Introduction to IoT Serie of Workshops

Requirements

- Basic programming knowledge, preferably C or C++.
- Basic knowledge in electricity,
- Foundations in digital and analog electronics

Materials

- Personal computer
- Operating system: Any
- Internet connection
- Dev board: WeMos D1 Mini
- Mico-USB to USB-A cable
- Breadboard
- Jumper wires
- Sensors:
    - DS18B20 (temperature sensor)
    - Capacitive soil moisture sensor
    - VL53L0X (ToF)
- Actuator:
    - LED

Session Outline

Day 1: Introduction to IoT

- Introduction to IoT
- Setup development environment
    - Install Arduino IDE
    - Install libraries
    - Drivers
- Hardware review
- Coding Warm-up
    - LED Blink

Day 2: Sensors and Communication:

- Just analog (Capacity sensor)
- PWM
- 1-Wire (temperature sensor)
- I2C (ToF sensor)

Day 3: IoT Communication:

- MQTT

Day 4: NIG stack:

- Setup docker
- Node-RED
- Influx
- Grafana