

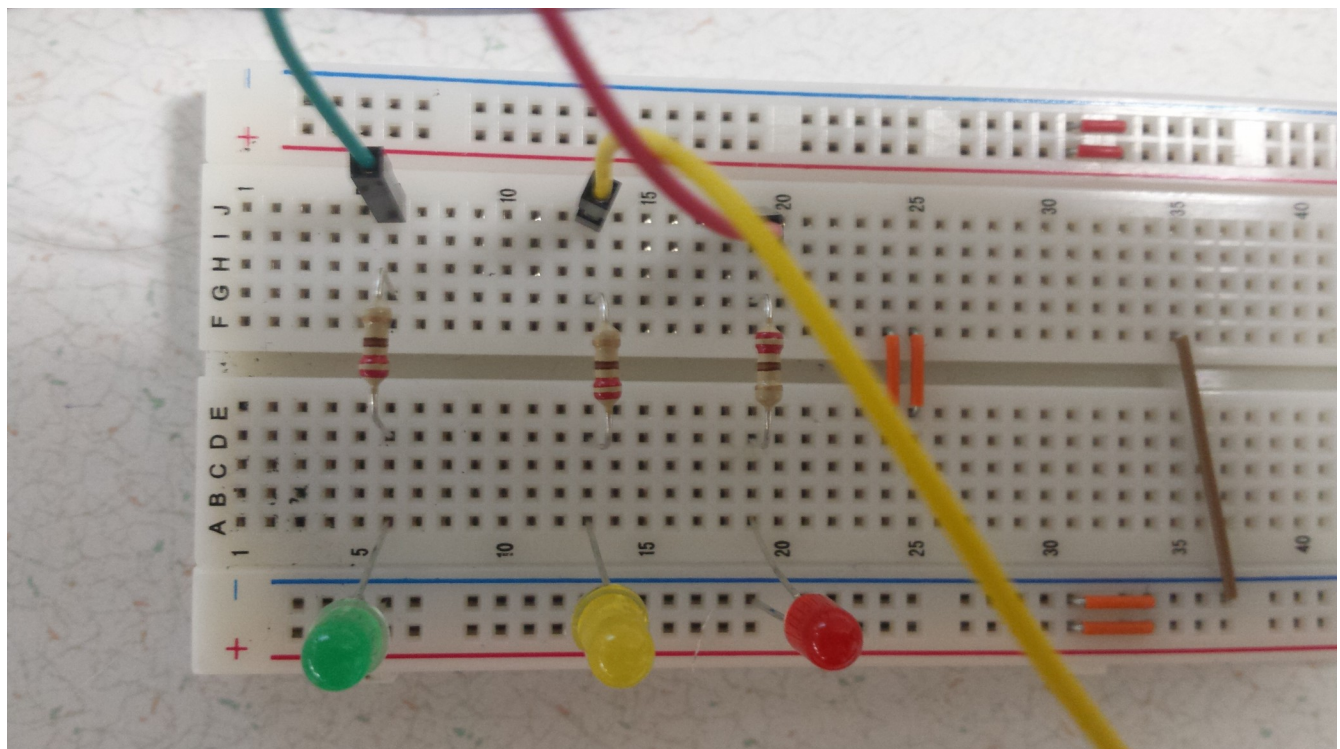
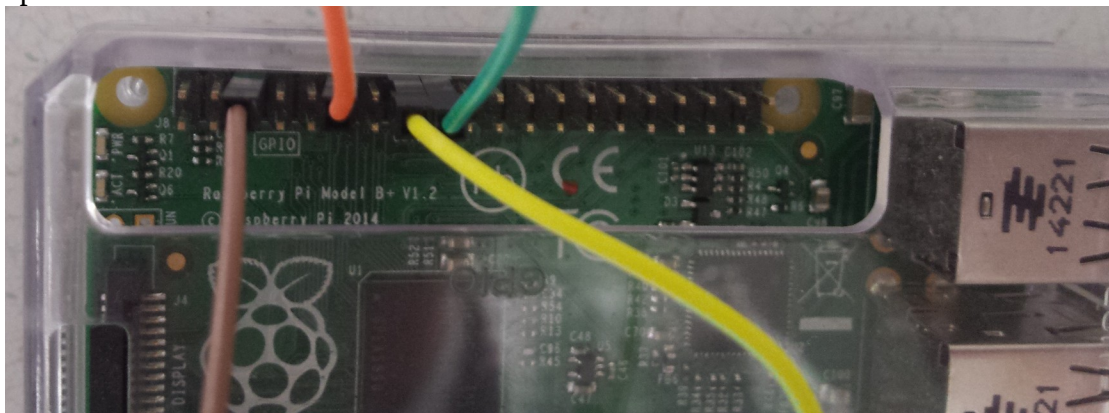
Kyle Klobberdanz
Final Report
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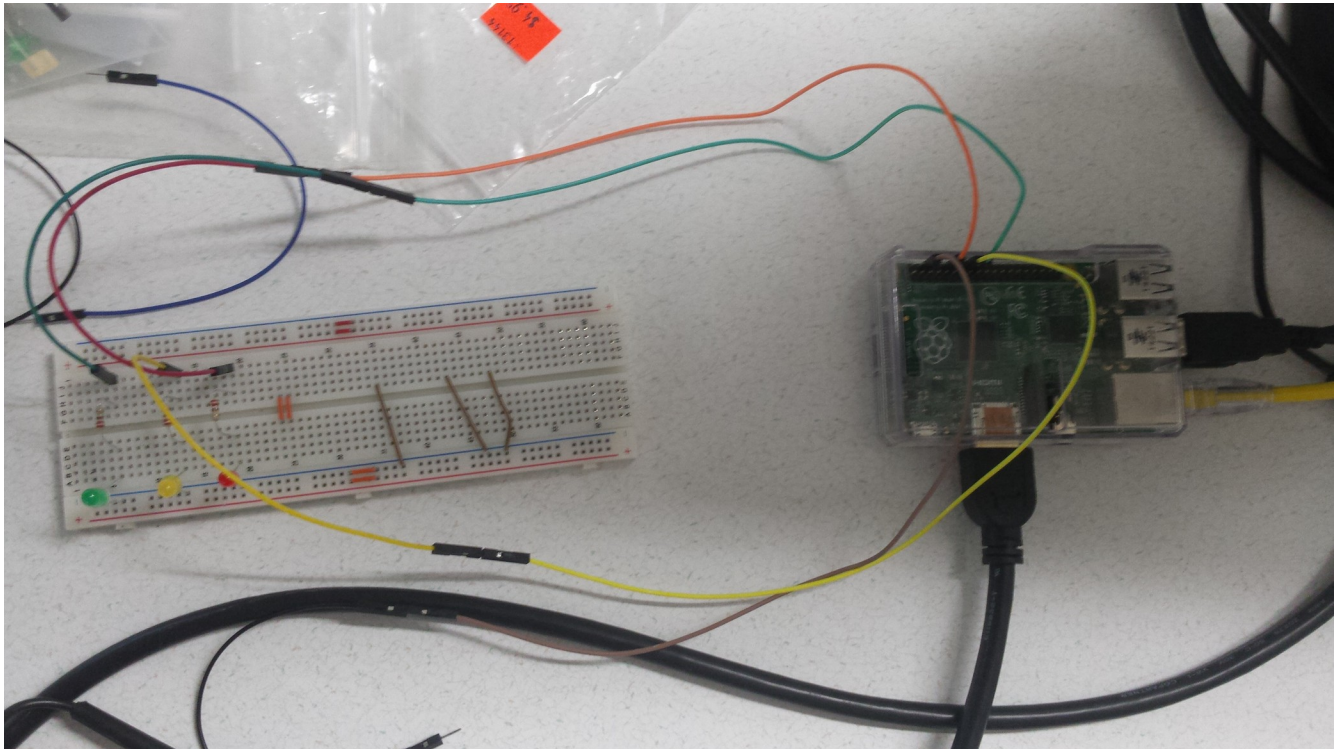
Github repository: <https://github.com/kklobberdanz/Piserver/>

