Fpt University

TRƯỜNG ĐẠI HỌC FPT

Environmental Data Collection and Monitoring

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Outline

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3. Sensors
4. Blynk
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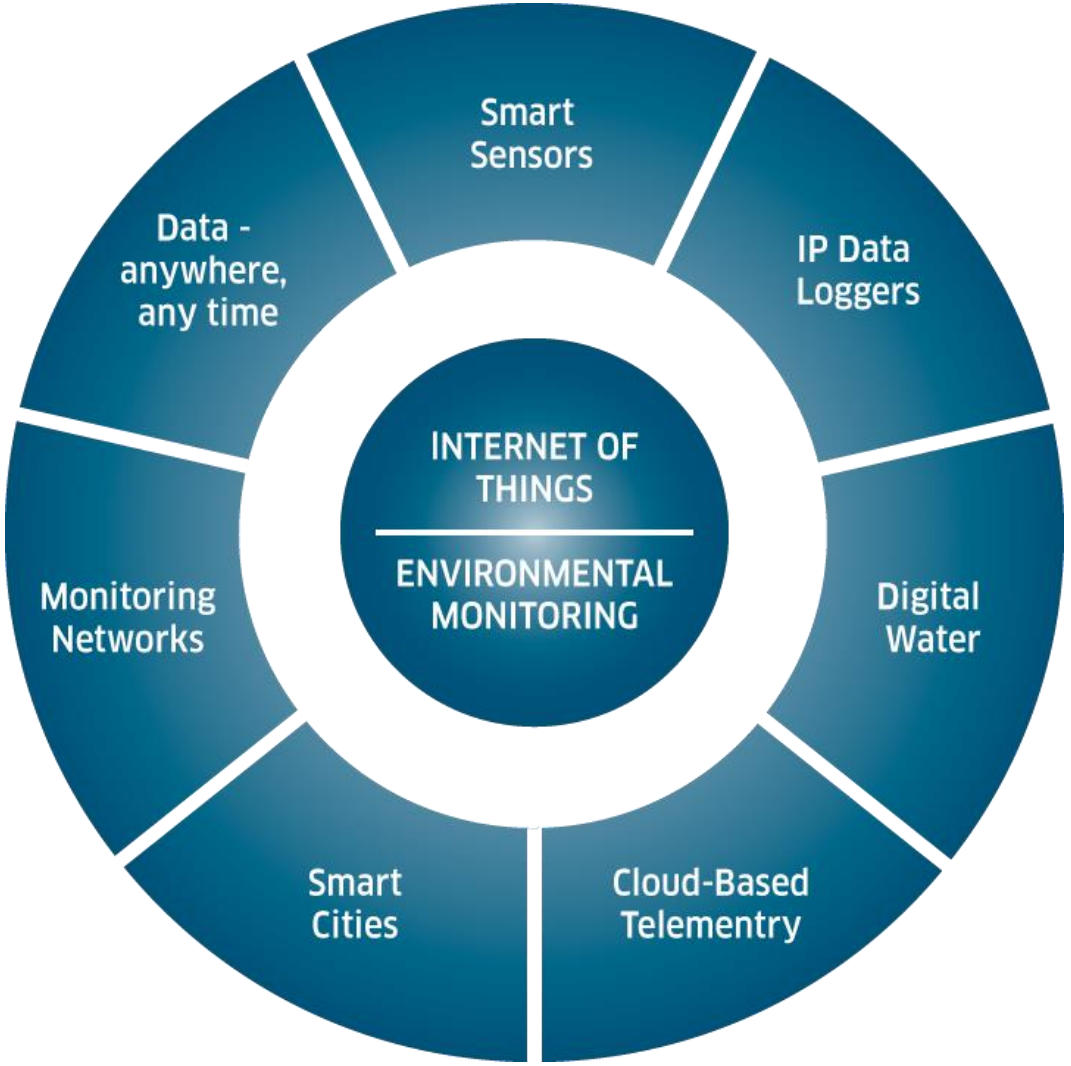


Introduction

Environmental Pollution

Image: Google

Introduction

Environmental Monitoring

Environmental monitoring describes the processes and activities that need to take place to characterize and monitor the quality of the environment.

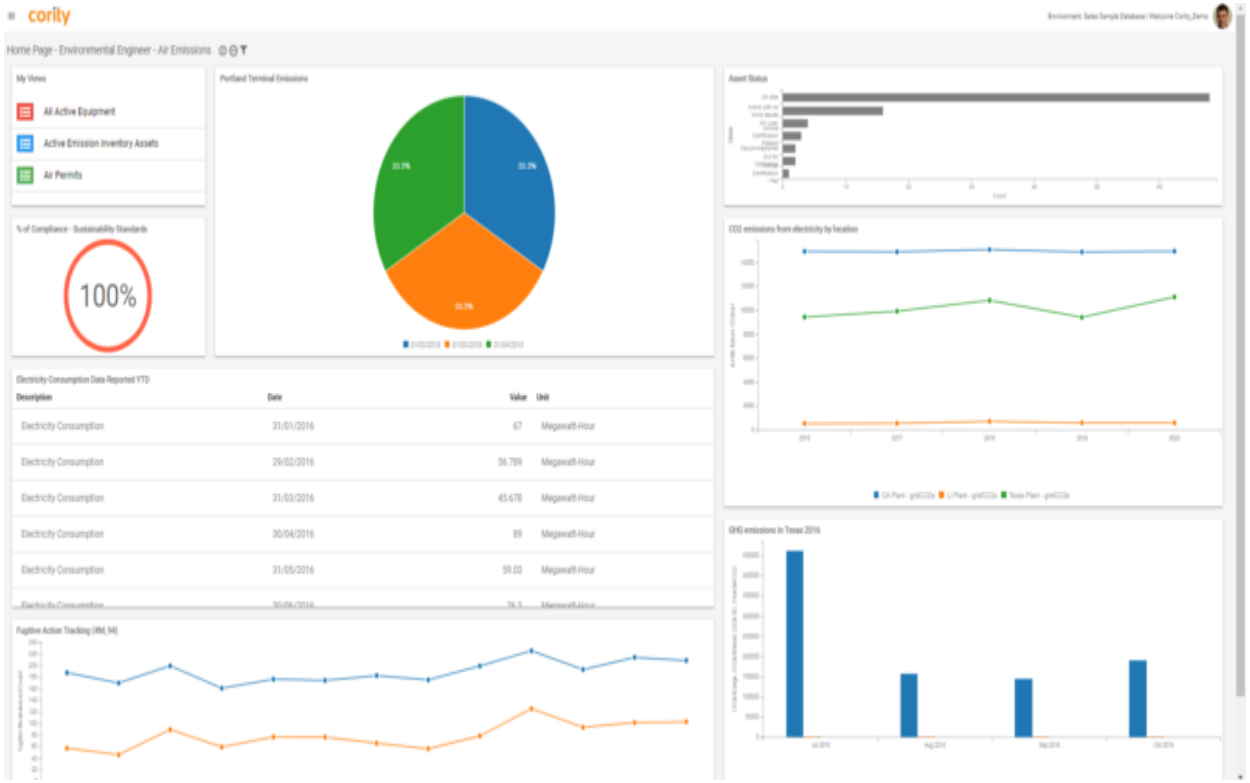
Environmental monitoring is used in the preparation of environmental impact assessments, as well as in many circumstances in which human activities carry a risk of harmful effects on the natural environment

