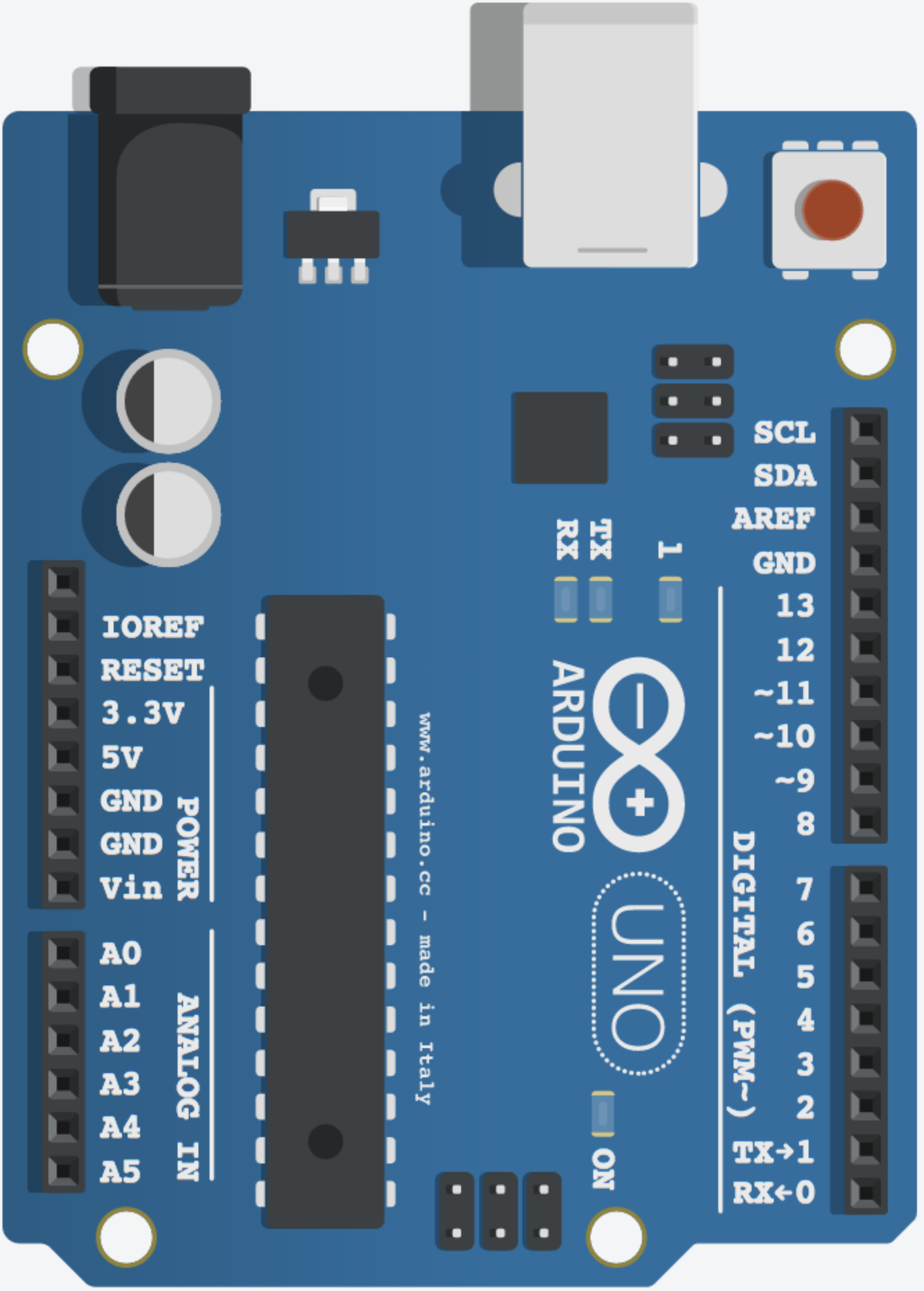
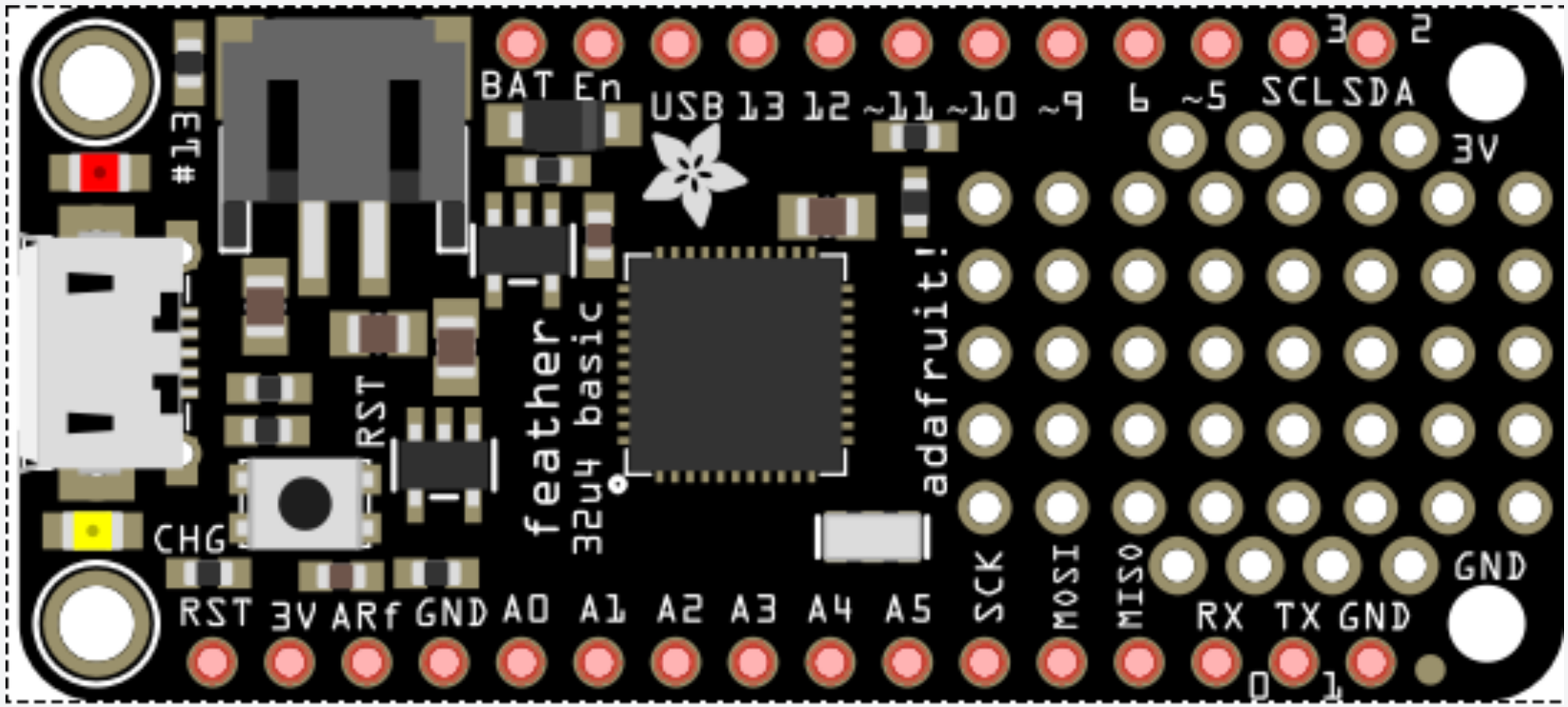
ARDUINO

