



Getting Started with the Raspberry Pi

Raspberry Pi 4

- Broadcom BCM2711, Quad core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
- 2GB, 4GB or 8GB LPDDR4-3200 SDRAM (depending on model)
- 2.4 GHz and 5.0 GHz IEEE 802.11ac wireless, Bluetooth 5.0, BLE
- Gigabit Ethernet
- 2 USB 3.0 ports; 2 USB 2.0 ports.
- Raspberry Pi standard 40 pin GPIO header (fully backwards compatible with previous boards)
- 2 × micro-HDMI ports (up to 4kp60 supported)
- 2-lane MIPI DSI display port
- 2-lane MIPI CSI camera port
- 4-pole stereo audio and composite video port
- H.265 (4kp60 decode), H264 (1080p60 decode, 1080p30 encode)
- OpenGL ES 3.0 graphics
- Micro-SD card slot for loading operating system and data storage
- 5V DC via USB-C connector (minimum 3A*)
- 5V DC via GPIO header (minimum 3A*)
- Power over Ethernet (PoE) enabled (requires separate PoE HAT)
- Operating temperature: 0 – 50 degrees C ambient

<https://www.raspberrypi.org/products/raspberry-pi-4-model-b/specifications/>





Updating Software - Advanced Packaging Tool

```
pi@raspberrypi:~ $ sudo apt update
```

```
pi@raspberrypi:~ $ sudo apt upgrade
```



Working on updates
20% complete
Don't turn off your computer



Let's install our first program!

```
pi@raspberrypi:~ $ sudo apt install speedtest-cli
```

```
pi@raspberrypi:~ $ speedtest-cli
```



Updating WiFi



/etc

Configuration Files

The configuration file for WiFi APs is titled: **wpa_supplicant.conf**

The config file is in a folder titled: **wpa_supplicant**

That folder is located in the directory: **etc**

```
pi@raspberrypi:~ $ sudo nano /etc/wpa_supplicant/wpa_supplicant.conf
```



Github

```
cd /usr/local/bin
```

```
sudo wget https://github.com/corbitt799/natia/archive/master.zip
```

```
sudo unzip master.zip
```

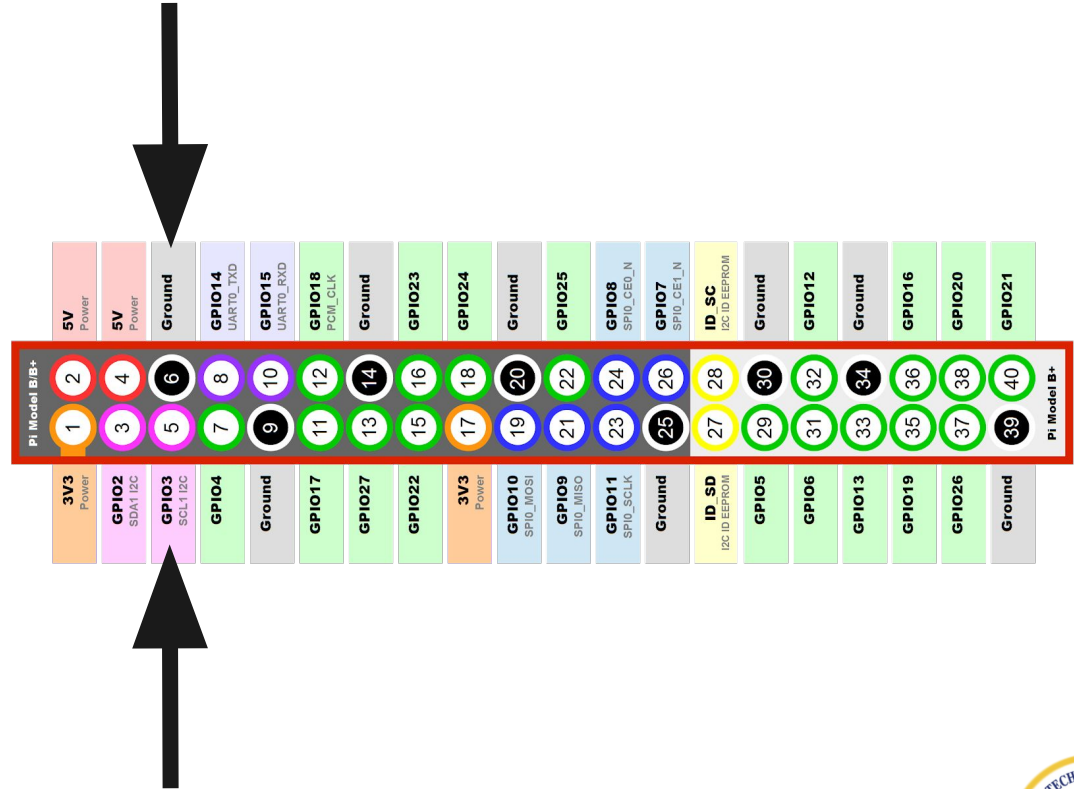
```
sudo mv natia-master natia
```

```
./natia/power_button/install
```

```
sudo reboot
```

