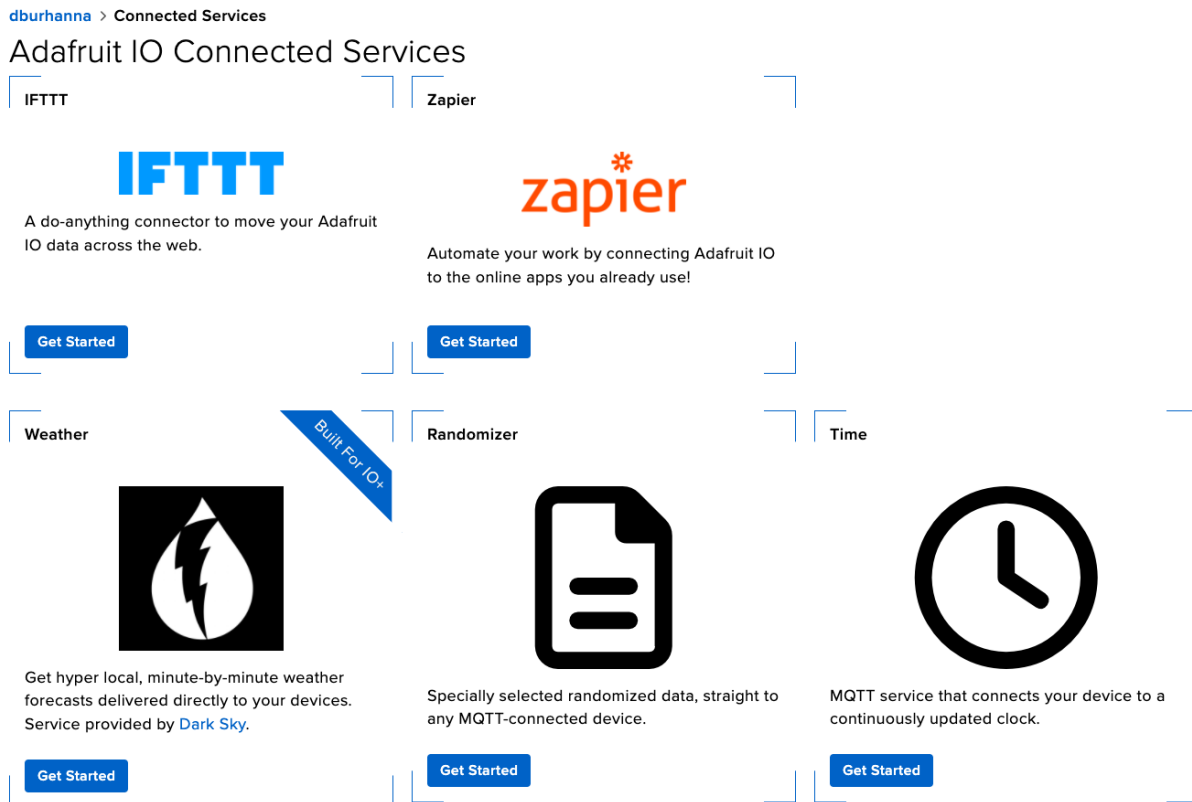# Lab 12
Adafruit IO Services and Integrations

Part 1 - Explore the Adafruit IO Time Service

Adafruit IO has a few other services and integrations which may be useful. On tha AIO webpage, select "Services" from the menu across the top. Then select the "view all" option. The screenshot on the next page shows what is currently available.

We will explore the Time service first. Click on the "Get Started" button to read about the time service.

We can use the time service when connected to AIO using HTTP or MQTT. Using the time service would be a good way to synchronize multiple IOT devices connected to AIO.

It is common to use a Real Time Clock - RTC with embedded systems like the Feather Sense. With CircuitPython and the Feather Sense we can use the following code to set up a Real Time Clock:

```
import rtc
rt_clock = rtc.RTC()
print(rt_clock.datetime)
```

Try to set up the RTC in the CP REPL and then print the current time of the newly created clock. What does it say the current datetime is? Something similar to…

```
struct_time(tm_year=2000, tm_mon=1, tm_mday=1, tm_hour=0, tm_min=5, tm_sec=36,
tm_wday=5, tm_yday=1, tm_isdst=-1)
```

We can use the time service when connected to AIO using HTTP or MQTT. Using the time service would be a good way to synchronize multiple IOT devices connected to AIO.

