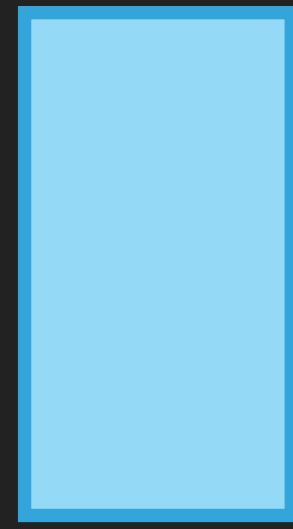


PLAN FOR CLASS 4

- ▶ Blog review / labs
- ▶ AMA from Class 3
- ▶ Music and microcontroller inspiration
- ▶ Binary review
- ▶ Oscilloscope intro
- ▶ Analog Output
 - ▶ PWM, Tone, Servo
- ▶ Other programming stuff
 - ▶ Variables, costs, #defines
 - ▶ Including files and libraries
- ▶ Midterm and form groups

MINIMAL MICRO

Everything happens on the chip, minimal additional parts - just passive components, headphone jack, etc.



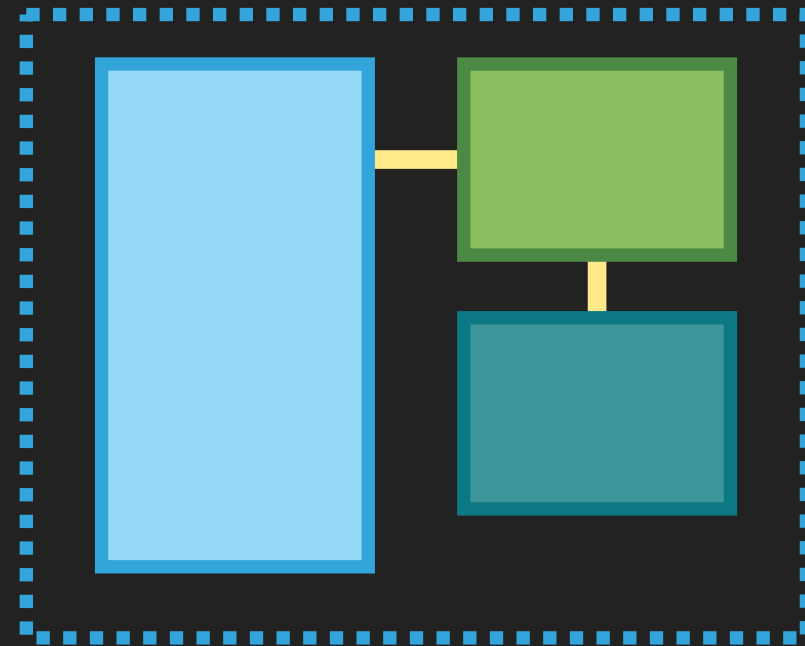
Built-in: Tone, direct pin manipulation.
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Some additional chip-to-chip peripherals help make great sound.



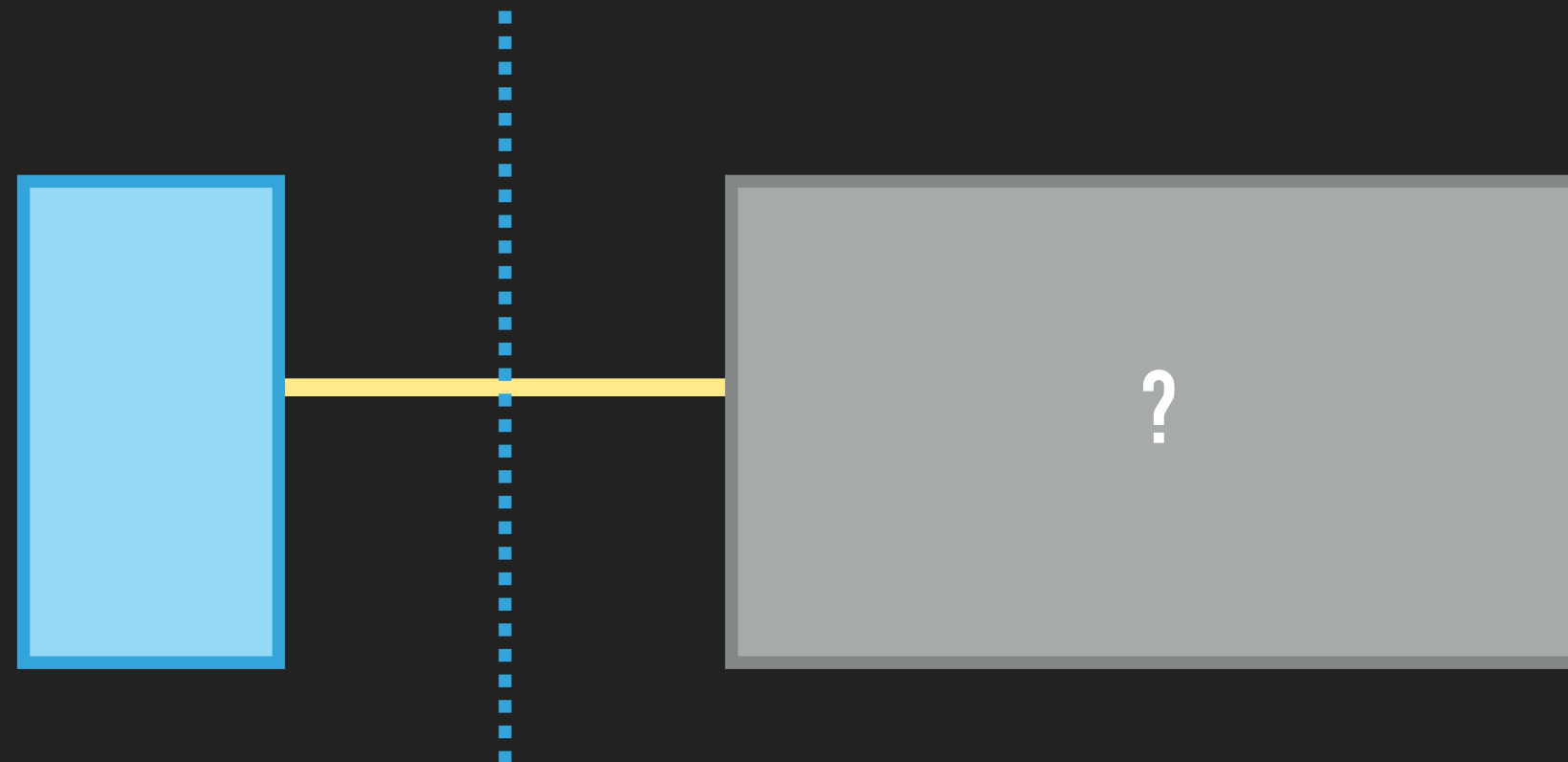
I2S amp, memory card reader
Teensy line of boards, Daisy

