IOTIANHUB INTERNSHIP COURSE

INTERNET OF THINGS With AWS INTERNSHIP COURSE—

WEEK-1

❖ INTRODUCTION TO IOT
- Introduction to IoT
- IoT and Its Application
- How M2M is different from IoT
- Components of IoT
- IoT Devices
- IoT Communication Protocols
- IoT and Its Future

❖ COMMUNICATION PROTOCOLS
- UART/USART (RS232)
- SPI
- I2C
- MQTT
- REST API
- HTTPS
- COAP
- AMQP
- XMPP

❖ GETTING STARTED WITH ARDUINO
- Introduction to Microcontroller
- Introduction to Arduino
- What is ARDUINO?
- What is open source Microcontroller platform?
- Arduino UNO R3 board
- Pin configuration
- USART in Arduino
- ADC in Arduino
- PWM in Arduino
- WatchDog timer in Arduino
- Arduino I2C
- Basics to Developing Bootloader for Arduino
- Adding a New Library to Arduino IDE and Using It
- Basic functions related to startup and GPIO in Arduino

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- Basic functions related to Serial Communication in Arduino
- Basic functions related to Time and Interrupts in Arduino

WEEK-2--

- ❖ INTERFACE
  - ❖ Hc-05 Bluetooth module interface with Arduino
  - ❖ Analog Joystick with Arduino
  - ❖ PIR sensor interfacing with Arduino
  - ❖ DHT-11 sensor interfacing with Arduino
  - ❖ DC motor interfacing with Arduino
  - ❖ 7 segment display using Arduinos
  - ❖ OLED interface with Arduino
  - ❖ Ultrasonic sensor interfacing with Arduino

WEEK-3--

- ❖ NODEMCU BASICS
  - Introduction to Nodemcu
  - Getting Started with Nodemcu
  - Nodemcu development kit/board
- ❖ NODEMCU WITH ARDUINO IDE
  - Getting Started with NodeMCU using Arduino IDE
  - NodeMCU GPIO with Arduino IDE
  - NodeMCU ADC with Arduino IDE
  - NodeMCU PWM with Arduino IDE
  - NodeMCU GPIO Interrupts with Arduino IDE
  - NodeMCU SPI with Arduino IDE
  - NodeMCU I2C with Arduino IDE
  - HTTP Client on NodeMCU with Arduino IDE
  - HTTP Server on NodeMCU with Arduino IDE
  - NodeMCU MQTT Client with Arduino IDE

WEEK-4--

- ❖ NODEMCU INTERFACING
  - DHT11 Sensor Interfacing with NodeMCU and sending data to Thingspeak
  - Ultrasonic sensor interfacing with Nodemcu and sending data to Thingspeak.
  - Servo Motor Interfacing with NodeMCU and controlling using GUI
  - DC Motor Interfacing with NodeMCU
  - PIR Interfacing with NodeMCU
  - HC-05 Bluetooth Module Interfacing with NodeMCU

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- OLED Graphic Display Interfacing with NodeMCU
- Control Home appliances using Thinger.io
- Control Home appliances using Google Assistant

WEEK-5--

❖ Raspberry pi basics
- Raspberry Pi Introduction
- Getting Started with Raspberry Pi
- How to use WiringPi Library on Raspberry Pi
- Access Raspberry Pi Home Screen on Laptop Display using LAN(Ethernet)
- Raspberry Pi GPIO Access
- Raspberry Pi PWM Generation using Python and C
- Raspberry Pi UART Communication using Python and C
- Raspberry Pi I2C
- Python based I2C functions for Raspberry Pi
- Access Raspberry Pi on Laptop using Wi-Fi
- Using Raspberry Pi 3 On-Board Bluetooth for Communication

❖ Raspberry Interface
- Home Automation Using Raspberry pi
- DHT-11 sensor data on Node-red dashboard using MQTT protocol.

❖ **Introduction to aws**

❖ **Introduction of different AWS services**

❖ **How to send sensor data to Aws using Nodemcu**