

Learning *circuit* *python*

Without the Hardware Using Device Simulator Express

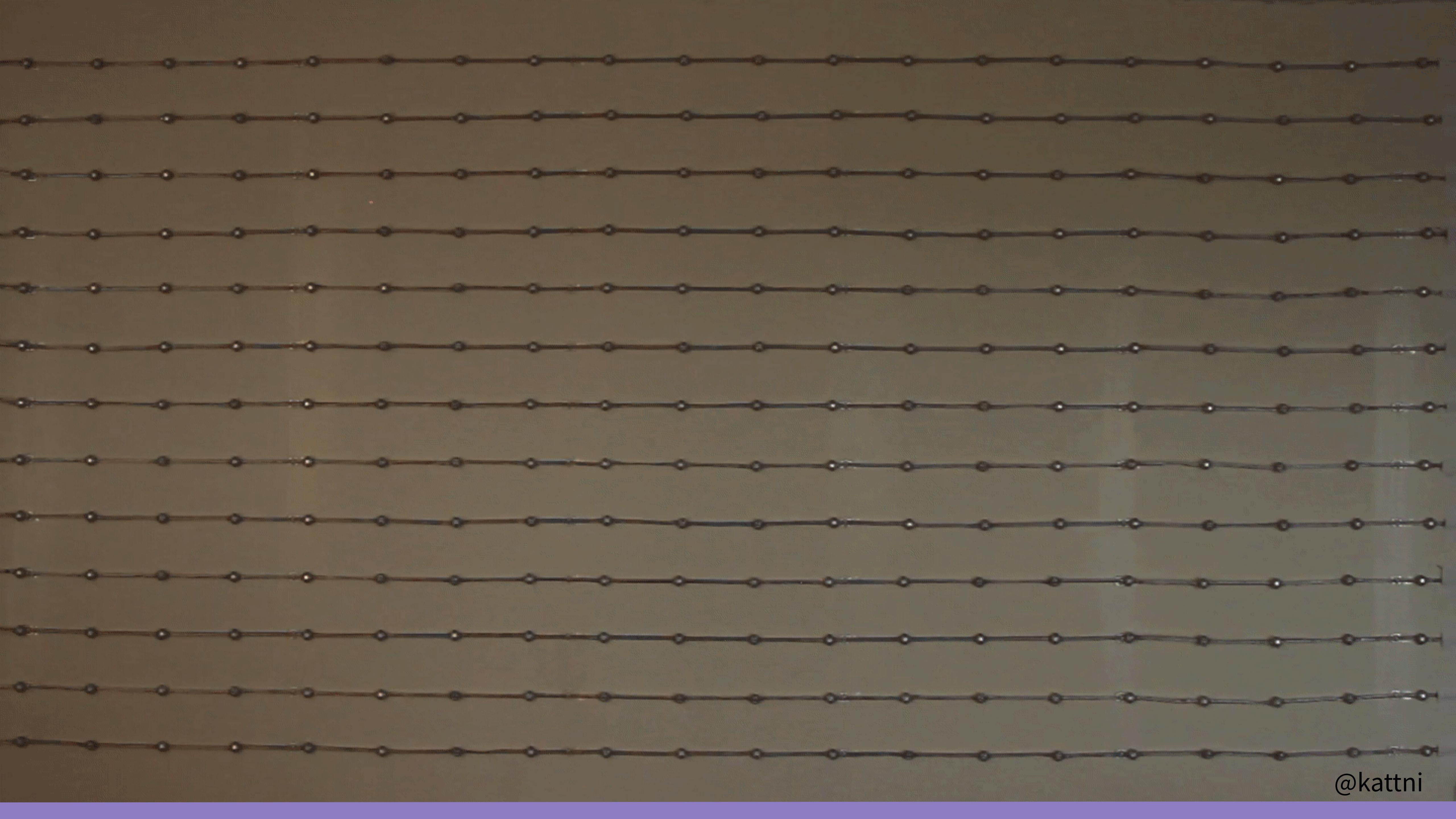
Kattni Rembor

Python on Hardware

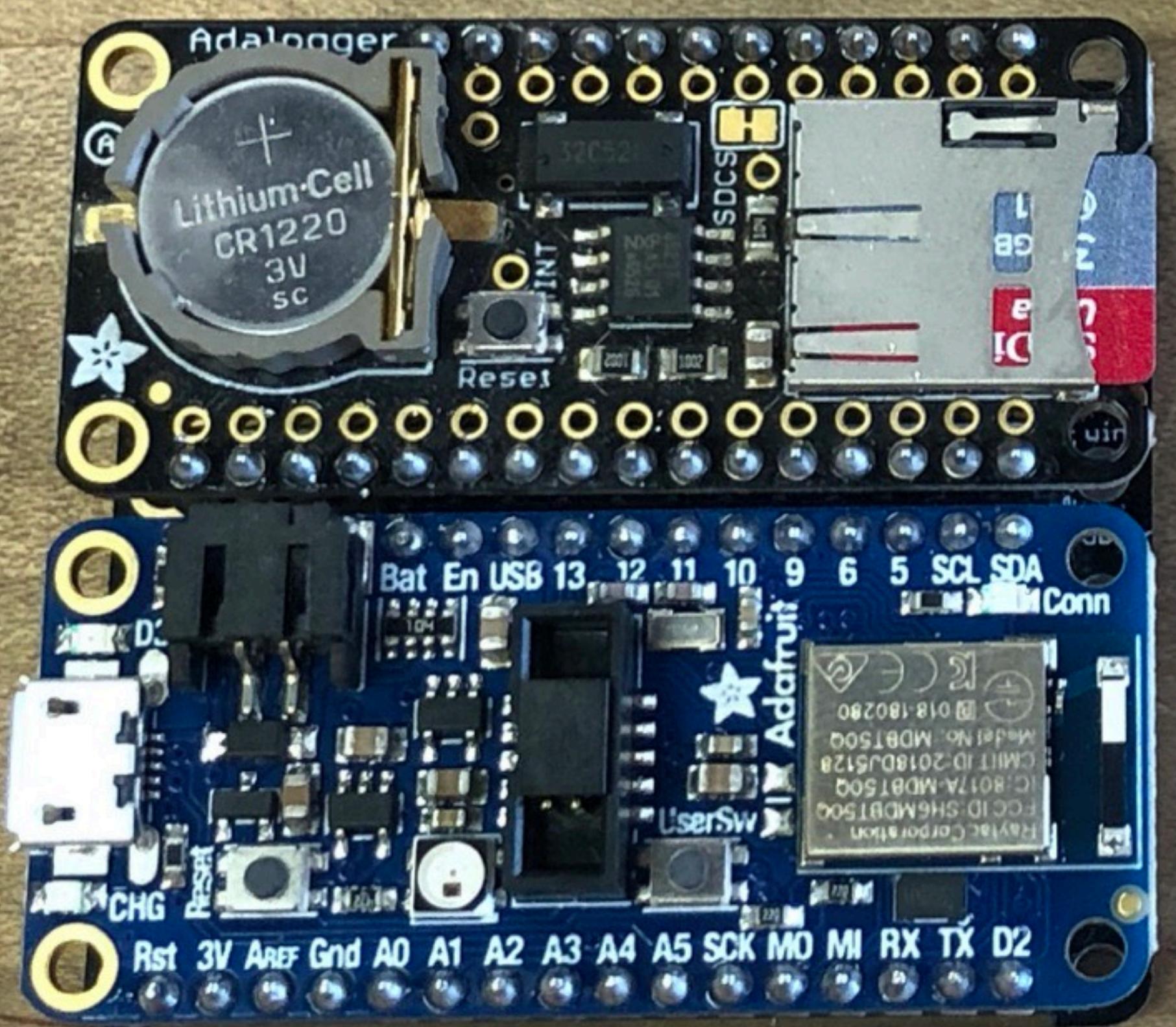
- Python on your computer vs. python on a microcontroller
- Data manipulation vs. physical world
- Hardware is fun!
- You can do things like...