Start with your code from Lab 11 Part 3. You should subscribe to the "seconds" feed with the following command:

```
# Subscribe to time/seconds topic
# https://io.adafruit.com/api/docs/mqtt.html#time-seconds
io.subscribe_to_time("seconds")
```

Use the "payload" of seconds feed that the Feather Sense receives to create a time_structure with the command:

```
current_time = time.localtime(int(payload))
```

Then you can set the RTC with the following command:

```
rt_clock.datetime = current_time
```

Now the Feather Sense time is in sync with the time on AIO. Add:

```
print(rt_clock.datetime)
```

to one of your message callback functions and you can confirm the time is correct every time a message is received.

Show your instructor the time on your RTC has been set correctly.

Save your code as lastname_lab12_part1.py. Modify header information and inline comments of your code.

Code lab12_part1.py

Part 2 - Explore the Adafruit IO IFTTT Integration

IFTTT stands for **IF T**his **T**hen **T**hat. IFTTT is a service which enables us to connect different internet connected devices and services together with "Applets" IFTTT handles all the "code" required to integrate the various services. We can use IFTTT to create a limited number of applets at no cost.

Select "Services" and then IFTTT from the AIO window. You should see a screen similar to the following:

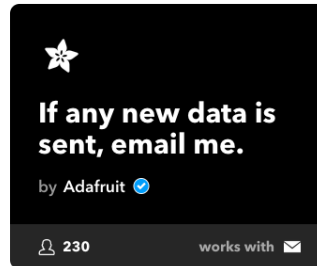The square with the Adafruit logo and "If any new data is sent, email me." is an example of an applet. Click on the square to get started. You will be brought to the ifttt.com/adafruit web page.
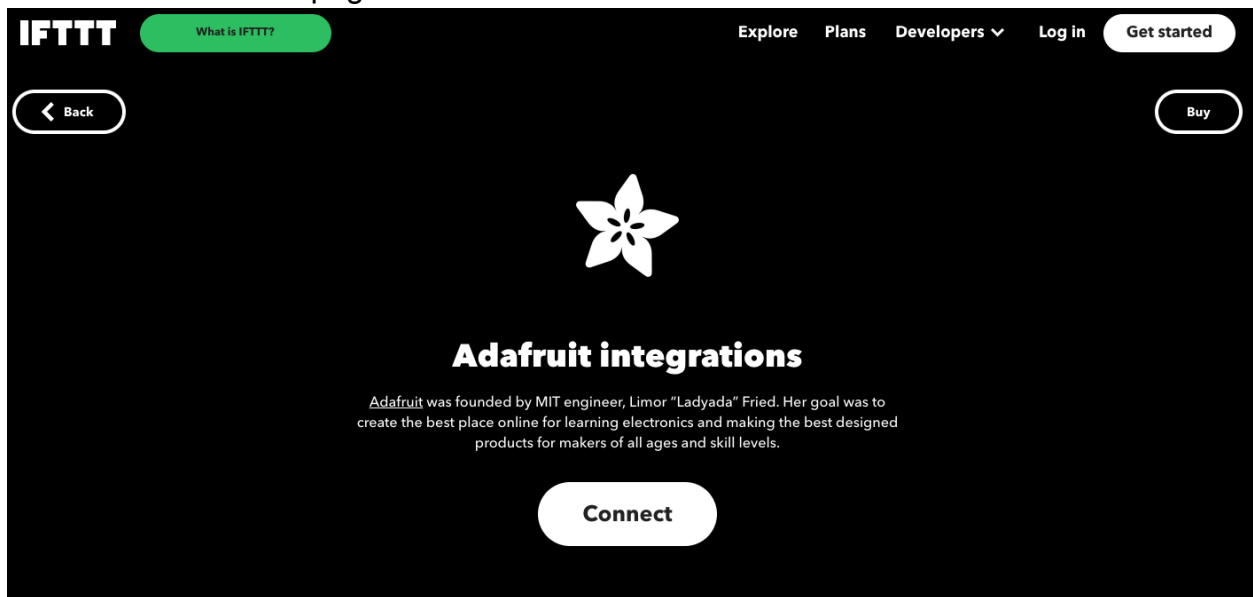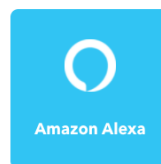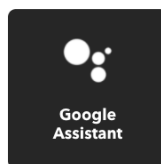
Click the Connect button and you will be required to Log in to IFTTT. You can use Google, Apple or Facebook login integrations or create a new account with another email.