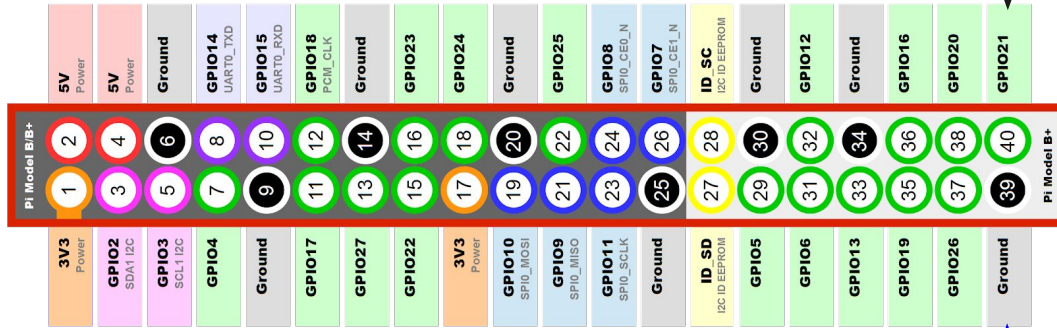


Power Button

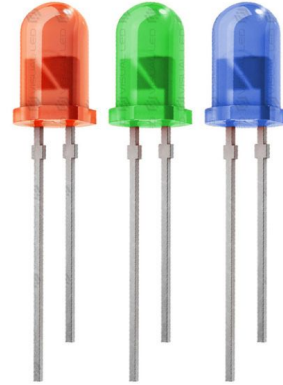


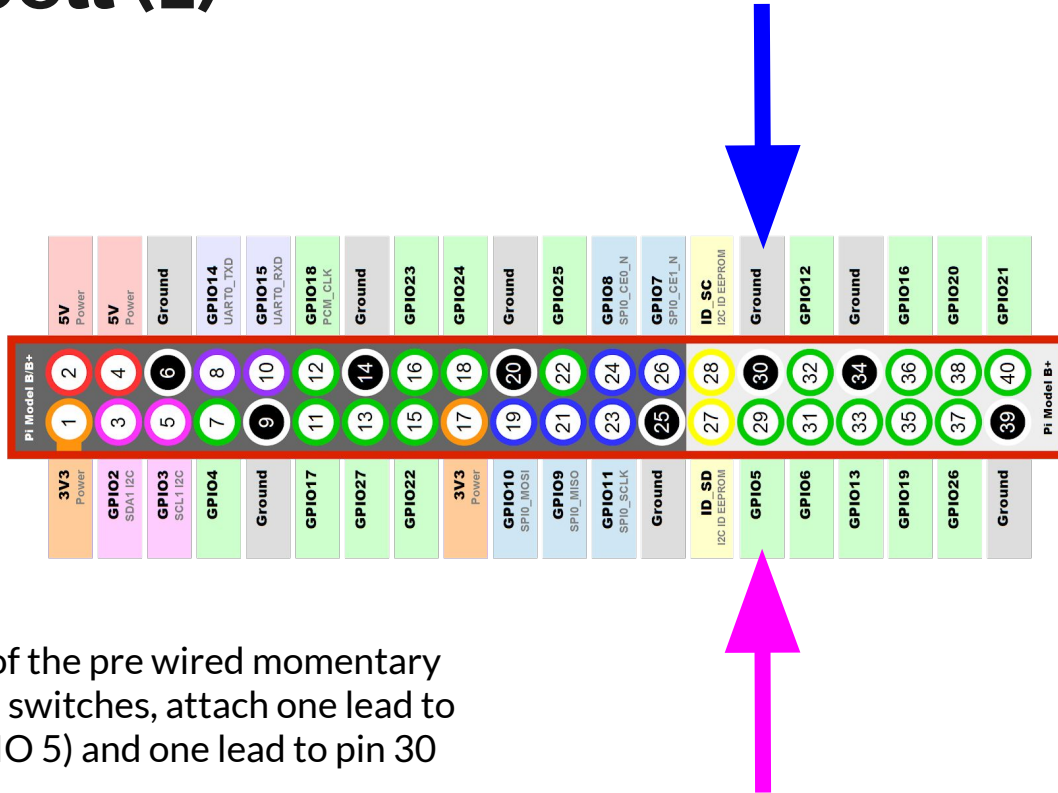
Using one of the pre wired momentary push button switches, attach one lead to pin 5 (GPIO3) and one lead to pin 6