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Learning CircuitPython without the Hardware

- Adafruit Learn Guides
- Device Simulator Express - VS Code extension
- MakeCode - some versions support Python

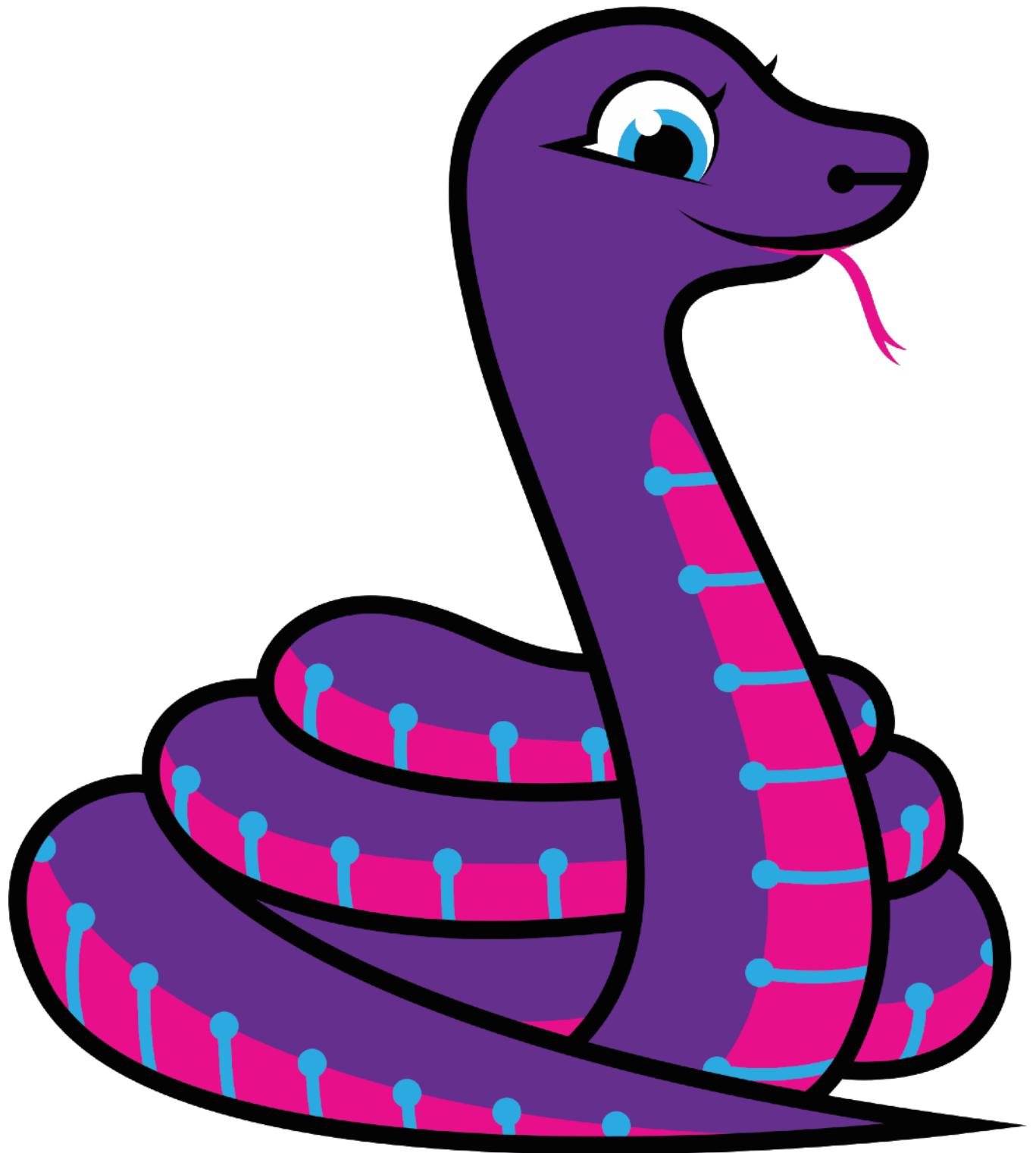
Blinky: The CircuitPython “Hello, world!”

```
import time
from adafruit_circuitplayground import cp

while True:
    cp.red_led = True
    time.sleep(0.5)
    cp.red_led = False
    time.sleep(0.5)
```

