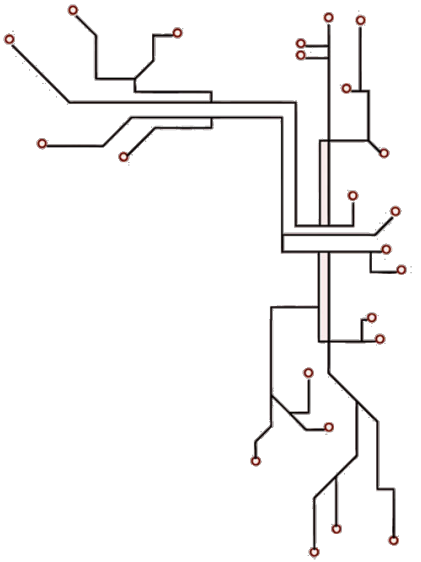
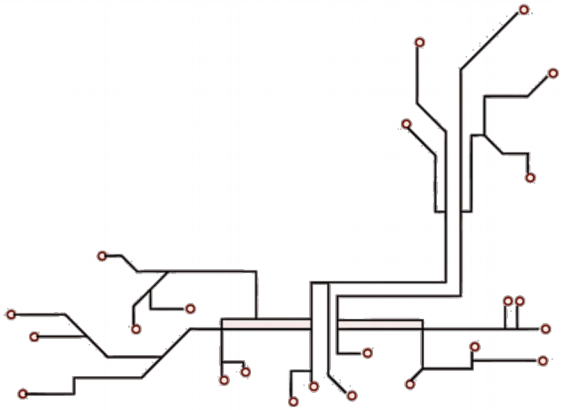
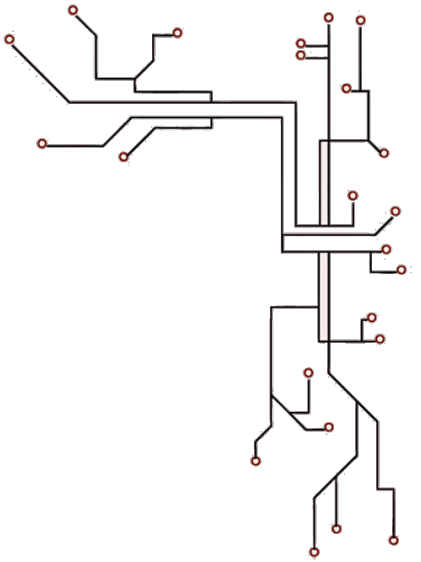
MAKING SMART DEVICES





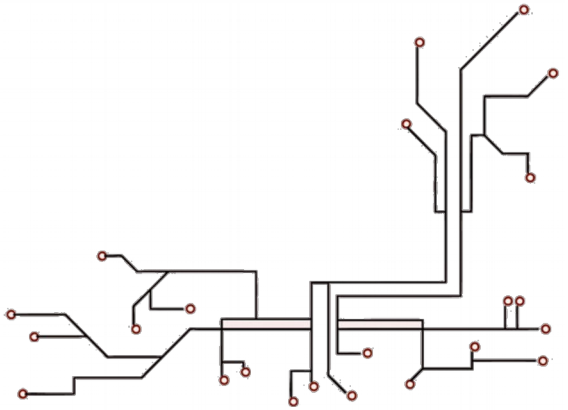
A POSTERIORI

Play · Experience · Learn



ACTIVITY

Make a Name Tag!
(Start a New Project, Save)