ARDUINO

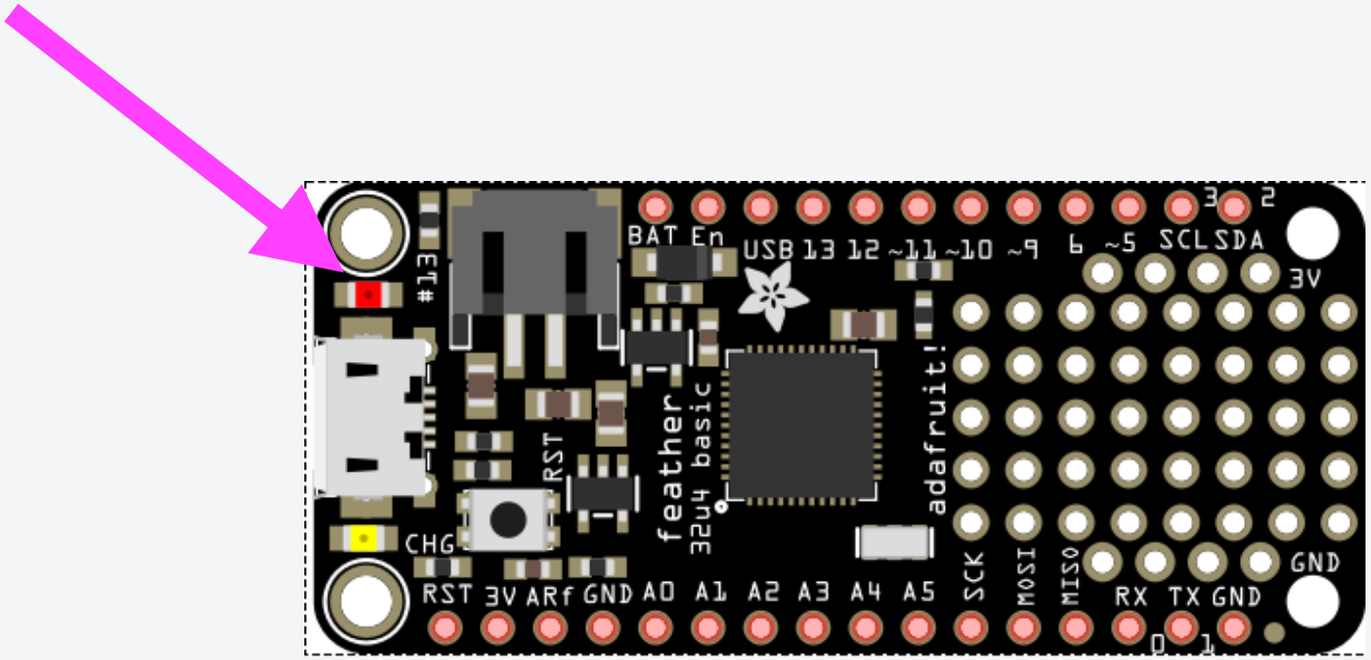
FEATHER 32U4


SCL
SDA
AREF
GND
13
12
~11
~10
~9
8
7
6
5
4
3
2
TX→1
RX←0
DIGITAL (PWM~)
RX
TX
L
ON
UNO
ARDUINO
www.arduino.cc - made in Italy
IOREF
RESET
3.3V
5V
GND
GND
Vin
POWER
A0
A1
A2
A3
A4
A5
ANALOG IN