This project allows a user to turn on and off 3 LEDs remotely using either the webpage served by the raspberry pi, or the high level python API provided. This project was coded in python 3 using the Django framework.

In working on this project, I learned a lot about HTTP requests and I also had to learn a bit about Bash scripting in order to automate the setup process, and allow the server to be started and cleaned up on exit using just one command. I improved my knowledge of python as well as some basic html.

The circuit is the same as in the instructions, except light 1 is connected to pin 12, light 2 to pin 16, and light 3 to pin 18. The resistors are all 220 Ω .





Users can interact with the pi server using the webpage, which is the devices IP address/piserver, so if your devices IP address is 192.168.0.7, in your web browser you would type:

<http://192.168.0.7:8000/piserver/>

This is how you could interact with the website



Doing this would turn light_1 on.

An issue I encountered is learning the basics of the framework I chose, Django. Also, figuring out how to translate POST requests into actually flipping the lights was a challenge. I had to do quite a bit of google-ing to figure out how to write the script that I used to start the server.

To extend the project, I think it would be cool to be able to control something useful through the network, such as home lighting, or a coffee maker.

API documentation:

This is a high level python api that sends posts requests in a JSON format to the webpage, which in turn turns the specified light off or on.

Ensure you are in the same directory as the file ledpiapi.py

By default, this directory is /home/pi/Piserver/API

flip_light takes the arguments (light_id : int, choice : string, webpage : string)

Here's an example of how to use it.

Python 3.4.2 (default, Oct 19 2014, 13:31:11)

[GCC 4.9.1] on linux

Type "help", "copyright", "credits" or "license" for more information.

```
>>> from ledpiapi import *
```

```
>>>
```

```
>>> # enter the webpage as a string, and ensure there is a '/' at the end
```

```
>>> webpage = 'http://192.168.0.7:8000/piserver/'
```

```
>>> flip_light(1, "on", webpage)
```

```
>>>
```

```
>>> flip_light(3, "on", webpage)
```

```
>>> flip_light(3, "off", webpage)
```

```
>>> flip_light(2, "on", webpage)
```

```
>>> flip_light(3, "on", webpage)
```

```
>>> flip_light(3, "off", webpage)
```

```
>>> flip_light(2, 'off', webpage)
```

```
>>> flip_light(1, "half", website)
```

```
>>> flip_light(1, "quarter", website)
```

```
>>>
```

The post requests are encoded using JSON. They are as follows:

JSON	Effect
{'choice':[1]}	Turn light_1 on
{'choice':[2]}	Turn light_1 off
{'choice':[3]}	Turn light_2 on
{'choice':[4]}	Turn light_2 off
{'choice':[5]}	Turn light_3 on
{'choice':[6]}	Turn light_3 off
{'choice':[7]}	Turn light_1 to half brightness
{'choice':[8]}	Turn light_2 to half brightness
{'choice':[9]}	Turn light_3 to half brightness
{'choice':[10]}	Turn light_1 to quarter brightness
{'choice':[11]}	Turn light_2 to quarter brightness
{'choice':[12]}	Turn light_3 to quarter brightness