IOT AND CLOUD COMPUTING LAB

By,

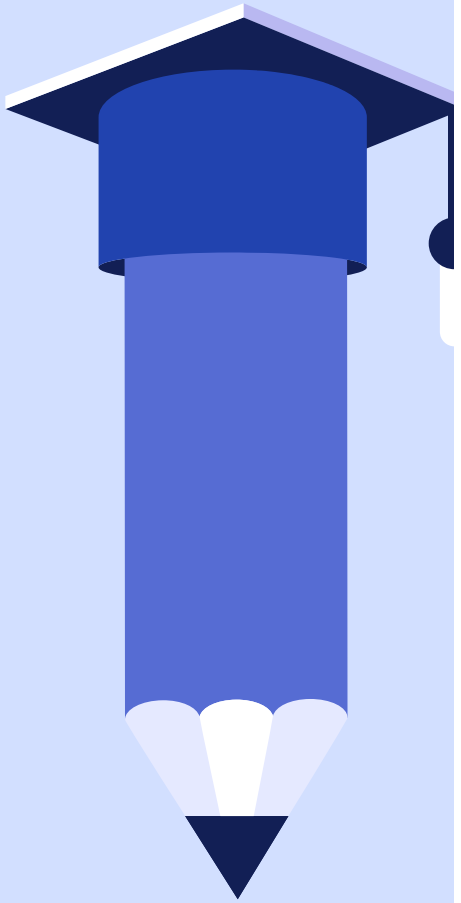
Asst. Prof. S.Asra

M.E(Computer science & Engineering)

B.E(Computer Science & Engineering)

Diploma(Computer Science & Engineering)

IOT AND CLOUD COMPUTING LAB



IOT AND CLOUD COMPUTING LAB

Course	B.Tech.-VI-Sem.	L	T	P	C
Course Code	22CSPC64	-	-	2	1

Course Outcomes (COs) & CO-PO Mapping (3-Strong; 2-Medium; 1-Weak Correlation)

COs	Upon completion of course the students will be able to	PO4	PO5	PO9	PSO2
CO1	identify various IoT devices	3	3	3	3
CO2	use IoT devices in various applications	3	3	3	3
CO3	develop automation work-flow in IoT enabled cloud environment	3	3	3	3
CO4	take part in practicing and monitoring remotely	3	3	3	3
CO5	make use of various IoT protocols in cloud	3	3	3	3

List of Experiments

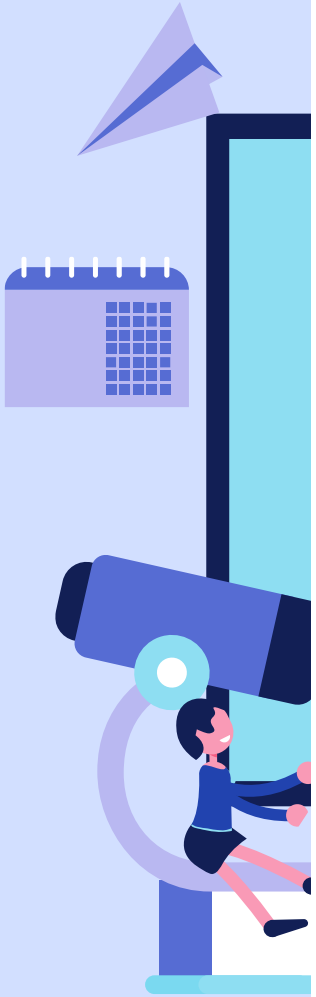
Week	Title/Experiment
1	Install necessary software for Arduino and Raspberry Pi.
2	Familiarization with Arduino and Raspberry Pi board.
3	Write a program to transfer sensor data to a Smartphone using Bluetooth on Arduino.
4	Write a program to implement RFID using Arduino.
5	Write a Program to monitor temperature and humidity using Arduino and Raspberry Pi.
6	Write a Program to interface IR sensorswith Arduino using IoT Cloud Application.
7	Write a Program to upload temperature and humidity data to the cloud using an Arduino or Raspberry Pi.
8	Write a program to retrieve temperature and humidity data from the cloud using Arduino and Raspberry Pi.
9	Write a program to create a TCP server on cloud using Arduino and respond with humidity data to the TCP client when requested.
10	Write a program to create a UDP server on cloud using Arduino and respond with humidity data to the UDP client when requested.

References

1. IoT and Cloud Computing Lab Manual, Department of CSE, CMRIT, Hyd.

Micro-Projects: Student should submit a report on one of the following/any other micro-project(s) approved by the lab faculty before commencement of lab internal examination.