BAT En
USB 13 12 ~11 ~10 ~9 6 ~5 SCL SDA 3 2
3V
#13
CHG
RST
feather
32u4 basic
adafruit!
RST 3V ARf GND A0 A1 A2 A3 A4 A5 SCK MOSI MISO RX TX GND
GND
0 1

HELLO LED!

BLINK


#13
BAT En
USB 13 12 ~11 ~10 ~9 6 ~5 SCL SDA
3 2
3V
feather
32u4 basic
adafruit!
RST
CHG
RST 3V ARf GND A0 A1 A2 A3 A4 A5 SCK MOSI MISO RX TX GND
GND
0 1

BLINK

Blink | Arduino 1.6.7

Blink §

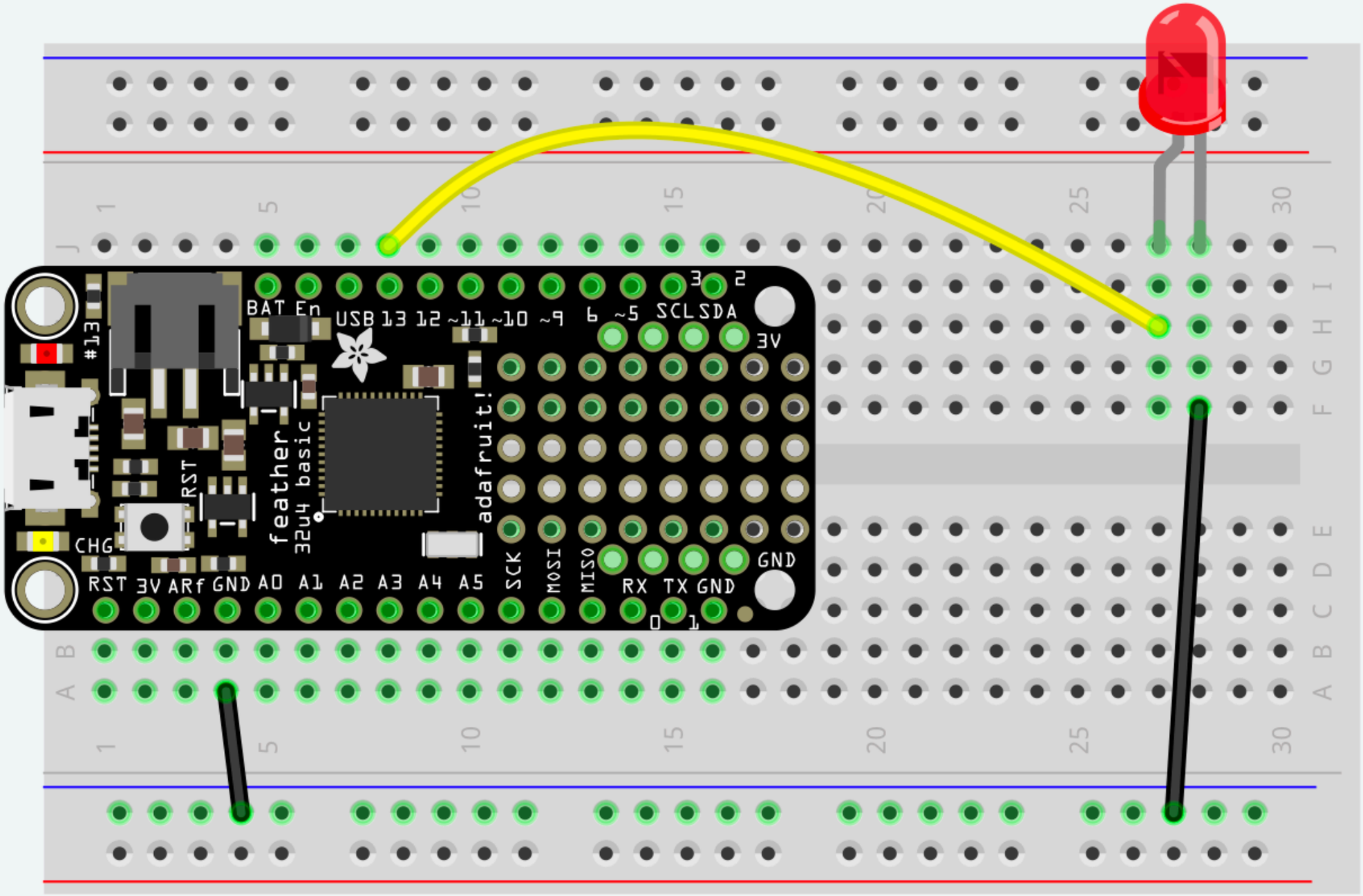
```
const int LED = 13;

void setup() {
  pinMode(LED, OUTPUT);
}

void loop() {
  // turn the LED on (HIGH is the voltage level)
  digitalWrite(LED, HIGH);

  // wait for a second
  delay(1000);

  // turn the LED off by making the voltage LOW
  digitalWrite(LED, LOW);

  // wait for a second
  delay(1000);
}
```

Auto Format finished.