Image: Google

Introduction

Related Works

Rotronic RMS



Cority's Envinronmental Magagement System

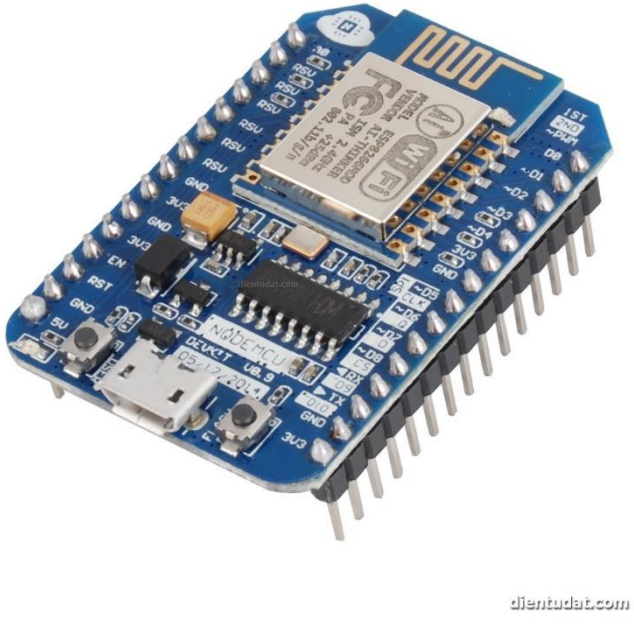
Introduction

Main Features of Project

- Collect environment’s data
- Display and observe data collected real time on multiple devices
- Get alarm/notification when the data collected exceed designated threshold limit
- Export the collected data

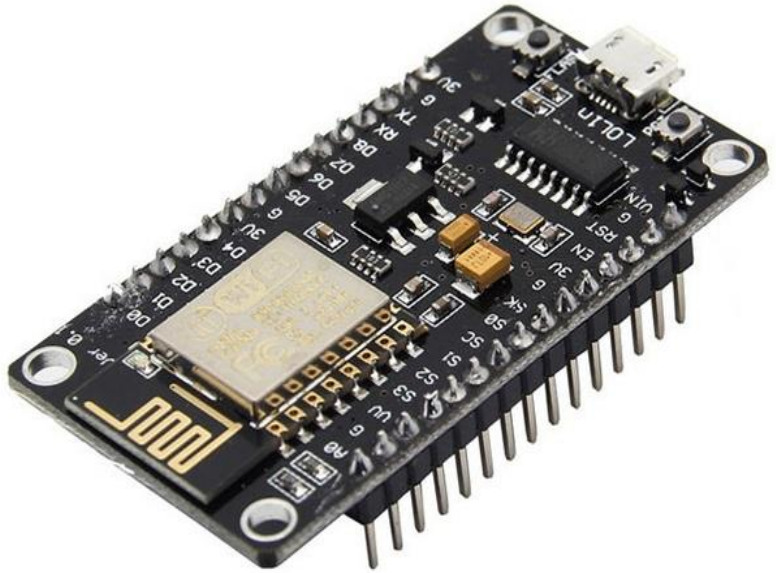
NodeMCU

What is nodeMCU ?



NodeMCU V0.9 (Version1)

NodeMCU V1.0 (Version2)

