No-Code MagTag Every Day Goal Tracker

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https://learn.adafruit.com/no-code-magtag-every-day-goal-tracker

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Table of Contents

Overview

This project is **a no-code habit tracker built with the Adafruit MagTag, designed to help you monitor three daily habits and keep streaks alive**...all without writing a single line of code. Using Adafruit IO Wippersnapper and IO Actions, you'll set up a fully functional system that tracks progress, displays streaks, and lets you check off habits with the MagTag's four front-facing buttons.

This guide walks you through creating a personal habit tracker using the Adafruit MagTag eInk display. **The device will track three daily habits (for example: meditate, stretch, walk) and display whether you've completed them**. If you complete your daily tasks, overnight your MagTag will reset the TODO and add to your streak, showing how many consecutive days you've kept up the routine.

The best part? No coding is required. Thanks to Adafruit IO Wippersnapper, you'll configure the MagTag entirely through a web interface. With Adafruit IO Actions, you'll automate streak tracking and reset logic, making this project accessible to beginners.

What is WipperSnapper?

WipperSnapper is a firmware designed to turn any WiFi-capable board into an Internet-of-Things (IoT) device without programming a single line of code. WipperSnapper connects to [Adafruit IO](https://adafru.it/fsU) (https://adafru.it/fsU), a web platform designed (by Adafruit! (https://adafru.it/Bo5)) to display, respond, and interact with your project's data.

Simply load the WipperSnapper firmware onto your board, add credentials, and plug it into power. Your board will automatically register itself with your Adafruit IO account.

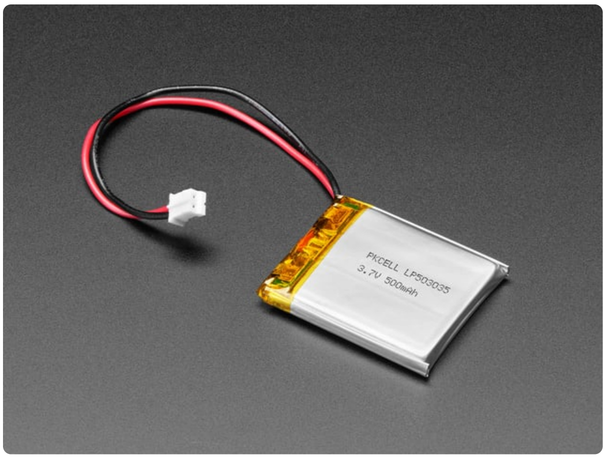
From there, you can add components to your board such as buttons, switches, potentiometers, sensors, and more! Components are dynamically added to hardware, so you can immediately start interacting, logging, and streaming the data your projects produce without writing code.

Parts

Adafruit MagTag - 2.9" Grayscale E-Ink WiFi Display
The Adafruit MagTag combines the ESP32-S2 wireless module and a 2.9" grayscale E-Ink display to make a low-power IoT display that can show data on its screen even when power is...
https://www.adafruit.com/product/4800

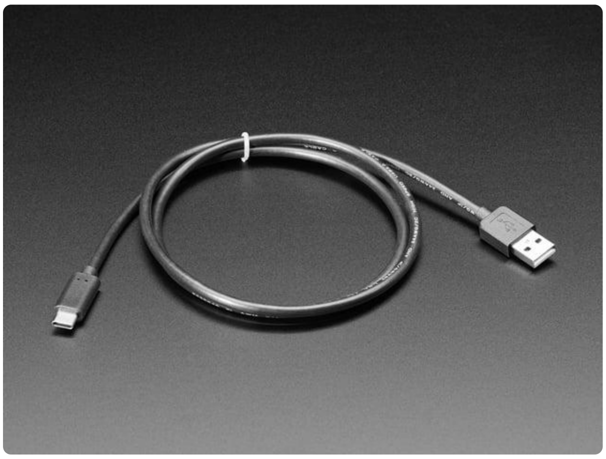
Mini Magnet Feet for RGB LED Matrices (Pack of 4)
Got a glorious RGB Matrix project you want to mount and display in your workspace or home? If you have one of the matrix panels listed below, you'll need a pack of these...
https://www.adafruit.com/product/4631

[Adafruit MagTag Enclosure & Buttons Kit](https://www.adafruit.com/product/6433)
Here is a cool and minimal enclosure for your MagTag to keep it safe during use and transport. This case has been...
https://www.adafruit.com/product/6433



[Lithium Ion Polymer Battery - 3.7v 500mAh](https://www.adafruit.com/product/1578)
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/1578

[Black Nylon Machine Screw and Stand-off Set – M3 Thread](https://www.adafruit.com/product/4685)
Totaling 420 pieces, this M3 Screw Set is a must-have for your workstation. You'll have enough screws, nuts, and hex standoffs to fuel...
https://www.adafruit.com/product/4685



[USB Type A to Type C Cable - approx 1 meter / 3 ft long](https://www.adafruit.com/product/4474)
As technology changes and adapts, so does Adafruit. This USB Type A to Type C cable will help you with the transition to USB C, even if you're still...
https://www.adafruit.com/product/4474

WipperSnapper Setup

The WipperSnapper firmware and ecosystem are in BETA and are actively being developed to add functionality, more boards, more sensors, and fix bugs. We encourage you to try out WipperSnapper with the understanding that it is not final release software and is still in development. If you encounter any bugs, glitches, or difficulties during the beta period, or with this guide, please contact us via http://io.adafruit.com/support

What is WipperSnapper

WipperSnapper is a firmware designed to turn any WiFi-capable board into an Internet-of-Things device without programming a single line of code. WipperSnapper connects to Adafruit IO (https://adafru.it/fsU), a web platform designed (by Adafruit! (https://adafru.it/Bo5)) to display, respond, and interact with your project's data.

Simply load the WipperSnapper firmware onto your board, add credentials, and plug it into power. Your board will automatically register itself with your Adafruit IO account.

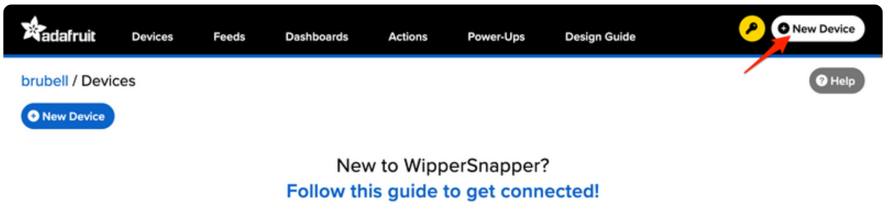
From there, you can add components to your board such as buttons, switches, potentiometers, sensors, and more! Components are dynamically added to hardware, so you can immediately start interacting, logging, and streaming the data your projects produce without writing code.