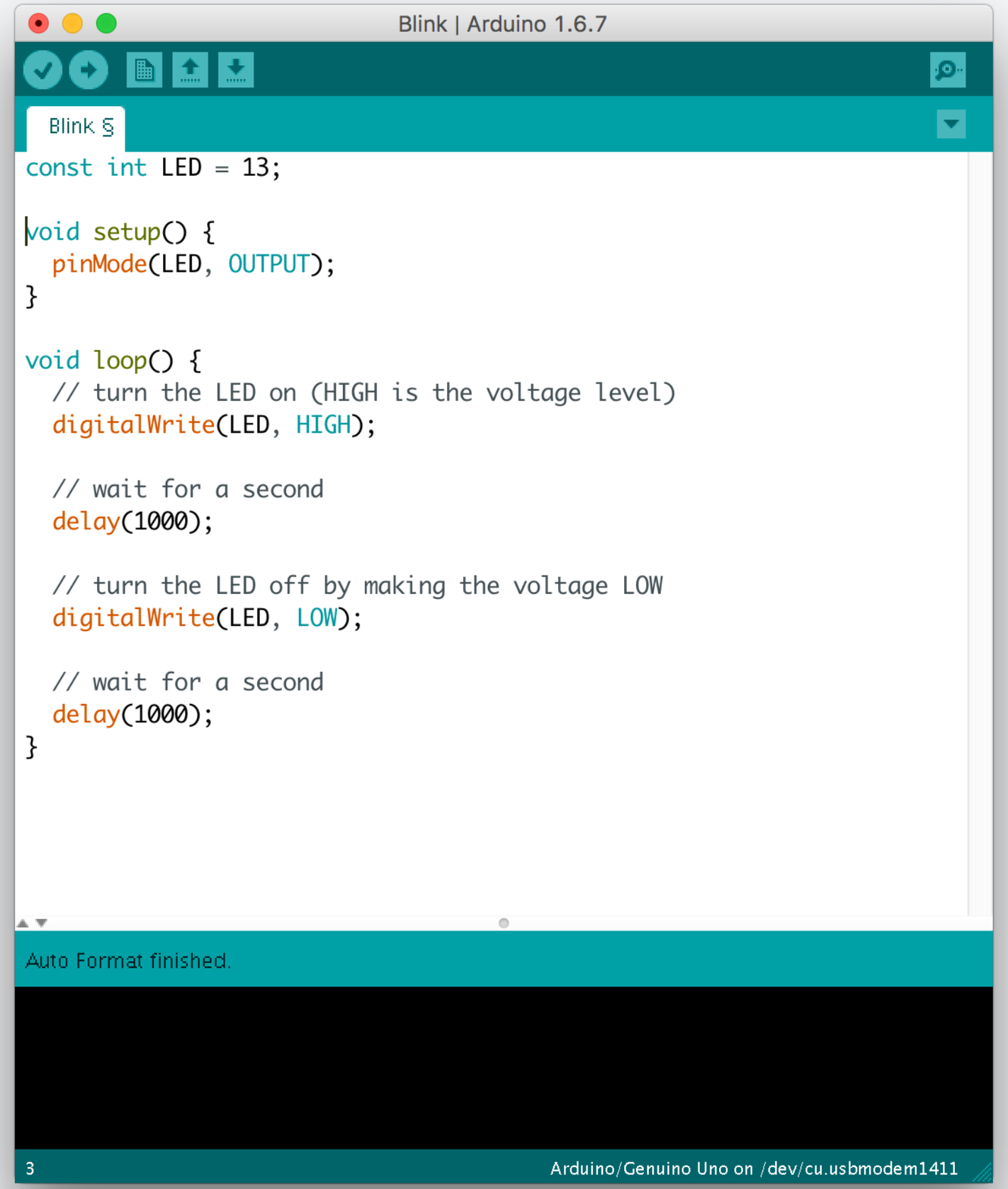
3 Arduino/Genuino Uno on /dev/cu.usbmodem1411

Try changing the blink frequency, then try creating a pattern.

