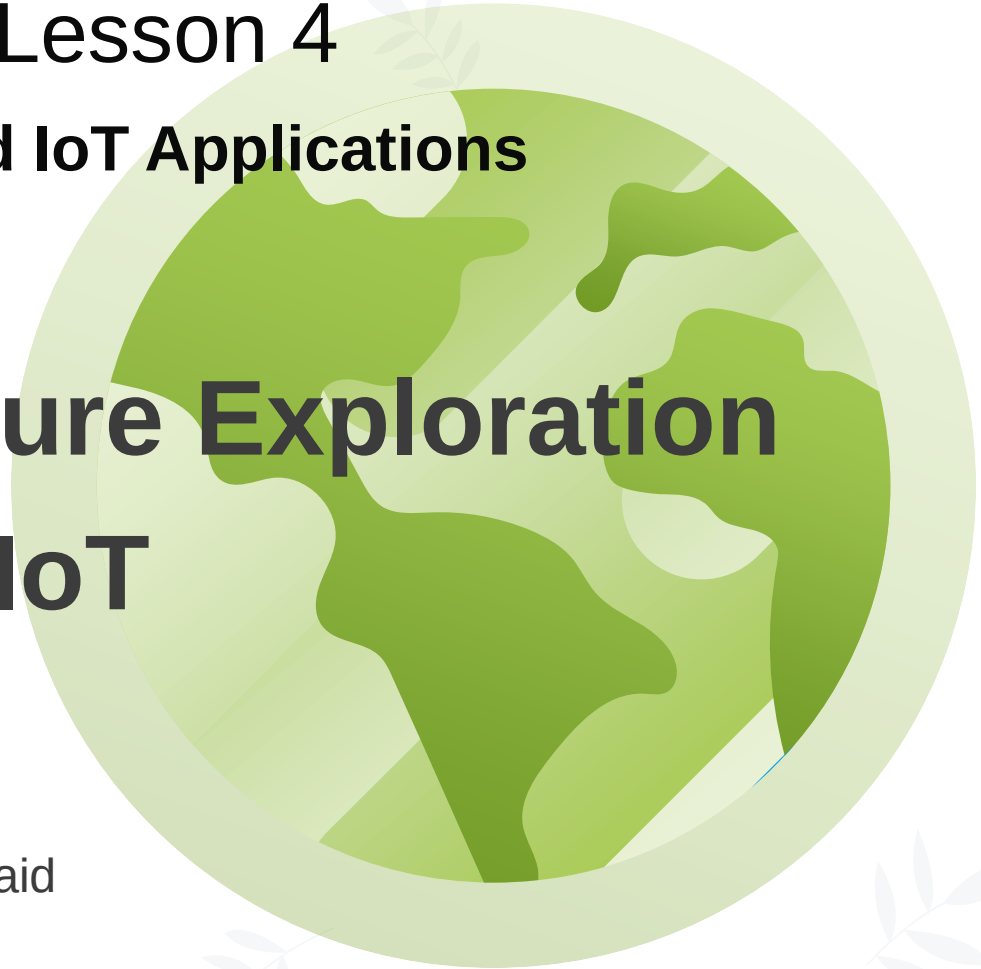
Steam Up 2gether – Lesson 4

Getting Started with Arduino and IoT Applications



Ignite Curiosity on Nature Exploration by using IoT

July 23rd, 2020

Stephen Chen & Junaid

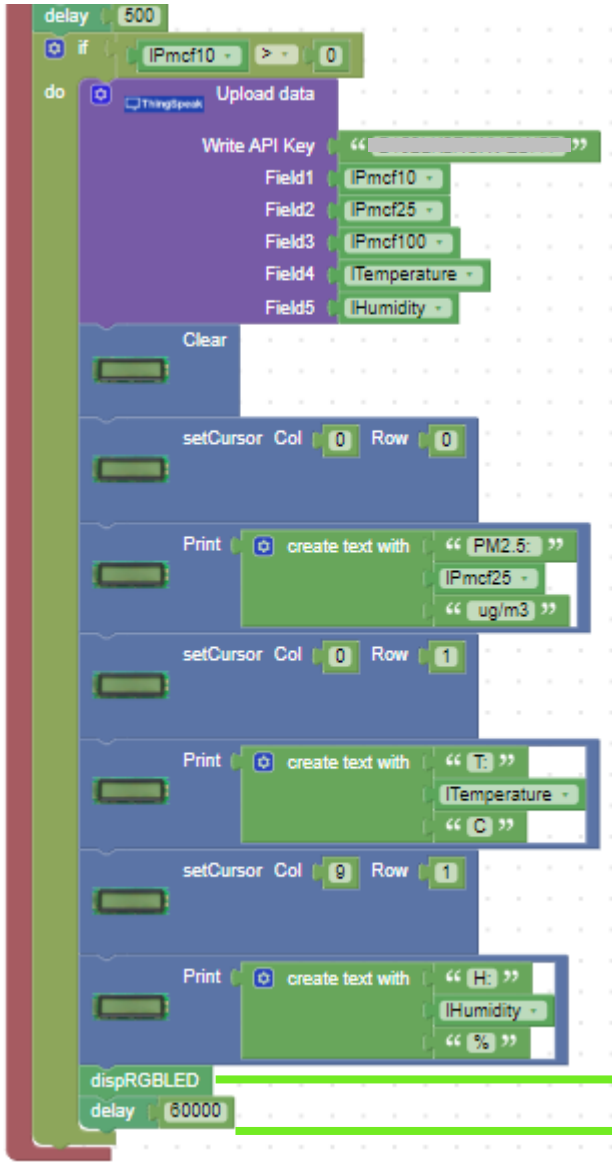
Opening and Introduction

- P1 Study and implementation of IoT AQM (3/5)
- P2 Study and implementation of IoT AQM (4/5)
- P3 Study and implementation of IoT AQM (5/5)
- P4 Beyond the lesson

PART 1

- Study and implementation of IoT AQM (3/5)
- Explain IoT AQM MotoBlockly code step by step (2)

Explain IoT AQM MotoBlockly code step by step (2)



IoT setting. Upload data to cloud by API KEY

With unique API key.
Upload PM1.O, PM2.5, PM100, Temperature and Humidity to cloud “ThingSpeak”

Subroutine calls :
RGB LED show different color as an indicator.

Upload Data to cloud every 60000ms = 1 min

Pop Quiz – Please complete in Corelab

Question (1)

What are the values you should set in R.G.B form to present pure white color in RGB LED ?

1. 213, 245, 187
2. 255, 368, 114
3. 231, 013, 043
4. 255, 255, 255

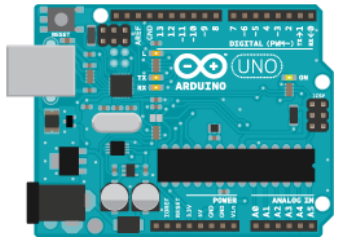
PART 2

- Study and implementation of IoT AQM (4/5).
- Uploaded data by internet(wi-fi) and storage the data on cloud
- Introduction to cloud: ThingSpeak. (Channel Stas + widget)

Uploaded data by internet (Wi-fi) and storage the data on cloud

Log in https://thingspeak.com to use cloud service “ThingSpeak”trial version.

