

Security Access Control (SAC) Multi-Factor Authentication (MFA)

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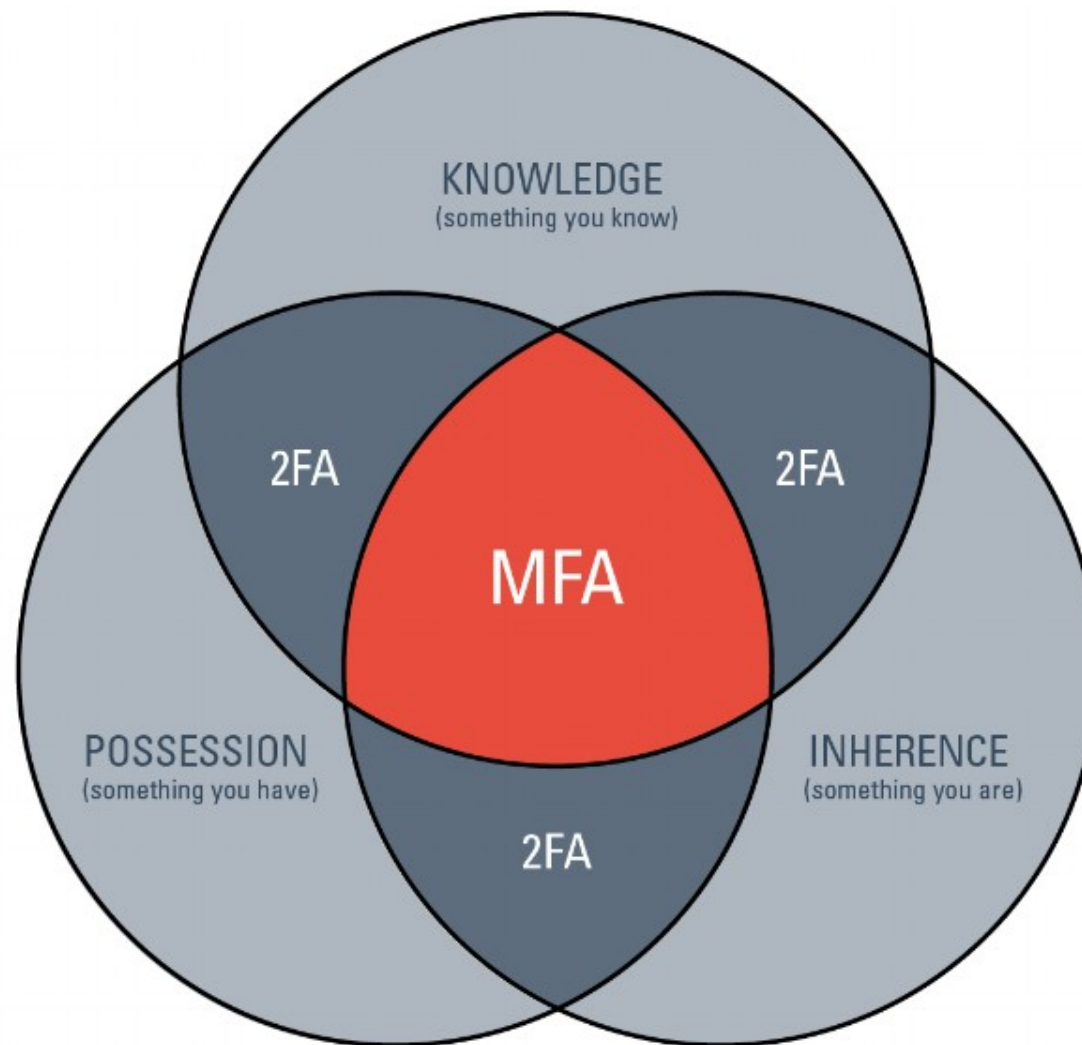
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What is Multi-Factor Authentication (MFA) ?

Multi-Factor Authentication (MFA) is a method of confirming a user's claimed identity in which a computer user is granted access only after successfully presenting 2 or more pieces of evidence (or factors) to an authentication mechanism.



What is Multi-Factor Authentication (MFA) ?



