

Mirco:bit + OBLOQ for IoT Applications

By DTSL

What is OBLOQ?

What is OBLOQ ?

OBLOQ is an extension module that allows micro:bit to connect to a Wi-Fi network. With MakeCode block editor, even a beginner can setup the connection to then send and receive data via EasyIoT platform.



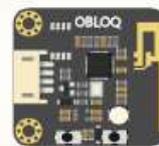
Electronic Device

Link



Micro:bit

Link



OBLOQ Module

WIFI



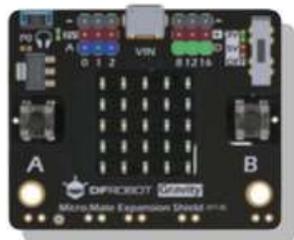
Internet

IoT Project Setup

To start your first IoT project, you will need the following things



OBLOQ Module



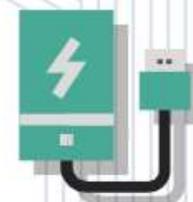
micro:bit + Micro:Mate expansion shield



Gravity Module



A Computer with USB port and internet connection.



USB power bank as external power supply (optional)

Part 1 – IoT Application by using EasyIoT (MQTT)



Setup EasyIoT Account

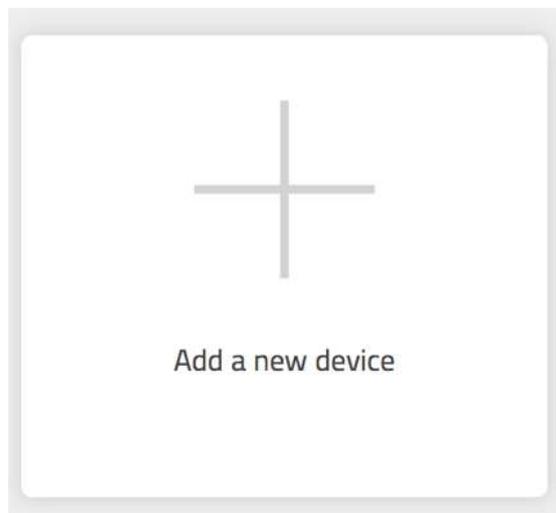
Visit <https://iot.dfrobot.com>, create an account and login

The screenshot shows the homepage of the Easy IoT website. The browser address bar displays "iot.dfrobot.com". The navigation menu includes "Homepage", "Documents", "Workshop", and "CoolPlayer", with "Sign up/ Sign in" on the right. The main banner features a central "Easy IoT" logo surrounded by various IoT-related icons (lightbulb, house, wind turbine, router, cloud, smartphone, laptop, etc.). To the right of the banner, the text reads "Easy IoT the simplest solution of IoT" with a "Free trial" button below it. The bottom of the page has a horizontal strip with four icons representing different IoT applications: a clock and Wi-Fi signal, a server rack, a person with a bar chart, and a smartphone with a lightbulb.

Setup EasyIoT Account

Go to “Workshop” and add a new device.

Take down “lot_id(user)”, “lot_pwd(password)” and “topic” for future steps.



lot_id(user)

HJ-rTpNwwN

lot_pwd(password)

SJGSap4DvV

Re-generate



Allocated : 8000/10000

0/1000



New Device

Topic :