LED Blink



Using one of the pre wired LEDs, attach the
BLACK lead to pin 40 (GPIO 21) and the
BLUE or YELLOW lead to pin 39

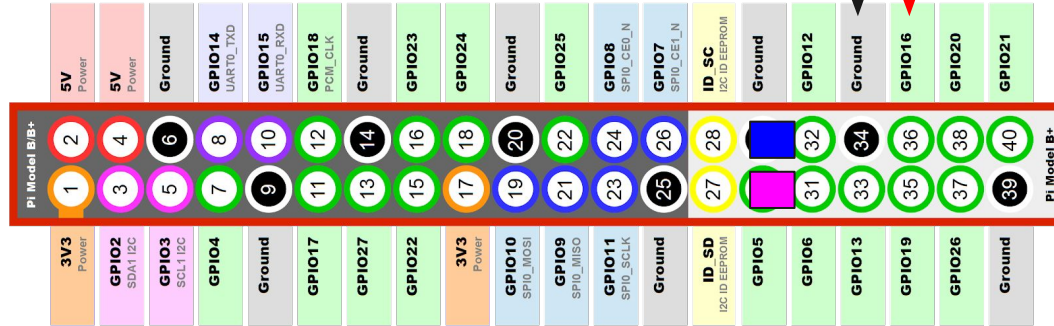




Doorbell (2)