BLINK 2

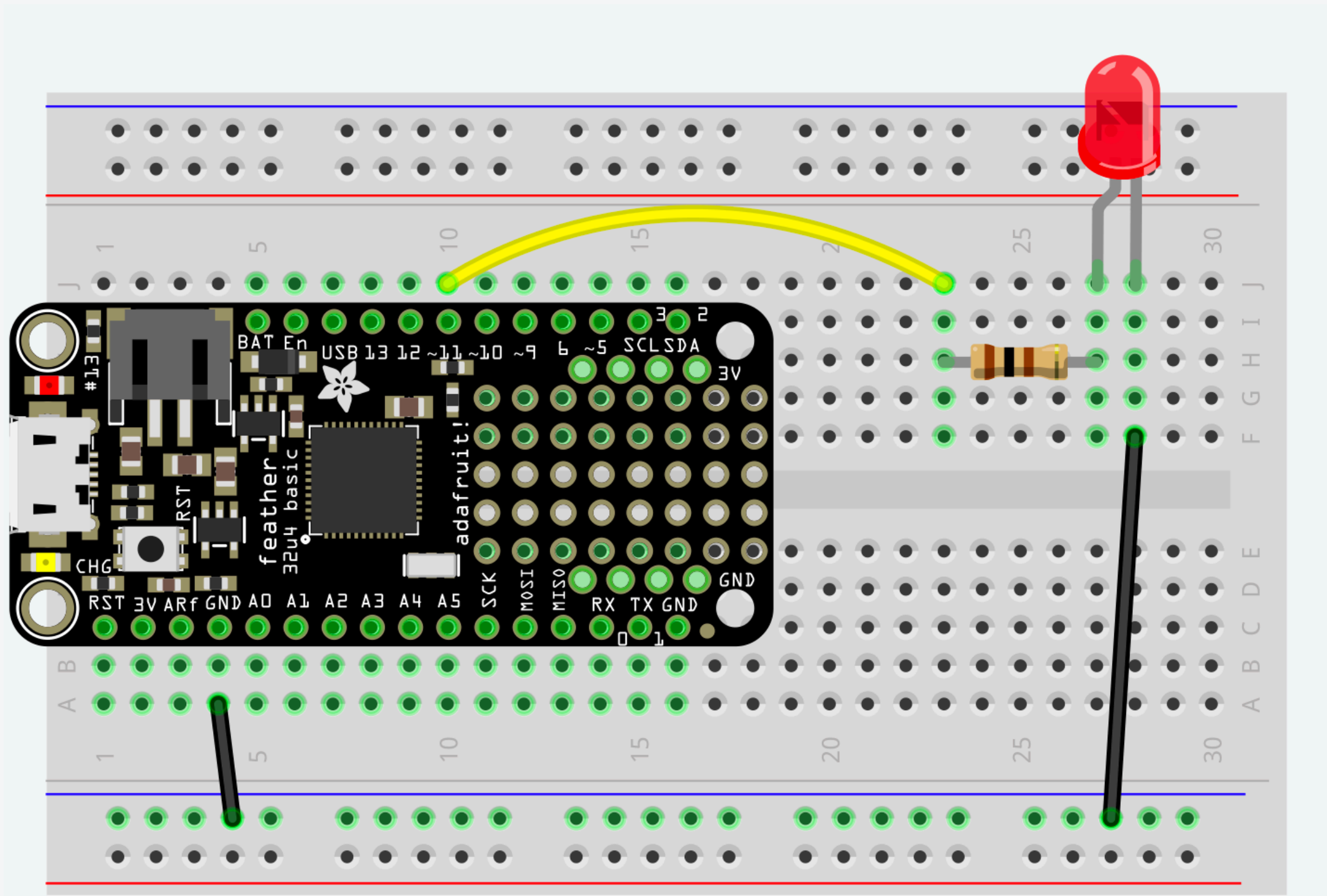

BAT En
USB 13 12 ~11 ~10 ~9 6 ~5 SCL SDA
3 2
3V
#13
RST
feather
32u4 basic
adafruit!
CHG
RST 3V ARf GND A0 A1 A2 A3 A4 A5 SCK MOSI MISO
RX TX GND
GND
0 1
J 1 5 10 15 20 25 30
A B C D E F G H I J