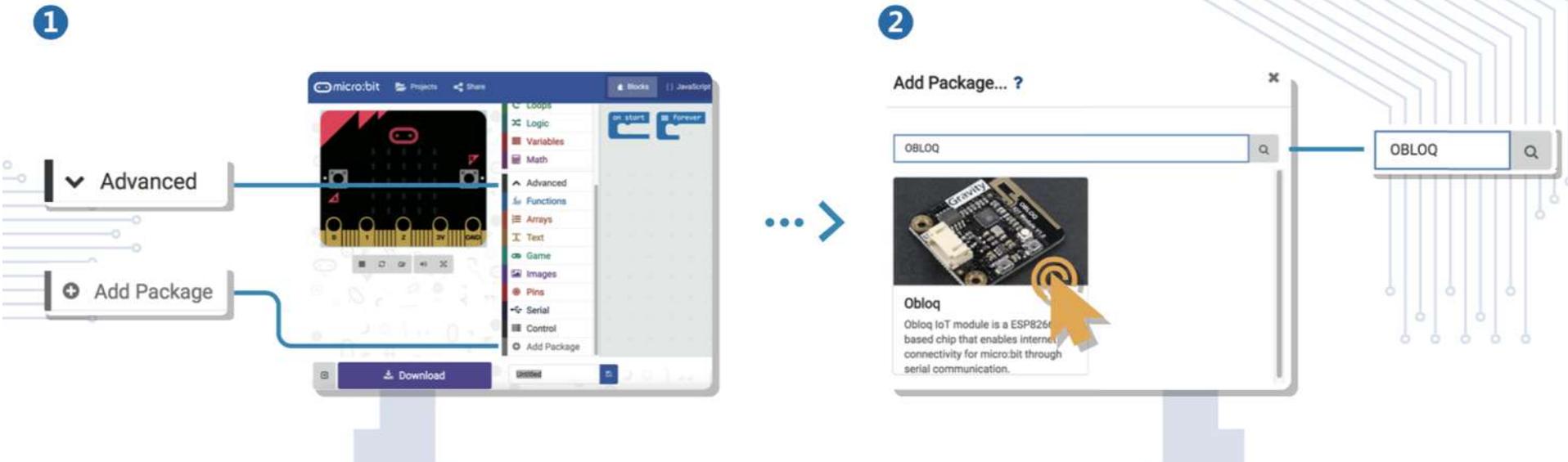
pf2ra9cWg

Send msg

View details



Add OBLOQ module to the block list



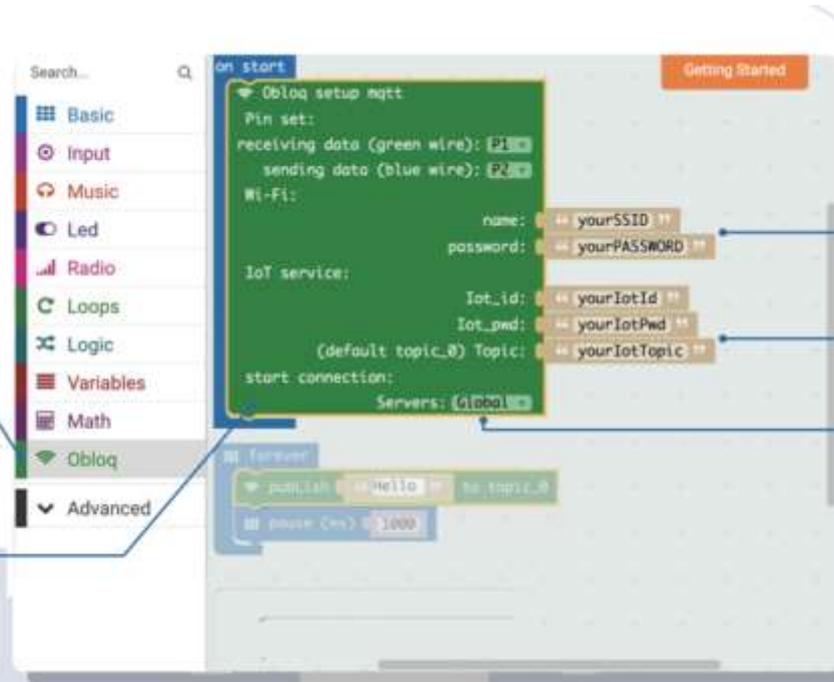
Visit <https://makecode.microbit.org> to open online block editor.
Click “Add Package” under “Advanced”

Search for “<https://github.com/DFRobot/pxt-ObloqV1>” and add it to the block list.

Configure Network Connection

1 Click "Obloq" to expand the block list

2 Drag "Obloq setup mqtt" into the "on start" loop.

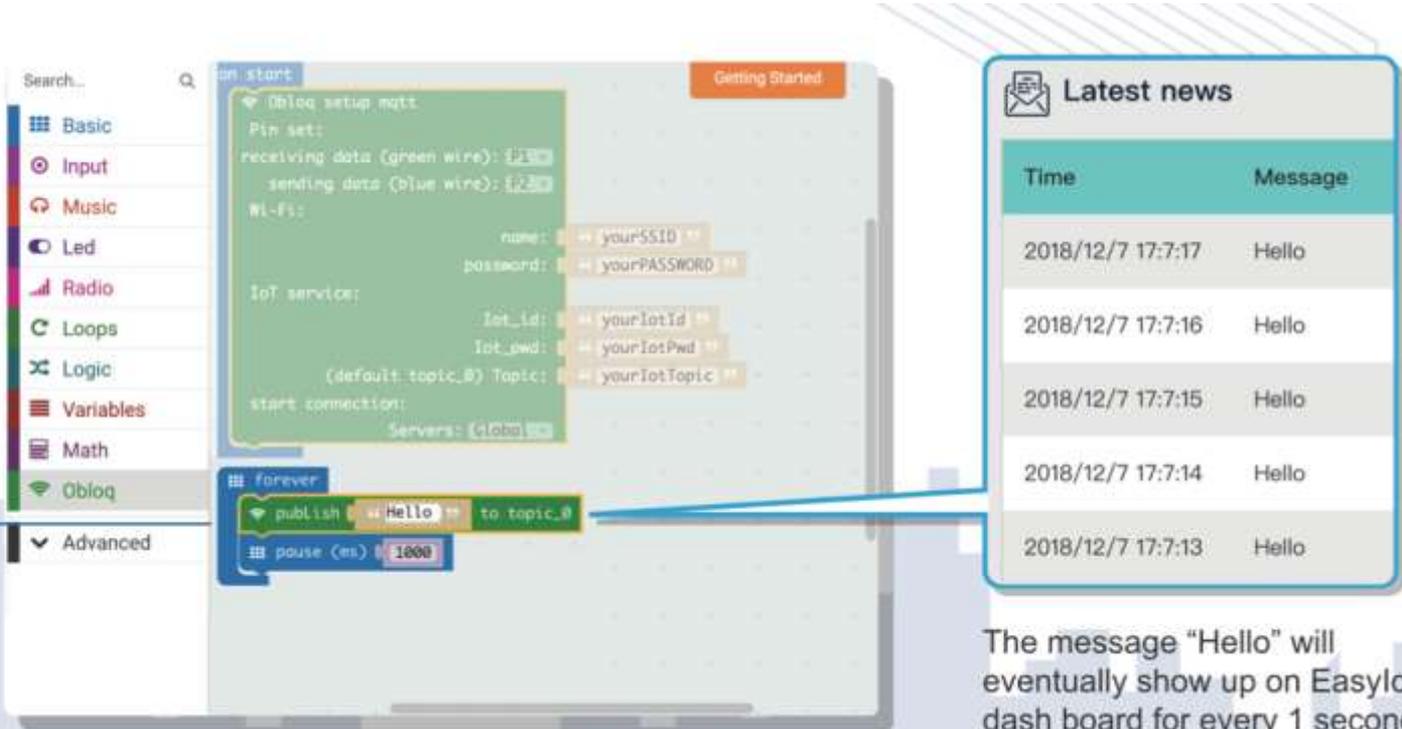


3 Fill in Wi-Fi name and password

4 Fill in lot_id, lot_pwd and topic code

5 Select "Global" server

Send message "Hello" to EasyIoT in every 1 second



The "publish" block sends out a message "Hello" to devices registered at topic_0. Meanwhile, it will be displayed and recorded on EasyIoT platform.

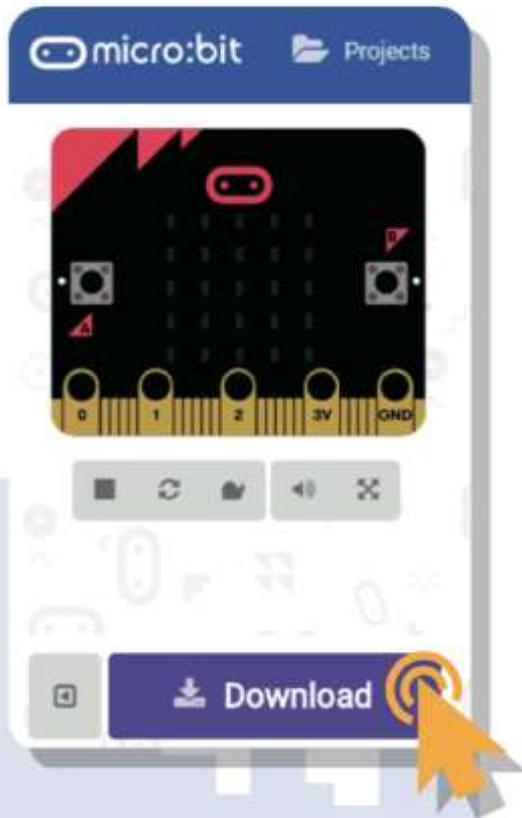
The message "Hello" will eventually show up on EasyIoT dash board for every 1 second.