Air quality sensor



Arduino

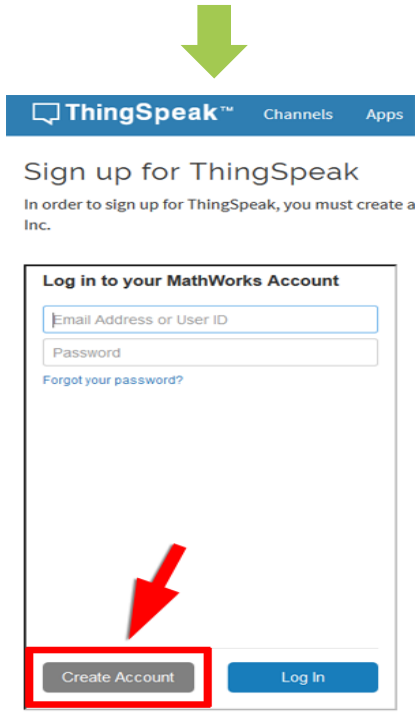
Wi-fi module

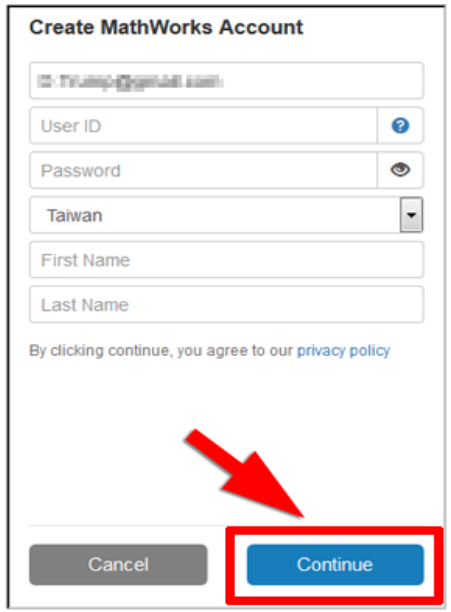
CLOUD server
ThingSpeak

ThingSpeak data diagram

Introduction to cloud: ThingSpeak (Channel Stas + widget)

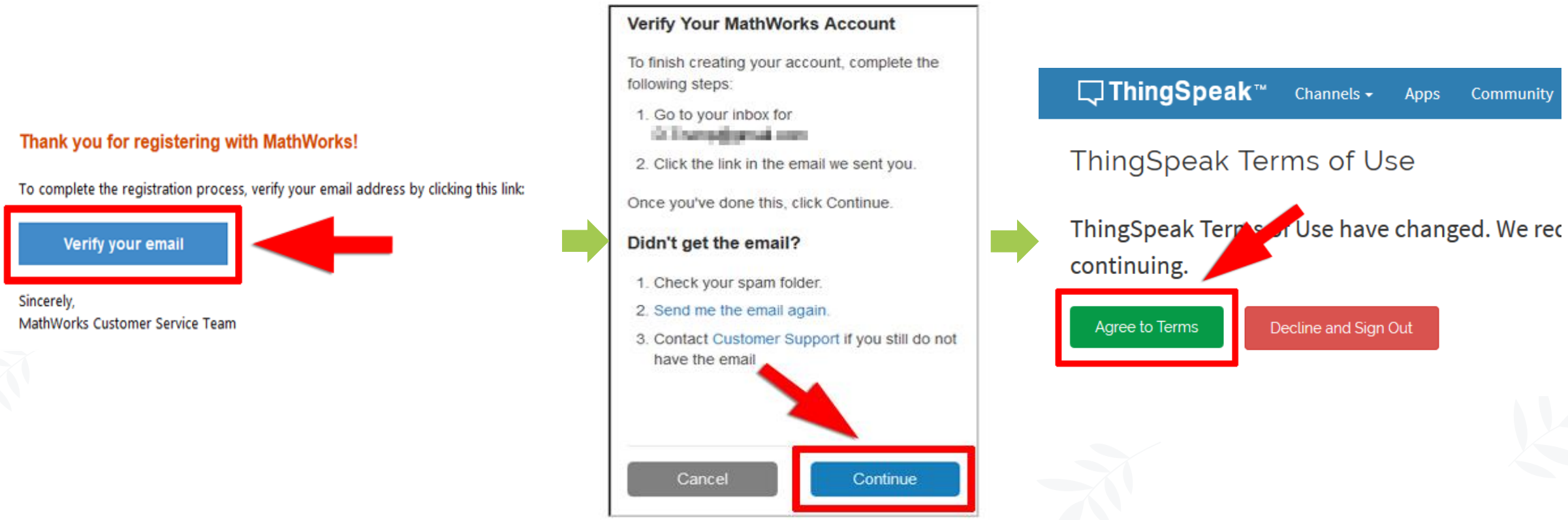
Type https://thingspeak.com to register a new account





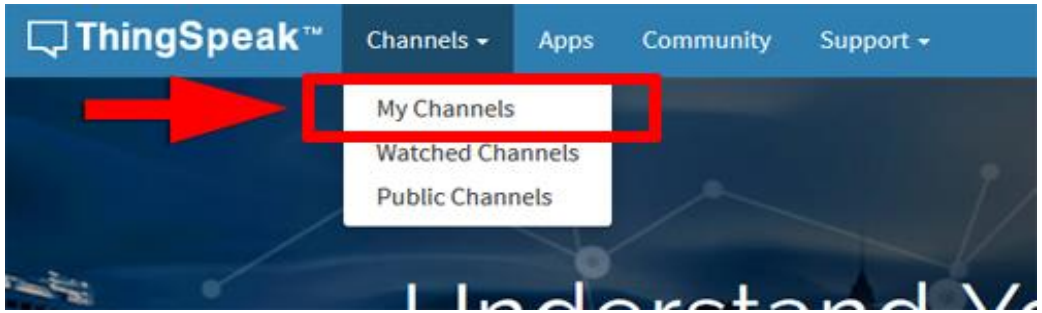
Introduction to cloud: ThingSpeak (Channel Stas + widget)