Once you are logged in, click the "Explore" options at the top of the screen. Take a minute to scroll through the many different possible IFTTT applets being highlighted. There are lots of possibilities.

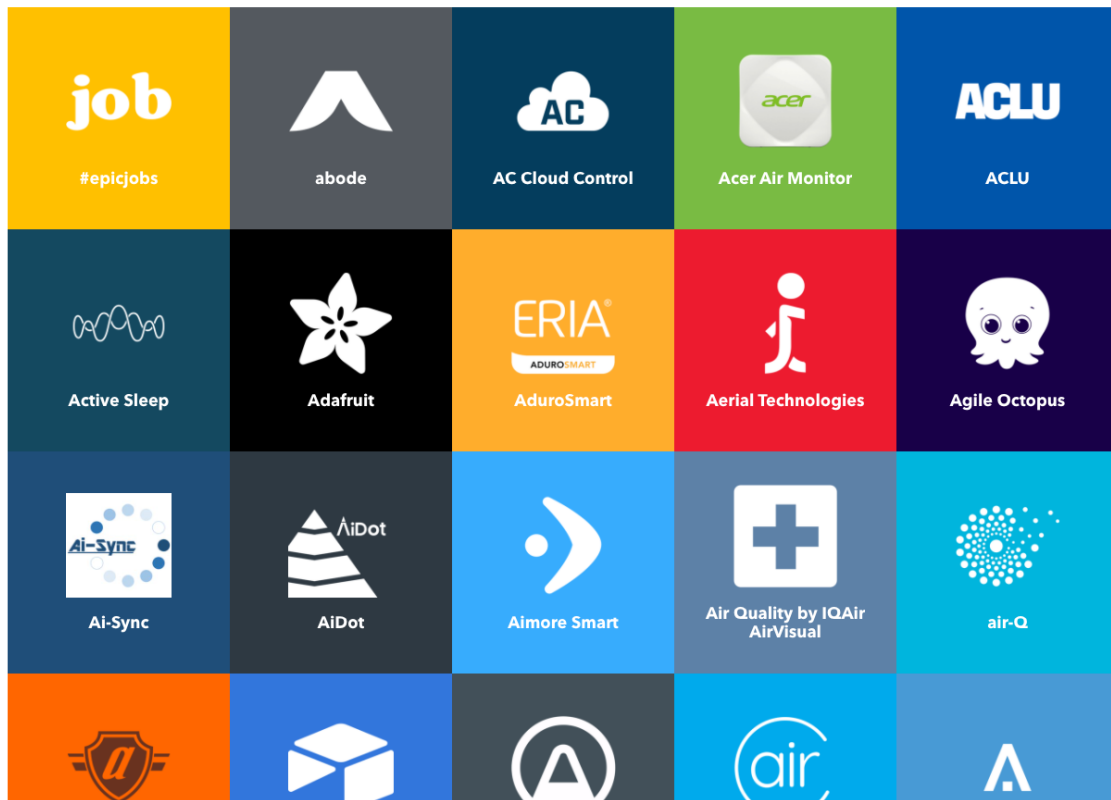Click the create button in the upper right hand corner.
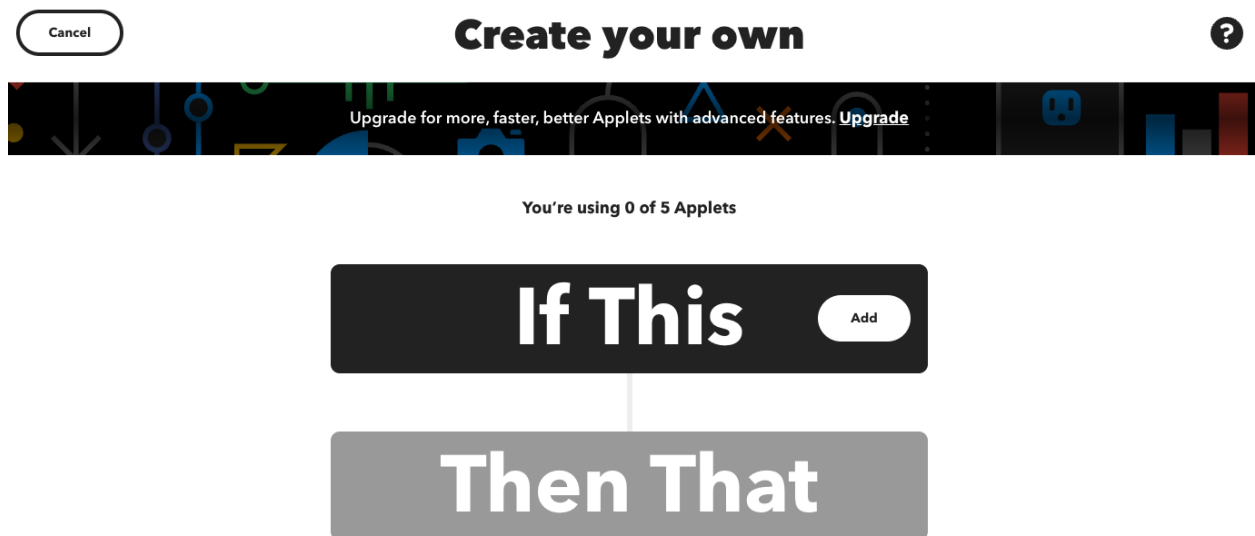
Click the add button. First you must choose the "service" your IF will be associated with. Take a minute and scroll down through the options. You should recognize many different Internet of Things options here.

