

Adafruit IO



Thomas Trickel



Adafruit IO

Internet of Things (IoT)

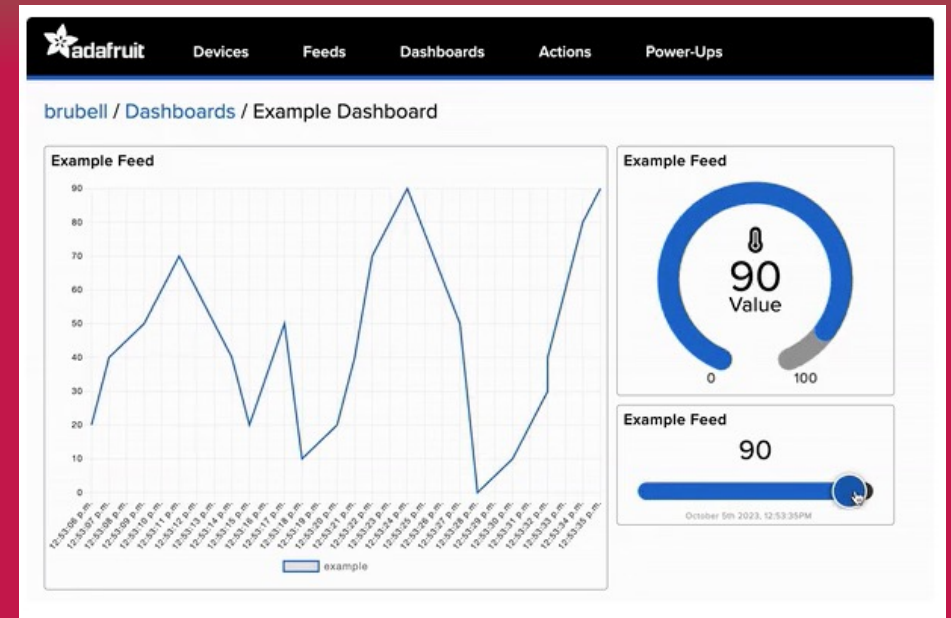
Feeds and Dashboards

Control LED from AIO (digital output)

Send Data to AIO (digital input)

...

Send CO2 data to AIO (analog input)



Control LED from AIO

- Sign up to Adafruit
- Hardware
- Create Feed
- Create Dashboard
- Write Python Code

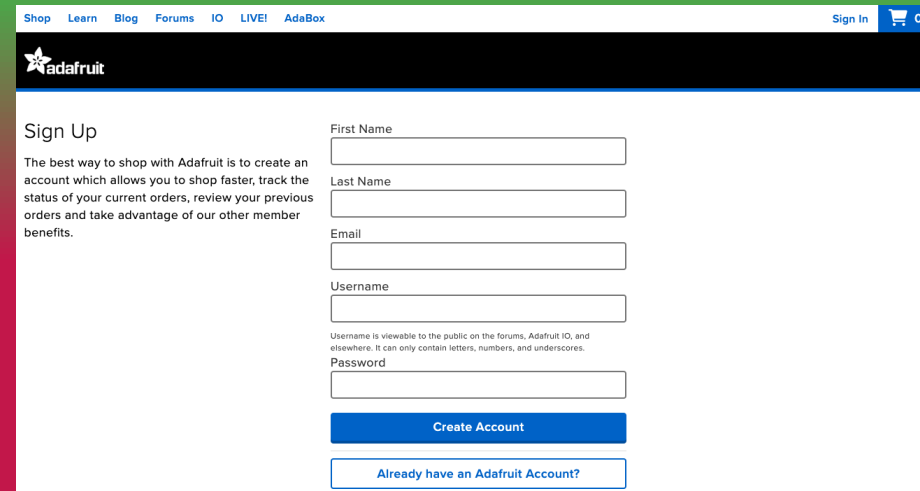


Setup AIO Account

Sign Up

https://accounts.adafruit.com/users/sign_up

Two factor authentication



The screenshot shows the Adafruit website's sign-up page. At the top, there is a navigation bar with links for Shop, Learn, Blog, Forums, IO, LIVE!, and AdaBox. On the right side of the navigation bar, there are links for Sign In and a shopping cart icon. Below the navigation bar is the Adafruit logo. The main content area is titled "Sign Up" and contains a paragraph explaining the benefits of creating an account. To the right of this text are several input fields for user information: First Name, Last Name, Email, Username, and Password. Below the Password field is a blue "Create Account" button and a link that says "Already have an Adafruit Account?".

Shop Learn Blog Forums IO LIVE! AdaBox Sign In

adafruit

Sign Up

The best way to shop with Adafruit is to create an account which allows you to shop faster, track the status of your current orders, review your previous orders and take advantage of our other member benefits.

First Name

Last Name

Email

Username

Username is viewable to the public on the forums, Adafruit IO, and elsewhere. It can only contain letters, numbers, and underscores.

Password

[Create Account](#)

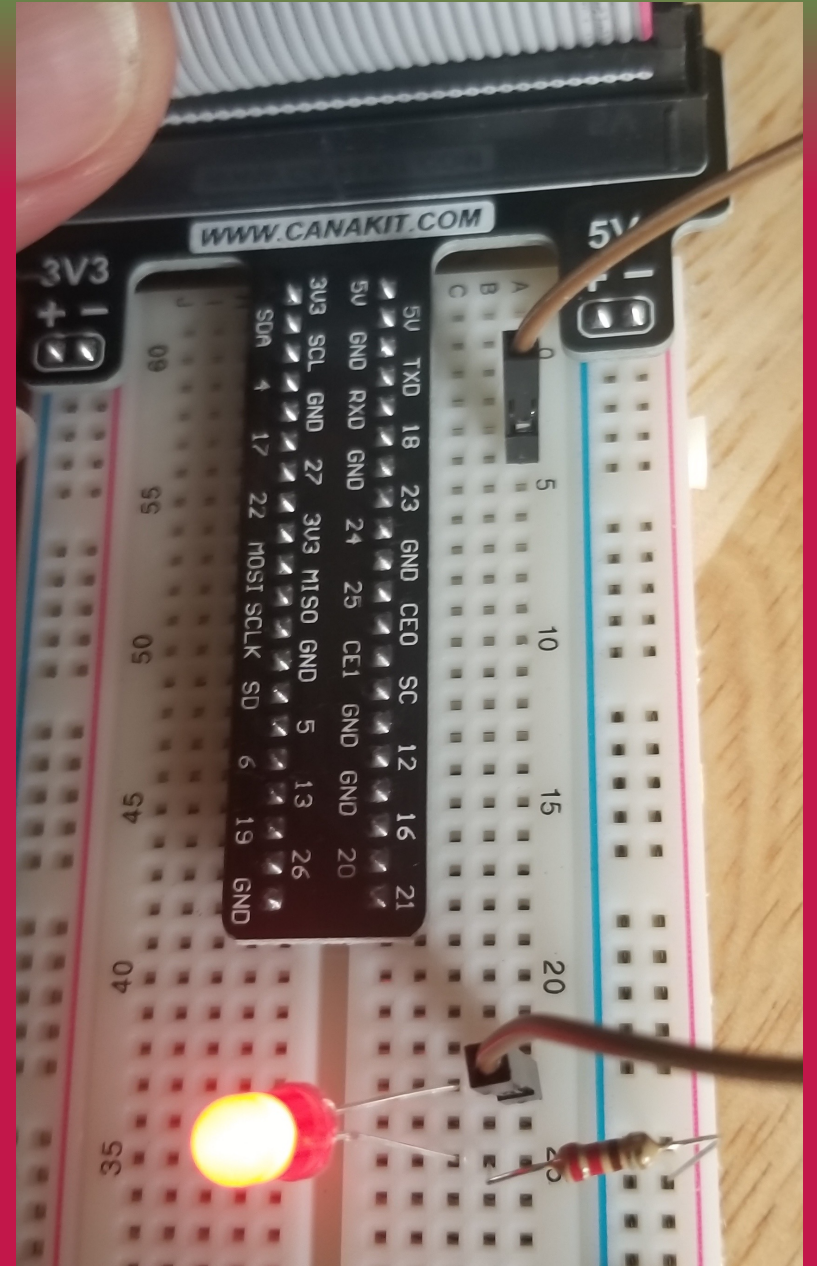
[Already have an Adafruit Account?](#)

