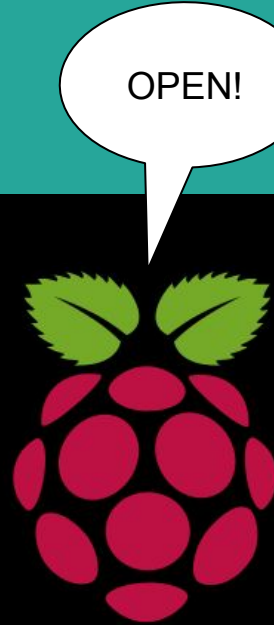


Team OpenSaysPi

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Zack Webster



```
Call Trace:
[<041b7f2>] iounmap+0x3e/0xc8
[<053403d>] apb_generic_free_gatt_table+0x2e/0x3e
[<0533991>] apb_add_bridge+0x1a0/0x26f
[<05439eb>] __driver_attach+0x0/0x6b
[<04e6bf4>] pci_device_probe+0x36/0x57
[<0543945>] driver_probe_device+0x12/0x8b
[<0543a2f>] __driver_attach+0x14/0x6b
[<054344a>] bus_for_each_dev+0x37/0x59
[<05438af>] driver_attach+0x11/0x13
[<05439eb>] __driver_attach+0x0/0x6b
[<0543152>] bus_add_driver+0xd4/0xf4
[<04e6d22>] __pci_register_driver+0x47/0x63
[<040044d>] init+0x17d/0x2f7
[<0403dec>] ret_from_fork+0x6/0x1c
[<0400240>] init+0x6/0x2f7
[<0404c3b>] kernel_thread_helper+0x7/0x10
=====
Code: 78 2b 8b 44 24 04 29 40 8b 54 24 10 c1 f8 05 c1 e0 0c 09 f8 09 02 8b 43 0c
05 e0 75 08 04 0b 3c 00 77 c0 61 c0 40 89 43 0c eb 00 <0> 0b 91 00 77 c8 61 c8
0b 03 f6 c4 04 0e 05 a5 00 00 00 a1 0c
RIP: [<041bd49>] change_page_attr+0x19a/0x275 SS:ESP 0068:c14f7ec9
<0>Kernel panic - not syncing: Fatal exception
[<0>]
```



Introduction

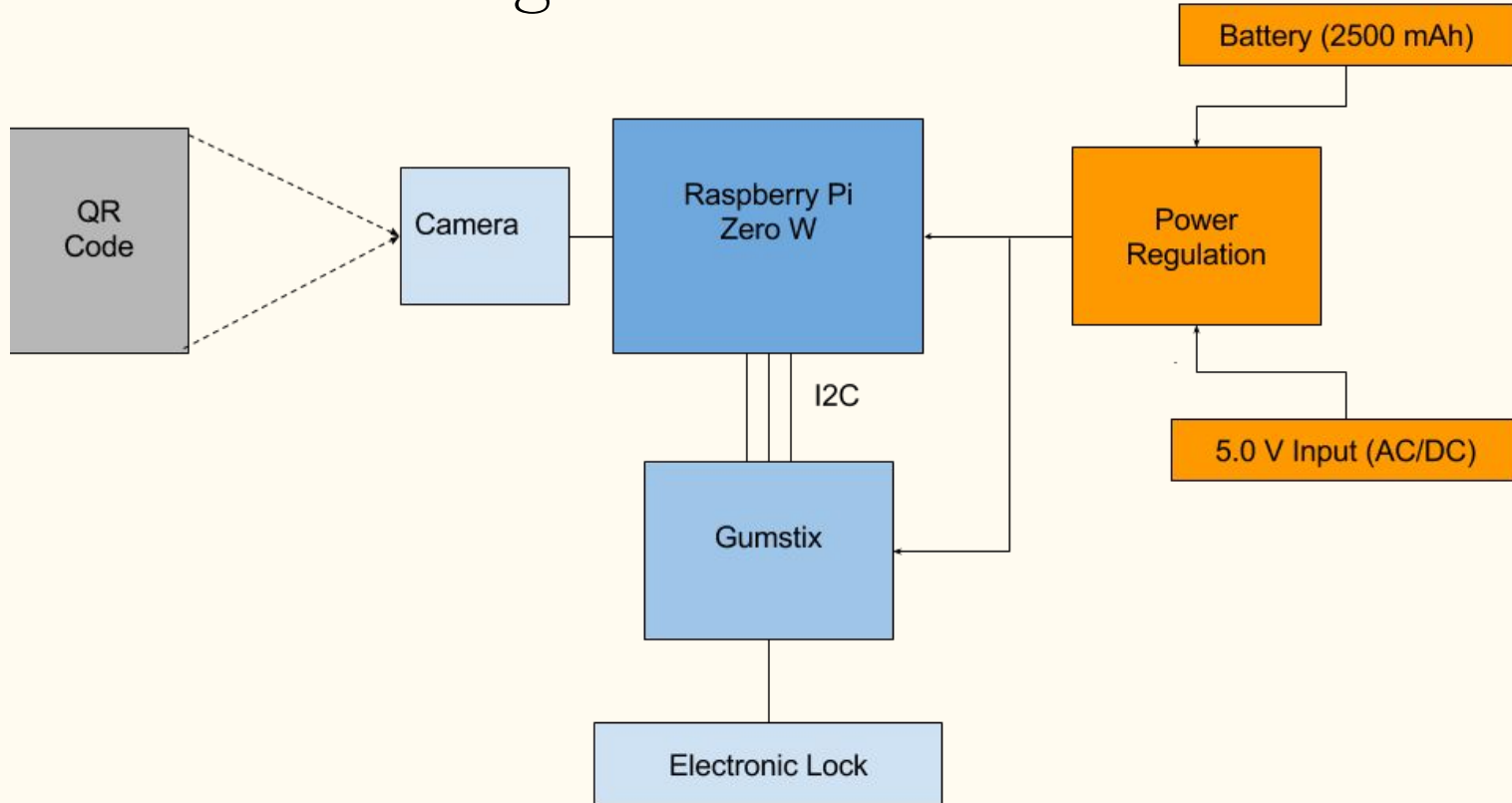
What is our product?

- It is an automated door lock/unlock system
- It uses QR codes for authentication

What is the advantage?

- Provides an easy way to give access to your home
- Home owners that rent their apartments using services like AirBnb and HomeAway always need a way of giving temporary access to their home
- Hybrid between lock control and video monitoring system

System-Level Diagram



Timeline

March 27th - April 3rd

- Install necessary packages and get familiar with devices
- Research on required topics like the I2C protocol and QR decoding.

April 3rd - April 13th

- Setup the individual modules (Detection and Actuation modules)

April 13th - April 30th

- Put the modules together (physical assembly)
- Work on more ambitious goals

Challenges

- Setting up I2C interface to communicate between Raspberry Pi and Gumstix
- Addressing power requirements for both modules and making the power consumption as small as possible
- Setting up the QR code detection
- Low latency response to an unlock or lock request
- Building low level components on the Gumstix for actuation
- Minimizing unnecessary packages on the Raspberry Pi - make a custom version?

Add-Ons

- Having the Gumstix and Raspberry Pi communicate over Bluetooth (or other compatible protocol) instead of I2C
- Creating a webpage/app to allow for QR code generation and a centrally maintained database for storing data for individual users
- Enabling a streaming option in the webpage/app
- Addressing security concerns - secure communication between Pi and Gumstix?
- Incorporating other Bluetooth based features such as presence detection