BLINK 2



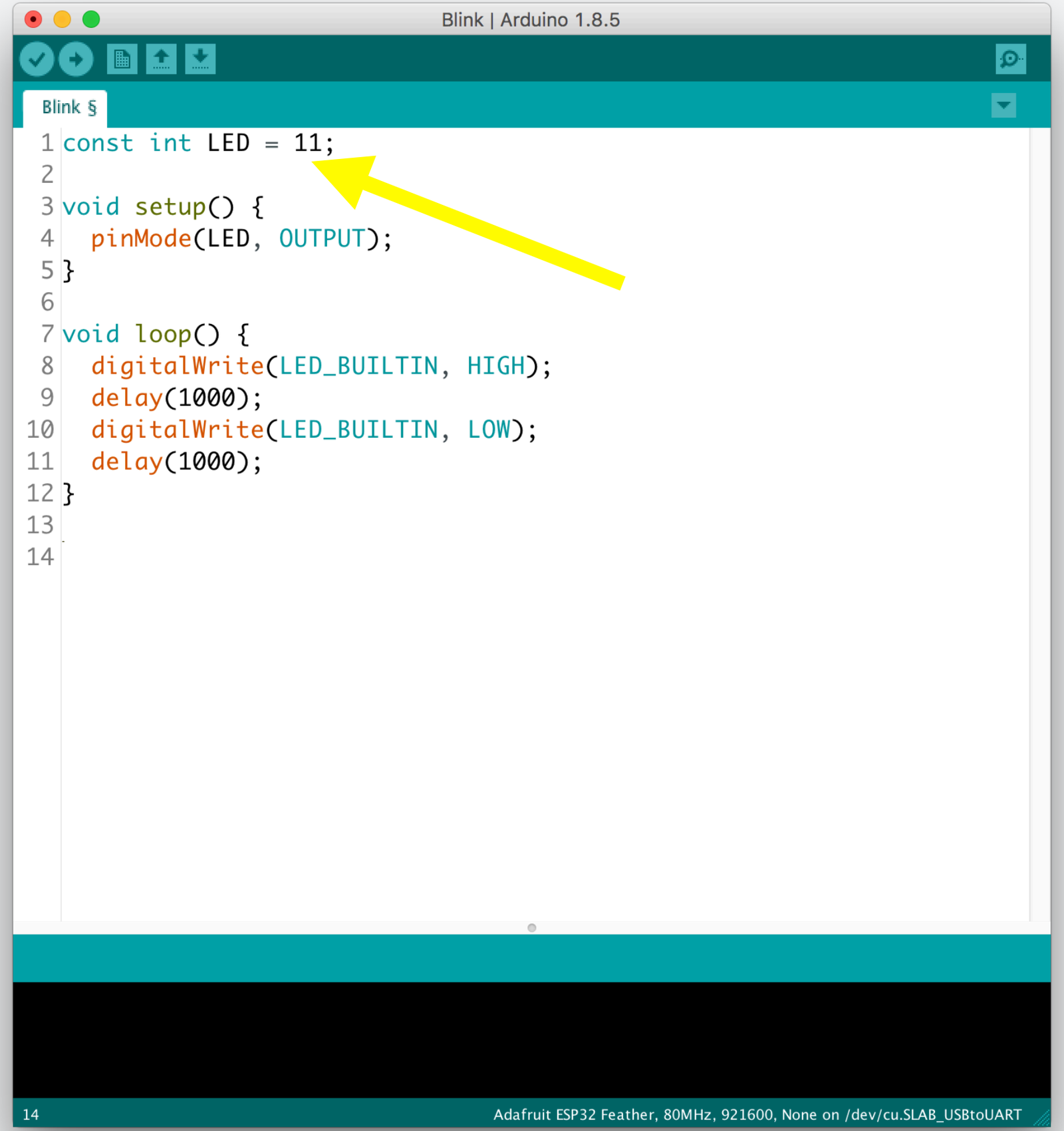
Notice that the code is the same as Blink 1

BLINK 3



* Resistor is 100Ω (Brown Black Brown)

