



INTERNET OF THINGS (IOT) TUTORIAL FOR TRAINERS

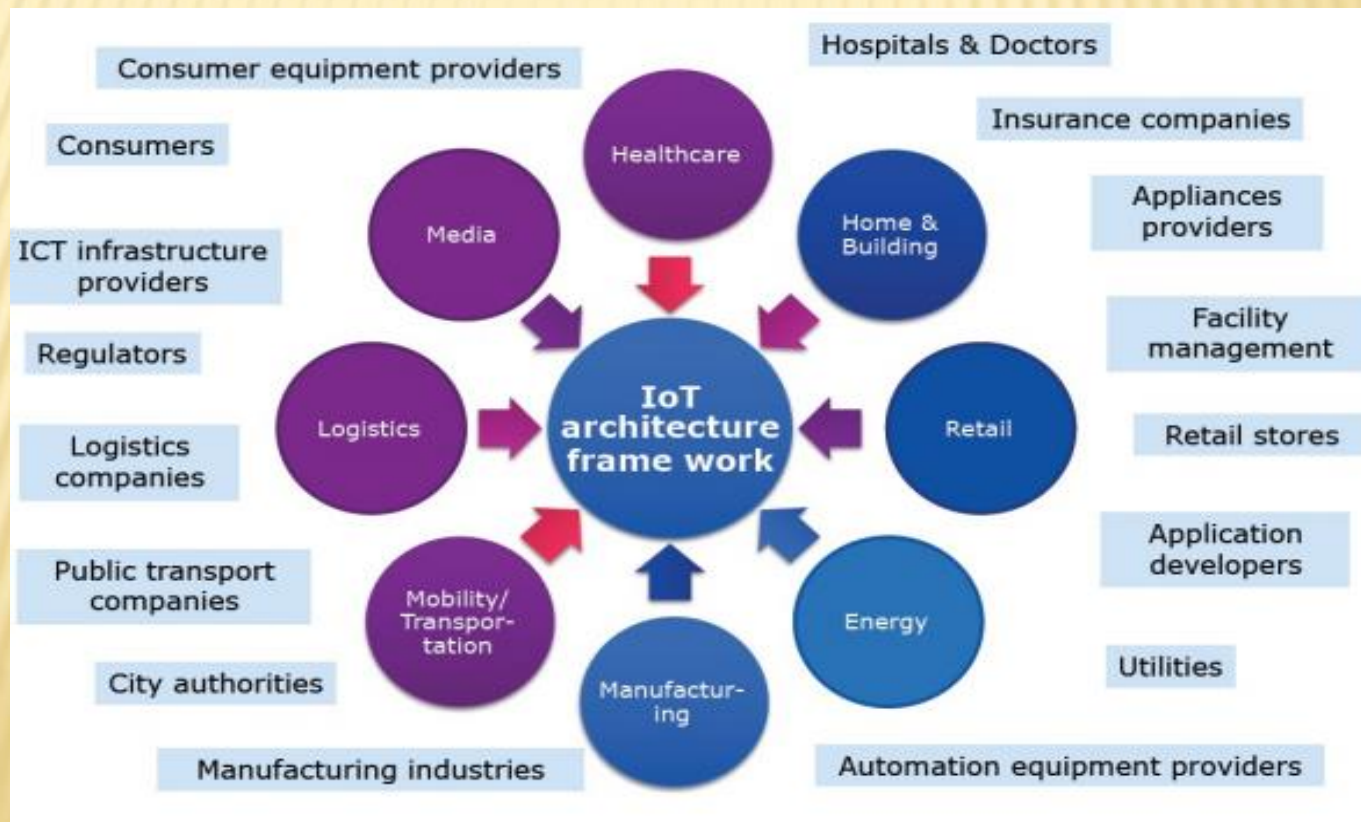
23-24 MARCH 2021

BY MUHAMMAD AZIZI MOHD ARIFFIN

INTRODUCTION TO IOT

IEEE Definition:

“A network of items, each embedded with sensors, which are connected to the Internet.”