Pros: compact, good sound

Cons: some additional cost and complexity.

MICRO W/ COMMS

Microcontroller sends messages to music hardware or software.
Custom midi controller, DAW control surface, or DIY interface to custom software.



MIDI, OSC
DIY

Pros: Can control anything.

Cons: Needs external hardware, protocol knowledge.

INSTANT FUN WITH LIMITATIONS

Interview with Jasper Knudsen, CEO at Teenage Engineering

History of Teenage Engineering

Teenage Engineering was founded in 2005 by Jasper Knudsen and his brother, Peter Knudsen. The company's name is a play on the words 'teenage' and 'engineering', reflecting the company's focus on creating fun, functional electronic music equipment for teenagers and young adults.

The company's first product, the TR-69, was a portable drum machine that was designed to be used by teenagers in their bedrooms. The TR-69 was a success, and it led to the development of other products, such as the TR-707 and the TR-708.



TR-69 portable drum machine

Teenage Engineering's products are designed to be fun and functional. The company's products are designed to be used by teenagers in their bedrooms, and they are designed to be used by teenagers in their bedrooms.

Design Philosophy

Teenage Engineering's design philosophy is based on the idea of creating fun, functional electronic music equipment for teenagers and young adults. The company's products are designed to be used by teenagers in their bedrooms, and they are designed to be used by teenagers in their bedrooms.

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TR-707 portable drum machine

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Future of Teenage Engineering

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TR-708 portable drum machine

TRUST & LOYALTY

KIM BJØRN

PUSH TURN MOVE

INTERFACE DESIGN
IN ELECTRONIC MUSIC



FOREWORD BY
JEAN-MICHEL JARRE



LEARNING TO LISTEN

Interview with Tony Hawk, aka Mr. Tingles, musician and producer



Mr. Tingles

Mr. Tingles

Mr. Tingles

Mr. Tingles

Mr. Tingles

Mr. Tingles

Mr. Tingles

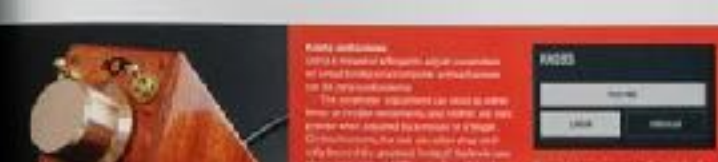
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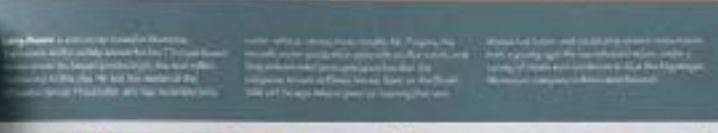
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TR-707 portable drum machine

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INSTANT FUN WITH LIMITATIONS
Interview with Jasper Koutchouk, CEO at Teenage Engineering

Teenage Engineering is an independent design and development studio that specializes in creating custom hardware and software for the music industry. The company was founded in 2007 by Jasper Koutchouk and is based in Los Angeles, California. The company's products are known for their unique design and high-quality craftsmanship.