BLINK 3

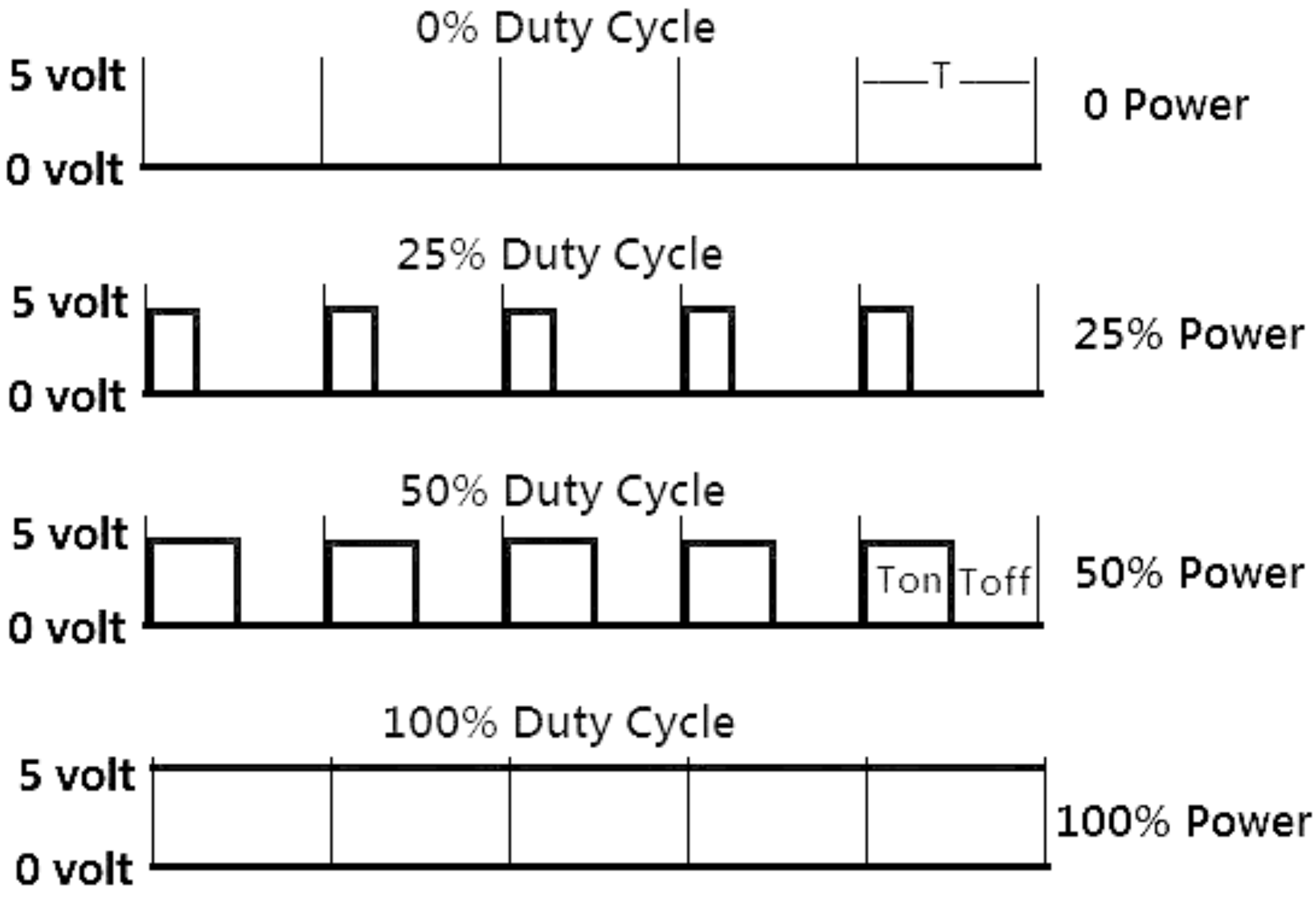

Blink | Arduino 1.8.5
Blink §
1 const int LED = 11;
2
3 void setup() {
4 pinMode(LED, OUTPUT);
5 }
6
7 void loop() {
8 digitalWrite(LED_BUILTIN, HIGH);
9 delay(1000);
10 digitalWrite(LED_BUILTIN, LOW);
11 delay(1000);
12 }
13
14
14
Adafruit ESP32 Feather, 80MHz, 921600, None on /dev/cu.SLAB_USBtoUART

Try connecting more LEDs to other pins. What patterns can you create? What limits/ complications are caused by using the `delay` function?

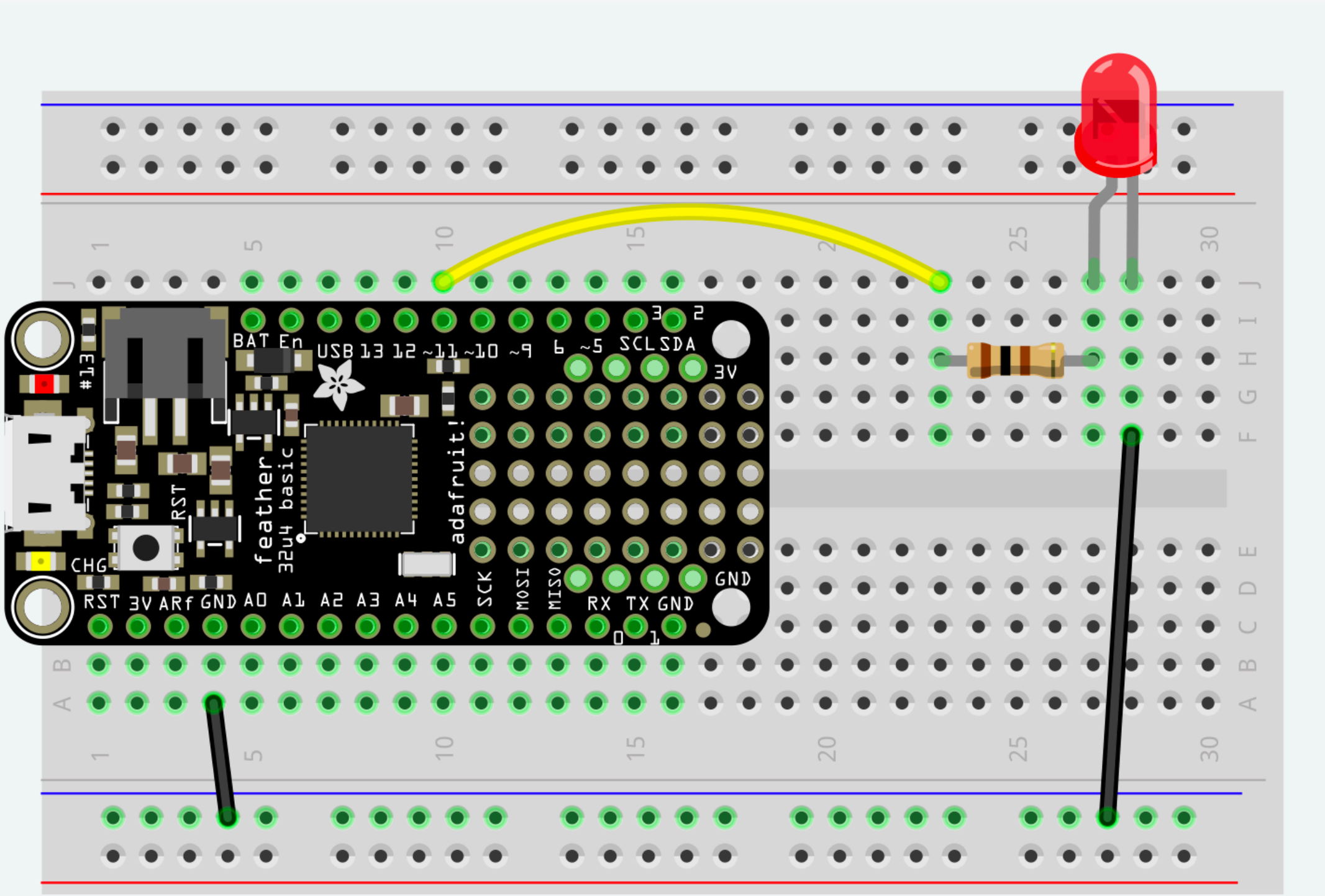
ANALOG OUT

(PULSE WIDTH MODULATION)

