UPT Universitatea
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Microprocessor Systems

Smart Locking Door

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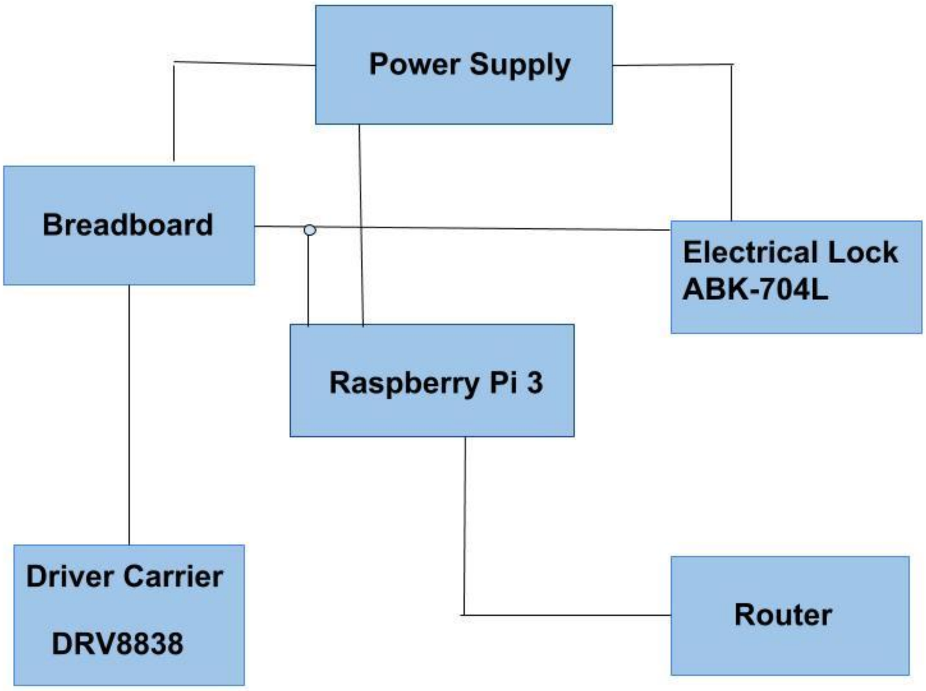
CONTENT

User Requirements

This Smart Locking door project, makes your life easier, you can easily open your door for someone just by using a mobile application, or to lock it when you are too lazy to get up or if you leave your home and forget to lock it.

It is easy to use, you only have to attach it on the door and connect it to a power supply.