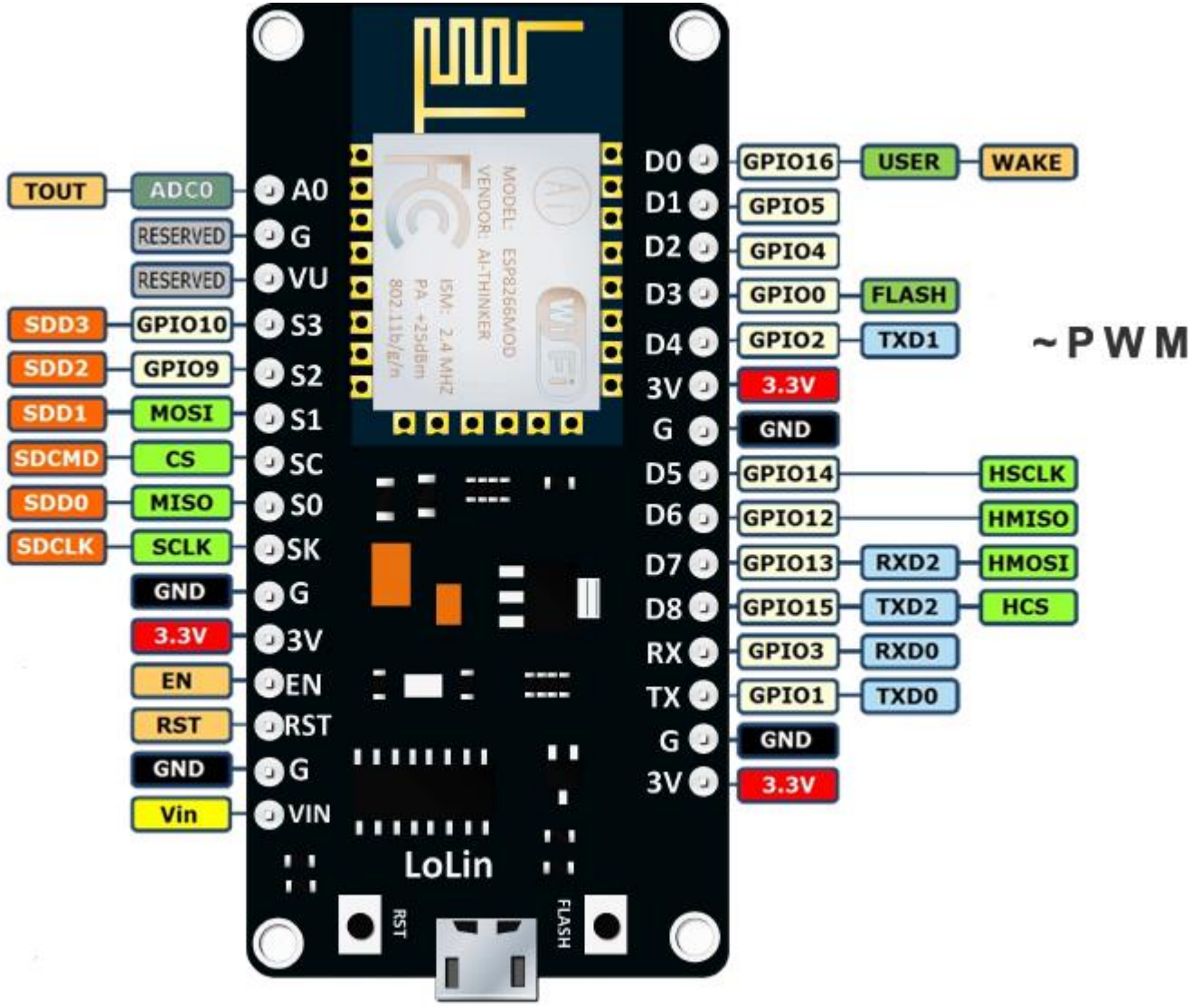


NodeMCU Lolin (Version3)

NodeMCU

NodeMCU V3 pinout and specification

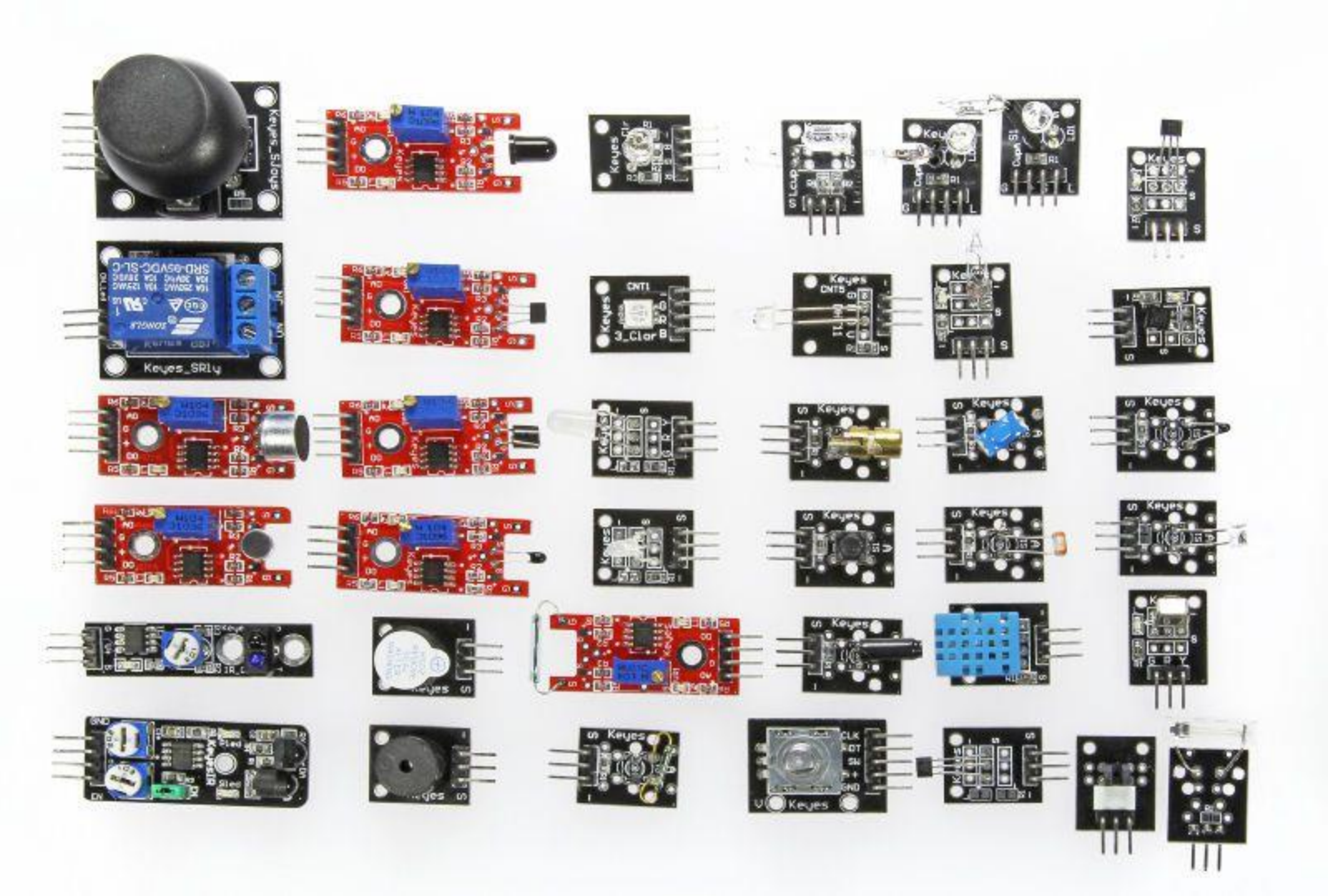
- Microcontroller: Tensilica 32-bit RISC CPU Xtensa LX106
- Operating Voltage: 3.3V
- Input Voltage: 7-12V
- Digital I/O Pins (DIO): 16
- Analog Input Pins (ADC): 1
- UARTs: 1
- SPIs: 1
- I2Cs: 1
- Flash Memory: 4 MB
- SRAM: 64 KB
- Clock Speed: 80 MHz
- USB-TTL based on CH340 is included onboard, Enabling Plug n Play
- PCB Antenna



Sensors

What is sensors ?

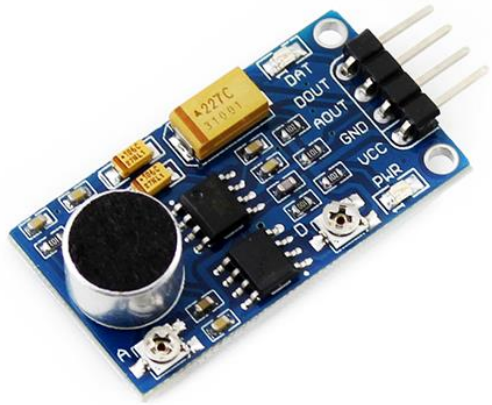
A sensor is a device, module, machine, or subsystem that detects events or changes in its environment and sends the information to other electronics, frequently a computer processor.