| Time | Message |
|-------------------|---------|
| 2018/12/7 17:7:17 | Hello |
| 2018/12/7 17:7:16 | Hello |
| 2018/12/7 17:7:15 | Hello |
| 2018/12/7 17:7:14 | Hello |
| 2018/12/7 17:7:13 | Hello |

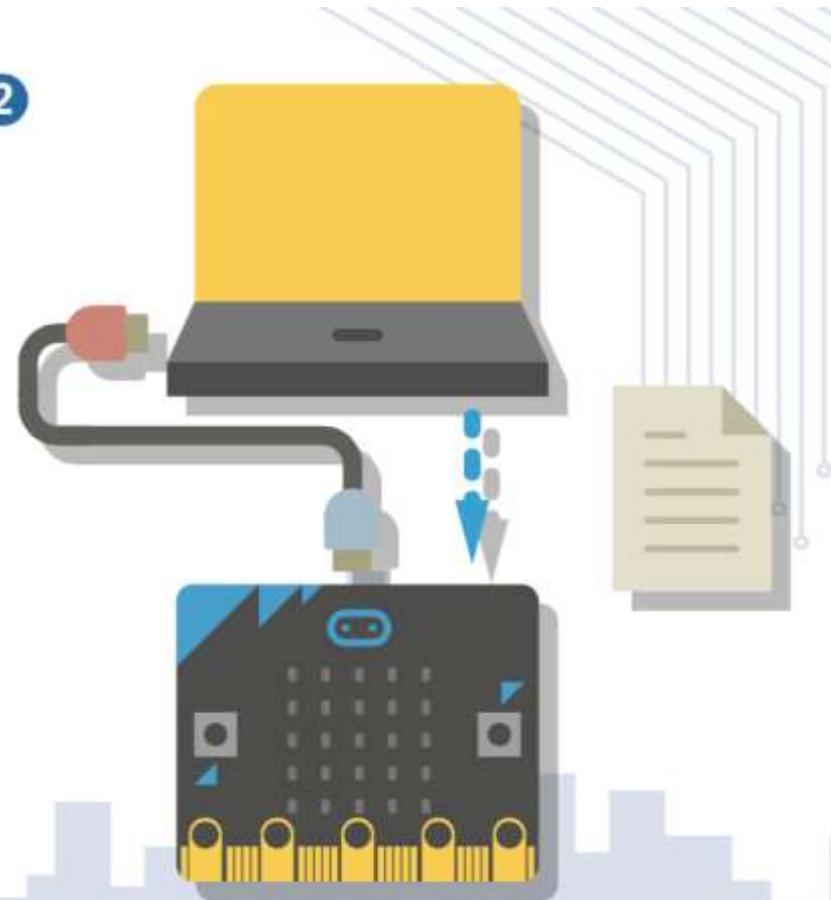
The screenshot shows the EasyIoT code editor with a 'forever' loop containing a 'publish' block with the message 'Hello' and a 'pause' block with a duration of 1000ms. The 'Latest news' table on the right displays a list of messages received at regular intervals.