Sign up for Adafruit.io

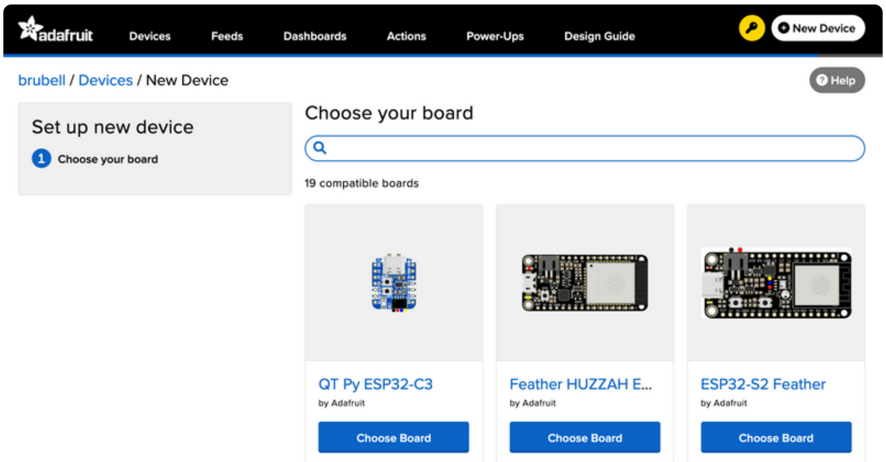
You will need an Adafruit IO account to use WipperSnapper on your board. If you do not already have one, head over to io.adafruit.com (https://adafru.it/fsU) to create a free account.

Add a New Device to Adafruit IO

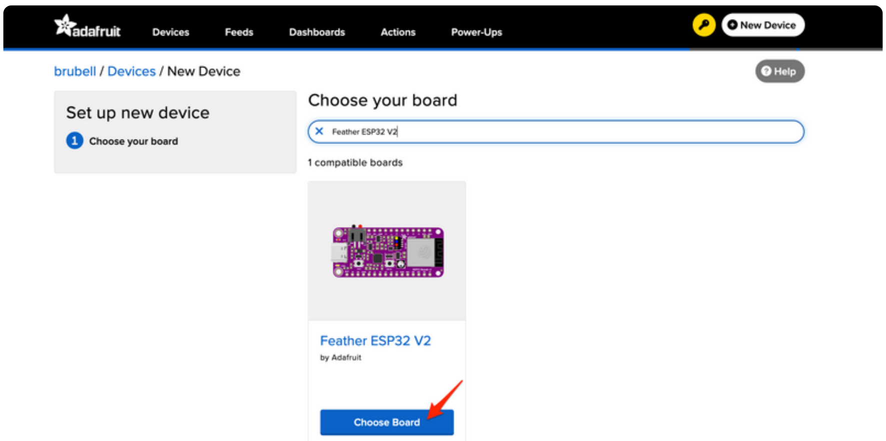
Log into your Adafruit IO (https://adafru.it/fsU) account. Click the New Device button at the top of the page.



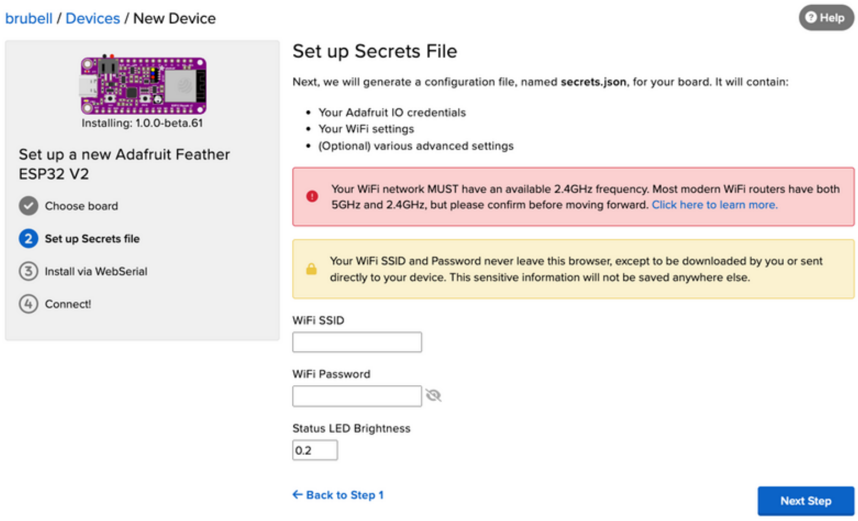
After clicking New Device, you should be on the board selector page. This page displays every board that is compatible with the WipperSnapper firmware.



In the board selector page's search bar, search for the Feather ESP32 V2. Once you've located the board you'd like to install WipperSnapper on, click the Choose Board button to bring you to the self-guided installation wizard.

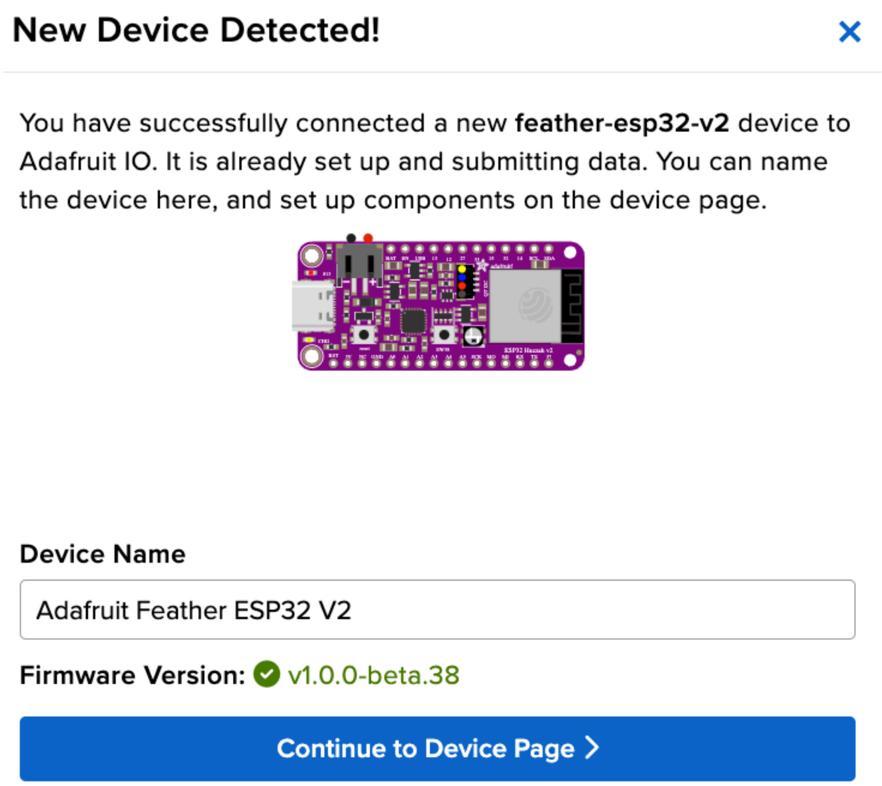


Follow the step-by-step instructions on the page to install Wippersnapper on your device and connect it to Adafruit IO.

