

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

Efstathios Chatzikyriakidis

M.Sc. in Informatics and Communications
Specialization in Computational Intelligence and Digital Media
School of Informatics, Faculty of Sciences
Aristotle University of Thessaloniki, Hellas

B.Sc. in Informatics and Communications
Specialization in Software Engineering
Department of Informatics and Communications, Faculty of Applied Technology
Technological Educational Institute of Central Macedonia, Hellas

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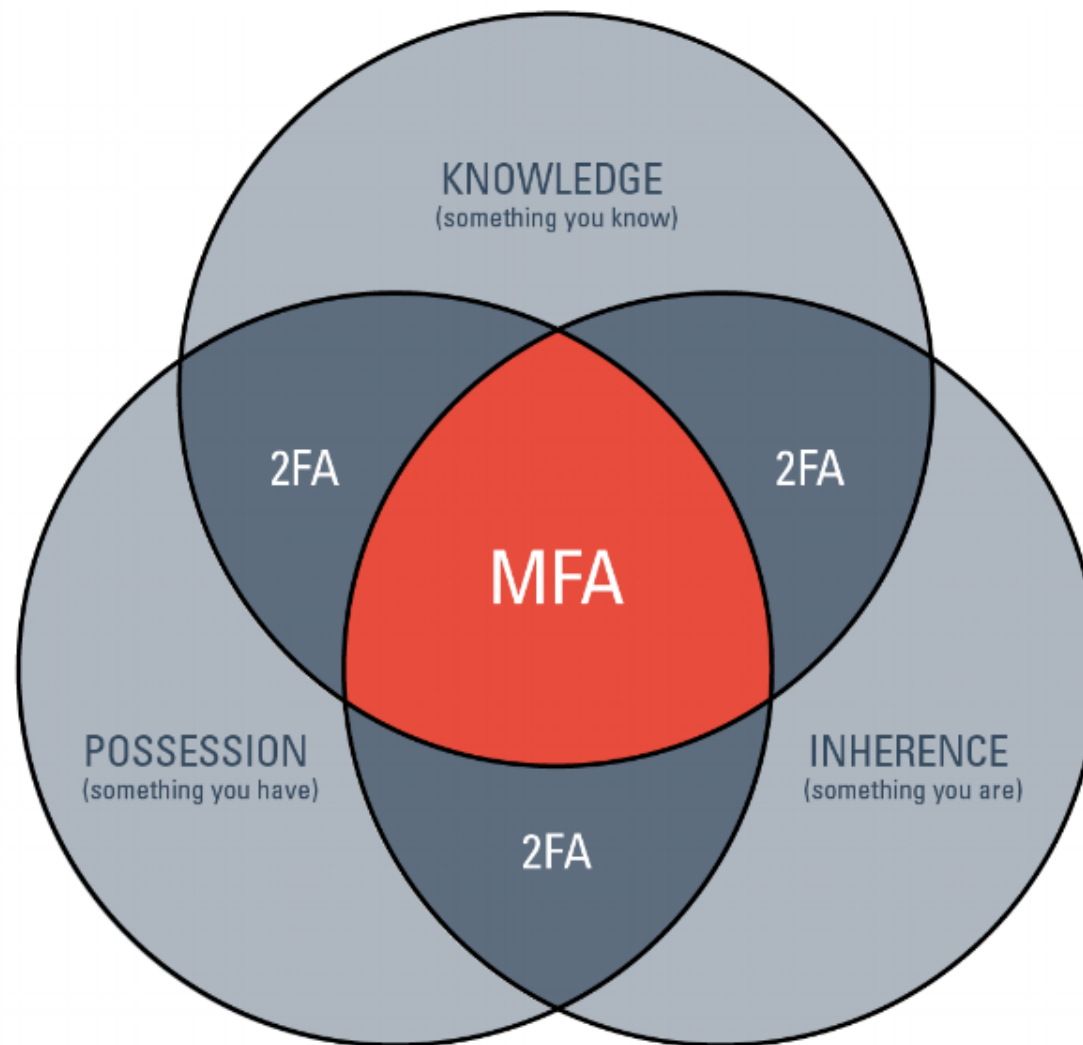
Email : contact@efxa.org
Website : www.efxa.org