Connect Micro:bit to your PC and move the HEX file to Micro:bit Drive

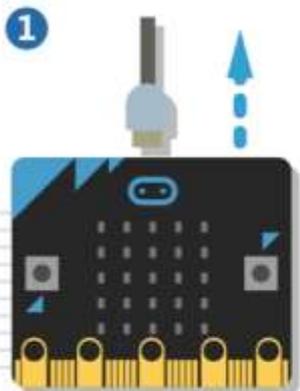
1



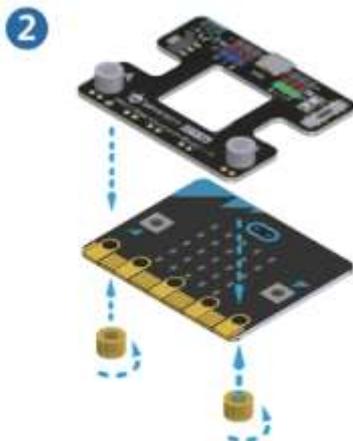
2



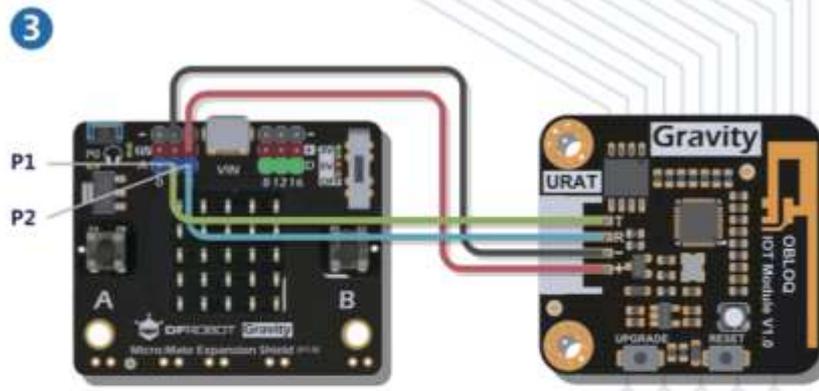
Connect the circuit and switch on power



To prevent short circuit, unplug the USB cable from micro:bit



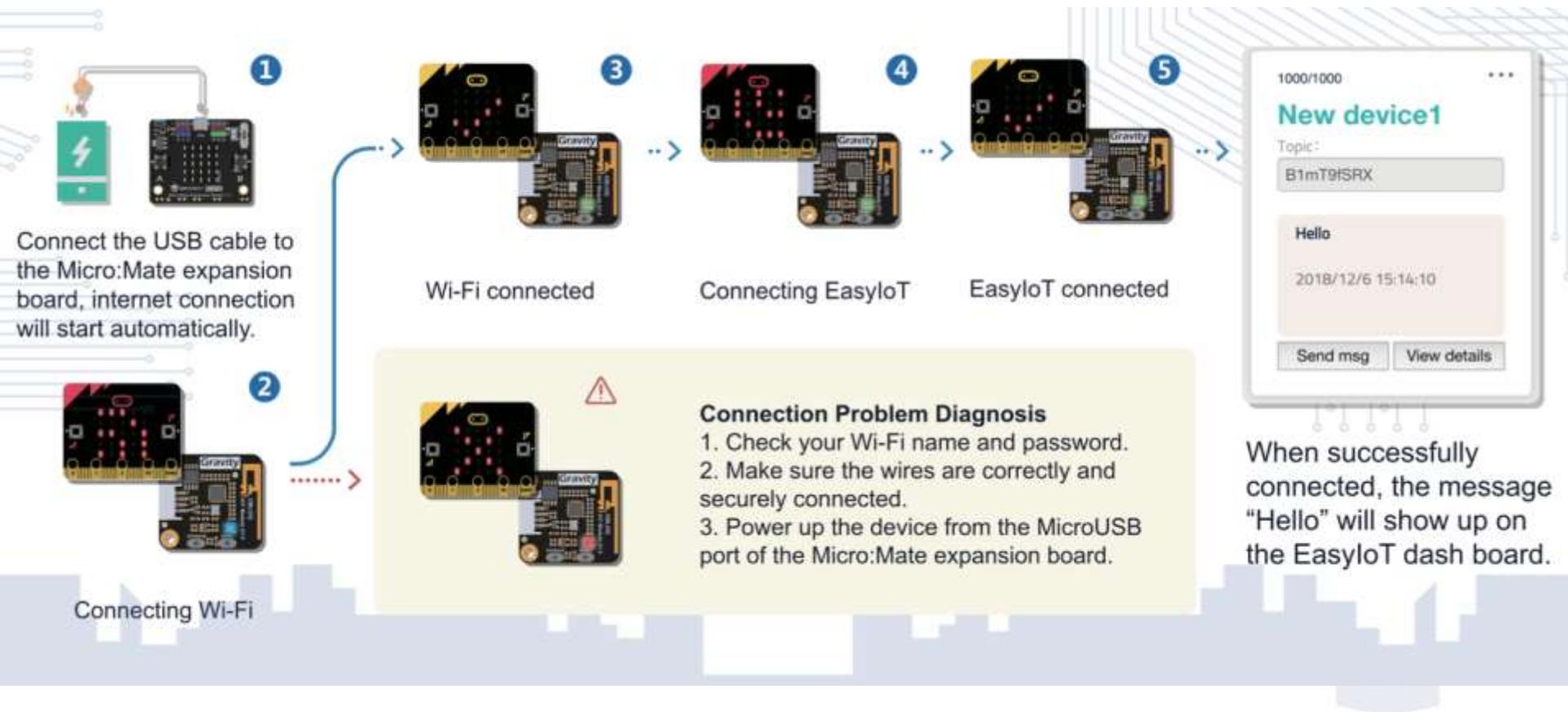
Install Micro:Mate expansion board onto micro:bit (make sure the screws are securely tightened)



Connect the circuit

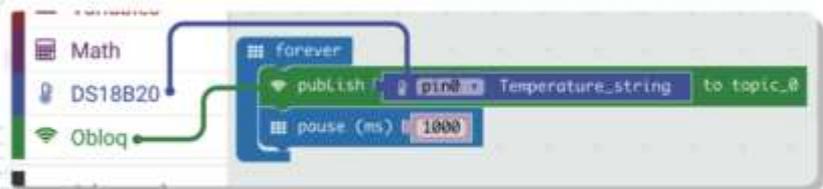
| | | |
|----------------------|-------|-----------|
| Power cable (red) | ————— | Red pin |
| Ground cable (black) | ————— | Black pin |
| TX (Green) | ————— | P1 pin |
| RX (Blue) | ————— | P2 pin |

Start Connection



Example 1: Publish temperature data to EasyIoT

• Program

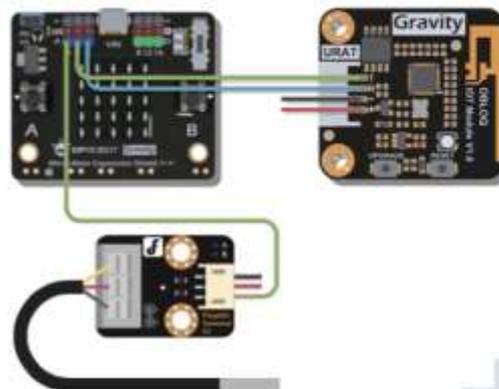


Add Package... ?



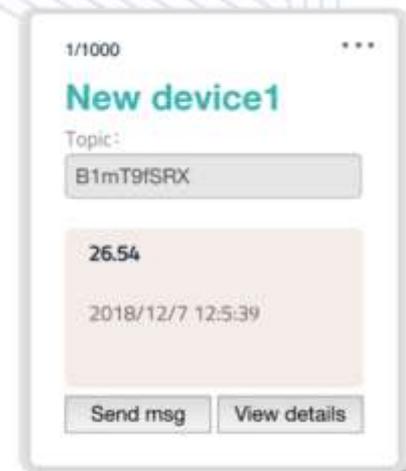
Note: to use water-proof temperature sensor, you will need to add following package to MakeCode Editor.
github.com/DFRobot/pxt-ds18b20

• Wiring Diagram



Power cable (red) — Red pin
 Ground cable (black) — Black pin
 TX (Green) — P1 pin
 RX (Blue) — P2 pin

• Result



Temperature data will be updated to EasyIoT in every second.

