



LED Reactive Light-Up Hockey Puck in MakeCode

Created by Ruiz Brothers



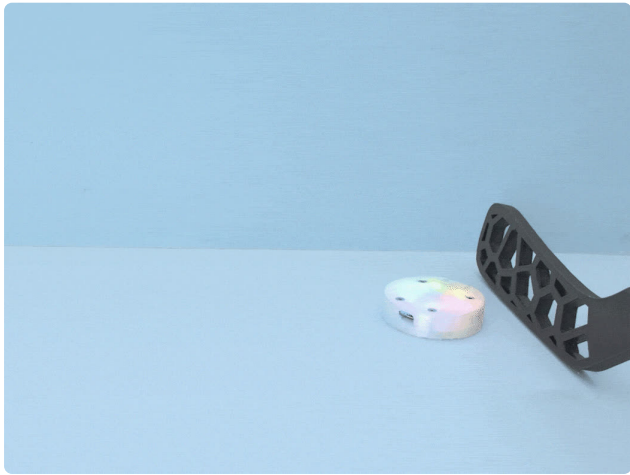
<https://learn.adafruit.com/led-hockey-puck>

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Overview



In this project, we're making a 3D printed LED hockey puck.

This was inspired by the DIY indoor hockey project by [Yuksel Timez \(https://adafru.it/Ptf\)](https://adafru.it/Ptf).

This hockey puck lights up and makes chips tunes based on motion!

You get a light show each time you hit the hockey puck, so it's still super fun even when you miss a goal.



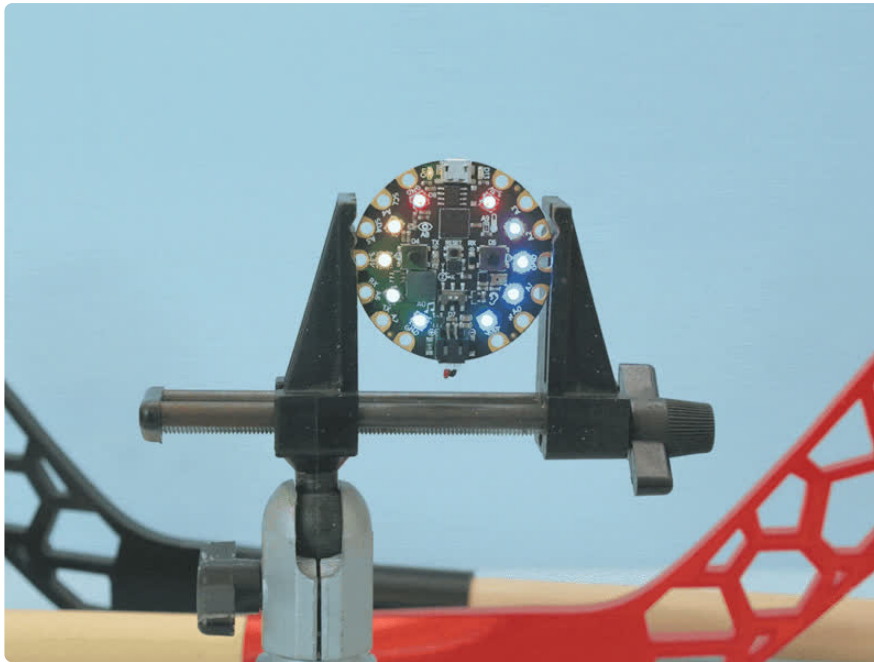
Either the **Circuit Playground Express** or the **Circuit Playground Bluefruit** make this a fun and easy project that uses the built-in motion sensor and NeoPixel LEDs.

The case was 3D printed in NinjaFlex filament which lets you use the buttons to switch between different animations.



