

Microprocessor Systems

# **Smart Locking Door**

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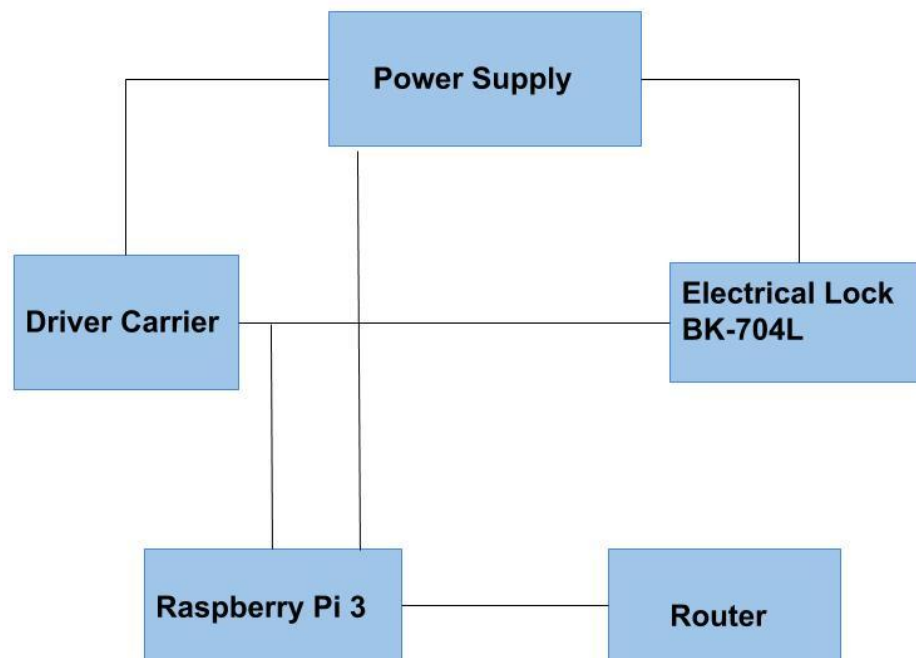
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## User Requirements

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

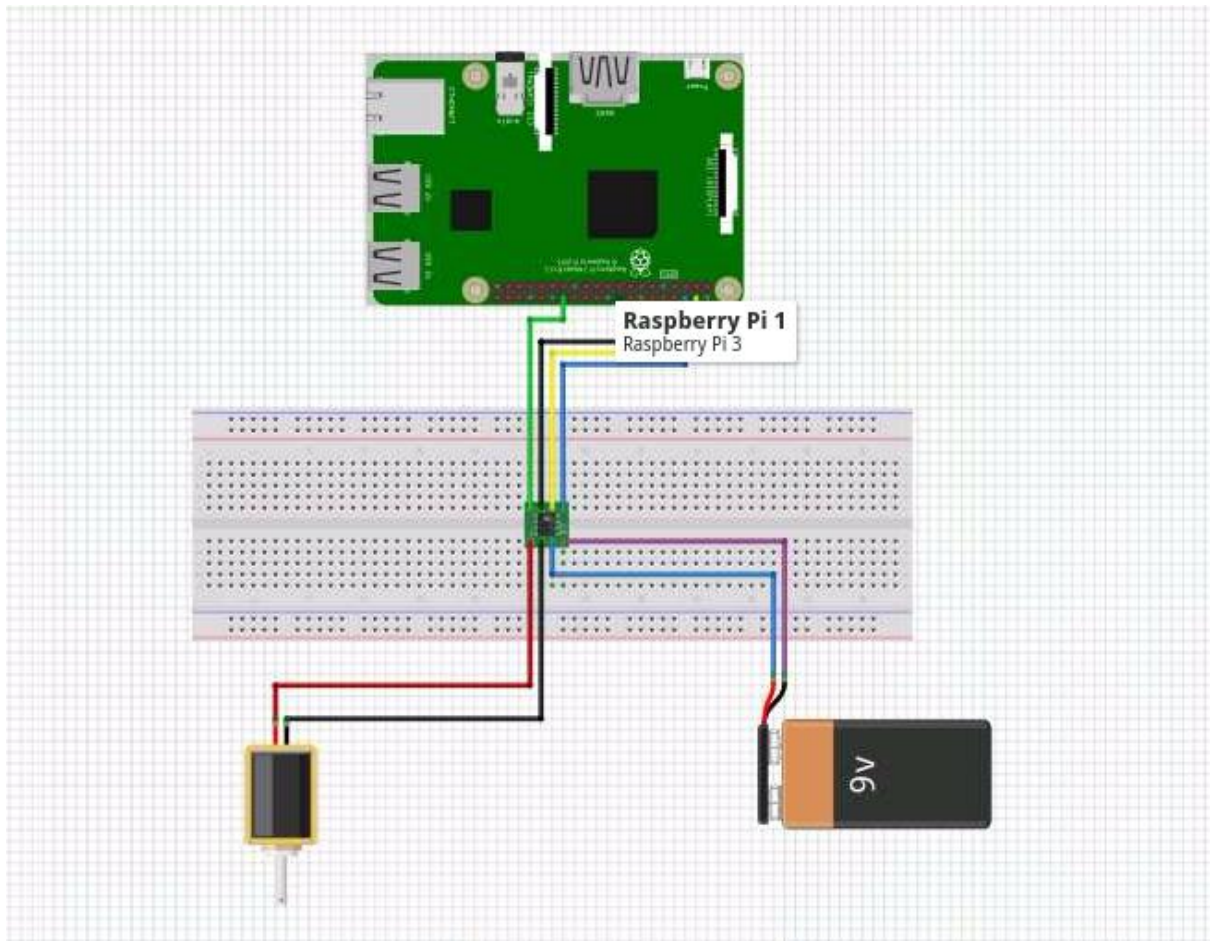


**Lock:** This part of the project is the material part of the lock, is a metal lock that is used to lock and unlock the door, this is controlled by the Engine.

**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. The **Raspberry Pi** is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries. The original model became far more popular than anticipated, selling outside of its target market for uses such as robotics. Peripherals (including keyboards, mice and cases) are not included with the Raspberry Pi. Some accessories however have been included in several official and unofficial bundles

## **Software Design**

A Python program that communicates with the hardware part of the system and makes it work.

In order to make it work we had to initialize the pins on the Raspberry Pi 3 that are connected to the Driver Carrier. After that the pins are set and put on HIGH or LOW, depending on the direction.

We also used some functions that are already implemented and imported some important libraries.

## **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>
- [http://wiki.seeed.cc/Raspberry Pi 3 Model B/](http://wiki.seeed.cc/Raspberry_Pi_3_Model_B/)