Feeds & Dashboards

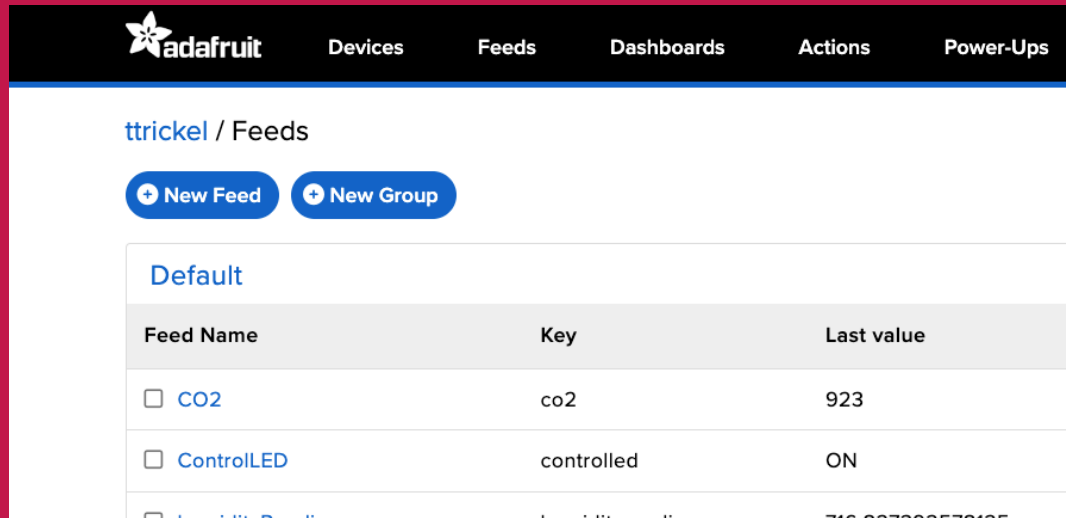
- Think of a Feed as property of an IoT device
 - Feeds are Features of an IoT device
 - Weather Station – temperature, humidity, wind speed, etc
 - Thermostat – set temperature, on/off
 - Door Lock
- Data is sent to and comes from Feeds
- Dashboards are used to
 - Display Feed data
 - Send data to a Feed

Hardware

- Digital Output
- Polarity matters on LED
 - Short leg is Cathode, connect to – (GND)
- Resistor 220 Ω (Red Red Brown)
- Wire
 - LED Anode to GPIO 18

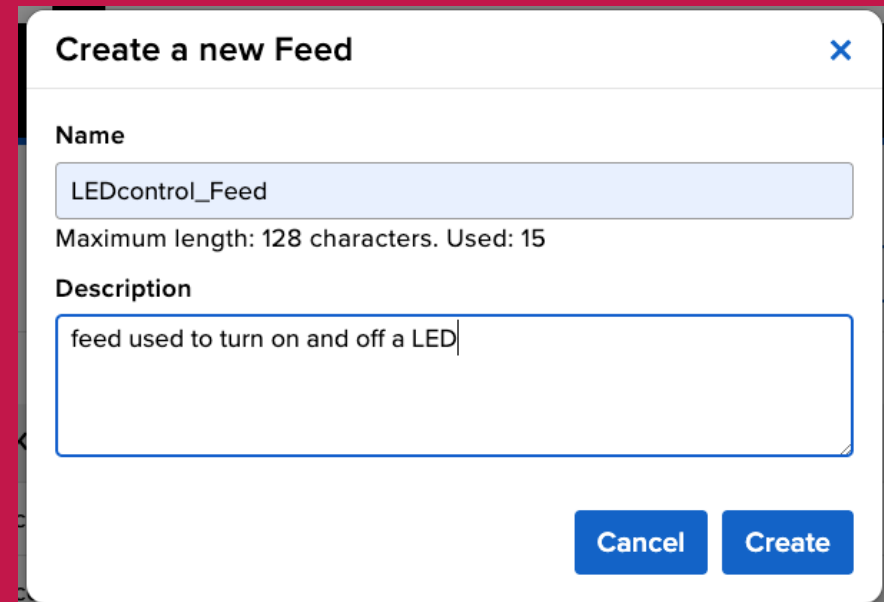


Create AIO Feed



The screenshot shows the Adafruit dashboard with the 'Feeds' tab selected. The breadcrumb 'ttrickel / Feeds' is visible. There are two buttons: '+ New Feed' and '+ New Group'. Below is a table with the following data:

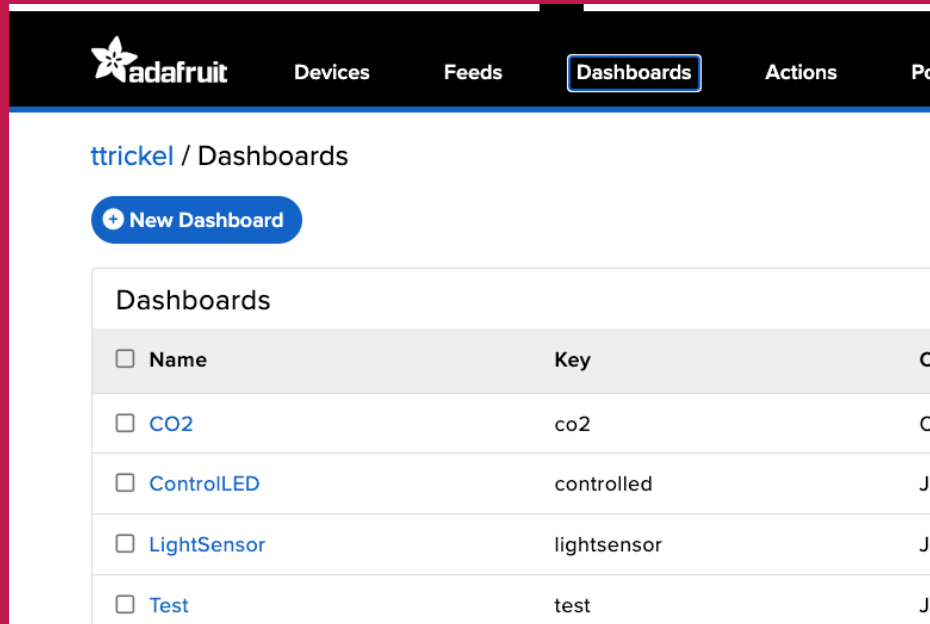
Feed Name	Key	Last value
<input type="checkbox"/> CO2	co2	923
<input type="checkbox"/> ControlLED	controlled	ON
<input type="checkbox"/> Humidity Reading	humidityreading	716.827202570125



The dialog box is titled 'Create a new Feed' and contains the following fields and buttons:

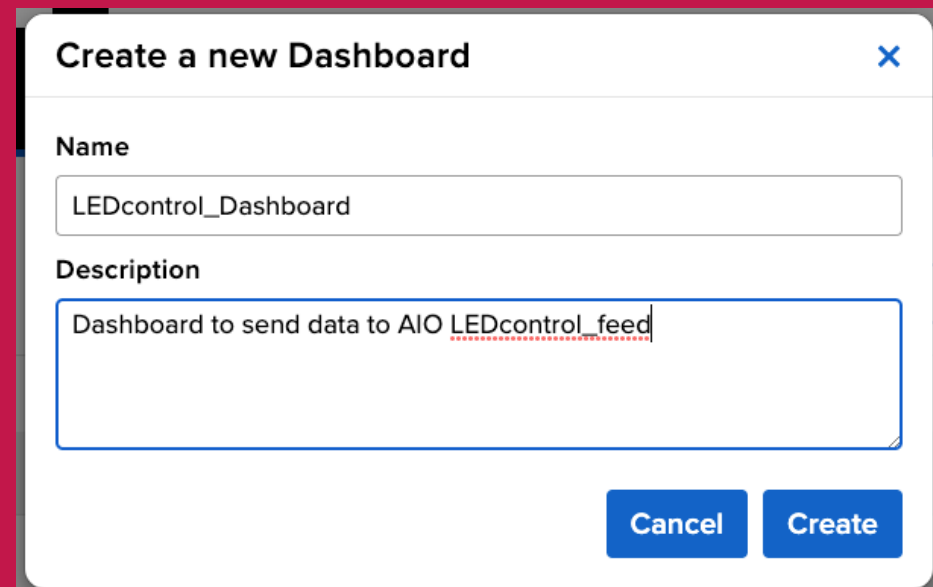
- Name:** A text input field containing 'LEDcontrol_Feed'. Below it, a message reads 'Maximum length: 128 characters. Used: 15'.
- Description:** A text area containing 'feed used to turn on and off a LED'.
- Buttons:** 'Cancel' and 'Create' buttons at the bottom right.

Create AIO Dashboard



The screenshot shows the Adafruit web interface. At the top, there is a navigation bar with the Adafruit logo and menu items: Devices, Feeds, Dashboards (highlighted), Actions, and Profile. Below the navigation bar, the user's name 'ttrickel' and the page title 'Dashboards' are displayed. A blue button labeled '+ New Dashboard' is visible. Below this, a table lists existing dashboards:

<input type="checkbox"/>	Name	Key	
<input type="checkbox"/>	CO2	co2	
<input type="checkbox"/>	ControlLED	controlled	
<input type="checkbox"/>	LightSensor	lightsensor	
<input type="checkbox"/>	Test	test	



The screenshot shows a modal window titled 'Create a new Dashboard' with a close button (X) in the top right corner. The form contains the following fields:

- Name:** A text input field containing 'LEDcontrol_Dashboard'.
- Description:** A text area containing 'Dashboard to send data to AIO LEDcontrol_feed'.

At the bottom right of the modal, there are two buttons: 'Cancel' and 'Create'.

Create AIO Dashboard continued

The screenshot shows the Adafruit dashboard interface. At the top, there is a navigation bar with the Adafruit logo and links for Devices, Feeds, Dashboards, Actions, and Power-Ups. A 'New Device' button is visible in the top right. The main content area is titled 'ttrickel / Dashboards / LEDcontrol_Dashboard'. On the right side, there is a 'Dashboard Settings' panel with the following options:

- Edit Layout
- Create New Block
- View Fullscreen
- Dark Mode: on
- Block Borders: on
- Dashboard Privacy: off
- Delete Dashboard

On the left side, there is a sidebar with links for Get Help, Quick Guides, API Documentation, FAQ, Terms of Service, Privacy Policy, Website Accessibility, and Send Feedback. There are also links for Learn, IO Plus, and News.

The screenshot shows a 'Create a new block' dialog box. The title is 'Create a new block' with a close button (X) in the top right corner. Below the title, there is a 'Slider' label and a paragraph of text: 'Click on the block you would like to add to your dashboard. You can always come back and switch the block type later if you change your mind.'

The dialog box displays a grid of block options:

- ON (toggle switch)
- RESET (button)
- Slider (slider control)
- Progress indicator (circular gauge)
- HELLO WORLD! (text)
- Terminal (code editor)
- Camera (camera icon)
- Line graph (line chart)
- Blue circle (circle)
- Map (map icon)
- Keypad (numeric keypad)
- Cloud (cloud icon)

A large green arrow points from the 'ON' block in the dialog box to the 'ON' block in the dashboard settings panel.

Create AIO Dashboard continued

Choose a single feed you would like to connect to this toggle. You can also create a new feed within a group.

Default

Feed Name	Last value	Recorded	
<input type="checkbox"/> CO2	923	7 months	🔒
<input type="checkbox"/> ControlLED	ON	2 days	🔒
<input type="checkbox"/> humidityReading	716.827392578...	7 months	🔒
<input type="checkbox"/> ledControl	off	2 days	🔒
<input checked="" type="checkbox"/> LEDcontrol_Feed		5 minutes	🔒
<input type="checkbox"/> lightReading	0	over 4 years	🔒
<input type="checkbox"/> runTime	9:6:0	over 4 years	🔒
<input type="checkbox"/> switch	0	2 days	🔒
<input type="checkbox"/> switchTest	0	1 day	🔒
<input type="checkbox"/> temperatureReading	698.892364501...	7 months	🔒

1 of 1 feeds selected

< Previous step

Next step >

click the "Create Block" button to send it to your dashboard.

