Installing the Python Library

```
sudo pip3 install rpi_ws281x
```

Ref for Python: https://github.com/rpi-ws281x/rpi-ws281x-python

Ref for Rust: https://github.com/rpi-ws281x/rpi-ws281x-rust

Be careful with these 2 parameters.

```
# ----------------------------------

# Number of LED pixels.

LED_COUNT = 8

# GPIO pin connected to the pixels (must
support PWM!).

GPIO_PIN = 18

# ----------------------------------
```

save this file as **neopixel.py**

```
#!/usr/bin/python3

from rpi_ws281x import PixelStrip, Color
import time
import argparse

# ----------------------------------
LED_COUNT = 8          # Number of LED pixels.
GPIO_PIN = 18          # GPIO pin connected to the
pixels (must support PWM!).
# ----------------------------------
```

```
FREQ = 800000         # LED signal frequency in hertz
(usually 800khz)
DMA = 10              # DMA channel to use for
generating signal (try 10)
LED_BRIGHTNESS = 255  # Set to 0 for darkest and 255
for brightest

# True to invert the signal (when using NPN transistor
level shift)
LED_INVERT = False

# Intialize the library (must be called once before
other functions).
strip = PixelStrip(LED_COUNT, GPIO_PIN, FREQ, DMA,
LED_INVERT, LED_BRIGHTNESS)
strip.begin()

# Define functions which animate LEDs in various ways.
def colorWipe(strip, color, wait_ms=50):
    """Wipe color across display a pixel at a time."""
    for i in range(strip.numPixels()):
        strip.setPixelColor(i, color)
        strip.show()
        time.sleep(wait_ms / 1000.0)


def theaterChase(strip, color, wait_ms=50,
iterations=10):
    """Movie theater light style chaser animation."""
    for j in range(iterations):
        for q in range(3):
            for i in range(0, strip.numPixels(), 3):
                strip.setPixelColor(i + q, color)
            strip.show()
            time.sleep(wait_ms / 1000.0)
            for i in range(0, strip.numPixels(), 3):
                strip.setPixelColor(i + q, 0)
```

```
def wheel(pos):
    """Generate rainbow colors across 0-255
positions."""
    if pos < 85:
        return Color(pos * 3, 255 - pos * 3, 0)
    elif pos < 170:
        pos -= 85
        return Color(255 - pos * 3, 0, pos * 3)
    else:
        pos -= 170
        return Color(0, pos * 3, 255 - pos * 3)


def rainbow(strip, wait_ms=20, iterations=1):
    """Draw rainbow that fades across all pixels at
once."""
    for j in range(256 * iterations):
        for i in range(strip.numPixels()):
            strip.setPixelColor(i, wheel((i + j) &
255))
        strip.show()
        time.sleep(wait_ms / 1000.0)


def rainbowCycle(strip, wait_ms=20, iterations=5):
    """Draw rainbow that uniformly distributes itself
across all pixels."""
    for j in range(256 * iterations):
        for i in range(strip.numPixels()):
            strip.setPixelColor(i, wheel(
                (int(i * 256 / strip.numPixels()) + j)
& 255))
        strip.show()
        time.sleep(wait_ms / 1000.0)


def theaterChaseRainbow(strip, wait_ms=50):
    """Rainbow movie theater light style chaser
animation."""
    for j in range(256):
```

```
        for q in range(3):
            for i in range(0, strip.numPixels(), 3):
                strip.setPixelColor(i + q, wheel((i +
j) % 255))
            strip.show()
            time.sleep(wait_ms / 1000.0)
            for i in range(0, strip.numPixels(), 3):
                strip.setPixelColor(i + q, 0)


# Main program logic follows:
if __name__ == '__main__':
    # Process arguments
    parser = argparse.ArgumentParser()
    parser.add_argument('-c', '--clear',
action='store_true', help='clear the display on exit')
    args = parser.parse_args()

    # Create NeoPixel object with appropriate
configuration.
    strip = PixelStrip(LED_COUNT, LED_PIN,
LED_FREQ_HZ, LED_DMA, LED_INVERT, LED_BRIGHTNESS,
LED_CHANNEL)
    # Intialize the library (must be called once
before other functions).
    strip.begin()

    print('Press Ctrl-C to quit.')
    if not args.clear:
        print('Use "-c" argument to clear LEDs on
exit')

    try:

        while True:
            print('Color wipe animations.')
            colorWipe(strip, Color(255, 0, 0))  # Red
wipe
            colorWipe(strip, Color(0, 255, 0))  #
Green wipe
```

```
            colorWipe(strip, Color(0, 0, 255))  # Blue
wipe
            print('Theater chase animations.')
            theaterChase(strip, Color(127, 127, 127))
# White theater chase
            theaterChase(strip, Color(127, 0, 0))  #
Red theater chase
            theaterChase(strip, Color(0, 0, 127))  #
Blue theater chase
            print('Rainbow animations.')
            rainbow(strip)
            rainbowCycle(strip)
            theaterChaseRainbow(strip)

    except KeyboardInterrupt:
        if args.clear:
            colorWipe(strip, Color(0, 0, 0), 10)
```

Ref: https://github.com/rpi-ws281x/rpi-ws281x-python/blob/master/examples/strandtest.py

Set executable permission using:

```
chmod +x neopixel.py
```

It needs to be run with root permission using sudo

```
sudo ./neopixel.py
```