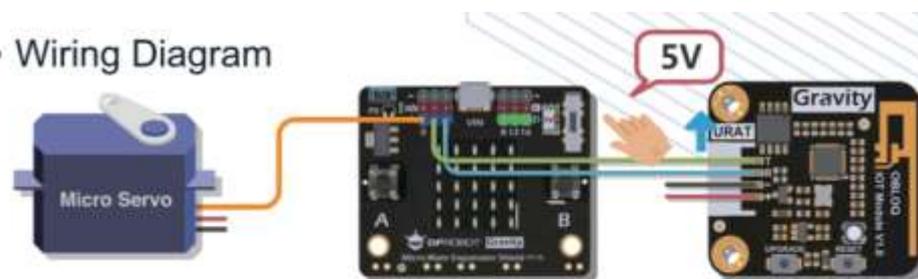
Example 2: Control a servo via EasyIoT

• Program

```

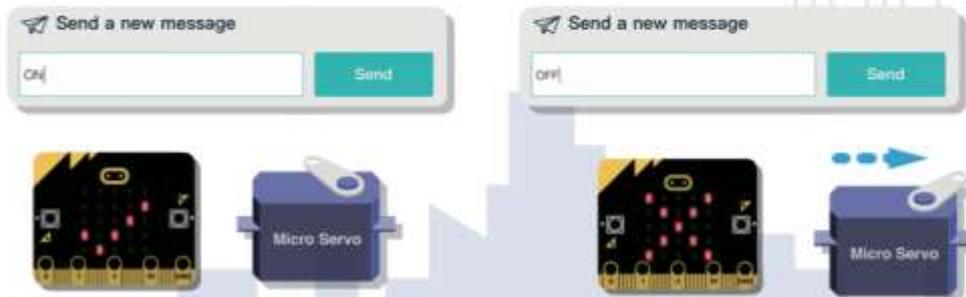
on topic_0 received message
  if message == "ON"
    then
      show icon [LED icon]
      servo write pin P8 (write only) to 0
    else if message == "OFF"
      then
        show icon [LED icon]
        servo write pin P8 (write only) to 90
  
```

• Wiring Diagram



Note: Servo only works under 5V.
Put the switch on middle to set P8, P12, P16 to 5V (LED turns red)

• Result



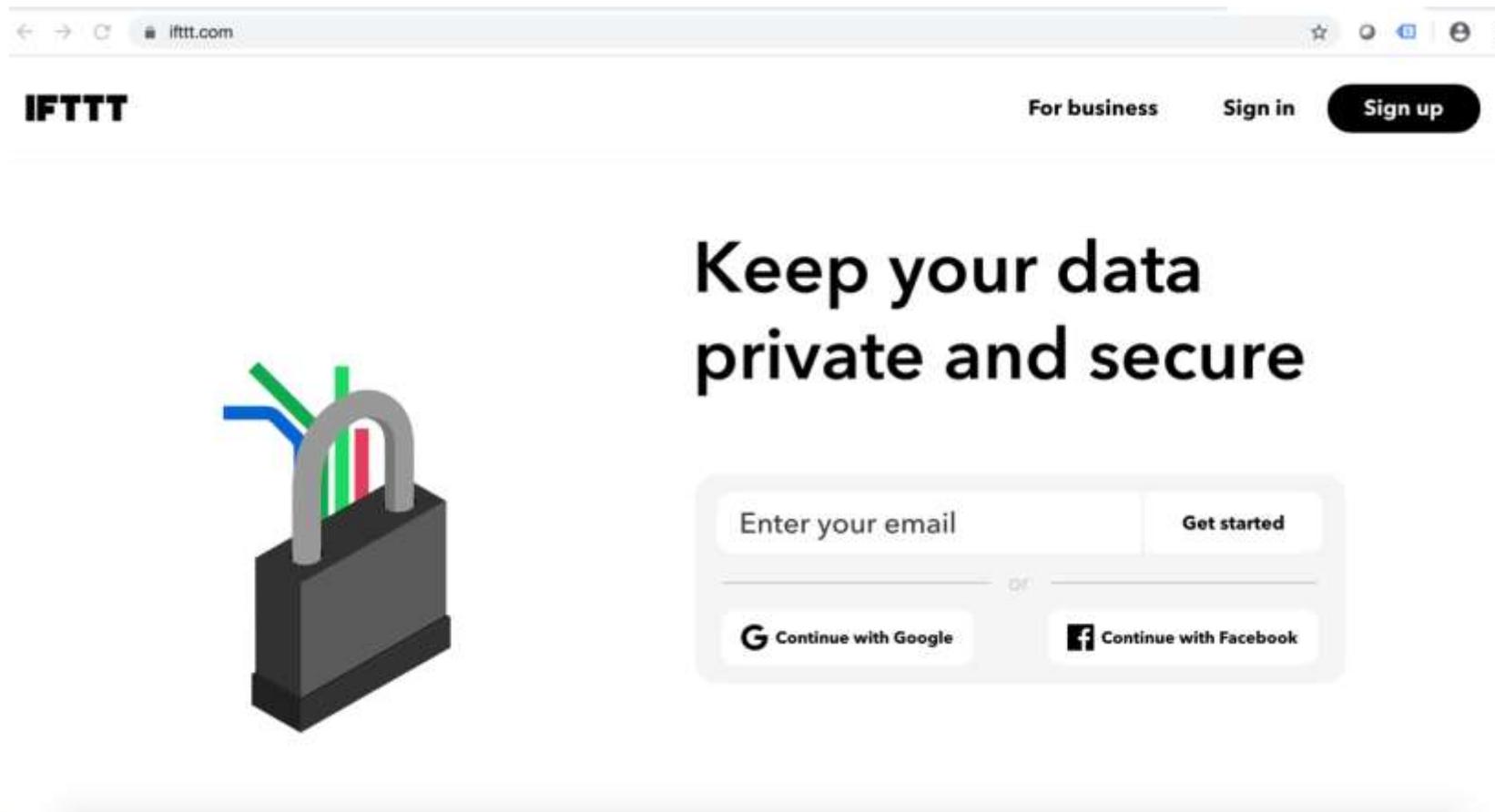
Control the servo by sending "ON" and "OFF" from EasyIoT

Part 2 – IoT Application by using IFTTT (HTTP)



IFTTT – IF THIS THEN THAT

Visit <https://ifttt.com> , then sign up a new account.



The screenshot shows the IFTTT website homepage. At the top left is the IFTTT logo. To the right are links for "For business", "Sign in", and a "Sign up" button. The main heading reads "Keep your data private and secure". Below this heading is a sign-up form with an "Enter your email" input field and a "Get started" button. Below the form are two social login options: "Continue with Google" and "Continue with Facebook". To the left of the sign-up form is an illustration of a grey padlock with three colored wires (blue, green, red) plugged into it, symbolizing data security.

Search for “Webhooks” service

Click “Search” and type in “Webhooks”. Then click “Services”.