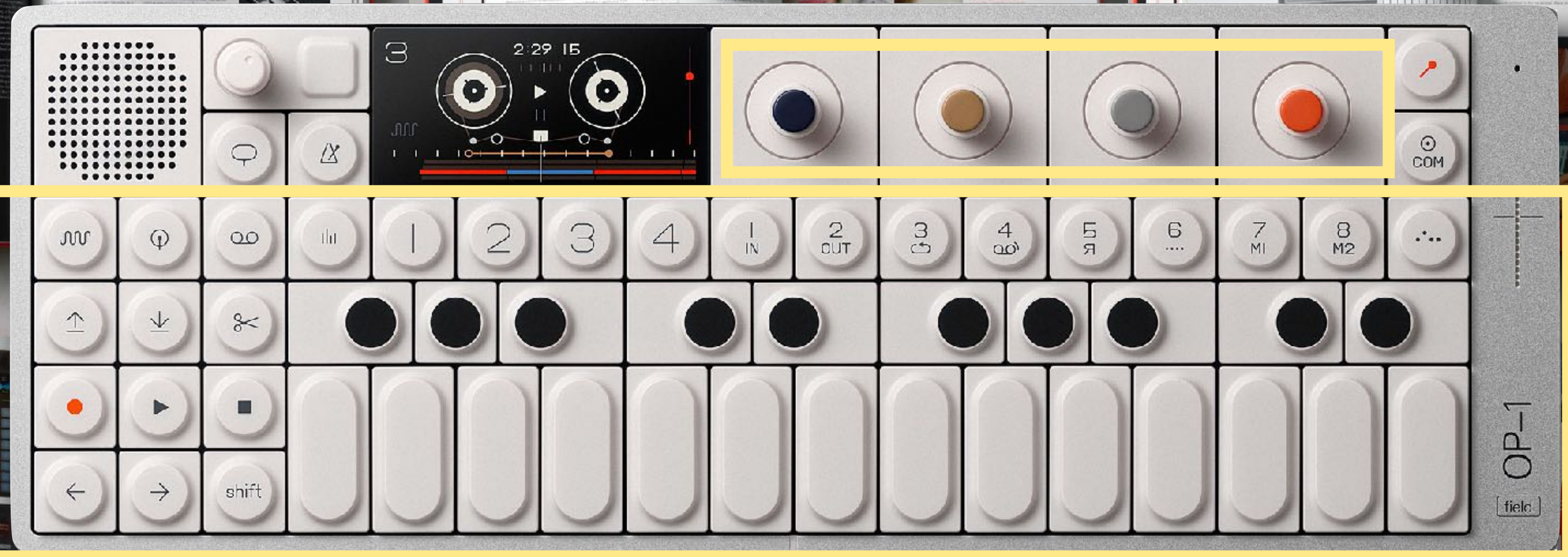


TRUST & LOYALTY

Trust and loyalty are essential for any business to succeed. Without them, a company will struggle to attract and retain customers. Building trust and loyalty requires a commitment to quality and customer service.



Category	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10
Category 1	100	200	300	400	500	600	700	800	900	1000
Category 2	100	200	300	400	500	600	700	800	900	1000
Category 3	100	200	300	400	500	600	700	800	900	1000



**FRESH
TURN
MOVE**

INTERFACE DESIGN
IN ELECTRONIC MUSIC

FOREWORD BY
JEAN-MICHEL JARRE



INSTANT FUN WITH LIMITATIONS

Interview with Jasper Knudsen, CEO at Teenage Engineering

Teenage Engineering is an independent design and development studio that specializes in creating custom user interfaces for a wide range of electronic devices. The company's work is characterized by its playful, colorful, and often whimsical aesthetic. Jasper Knudsen, the CEO, discusses the challenges and joys of designing interfaces that are both functional and fun.



A close-up image of a Teenage Engineering device, showing a grid of colorful buttons and a small display screen.

TRUST & LOYALTY

Interview with [Name], [Company]

This section discusses the importance of trust and loyalty in the context of user interface design. It explores how designers can build trust through transparency and how users can develop loyalty through consistent and reliable experiences.



A close-up image of a device interface with a grid of buttons and a small display.

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Interview with [Name], [Company]

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INTERACTION

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A close-up image of a device interface with a grid of buttons and a small display.