System overview



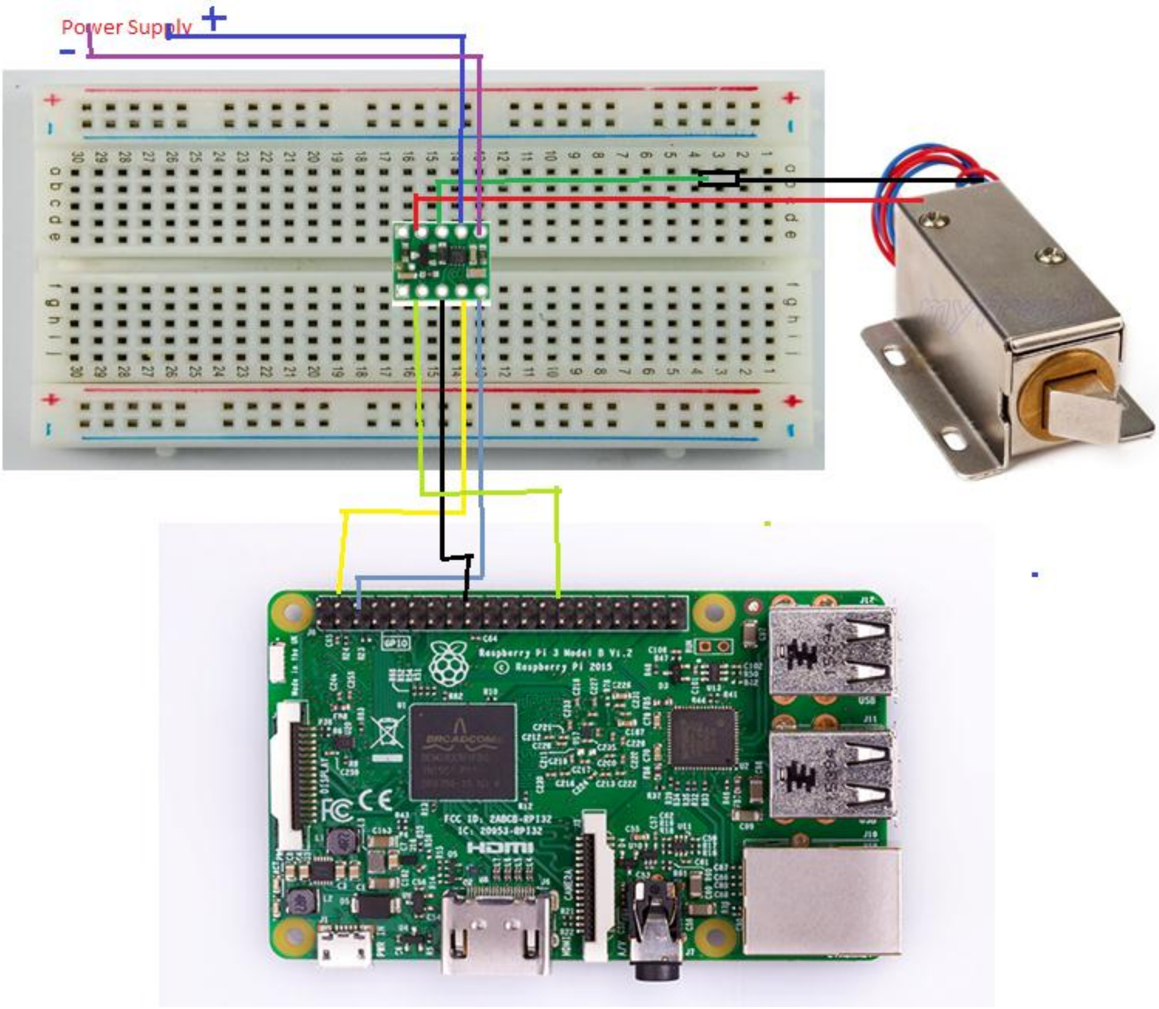
Lock: This part of the project is the material part of the lock, is a metal lock that is used to lock and unlock the door, this is controlled by the Engine.

BreadBoard: This board is used for connecting the Raspberry and the Engine using jumpers.

DRV8838: The driver provides an integrated motor solution for cameras, consumer products, toys, and other low-voltage or battery-powered motion control applications. The device can drive one dc motor or other devices like solenoids. The output driver block consists of N-channel power MOSFETs configured as an H-bridge to drive the motor winding. An internal charge pump generates needed gate drive voltages.

Electrical Lock ABK-704L: Intelligent motor electric locks (motor lock) .with signal output feature.Made of Stainless steel material.with self-closing lockable, door status auto-detect feature ,auto-correct misoperation,, high sensitivity sensor, low noise lock.

Hardware design



Raspberry Pi 3 provides support for quick prototyping.

Software Design

An application written in python which is located on the Raspberry Pi and can be accessed via Bluetooth to lock and unlock the door.

```
# incuietoare.py
import RPi.GPIO as GPIO
# Initialize pin 16 for output, initially 0 logic (low)
GPIO.setmode(GPIO.BOARD)
GPIO.setup(12, GPIO.OUT, initial=GPIO.LOW)
# Put 1 logic (high) on pin 16 (command)
GPIO.output (16, GPIO.HIGH)
# Wait 5 seconds. The manual says that any more than 8 yala shatters
import time
time.sleep(2)
# Cleaning done; The command automatically switches to 0 (low) pin 16
GPIO.cleanup()
```

Results and further work

As a result we have a locking door device that is controlled by a Python program.

We plan to add to this device a led that tells us when the door is open or closed. When the LED is ON the door is locked and when the LED is OFF the door is unlocked.

Moreover, we want to make an application to make our life easier. The application consists of a mobile app that can be use to lock/unlock the door using your mobile phone.

Repository

https://github.com/catalinboie/MS-Project

References

- http://www.instructables.com/id/Building-a-Web-Enabled-Door-Lock-using-Rest-API-an/
- https://www.raspberrypi.org/products/raspberry-pi-3-model-b/
- http://www.ti.com/lit/ds/symlink/drv8837.pdf
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