You can type in Adafruit or just select from the list of available services.

Search services

job #epicjobs	**abode**	**AC** Cloud Control	acer Acer Air Monitor	**ACLU**
Active Sleep	Adafruit	**ERIA** ADUROSMART AduroSmart	Aerial Technologies	Agile Octopus
Ai-Sync	ΛiDot AiDot	Aimore Smart	Air Quality by IQAir AirVisual	air-Q

After selecting Adafruit, you need to select a "trigger"

Adafruit

Monitor a feed on Adafruit IO

This Trigger fires anytime it validates the data that you send to your feed. Example: If Feed Temperature > 80, fire Trigger.

Any new data

This Trigger fires any time there is new data in your feed.

Select "Monitor a feed". It is finally time to connect IFTTT to AIO.
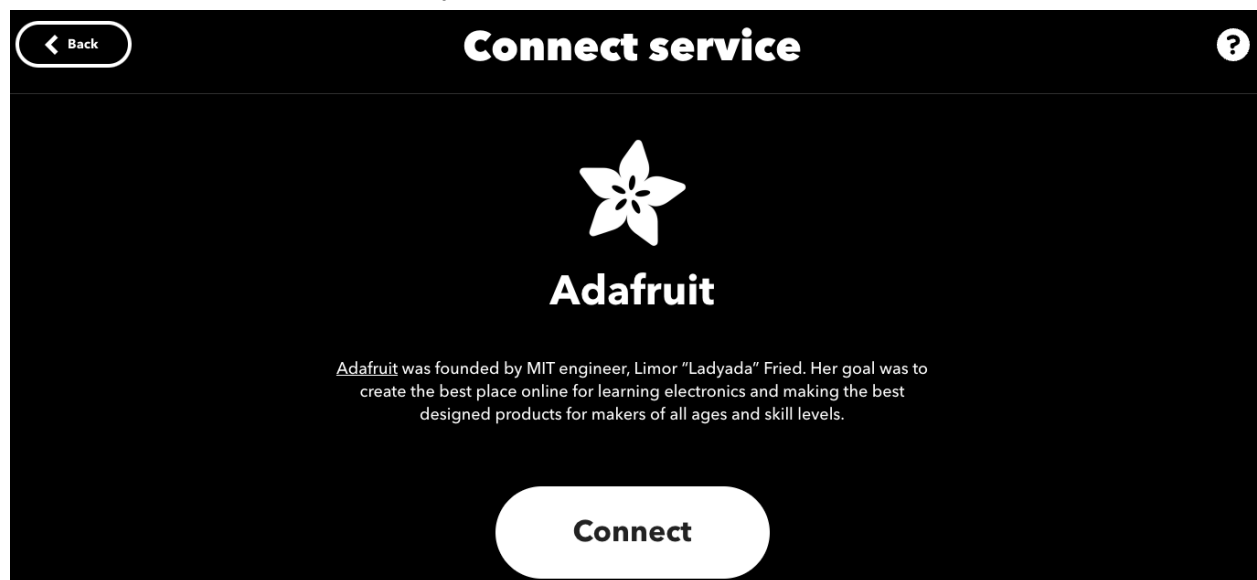
Click the Connect button and a pop-up should appear prompting you to log into your Adafruit account. Select "Authorize" to allow IFTTT to communicate with your feeds.