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

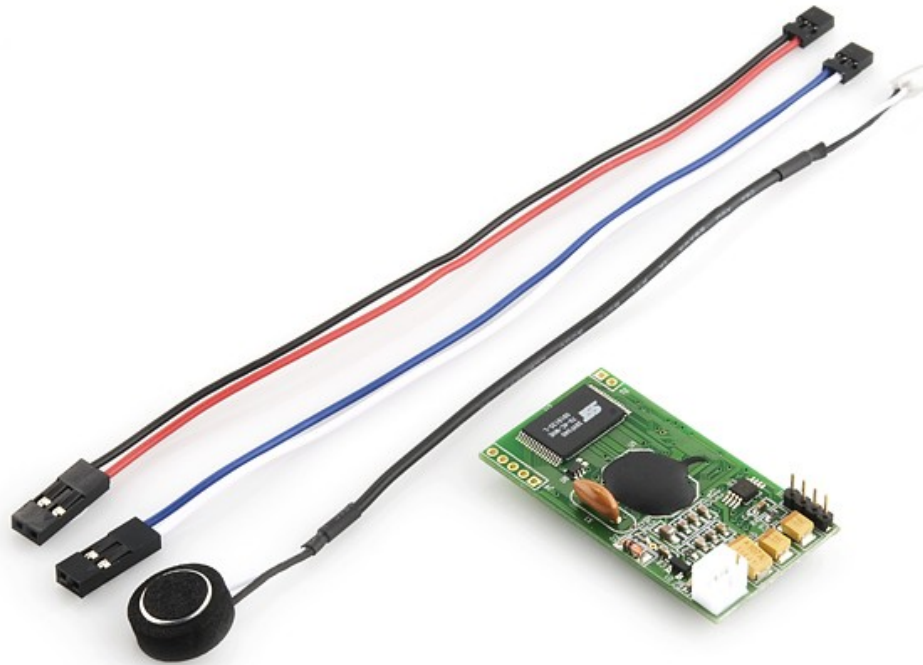
Hardware Parts

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

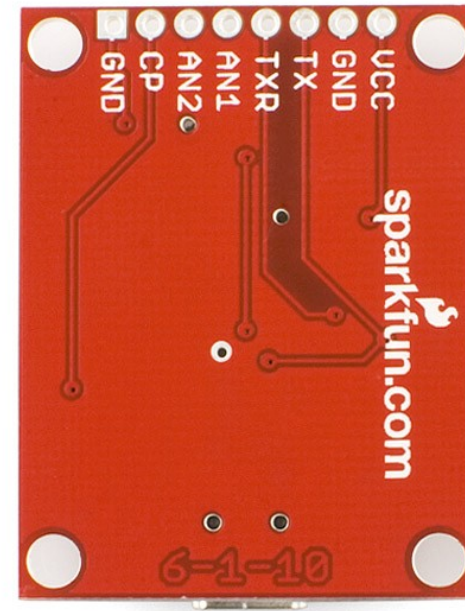
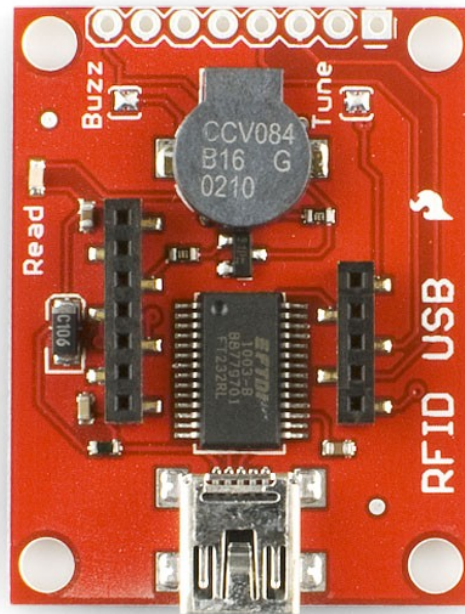
Keypad Module (12 Button)