1-Factor Authentication (1FA)

Knowledge (something the user knows)

Password, Image, Pattern

2-Factor Authentication (2FA)

- Knowledge (something the user knows)

Password, Image, Pattern

- Possession (something the user has)

Fob that generates a pre-determined code

Signed Digital Certificate

Smartphone

RFID Tag

3-Factor Authentication (3FA)

- Knowledge (something the user knows)

Password, Image, Pattern

- Possession (something the user has)

Fob that generates a pre-determined code

Signed Digital Certificate

Smartphone

RFID Tag

- Inherence (something the user is)

Voice, Fingerprint, Palm Veins, Face, DNA, Hand Geometry, Iris, Retina

3FA Prototype with Arduino Platform

- Something the user knows : Password
- Something the user has : RFID Tag
- Something the user is : Voice

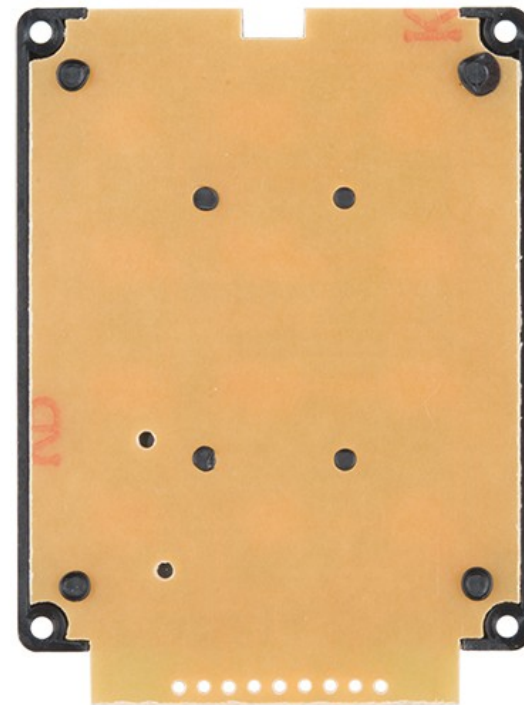
Why Arduino Platform?

- Open Source Hardware / Open Source Software
- Cheap
- Easily available
- Easy to use
- Easy to program
- Very widespread
- Various hardware modules available

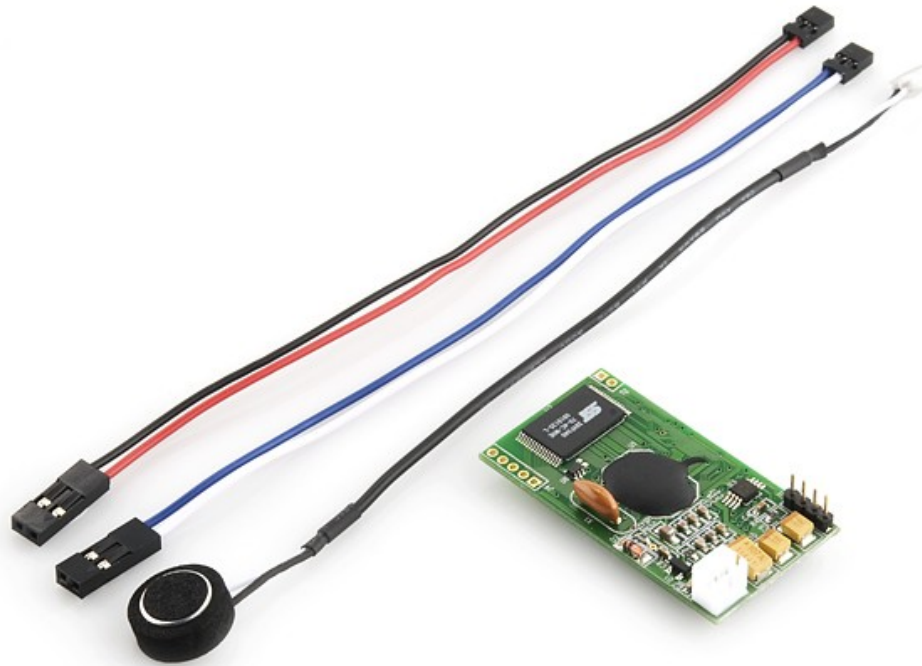
Hardware Parts

- Keypad Module (12 Button)
- VRBot Module
- RFID USB Reader
- RFID Reader ID-12LA (125kHz)
- RFID Tags (125kHz)