IFTTT

Home

Get more

Get more from the services you love

Connections

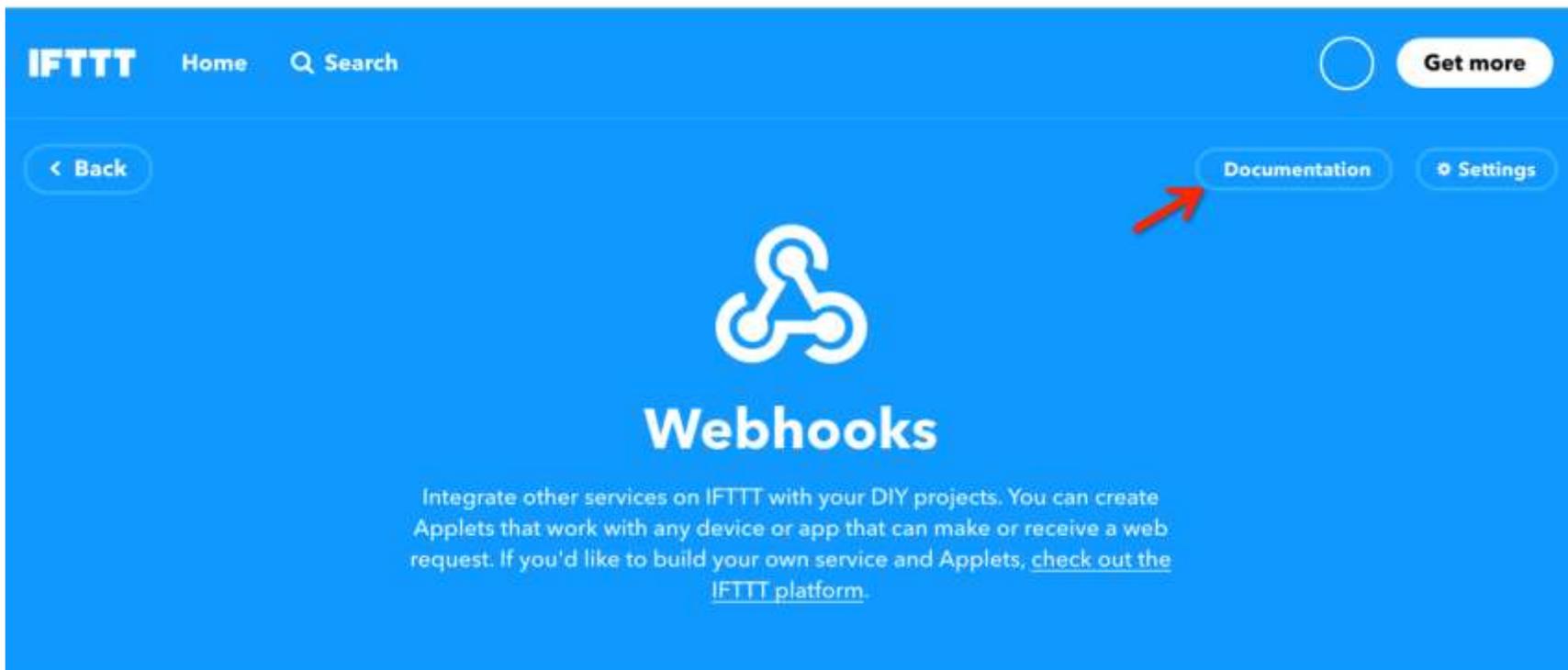
Services



Webhooks

“Webhooks” Service Configuration

Click “Documentation” Button.



IFTTT Home Search Get more

< Back Documentation Settings

Webhooks

Integrate other services on IFTTT with your DIY projects. You can create Applets that work with any device or app that can make or receive a web request. If you'd like to build your own service and Applets, [check out the IFTTT platform](#).

Launch outgoing calls Make a Web Request on Get an email when

“Webhooks” Service Configuration

Please copy this URL for future use.

The “event” name will be changed to different name (e.g. dtslasia).



Your key is: **bqEmsW9vMP3CV6SdBYUnGw**

[Back to service](#)

To trigger an Event

Make a POST or GET web request to:

`https://maker.ifttt.com/trigger/{event}/with/key/bqEmsW9vMP3CV6SdBYUnGw`

Please copy this URL

With an optional JSON body of:

```
{ "value1" : " ", "value2" : " ", "value3" : " " }
```

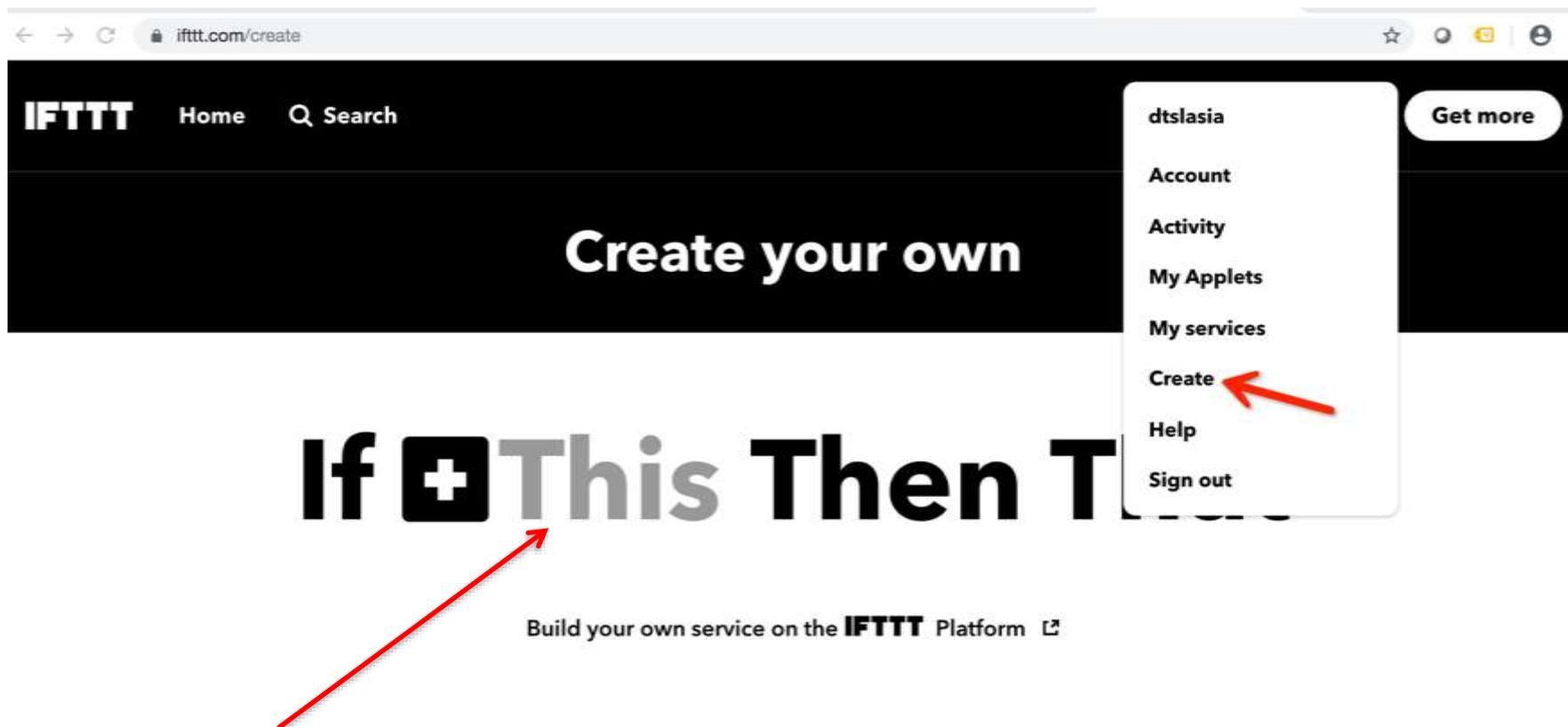
The data is completely optional, and you can also pass `value1`, `value2`, and `value3` as query parameters or form variables. This content will be passed on to the Action in your Recipe.