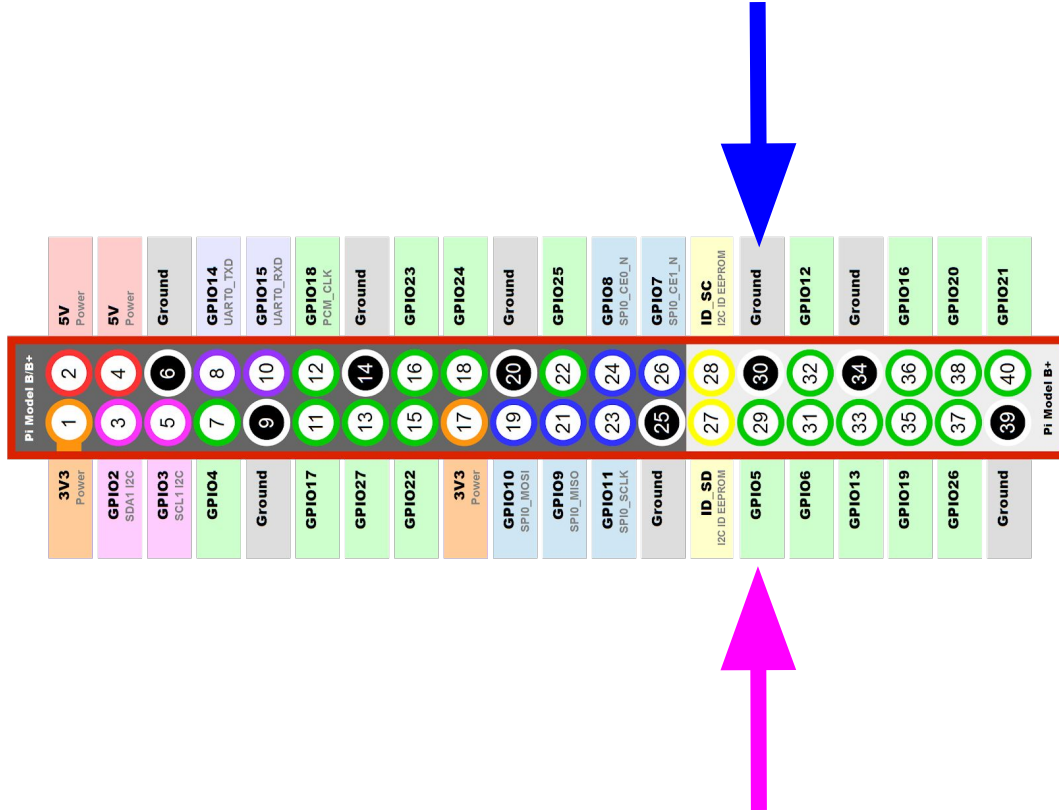


Using one of the pre wired momentary push button switches, attach one lead to pin 29 (GPIO 5) and one lead to pin 30



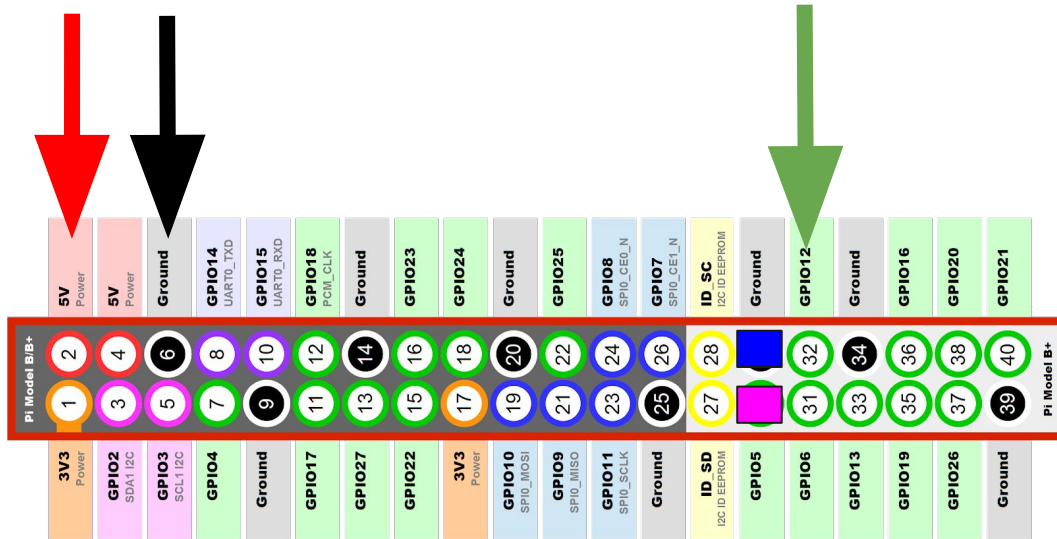
Using the buzzer, attach the RED lead to pin 36 (GPIO 16) and the BLACK lead to pin 34

Door Open / Relay (1)



Using the pre wired door contacts, attach one lead to pin 29 (GPIO 5) and one lead to pin 30

Door Open / Relay (2)