IOT ARCHITECTURE

IP

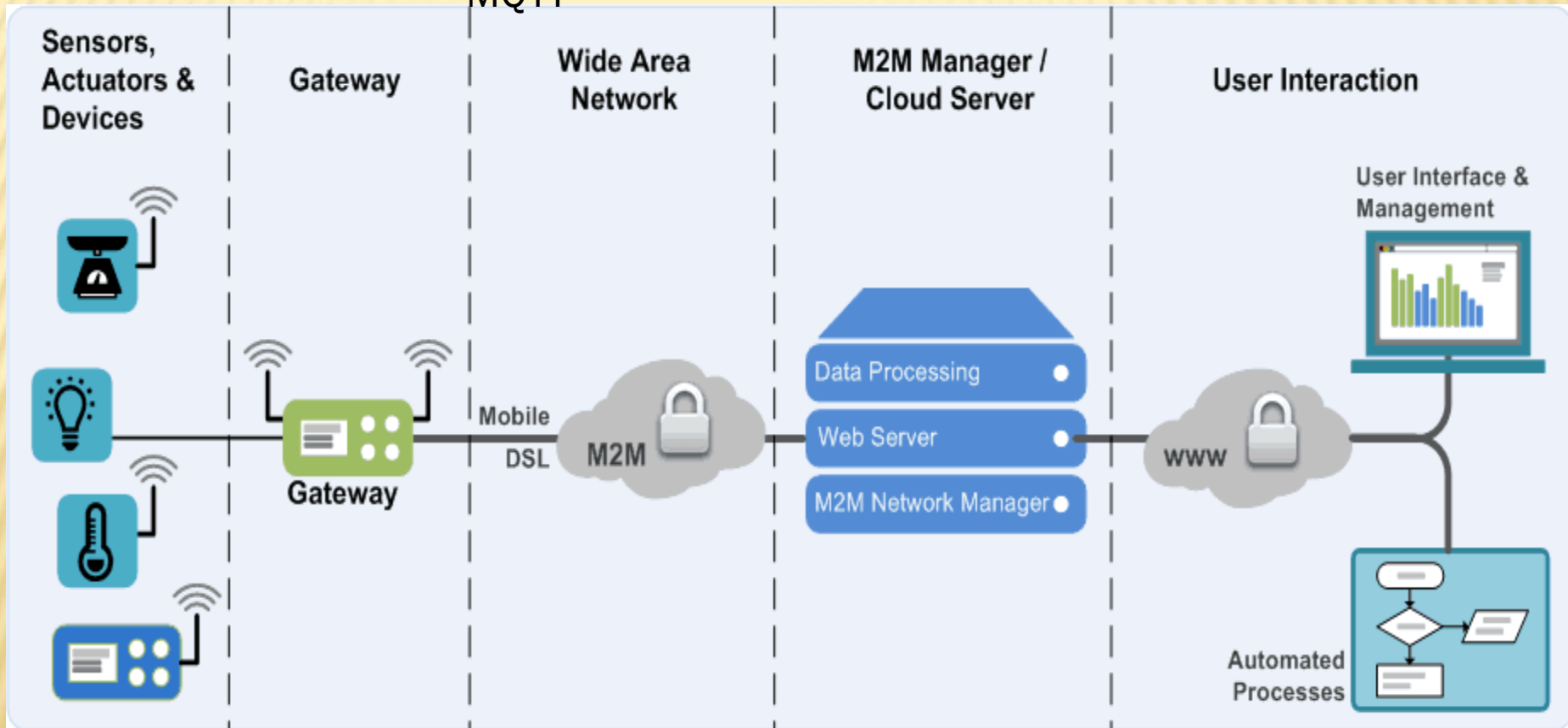
Wi-Fi/Lora WAN

MQTT

Firebase

Blynk / ThingsSpeak Platform