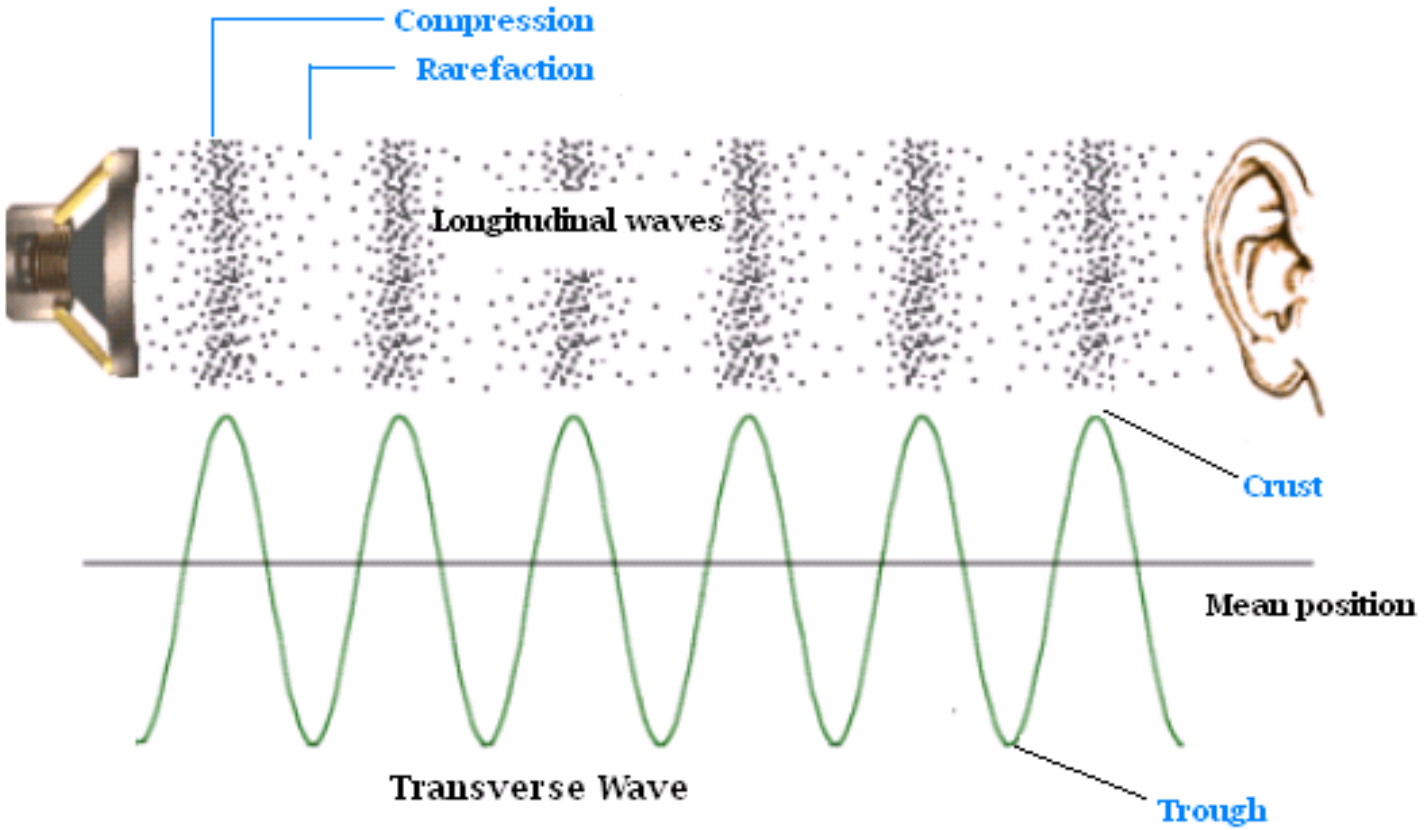


A POSTERIORI

Play · Experience · Learn

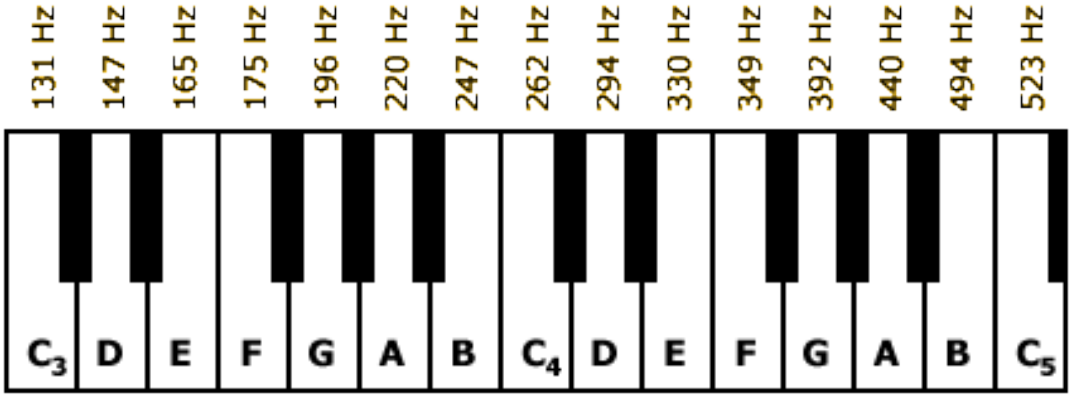
micro:bit Music

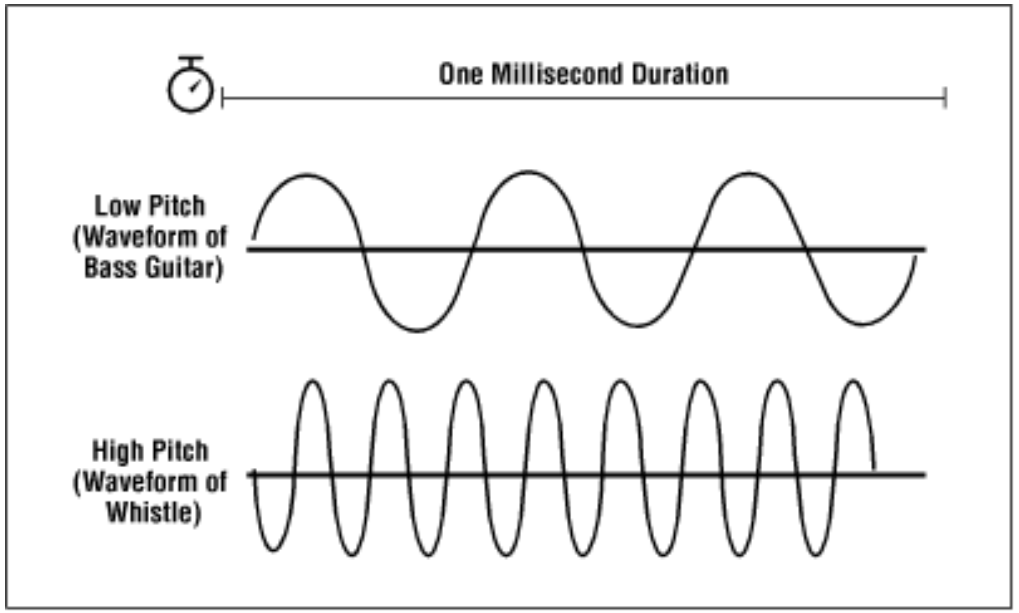
What is Sound?