Sensors

Some type of sensors use for environment monitoring

Air-quality sensor

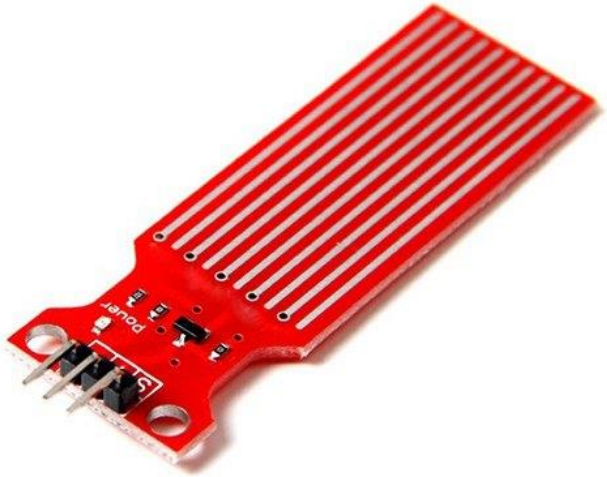


Sound sensor

Dust sensor

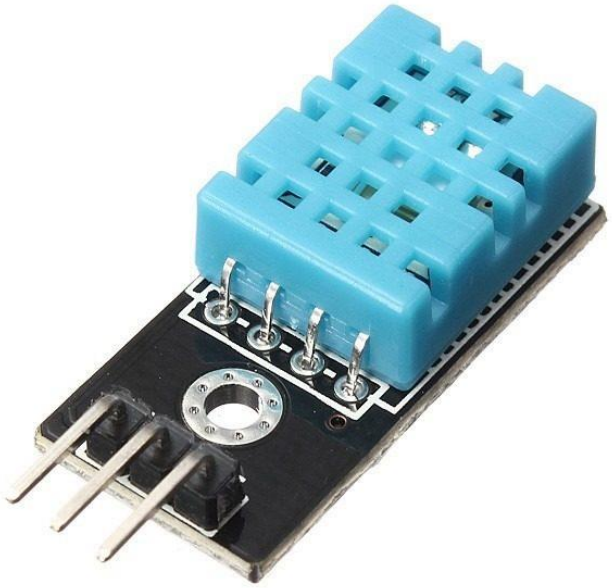
Sensors

Some type of sensors use for environment monitoring



Water level sensor

Rain drop sensor



Temperature/Humidity sensor

Blynk


T-Mobile
6:24 PM
27%
TEMPERATURE C°
V27
HUMIDITY %
V22
24.786
28.6
1h
6h
1d
1w
BEDROOM
V5
KITCHEN
D7
ZERGBA
Widget Box
2000
+Add
DISPLAYS
Value Display
200
LED
100
Gauge
300
LCD
400
Graph
400
History Graph
900
B

Blynk

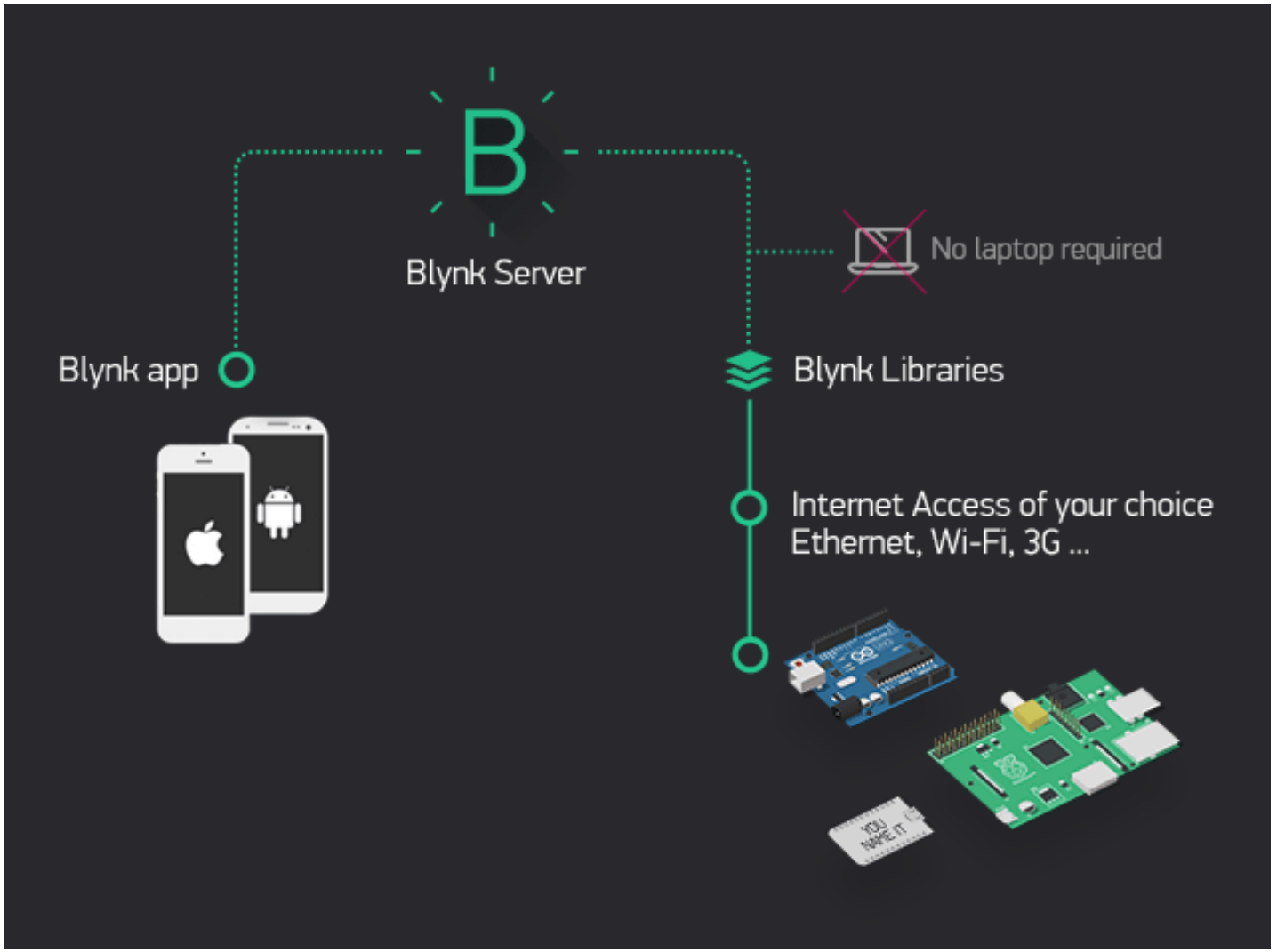
How does Blynk work ?