Digital Ocean / Amazon AWS



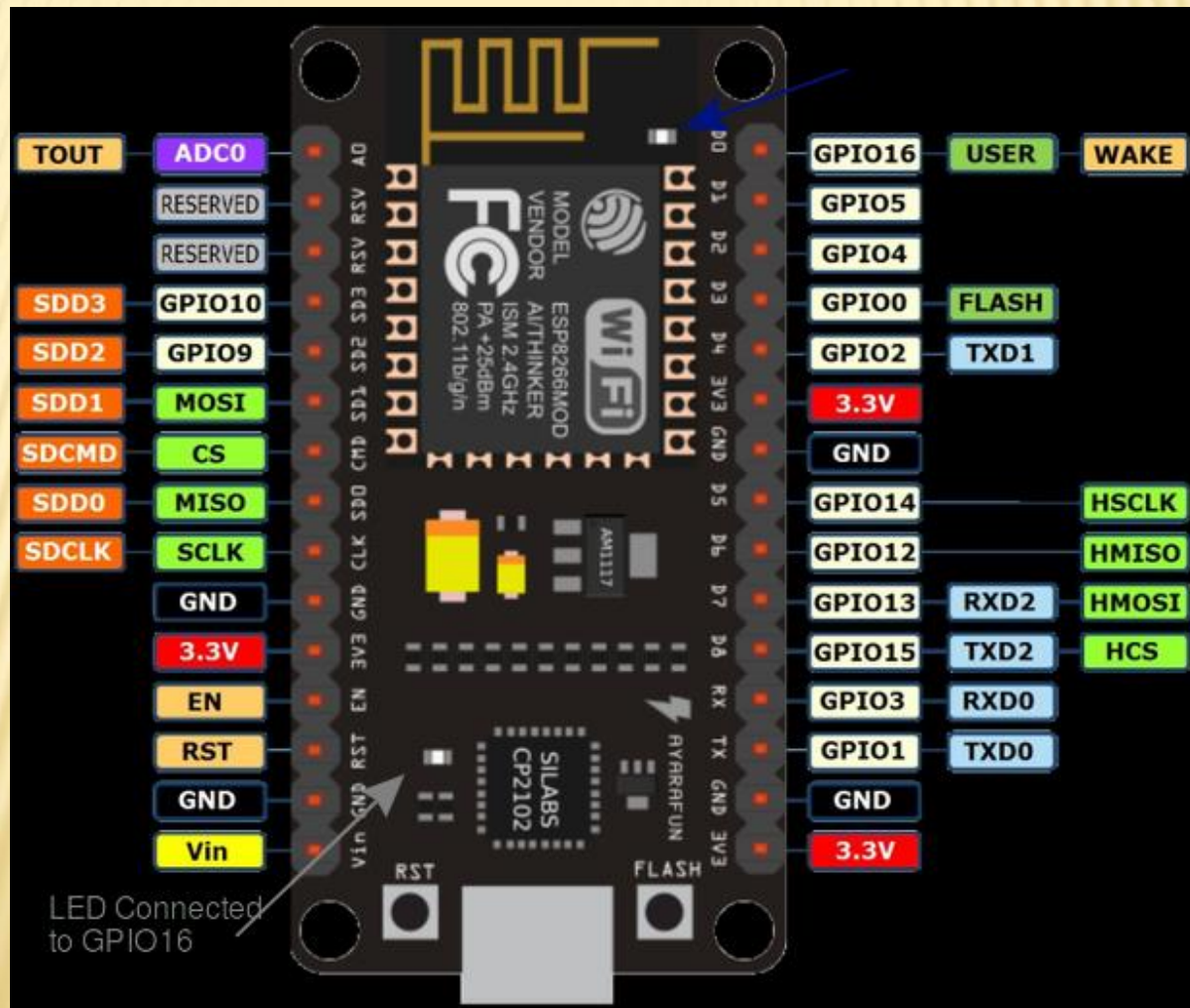
DHT11
DHT22
CO2 Sensor
Motion Sensor

Arduino UNO
