

# Raspberry Pi Setup

8GB SD Card (4GB minimum)  
Install Raspbian via NOOBS

Default Raspbian Credentials:  
username: **pi**  
password: **raspberry**

Update with:  
**sudo apt-get update**  
**sudo apt-get upgrade**

## Board Revisions

cat /proc/cpuinfo

v1		v2	
3.3V	1	3.3V	1
5V	2	5V	2
I2C0 SDA	3	I2C1 SDA	3
I2C0 SCL	5	I2C1 SCL	5
GPIO4	7	GPIO4	7
DNC	9	GROUND	10
GPIO17	11	GPIO17	11
GPIO21	13	GPIO27	13
GPIO22	15	GPIO22	15
DNC	17	3.3V	17
SP10 MOSI	19	SP10 MOSI	19
SP10 MISO	21	SP10 MISO	21
SP10 SCLK	23	SP10 SCLK	23
DNC	25	GROUND	25

## Nano Text Editor

List commands: **CTRL+G**  
Save File: **CTRL+O**  
Exit Nano: **CTRL+X**  
Cut Line: **CTRL+K**  
Copy Line: **ALT+6**  
Search for Text: **CTRL+W**  
Search and Replace: **ALT+R**  
Go to line and column: **ALT+G**  
Indent Line: **ALT+}**  
Un-indent Line: **ALT+{**  
Move to start of line: **CTRL+A**  
Move to end of line: **CTRL+E**

## Safety

- Unplug the PI before making connections
- 50mA max current from 3.3V supply
- Don't use alligator clips for connections
- Use female jumper wires
- Don't touch the header while PI is on
- I/O Pins only 3.3V tolerant



# Programming RPI.GPIO

**sudo apt-get install python-dev**

import RPi.GPIO as GPIO  
GPIO.setmode(GPIO.BOARD or GPIO.BCM)

# To configure a pin  
GPIO.setup([pin num], GPIO.OUT or GPIO.IN)

# To set an output pin state  
GPIO.output([pin num], GPIO.HIGH or GPIO.LOW)

# To read an input pin  
GPIO.input([pin number])

GPIO.cleanup()

Comment line in  
`/etc/modprobe.d/raspi-blacklist.conf`

Sending data from command line:  
`echo -ne "[data]" > /dev/spidev0.0`

<https://github.com/doceme/py-spidev>

```
import spidev
spi=spidev.SpiDev()
spi.open(0,0)
spi.xfer2([data], [max_speed_hz])
spi.close()
```

## I2C

Comment line in  
`/etc/modprobe.d/raspi-blacklist.conf`

Add lines to `/etc/modules` file:  
i2c-bcm2708  
i2c-dev

**sudo apt-get install python-smbus**  
**sudo apt-get install i2c-tools**  
**sudo i2cdetect -y 1**

```
import smbus
i2c = smbus.SMBus(1)
i2c.read_byte_data(device addr, register addr)
i2c.read_word_data(device addr, register addr)
```

## Twitter

**sudo apt-get install python-pip**  
**sudo pip install twython**

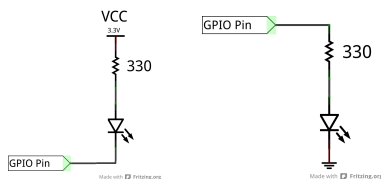
<https://dev.twitter.com/apps>

```
from twython import Twython
twitter = Twython("Consumer Key",
"Consumer Secret", "Access Token",
"Token Secret")
```

```
twitter.update_status(status="Your tweet")
```

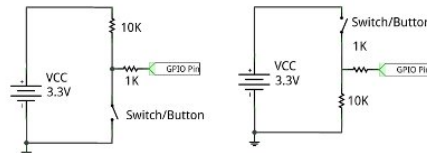
# Electronics LED

## Configure I/O pin as output

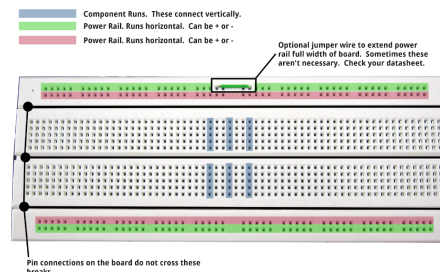


## Switch and Button

### Configure I/O pin as input



## Breadboard



## Safety

- Always ground yourself before touching components
- Never connect opposite power rails together (short circuit)
- Never directly interface 5V to 3.3V
- Always read the datasheet