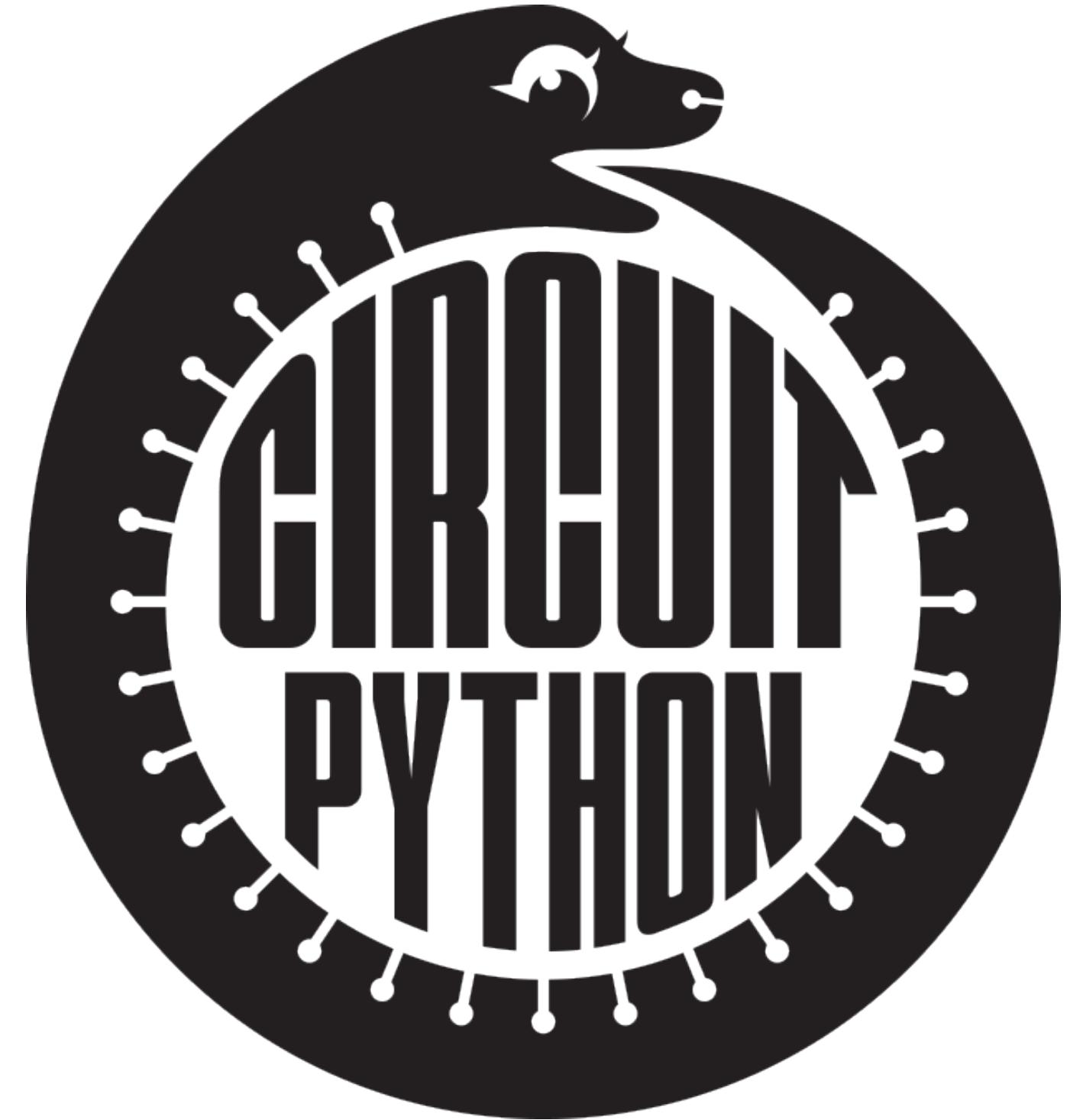
What is CircuitPython?

- Open Source
- Amazing, supportive community
- Runs on microcontrollers
- Higher level programming language
- Designed for learning
- Lowers the barrier for entry



Why would I use CircuitPython?

- New to programming
- Get your project up and running quickly
- Easily update your code - live!
- Serial console and REPL
- Broad hardware support
- It's Python!
- Open Source Software on Open Source Hardware