Block Title (optional)

Button On Text

Limit of 6 characters for the toggle text. Use the block title to be more descriptive.

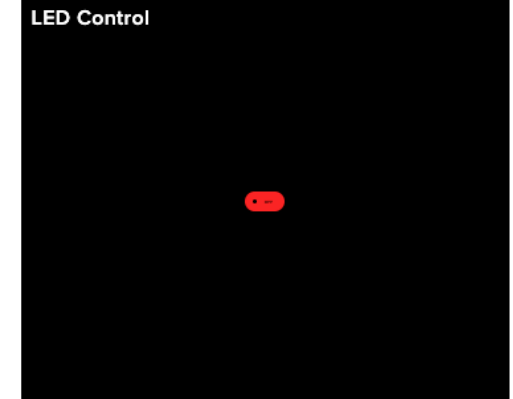
Button On Value (uses On Text if blank)

Button Off Text

Limit of 6 characters for the toggle text. Use the block title to be more descriptive.

Button Off Value (uses Off Text if blank)

Block Preview



Toggle A toggle button is useful if you have an ON or OFF type of state. You can configure what values are sent on press and release.

Test Value

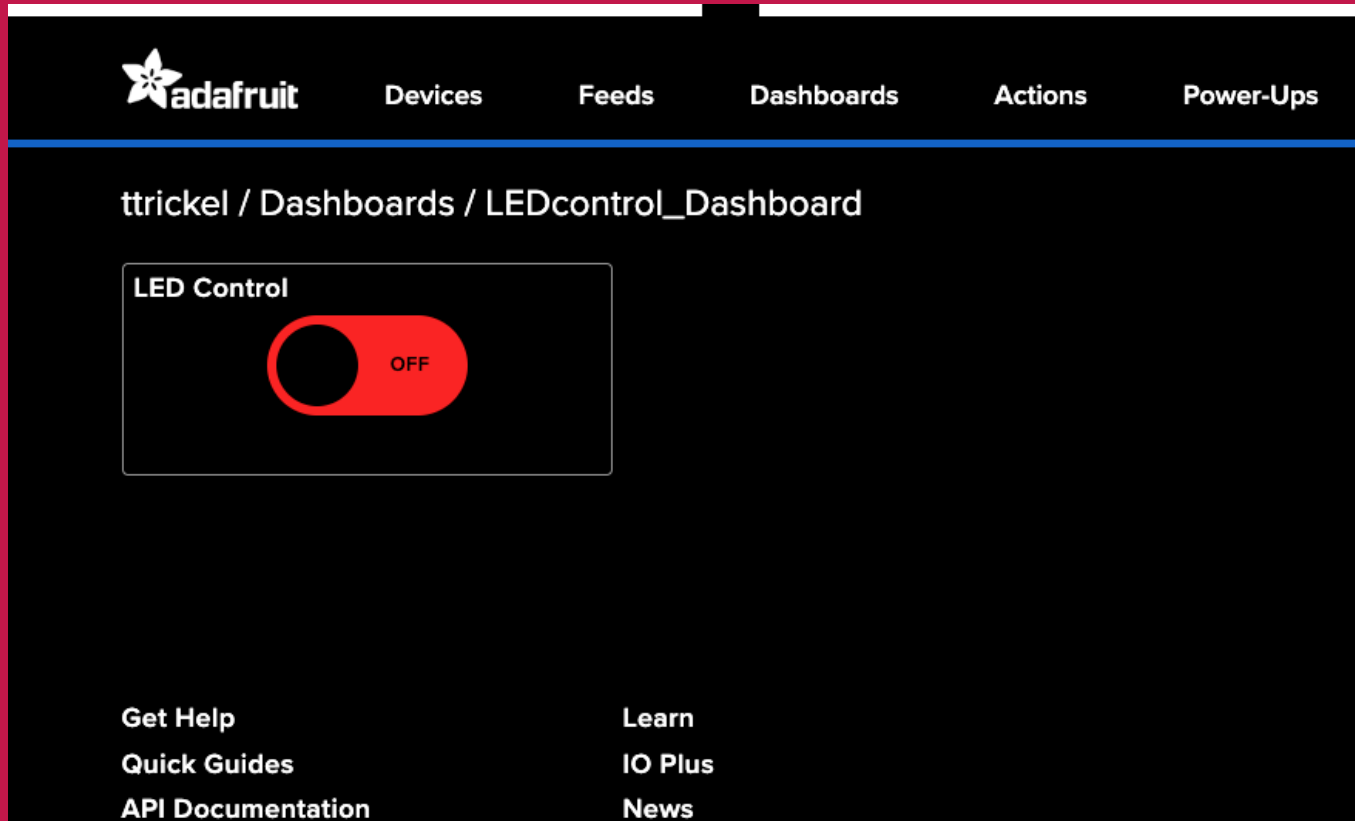
Published Value

0 bytes

< Previous step

Create block

Create AIO Dashboard continued



Control LED from AIO Python Code

change

YOUR_AIO_KEY

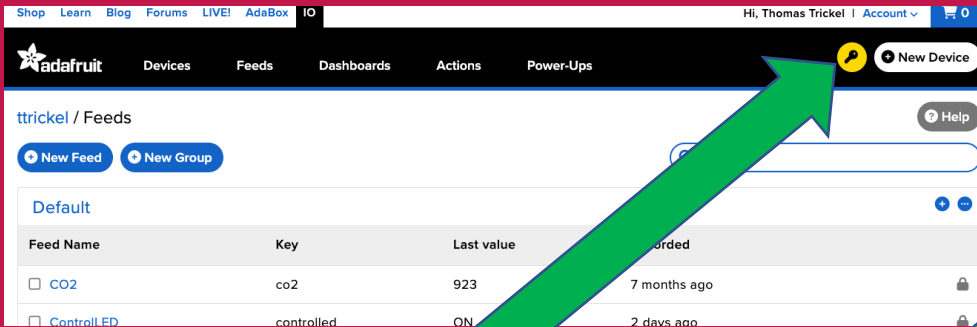


YOUR_AIO_USERNAME



```
1  """
2  'digital_out.py'
3  =====
4  Example of turning on and off a LED
5  from the Adafruit IO Python Client
6  Author(s): Brent Rubell, Todd Treece
7             with modifications by Thomas Trickel
8  """
9  # Import standard python modules
10 import time
11 import RPi.GPIO as GPIO
12
13 # import Adafruit IO REST client.
14 from Adafruit_IO import Client, Feed, RequestError
15
16 # setup GPIO
17 GPIO.setwarnings(False)
18 GPIO.setmode(GPIO.BCM)
19 GPIO.setup(18, GPIO.OUT)
20
21
22 # Set to your Adafruit IO key.
23 # Remember, your key is a secret,
24 # so make sure not to publish it when you publish this code!
25 ADAFRUIT_IO_KEY = 'YOUR_AIO_KEY'
26
27 # Set to your Adafruit IO username.
28 # (go to https://accounts.adafruit.com to find your username)
29 ADAFRUIT_IO_USERNAME = 'YOUR_AIO_USERNAME'
30
31 # Create an instance of the REST client.
32 aio = Client(ADAFRUIT_IO_USERNAME, ADAFRUIT_IO_KEY)
33
34 try: # if we have a 'digital' feed
35     digital = aio.feeds('ledcontrol-feed')
36 except RequestError: # create a digital feed
37     feed = Feed(name="ledcontrol-feed")
38     digital = aio.create_feed(feed)
39
40 while True:
41     data = aio.receive(digital.key)
42     if data.value == "ON":
43         print('received <- ON\n')
44         GPIO.output(18, True)
45     elif data.value == "OFF":
46         print('received <- OFF\n')
47         GPIO.output(18, False)
48
49 # timeout so we dont flood adafruit-io with requests
50 time.sleep(0.5)
51
```