You can also try it with `curl` from a command line.

```
curl -X POST https://maker.ifttt.com/trigger/{event}/with/key/bqEmsW9vMP3CV6SdBYUnGw
```

Create your own new “Applet”

Click “Create” from the menu.
Then click “This”



Create your own new “Applet”

Type in “Webhooks” from search box.
Then click “Webhooks”



< Back

Choose a service

Step 1 of 6



Create your own new “Applet”

Click “Receive a web request”.



< Back



Choose trigger

Step 2 of 6

Receive a web request

This trigger fires every time the Maker service receives a web request to notify it of an event. For information on triggering events, go to your Maker service settings and then the listed URL (web) or tap your username (mobile)

Create your own new “Applet”

Please type your own event name. e.g. “dtslasia”

IFTTT

Home

Q Search



Get more

< Back



Complete trigger fields

Step 2 of 6

Event Name

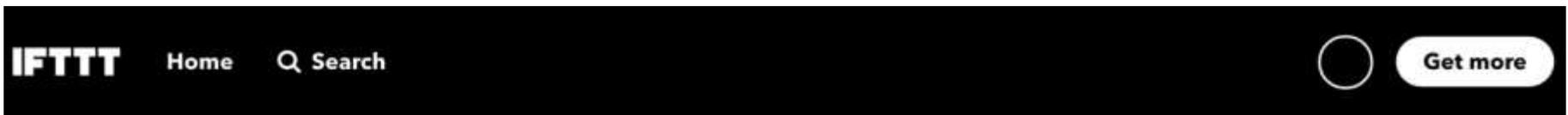
dtslasia

The name of the event, like "button_pressed" or "front_door_opened"

Create trigger

Create your own new “Applet”

Please click “That”



< Back

If  Then  That



Create your own new “Applet”

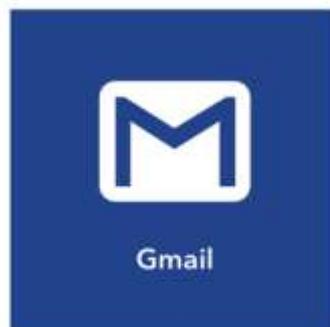
Please type “Gmail”, then click the Gmail icon.



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Choose action service

Step 3 of 6



Create your own new “Applet”

Click “Send yourself an email”.



< Back



Choose action

Step 4 of 6

Send an email

This Action will send an email to up to twenty recipients from your Gmail account.

Send yourself an email

This action will send yourself an email. HTML, images and links are supported.



Create your own new “Applet”

You may change the “Subject” and “Body” of the email.

< Back



Complete action fields

Step 5 of 6

Subject

The event named " `EventName` " occurred on the Maker Webhooks service

Add ingredient

Body

What: `EventName`

When: `OccurredAt`

Extra Data: `Value1` , `Value2` ,
`Value3` ,

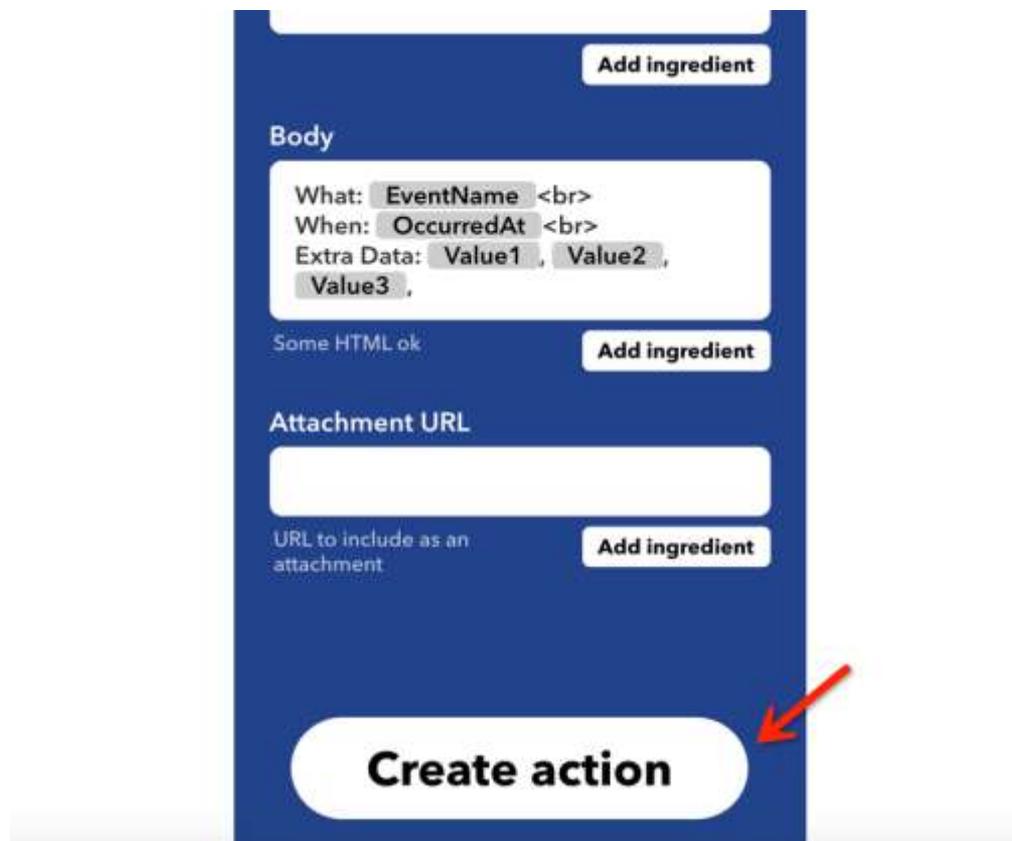
Some HTML ok

Add ingredient

Attachment URL

Create your own new “Applet”