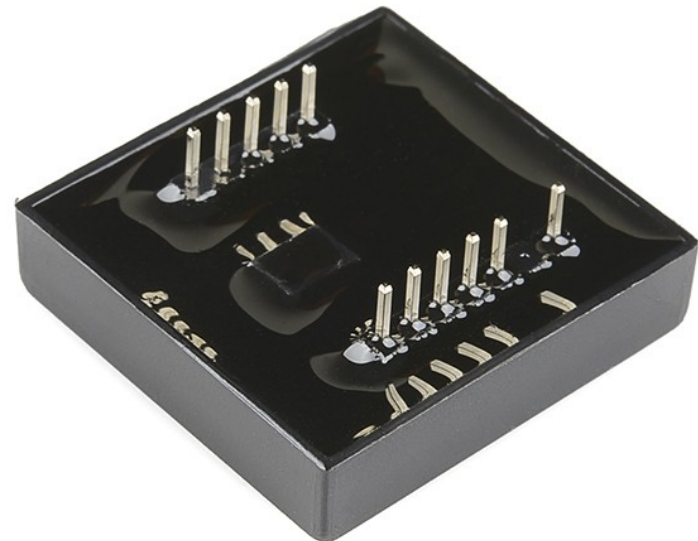
VRBot Module



RFID USB Reader



RFID Reader ID-12LA (125kHz)



RFID Tags (125kHz)