PULSE WIDTH MODULATION



PWM LED


BAT En
USB 13 12 ~11 ~10 ~9 6 ~5 SCL SDA
3 2
3V
#13
RST
feather
32u4 basic
adafruit!
CHG
RST 3V ARf GND A0 A1 A2 A3 A4 A5 SCK MOSI MISO RX TX GND
0 1
GND
J 1 5 10 15 20 25 30 F G H I J
A B 1 5 10 15 20 25 30 A B C D E F

PWM LED

sketch_jan16a | Arduino 1.8.5

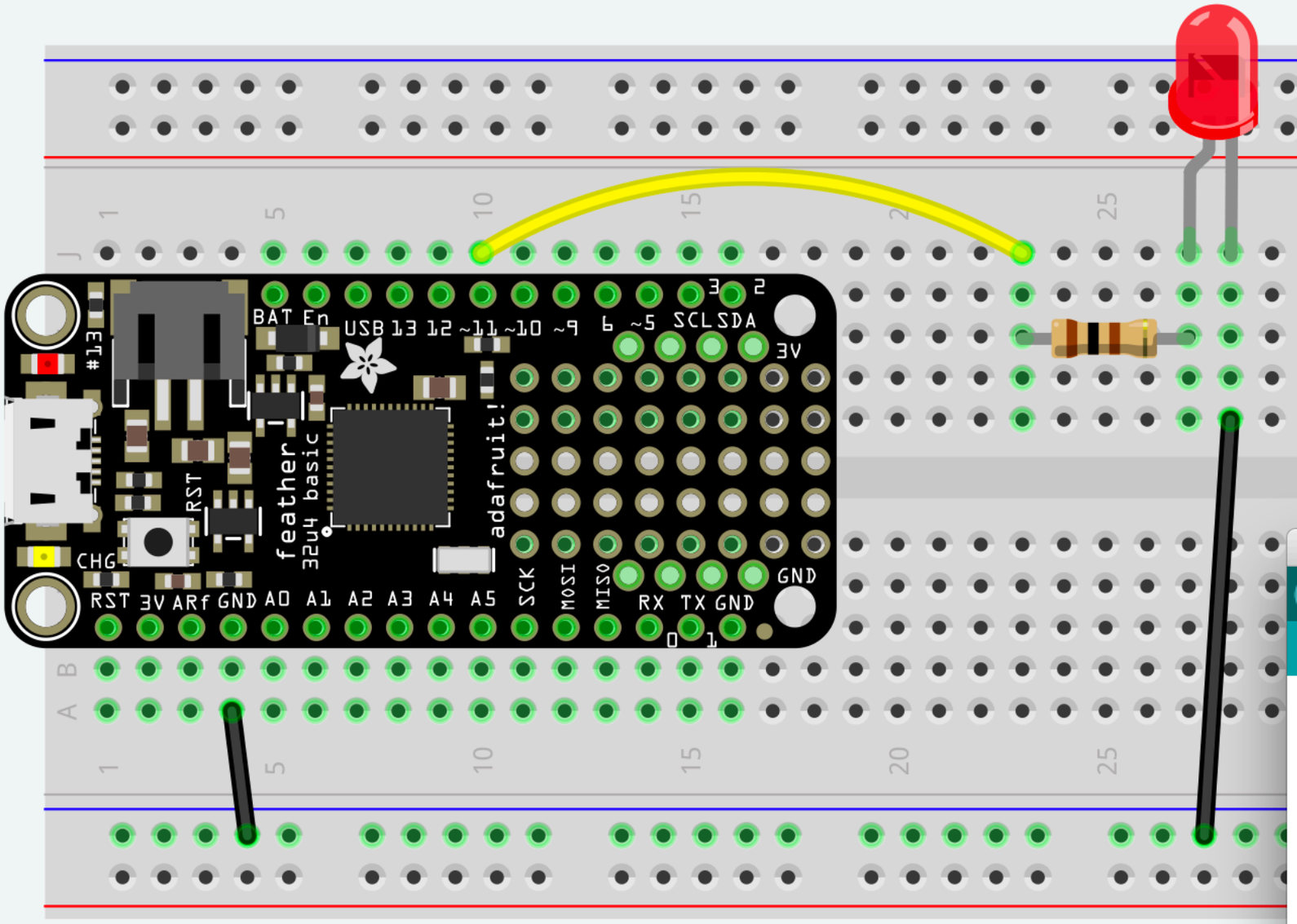
sketch_jan16a §

```
const int LED = 11;


void setup() {
  pinMode(LED, OUTPUT);
}

void loop() {
  for (int i = 0; i <= 255; i += 5) {
    analogWrite(LED, i);
    delay(30);
  }

  for (int i = 255; i >= 0; i -= 5) {
    analogWrite(LED, i);
    delay(30);
  }
}
```

Auto Format finished.

21 Adafruit ESP32 Feather, 80MHz, 921600, None on /dev/cu.SLAB_USBtoUART

PWM LED



sketch_jan16a | Ar

sketch_jan16a §

```ino
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  }

  for (int i = 255; i >= 0; i -= 5) {
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    delay(30);
  }
}
```