香港教育大學
The Education University of Hong Kong

FACULTY OF LIBERAL ARTS AND SOCIAL SCIENCES
博文及社會科學學院

科學與環境學系
Department of Science and Environmental Studies

2023-2024 Quality Education Fund Thematic Network - Tertiary Institutes

STEAM Education with Self-directed and Progressive Learning of Engineering Design Process for Problem-solving

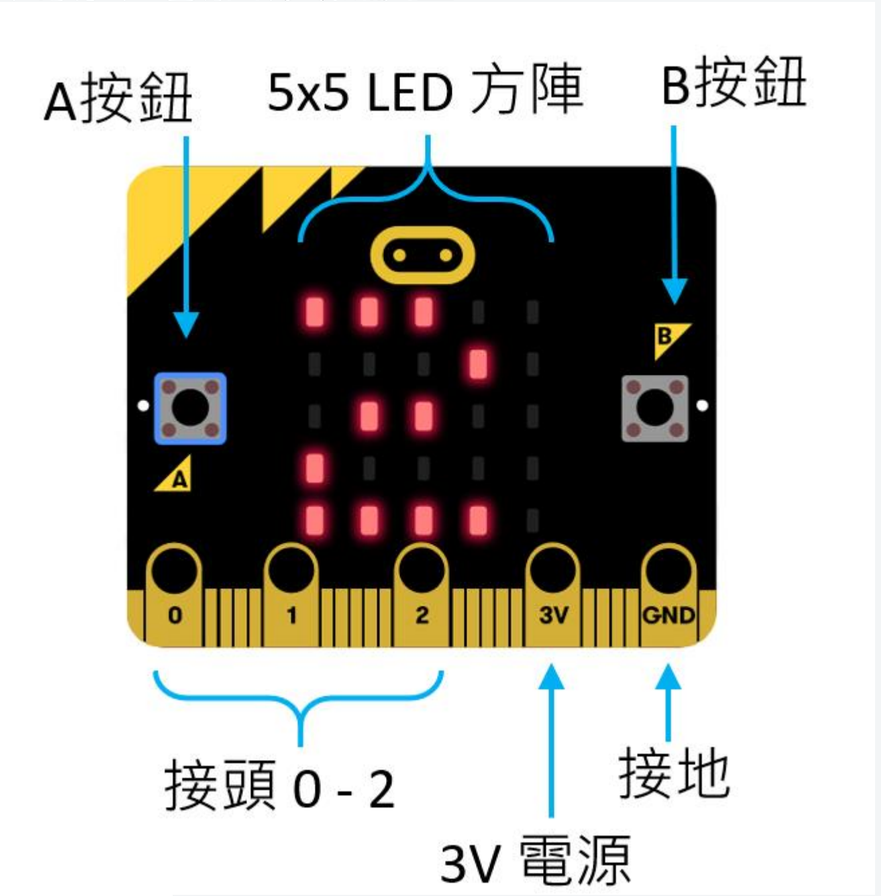
透過STEAM教育自主及循序漸進學習以工程設計流程解難

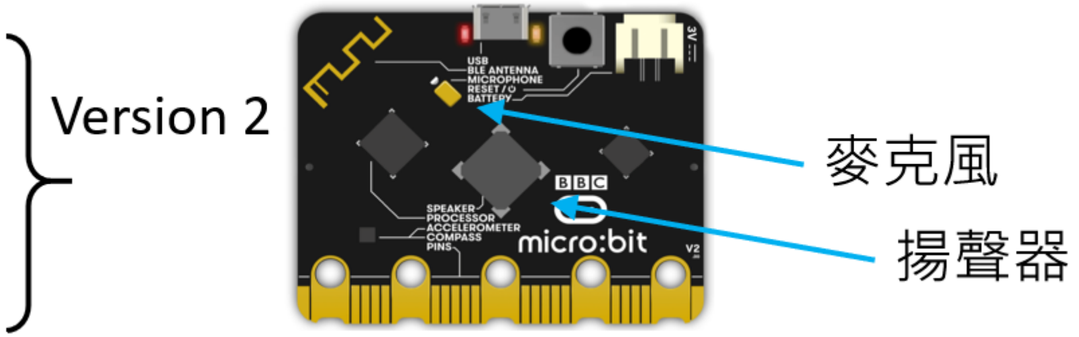
Application of Micro:bit for data logging

迦密中學Carmel Secondary School

micro:bit

- micro:bit 是一由英國 BBC 開發設計的微型控制器，用於電腦及編程教學。
- micro:bit 包含:
- 2個 控制按鈕（A及B按鈕）
- 1個 重置按鈕
- 1個 5x5 LED 顯示方陣
- 1個 3軸加速度傳感器
- 1個 3軸磁力儀
- 1組 2.4GHz 無線電模組(用於藍芽傳訊)
- 1個 揚聲器
- 1個 麥克風
- 1個 觸感傳感器





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MakeCode 編程平台

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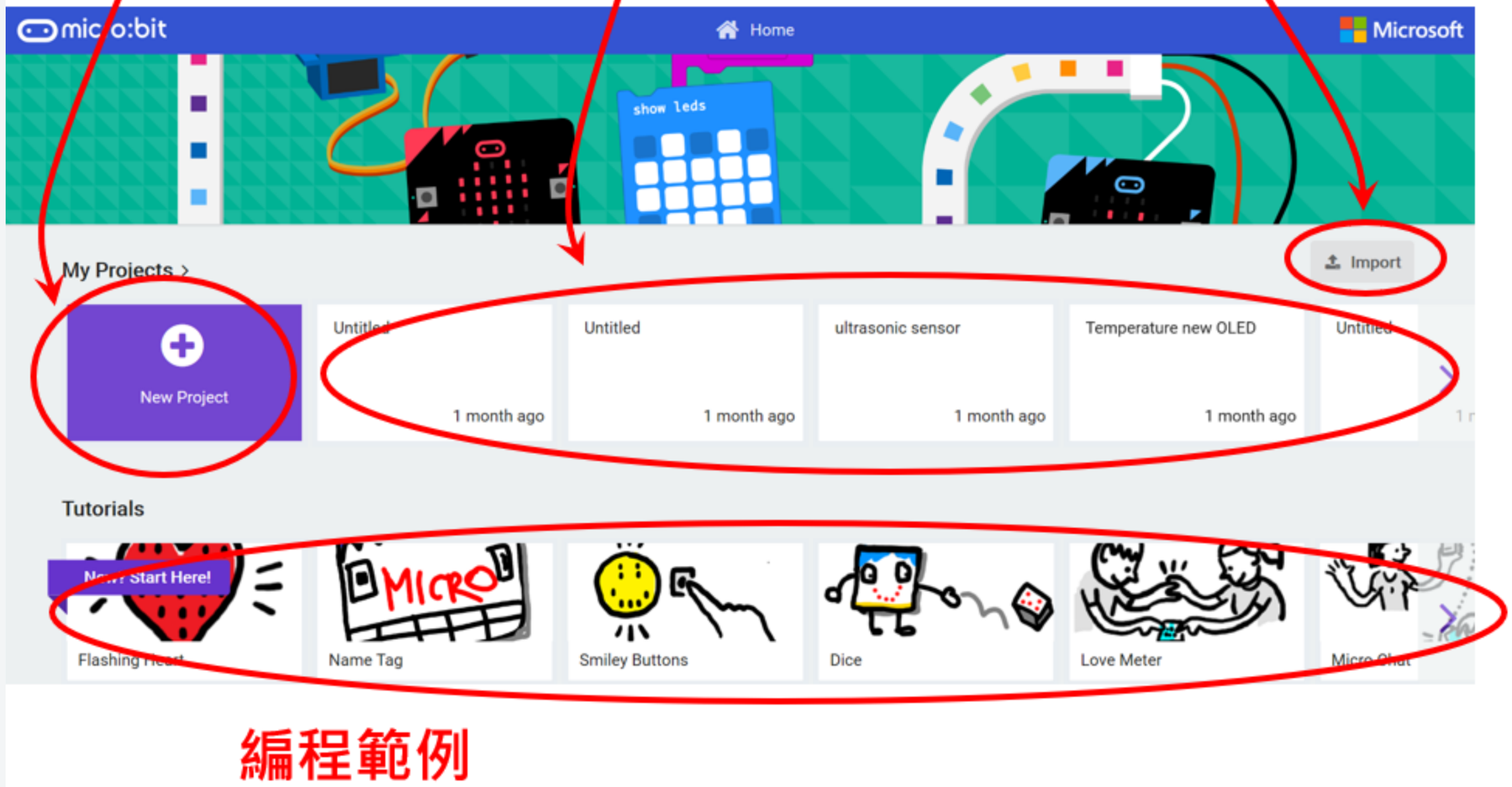
開始**新的編程項目**　**之前的編程項目**　從**電腦載入**之前的編程檔案(.hex)



