controlled Car Trunk by duke2luke



Simple Internet Gizmo by talk2bruce



RFID: The REAL Story by metrogdor22



RFID Car Lock/Unlock v1.0 by thematthewknot