Node MCU ESP8266/ESP32
Raspberry PI

Grafana
Laravel
PHP/MYSQL

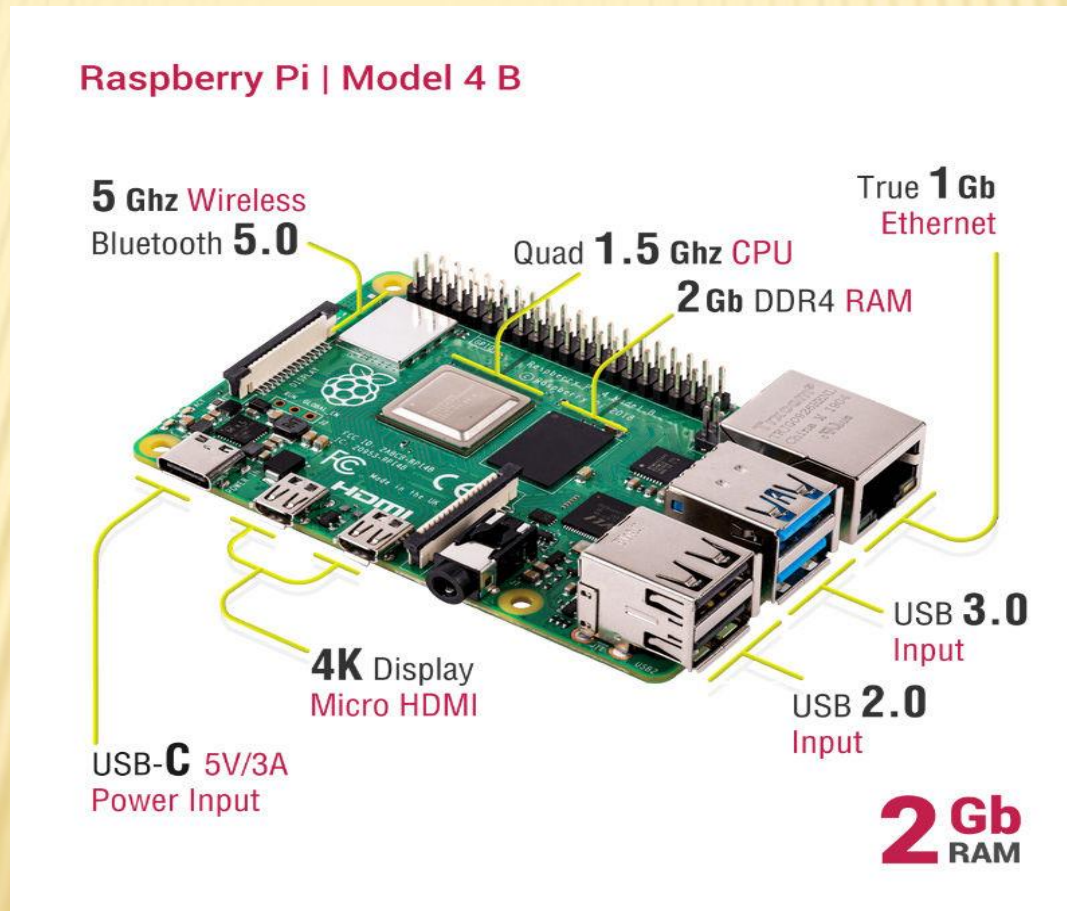
IOT HARDWARE (MICROCONTROLLER)