編程範例

以 MakeCode 編程

- 我們先以**線上版 MakeCode** 編程:

  https://makecode.microbit.org/

- 點擊 **“+ New Project ”**
- 輸入右面程式碼製作**溫度探測器**

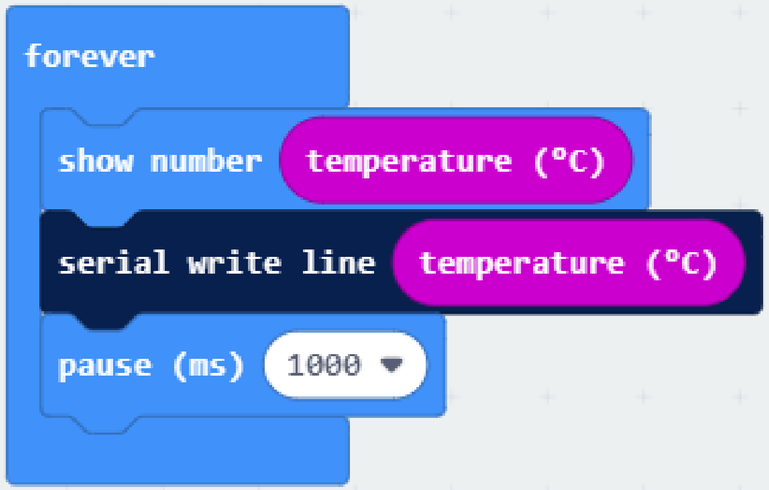
Micro:bit 模擬器, 測試程式

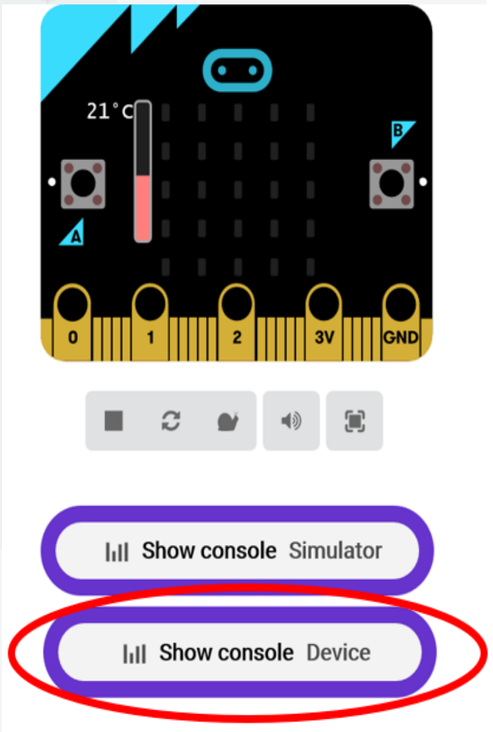
- micro:bit 可輕鬆地通過 microUSB 連接線 與電腦 進行連接， 點擊Download旁邊的**3點**
- **按Connect device ，按pair**， 選擇要連接的microbit，然後**按connect**
- 點擊 “Download” 並把檔案儲存至 “MICROBIT (D:)” 中(micro:bit 可能出現在不同的硬碟中)

下載程式並在 micro:bit 上運行

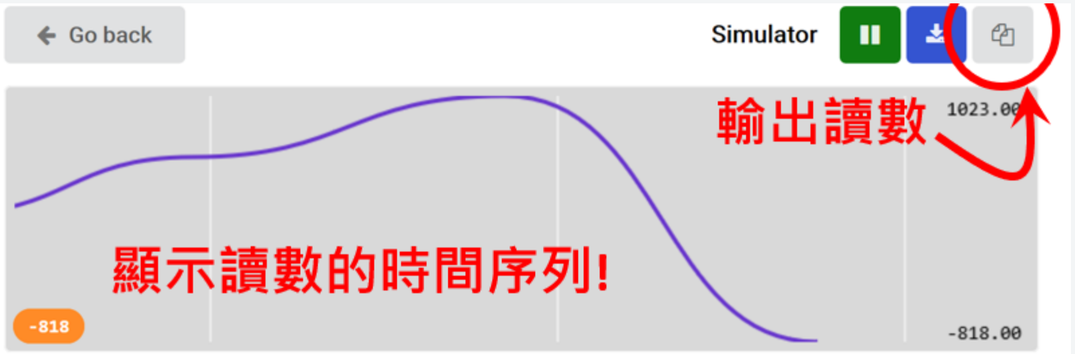
以 micro:bit 作數據記錄儀

- 我們可以電腦**顯示/讀取/記錄**傳感器讀數
- 以 **MakeCode 線下版讀取讀數會比較穩定**
- 我們先試試以下的編碼 (Serial 序列):





- 點擊 “**Show console**”(顯示系統監控)



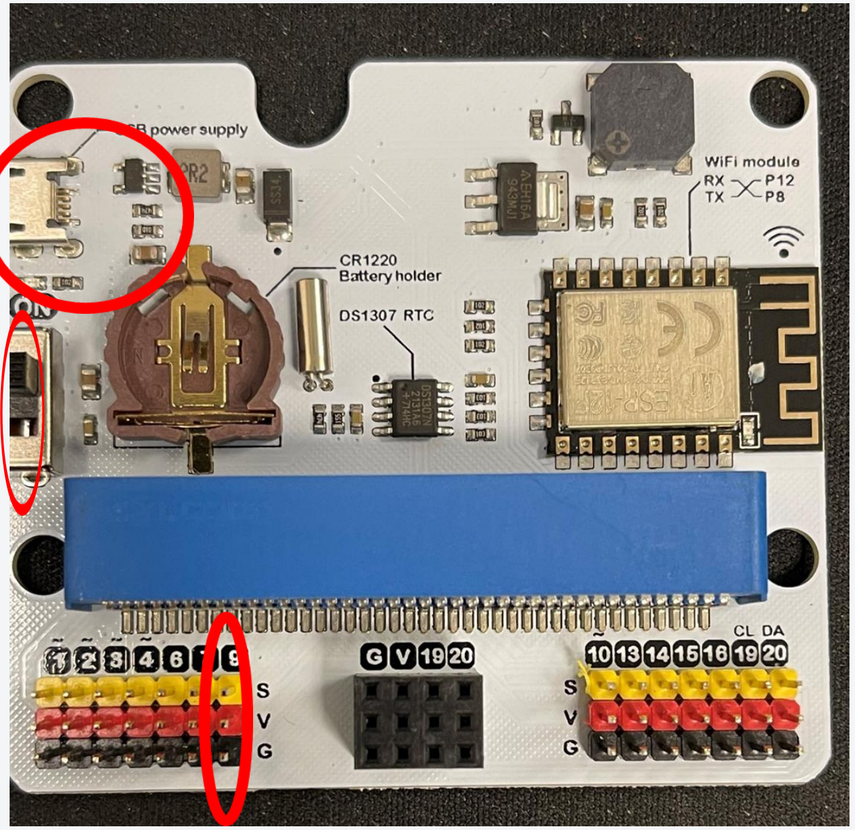
- 我們可以在“**Show console device**”右上角的 “**Export data**” 或 “**Copy text**” 下載數據

