Assignment 3

1. Setting up account on Wokwi

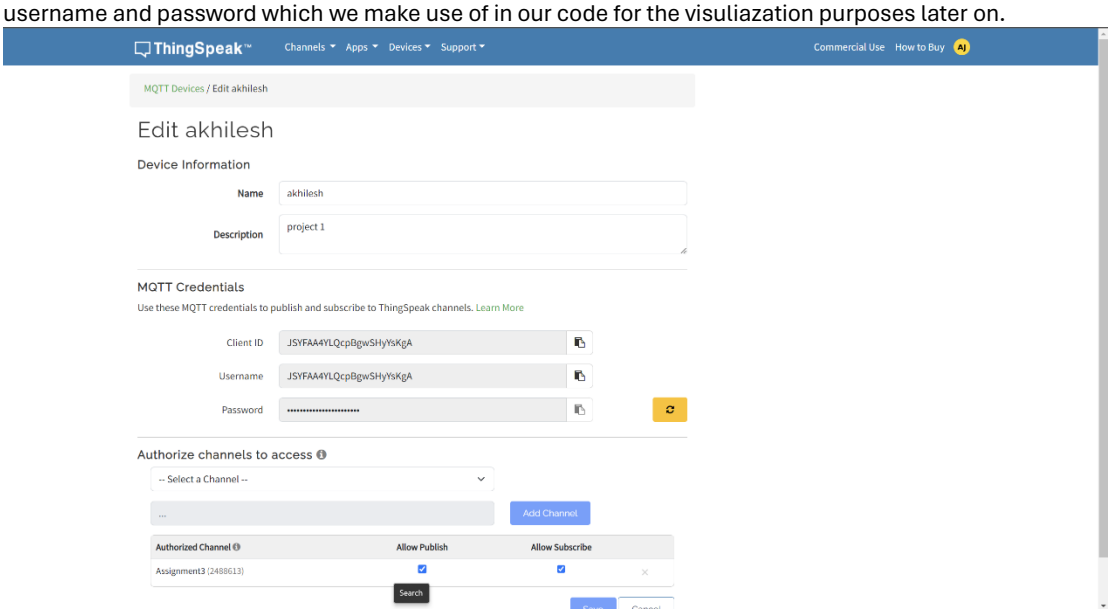
- After some basic signup on the Wokwi using university's email Id we proceed to start a new project while choosing ESP32 as our microcontroller.
- I have used micropython to integrate my code. Where the first challenge was to connect to a wifi network and import some important libraries for our environment to run.

```
rst:0x1 (POWERON_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsip: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:2
load:0x3fff0030,len:4728
load:0x40078000,len:14888
load:0x40080400,len:3368
entry 0x400805cc
Wi-Fi Connected
Published: Temperature=-38.62C, Humidity=26.94%, CO2=1438.74ppm
```

- I have chosen to use the basic guest wifi method to make the connection with internet i.e. Wokwi-guest as the username and blank string for the password section.

2. MQTT setup

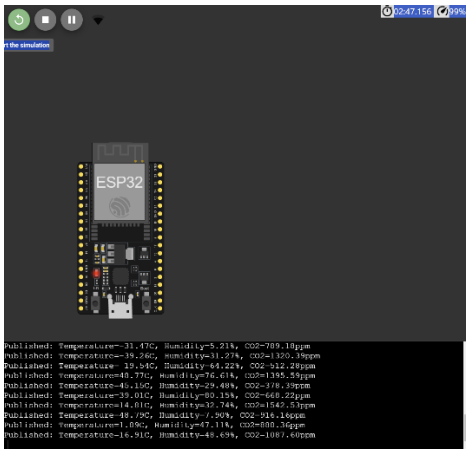
- After connecting to the wifi, next step is to setup our MQTT server, for which I have made use of "ThingSpeak" .
- On the "ThingSpeak" website we are supposed to make one channel which maybe private or publicly available. While making this channel for the first time it asks you to determine the number of visualization sections you want to have in your environment.
- I have made 3 visualization graphs in this assignment namely; temperature, humidity, CO2.
- After that we need to add device to our channel which is the MQTT device. This step gives you client's MQTT username and password which we make use of in our code for the visuliazation purposes later on.



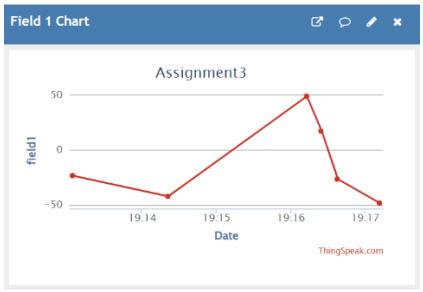
https://github.com/asJ26/Cloud-based-IOT-system.git

3. Data visualization on ThingSpeak

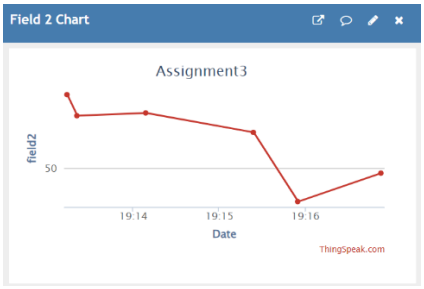
- The code I have pushed on the GitHub generates random values from the sensors which can be seen on the graphs.



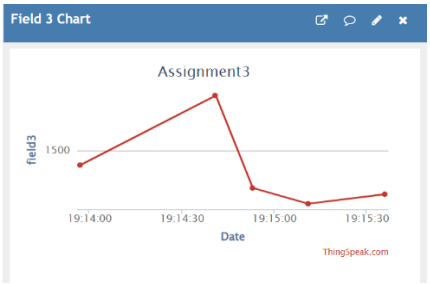
- These random values generate every second and are pushed to the ThingSpeak's website where we have 3 different graphs setup showing us the change in values for different features.



1. Temperature



2. Humidity



3. CO_2

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