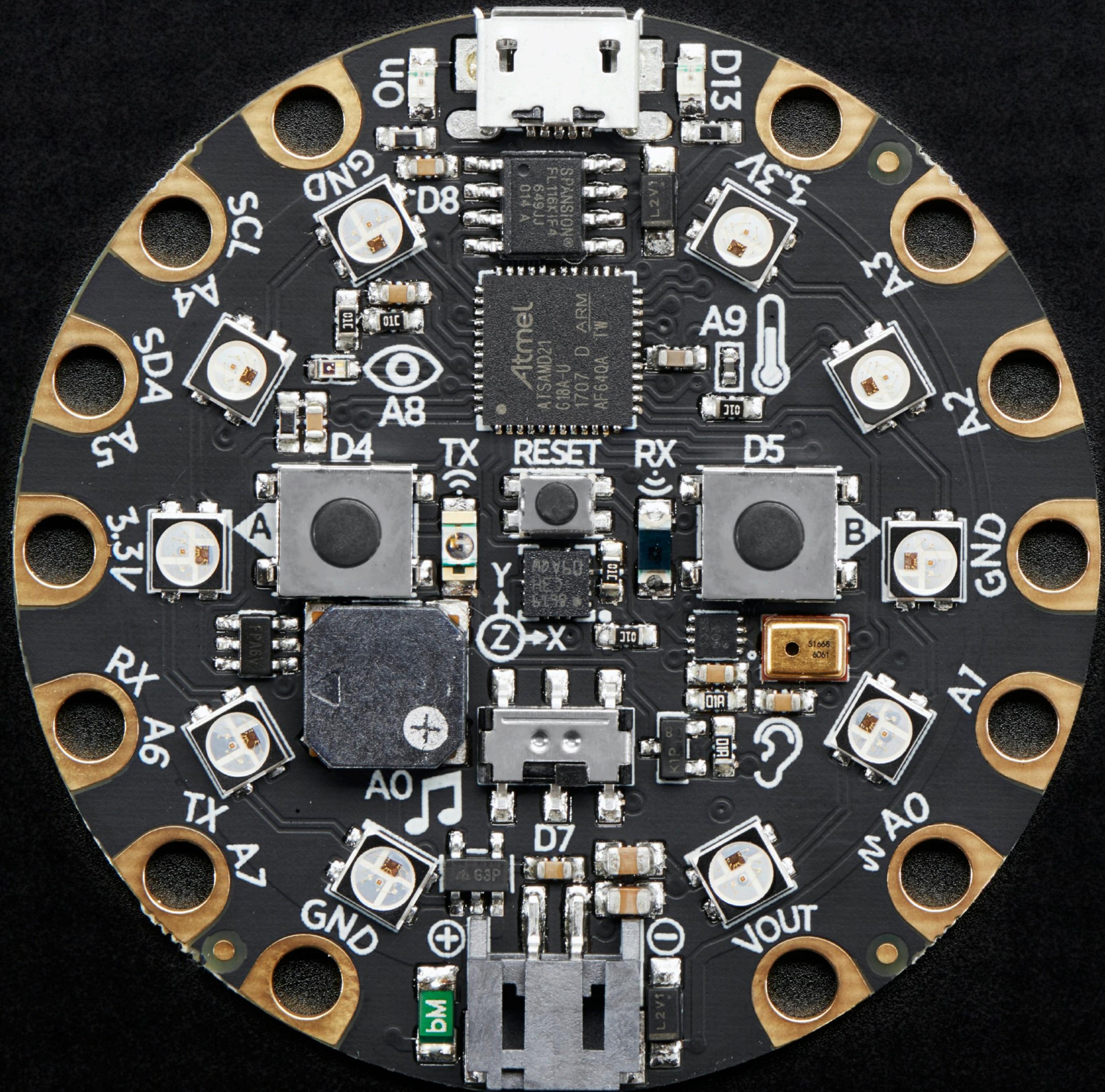


The Adafruit CircuitPython Community

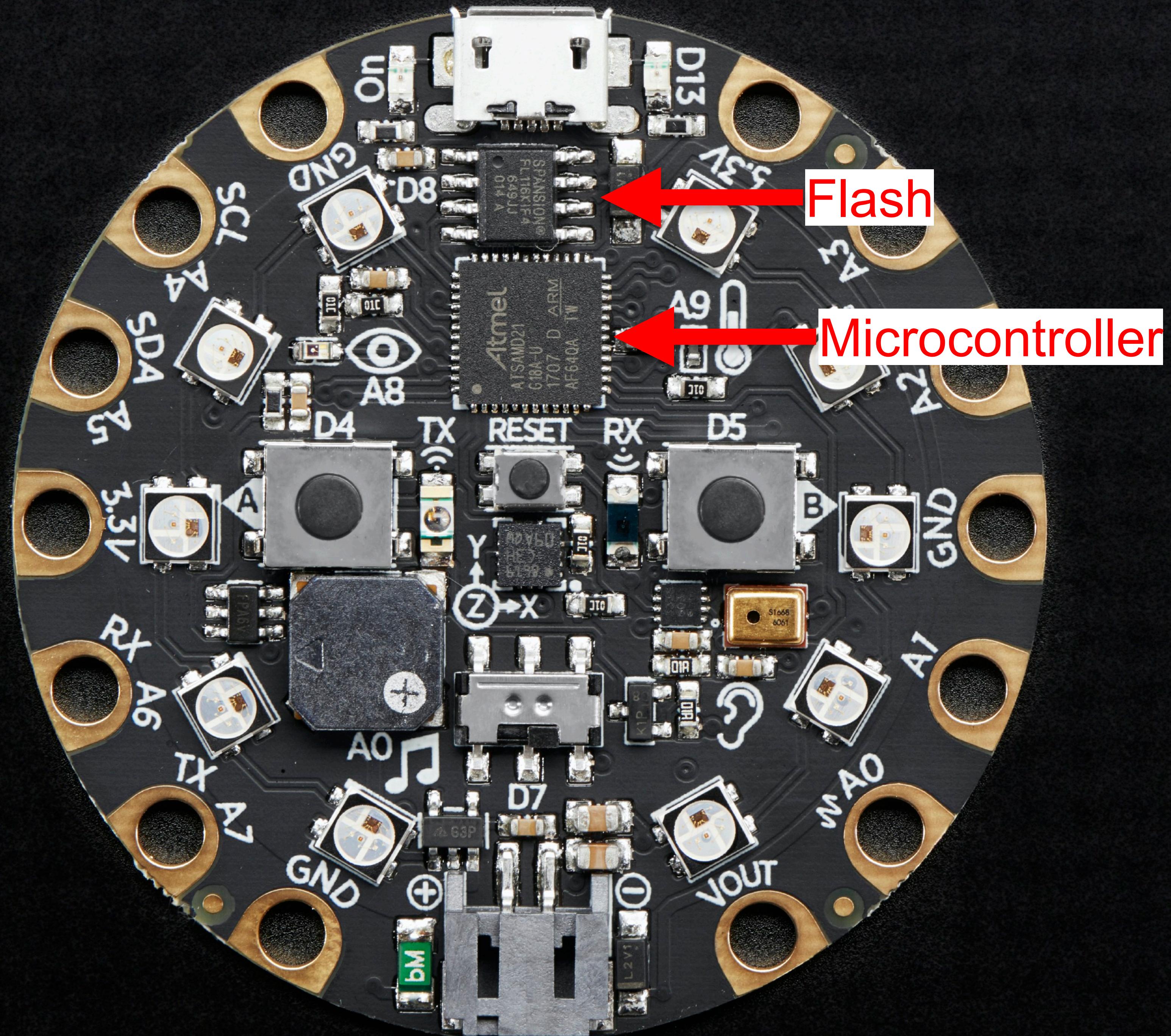
- Everyone's welcome!
- Open Source Community
- Discord
- Forums
- GitHub

