Experiment Number 3

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Branch ::	CSE - IoT	Sec/Grp ::	1/A
Semester ::	5th	Date ::	17th Sept, 2021
Subject ::	WSN Lab	CODE ::	CSD-331

1. Aim :

Understanding the working of ESP8266 WiFi module and its uses.

2. Requiremnets :

1. TinkerCAD
2. Arduino Uno
3. Resistor

3. Theory :

ESP8266 is Wi-Fi enabled system on chip (SoC) module developed by Espressif system. It is mostly used for the development of the Internet of Things (IoT) embedded applications.

The ESP8266 is a low-cost Wi-Fi microchip with full TCP/IP stack and micro-controller capability produced by Shanghai-based Chinese manufacturing company Espressif Systems.

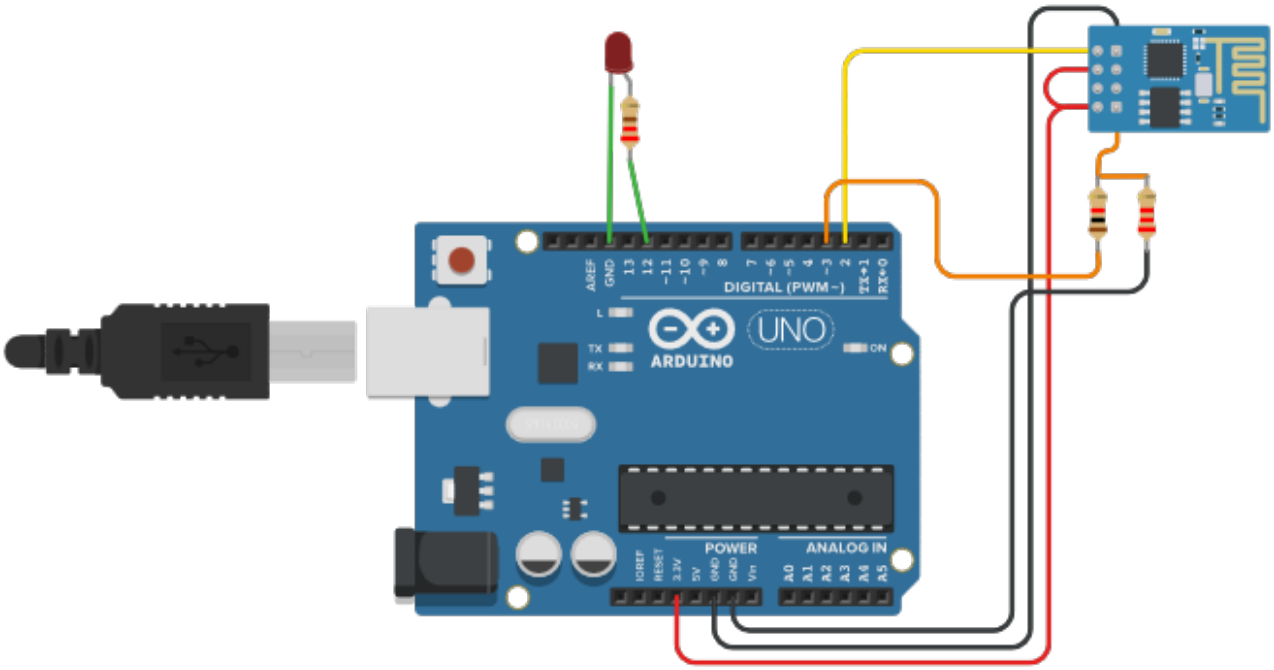
The ESP8266 is capable of either hosting an application or offloading all the Wi-Fi networking functions from another application processor.

Each ESP8266 Wi-Fi module comes pre-programmed with an AT command set firmware, now you can simply hook this up to your Arduino device and get as much Wi-Fi ability as a Wi-Fi Shield offers.

4. Source Code :

```
String ssid = "Simulator Wifi";
String password = "";
String host = "api.thingspeak.com";

const int httpPort = 80;

String uri = "/update?api_key=qwertyuiop&field1=";

int setupESP8266(void)
{
    Serial.begin(115200);
    Serial.println("AT");
    delay(10);
    if (!Serial.find("OK"))
        return 1;
    Serial.println("AT+CWJAP=\"" + ssid + "\",\"" + password + "\"");
    delay(10);
    if (!Serial.find("OK"))
        return 2;
    Serial.println("AT+CIPSTART=\"TCP\",\"" + host + "\"," + httpPort);
    delay(50);
    if (!Serial.find("OK"))
        return 3;
    return 0;
}

void anydata(void)
{
    int temp = map(analogRead(A0), 20, 358, -40, 125);
    String httpPacket = "GET " + uri + String(temp) + " HTTP/1.1\r\nHost:
        " + host + "\r\n\r\n";
    int length = httpPacket.length();
    Serial.print("AT+CIPSEND=");
    Serial.println(length);
    delay(10);
    Serial.print(httpPacket);
    delay(10);
    if (!Serial.find("SEND OK\r\n"))
        return;
}
```

```
void setup()
{
    setupESP8266();
}

void loop()
{
    anydata();
    delay(10000);
}
```



5. Observations :

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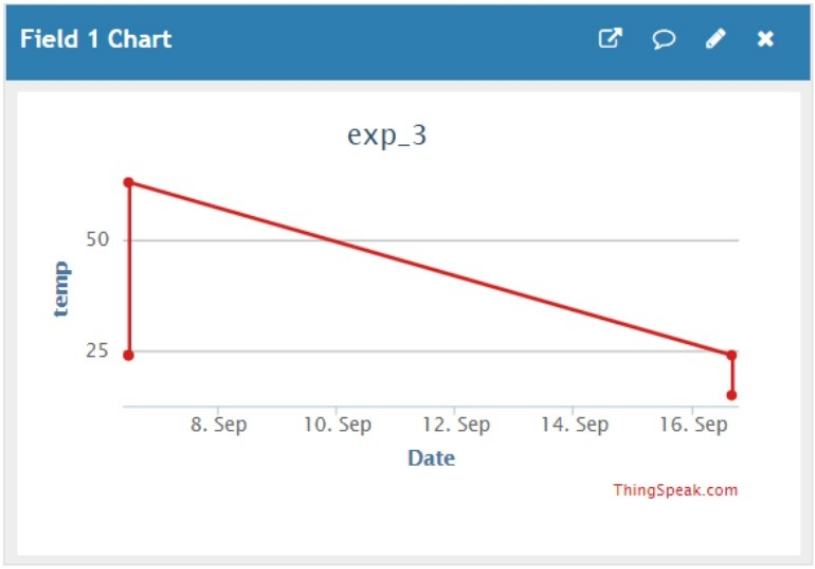

Learning Outcomes :

- ESP8266
- Arduino Uno
- TinkerCAD
- ThingSpeak

S. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			