# IoT Workshop 2

20th March, Saturday - 10.30 AM to 5 PM

## Important Links

Workshop 2 Requirements
Workshop Pre-Lunch
Workshop Post-Lunch

## Agenda

1. Agenda. What will we cover and what we won't?
2. Introduction to ESP32
3. Peripherals - GPIO, Interrupts, PWM, ADC
4. Protocols (MQTT, CoAP, HTTP)
5. Serial Communication - UART
6. Wireless Communication - BLE

## Pre-requisites

1. Theory of GPIO, Interrupts, ADC, PWM, UART (most of it is covered in labs)
2. Theory of MQTT, CoAP and HTTP (covered in Workshop 1)

## Resources (All resources)

1. Peripherals
    a. Codes
2. Protocols
    a. Codes
    b. Recommended Libraries:
        i. PubSubClient
        ii. HTTPClient (Arduino built-in)
        iii. ArduinoJson
3. BLE
    a. Codes + PPT
    b. Bluetooth LE Assigned Numbers
    c. Bleak
        i. Docs: https://bleak.readthedocs.io/en/latest/index.html
        ii. Examples: https://github.com/hbldh/bleak/tree/develop/examples
    d. Arduino BLE
    https://github.com/nkolban/ESP32_BLE_Arduino/tree/master/examples
4. Asyncio
    a. https://docs.python.org/3/library/asyncio.html
    b. https://realpython.com/async-io-python/

## Additional Resources & Further Reading

1. BLE
    a. Books
        i. Getting started with Bluetooth Low Energy (First 4-5 Chapters)

# IoT Workshop 2

20th March, Saturday - 10.30 AM to 5 PM

   ii. Make Bluetooth (Various GATT Services)
b. Alternative Python Libraries
   i. https://github.com/peplin/pygatt
   ii. https://github.com/IanHarvey/bluepy