AIO KEY & USERNAME



Shop Learn Blog Forums LIVE! AdaBox IO Hi, Thomas Trickel Account

adafruit Devices Feeds Dashboards Actions Power-Ups

ttrickel / Feeds

New Feed New Group

Feed Name	Key	Last value	Recorded
<input type="checkbox"/> CO2	co2	923	7 months ago
<input type="checkbox"/> ControlLED	controlled	ON	2 days ago

YOUR ADAFRUIT IO KEY ✕

Your Adafruit IO Key should be kept in a safe place and treated with the same care as your Adafruit username and password. People who have access to your Adafruit IO Key can view all of your data, create new feeds for your account, and manipulate your active feeds.



If you need to regenerate a new Adafruit IO Key, all of your existing programs and scripts will need to be manually changed to the new key.

Username

Active Key

REGENERATE KEY

[Hide Code Samples](#)

Arduino

```
#define IO_USERNAME "ttrickel"  
#define IO_KEY      "a0da523dfa16502494a70e61e1f683ba8  
a0b32f4"
```

Linux Shell

```
export IO_USERNAME="ttrickel"  
export IO_KEY="a0da523dfa16502494a70e61e1f683ba8a0b32f  
4"
```

Scripting

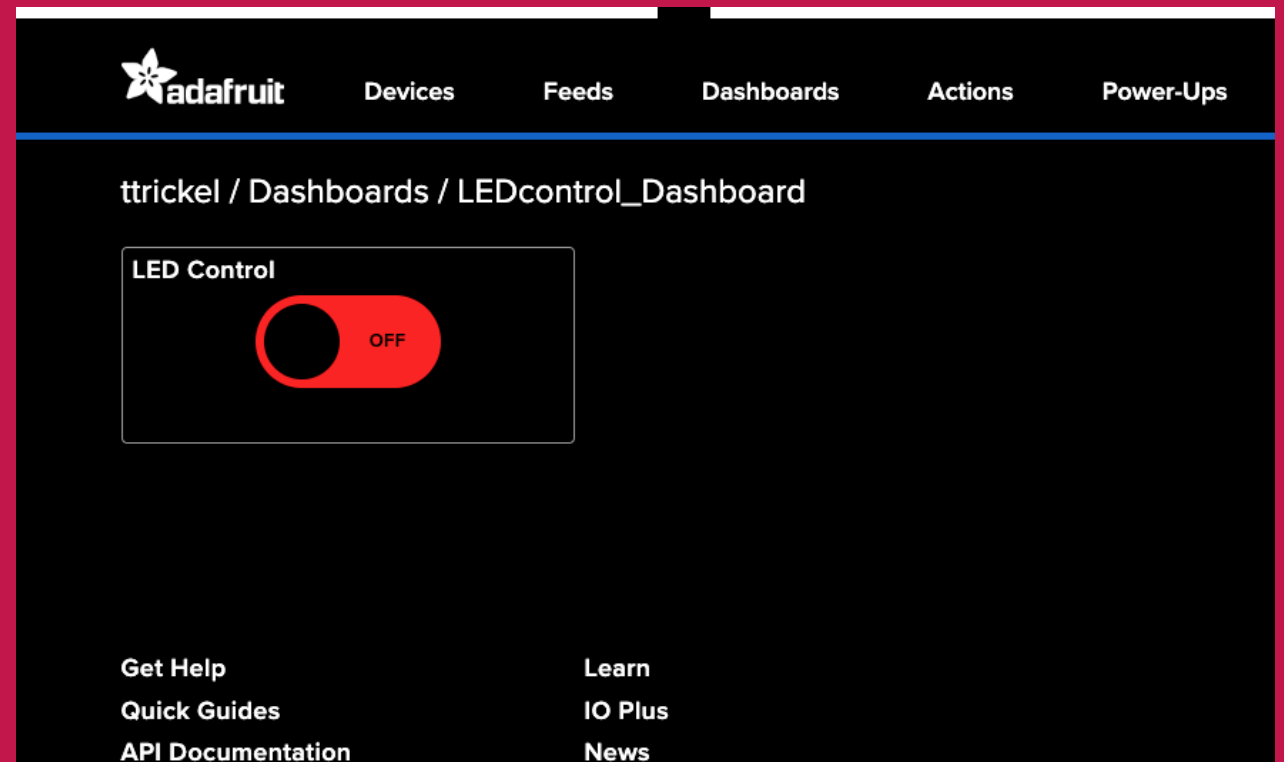
```
ADAFRUIT_IO_USERNAME = "ttrickel"  
ADAFRUIT_IO_KEY = "a0da523dfa16502494a70e61e1f683ba8a0b  
32f4"
```

Test It

Run Python Code



Click on LED Control icon





Smashingly Excellent!