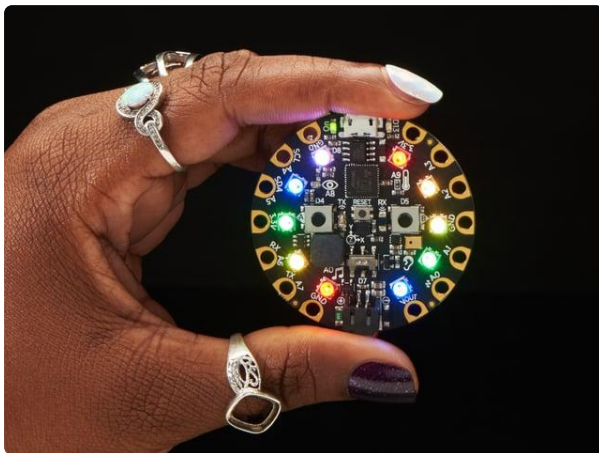
With MakeCode for the Circuit Playground Express or MakeCode Maker, we were able to quickly make this demo.

MakeCode an easy to use block based code editor that's great if you're just getting started.



Parts

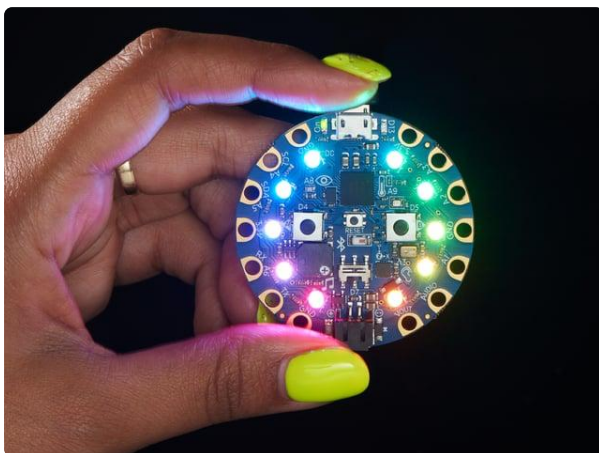
Select either the Circuit Playground Express or the Circuit Playground Bluefruit.



[Circuit Playground Express](#)

Circuit Playground Express is the next step towards a perfect introduction to electronics and programming. We've taken the original Circuit Playground Classic and...

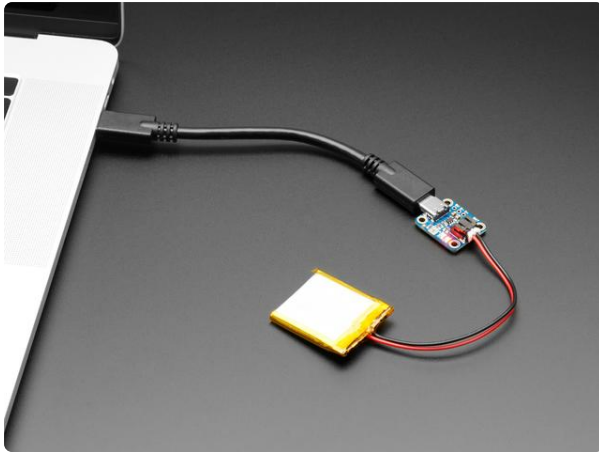
<https://www.adafruit.com/product/3333>



[Circuit Playground Bluefruit - Bluetooth Low Energy](#)

Circuit Playground Bluefruit is our third board in the Circuit Playground series, another step towards a perfect introduction to electronics and programming. We've...

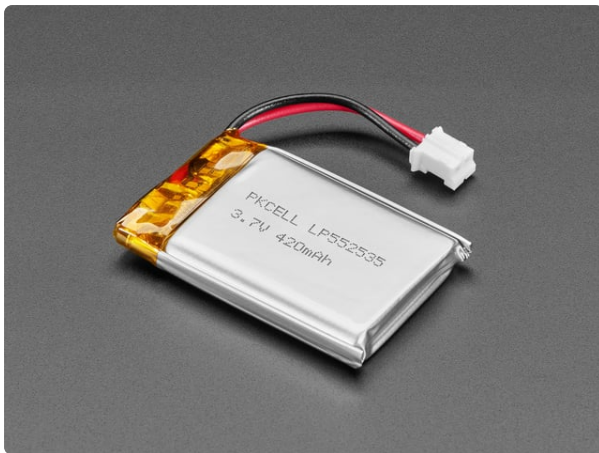
<https://www.adafruit.com/product/4333>



Adafruit Micro-Lipo Charger for LiPoly Batt with USB Type C Jack

Oh so handy, this little lipo charger is so small and easy to use you can keep it on your desk or mount it easily into any project! Simply plug it via any USB C cable into a USB port...