FEEDBACK

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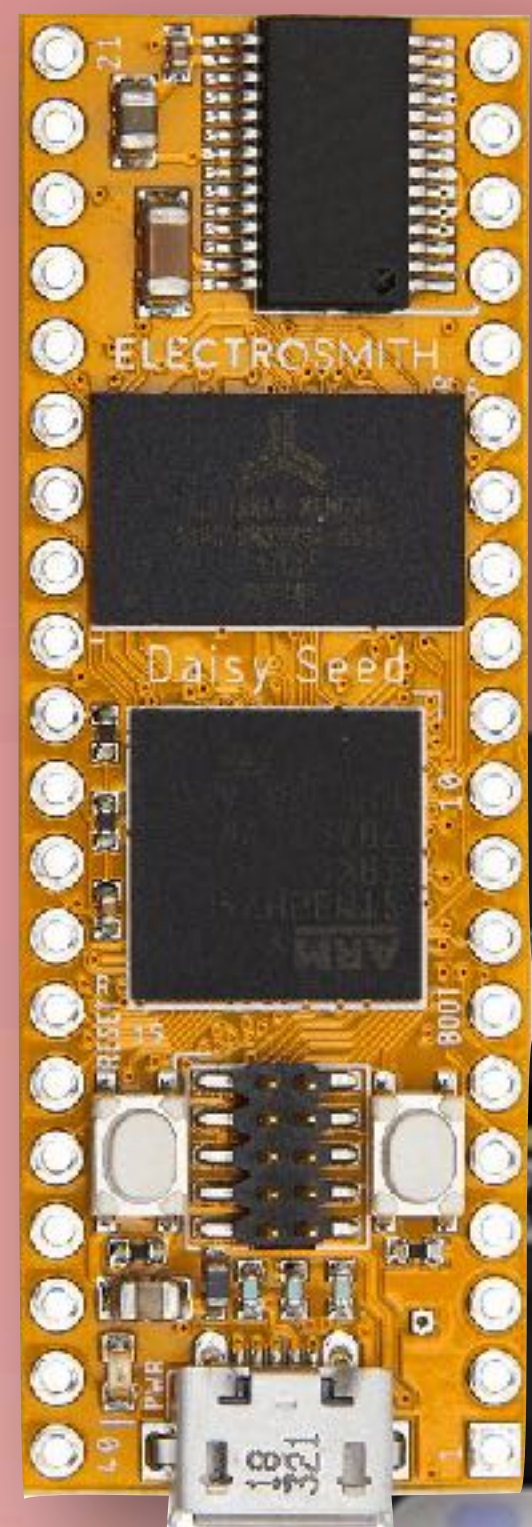
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