iot:bit

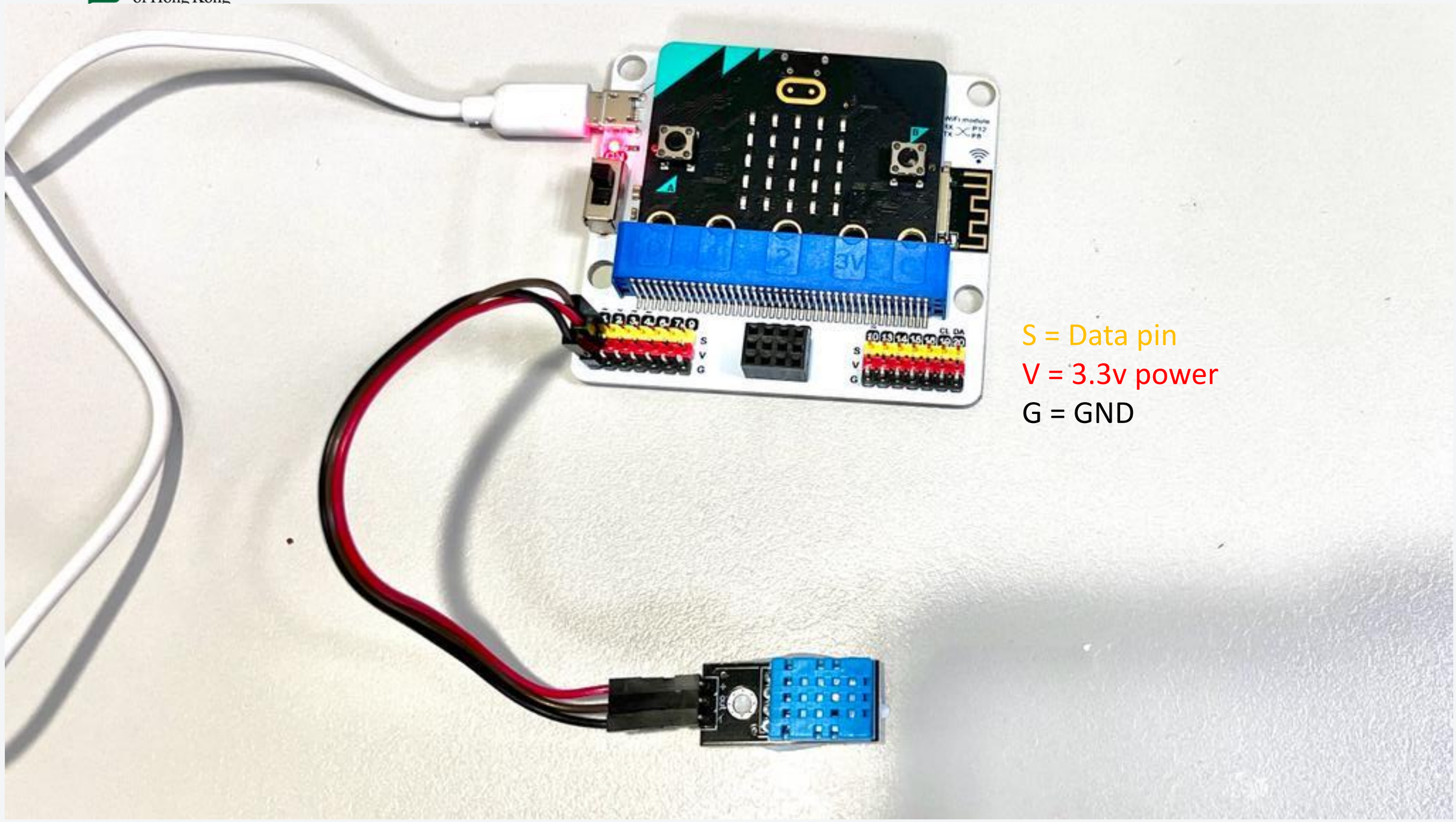
Power supply for iot:bit

Switch

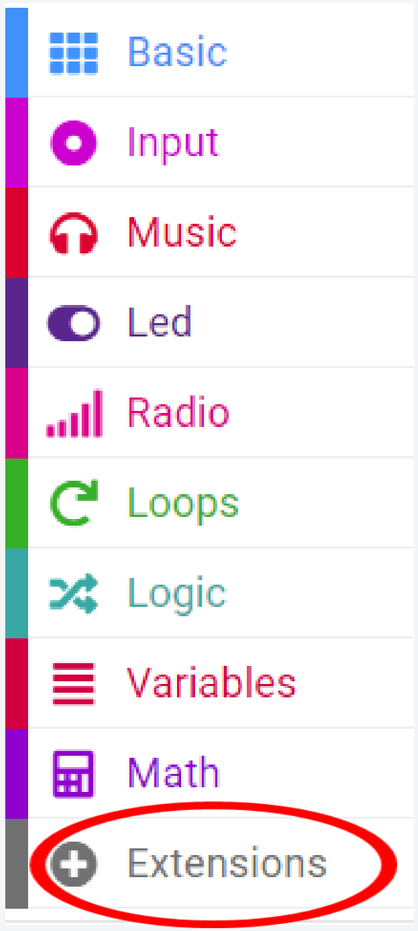
S = Data pin
V = 3.3v power
G = GND

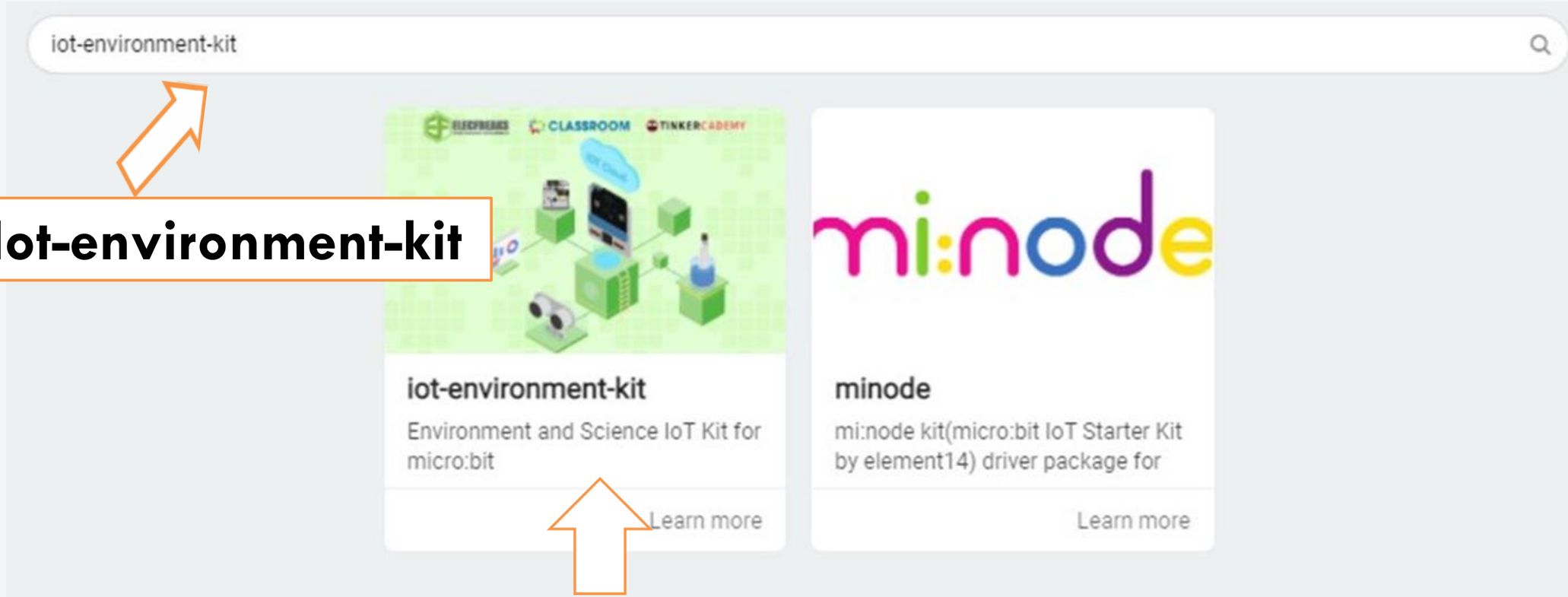


DHT11



MakeCode extensions





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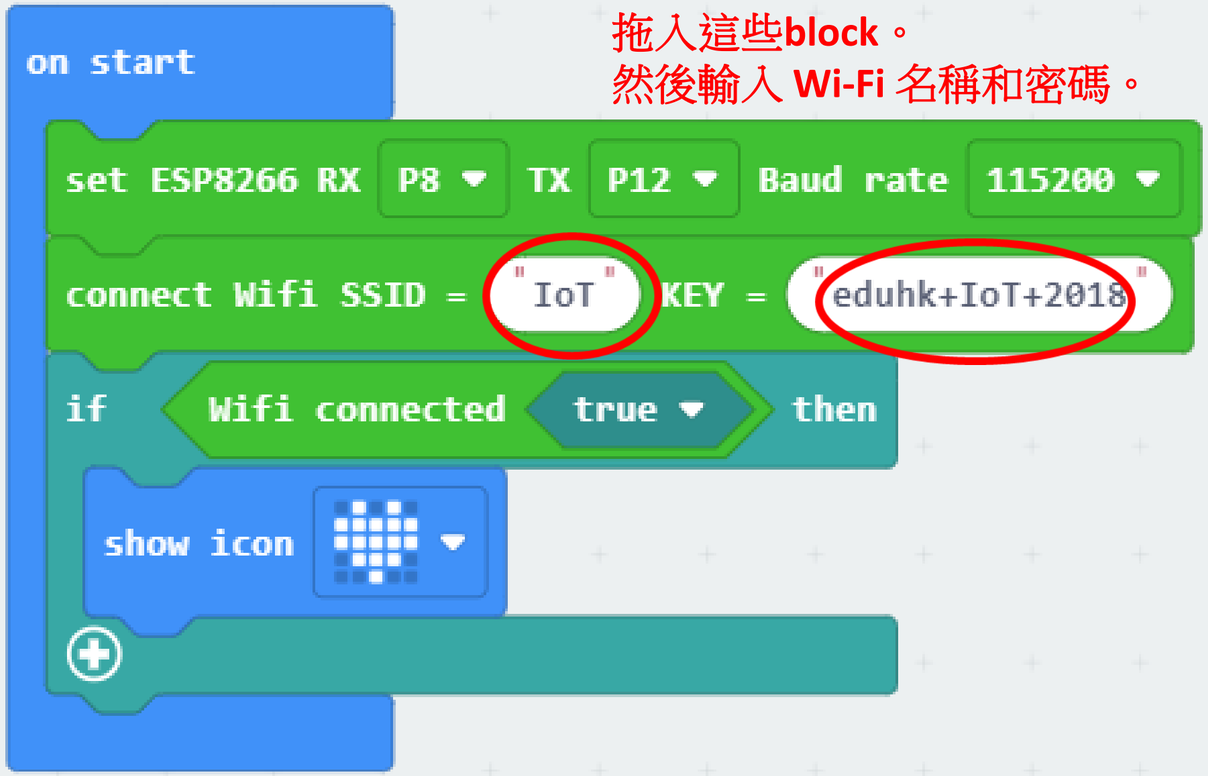
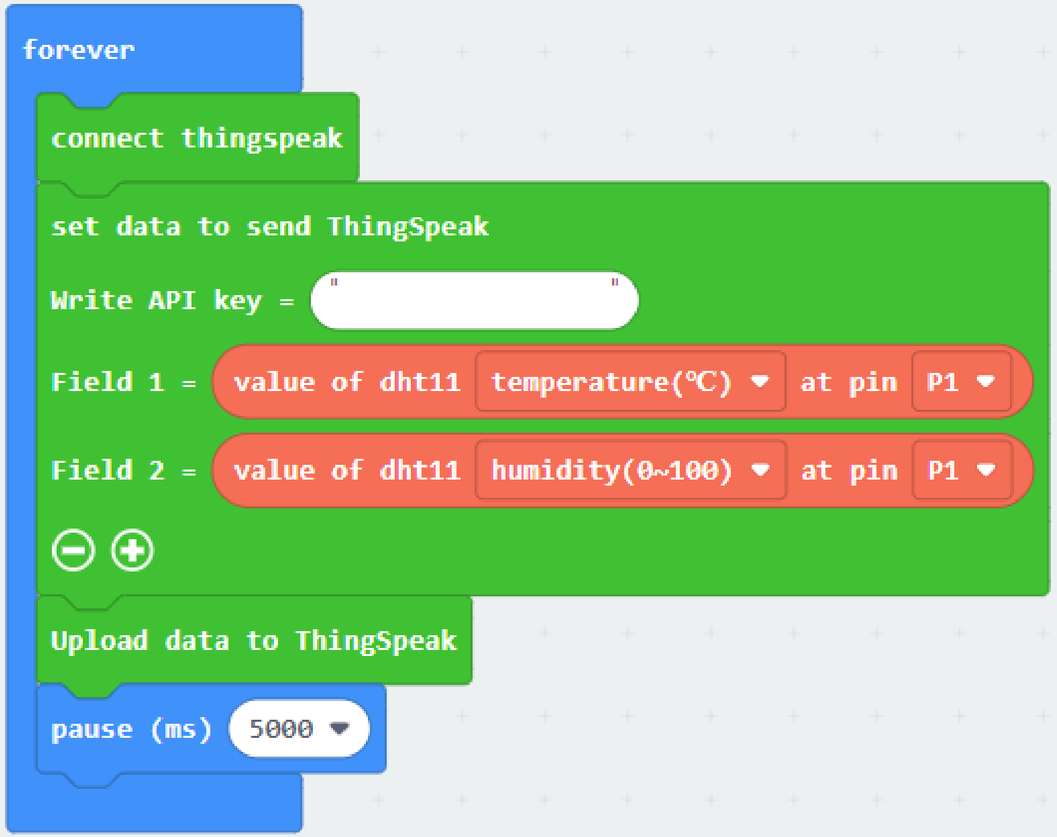
iot:bit WiFi setting