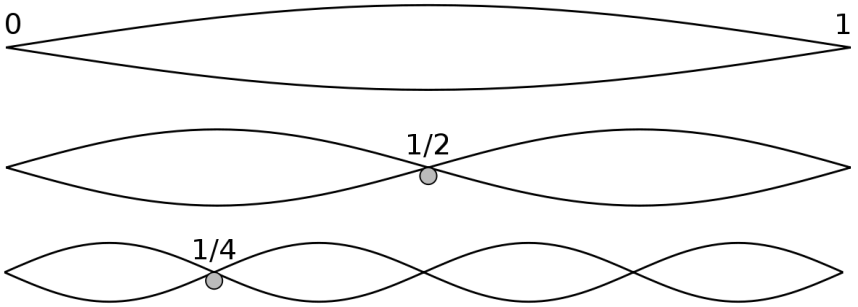


micro:bit Music

- Tone & Frequency







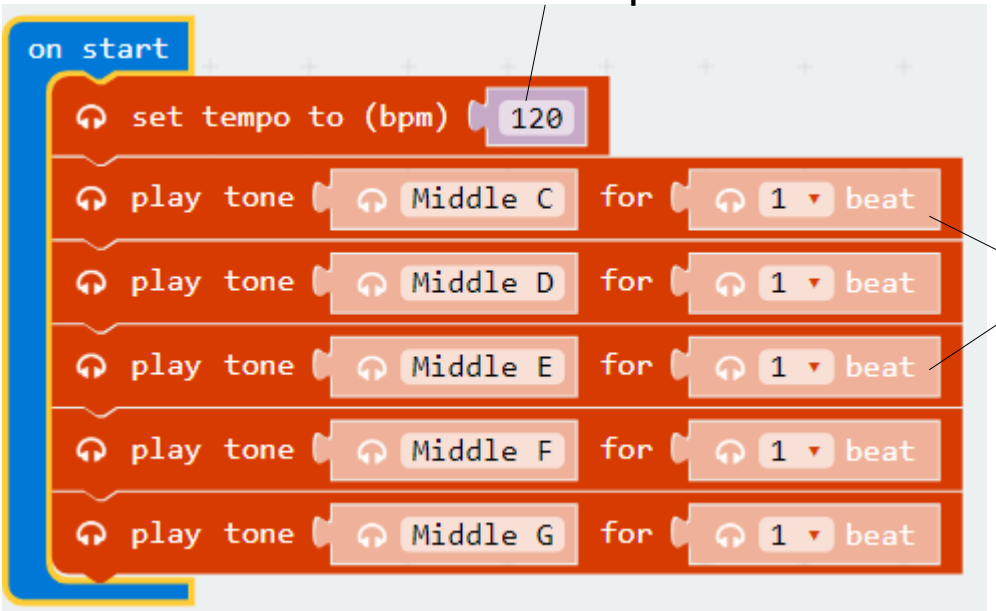
A POSTERIORI

Play · Experience · Learn

micro:bit Music

- Tempo & Beats

You can change the tempo

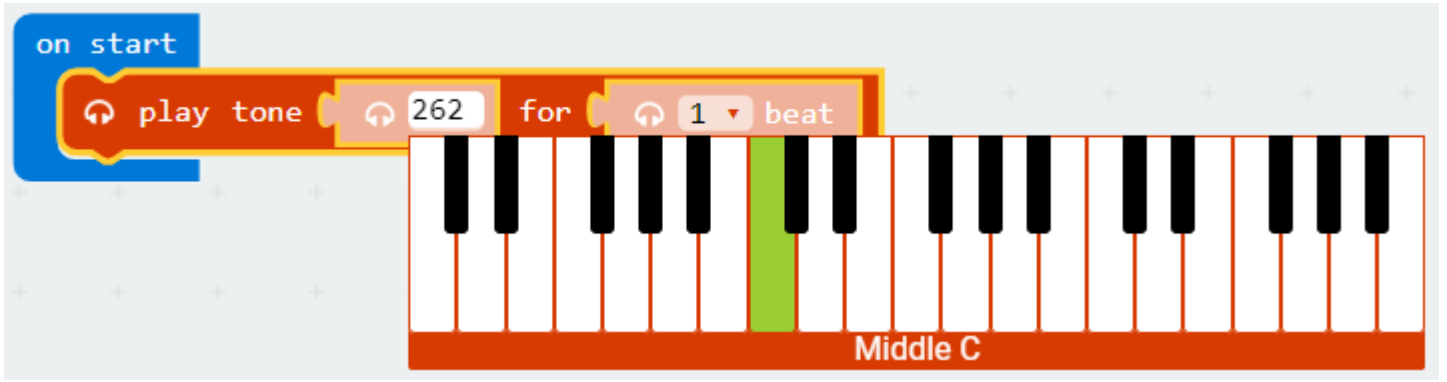


… or each note's duration

Higher Tempo = Shorter Beat
How long is each beat if tempo is 60 bpm? 120 bpm?

Let’s Make

A 15-sec micro:bit Jingle…



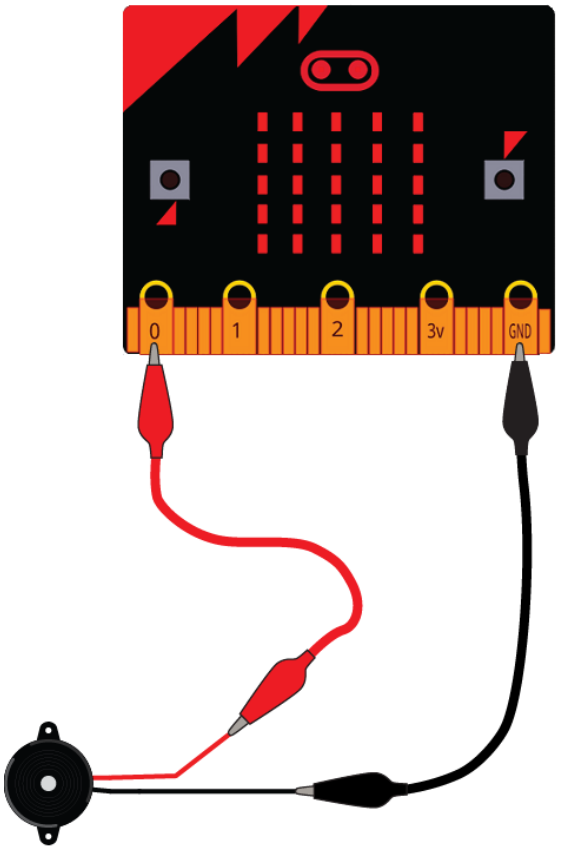
Hint: At 120 bpm tempo, how many beats do you need to play in sequence?