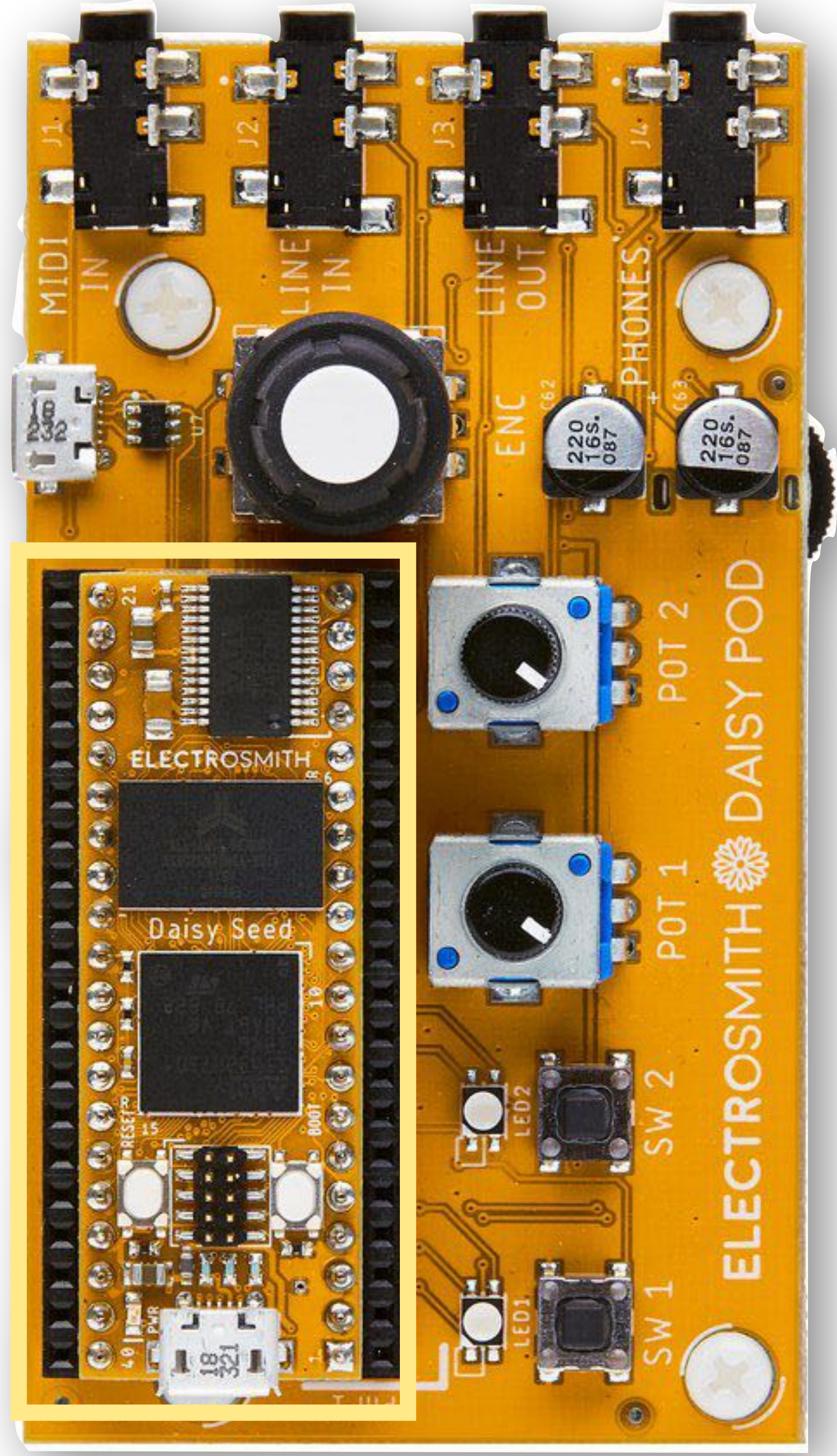
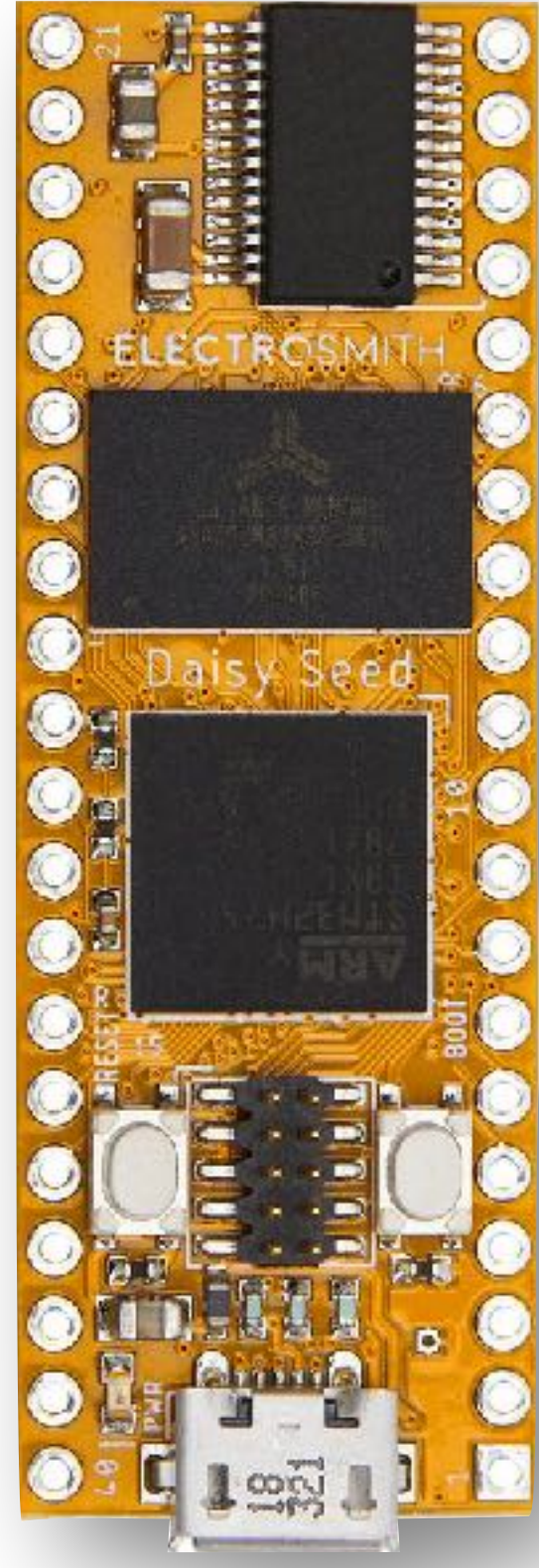
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