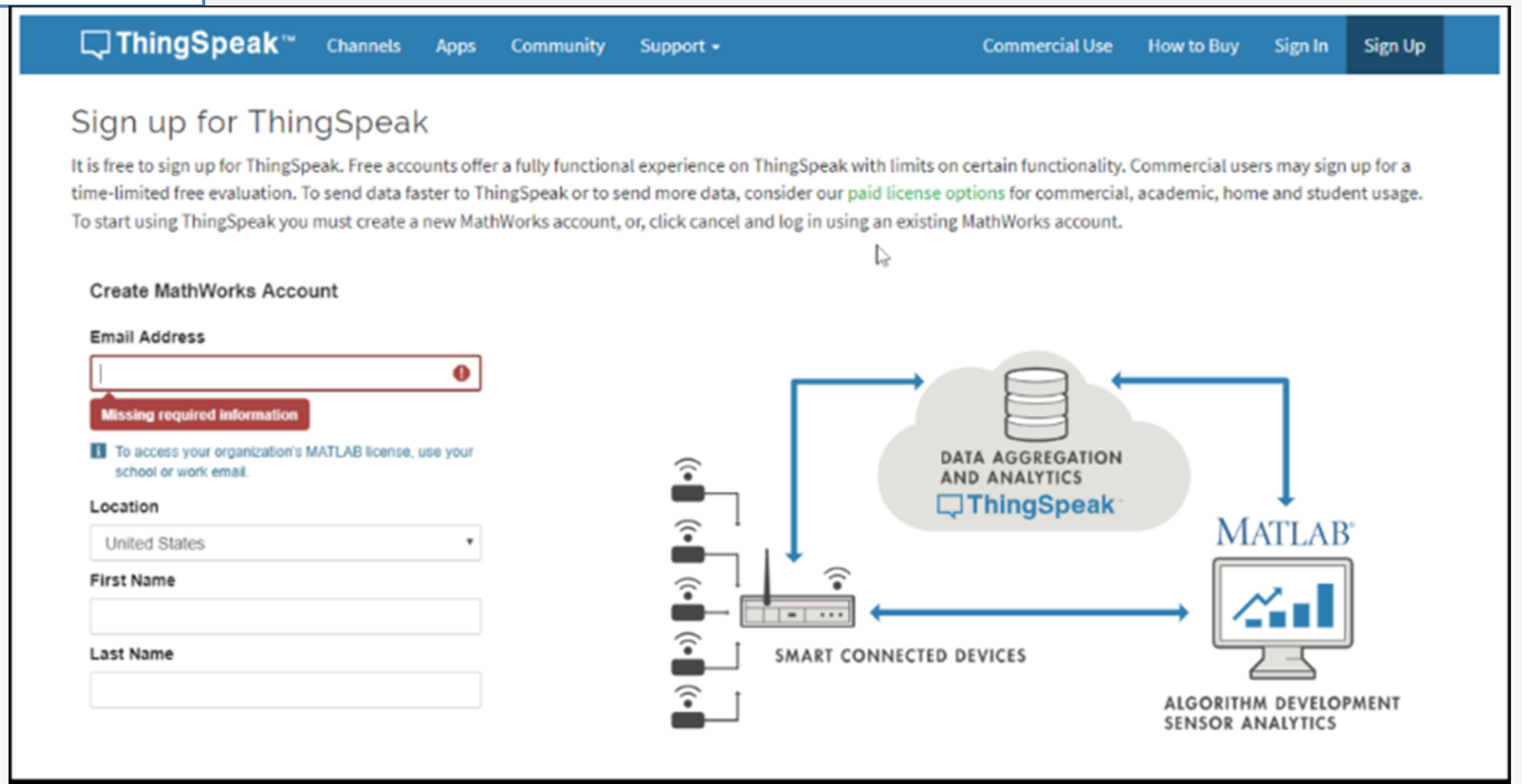
拖入這些block。
然後輸入 Wi-Fi 名稱和密碼。



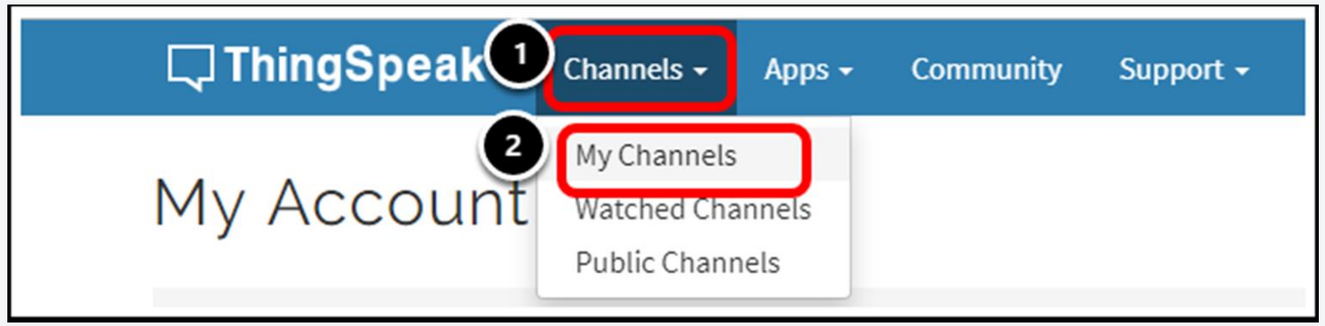


ThingSpeak Set Up

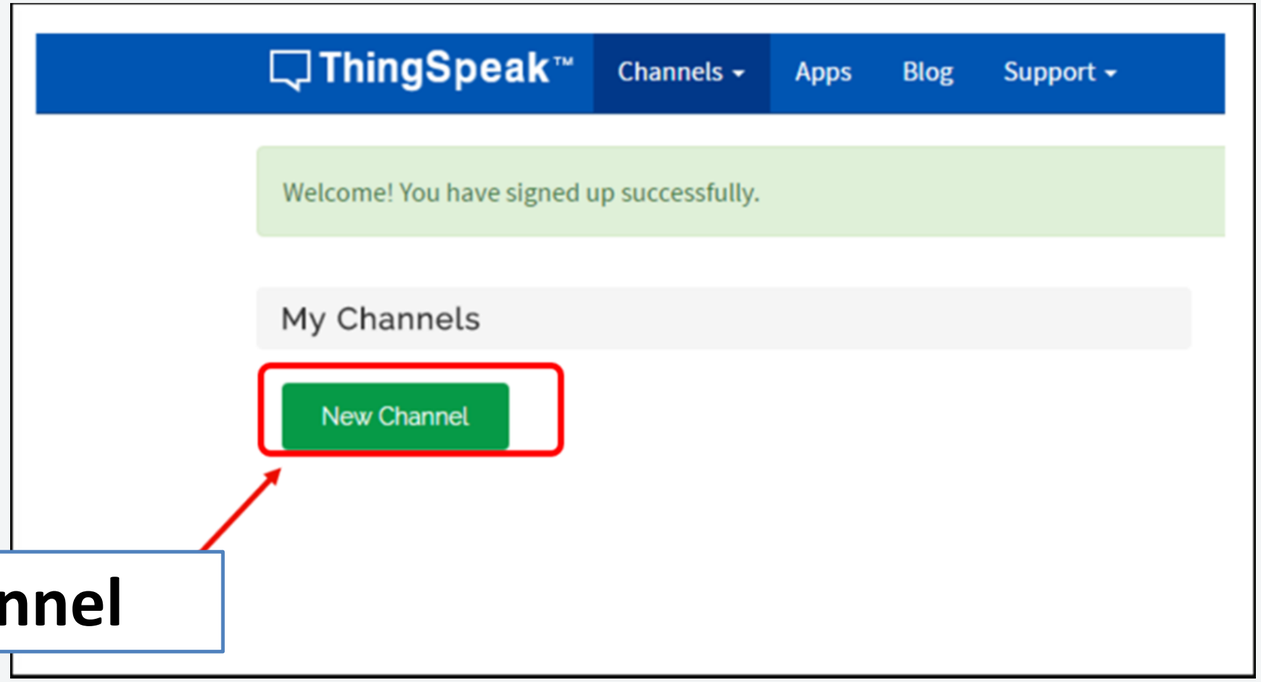
Step 1: 登入
https://thingspeak.com



ThingSpeak Set Up

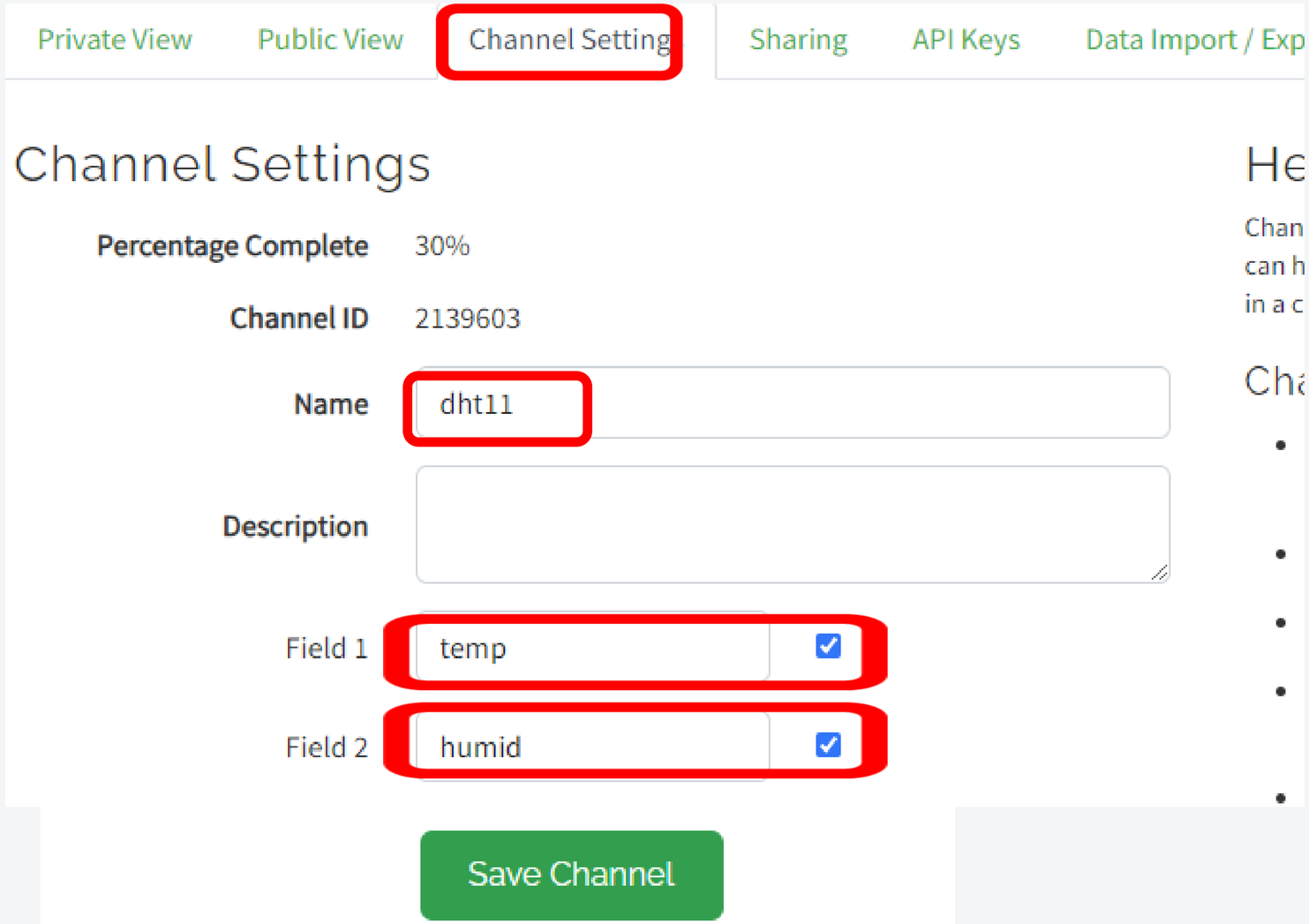


