Internet of Things Laboratory
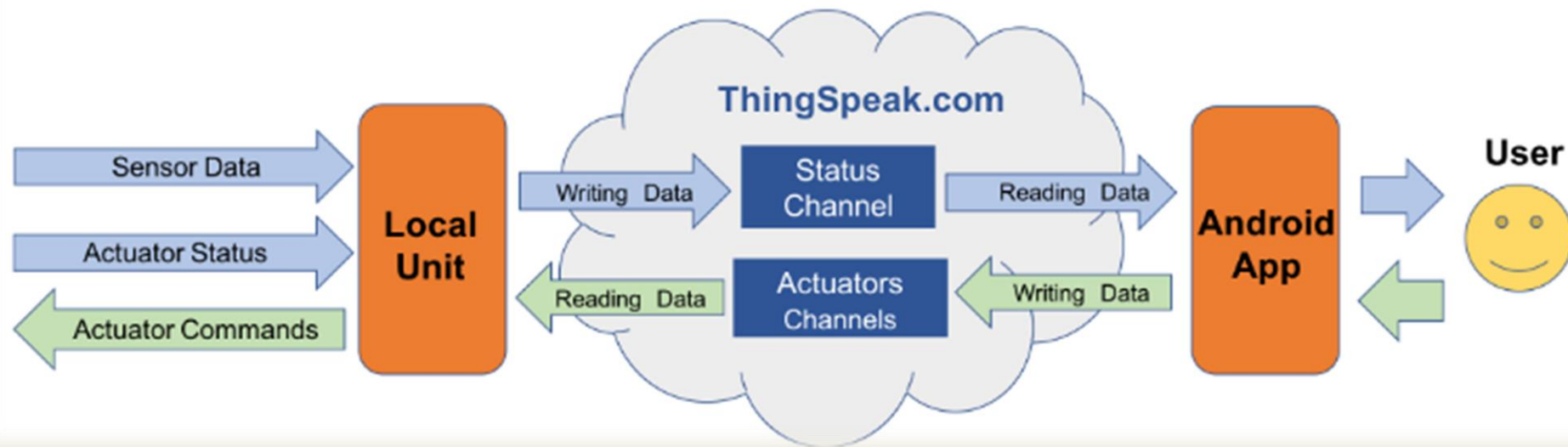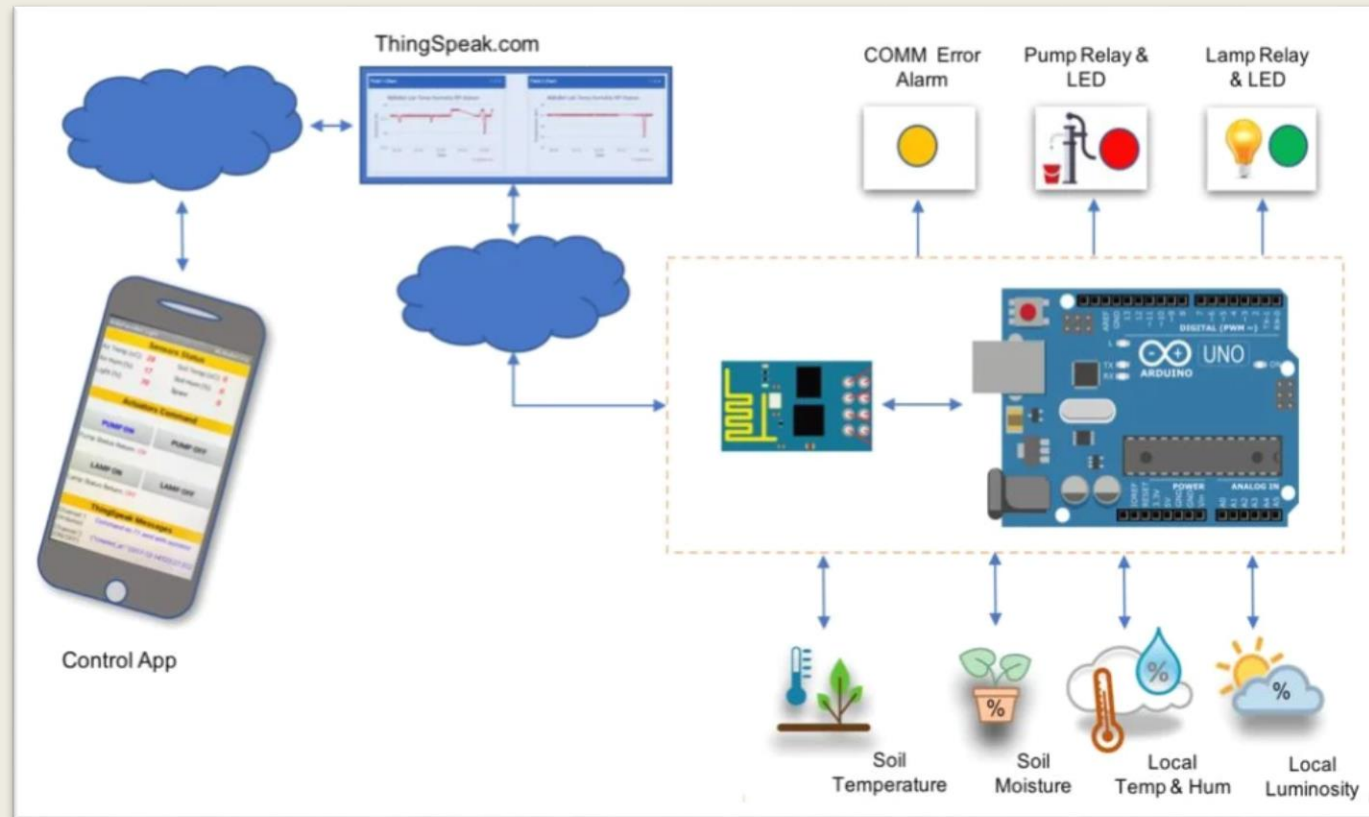
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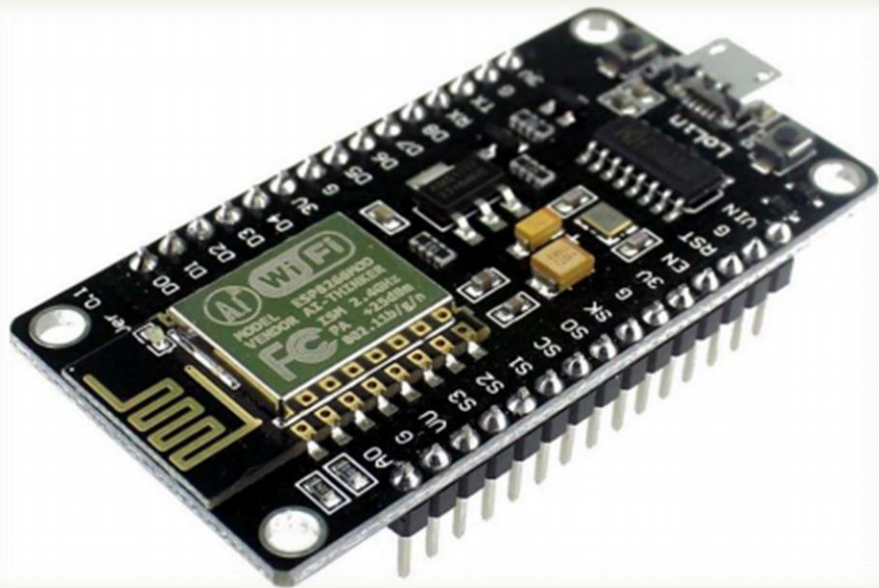4. MIT App Inventor