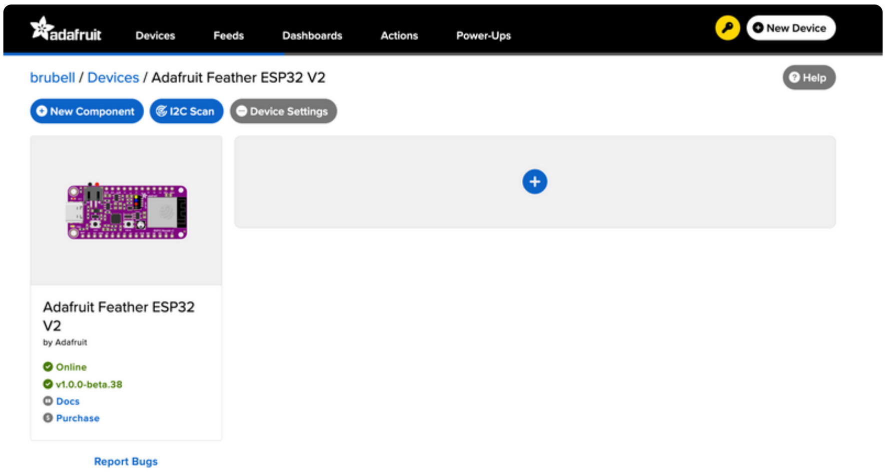


If the installation was successful, a popover should appear displaying that your board has successfully been detected by Adafruit IO.

Give your board a name and click "Continue to Device Page".



You should be brought to your board's device page.



Feedback

Adafruit.io WipperSnapper is in **beta** and you can help improve it!

If you have suggestions or general feedback about the installation process - visit https://io.adafruit.com/support (https://adafru.it/Sgb), click "Contact Adafruit IO Support" and select "I have feedback or suggestions for the WipperSnapper Beta".

Troubleshooting

If you encountered an issue during installation, please try the steps below first.

If you're still unable to resolve the issue, or if your issue is not listed below, get in touch with us directly at https://io.adafruit.com/support (https://adafru.it/Sgb). Make sure to click "Contact Adafruit IO Support" and select "There is an issue with WipperSnapper. Something is broken!"

I don't see my board on Adafruit IO, it is stuck connecting to WiFi

First, make sure that you selected the correct board on the board selector.

Next, please make sure that you entered your WiFi credentials properly, there are no spaces/special characters in either your network name (SSID) or password, and that you are connected to a 2.4GHz wireless network.

If you're still unable to connect your board to WiFi, please make a new post on the WipperSnapper technical support forum with the error you're experiencing, the LED colors which are blinking, and the board you're using. (https://adafru.it/V6a)

I don't see my board on Adafruit IO, it is stuck "Registering with Adafruit IO"

Try hard-resetting your board by unplugging it from USB power and plugging it back in.

If the error is still occurring, please make a new post on the WipperSnapper technical support forum with information about what you're experiencing, the LED colors which are blinking (if applicable), and the board you're using. (https://adafru.it/V6a)

"Uninstalling" WipperSnapper

WipperSnapper firmware is an application that is loaded onto your board. There is nothing to "uninstall". However, you may want to "move" your board from running WipperSnapper to running Arduino or CircuitPython. You also may need to restore your board to the state it was shipped to you from the Adafruit factory.

Moving from WipperSnapper to CircuitPython

Follow the steps on the Installing CircuitPython page (https://adafru.it/Amd) to install CircuitPython on your board running WipperSnapper.

- If you are unable to double-tap the RST button to enter the UF2 bootloader, follow the "Factory Resetting a WipperSnapper Board" instructions below.

Uploading this sketch will overwrite WipperSnapper. If you want to re-install WipperSnapper, follow the instructions at the top of this page.

Moving from WipperSnapper to Arduino

If you want to use your board with Arduino, you will use the Arduino IDE to load any sketch onto your board.

First, follow the page below to set up your Arduino IDE environment for use with your board.

Setup Arduino IDE

https://adafru.it/YYC

Then, follow the page below to upload the "Arduino Blink" sketch to your board.

Upload Arduino "Blink" Sketch

https://adafru.it/10aN

Uploading this sketch will overwrite WipperSnapper. If you want to re-install WipperSnapper, follow the instructions at the top of this page.

Factory Resetting a WipperSnapper Board

Sometimes, hardware gets into a state that requires it to be "restored" to the original state it shipped in. If you'd like to get your board back to its original factory state, follow the guide below.

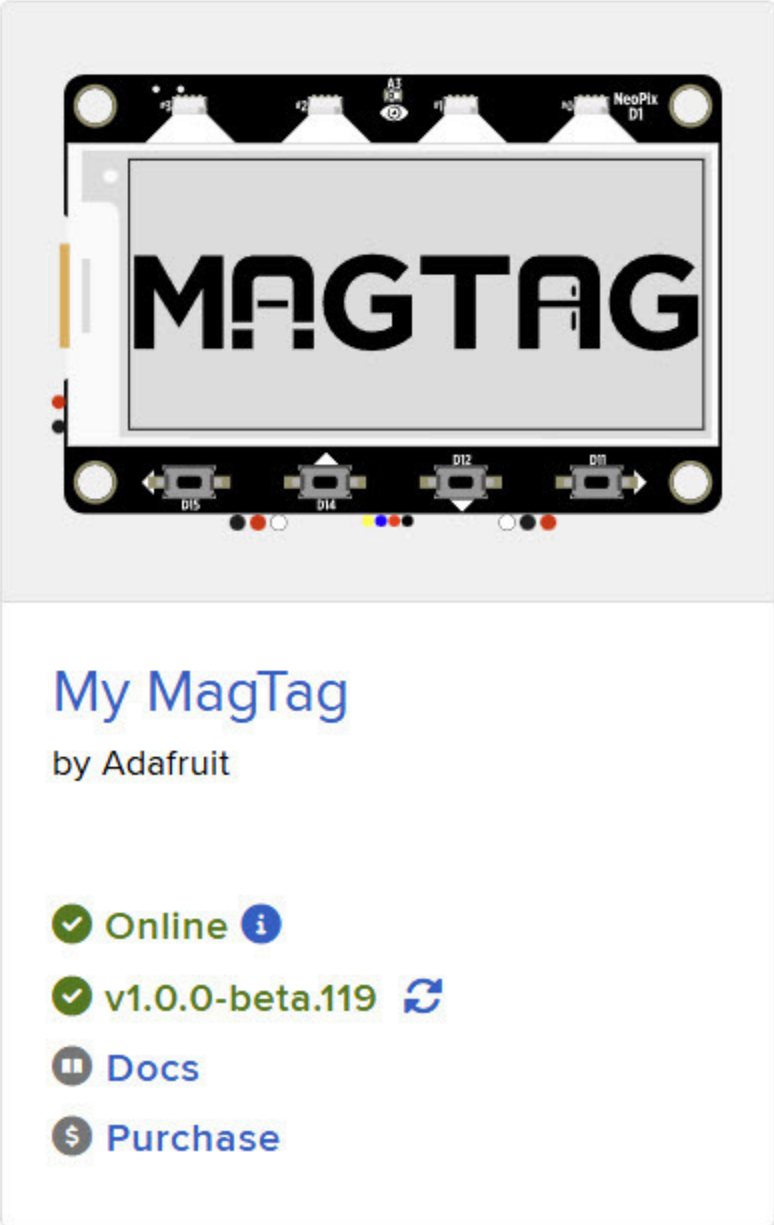
Factory Reset your Adafruit Feather HUZZAH ESP32-V2

https://adafru.it/10aO

Adafruit IO Configuration

Assuming you have already gone through the WipperSnapper Setup page and connected your board(s) to WipperSnapper, navigate to the WipperSnapper board **(https://adafru.it/TAu)** list (https://adafru.it/TAu). You should see your newly connected MagTag board listed here.