Step 2: 登入 “ThingSpeak”後，點擊頻道並選擇 “My Channels”



Step 3: Click New Channel

ThingSpeak Set Up



Step 4: 輸入Channel名稱，、並在 “Field”中新增名稱以記錄數據，然後Save Channel

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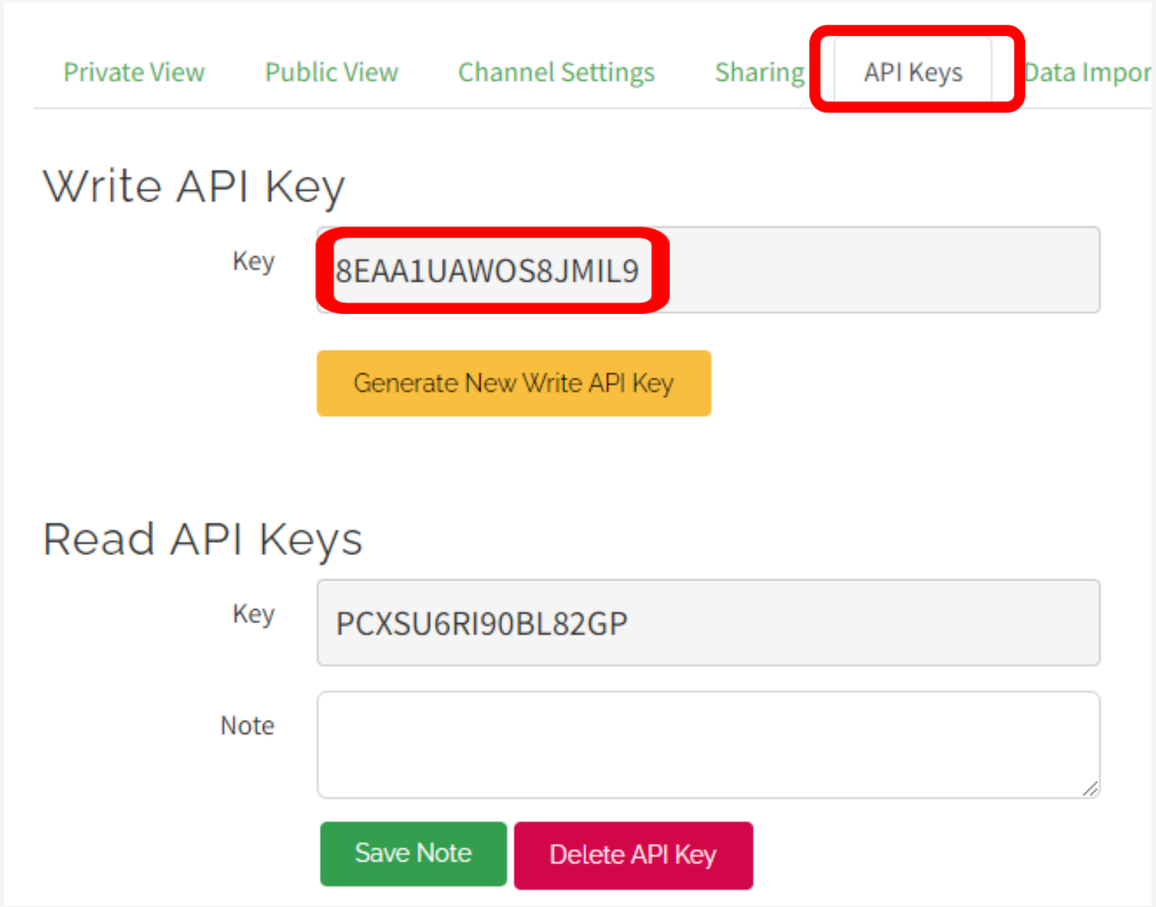
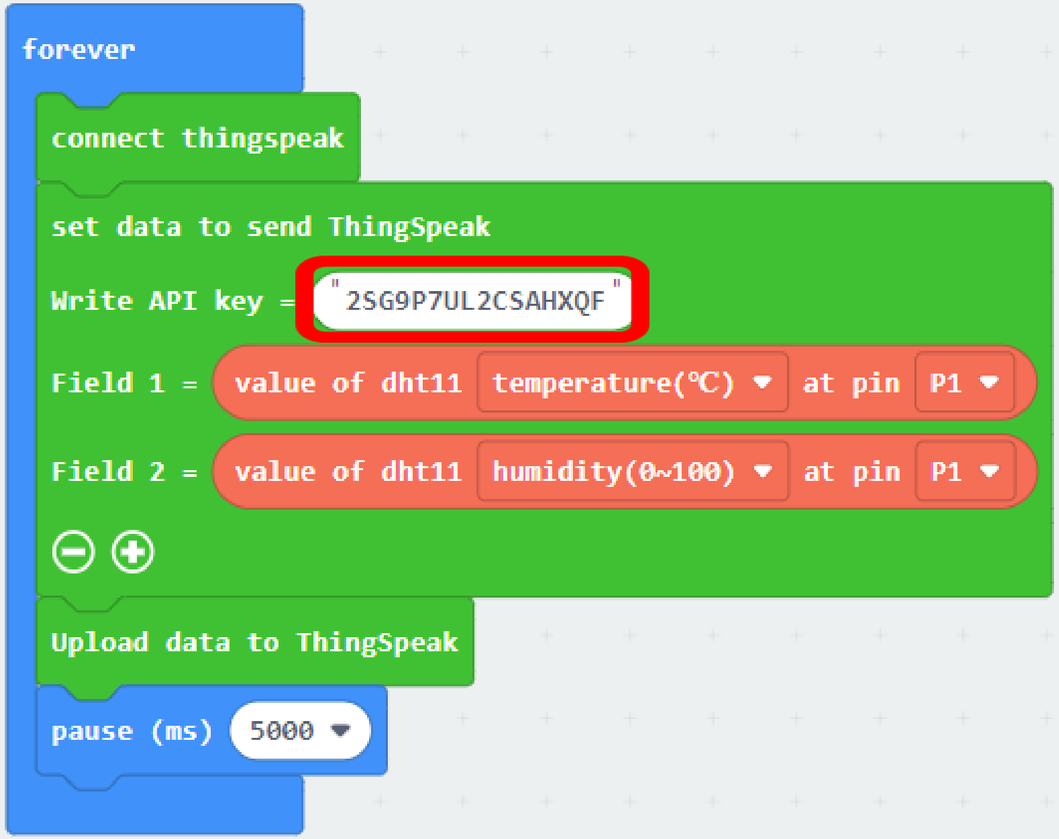
ThingSpeak Set Up



