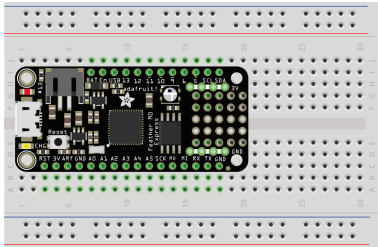


Lab. 2.1 - On-board LED blinking

Lista dei materiali

1x Adafruit Feather M0

Schematics e wiring del circuito



on-board LED board.D13

Codice CircuitPython

```
# Lab 2.1 - onboard LED blinking
import board
import digitalio
import time

led = digitalio.DigitalInOut(board.D13)
led.direction = digitalio.Direction.OUTPUT

while True:
    led.value = True
    time.sleep(1)
    led.value = False
    time.sleep(0.5)
```

Lab. 2.2 - External LED blinking

Lista dei materiali

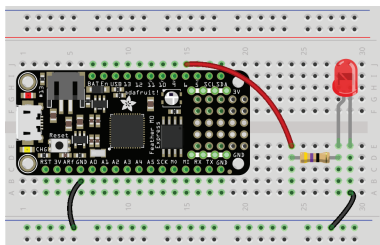
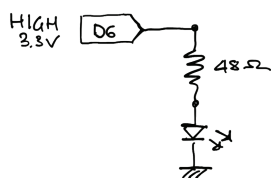
1x Adafruit Feather M0

1x LED

1x resistenza 48Ω

jumper

Schematics e wiring del circuito



LED board.D6

Codice CircuitPython

```
# Lab 2.2 - external LED blinking
import board
import digitalio
import time

led = digitalio.DigitalInOut(board.D6)
led.direction = digitalio.Direction.OUTPUT

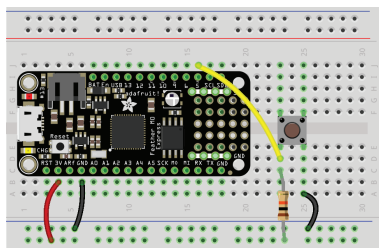
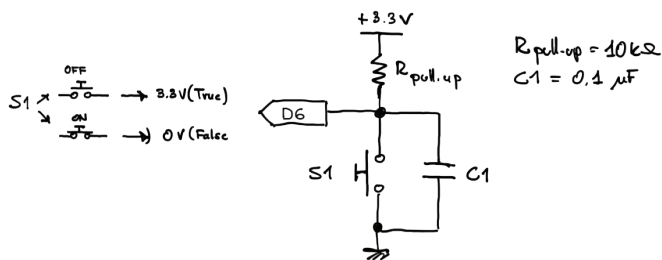
while True:
    led.value = True
    time.sleep(1)
    led.value = False
    time.sleep(0.5)
```

Lab. 2.3 - Toggle on-board LED with external pull-up resistor

Lista dei materiali

- 1x Adafruit Feather M0
- 1x momentary switch
- 1x resistenza 10kΩ

Schematics e wiring del circuito



on-board LED board.D13

Codice CircuitPython

```
# Lab 2.3 - toggle onboard LED
# toggle onboard LED with pushbutton,
# using external pull-up resistor
import time
import board
import digitalio

led = digitalio.DigitalInOut(board.D13)
led.direction = digitalio.Direction.OUTPUT

switch = digitalio.DigitalInOut(board.D6)
switch.direction = digitalio.Direction.INPUT

while True:
    if switch.value:
        led.value = False
    else:
        led.value = True

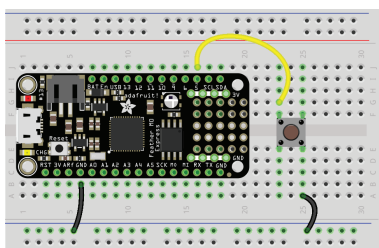
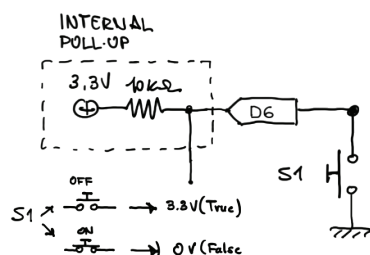
    time.sleep(0.01)
```