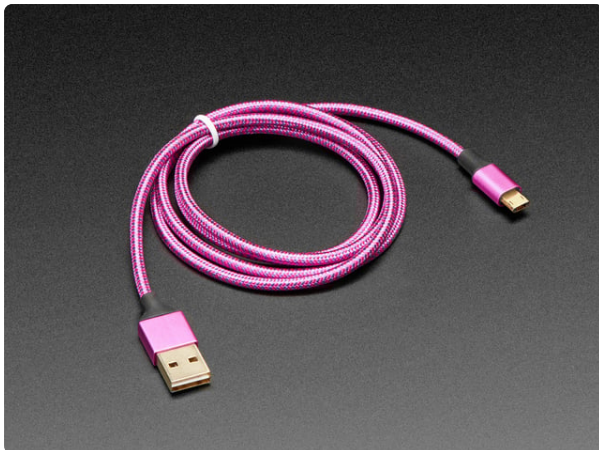
<https://www.adafruit.com/product/4410>



Lithium Ion Polymer Battery with Short Cable - 3.7V 420mAh

Lithium-ion polymer (also known as 'lipo' or 'lipoly') batteries are thin, light, and powerful. The output ranges from 4.2V when completely charged to 3.7V. This...

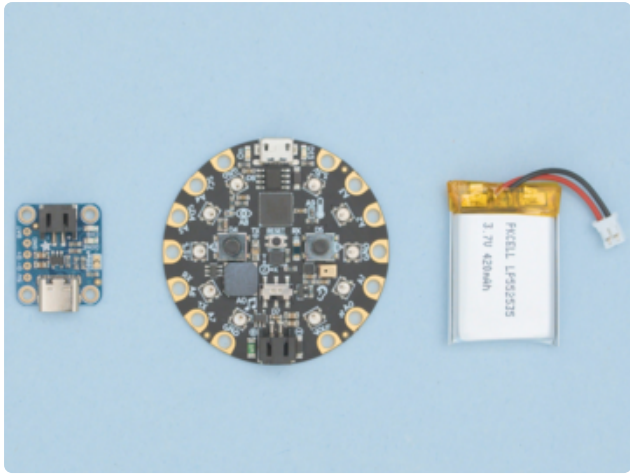
<https://www.adafruit.com/product/4236>



Fully Reversible Pink/Purple USB A to micro B Cable - 1m long

This cable is not only super-fashionable, with a woven pink and purple Blinka-like pattern, it's also fully reversible! That's right, you will save seconds a day by...

<https://www.adafruit.com/product/4111>



4 x [M3 x 12mm](#)
M3-0.50 x 12M

<https://www.albanycountyfasteners.com/Flat-socket-head-cap-screw-3mm-stainless-steel-p/5470000.htm>

1 x [7/8 Dowel](#)
7/8 Dowel

<https://amzn.to/3puu7jt>

3D Printing



Parts List

STL files for 3D printing are oriented to print "as-is" on FDM style machines. Parts are designed to 3D print without any support material. Original design source may be downloaded using the links below.

`puck-cover.stl`

`puck-btm.stl`

`hockey-blade.stl`

[Edit Puck Design](#)

<https://adafru.it/19Fa>

[Download Puck Stls](#)