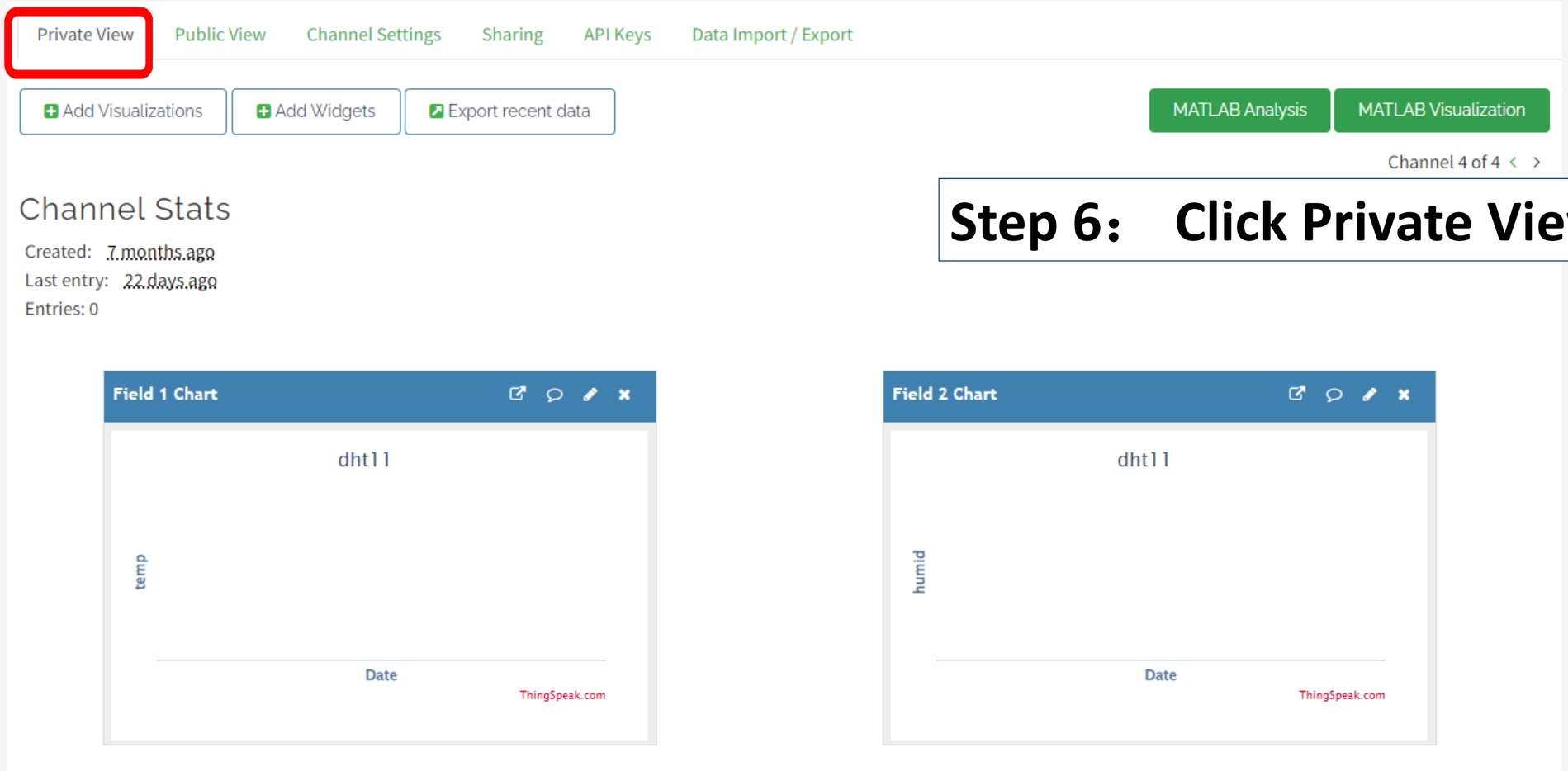
Step 5： Copy API Key

ThingSpeak Set Up



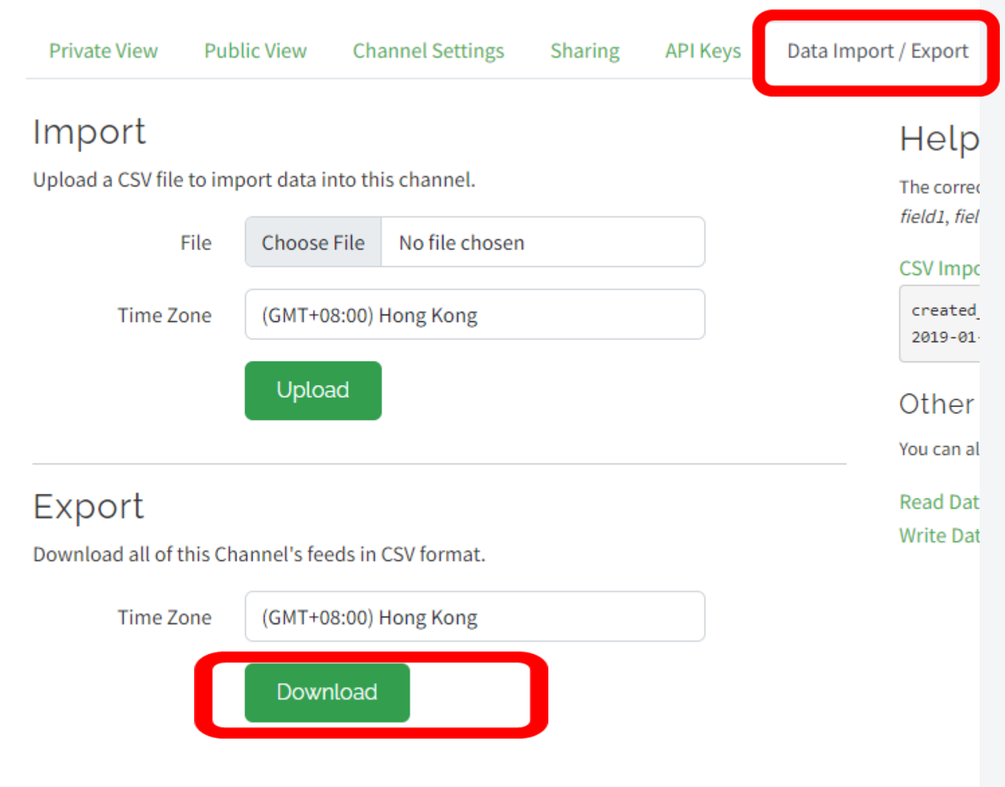
Step 5： Paste API Key in Makecode

ThingSpeak Set Up



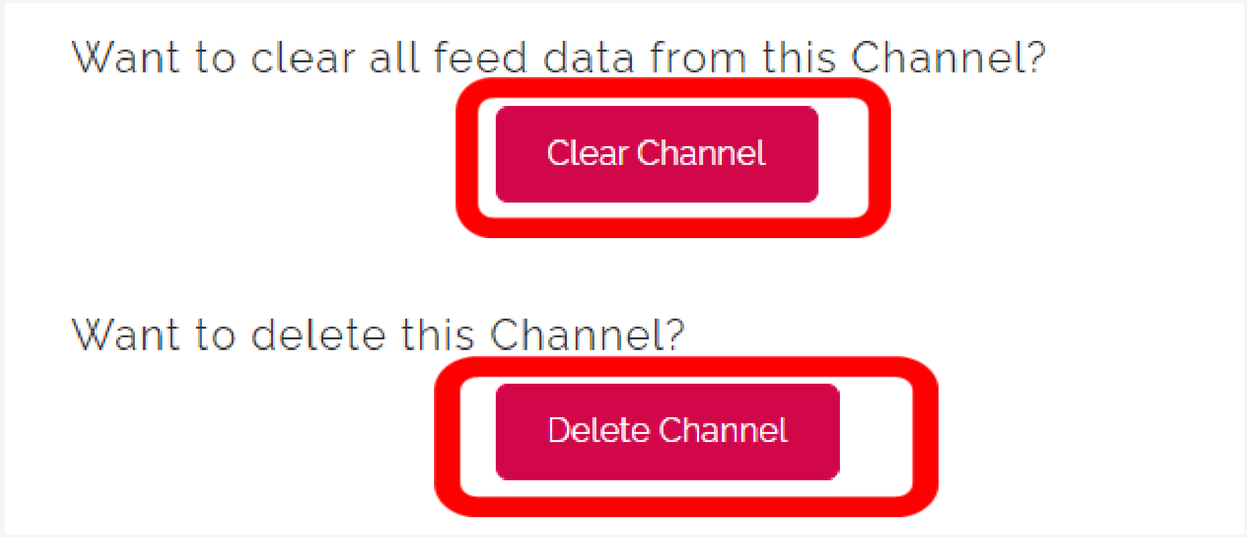
Step 6： Click Private View 睇結果

ThingSpeak Set Up



Step 7： Click Download