1. Air Pollution Meter.
2. Smart Garbage Collector.
3. Weather monitoring system.
4. Baggage Tracker.
5. Circuit Breakage Detection.
6. Anti-Theft Flooring System.
7. IoT Based Smart Street Light.
8. IoT based Gas Leakage Monitoring system.
9. IoT Based Smart Irrigation System.
10. IoT Based Water Level Monitoring System.



WEEK-8

Aim: Write a program to retrieve temperature and humidity data to the cloud using Arduino or Raspberry Pi.

Hardware Requirements:

1.Arduino UNO board
2.NodeMCU ESP8266 Breakout Board
3.DHT-11 temperature and humidity sensor
4.Jumper wires
5.Bread board

Procedure:

1. Open up the Arduino IDE and head over to the library manager.
2. Install the DHT library (You can also install it by going to Sketch > Include Library > Manage Libraries, and search for adafruit dht library).

DHT sensor with 3 pins:

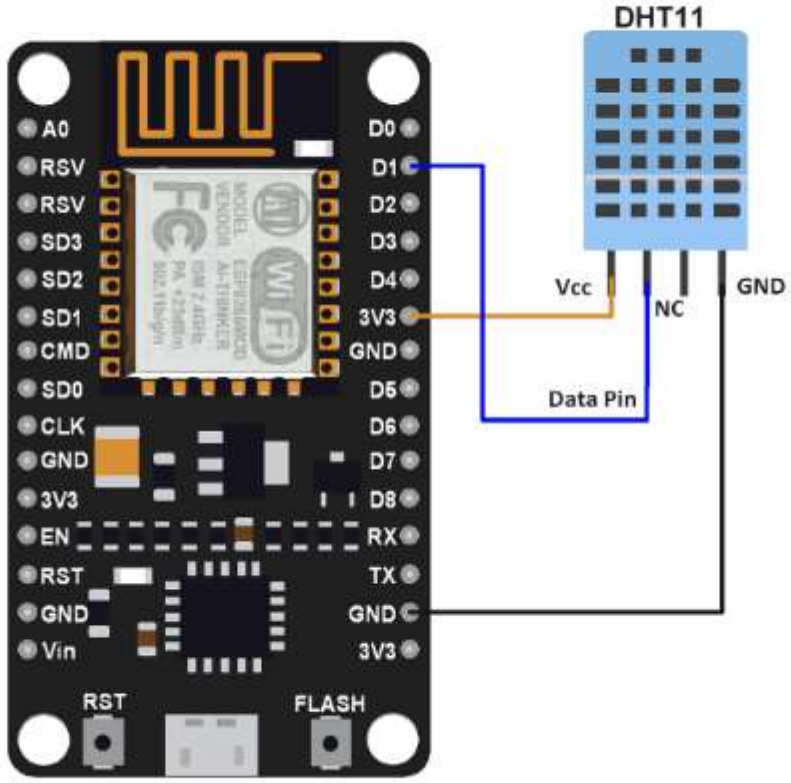
1. Power supply 3.5V to 5.5V.
2. Data, Outputs both Temperature and Humidity through serial Data.
3. Ground, Connected to the ground of the circuit.

Set up in source code:

1. Set your Wi-Fi SSID and password.
2. Set the API Key
3. Save->Compile->upload->now us can visualize our data in cloud

Asst. Prof. S.Asra
CSE Department, CMRIT

Connection Diagram DHT11 with NodeMCU



NodeMCU interfaced with DHT11

Asst. Prof. S.Asra
CSE Department, CMRIT

OUTPUT 1 :