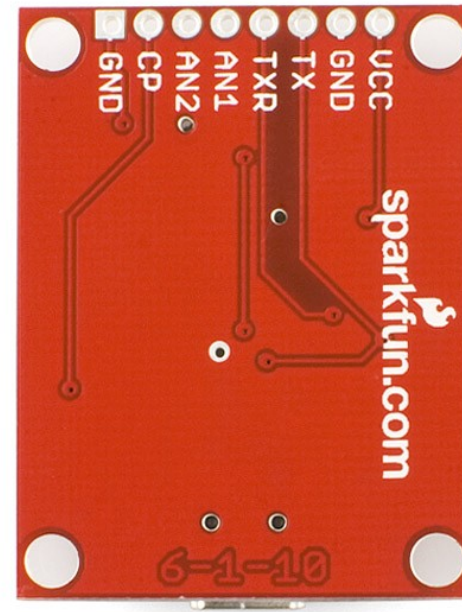
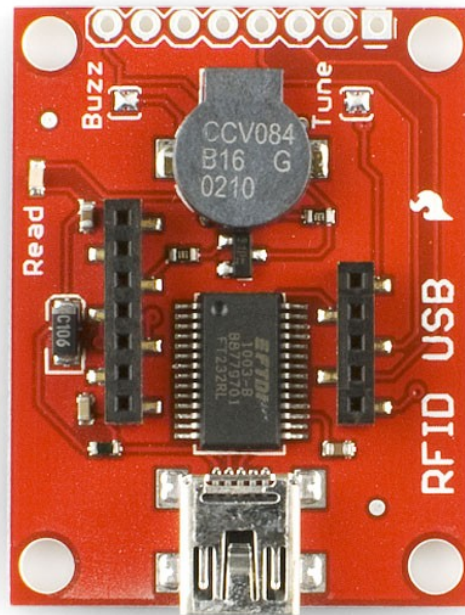
Keypad Module (12 Button)



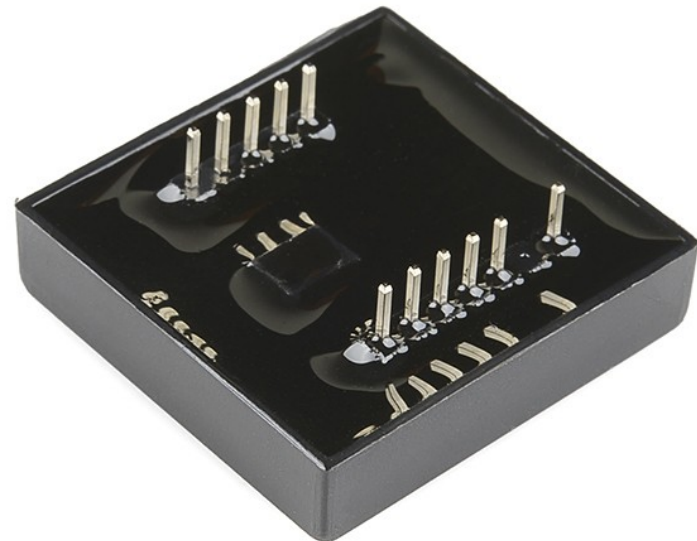
VRBot Module



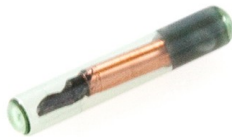
RFID USB Reader



RFID Reader ID-12LA (125kHz)



RFID Tags (125kHz)