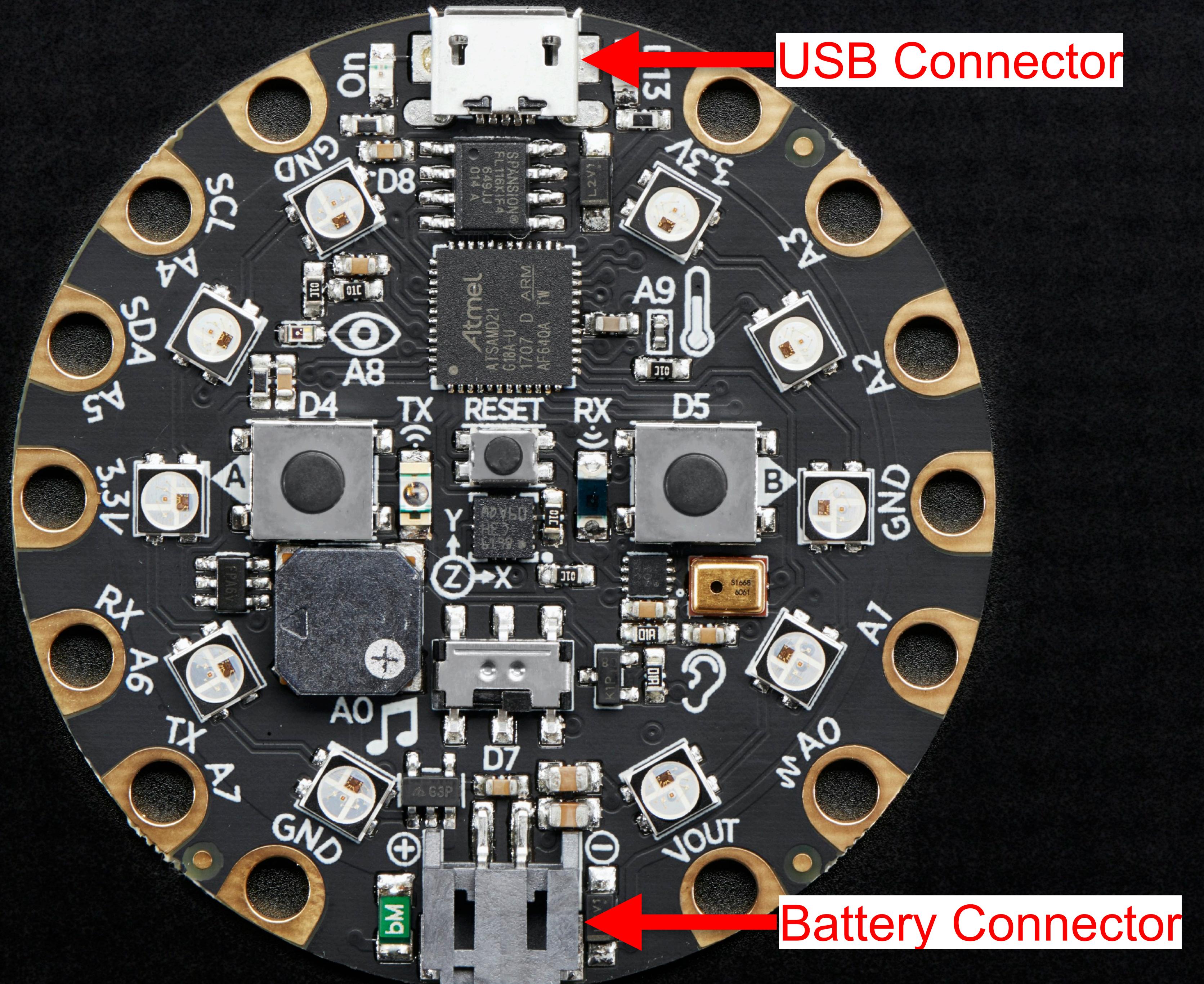
CODE + COMMUNITY = *circuit*python

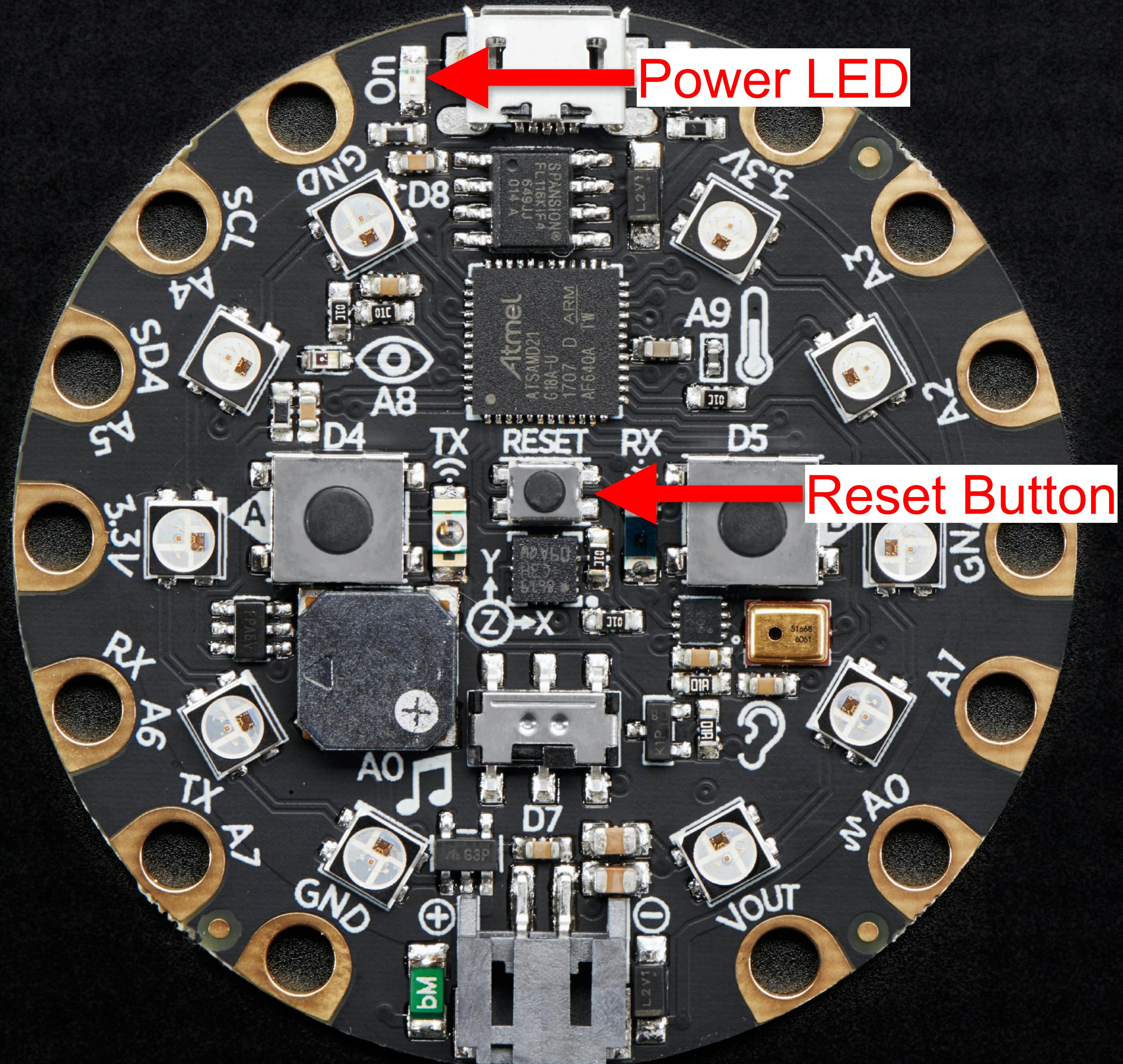