ACTIVITY

Compose a Jingle
(Tones, Beats, Tempo)

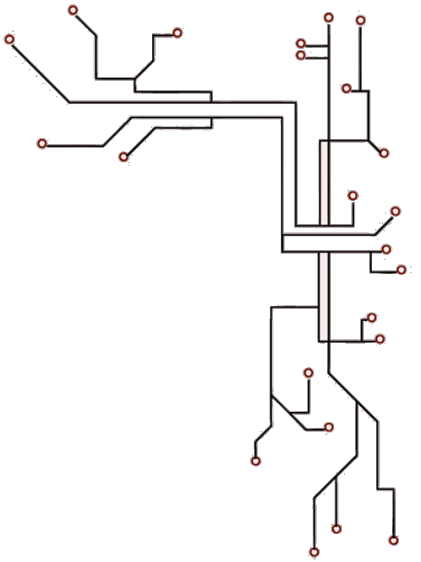
micro:bit Connected

Let’s hear it from the micro:bit, using our Piezoelectric Speaker



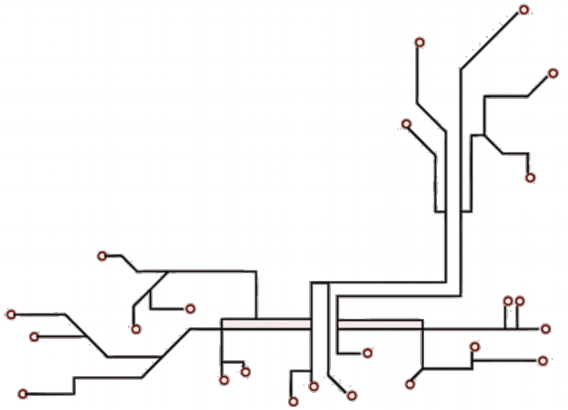
- Feel free to bring headphones from home.

  You can connect those, too.



ACTIVITY

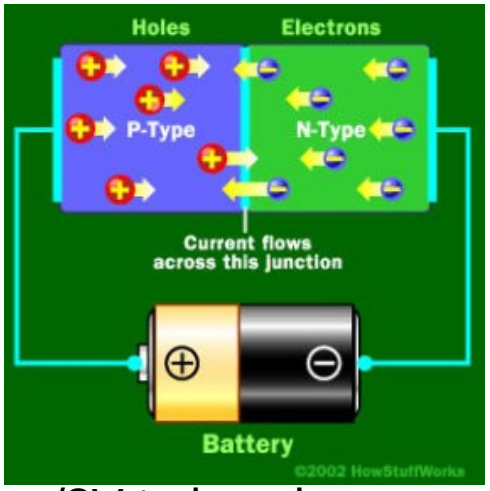
Make a Movie!
(Loops)