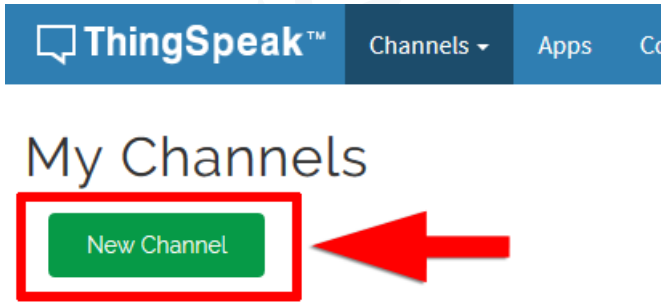
Type https://thingspeak.com to register a new account



Introduction to cloud: ThingSpeak (Channel Stas + widget)

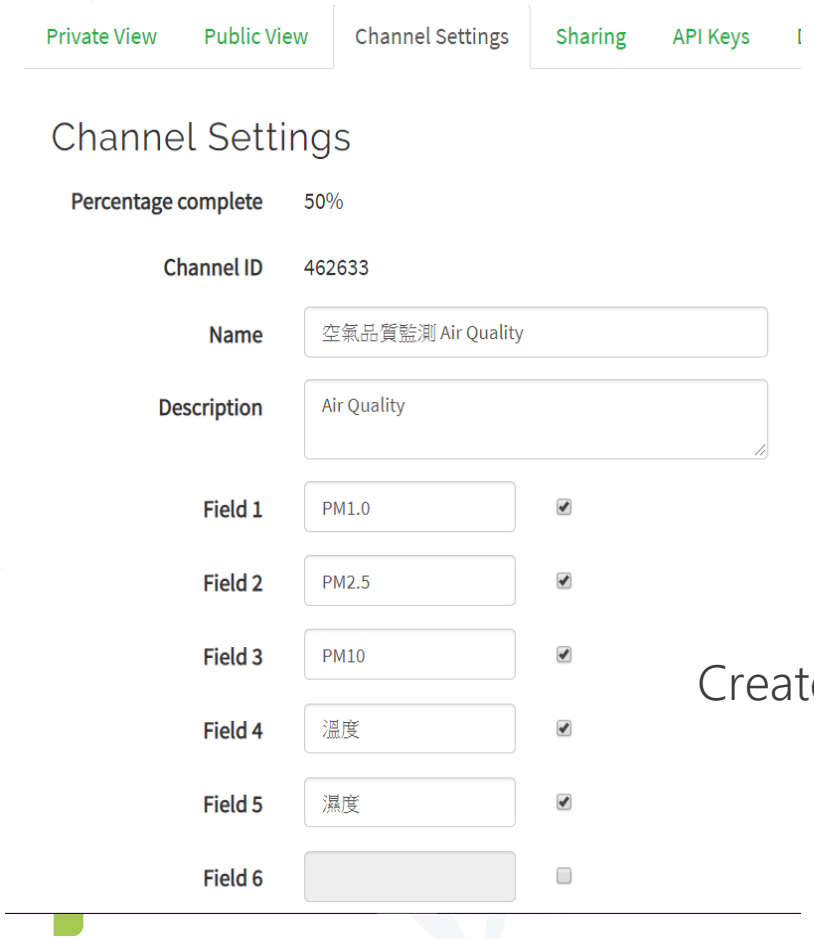
Build a new channel in order to upload data from Arduino

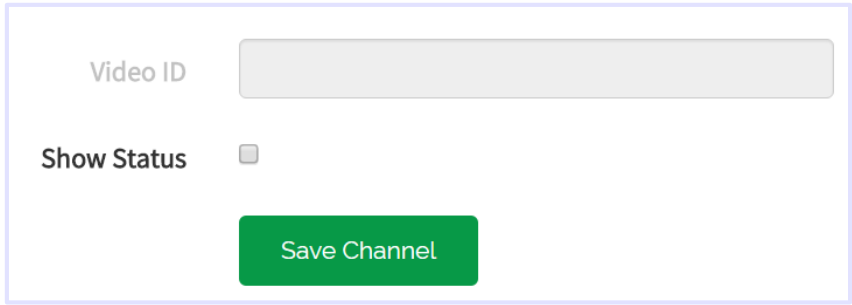




Introduction to cloud: ThingSpeak (Channel Stas + widget)

