

**Announcements**

1. Parts are on the way
2. Zoom video student hours, 1:00p-2:00p EDT, M-F
3. Reading:
  - (a) CircuitPython UART Serial Tutorial and Examples
  - (b) CircuitPython UART API Reference
  - (c) CircuitPython Internal RGB LED Tutorial and Examples
  - (d) CircuitPython NeoPixel API Reference
  - (e) MQTT Version 5.0 Standard
4. Homework 9 is due by noon on 2020-03-30
5. Supplemental materials:
  - (a) Adafruit IO

**Serial Communications**

Communication between the Feather and the ESP-01

- Asynchronous
- Full duplex
- Logic levels (**not** RS-232)

**Example Code**

```
import board
import busio
import time

uart = busio.UART(board.TX,
                  board.RX,
                  baudrate=115200,
                  bits=8,
                  parity=None,
                  stop=1)

# Wake up the ESP-01
uart.write(b"AT+RST\r\n")
time.sleep(5)
```

**Responses from the ESP-01**

```
response = uart.readline()
```

The `.readline()` method waits for an end-of-line and returns the character bytes that were read.

What happens if the ESP-01 never sends a line?

The `.readline()` method waits for `timeout` seconds, then gives up.

### Controlling the RGB LED

```
import time
import board
import neopixel # For Feather M0 Express

led = neopixel.NeoPixel(board.NEOPIXEL, 1)

led.brightness = 0.3

while True:
    led[0] = (255, 0, 0)
    time.sleep(0.5)
    led[0] = (0, 255, 0)
    time.sleep(0.5)
    led[0] = (0, 0, 255)
    time.sleep(0.5)
```