Hopefully IFTTT will connect to your AIO account and you can continue making your applet. See the next screen shot. The Adafruit account is filled in and it even shows one of the feeds. If not already selected. Use the drop down to select your "weather - temperature" feed.

Complete trigger fields

Monitor a feed on Adafruit IO

This Trigger fires anytime it validates the data that you send to your feed. Example: If Feed Temperature > 80, fire Trigger.

Adafruit account

Douglas Burhanna

Add account

Feed

weather - temperature

The name of the feed to check.

Relationship

less than

Relationship between two values.

Value

The value to compare against.

Create trigger

Create a trigger IF the weather-temperature feed is greater than 85 degrees by filling in the fields appropriately and selecting the Create trigger button.

The **IF T**his portion of the applet is now complete. To finish the applet you need to add the **T**hen **T**hat. Click the add button to proceed.

Create your own

You're using 0 of 5 Applets

If ✱ **Monitor a feed on Adafruit IO**
Douglas Burhanna   Edit   Delete

➕

Then That   Add

Once again you are presented with a long list of possible services. Type email in the search box and then select the Email option.

Choose an action

✉

Email

Send me an email

This Action will send you an HTML based email. Images and links are supported.

Click the Send me an email option to proceed. The email action is preloaded with information that will be sent. You can change the email Subject or the Body of the message. Add "High Temperature Warning -" before the FeedName in the Subject field and select Create action.

Click Continue and then Finish.

If Data on weather - temperature feed is greater than 85, then Send me an email at burhanna.douglas@

Edit title

by burhannadouglas

Connected

- Connected Mar 17, 2022
- Never run

View activity

Polling Applets usually run within 1 hour

Check now

Above is what the new applet should look like. To test the applet, run your Feather Sense with your Weather Station code, Lab 11 Part 6. You should be able to simulate a high temperature condition by breathing/blowing on the Feather Sense to raise the temperature being transmitted to AIO. IFTTT will not check AIO instantly but you can force IFTTT to run the applet by clicking the Check Now button. The applet should run and you should receive an email similar to the one shown on the next page.

High Temperature Warning - weather.temperature `External` ⅀

Adafruit via IFTTT <action@ifttt.com> Unsubscribe

to me ▾

The 85.7831 is greater_than 85 at March 17, 2022 at 09:47AM!

✦ **Manage** ›

Unsubscribe from these notifications or sign in to manage your Email service.

IFTTT

Show your instructor the notification email you received from IFTTT.

⬚

Part 3 - Use IFTTT to log high temperature notifications in a Google sheet

Create a new applet that will log any high temperature values into a Google sheet. Select "Create", then "Add", then select the Adafruit service again. Select the "Monitor a feed" option and set the IF up exactly as you did in Part 2.   After you "Create trigger" and click "Add". type google into the search box. From the available services, select "Google Sheets".

🔍 google ⊗

📄 Google Docs	📶 Google Wifi	△ Google Drive	✓ Google Tasks	▦ Google Sheets

| 31 Google Calendar | 👤 Google Contacts |
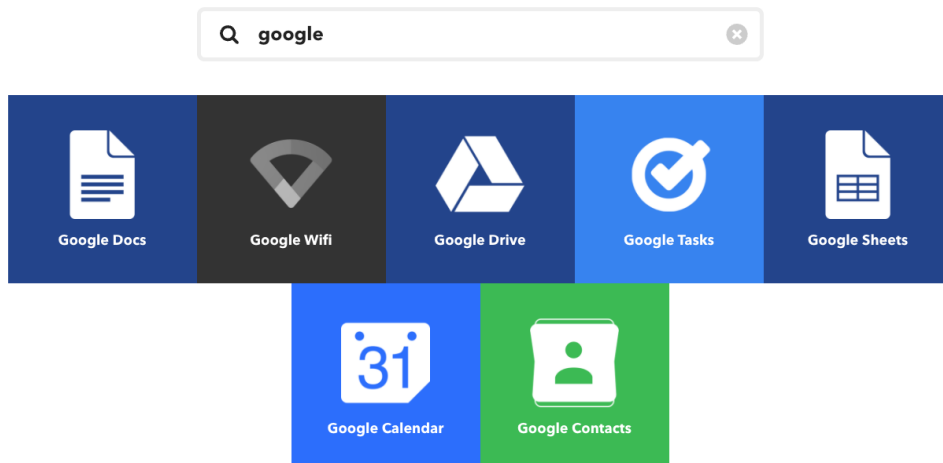
We want to log all the high temperature feed values in a Google spreadsheet. Select "Add row to spreadsheet".