Blynk allow us to:

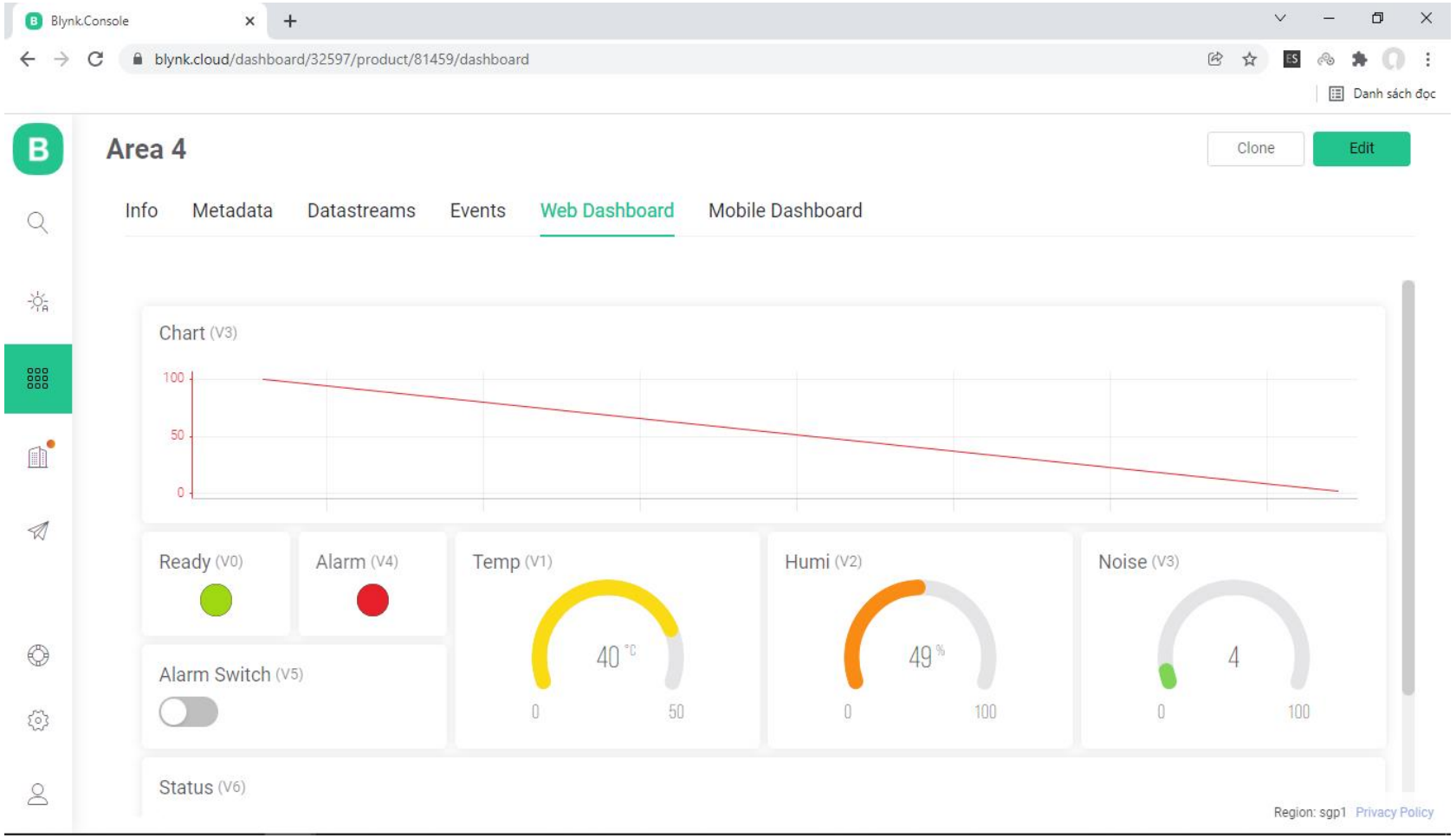
- Interact with Pins (Digital and Analog)
- Send and Receive data from Hardware

with Widgets of 3 main types:

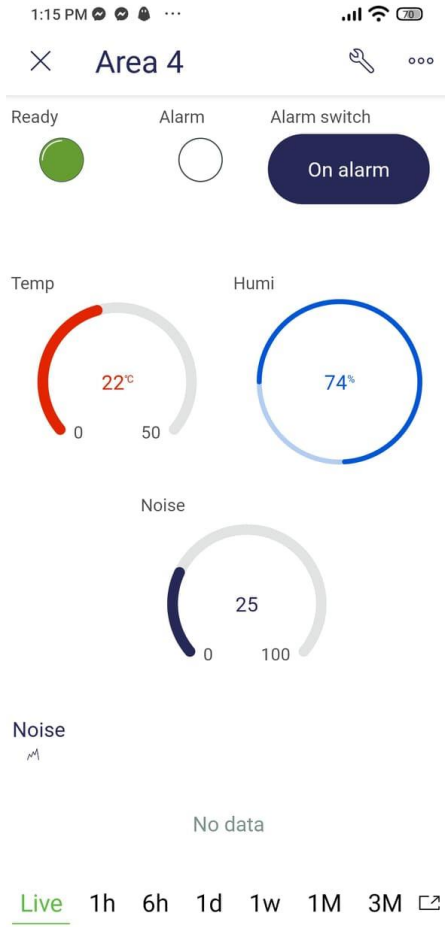
- Controllers
- Displays
- Notifications & Others