ThingSpeak Set Up



係Channel Settings 可以Clear Data，或者將成個 Channel delete

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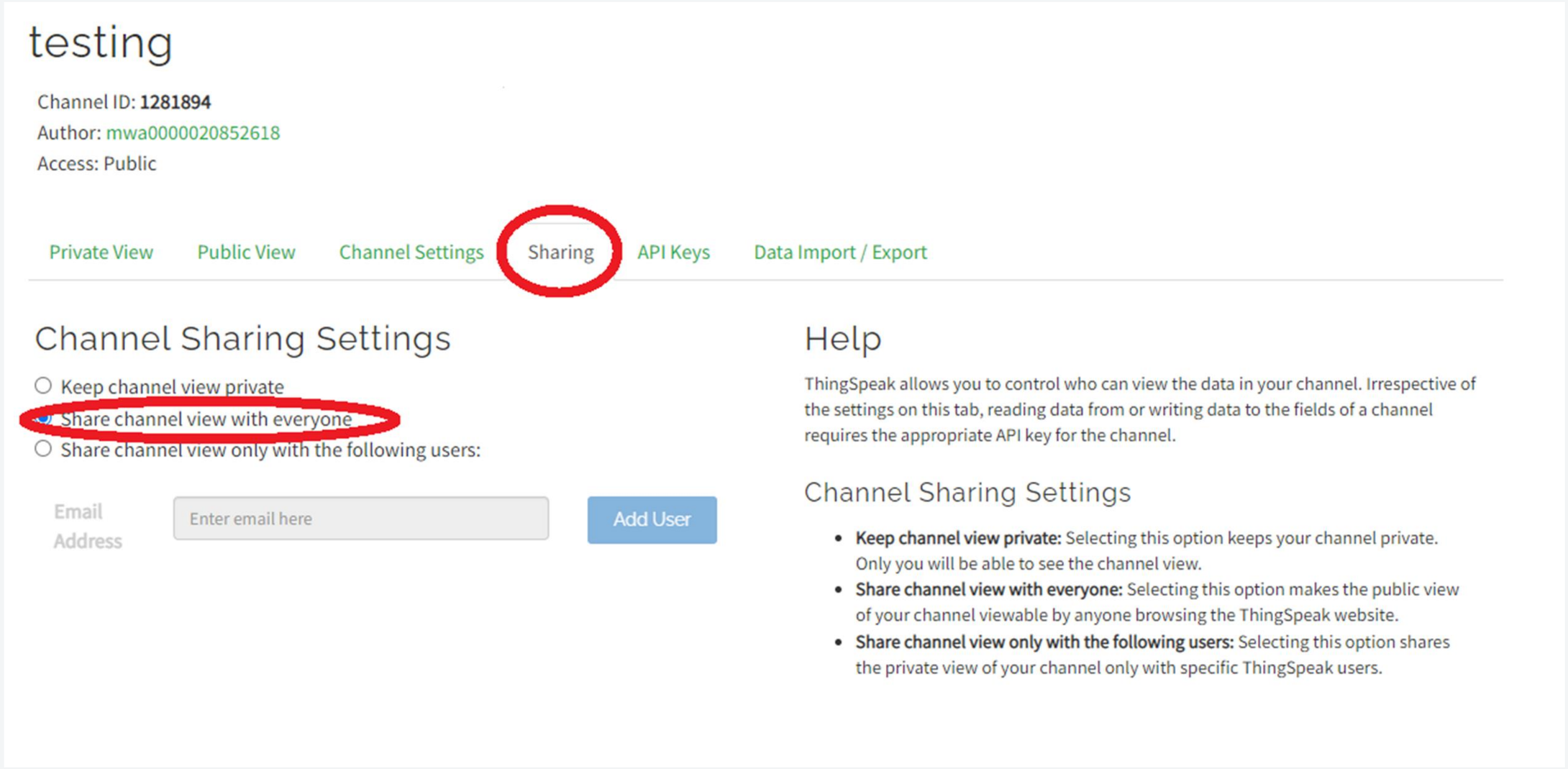
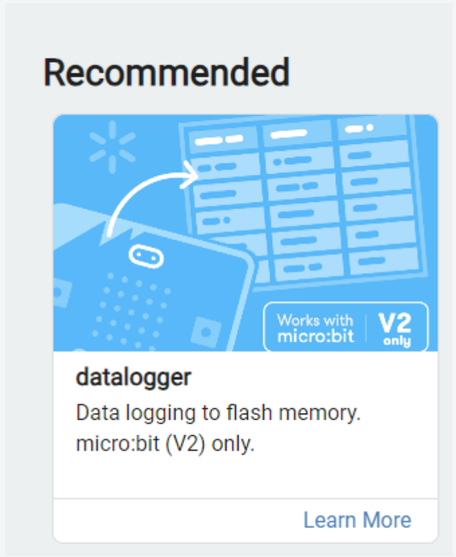
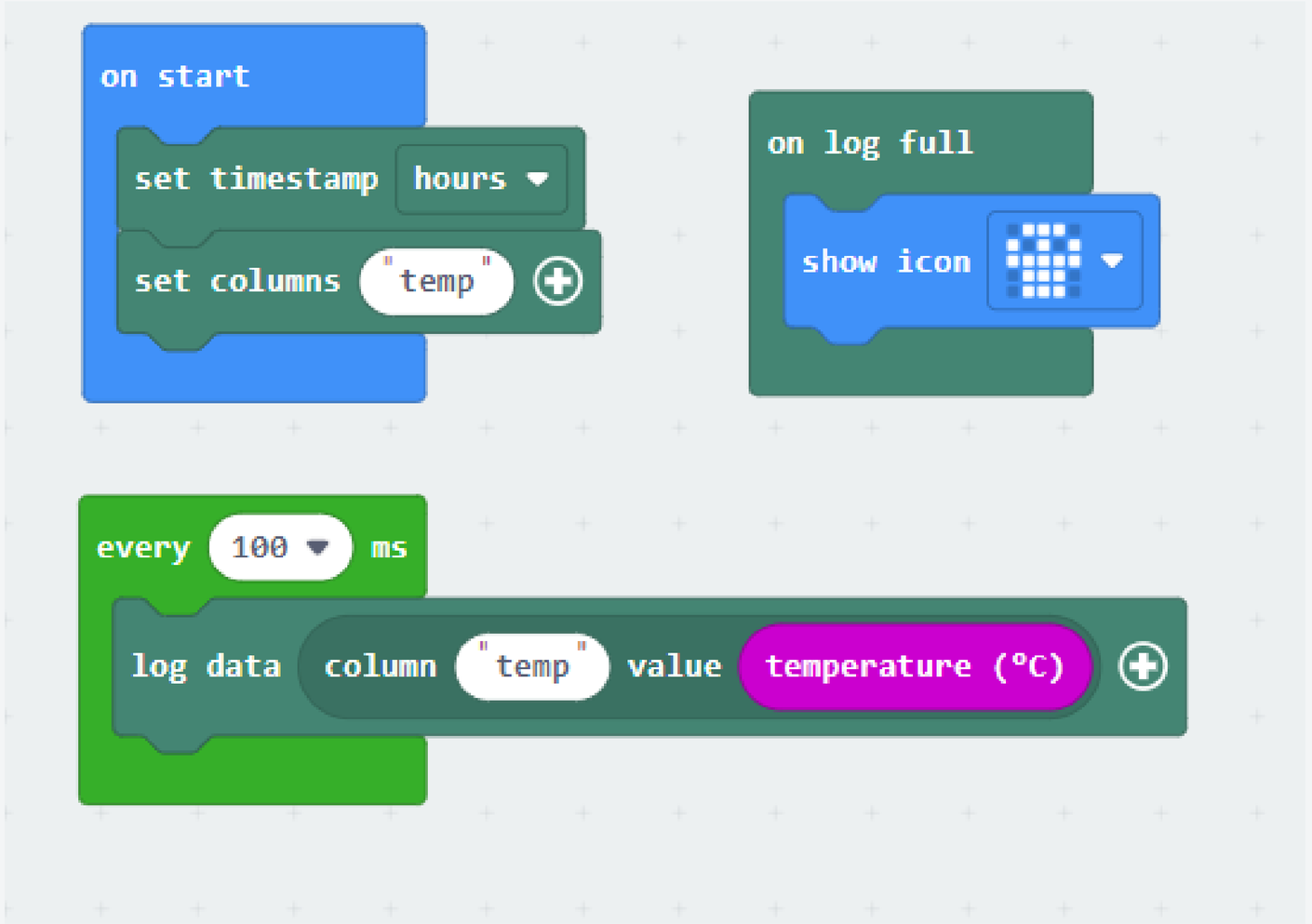
ThingSpeak Public View Sharing