Build a new channel in order to upload data from Arduino



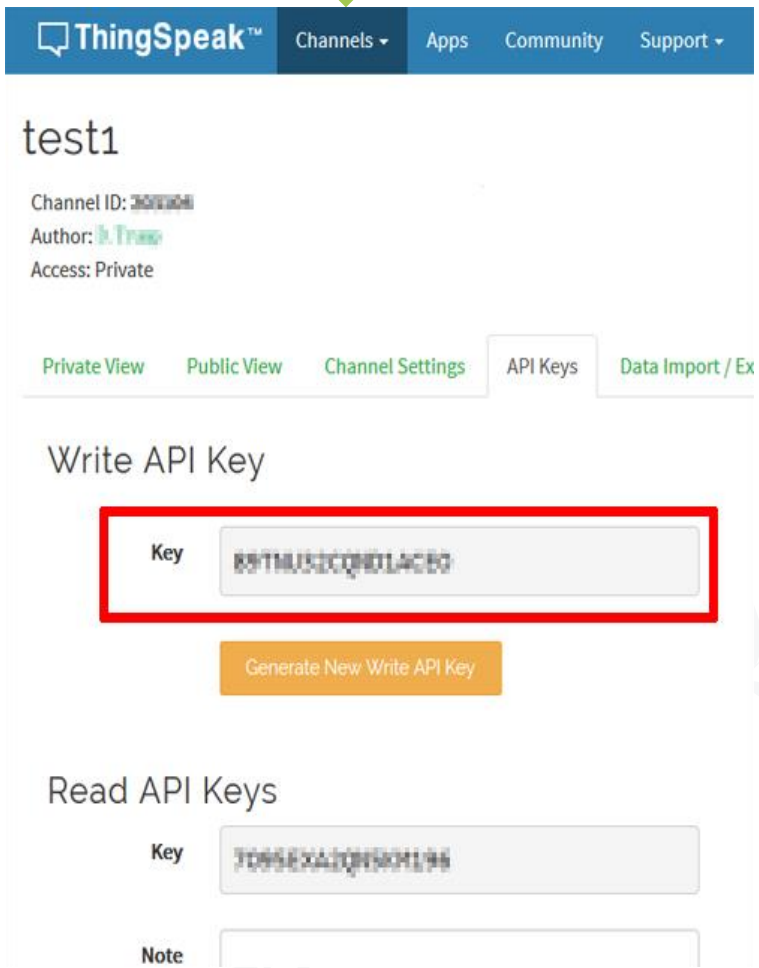


Create data name or category you want to upload

PART 3

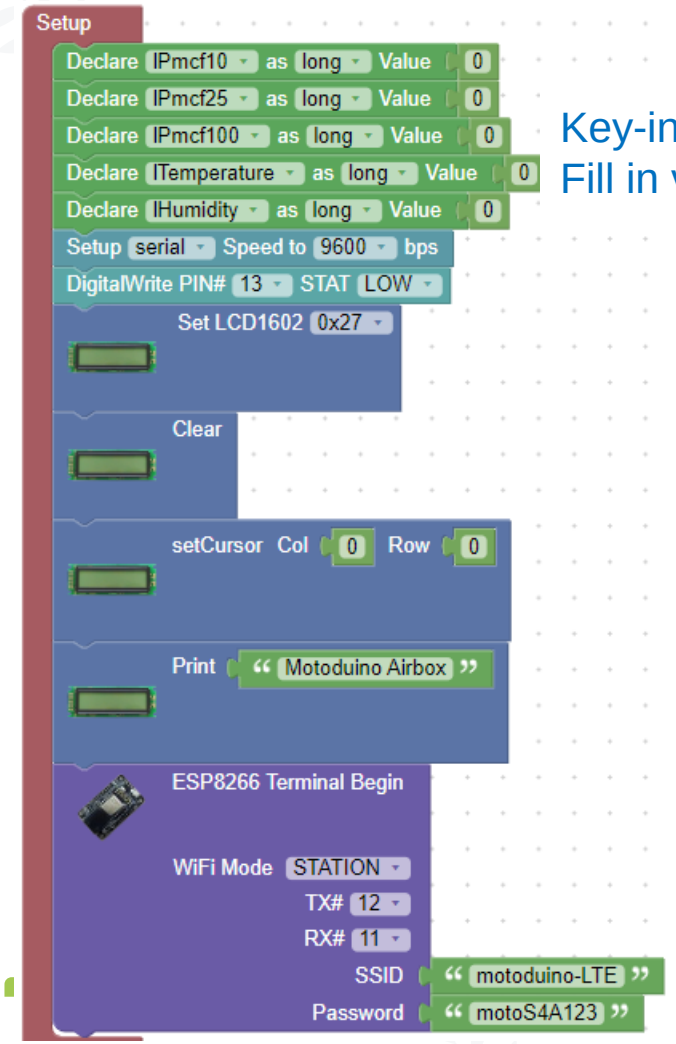
- Study and implementation of IoT AQM (5/5)
- Acquire API KEY. Set WIFI SSID
  Send data to cloud. Complete IoT AQM