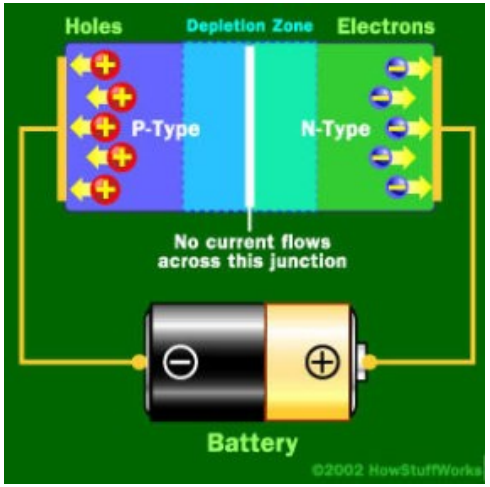
A POSTERIORI

Play · Experience · Learn

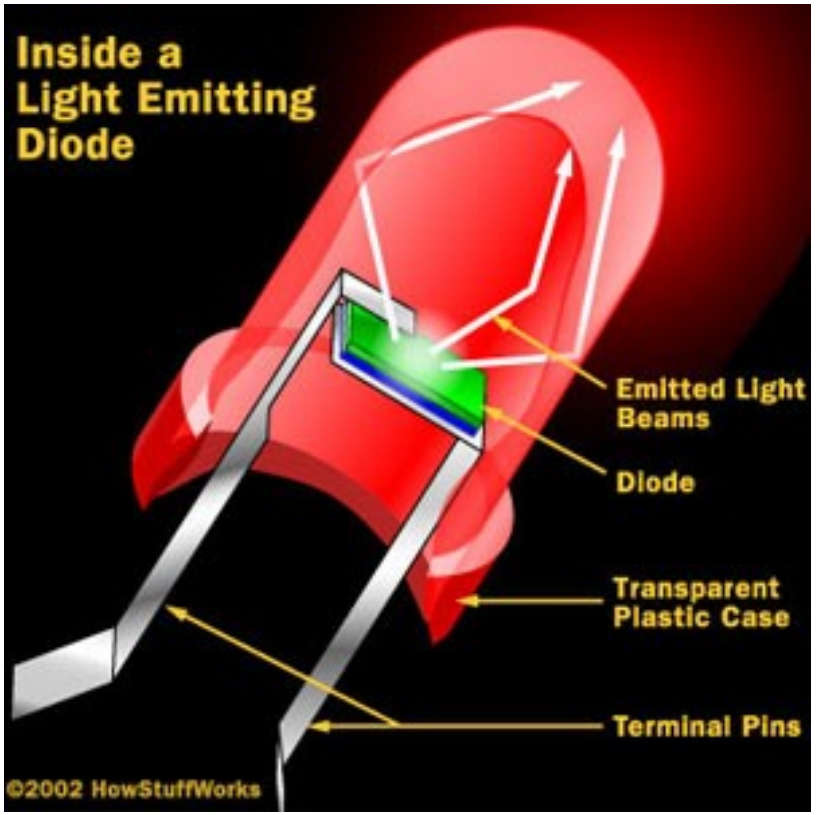
External LEDs



+/3V to long leg, Correct!



-/GND to long leg, No Light!



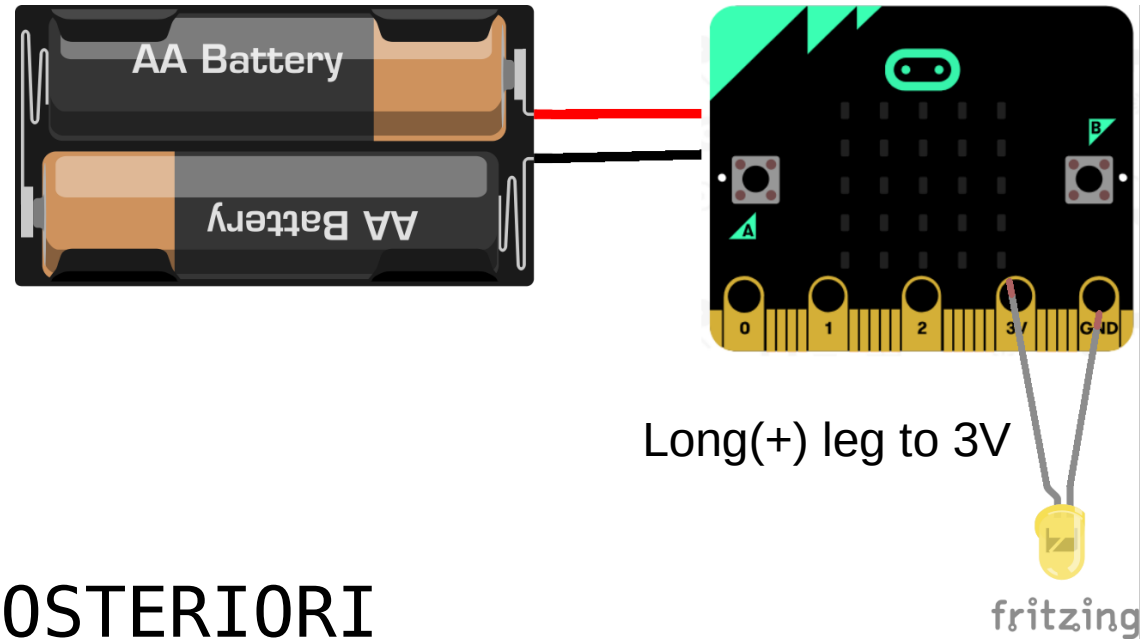
Efficient bulb - beats incandescent, which wastes a lot of energy in the form of dissipated heat

micro:bit External LEDs

LED Connections:

- Long Leg/Anode(+) connects to 3V or Pin 0-2
- Short Leg/Cathode(-) connects to GND

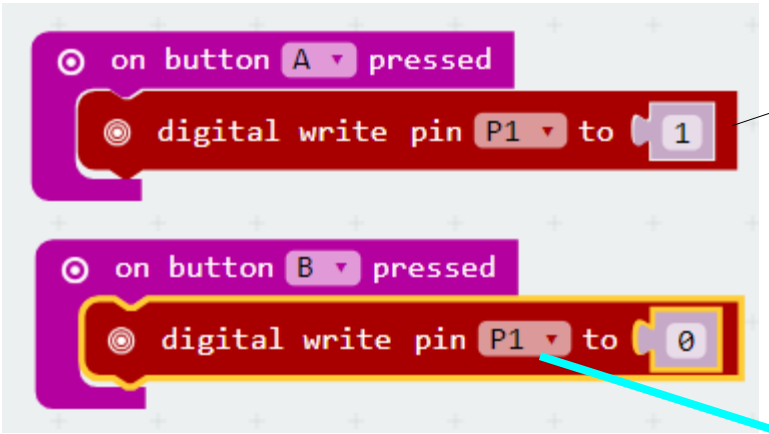
- First, let's use 3V to test LED and connectivity.