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1. Introduction

An IoT

The internet of things is a system of

- Interrelated computing devices
- Mechanical
- Digital machines
- Objects, animals or people

# 2. Learning NodeMCU

❖ **ESP8266 NodeMCU WiFi Devkit**

- **Voltage: 3.3V**

- **Current: 10uA~170mA**

- **GPIOs: 17**

- **Integrated TCP/IP protocol stack**

- **802.11 support: b/g/n**

- **Processor speed: 80~160MHz**

❖ **This module includes a built in USB connector and many pin-outs**

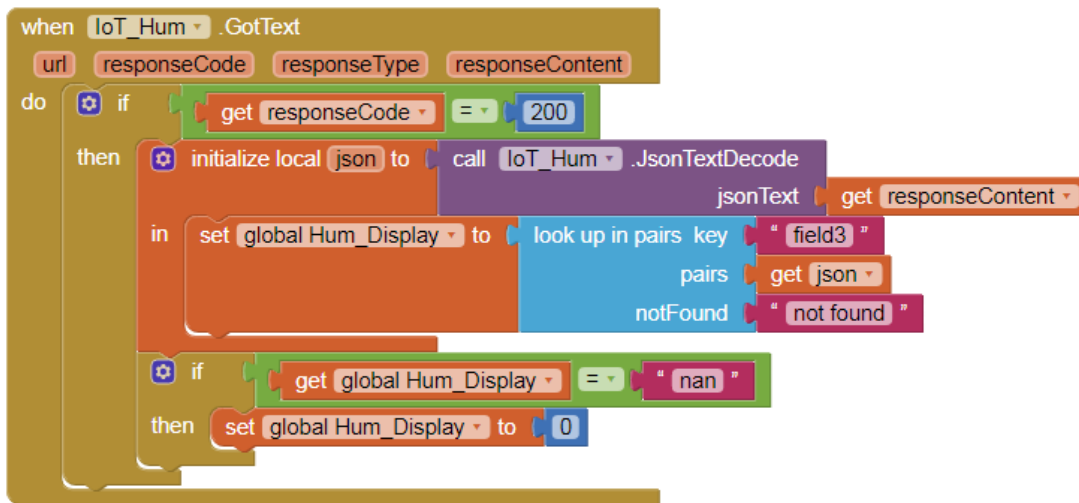❖ **It can connect to laptop just like Arduino**