Datalogger

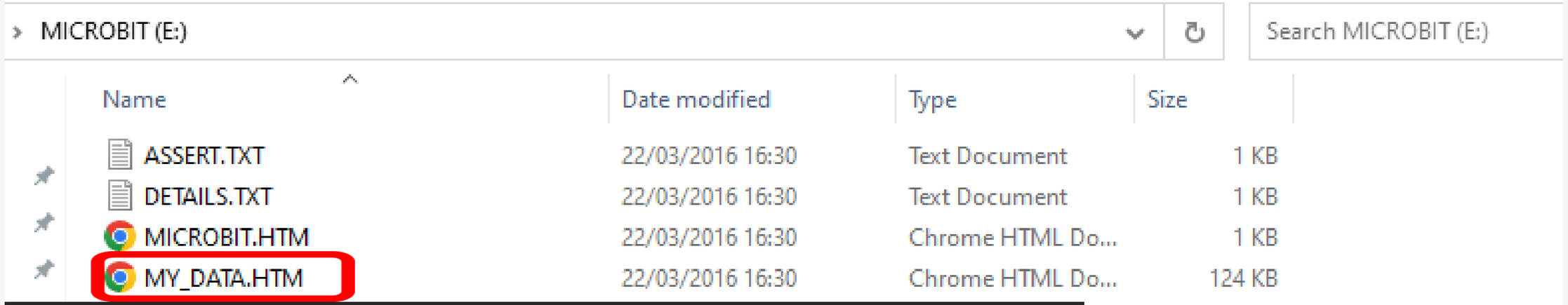
Add this Extension

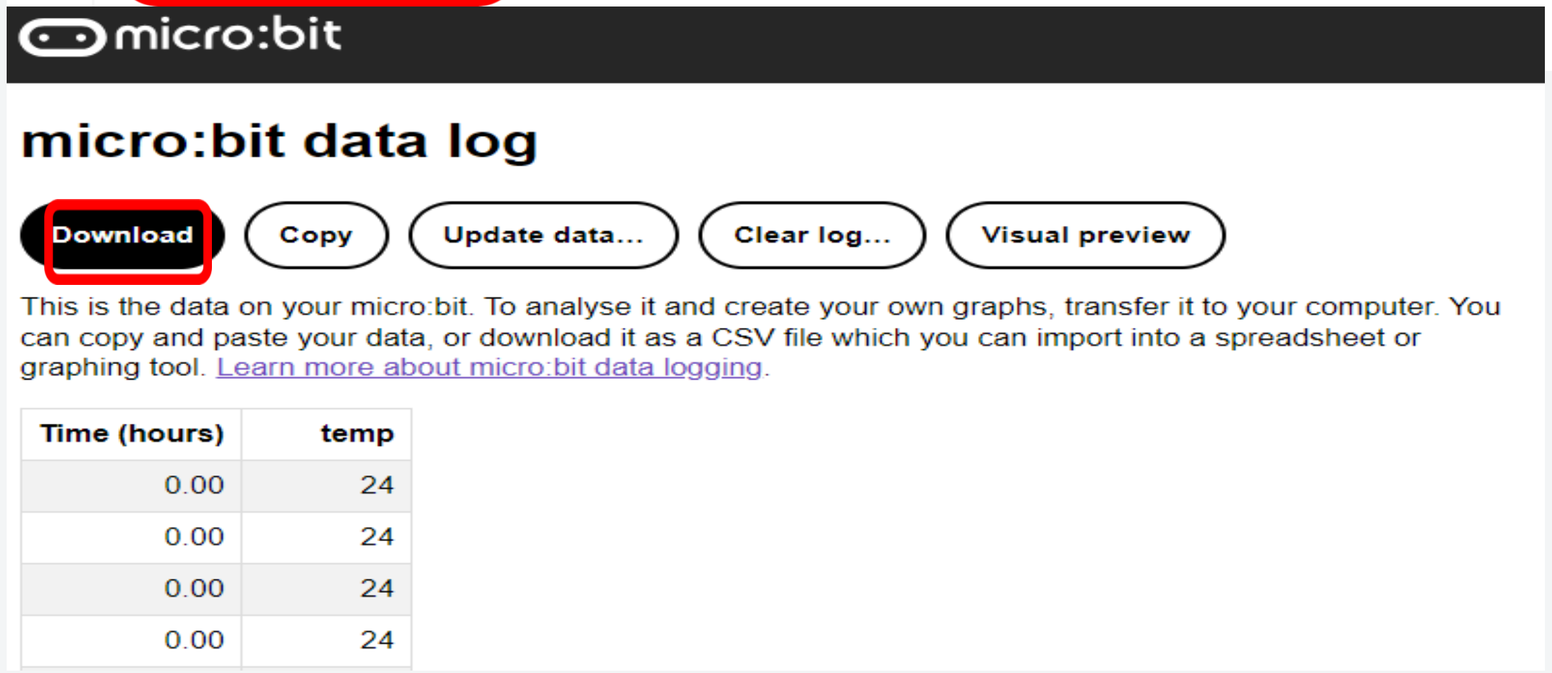




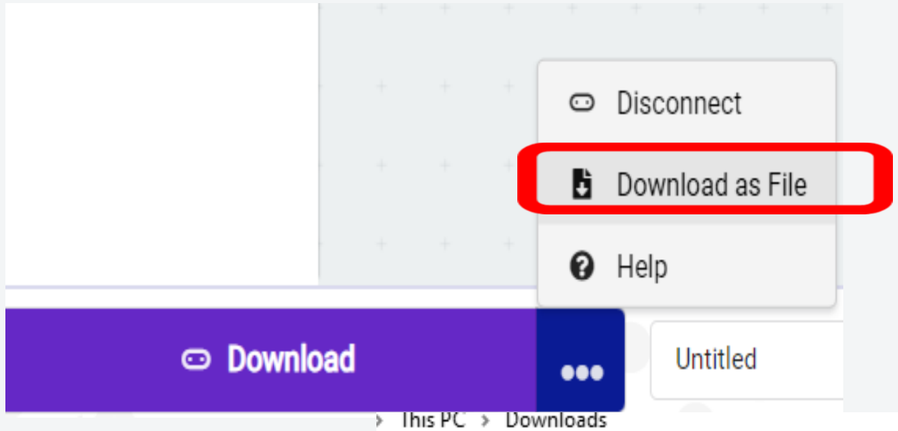
Datalogger

睇data

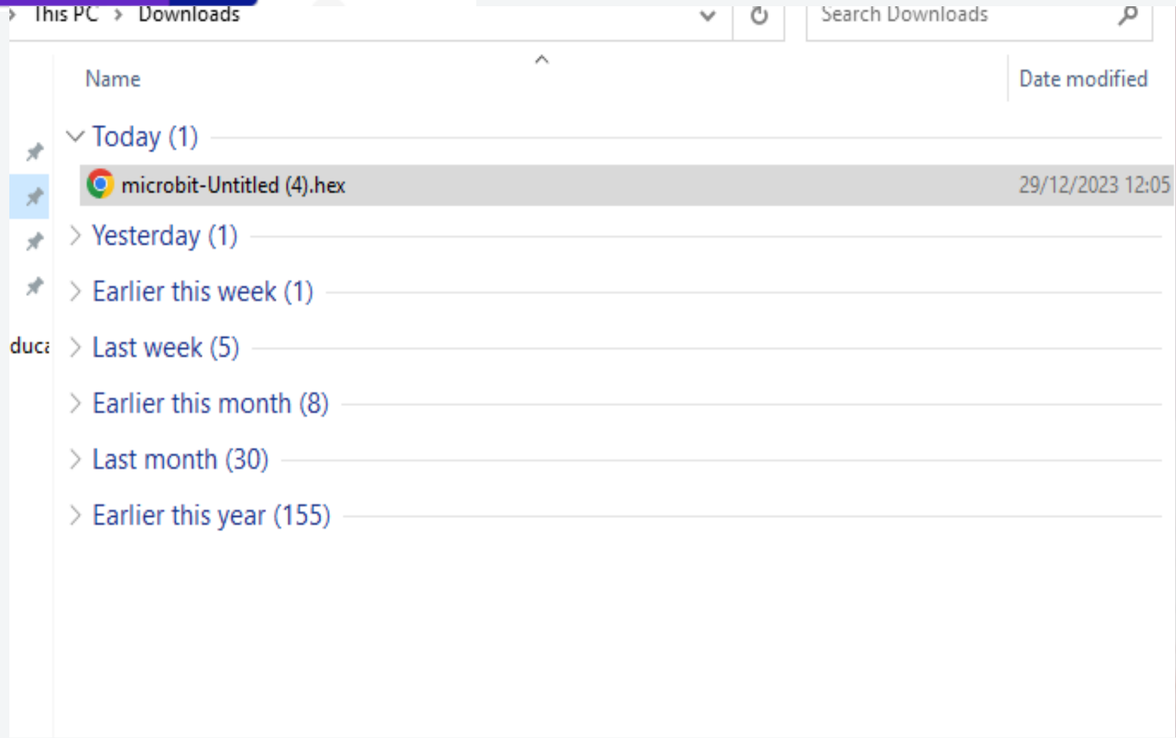


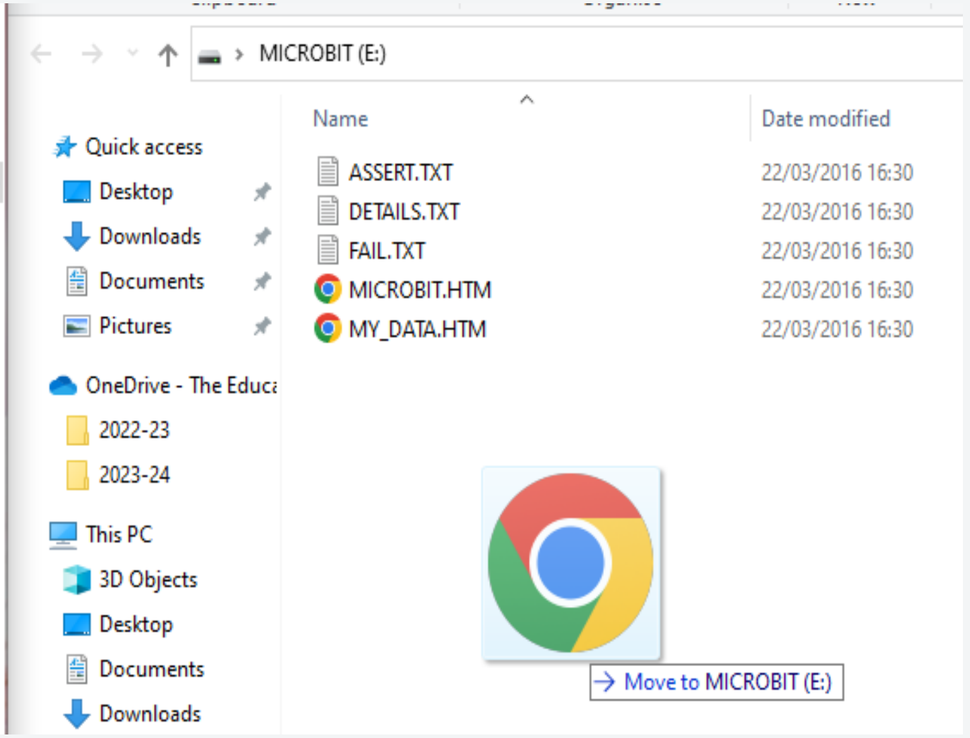


Datalogger Clear data



將**hex file**拖入**microbit**內，傳送完成後需要馬上斷開連線。





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School-based PD Workshop - Application of Micro:bit for Data logging

Speaker: Ms. Lam Hong Ching Anastasia
Research Assistant I

請掃描以下二維碼填寫意見表，
謝謝！

https://docs.google.com/forms/d/e/1FAIpQLSeXUO1F_9gb2fLFU_GfMWFppuNIrn2RK5FK8U840TVYRavP3w/viewform