Acquire API KEY. Set WIFI SSID. Send data to cloud. Complete IoT AQM

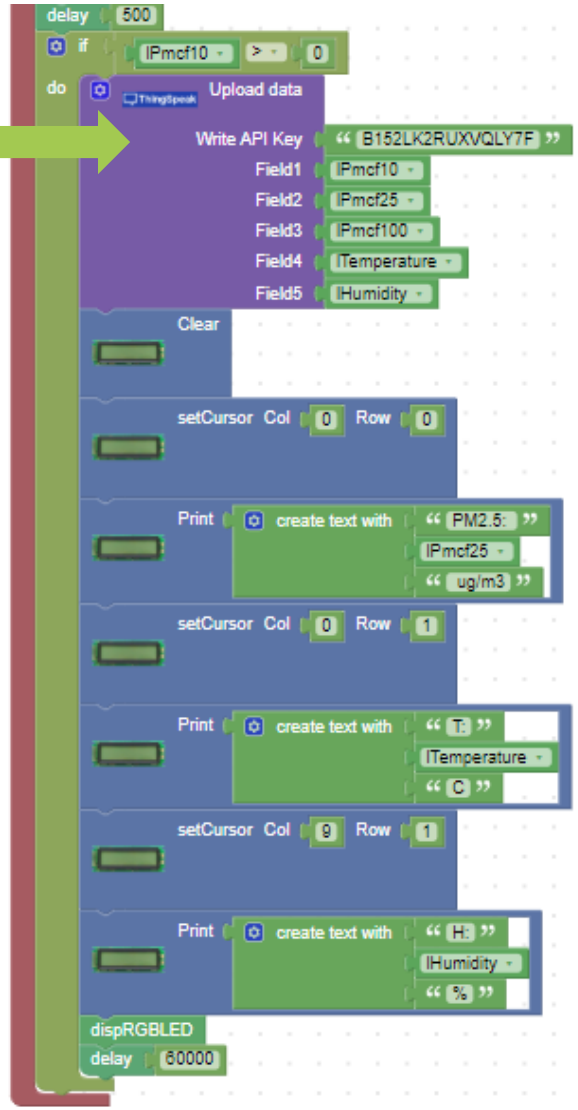


Remember this unique API KEY

Acquire API KEY. Set WIFI SSID. Send data to cloud. Complete IoT AQM



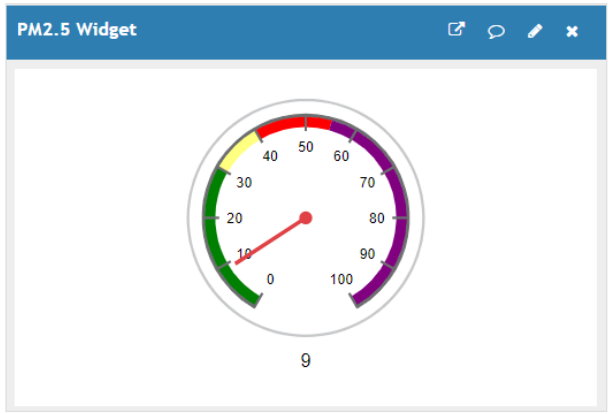
Key-in your API KEY here
Fill in variable you want to upload.