Blynk



Blynk Web Dashboard

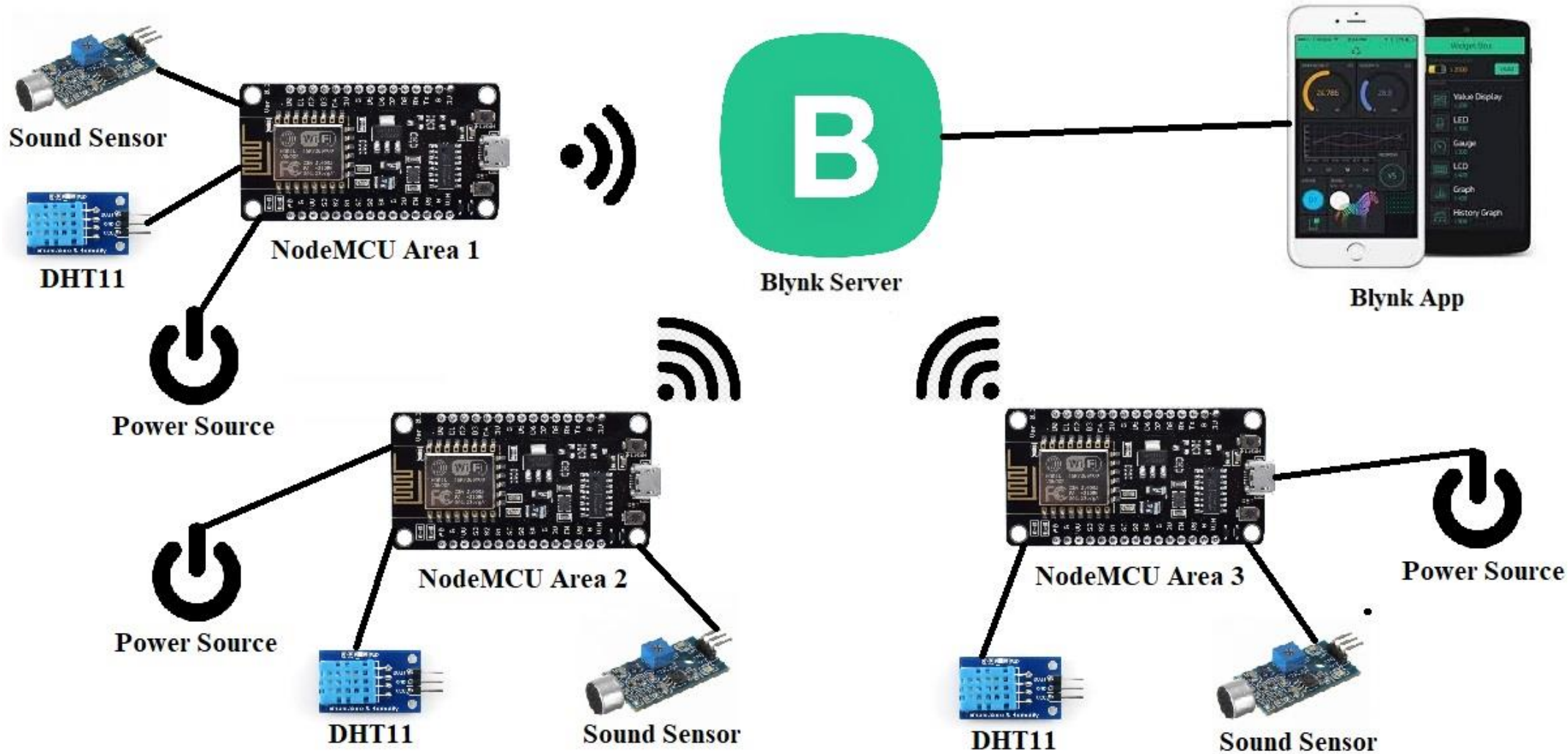


Blynk App Dashboard

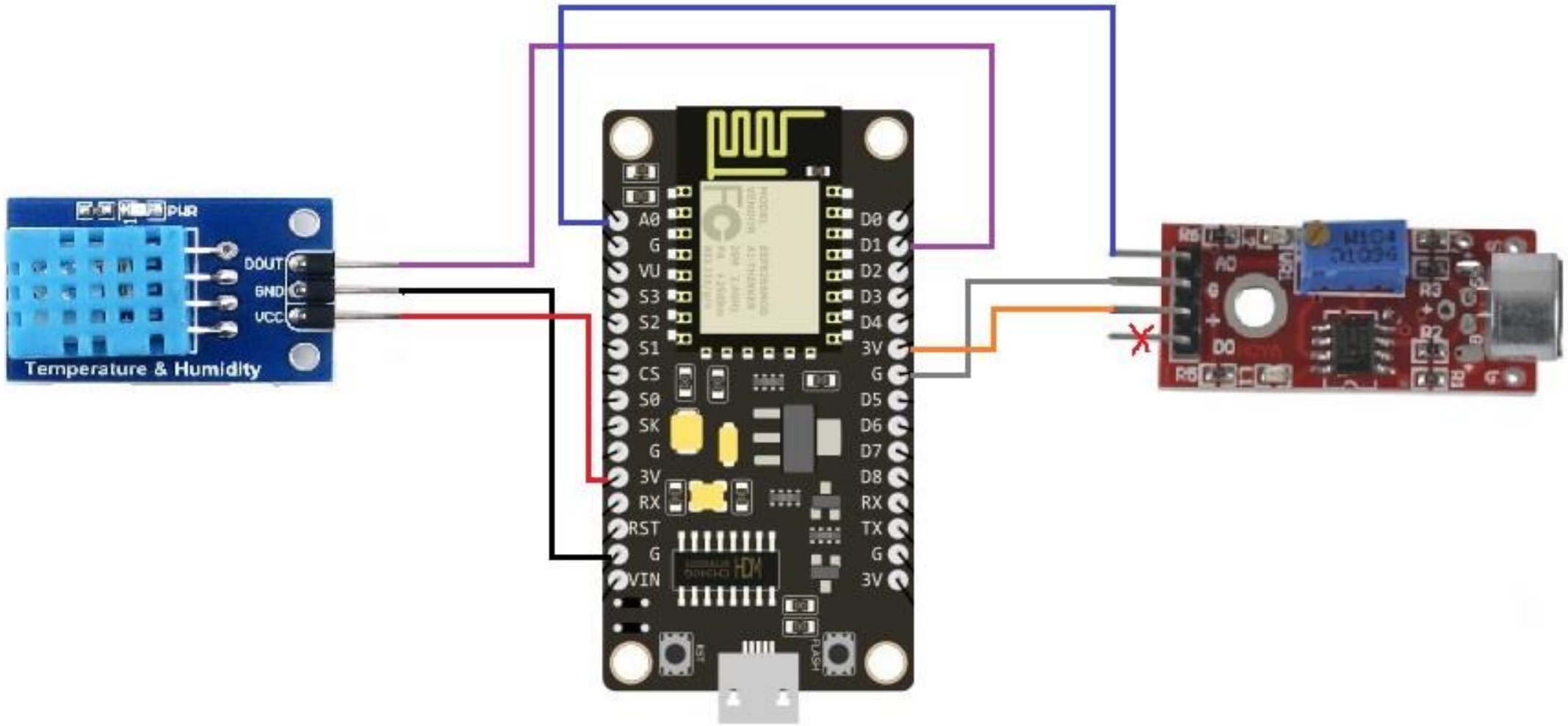
Blynk and another IoT Platforms

Blynk's Alternative

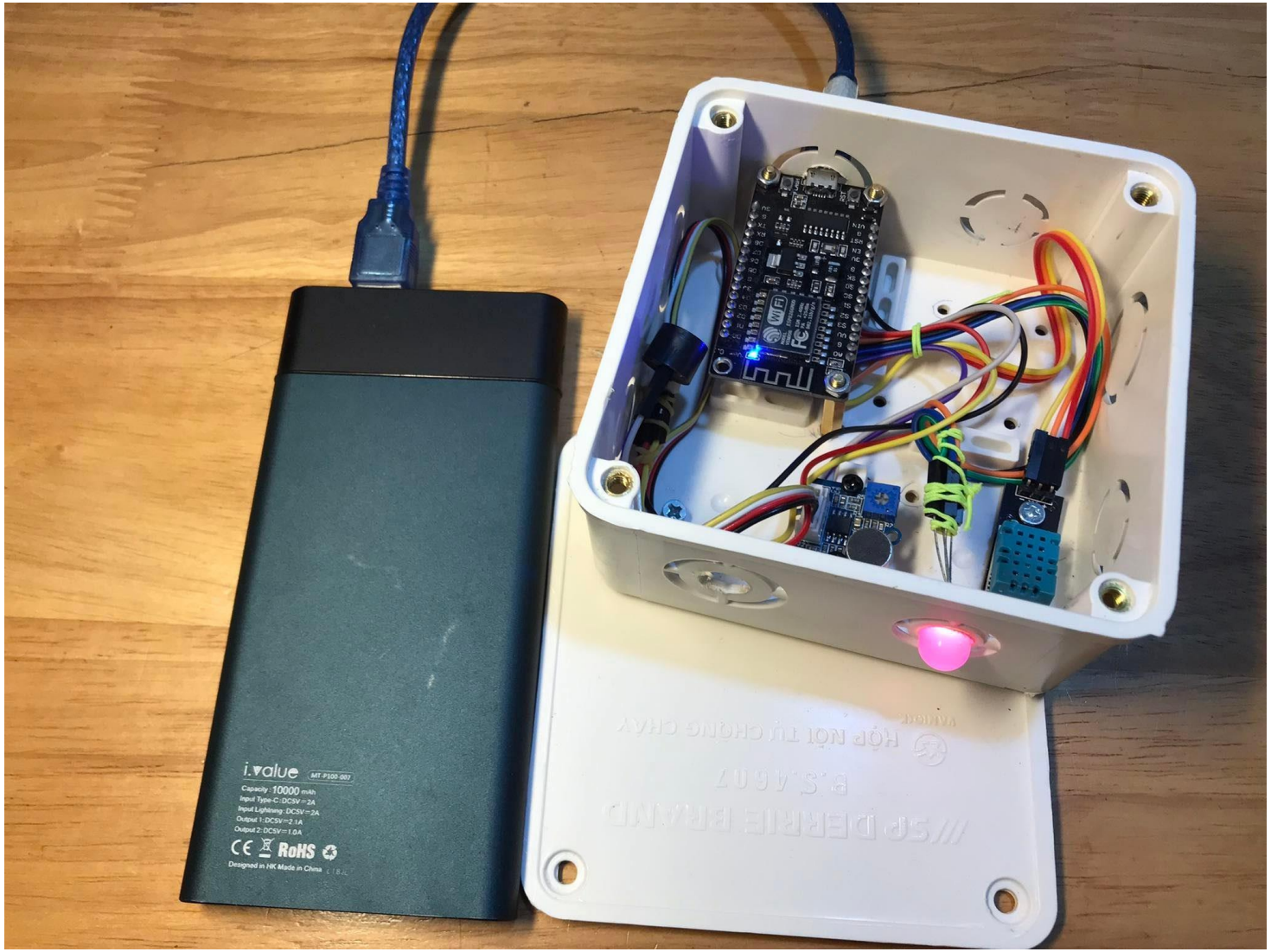
Project Architecture



Project’s Basic Circuit diagram



Project Result



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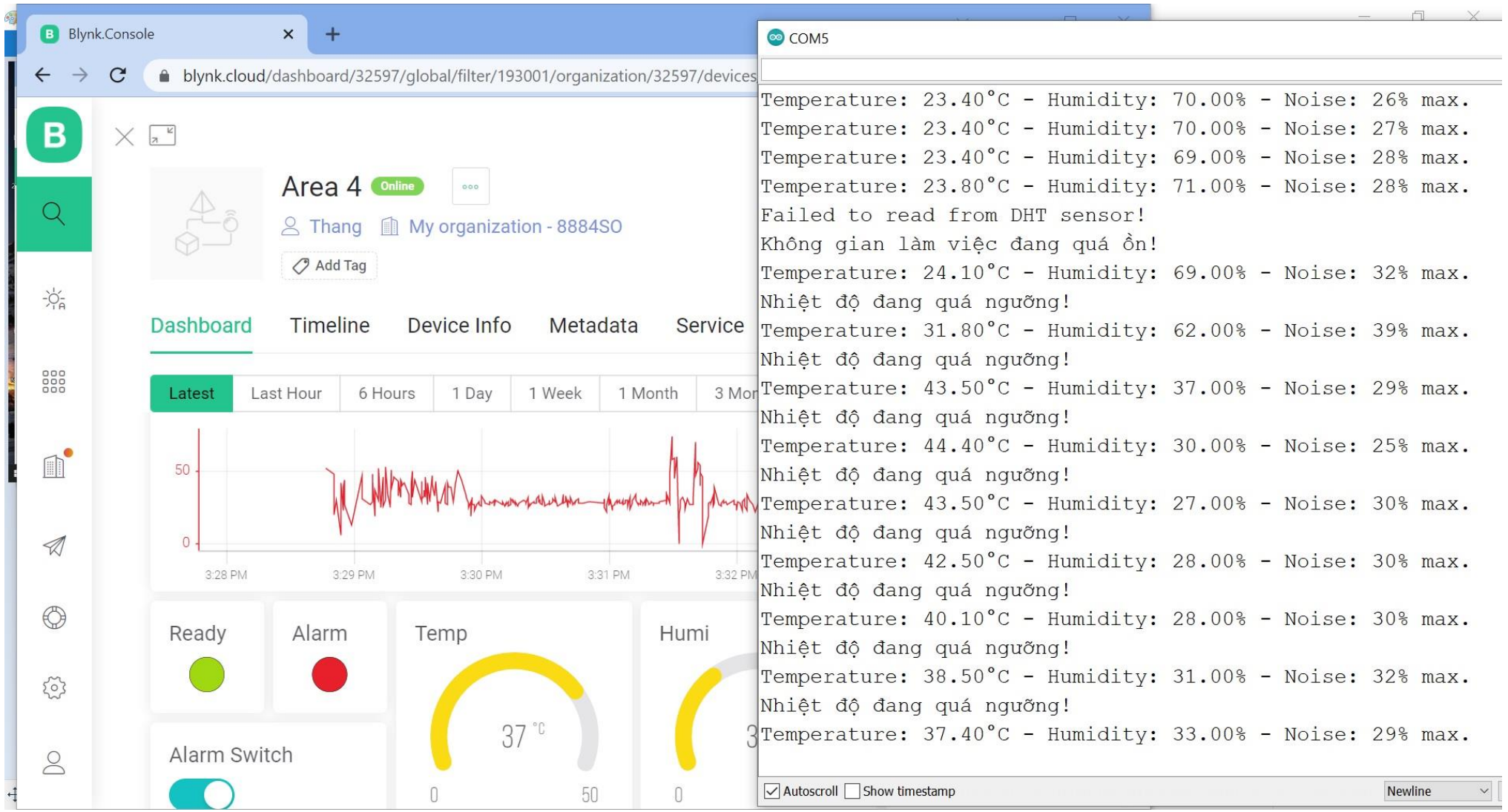