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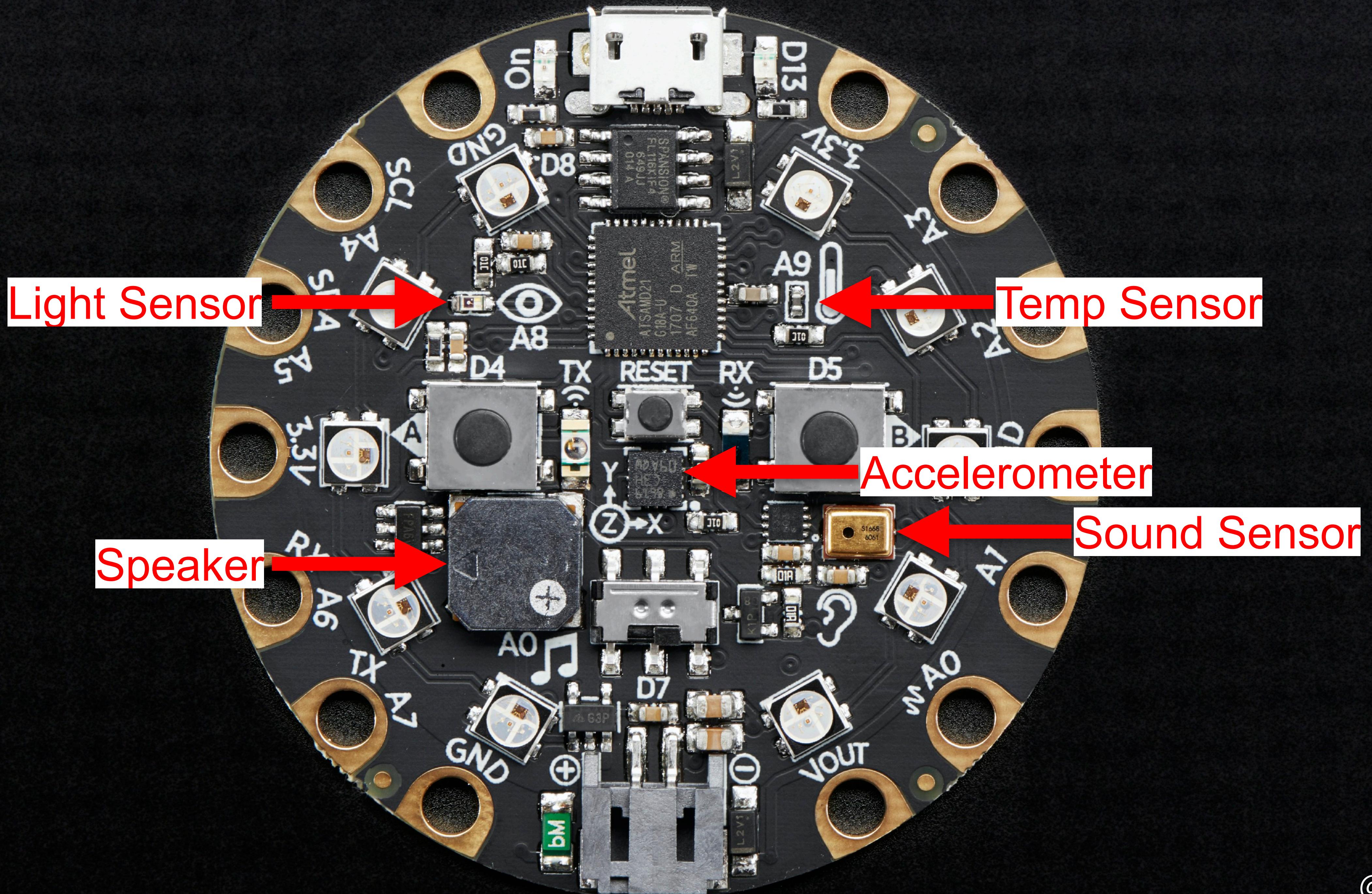