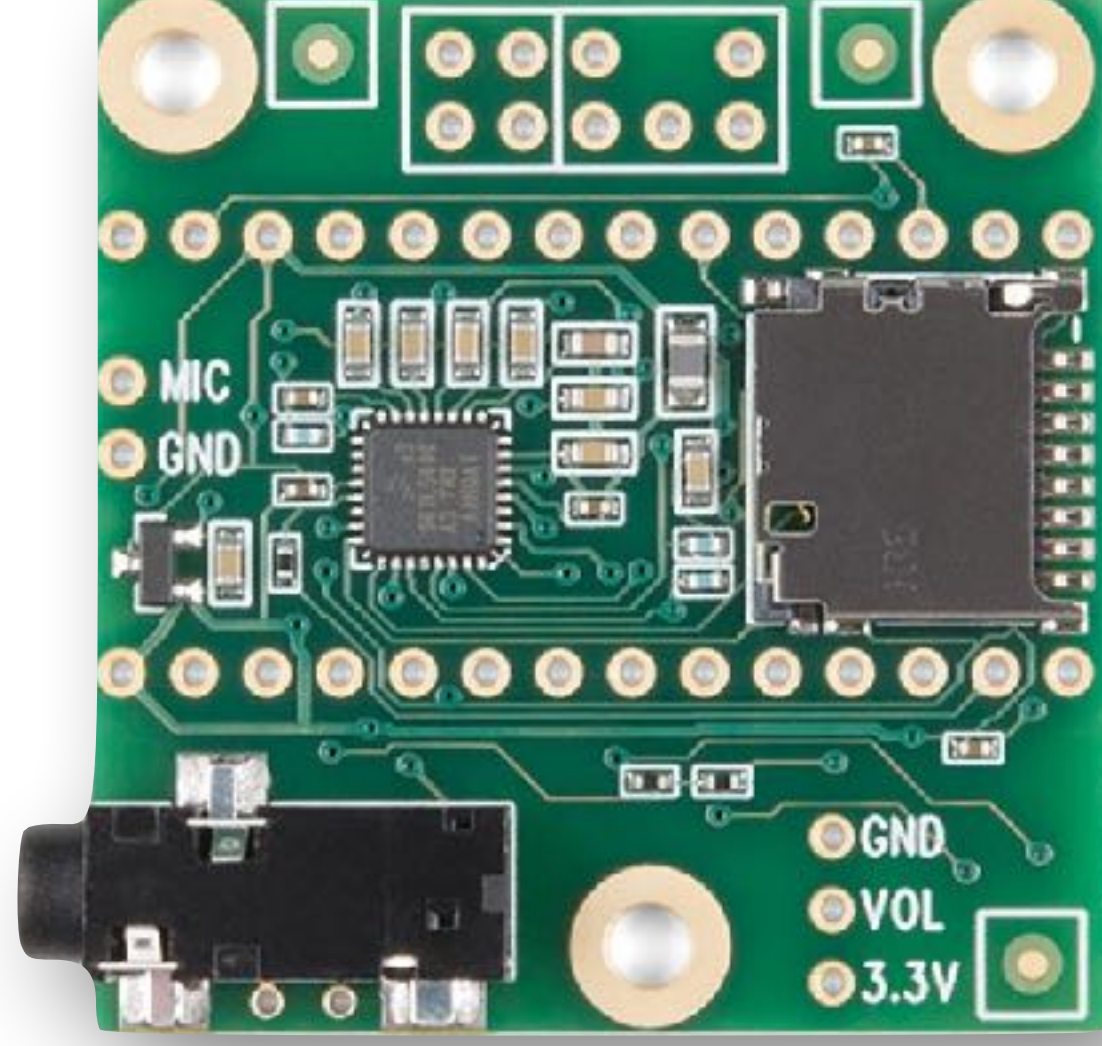
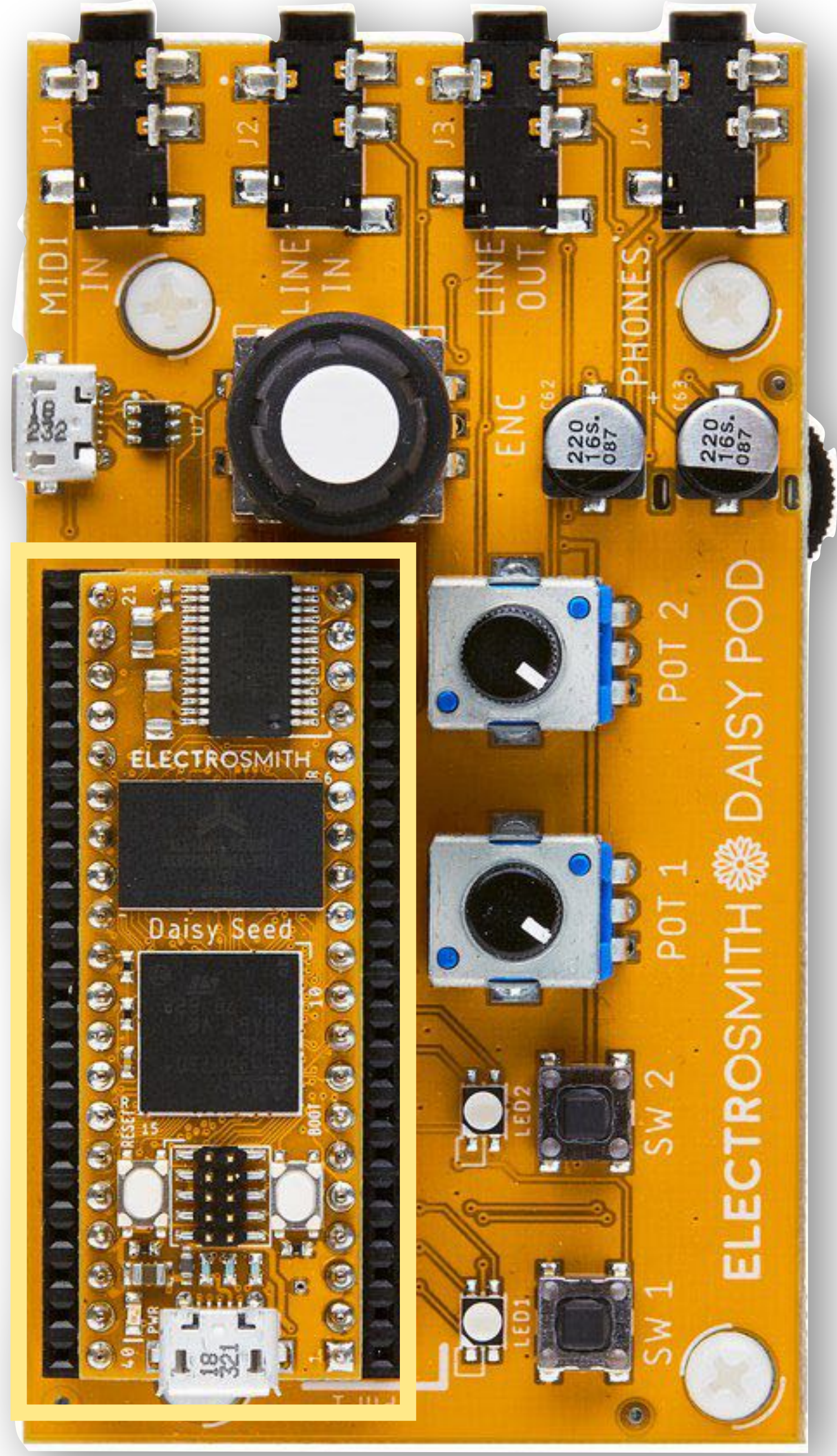
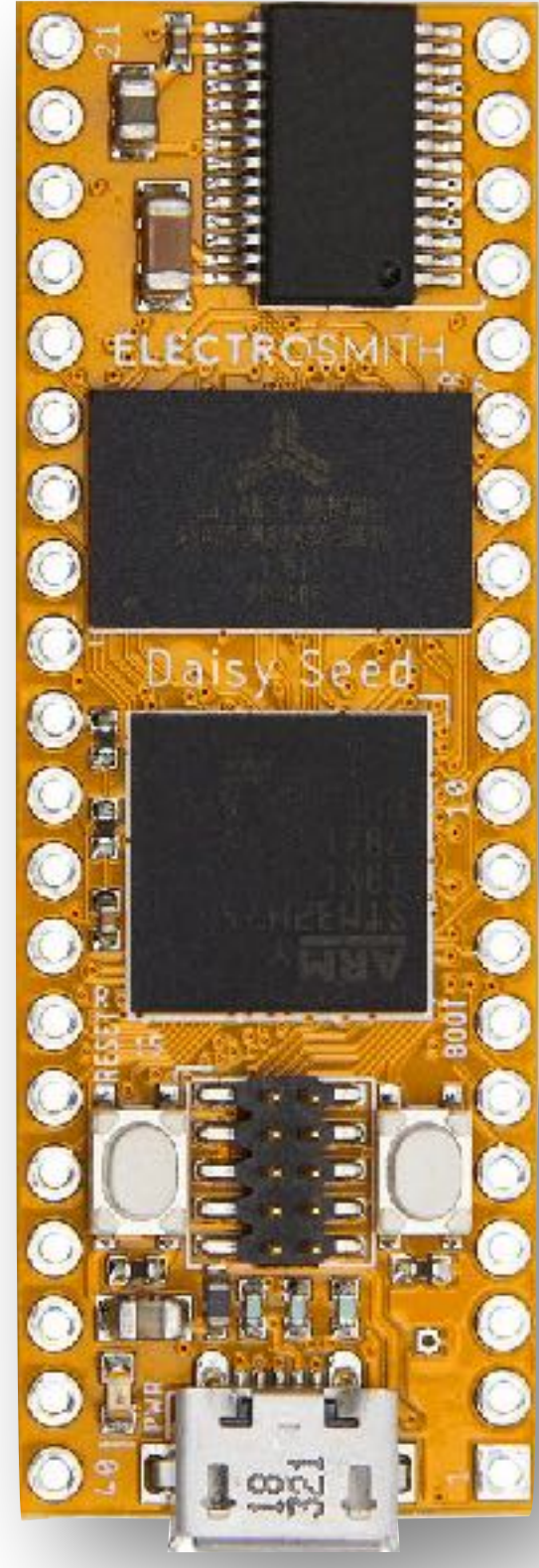