<https://adafru.it/PtF>

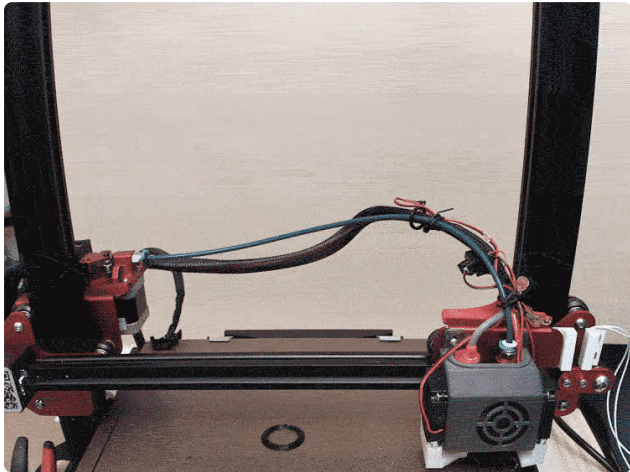
[Edit Hockey Blade](#)

<https://adafru.it/19Fb>

[Download Hockey Blade](#)

<https://adafru.it/PtF>

Slicing Parts

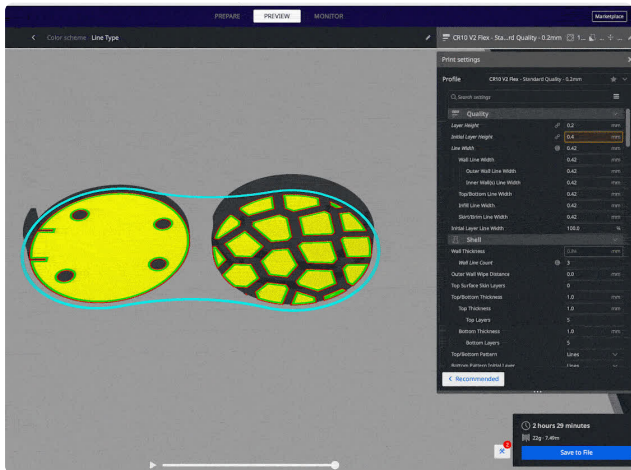


Hockey Blade

Slice the Blade part with settings for PETG material. The parts were sliced using CURA using the slice settings below.

PETG filament

230c extruder
0.2 layer height
30% gyroid infill
70c heated bed



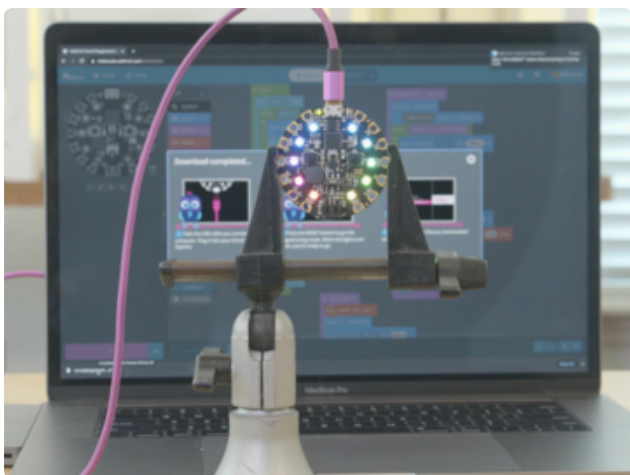
Circuit Playground Puck Case

Slice the Case parts with settings for TPU 98a material. The parts were sliced using CURA using the slice settings below.

TPU 98a filament

230c extruder
0.2 layer height
30% gyroid infill
50c heated bed

MakeCode



MakeCode for Adafruit Boards

MakeCode is an easy-to-use block-based programming editor that runs in the Google Chrome web browser. It's has an intuitive interface and features lots of examples and demos.

LED Hockey Puck Code

If you are using the Circuit Playground Express, which uses <https://makecode.adafruit.com> (<https://adafru.it/wpC>), click the button below.