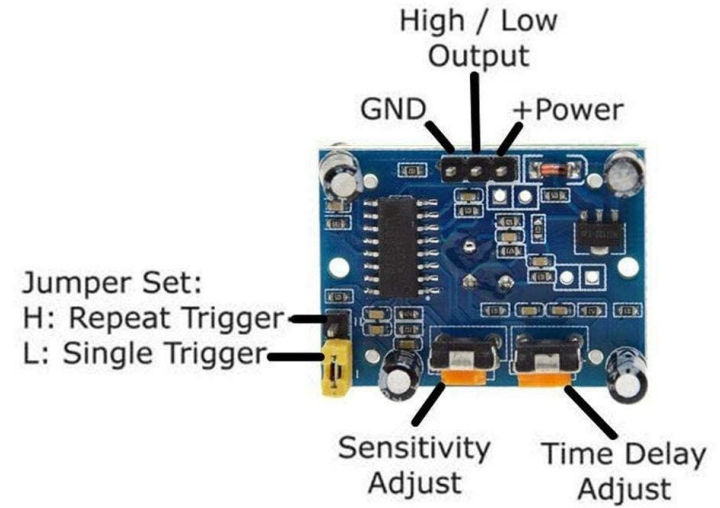
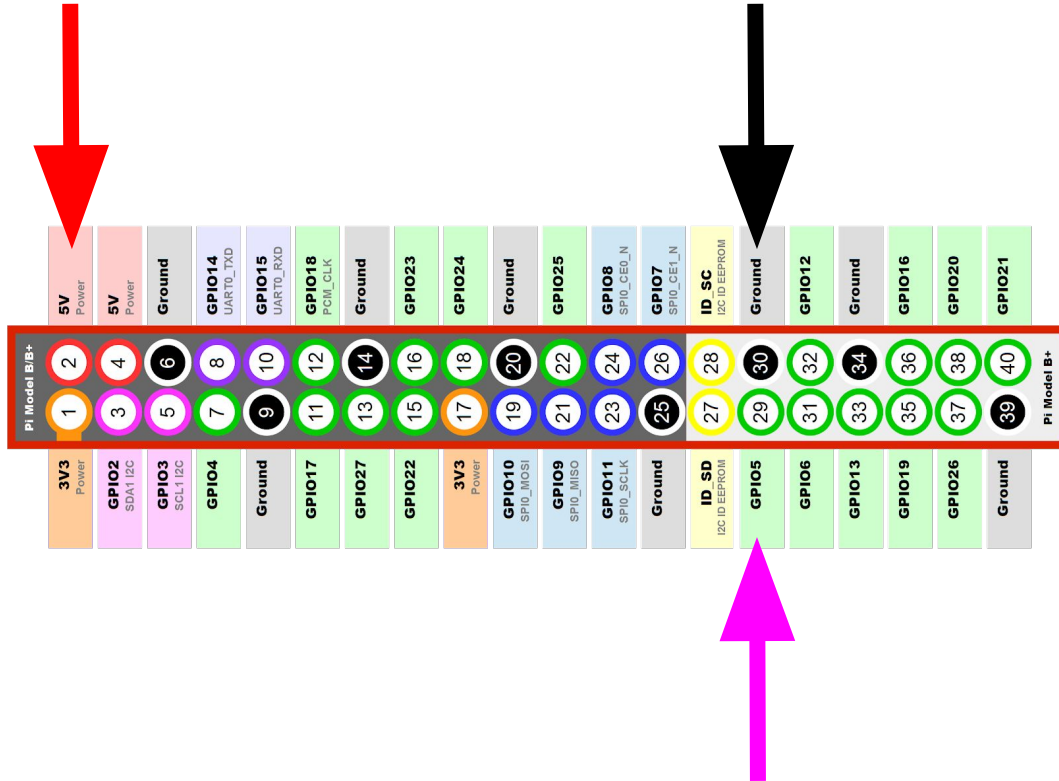


INPUT CONNECTION:
 DC +: Positive power supply (VCC)
 DC -: Connect power negative (GND)
 IN: Control the pick up of relay by low level or high level

Using the relay:

- GRD to pin 6
- High/Low to pin 32 (GPIO 12)
- +Power to pin 2

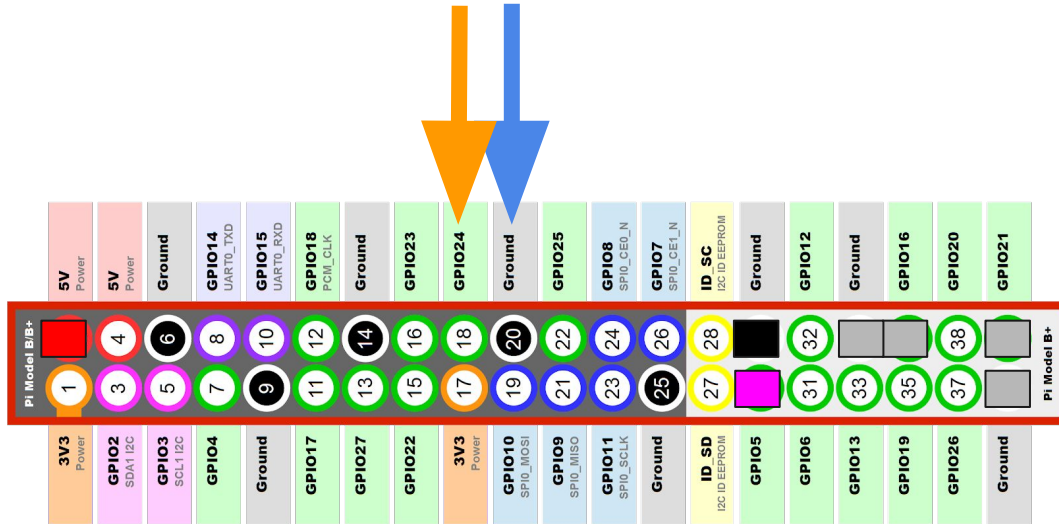
Motion Alarm



Using the motion sensor:

- GRD to pin 30
- High/Low to pin 29 (GPIO 5)
- +Power to pin 2

Motion Alarm w Switch



Using the pre wired toggle switch, attach one lead to pin 18 (GPIO 24) and one lead to pin 20

Halloween Fun (1)



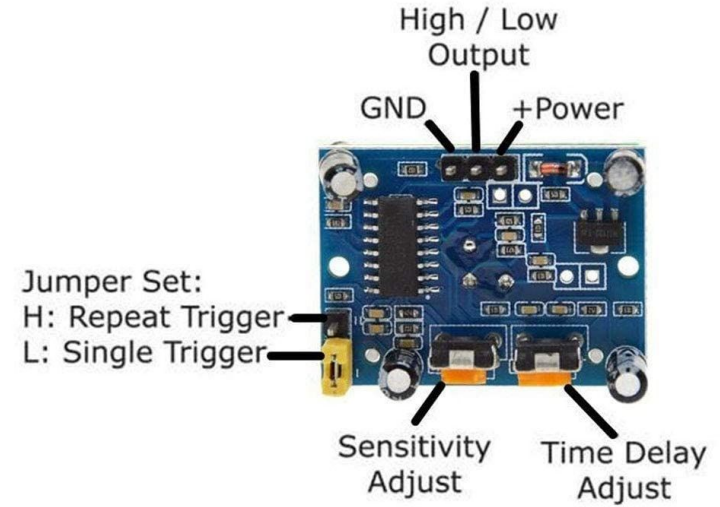
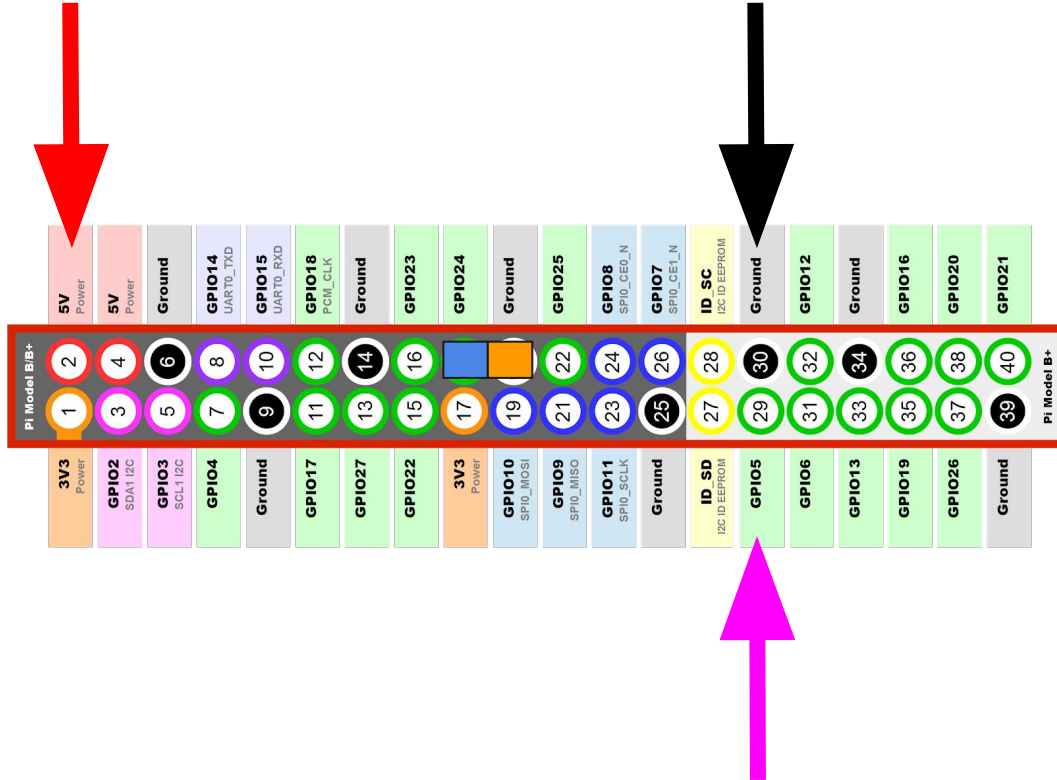
Pi Model B/B+		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Pi Model B+
3V3	5V			GPIO2	5V	GPIO3	Ground	GPIO4	GPIO14	GPIO15	GPIO18	Ground	GPIO23	GPIO24	Ground	GPIO25	GPIO8	GPIO7	ID	Ground	GPIO12	Ground	GPIO16	GPIO20	GPIO21		ID	GPIO5	GPIO6	GPIO13	GPIO19	GPIO26	Ground									
Power	Power			SDA I2C	Power	SCL I2C			UART0_TXD	UART0_RXD	PCM_CLK						SPI0_CEO_N	SPI0_CEO_N	I2C ID EEPROM								I2C ID EEPROM															