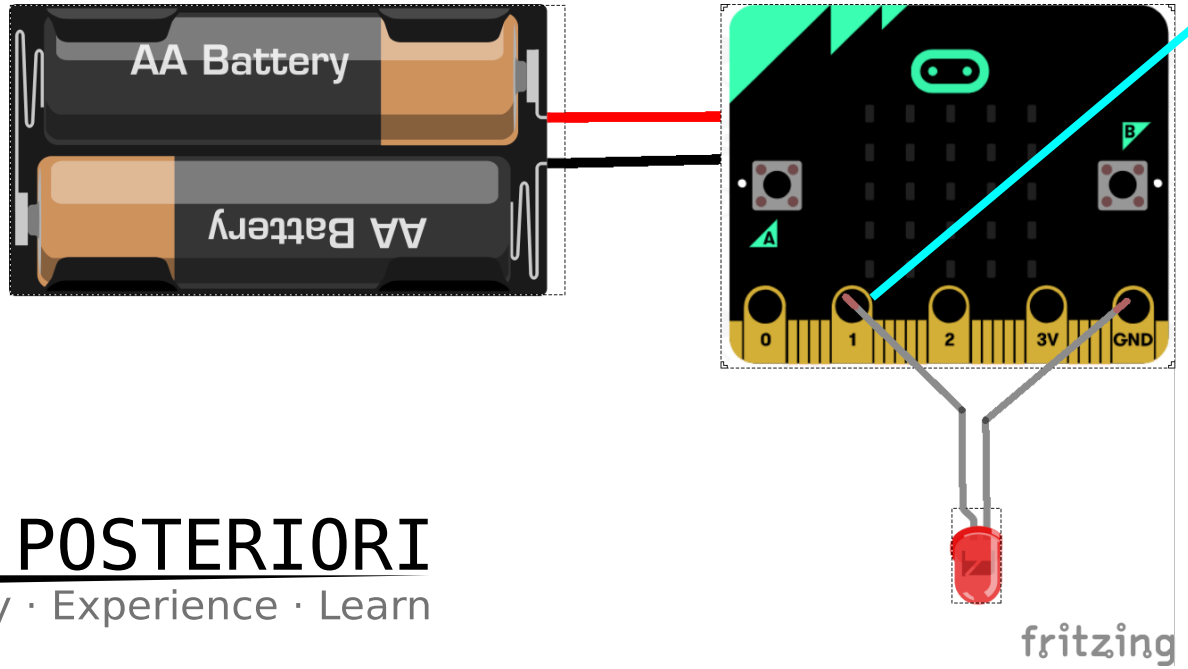
A POSTERIORI
Play · Experience · Learn

micro:bit External LEDs

- Now let's experiment using Pin 0, 1 or 2



1 = on
0 = off

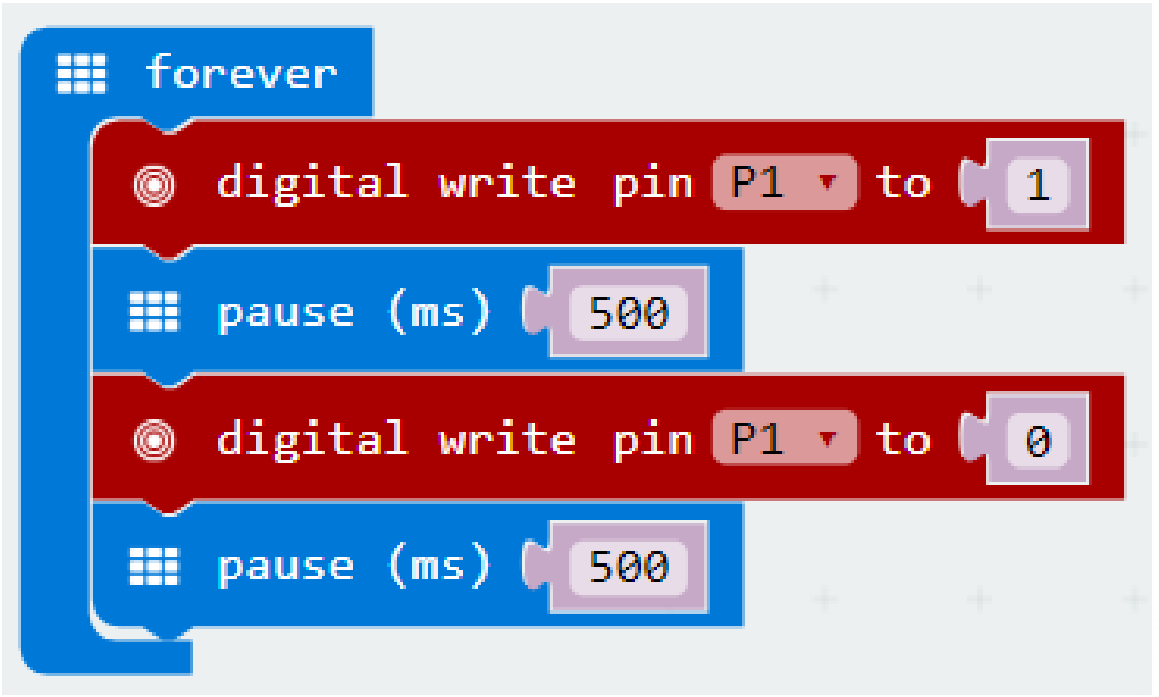


Whichever pin you decide, **make sure the connections and the code match**...

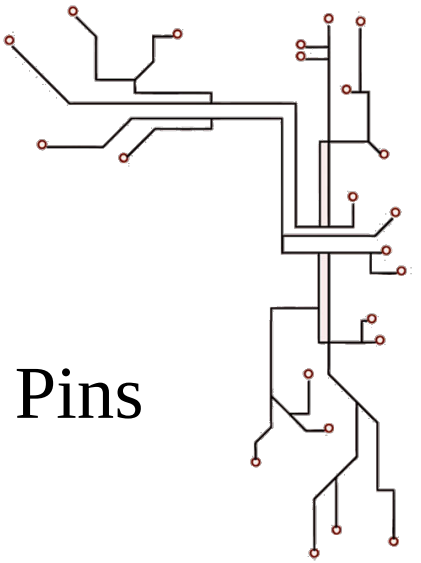
A POSTERIORI
Play · Experience · Learn

micro:bit External LEDs

- Blinking...