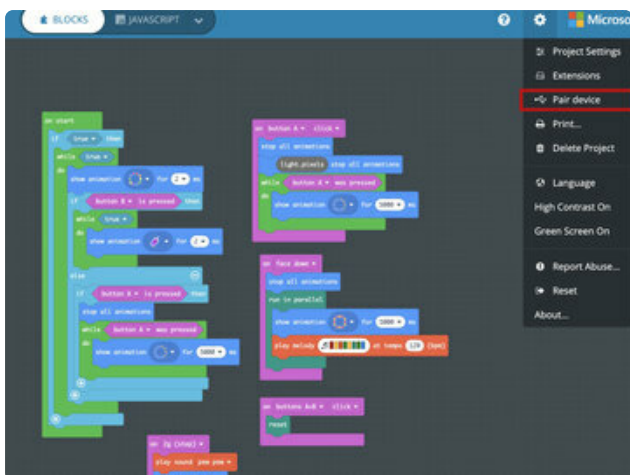
Get the Hockey Puck Code for the
Circuit Playground Express

<https://adafru.it/PtC>

If you are using the Circuit Playground Bluefruit, which uses <https://maker.makecode.com/> (<https://adafru.it/PvB>), click the button below.

Get the Hockey Puck Code for
Circuit Playground Bluefruit

<https://adafru.it/PvC>

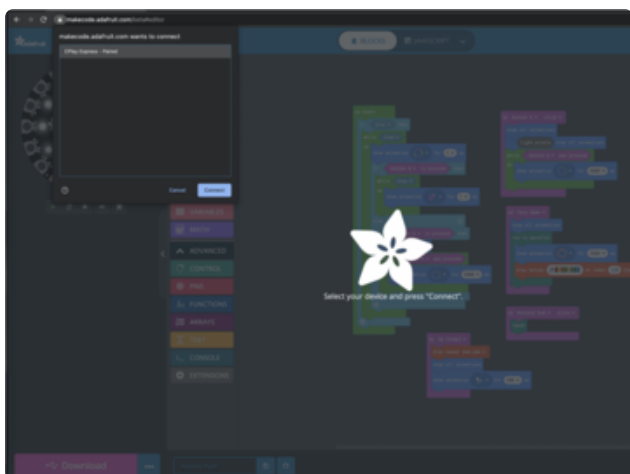


Pair Device and Upload

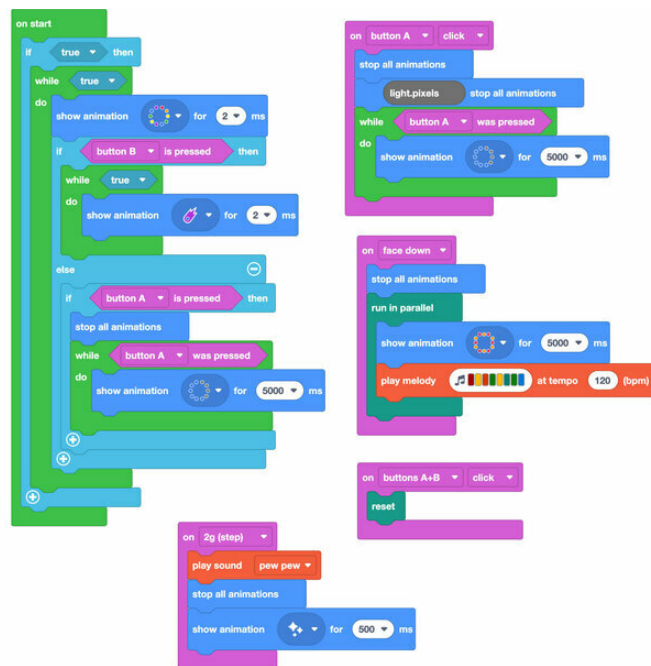
Once you have the MakeCode program open, click the **edit** button on the top right to open it in a new MakeCode project.

The code blocks and simulator will be ready to modify. Let's get the device paired with WebUSB.

1. Click on the **Gear icon**, at the top right.
2. Select **Pair Device** from the dropdown.
3. For the Circuit Playground Express, Click on **CPlay Express** and **Connect**. For the Circuit Playground Bluefruit, click your device and click **Pair Device**.
4. Click the big blue **Download** button to upload the code.