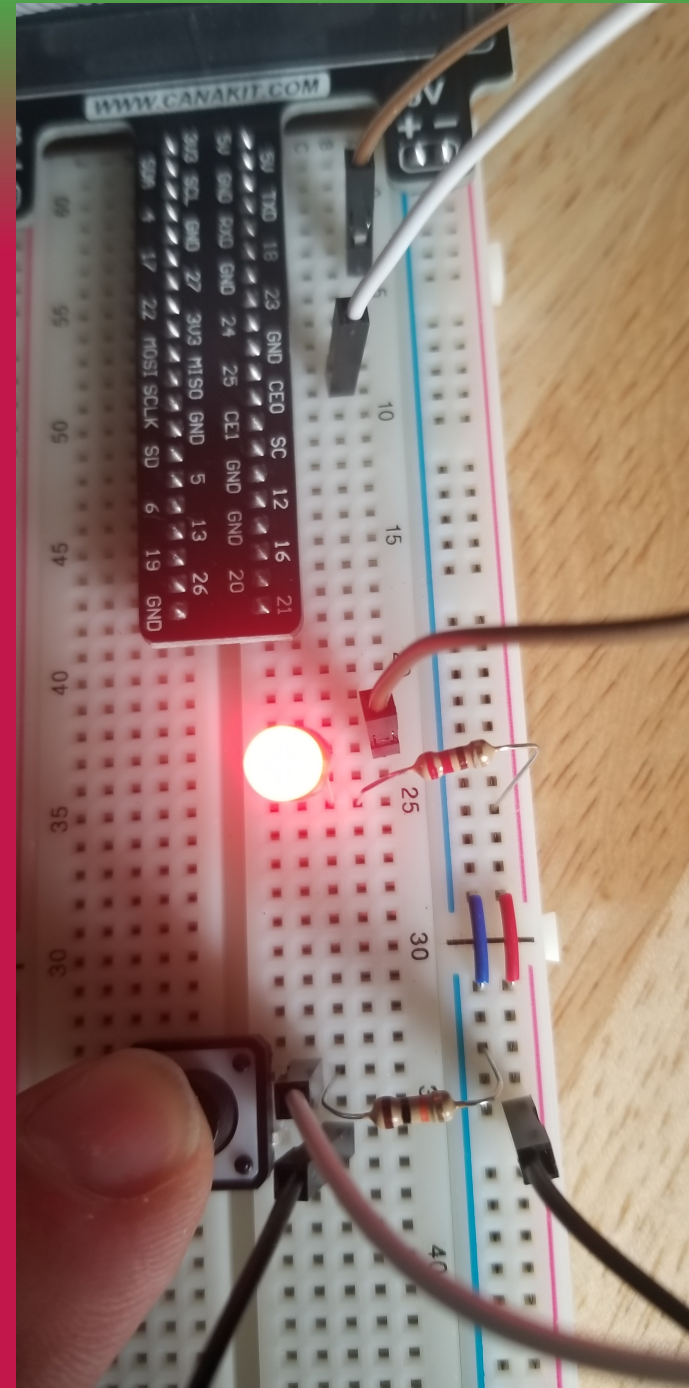


Send Switch Data to AIO

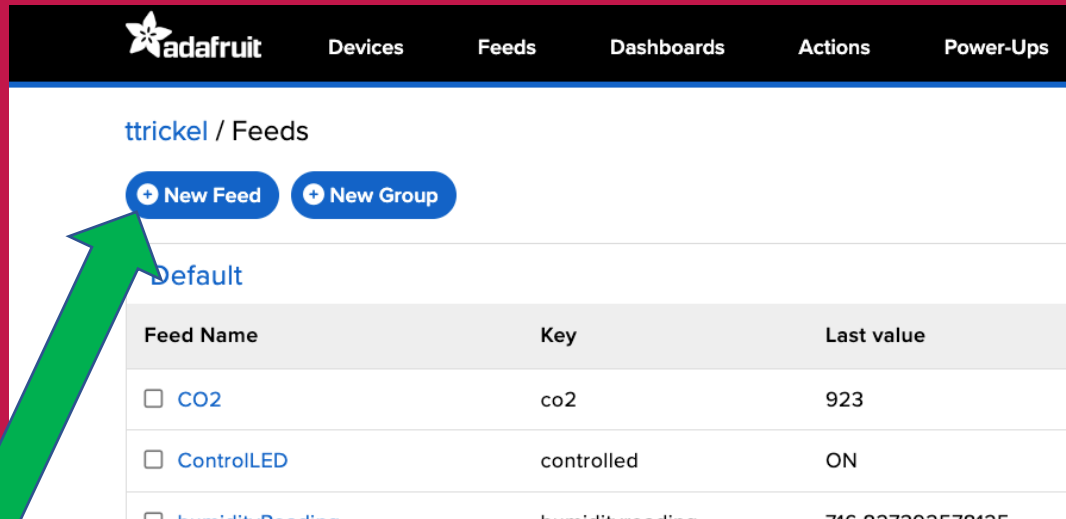
- Hardware
- Create Feed
- Create Dashboard
- Write Python Code

Hardware

- Digital Input
- Resistor 10k Ω (Orange Black Brown)
- Wire
 - Switch to GPIO 25



Create AIO Feed



The screenshot shows the Adafruit dashboard with the 'Feeds' section selected. The breadcrumb is 'ttrickel / Feeds'. There are two buttons: '+ New Feed' and '+ New Group'. A green arrow points to the '+ New Feed' button. Below the buttons is a 'Default' section and a table of feeds.

Feed Name	Key	Last value
<input type="checkbox"/> CO2	co2	923
<input type="checkbox"/> ControlLED	controlled	ON
<input type="checkbox"/> Humidity Reading	humidityreading	716.827202570125

Create a new Feed ✕

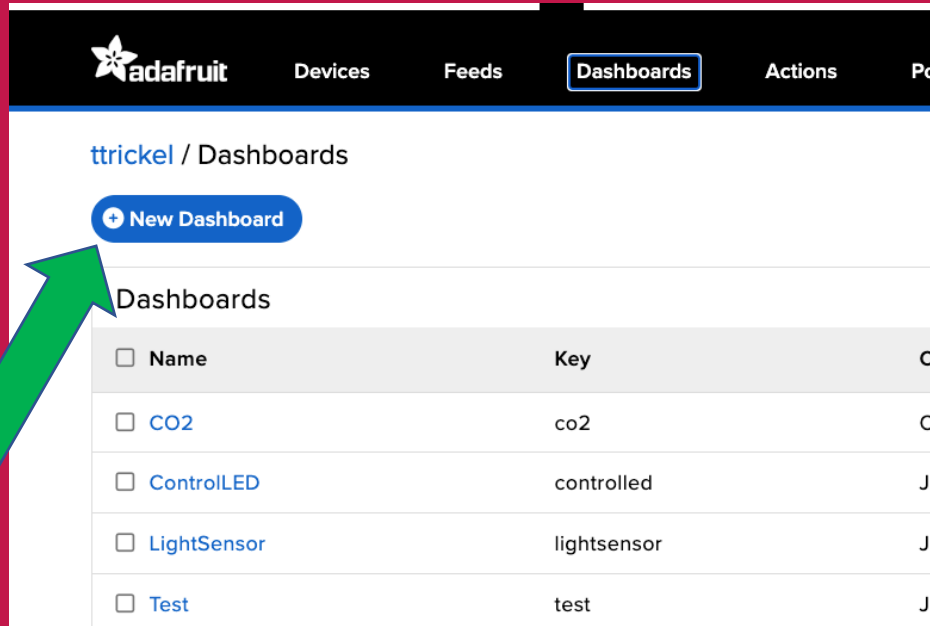
Name

Maximum length: 128 characters. Used: 15

Description

Cancel Create

Create AIO Dashboard



The screenshot shows the Adafruit website's 'Dashboards' page. The navigation bar includes 'adafruit', 'Devices', 'Feeds', 'Dashboards', 'Actions', and 'Po'. The user is logged in as 'ttrickel / Dashboards'. A blue button labeled '+ New Dashboard' is highlighted with a green arrow. Below it is a table of existing dashboards:

<input type="checkbox"/> Name	Key	
<input type="checkbox"/> CO2	co2	
<input type="checkbox"/> ControlLED	controlled	
<input type="checkbox"/> LightSensor	lightsensor	
<input type="checkbox"/> Test	test	

Create a new Dashboard ✕

Name

Description

Cancel **Create**

Create AIO Dashboard continued

The screenshot shows the top navigation bar of the Adafruit dashboard with the following items: [adafruit](#), [Devices](#), [Feeds](#), [Dashboards](#), [Actions](#), [Power-Ups](#), a user profile icon, and a [New Device](#) button. The main content area displays the breadcrumb [ttrickel / Dashboards / LEDcontrol_Dashboard](#). On the right, the **Dashboard Settings** panel includes: [Edit Layout](#), [Create New Block](#), [View Fullscreen](#), **Dark Mode** (on), **Block Borders** (on), **Dashboard Privacy** (locked), and [Delete Dashboard](#). On the left, there is a sidebar menu with links: [Get Help](#), [Quick Guides](#), [API Documentation](#), [FAQ](#), [Terms of Service](#), [Privacy Policy](#), [Website Accessibility](#), [Send Feedback](#), [Learn](#), [IO Plus](#), and [News](#).

The **Create a new block** dialog box features a close button (X) in the top right corner. Below the title, a **Slider** block is highlighted, and the text reads: "Click on the block you would like to add to your dashboard. You can always come back and switch the block type later if you change your mind." The dialog displays a grid of block thumbnails:

- ON (toggle)
- RESET (button)
- Slider (control)
- Progress indicator (circular)
- HELLO WORLD! (text)
- Terminal (code)
- Camera (image)
- Area chart (graph)
- Blue circle (shape) with #00ACEC
- Map (location)
- Keypad (input)
- Cloud (weather)

A large green arrow points from the 'HELLO WORLD!' block in the dialog to the 'Dashboard Settings' panel in the previous screenshot.

Create AIO Dashboard continued

Connect a Feed ✕

A text block can be used to send data as well as view data. To publish, click on the text block, enter any text, and press enter to send.

Choose a single feed you would like to connect to this text. You can also create a new feed within a group.

Search for a feed

Feed Name	Last value	Recorded	
<input type="checkbox"/> CO2	923	7 months	🔒
<input type="checkbox"/> ControlLED	ON	2 days	🔒
<input type="checkbox"/> humidityReading	716.827392578...	7 months	🔒
<input type="checkbox"/> ledControl	off	5 days	🔒
<input type="checkbox"/> LEDcontrol_Feed	OFF	about 2 hours	🔒
<input type="checkbox"/> lightReading	0	over 4 years	🔒
<input type="checkbox"/> runTime	9:6:0	over 4 years	🔒
<input checked="" type="checkbox"/> SwitchRead_Feed		3 minutes	🔒
<input type="checkbox"/> switchTest	0	5 days	🔒
<input type="checkbox"/> temperatureReading	698.892364501...	7 months	🔒

1 of 1 feeds selected

[< Previous step](#) [Next step >](#)

Block settings ✕

In this final step, you can give your block a title and see a preview of how it will look. Customize the look and feel of your block with the remaining settings. When you are ready, click the "Create Block" button to send it to your dashboard.

Block Title (optional)

Block Preview

Font Size

Static Text

When checked, ignore feed value and show the selected 'Static Text Value' all the time.

Static Text Value

When 'Static Text' is checked, use this value. Limited to 256 characters.

Decimal Places

Number of decimal places to display when value is a number. Defaults to -1 (unlimited).

Show Icon

When checked, show an icon with the value.

Icon

Show this icon next to the value.

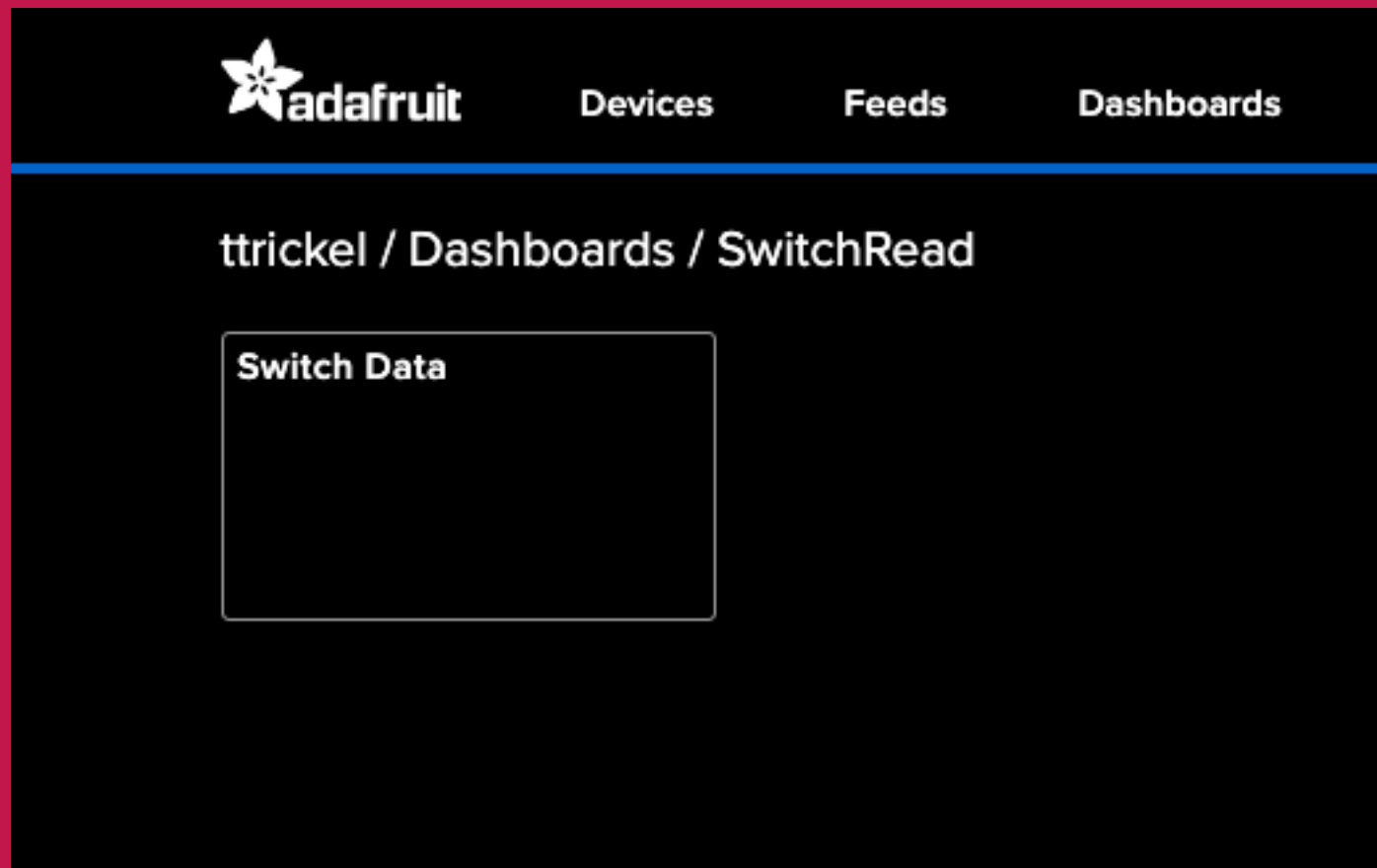
Text A text block can be used to send data as well as view data. To publish, click on the text block, enter any text, and press enter to send.