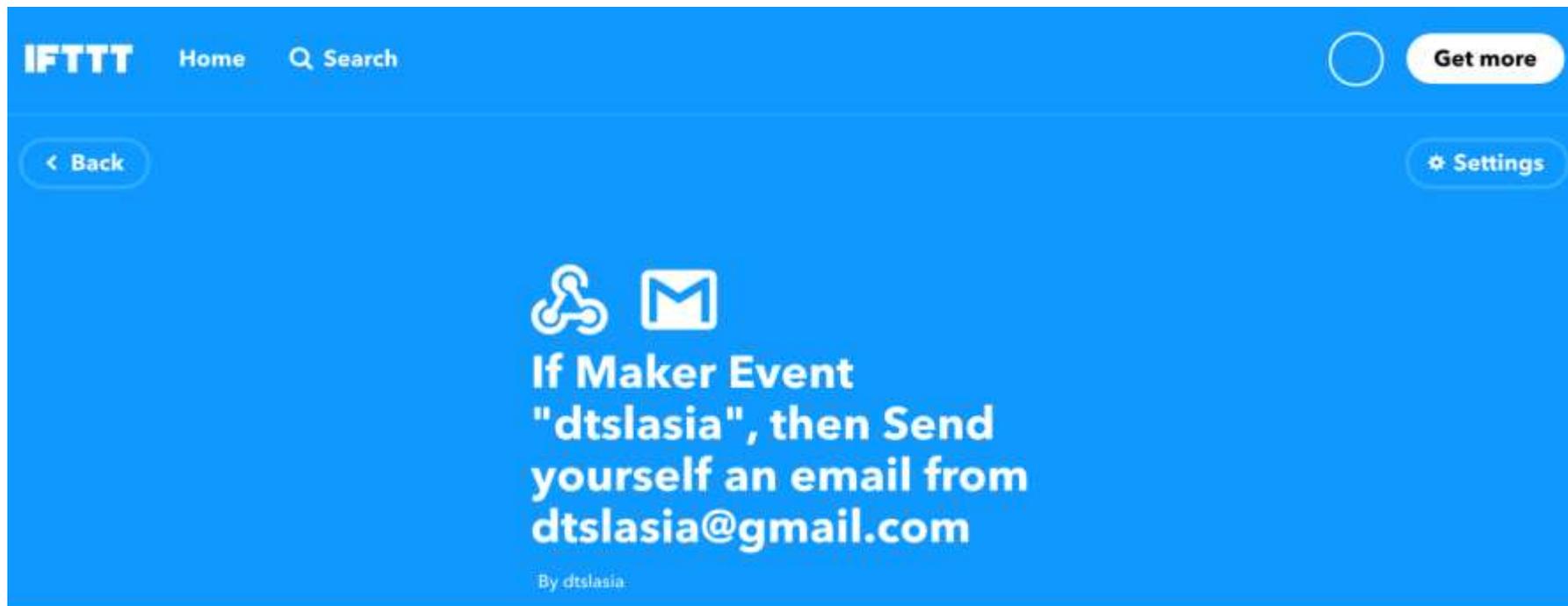
Click “Create action” button to finish the Applet setup.



The screenshot shows a dark blue form with several sections. At the top right is a button labeled "Add ingredient". Below this is a section titled "Body" containing a text area with the following content: "What:
 When:
 Extra Data: , , ,". Below the text area is the text "Some HTML ok" and another "Add ingredient" button. The next section is "Attachment URL" with an empty text input field, followed by the text "URL to include as an attachment" and a third "Add ingredient" button. At the bottom of the form is a large white button with the text "Create action", which is pointed to by a red arrow.



Create your own new “Applet”



The screenshot shows the IFTTT interface for creating a new applet. At the top left is the IFTTT logo, followed by 'Home' and a search icon. On the right, there is a 'Get more' button. Below the navigation bar, there are 'Back' and 'Settings' buttons. The main content area features an icon for a Maker Event (a person with a gear) and an email icon. The text reads: 'If Maker Event "dtslasia", then Send yourself an email from dtslasia@gmail.com'. Below this, it says 'By dtslasia'.

Connected

Micro:bit program for IFTTT

Please follow the diagram below to setup your own Micro:bit program. Connect a button to “P8” in order to trigger an event. You will receive a gmail after press the button.

The image displays the Micro:bit MakeCode editor interface. On the left, the 'Obloq http' block is configured with the following settings:

- Initial settings: Obloq http 初始設置
- Pin settings: 引腳設置
- Receive data (green wire): 接收數據(綠色導線): P1
- Send data (blue wire): 發送數據(藍色導線): P2
- Wi-Fi: Wi-Fi
- Name: 名稱: "Discovery-Guest"
- Password: 密碼: "guest31608443"
- HTTP configuration: http 配置
- IP address: ip地址: "maker.ifttt.com"
- Port number: 端口號: 80
- Start connection: 啓動連接
- Display text: 顯示 文字: 獲取IP地址

On the right, a 'Repeat' block is configured with the following settings:

- Repeat unlimited times: 重複無限次
- Condition: 如果 數位信號讀取 引腳 P8 > 0 那麼
- Action: 顯示 文字 http(get) url "trigger/dtslasia/with/key/bqEmsW9vMP3CV6SdBYUnGw" 超時(毫秒) 10000
- Pause: 暫停 1000 毫秒

Discovery Technologies Limited

- Unit 20, 9/F, No.1 Hung To Road, Kwun Tong, Kowloon, Hong Kong
- info@dtsl.asia
- Telephone: +852-3160 8443
- Fax: +852-3520 2341



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