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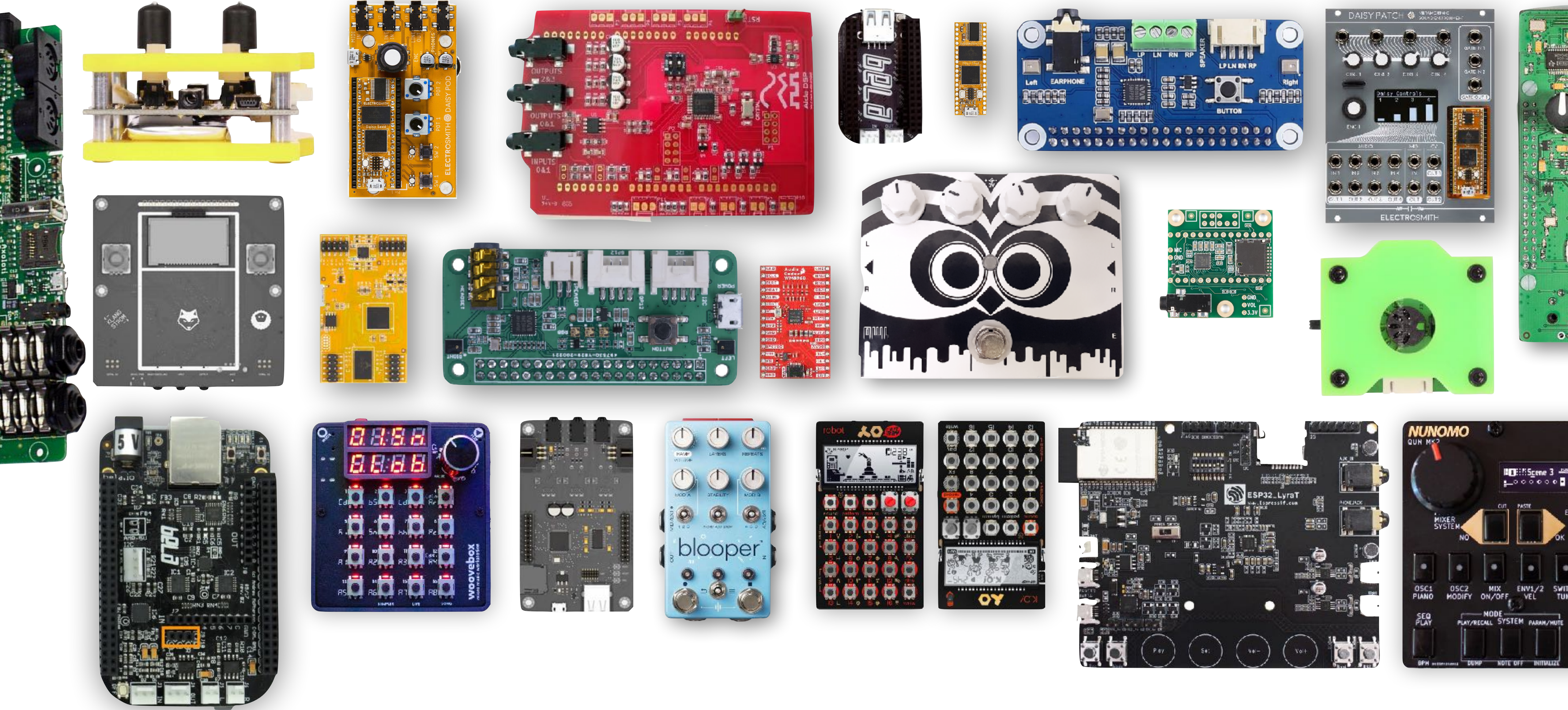
"An outstanding resource, and a bloody good read." - DJ MICKS