MakeCode Blocks



on start

if true then

- while true do show animation (rainbow)

if button B is pressed then

while true do

- show animation (purple fireball) for 2ms

else if

- button A is pressed then
 - stop all animations
 - while button A is pressed do
 - show animation (blue chase) for 5000ms

on button A click

- stop all animations
- While button A was pressed do
 - show animation (blue chase color) for 5000 ms

on face down

stop all animations

- run in parallel
 - show animation (red orange color) for 5000 ms
 - play melody (falling)

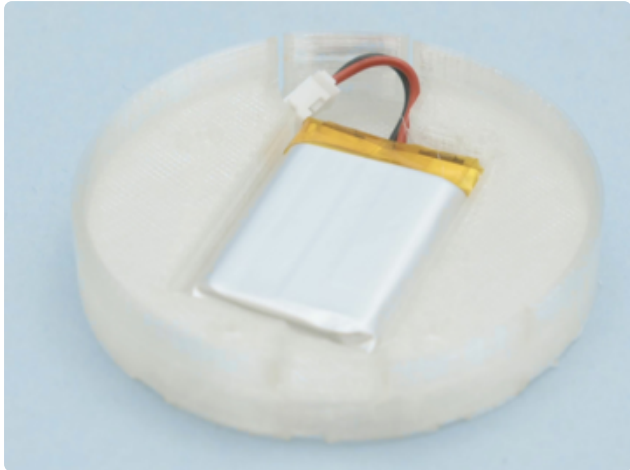
on 2g (step)

- play sound (pew pew)
- stop all animation
- show animation (sparkle)

on button A+B click

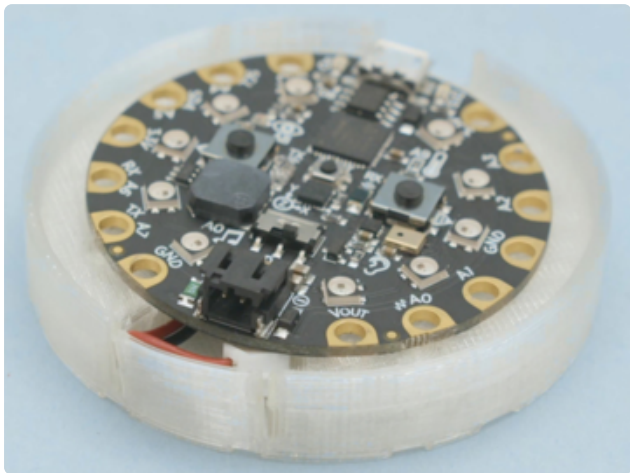
- reset

Assemble



Place Lipo Battery

Orient the battery so the wire connections are facing down.



Align Circuit Playground

The battery port aligns with the flaps on the case.



Attach screws

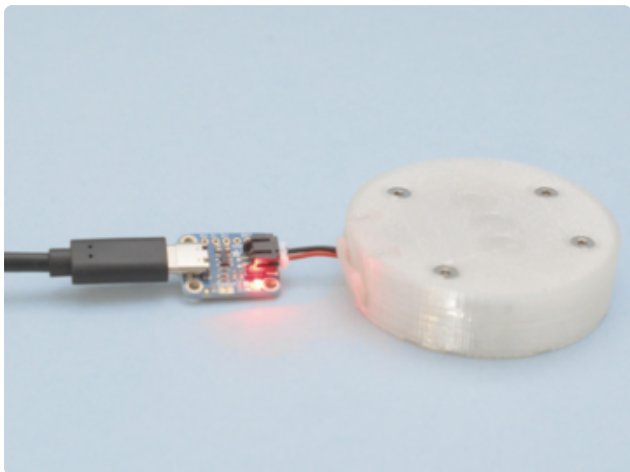
Align the flaps on both parts of the case and fasten four M3x12mm screws to each standoff.



Plug in Battery

Pull the lid flaps back to plug in and to disconnect the battery to the Circuit Playground.

To close the port opening, push the larger flap behind the shorter flap.



Charging the Battery

The battery connector can reach out of case and plug into a USB [lipo charger](http://adafru.it/4410) (<http://adafru.it/4410>) to recharge the battery.



Hockey Blade

The hockey blade press fits into a $7/8$ diameter dowel (<https://adafru.it/PtE>).

Use an M3 screw to further secure the blade.