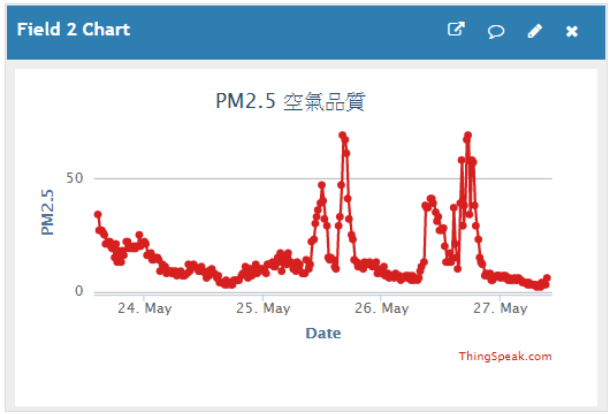


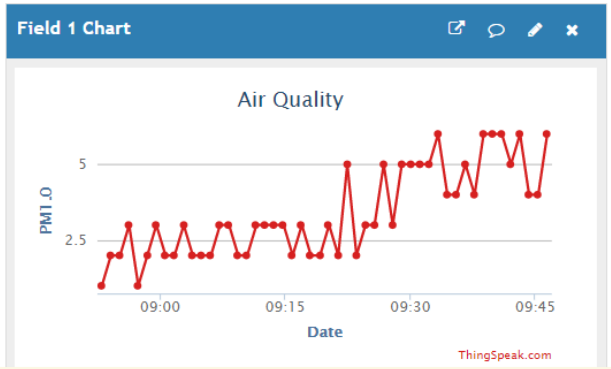
WIFI SSID and PW.
Connect to network.

MotoBlockly

Acquire API KEY. Set WIFI SSID. Send data to cloud. Complete IoT AQM







Now you can see your data on cloud server and show in diagram!

Pop Quiz – Please complete in Corelab

Question (2)
If You want to create a large IoT project. It is necessary to connect more than 10 sensors or modules to your Arduino, which Arduino may be the best choose ?

1. Arduino Nano 33 IoT with headers
2. ARDUINO UNO WiFi REV2
3. Arduino Mega 2560
4. Arduino Nano

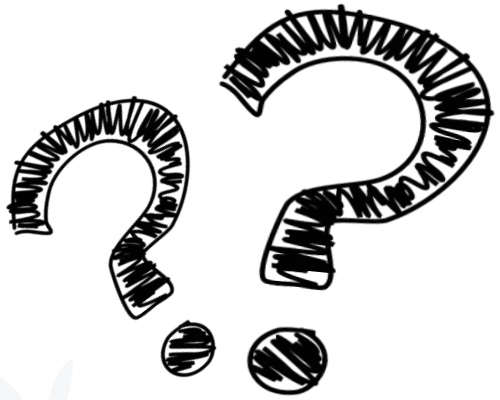
Question (3)
If you want to create a extremely small Air Quality Monitor. You need to install all parts into a extremely small box. The size of every part matter. You need to select the parts which as small as possible. Which Arduino may be the best choose?

1. Arduino Nano 33 IoT with headers
2. ARDUINO UNO WiFi REV2
3. Arduino Mega 2560
4. Arduino Nano

Pop Quiz – Please complete in Corelab

Question (4)
What does "API" mean in this project?

1. Access Point Interface
2. Air Project Index
3. Application Programming Interface
4. All Property Index



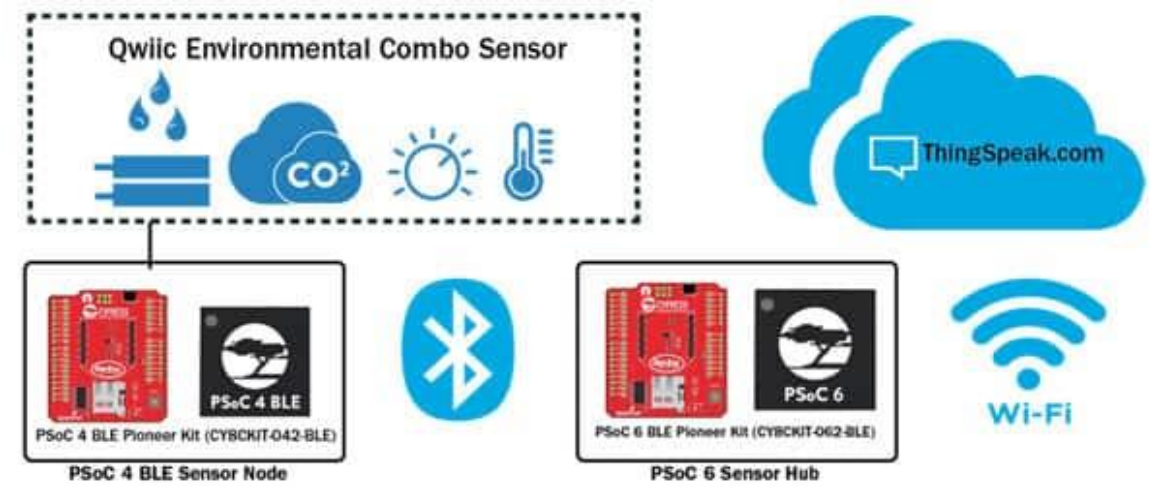
Question (5)
In order to complete a general IoT project, you need to upload data or download the data from CLOUD server.
Which platform can't be your IoT server?