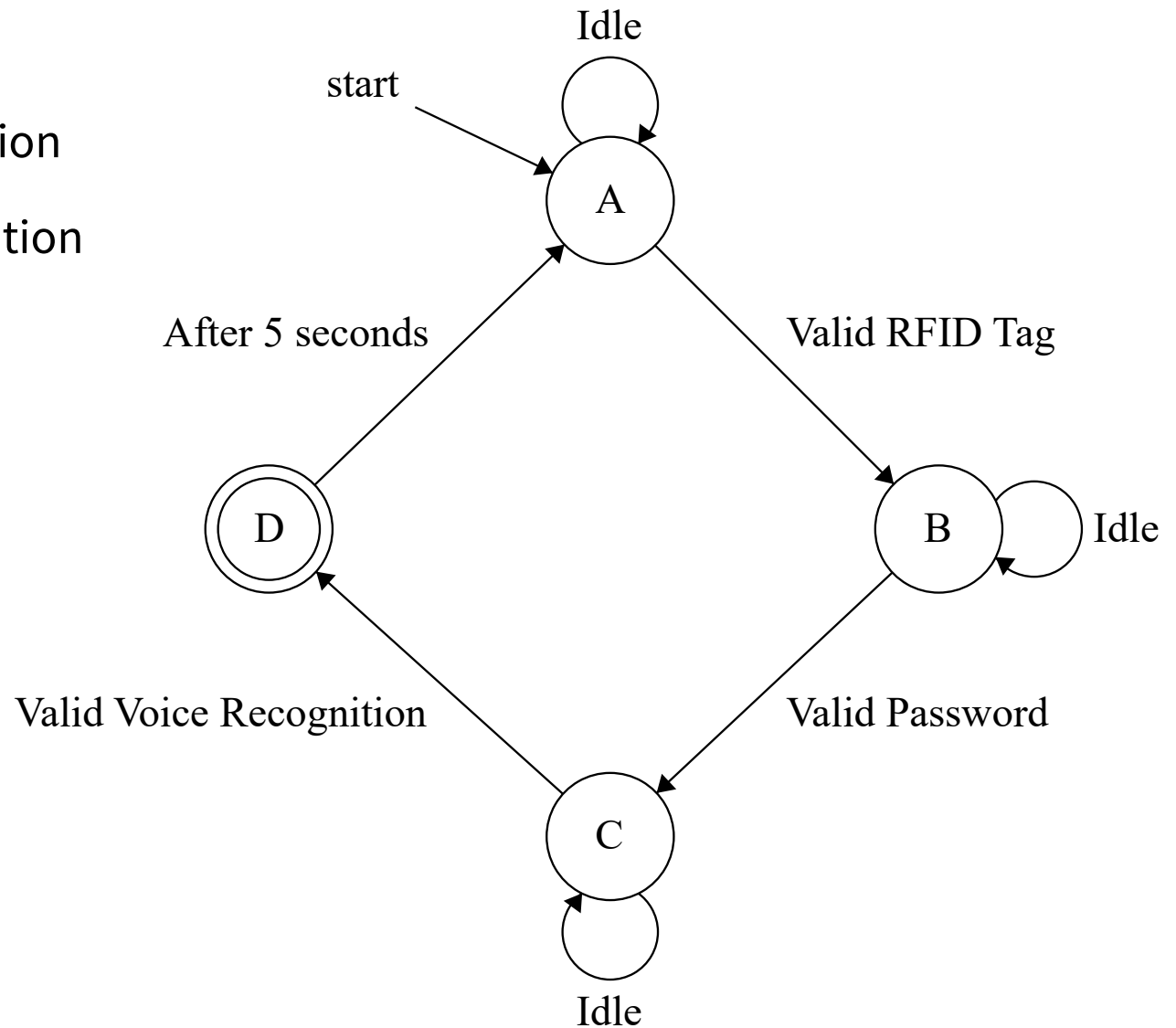


External Software Libraries

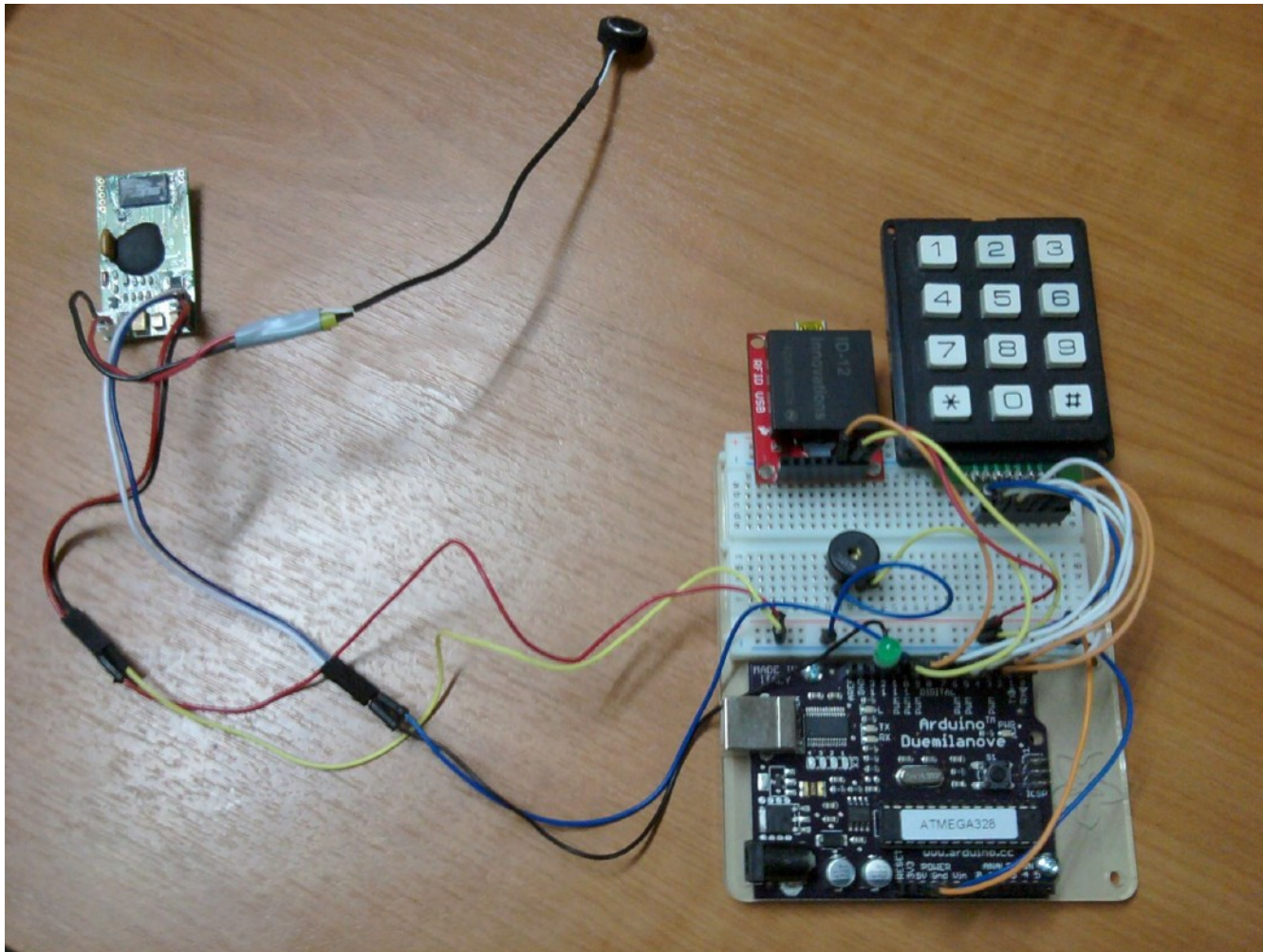
- Finite State Machine
- Software Serial
- Keypad
- VRBot Module Communication Protocol
- Musical Notes Pitches