You should now be prompted to connect IFTTT to Google Sheets.

Click the Connect button and a window should appear. **_SECURITY WARNING:_**

If you have sensitive information on your Google Drive it is probably wise to create a new Gmail account specifically for Internet of Things and AIO purposes.
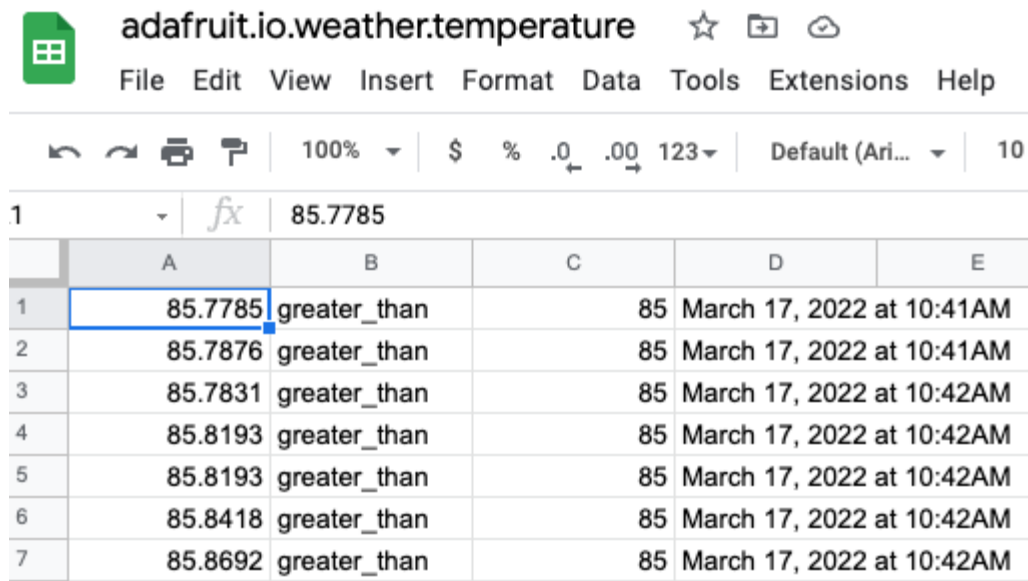
Click "Allow", then "Create action", then "Continue", then "Finish"

Run Lab 11 Part 6 on the Feather and create a high temperature situation again. IFTTT should start adding lines to a new Google Sheet.

In your Google Drive look for a new folder called "adafruit". Click into adafruit and then into the folder "io". You should see a new Google sheet called "adafruit.io.weather.temperature". Open the file to see the high temperature feed values being logged.
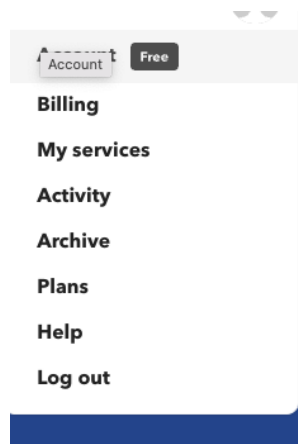

Show your instructor the new spreadsheet of logged values created by IFTTT.

You can disconnect IFTTT from Adafruit IO, Google Sheets or archive the applets to turn them off. Click on the account icon in the upper right corner and then select "My services"

Then select the service you want to disconnect from. Select the settings gear to disconnect.

My services

★   **Adafruit**   ❯

🖐   **Button widget**   ❯

📷   **Camera widget**   ❯

💬   **ClickSend SMS**   ❯

🕒   **Date & Time**   ❯

✉   **Email**   ❯