Lab. 2.4 - Toggle on-board LED using the internal pull-up resistor

Lista dei materiali

- 1x Adafruit Feather M0
- 1x momentary switch

Schematics e wiring del circuito



on-board LED board.D13

Codice CircuitPython

```
# Lab 2.4 - toggle onboard LED
# toggle onboard LED with pushbutton,
# using internal pull-up resistor
import time
import board
import digitalio

led = digitalio.DigitalInOut(board.D13)
led.direction = digitalio.Direction.OUTPUT

switch = digitalio.DigitalInOut(board.D6)
switch.direction = digitalio.Direction.INPUT
switch.pull = digitalio.Pull.UP

while True:
    if switch.value:
        led.value = False
    else:
        led.value = True

    time.sleep(0.01)
```

Lab. 2.5 - Toggle LED with external pull-up resistor**Lista dei materiali**

1x Adafruit Feather M0
1x momentary switch
1x resistenza 10k Ω

Schematics e wiring del circuito

A25-1. Disegnare prima lo schema del circuito modificando quello del Lab 2.3;
A25-2. Effettuare il cablaggio (wiring) del circuito su breadboard.

Codice CircuitPython

A25-3. A partire dal codice del Lab 2.2 e 2.3 scrivere il codice in CircuitPython

Lab. 2.6 - Toggle LED using the internal pull-up resistor**Lista dei materiali**

1x Adafruit Feather M0
1x momentary switch

Schematics e wiring del circuito

A26-1. Disegnare prima lo schema del circuito modificando quello del Lab 2.3;
A26-2. Effettuare il cablaggio (wiring) del circuito su breadboard.

Codice CircuitPython

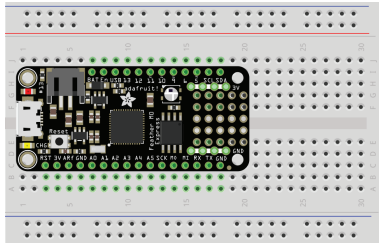
A26-3. A partire dal codice del Lab 2.2 e 2.3 scrivere il codice in CircuitPython

Lab. 2.7 - Turn on the on-board NeoPixel

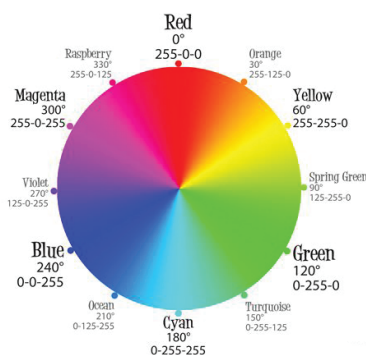
Lista dei materiali

1x Adafruit Feather M0

Schematics e wiring del circuito



on-board NeoPixel
board.NEOPIXEL



Codice CircuitPython

```
# Lab 2.7 - on-board NeoPixel
# turn on the on-board neopixel

import time
import board
import digitalio
import neopixel

dot = neopixel.NeoPixel(board.NEOPIXEL, 1,
    brightness=0.20, auto_write=False)

while True:
    # turn on neopixel, i.e. show red
    color = (255,0,0)
    dot.fill(color)
    dot.show()
    time.sleep(1)
    # turn off neopixel, i.e. show black
    color = (0,0,0)
    dot.fill(color)
    dot.show()
    time.sleep(1)
```

A27-1. Modificare il colore utilizzando la ruota dei colori

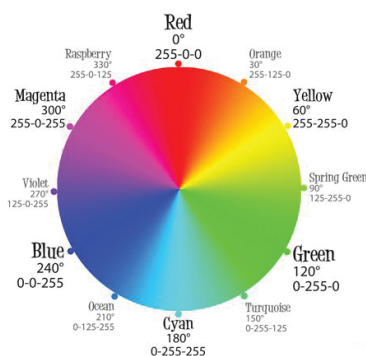
Lab. 2.8 - Programmare un semaforo

Lista dei materiali

1x Adafruit Feather M0

1x momentary switch (solo A28-2)

Color wheel



Codice CircuitPython

A28-1. Modificare il codice del Lab 2.7 per simulare il ciclo di un semaforo:

1. semaforo verde per 4s
2. semaforo giallo per 1s
3. semaforo rosso per 2s

A28-2. Modificare lo schema del circuito come nel Lab 2.4 e modificare il codice del Lab 2.8 A28-1 per simulare la presenza di un pulsante per l'attraversamento pedonale.

Se viene premuto il pulsante, dopo 1s scatta il giallo e poi il verde.