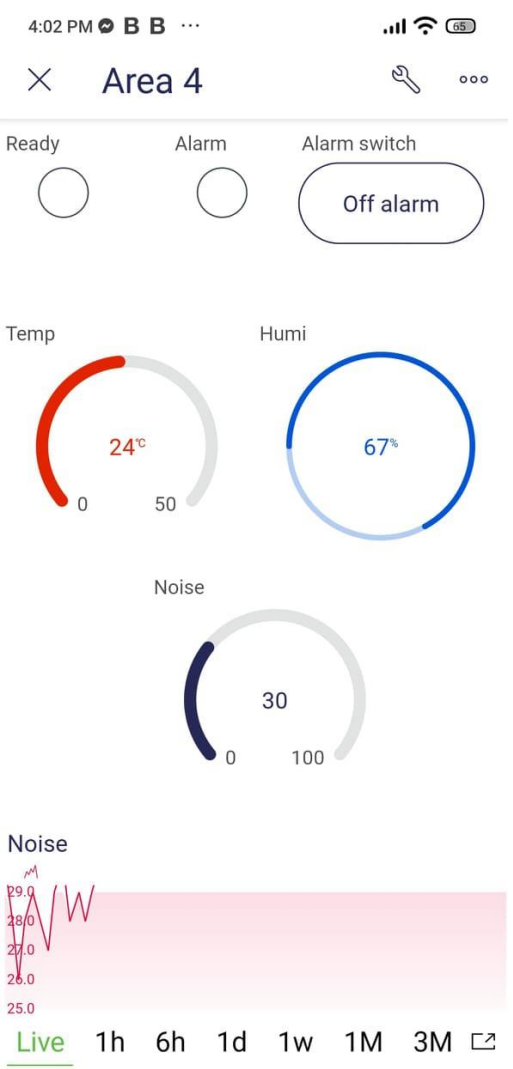
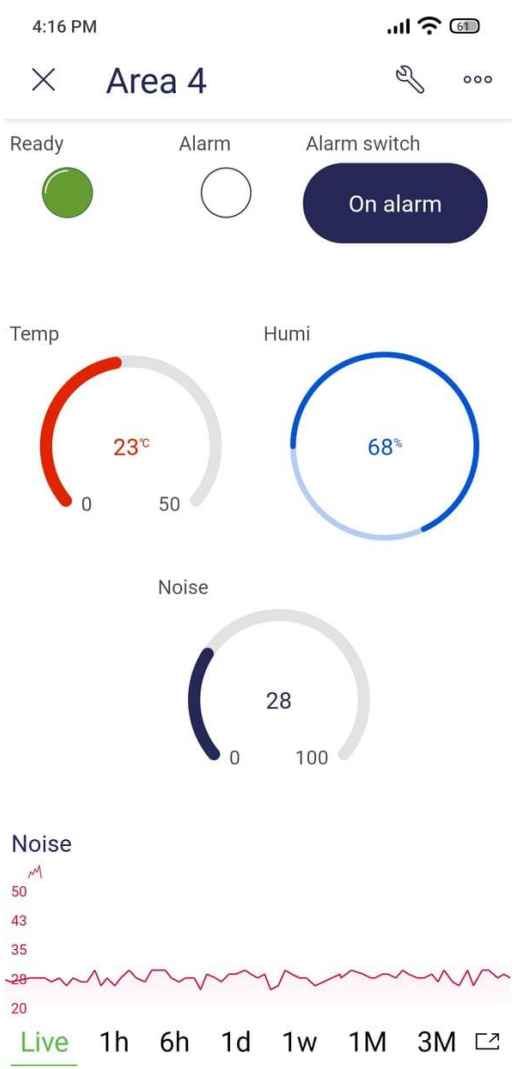
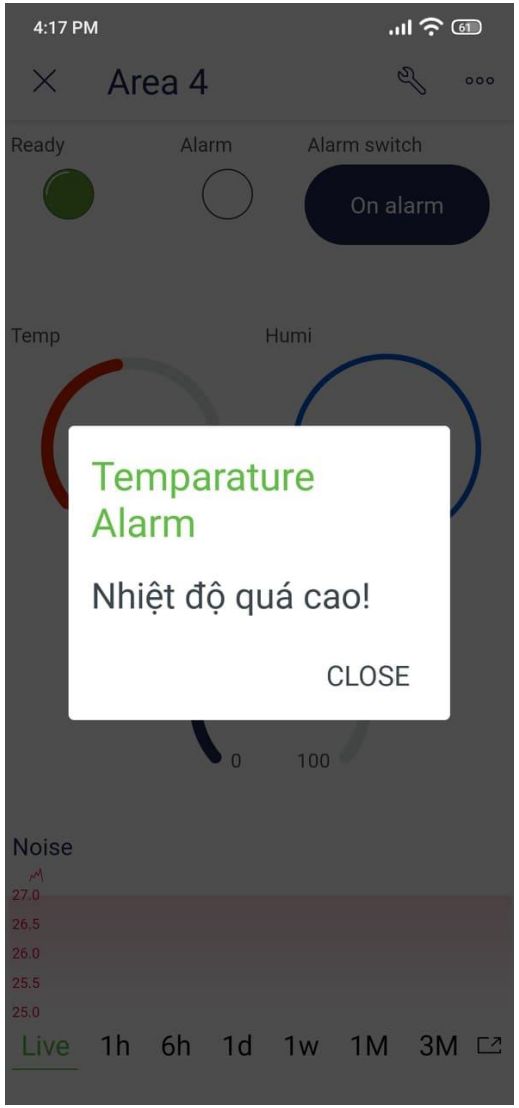


Project Result







Conclusion & Future plan

- We studied about NodeMCU and Blynk for more individual friendly environmental monitoring solution with connection using WiFi.
- Although the project is finished, it have some disadvantage and still need a lot more improvement to be more completed.
- This project only suit using for research and study, since to be able to use practically it need a lot more.
- In the future, we can extend the uses of the project by adding more different type of sensors and new functions.

Q&A session

THANKS FOR LISTENING