✗ NodeMCU ESP8266



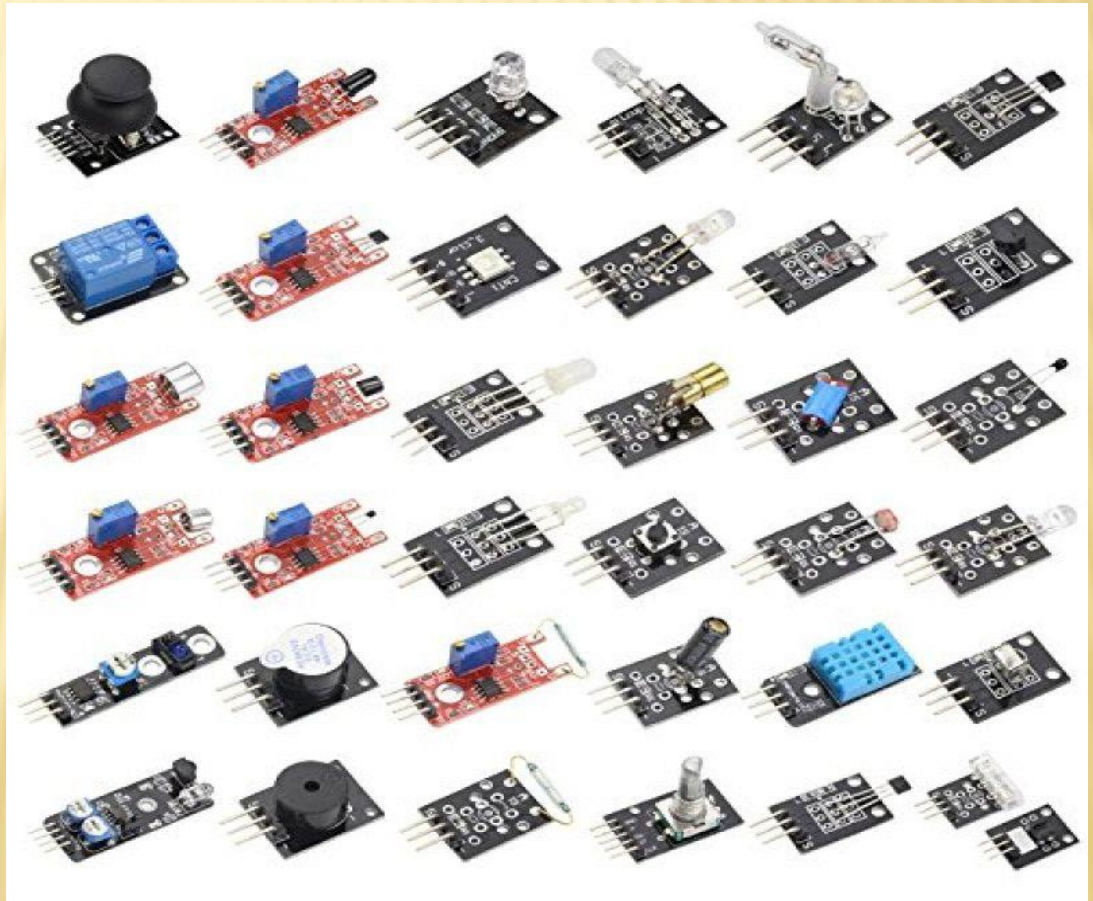
IOT HARDWARE (SINGLE-BOARD COMPUTER)

✖ Raspberry Pi



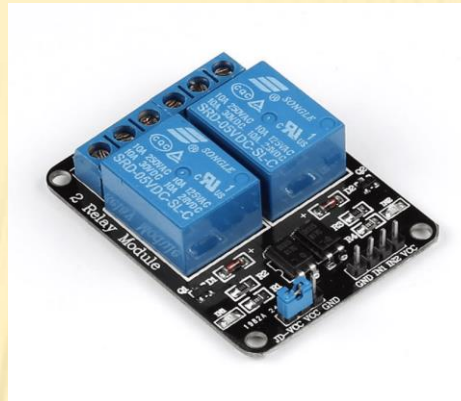
NOT HARDWARE (2F1120K2)

- ## ✖ Motion Sensor



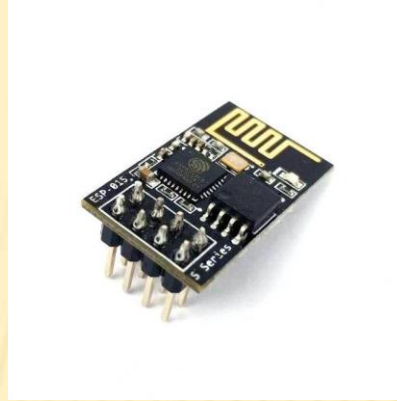
IOT HARDWARE (ACTUATOR)