Special Effects



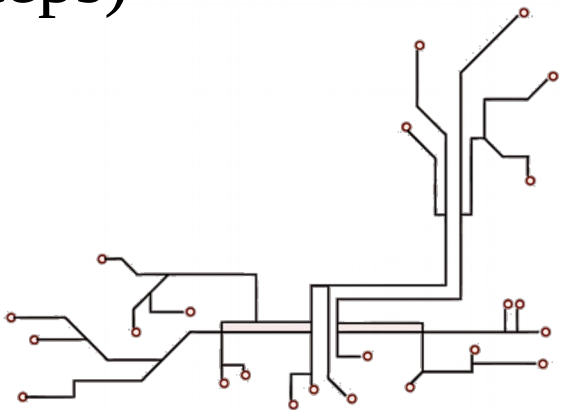
- Dimming the Light
  - Use *analog write* block to apply variable power on Pins
  - Make a fade in/fade out effect

Signal Types

Digital – Binary (0,1) or (0V, +3V)

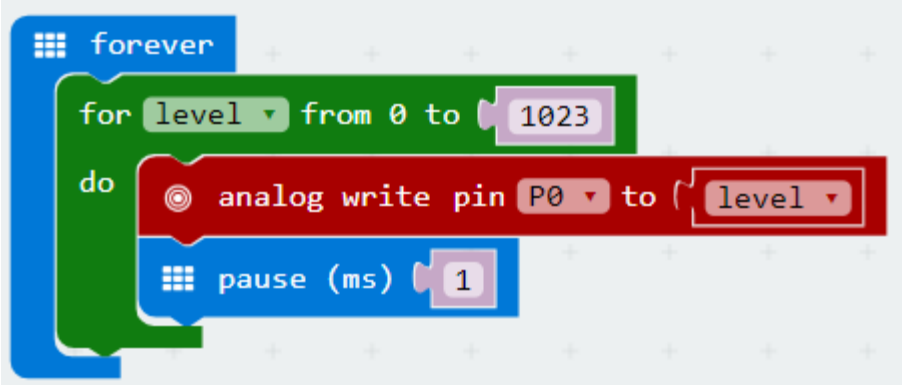
Analog – Range (0 – 1023)

or (0V to 3V in 1024 discrete steps)

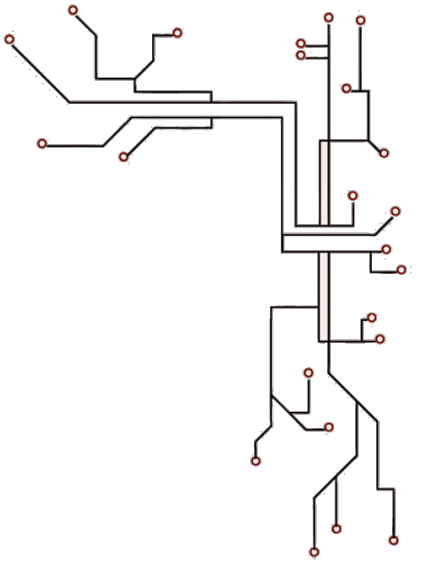


Special Effects

- Dimming the Light
  - Here's one solution to fade-in effect:

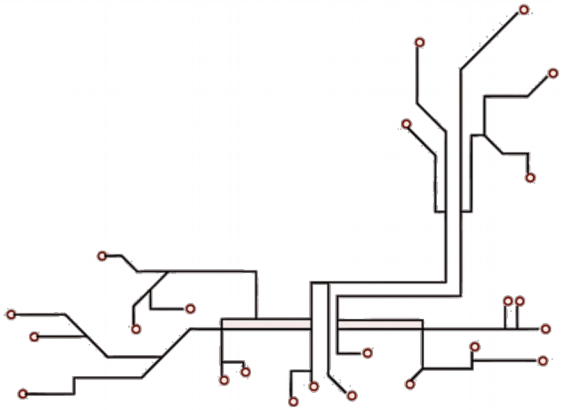


  - What about fading out???



ACTIVITY

Make a Light Show (Digital Pin Writing)