3. ThingSpeak

ThingSpeak is an Internet of Things (IoT) platform that collect and store sensor data in the cloud and develop IoT applications
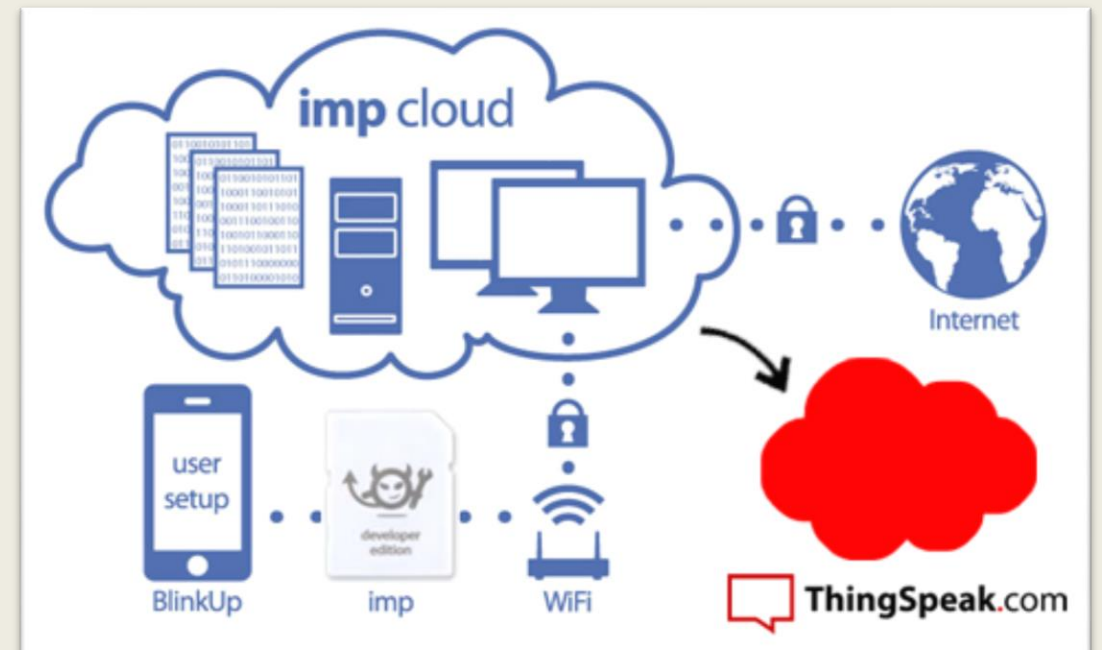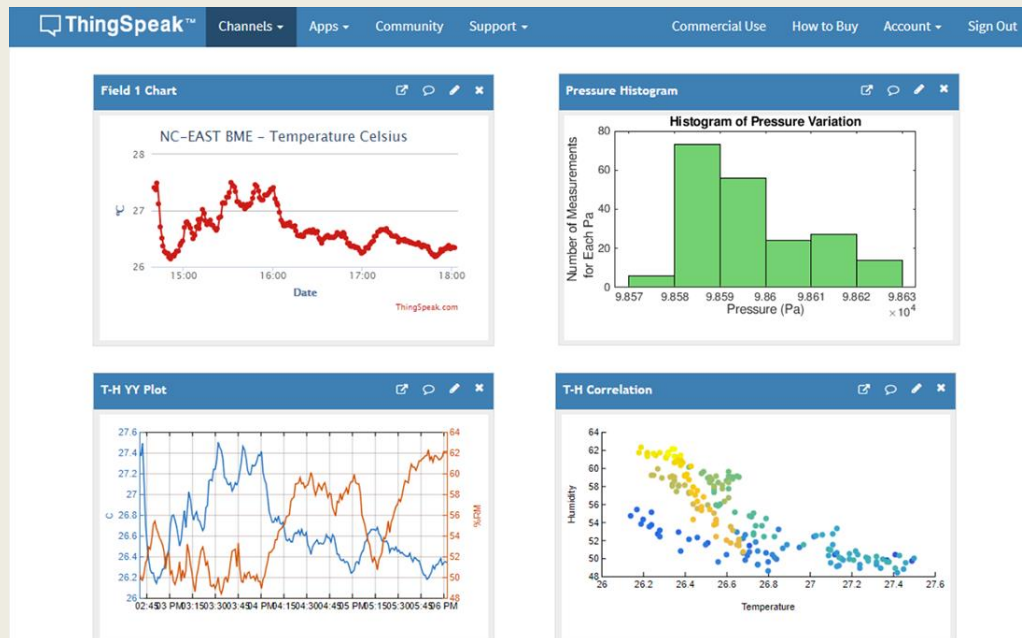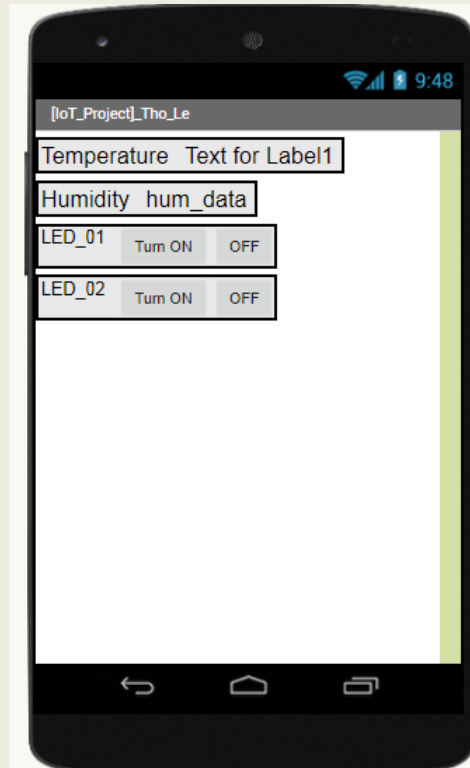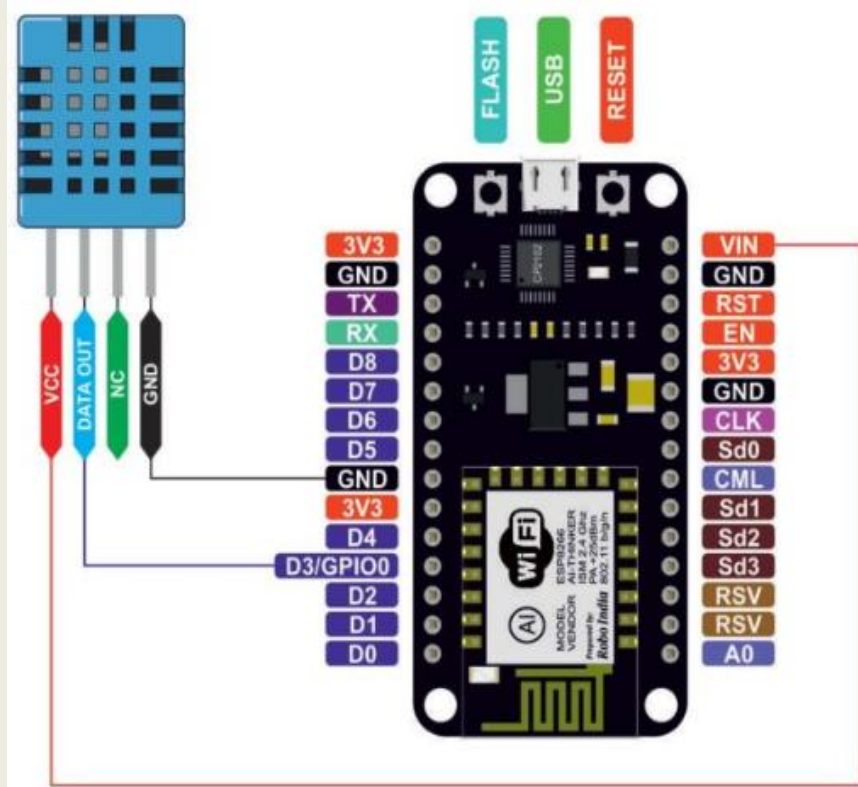
4. MIT App Inventor