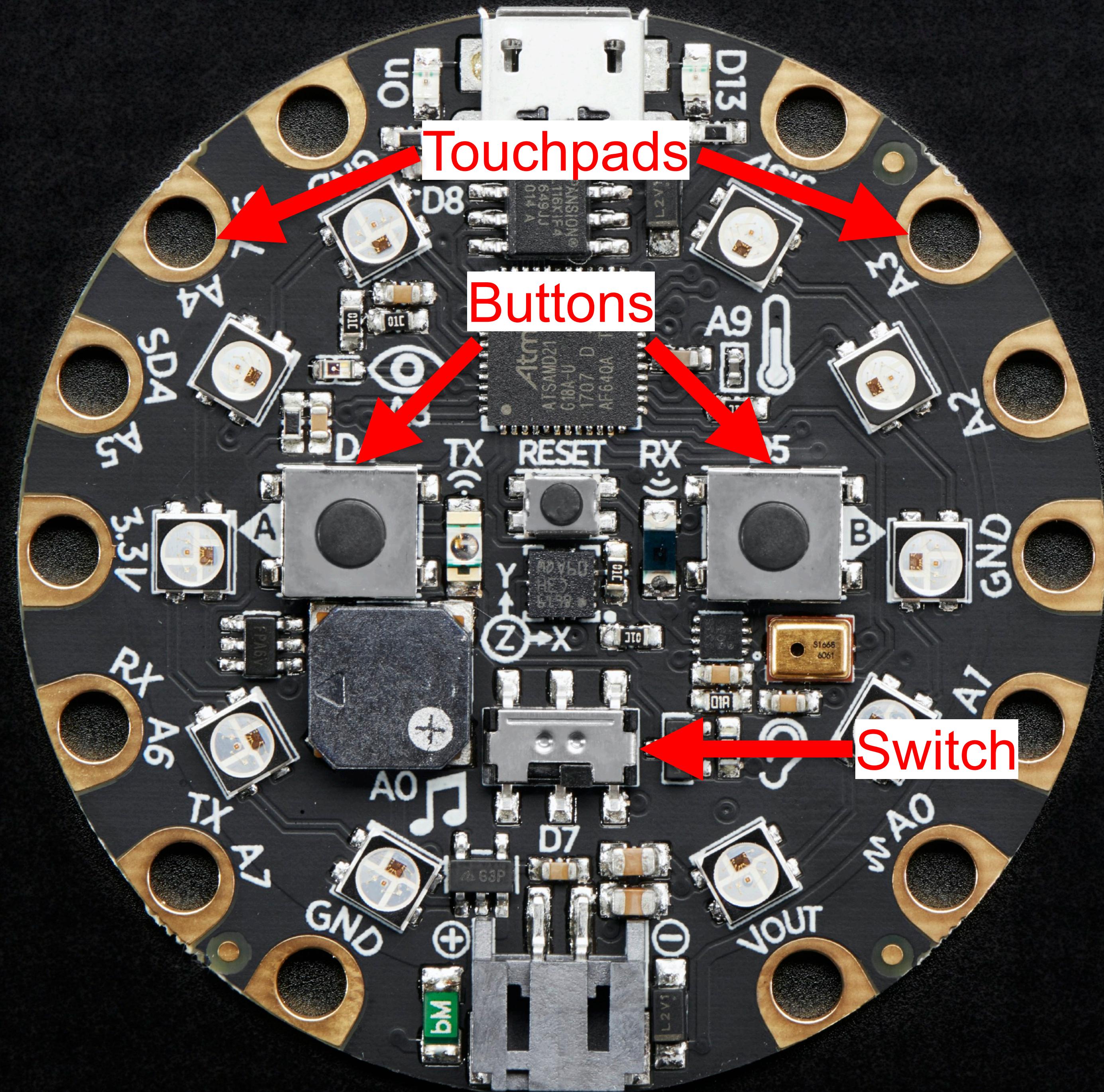
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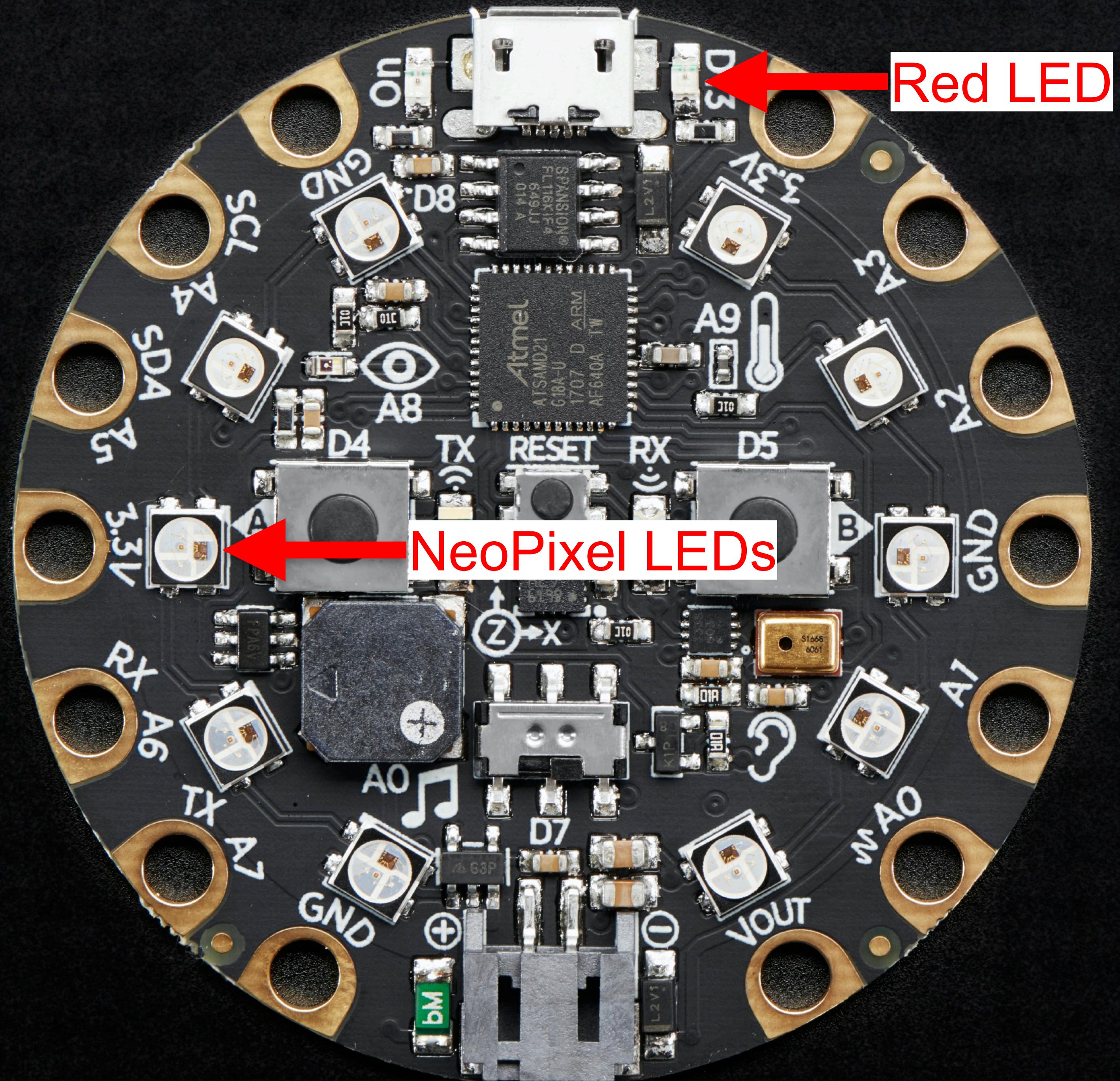