- ✖ Relay
- ✖ Buzzer
- ✖ Water Pump
- ✖ LCD Display



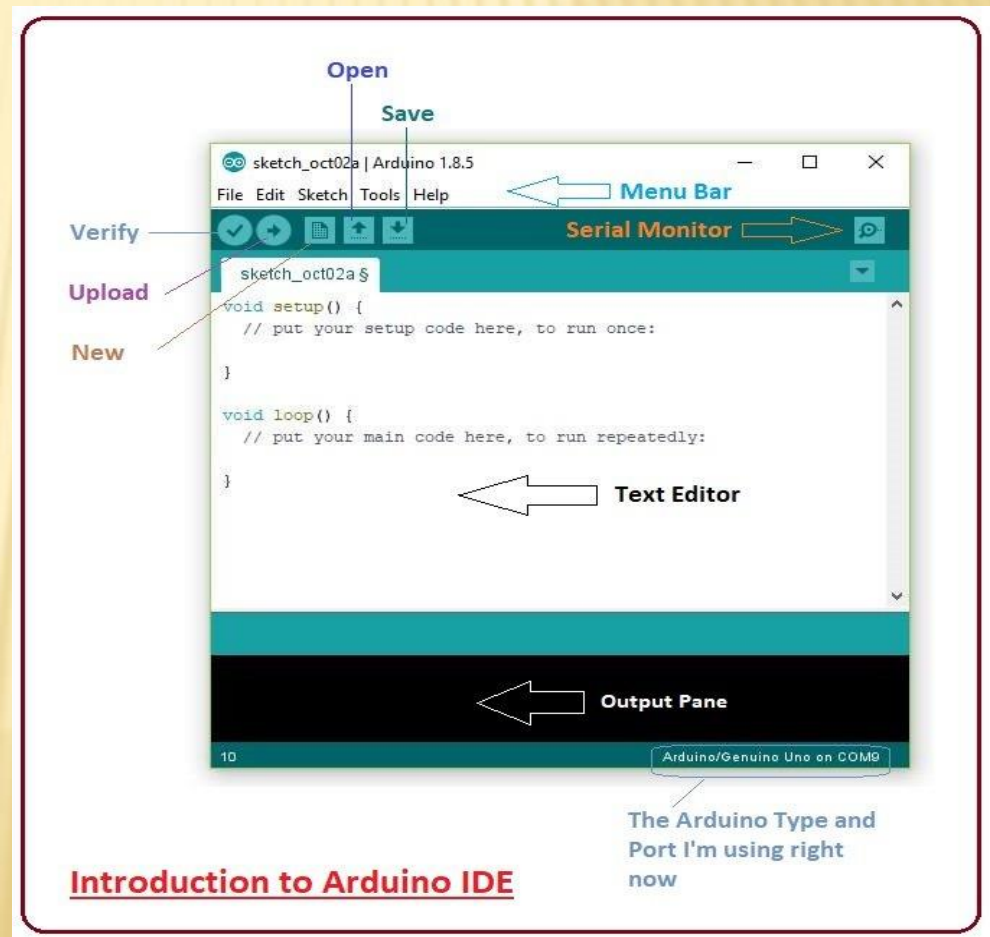
IOT HARDWARE (CONNECTIVITY)

- ✗ Wi-Fi
- ✗ Ethernet
- ✗ LoraWAN
- ✗ Bluetooth
- ✗ Zigbee
- ✗ GSM



IOT SOFTWARE

- ✗ Arduino IDE
- ✗ IBM NodeRED
- ✗ MicroPython
- ✗ Blynk Smartphone App



IOT EXERCISE (DAY 1)

- ✖ **Activity 0:** Installing Arduino IDE & Connecting Node MCU
- ✖ **Activity 1:** Digital Input and Output GPIO
- ✖ **Activity 2:** GPIO Non-Blocking
- ✖ **Activity 3:** Analog Output (RGB LED)
- ✖ **Activity 4:** Analog Input (LM35 Sensor)
- ✖ **Activity 5:** DH11 Sensor Module
- ✖ **Activity 6:** Displaying Sensor Data via Build in Web Server
- ✖ **Activity 7:** Sending Sensor Data via TCP Socket

IOT EXERCISE (DAY 2)

- ✖ **Activity 8:** Pushing Sensor Data via HTTP Post
- ✖ **Activity 9:** Using Node MCU with Blynk Platform
- ✖ **Activity 10:** Pushing Sensor Data to Google Firebase
- ✖ **Activity 11:** Introduction to Raspberry PI
- ✖ **Activity 12:** Using Raspberry PI GPIO
- ✖ **Activity 13:** Displaying Sensor via Flask using Raspberry PI

THANK YOU
LET'S GET OUR HANDS DIRTY