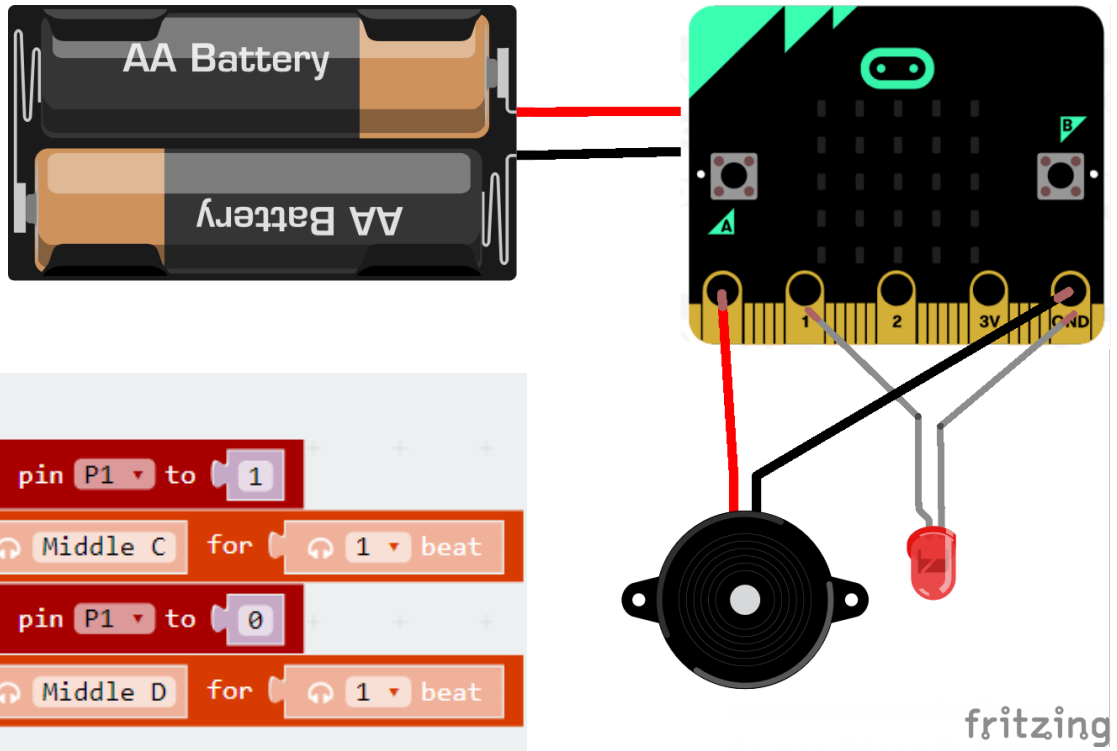


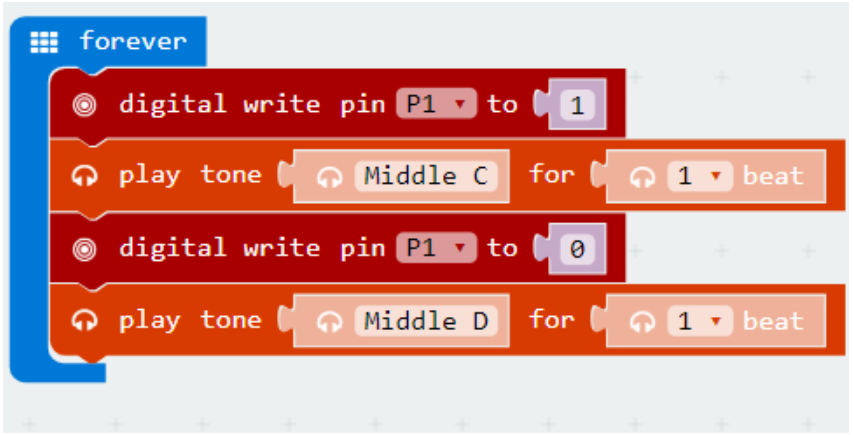
A POSTERIORI

Play · Experience · Learn

Let’s Combine

Let’s make some noise and flash some light!





A POSTERIORI
Play · Experience · Learn

Light & Sound Show

Combine lights with your musical number…

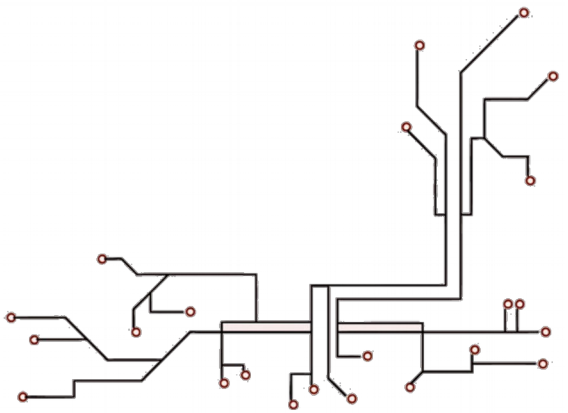
Get your Speaker (P0) and LEDs (P1-2) to work together, producing a thrilling 15-sec Spectactular!

A POSTERIORI

Play · Experience · Learn

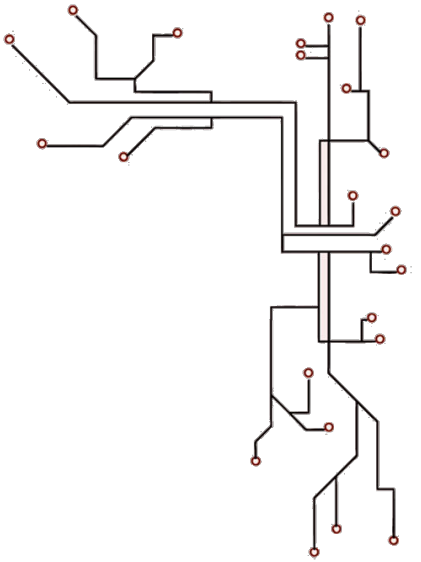
ACTIVITY

Make a Sound & Light Show (Music & Light)



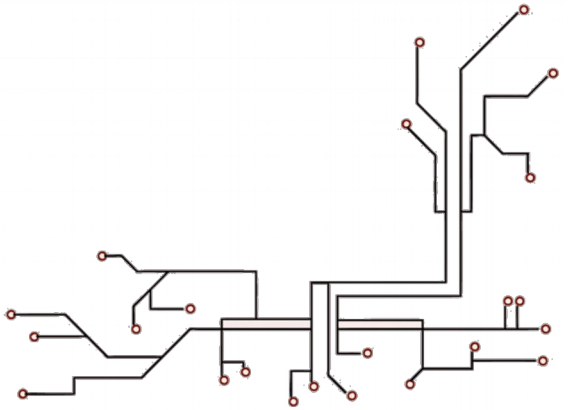
A POSTERIORI

Play · Experience · Learn



ACTIVITY

Make Anything!
(Open-Ended Exploration)



A POSTERIORI

Play · Experience · Learn