If you do not see your MagTag listed - go back to the WipperSnapper Setup Page and make sure its registered with Adafruit.io



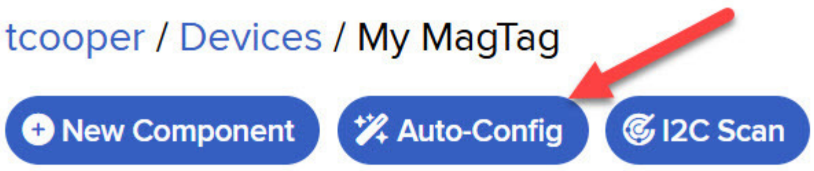
On the device page, quickly **check that your device is online and is running the latest version of the WipperSnapper firmware**.

The device tile on the left indicates the version number of the firmware running on the connected board.

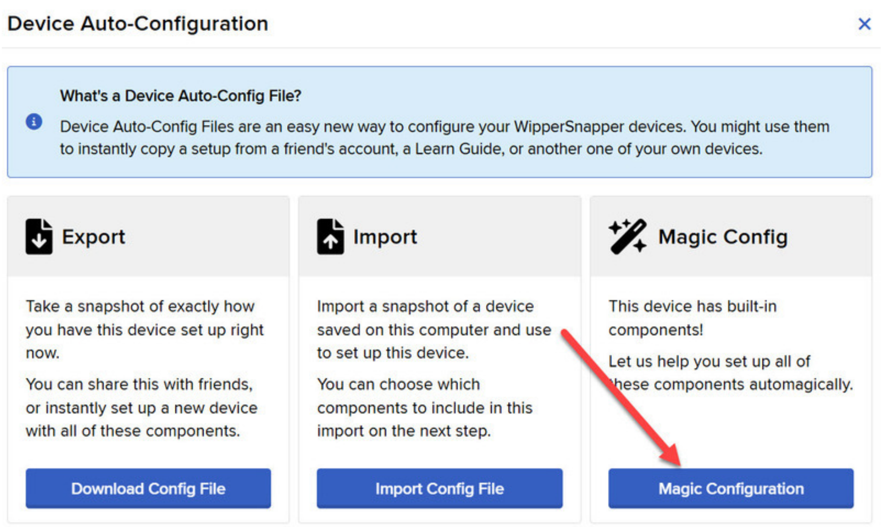
- **If the firmware version is green with a checkmark -** continue with this guide.
- **If the firmware version is red with an "X" -** [update to the latest WipperSnapper firmware](https://adafru.it/Vfd) (https://adafru.it/Vfd) on your board before continuing.

Adding Components

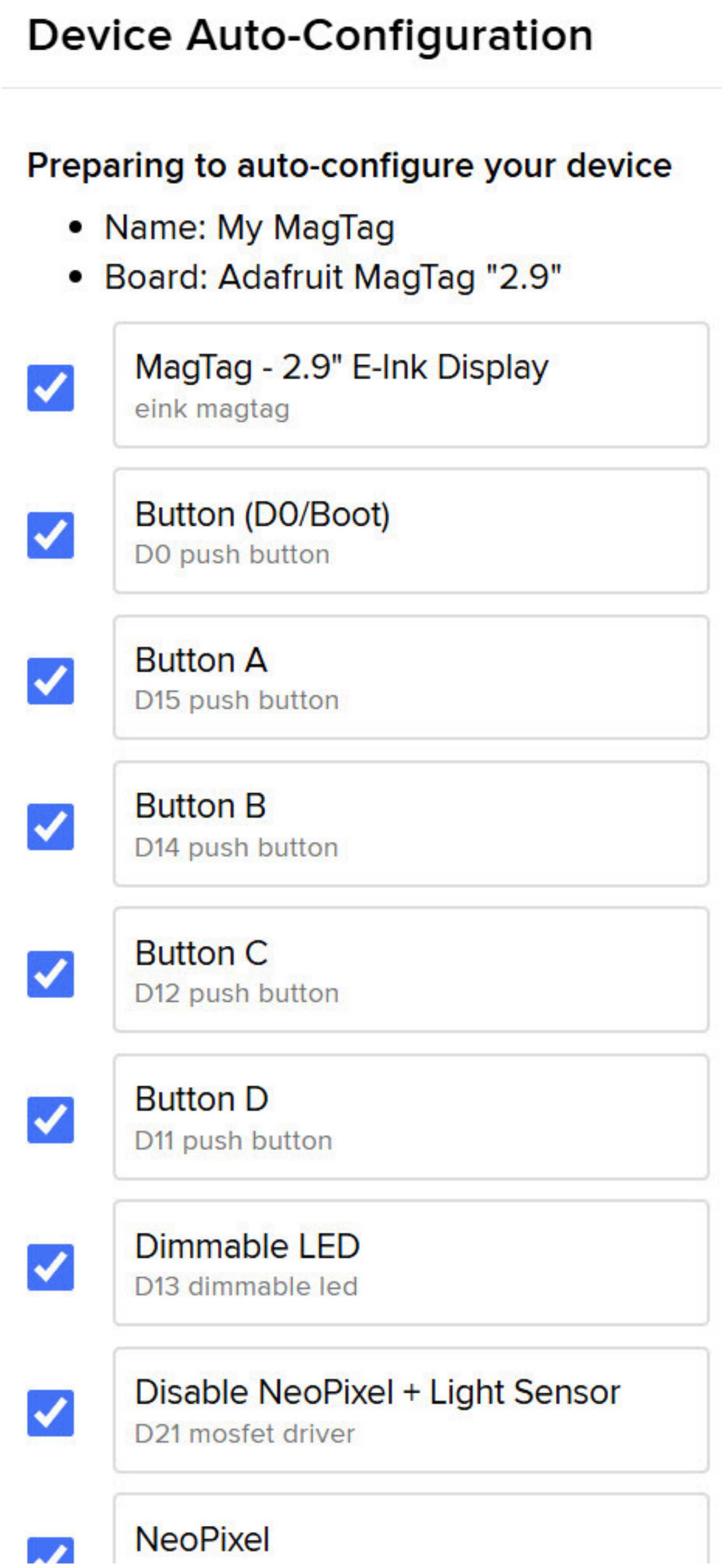
From the MagTag device page, click the Auto-Config button, which will be used to automatically set up all of the various buttons, LEDs, and sensors built into the MagTag.