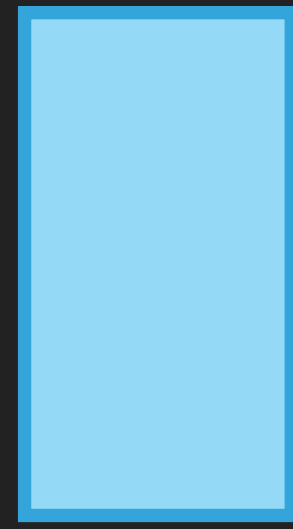






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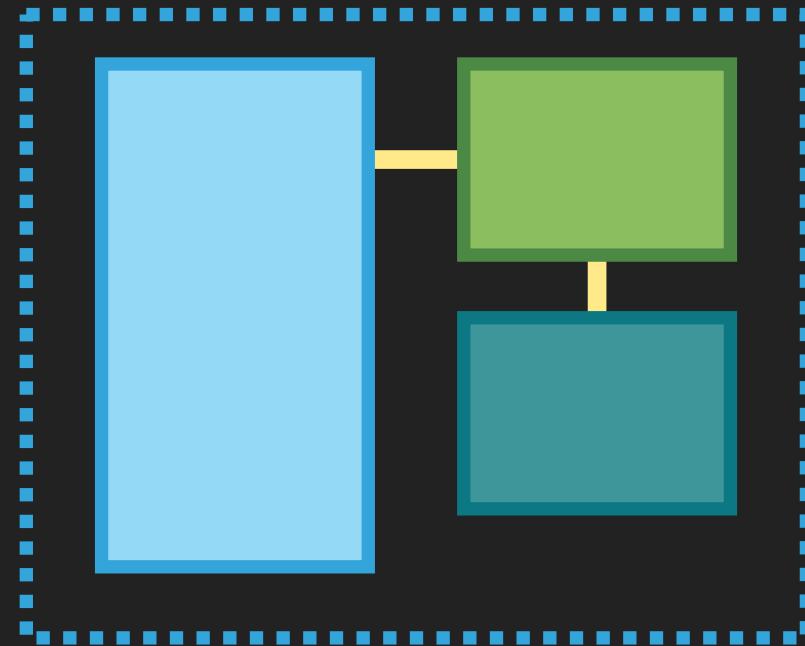
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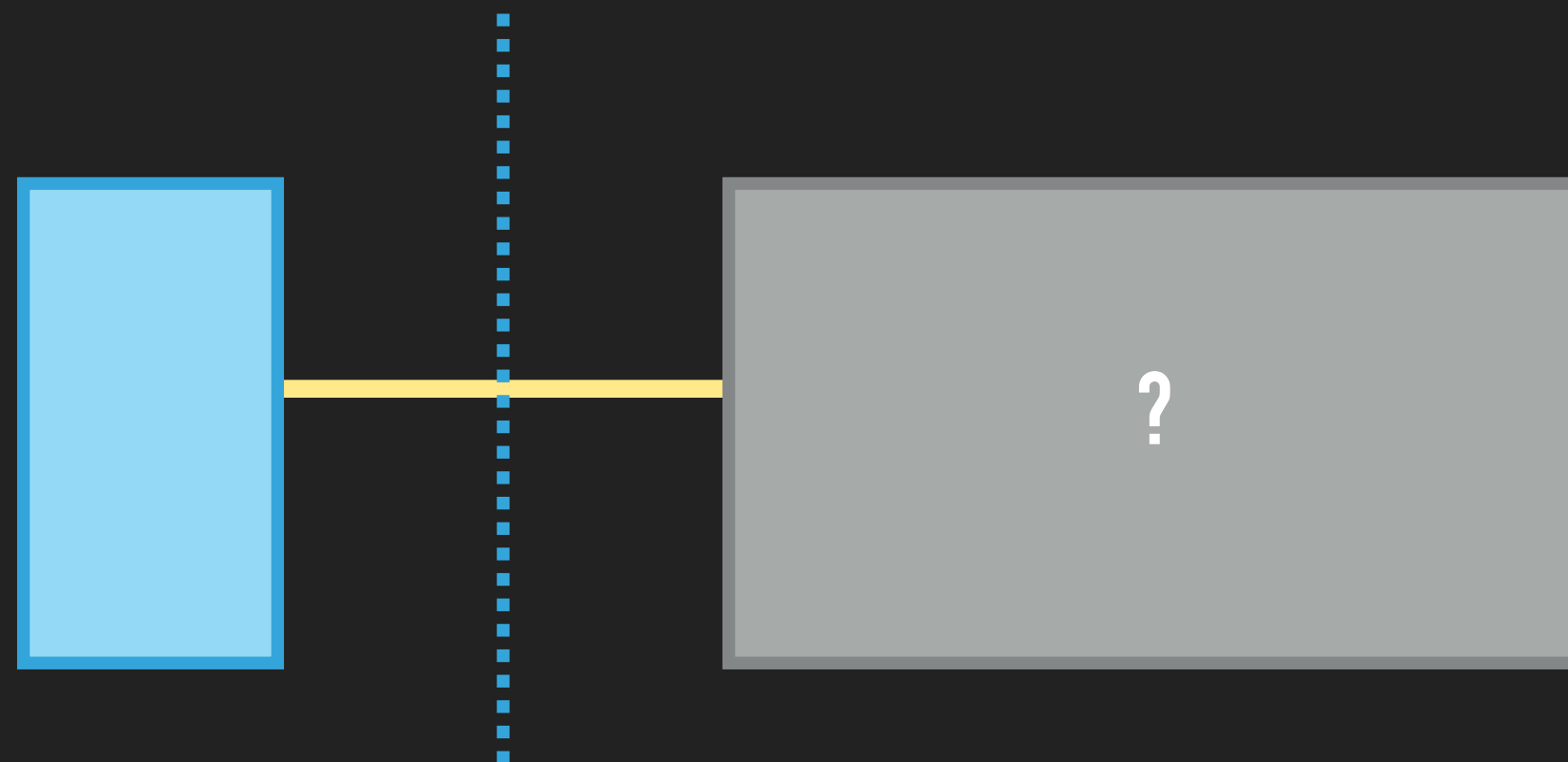
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