Board: Wemos D1 R32 (ESP32 based)

IDE: VS Code (Platform IO)

Framework: Arduino

Sensor 1: BME280 0x76

Sensor 2: MPU6050 0x68

Sensor 3: QMC5883L 0x0D

BLE Config:

\*3 services and 9 characteristics

Service 1: BME280

91bad492-b950-4226-aa2b-4ede9fa42f59

|  |  |
| --- | --- |
| Temperature (\*C) | cba1d466-344c-4be3-ab3f-189f80dd7518 |
| Air Pressure (hPa) | 0167d753-8af0-46f0-963d-3da7fc2c0ad7 |
| Altitude (m) | ca73b3ba-39f6-4ab3-91ae-186dc9577d99 |

Service 2: QMC5883L

6ce1e6fa-1930-4252-ba31-591e0e2b7473

|  |  |
| --- | --- |
| X axis (raw data) | 05c3676f-d165-4b7b-857b-b0b2c8534ccf |
| Y axis (raw data) | dcf9689a-74b7-48ab-982d-200d681e7f1d |
| Z axis (raw data) | a8bc42c7-b0b0-4211-8cb2-d74bfc56057f |

Service: MPU6050

abc23f39-1266-429a-b420-0797d410dba1

|  |  |
| --- | --- |
| Roll axis (degree) | 58484acc-8f99-4221-9e0e-8dc7686bf33c |
| Pitch axis (degree) | d52c5987-87d9-4637-a398-99eb26a01de7 |
| Yaw axis (degree) | 55844b93-1178-4aba-a100-dee4ca81262f |

External Libraries:

MadgwickAHRS.h For: MPU6050 orientation data. It is compulsory to obtain the 3 axis angles.

SparkFunBME280.h For: BME280 sensor data. There is no any sensor library for other sensors. I did hex communication and bitwise operator.

CircularBuffer.hpp For: Time saver :)

Smoothed.h For: Filter the sensor values. I did not use median filter.