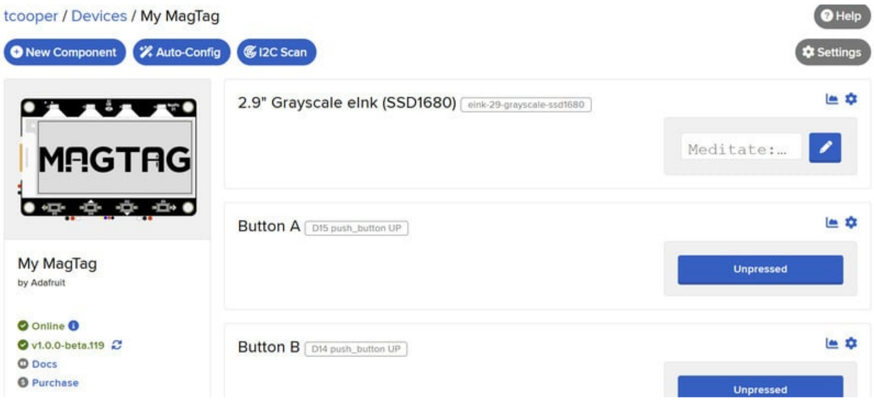
On the pop-up, select Magic Config to have Adafruit IO do all of the heavy lifting.



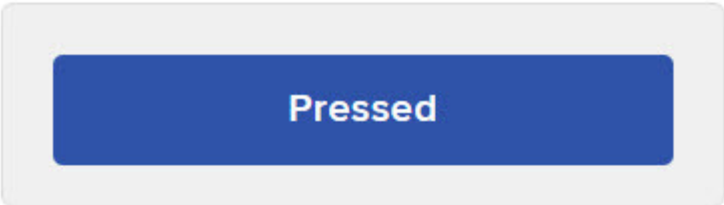
Even though this project will only use Buttons A, B, C, and the E-Ink display, you can just leave everything checked. This will set up all of the built-in components. This way they will be ready to go for any future updates to this project.



Your MagTag should all be set up and configured.



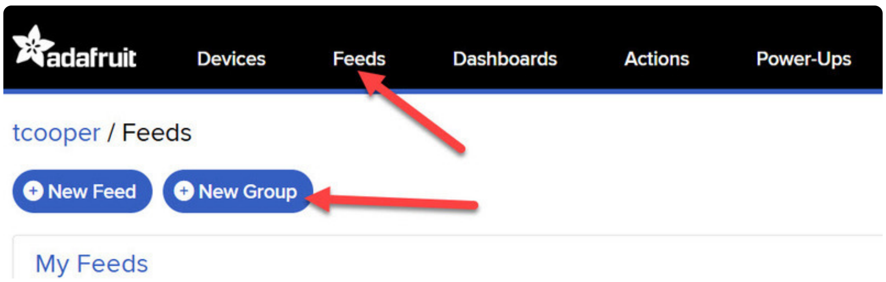
You can do a quick test to confirm it is all working as it should by pressing any of the front facing buttons. The corresponding button component should instantly react.



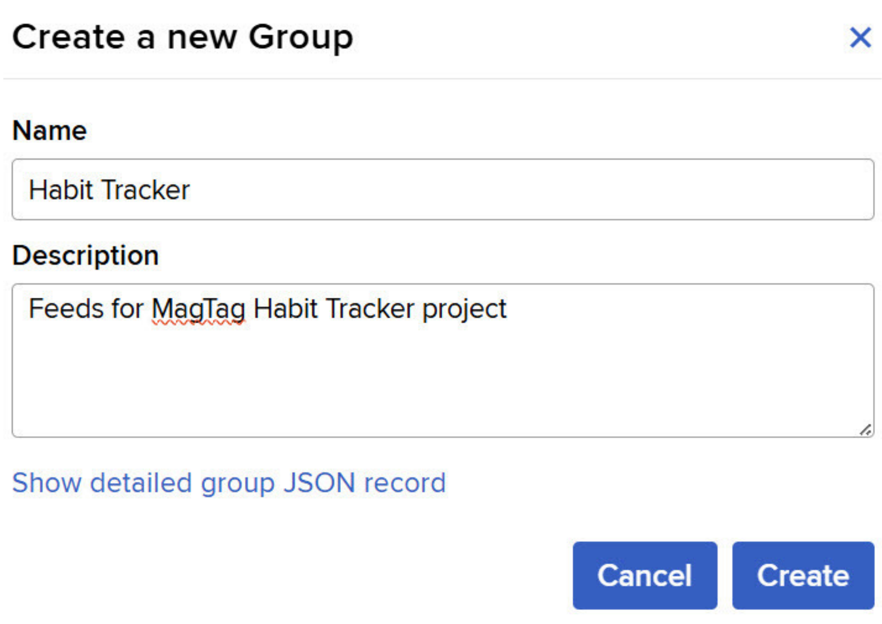
The next step sets up Adafruit IO Actions to get all of this to work.

Set Up Adafruit IO Actions

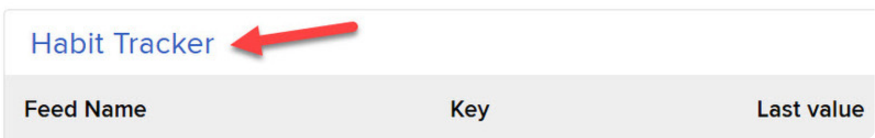
Before diving into creating your first Adafruit IO Action, you need to create some feeds to have a place to store the data. Head over to the Feeds page, and create a New Group.



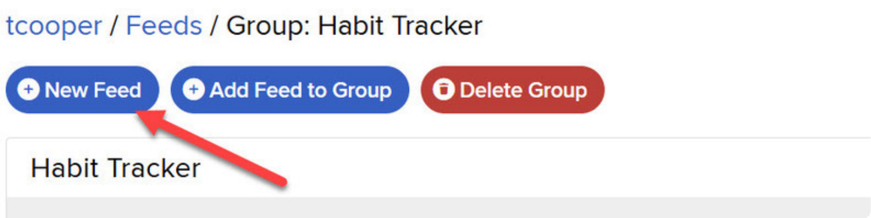
Create a group to organize the new feeds, to make it easier to find them later. Click the New Group button and name it Habit Tracker:



In your feeds list, scroll down until you find the Habit Tracker group, then click on the name to view the group. Add in all of the feeds you will need for this project.



Start by clicking the New Feed button to create a new feed within this group.