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Getting Started: Installing CircuitPython

- Double-tap the reset button to get into the bootloader
- *boardnameBOOT* drive will appear, e.g. *CPLAYBOOT*
- Download CircuitPython from circuitpython.org/downloads
- Drag the file to the *boardnameBOOT* drive
- *CIRCUITPY* drive will appear
- Done. Time to code!

Getting Started: CircuitPython Basics

- Plug your board into USB
- *CIRCUITY*
- code.py
- Serial console and REPL

Getting Started: Code Editor

- Mu editor: download from codewith.mu
 - Serial console built in.
 - Designed to be simple and effective.
 - Expects hardware.
- Visual Studio Code and Device Simulator Express
 - All the features of VS Code with CircuitPython
 - No hardware necessary

Getting Started: VS Code

- To begin, download Visual Studio Code:

<https://code.visualstudio.com/download>

Getting Started: Install Device Simulator Express

- Open VS Code, click on Extensions
- Search for: Device Simulator Express
- Click on Device Simulator Express and click “Install”
- Install dependency: Python

Getting Started: Running Device Simulator Express

- Press CMD+Shift+P (Mac) or CTRL+Shift+P (Windows)
- Search for: Device Simulator Express
- Click on Device Simulator Express: Open Simulator

Getting Started: Circuit Playground Library

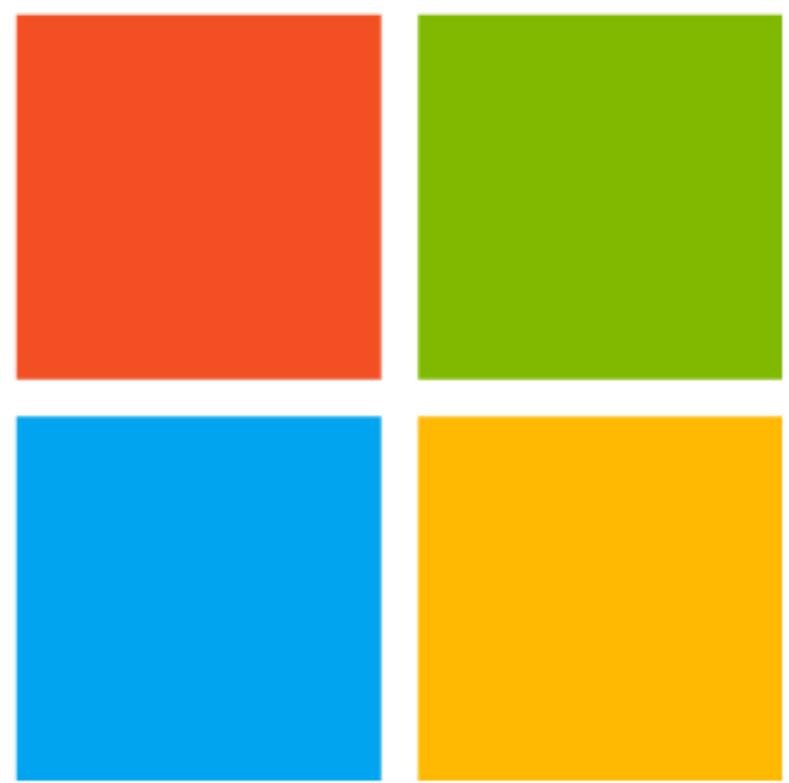
- Circuit Playground Library with Circuit Playground Express
- To use:
 - *from adafruit_circuitplayground import cp*
- Then all features are available as:
 - *cp.feature_name* e.g. *cp.red_led*, *cp.button_a*

Let's get coding!

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Device Simulator Express

- Circuit Playground Express
- micro:bit
- CLUE



Microsoft

PyBadge at PyCon 2020

- Microsoft intended to give away PyBadge kits
- Each PyBadge would be running code by Nina Zakharenko
- Customisable name badge and social battery status
- Check it out at:

https://github.com/ninja/pycon_pybadge_2020

Thank You!

Find me:

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@kattni on Discord and Twitter

<https://github.com/kattni/>

Microsoft Content:

<https://aka.ms/pycon2020>

More Circuit Playground Express:

<https://adafru.it/adafruit-cpx>

<https://adafru.it/cp-on-cpx-made-easy>

More CircuitPython:

<https://adafru.it/cpy-welcome>

<https://adafru.it/discord>

<https://circuitpython.org>