Finite State Machine

- A - RFID Tag authentication
- B - Password authentication
- C - Voice authentication
- D - Successful Access

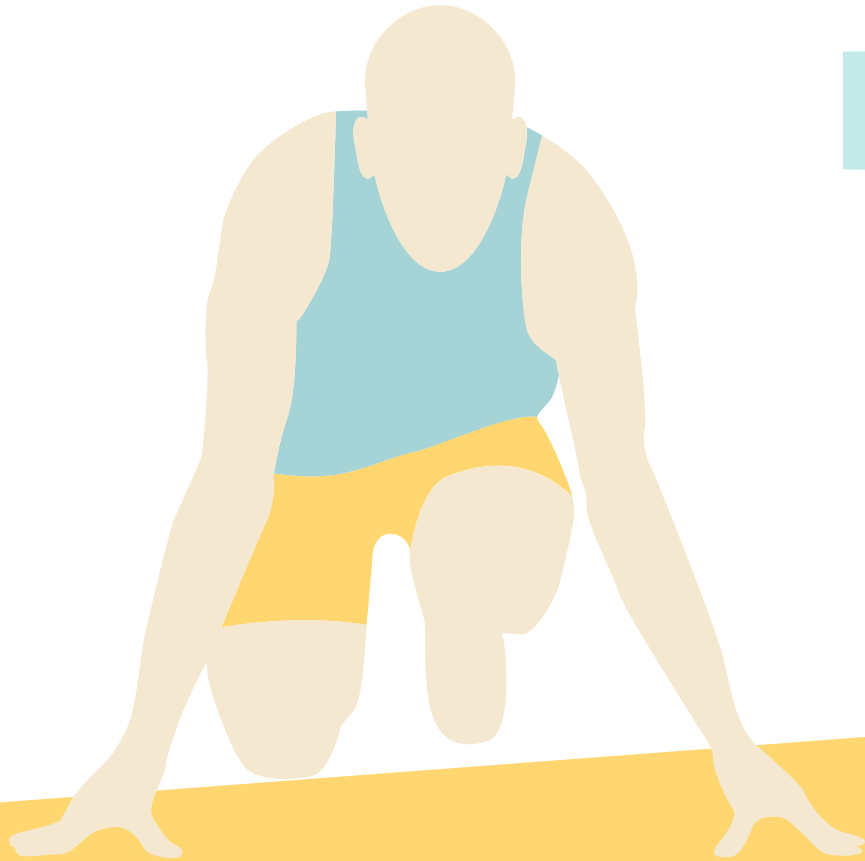


Prototype Photograph



Resources

- <http://www.arduino.cc>
- <http://www.sparkfun.com>
- <http://www.veear.eu>
- <http://www.id-innovations.com>
- http://en.wikipedia.org/wiki/Multi-factor_authentication
- http://efxa.org/arduino_security_control_multi_factor_authentication



Every
accomplishment
starts with
the decision
to try - Gail Devers