Using the pre wired toggle switch, attach one lead to pin 18 (GPIO 24) and one lead to pin 20



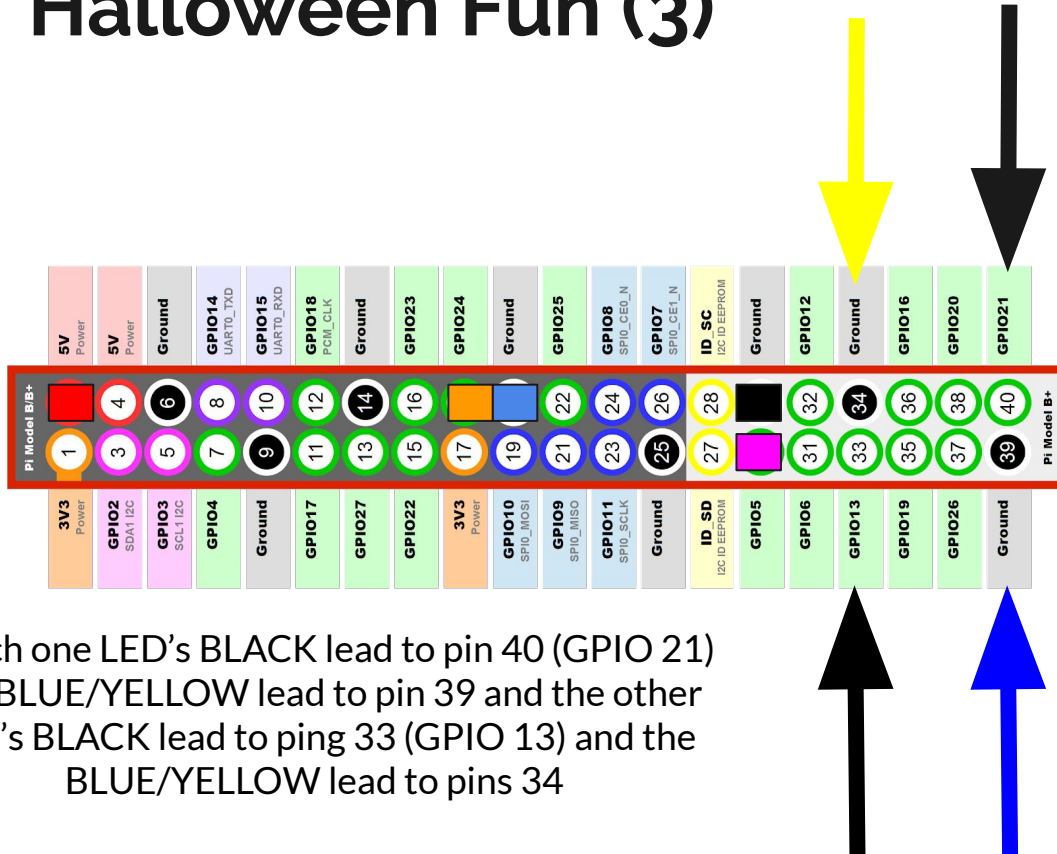
Halloween Fun (2)



Using the motion sensor:

- GRD to pin 30
- High/Low to pin 29 (GPIO 5)
- +Power to pin 2

Halloween Fun (3)



Attach one LED's BLACK lead to pin 40 (GPIO 21) and BLUE/YELLOW lead to pin 39 and the other LED's BLACK lead to pin 33 (GPIO 13) and the BLUE/YELLOW lead to pins 34