Test Value

Published Value

[< Previous step](#) [Create block](#)

Create AIO Dashboard continued



Send Switch Data to AIO Python Code

change

YOUR_AIO_KEY



YOUR_AIO_USERNAME



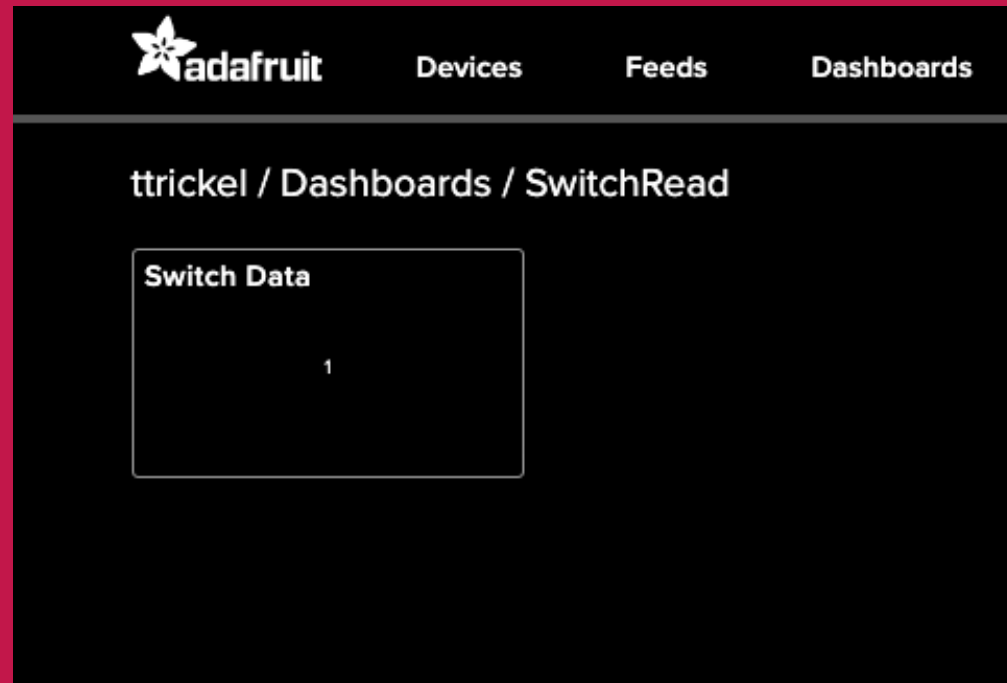
```
1  """
2  'digitalIn.py'
3  =====
4  Example of sending the status of a
5  switch to the Adafruit IO Python Client
6  """
7  # Import standard python modules
8  import time
9  import RPi.GPIO as GPIO
10
11 # import Adafruit IO REST client.
12 from Adafruit_IO import Client, Feed, RequestError
13
14 # setup GPIO
15 GPIO.setwarnings(False)
16 GPIO.setmode(GPIO.BCM)
17 GPIO.setup(25, GPIO.IN)
18
19 # Set to your Adafruit IO key.
20 # Remember, your key is a secret,
21 # so make sure not to publish it when you publish this code!
22 ADAFRUIT_IO_KEY = 'YOUR_AIO_KEY'
23
24 # Set to your Adafruit IO username.
25 # (go to https://accounts.adafruit.com to find your username)
26 ADAFRUIT_IO_USERNAME = 'YOUR_AIO_USERNAME'
27
28 # Create an instance of the REST client.
29 aio = Client(ADAFRUIT_IO_USERNAME, ADAFRUIT_IO_KEY)
30
31 try: # if we have a 'digital' feed
32     digital = aio.feeds('switchread-feed')
33 except RequestError: # create a digital feed
34     feed = Feed(name="switchread-feed")
35     digital = aio.create_feed(feed)
36
37 while True:
38     if GPIO.input(25):
39         aio.send(digital.key, 0)
40     else:
41         aio.send(digital.key, 1)
42
43 # timeout so we dont flood adafruit-io with requests
44     time.sleep(0.5)
45
```

Test It

Run Python Code



Press Switch on Breadboard

A screenshot of the Adafruit web interface. The top navigation bar includes the Adafruit logo, 'Devices', 'Feeds', and 'Dashboards'. The breadcrumb trail shows 'ttrickel / Dashboards / SwitchRead'. A data visualization box titled 'Switch Data' displays the value '1'.

adafruit Devices Feeds Dashboards

ttrickel / Dashboards / SwitchRead

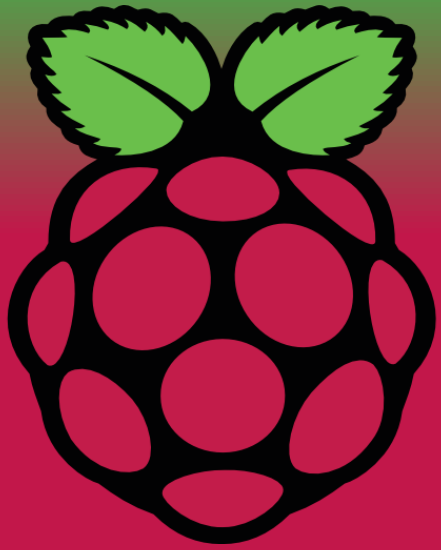
Switch Data

1



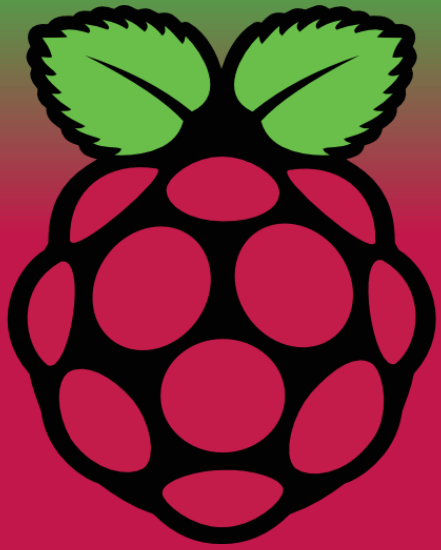
Unbelievably Excellent!





2025 Summer Tech Internship





2025 Summer Tech Internship