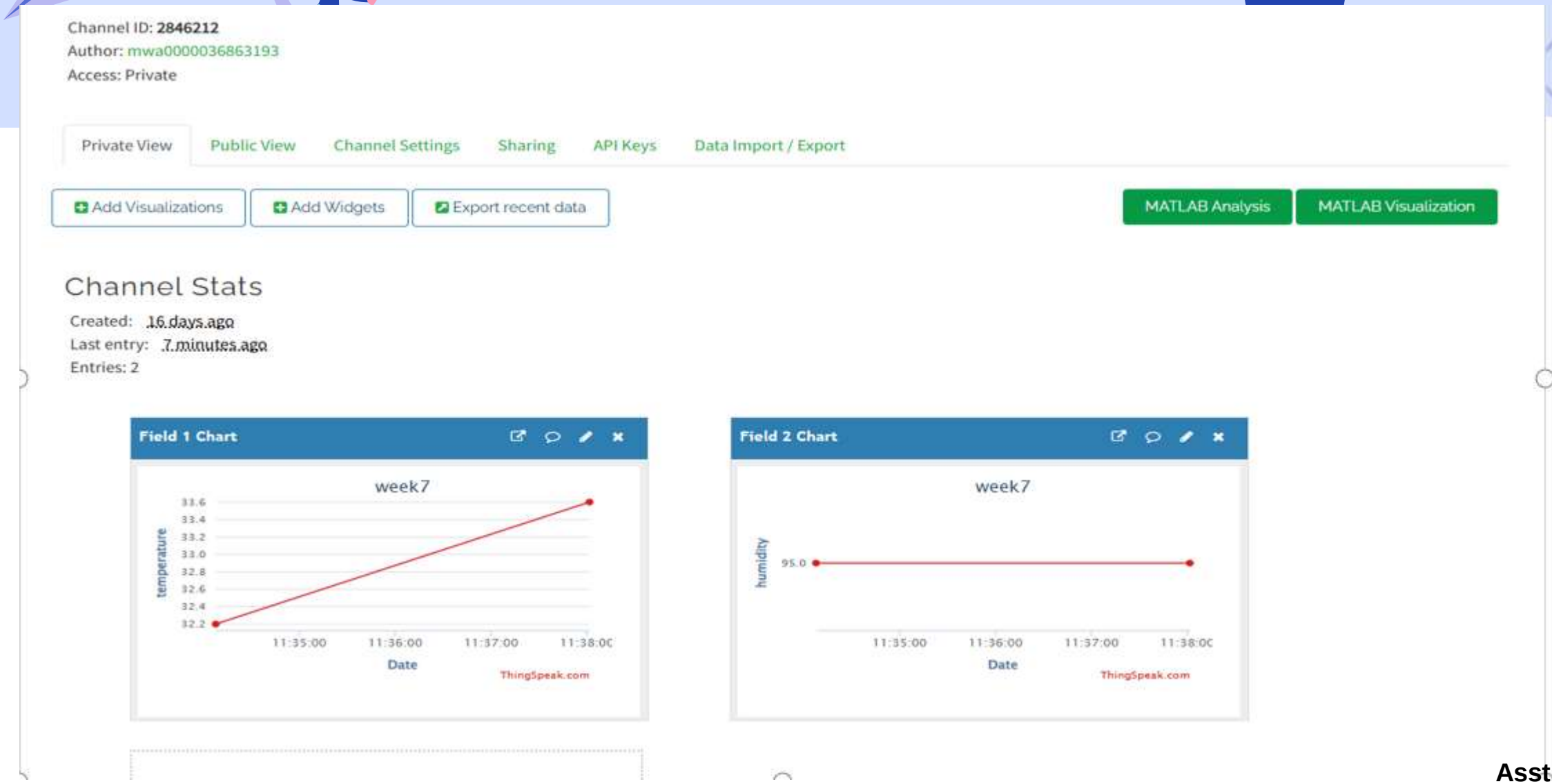
Output Serial Monitor

```
Writing at 0x00004000... (15 %)
Writing at 0x00008000... (23 %)
Writing at 0x0000c000... (30 %)
Writing at 0x00010000... (38 %)
Writing at 0x00014000... (46 %)
Writing at 0x00018000... (53 %)
Writing at 0x0001c000... (61 %)
Writing at 0x00020000... (69 %)
Writing at 0x00024000... (76 %)
Writing at 0x00028000... (84 %)
Writing at 0x0002c000... (92 %)
Writing at 0x00030000... (100 %)
Wrote 282912 bytes (207363 compressed) at 0x00000000 in 18.5 seconds (effective 122.6 kbit/s)...
Hash of data verified.

Leaving...
Hard resetting via RTS pin...
```

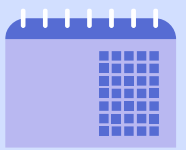
Asst. Prof. S.Asra
CSE Department, CMRIT

OUTPUT 2:



Asst. Prof. S.Asra
CSE Department, CMRIT

OUTPUT 3:



Output Serial Monitor ×

Message (Enter to send message to 'NodeMCU 1.0 (ESP-12E Module)' on 'COM11')

```
Temperature: 33
Humidity: 95
Temperature: 33
Humidity: 95
Temperature: 33
Humidity: 95
Temperature: 33
Humidity: 95
Temperature: 33
Unable to read channel / No internet connection
Temperature: 33
Humidity: 95
Temperature: 33
Humidity: 95
Temperature: 33
Humidity: 95
```

Asst. Prof. S.Asra
CSE Department, CMRIT


Thank you for
listening to