An open source web application originally provided by Google and currently maintained by Massachusetts Institute of Technology (MIT)

To drag and drop visual objects to create an application

5. The project

❖ **Circuit Diagram**

❖ **Programming for NodeMCU**

IoT_ESP8266 §

```cpp
#include <ThingSpeak.h>        //Thingspeak library
#include <ESP8266WiFi.h>       //ESP8266 library
#include "DHT.h"               //DHT sensor library

const int DHTPIN = D3;         //Read data from pin D3
const int DHTTYPE = DHT11;     //Declare DHT11 or DHT11

DHT dht(DHTPIN, DHTTYPE);
float t;
float h;
//Setup network parameters
    const char* ssid      = "International University";  //ssid
// const char* password = "   ";  //password

//Setup Thingspeaks
    char thingSpeakAddress[] = "api.thingspeak.com";
    unsigned long channelID  = 852480; //Your chanel ID
    char* writeAPIKey        = "E1MCGYU60JL72RLW";// Your write key
    char* readAPIKey         = "VZP2XVZDZJSSJ72L";//Your read key
//Setup field in Thingspeak
    unsigned int Led_01= 1;                      // LED Field
    unsigned int Temperature= 2;                 // Temperature Field
    unsigned int Humidity= 3;                    // Humidity Field
    unsigned int Led_02= 4;                      // LED Field
```

5. The project

❖ **The channel is at ThingSpeak and the data will be shown on App**

Thanks for your reading

Please, linking to the Instruction section to do step by step. (The project folder was attached)