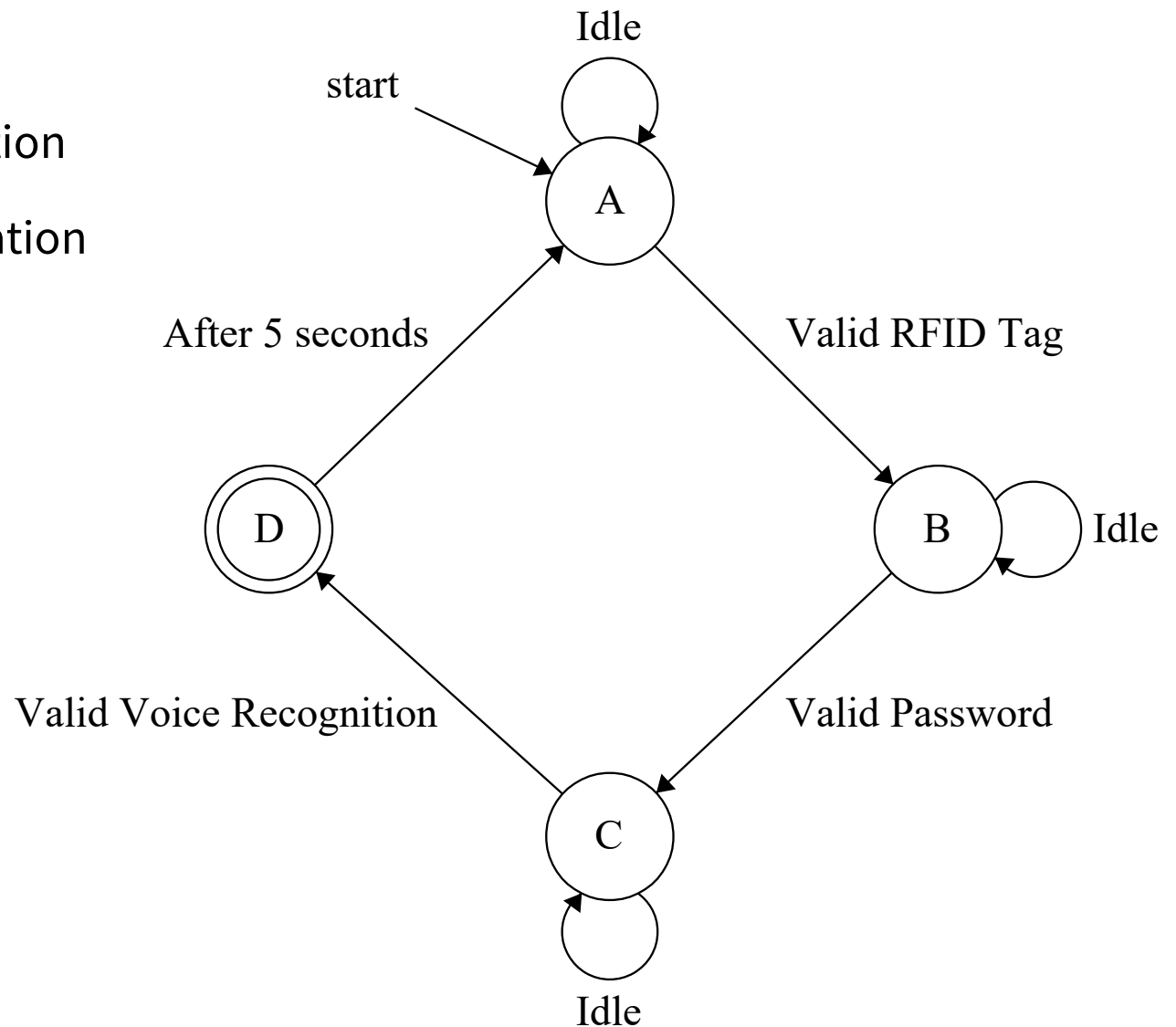


External Software Libraries

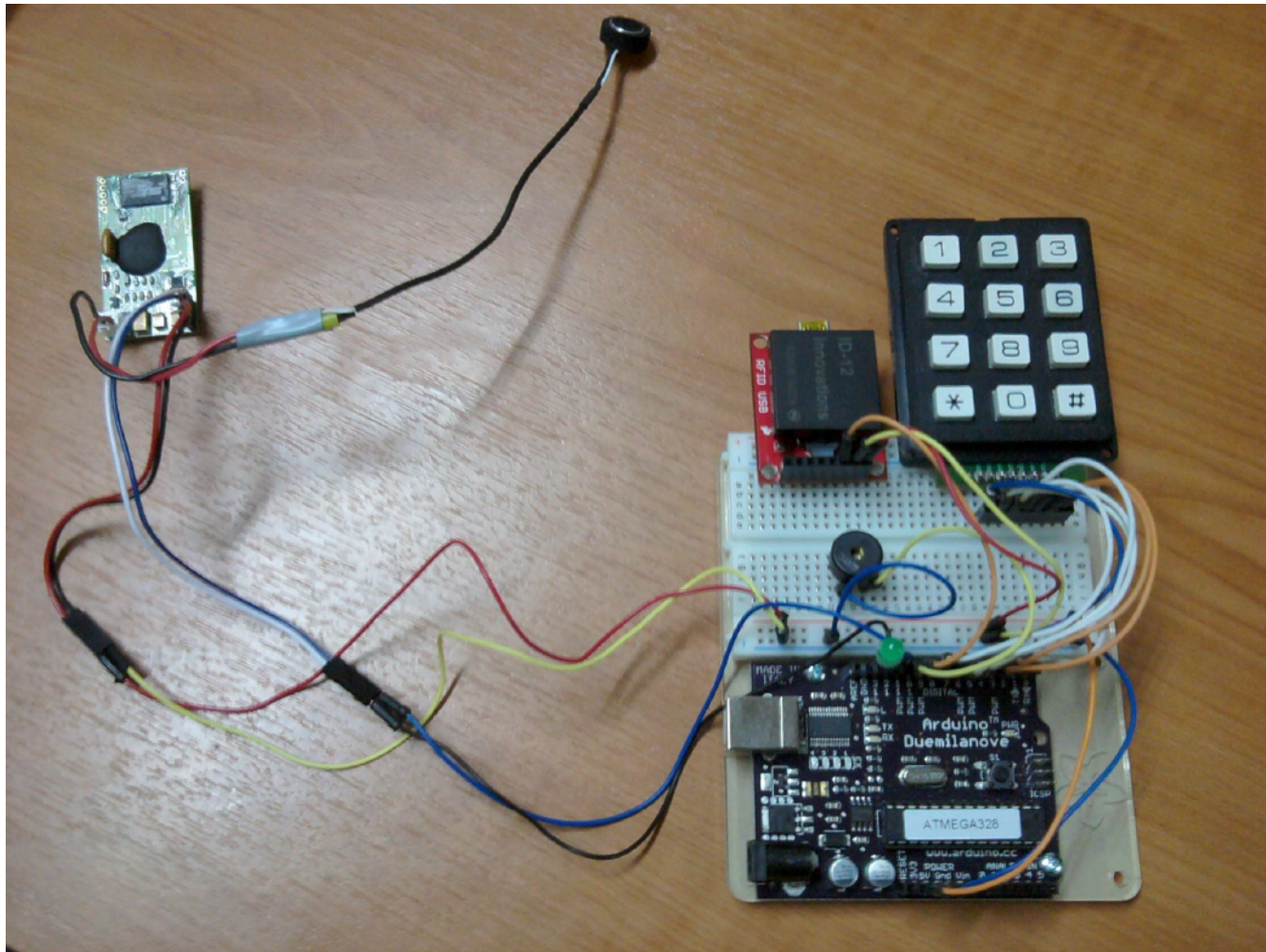
- Finite State Machine
- Software Serial
- Keypad
- VRBot Module Communication Protocol
- Musical Notes Pitches

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
- <http://gitlab.com/efxa/security-access-control-multi-factor-authentication>



Every
accomplishment
starts with
the decision
to try - Gail Devers