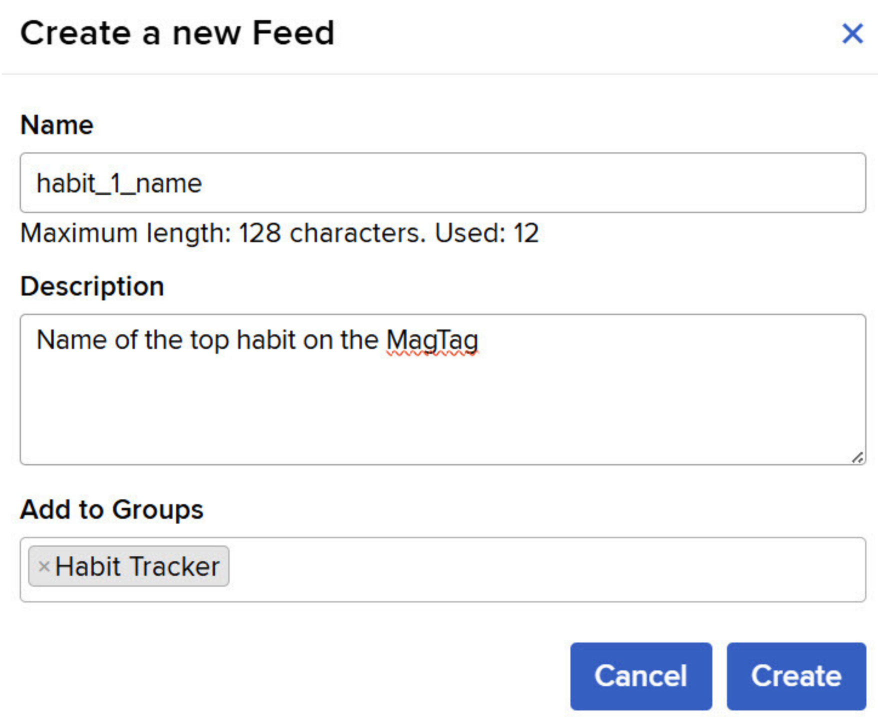


Now to create a feed to store the name of each habit, and the status of each habit. You'll need the following feeds:

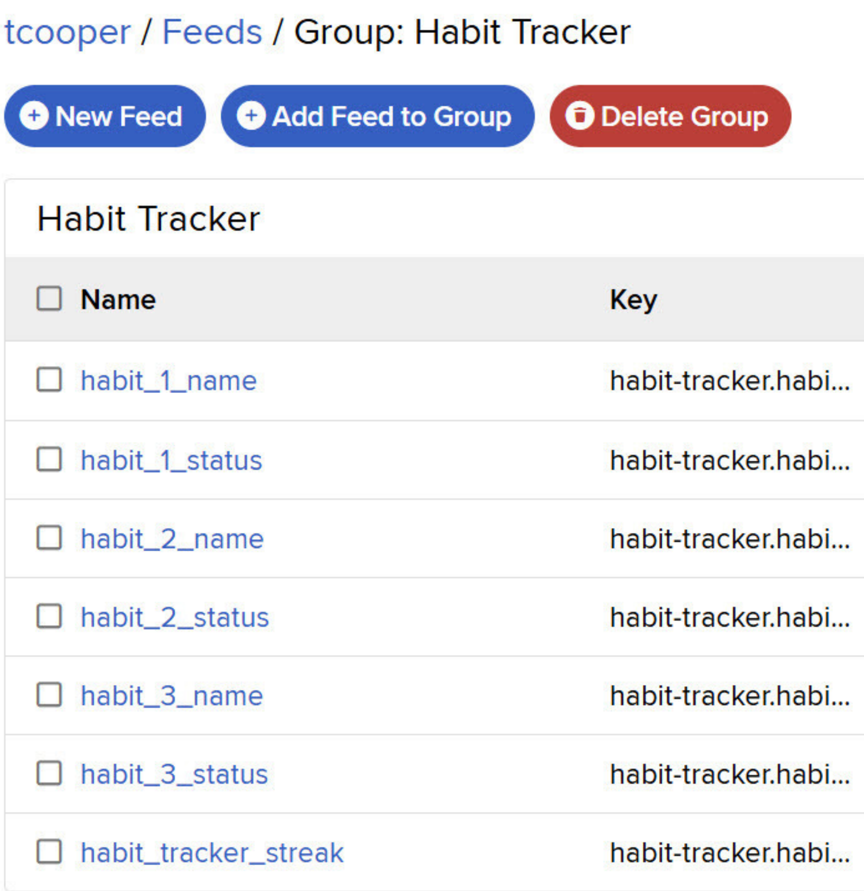
- habit_1_name
- habit_1_status
- habit_2_name
- habit_2_status
- habit_3_name

- habit_3_status

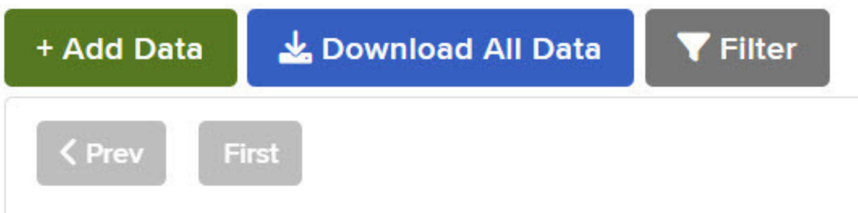
Next is a feed to store the total habit streak (how many days in a row you have completed all 3 tasks). Create a feed named habit_tracker_streak.



Go head and create each of these feeds until your feed group has all the correct feeds:

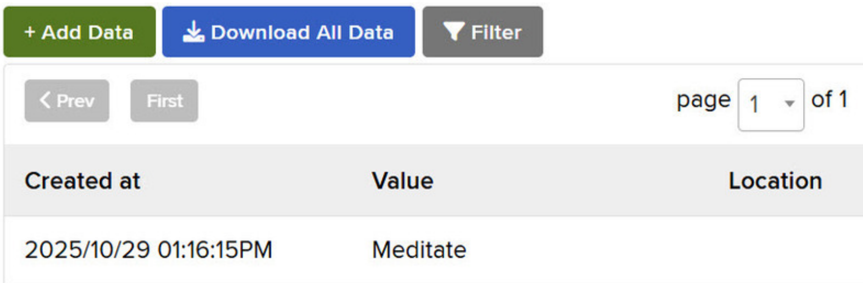


Next, in order for the Actions to work correctly, you need to set a starting value for each feed. So, pick 3 habits you want to track daily. In my case, I am going to track whether I have meditated, stretched, and taken a walk every day. So, to start with I am going to change habit_1_name to Meditate. To do this, click the name habit_1_name to go to the page for this feed. Then click the green Add Data button:

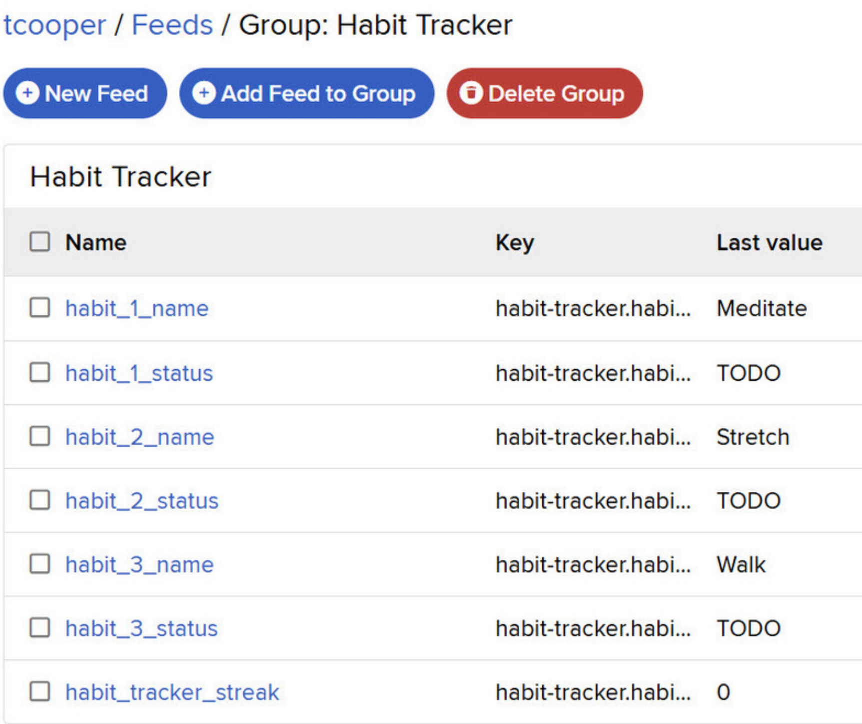


Then, in the VALUE field, enter the name of your first task, then click Create:

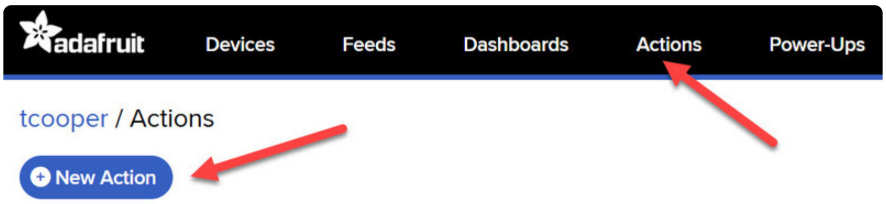
You should now see the name of your task at the top of the table at the bottom of this feed's page.



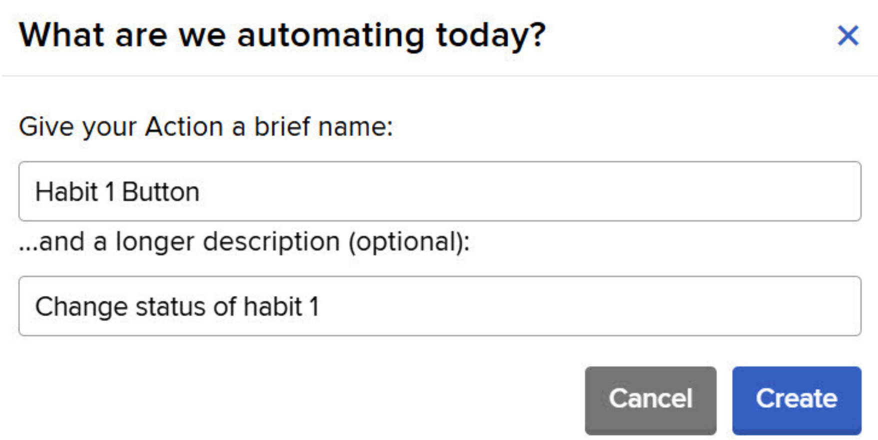
Now go through all of the feeds created earlier and enter a different task name for each of the habit names. Then for each of the habit statuses, change those to TODO. Finally, for the habit_tracker_streak, set that value to 0. When you are done, your group table should look like this:



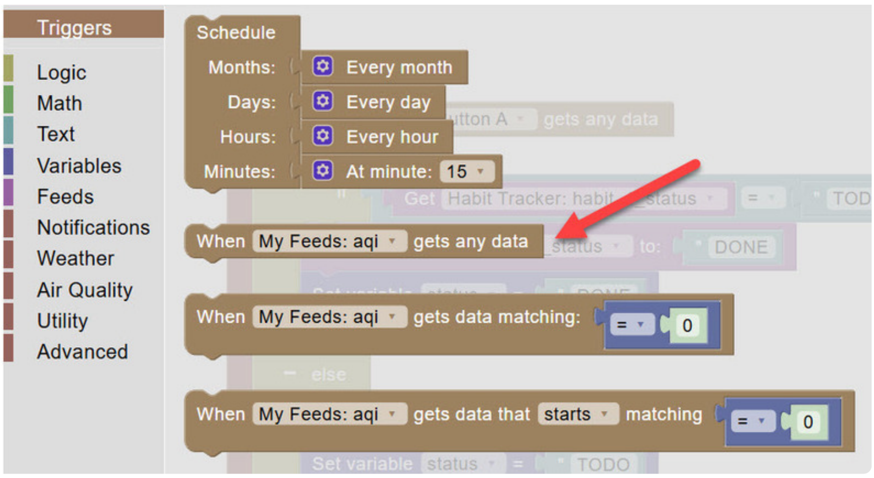
Now that the feeds are set up, you can set up the Actions. On the top navigation, click Actions, then click New Action:



To start, create an action that triggers every time the left-most button on the MagTag is clicked. This will change the status of habit_1 from TODO to DONE. So, name the first action Habit 1 Button:

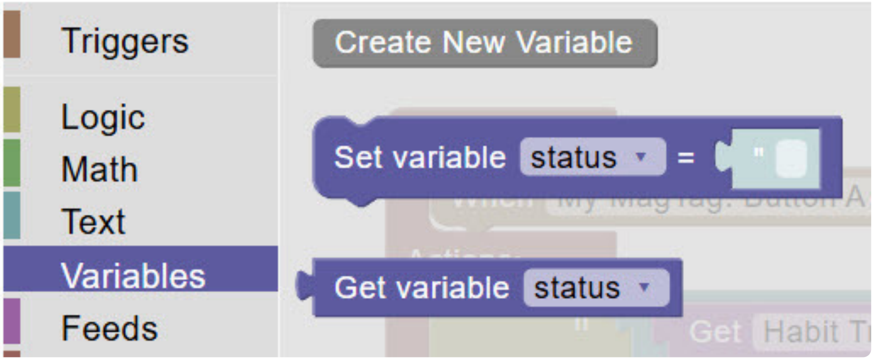


Start by setting up the trigger. In the triggers menu, choose the trigger for When a feed gest any data. Then change the dropdown to My MagTag: Button A.