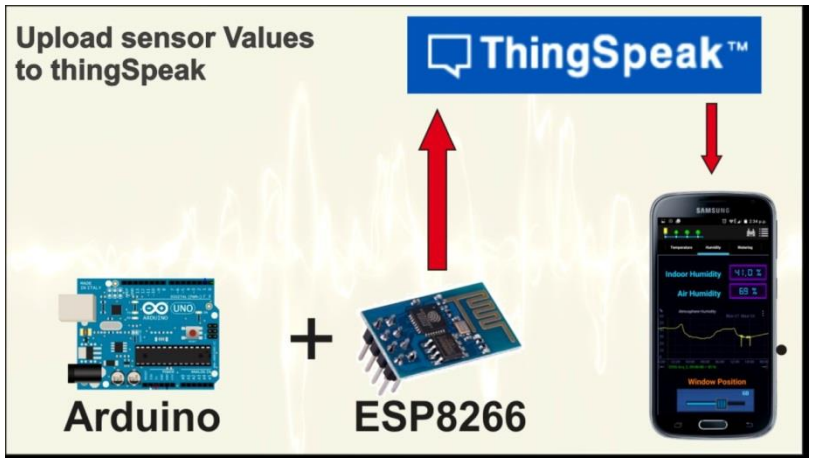
1. Google drive
2. ThingSpeak
3. Azure
4. Firebase

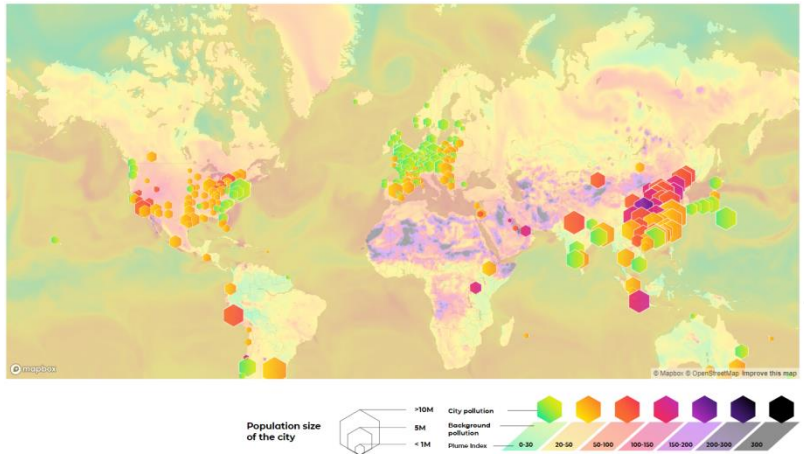
PART 4

- Review: Beyond the lesson
- What is core concept of IoT
- What else more we can do?
- How do we do more and better?

Review: Beyond the lesson







MENTOR: Stephen Chen

ASTERIA Electronics Toys Co., Ltd
www.AACSXR.com

XR SHOOTING SPORT
Cross reality and NERF/RIVAL blaster

https://pse.is/TFX8W

https://pse.is/UCQFJ

CLICK ME!

IoT AQM provided by

Motoduino lab
www.motoduino.com
Start your creative engine

Motoduino Lab. Inc.
www.motoduino.com
Email: samhlin@gmail.com
Tel: +886-932590459

CLICK ME!

Steam Up 2gether – Lesson 4

Getting Started with Arduino and IoT Applications

Ignite Curiosity on Nature Exploration by using IoT

Thank You !

July 23th, 2020

Stephen Chen & Junaid