EMLab2 Report

學生：楊竣凱、林沁穎、林咏毅
學號：b10901027、b10901069、b10901059

Review Question

1. What are the units used for the sensor values?
   A:
   megnato: mv/G
   accelerato: mv/g
   gyro: mv/(deg/s)

2. What is I2C read address and I2C write address allocated for the LSM6DSL 3D accelerometer and 3D gyroscope sensors in the IoT node (B-L475E-IOT01A or B-L4S5I-IOT01A)?
   A:
   I2C read address: 0xD5
   I2C write address: 0xD4

3. What are the main differences I2C between SMbus (System Management Bus)?
   A:
   The main differences between I2C and SMbus are in the areas of timing, protocols, operation modes, and electrical characteristics.

4. What is the I2C address of ADXL 345, if ALT ADDRESS is connected to HIGH?
   A:
   0x1D

5. How to connect two open-drain signal lines to achieve the wired-AND logic?
   A:
   By connecting gate outputs to a common-collector pull-up resistor will enable the wired-AND logic.

6. What is the main difference between the bus master and the bus slave?
   A:
   Bus master initiates communication by sending requests or instructions to other devices. On the other hand, bus slave waits for commands from the master and responds accordingly.

Discussions of Work

There are 3 files modified, which are main.cpp, mbed_app.json, and server

- mbed_app.json
  Modify the wifi-ssid and wifi-password to the wifi which the local device connected to.

```
"nsapi.default-wifi-ssid": "\"esys305\"",
"nsapi.default-wifi-password": "\"305305abcd\"",
```

- main.cpp
  Combine the code in mbed-socket-example and the sensor code given in class, to send the sensor value to local device by socket.

- server
  Write a python socket to receive data from STM32, and then use matplotlib to visualize the recieved data.

Github Repo

link (https://github.com/lin-1214/2024Spring_ESLAB/tree/main/LAB2)