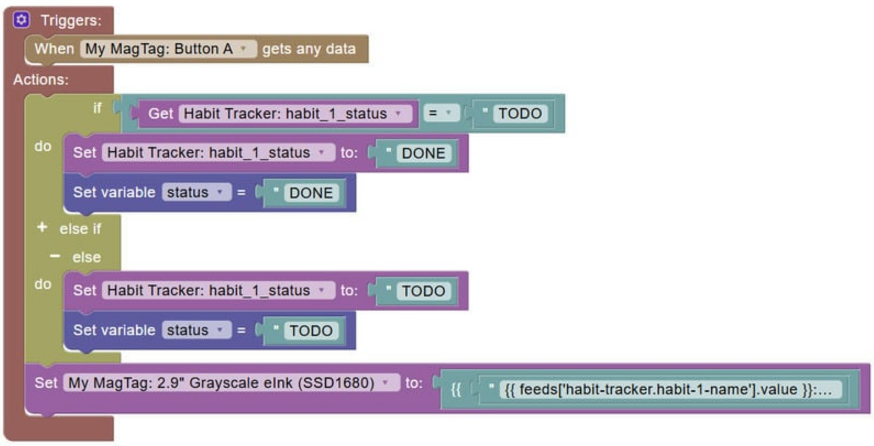
Learn more about the Any Data trigger block: https://io.adafruit.com/actions-docs/blocks/triggers/when_data.html

The next thing to do is create a new variable that is called 'status':



Learn more about variables here: https://io.adafruit.com/actions-docs/blocks/variables/set.html

Next put together the full action as follows:



So this action will get triggered anytime Button A on the MagTag is pressed. Then it will check to see what the current value of habit_1_status is. If it is TODO, change it to DONE. Then, update the entire MagTag display. For Habit 1, here is how to set up what to send to the E-Ink display:

```
{{ feeds['habit-tracker.habit-1-name'].value }}: {{ vars.status }}\n{{ feeds['habit-tracker.habit-2-name'].value }}: {{ feeds['habit-tracker.habit-2-status'].value }}\n{{ feeds['habit-tracker.habit-3-name'].value }}: {{ feeds['habit-tracker.habit-3-status'].value }}\nStreak:{{ feeds['habit-tracker.habit-tracker-streak'].value }} Days
```

This might look complicated, but all this is doing is sending the name of each habit and the status of each habit to the display.

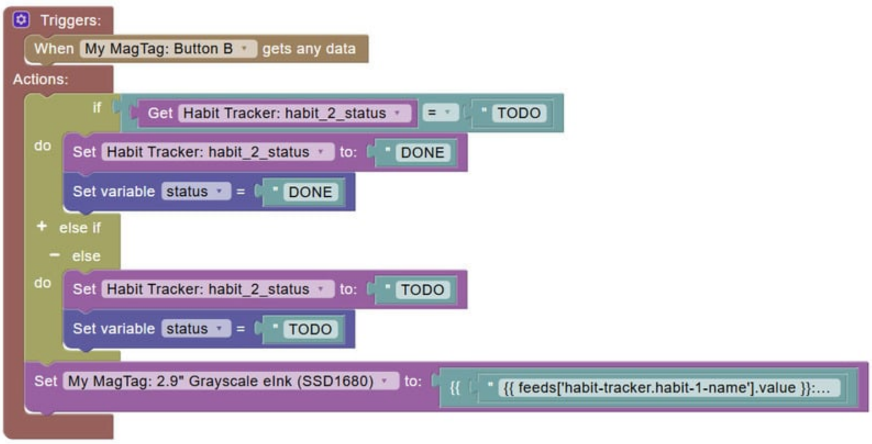
Those `{{ ... }}` curly brackets are placeholders. Think of them like snapshots that grab the latest values from Adafruit IO.

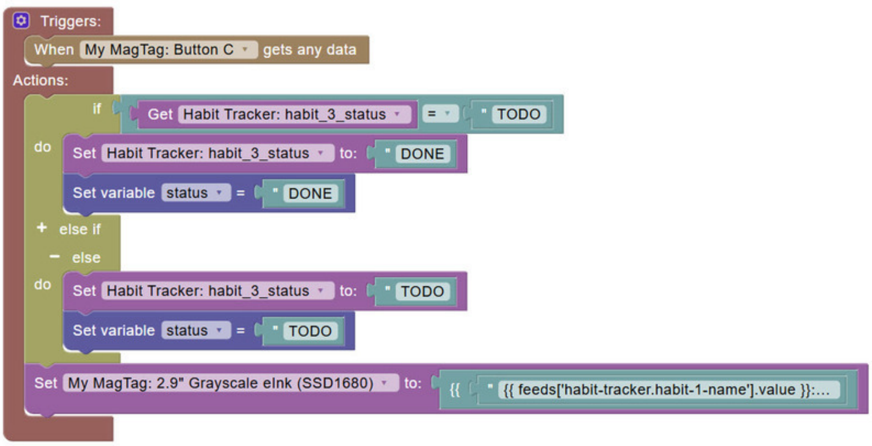
- `feeds[...]` are the actual data feeds (like buckets that store your habit names and statuses).
- `vars.status` is the variable set up, sets the feed to TODO or DONE.
- When the MagTag updates, it swaps those placeholders with whatever's inside the feeds right now.

So instead of hard-coding "Meditate: DONE," the MagTag is always showing **live data** from your Adafruit IO feeds.

Rinse & Repeat

Now to create a new action for each button:

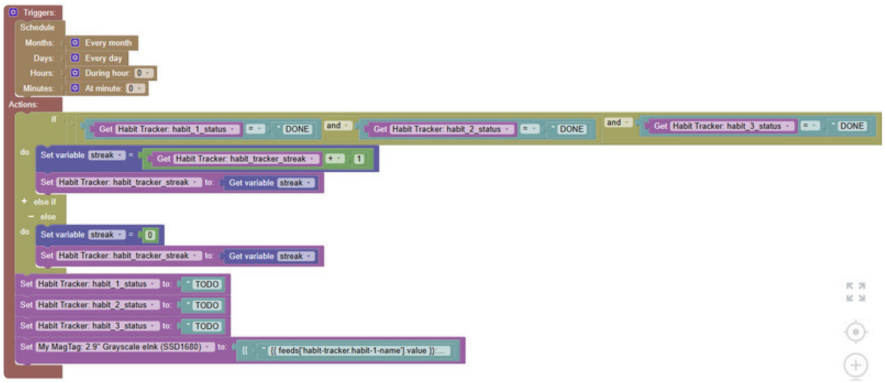




Setting the Streak

The last action to set up is one that will run every night at midnight. It will set all of the habits back to TODO, and if you have completed all of your tasks for the day, it will increase the streak counter. If you didn't complete all of your tasks, it will set the streak to 0.

I created a new action called Habit Tracker Reset. Set up the trigger to run the action every night at midnight:



Learn more about the schedule trigger: https://io.adafruit.com/actions-docs/blocks/triggers/on_schedule.html

Every day at midnight, this action runs to manage your habits and streaks. It checks whether all three habits were marked as complete the previous day. If they were, the streak counter is increased by one; if not, the streak resets back to zero. After updating the streak, the action resets all three habits to “TODO” so you start fresh each day. Finally, it sets the MagTag display with all of the habits showing TODO and the updated streak count.

Optional: MagTag Enclosure

The MagTag will work great on its own, especially if you use the [Adafruit Mini Magnetic Feet](http://adafru.it/4631) (http://adafru.it/4631) to stick it to your refrigerator. You can also 3D print or buy the Ruiz Brother's wonderful enclosure:

MagTag Case
By Ruiz Brothers

https://learn.adafruit.com/magtag-case