UNIVERSITY INSTITUTE of COMPUTING
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Worksheet 6

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Section/Group: MAM-3(A)
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Subject Name: Internet Of Things
Subject Code: 23CAH-702

1. Aim/Overview of the practical:

Interface Node MCU with DHT11 sensor

2. Apparatus (For applied/experimental sciences/materials based labs):

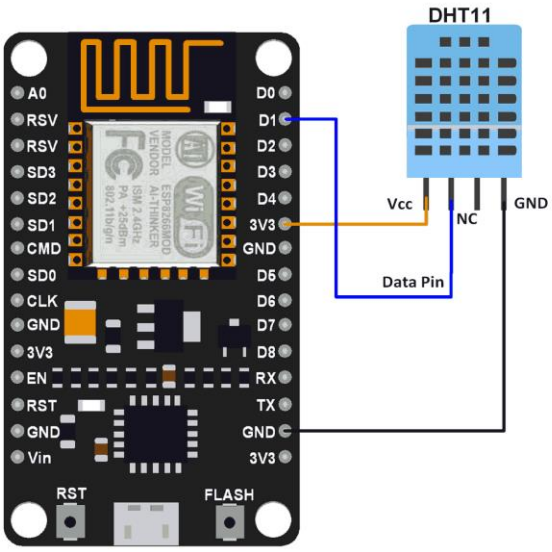
Hardware Requirements

1) Node MCU
2) DHT11 Sensor
3) Breadboard
4) Wires

Software requirements

1) **TinkerCad :** Tinkercad is used for designing and simulating circuits virtually.
2) **Arduino IDE:** Arduino IDE is used for writing, compiling, and uploading code to Arduino microcontroller boards.

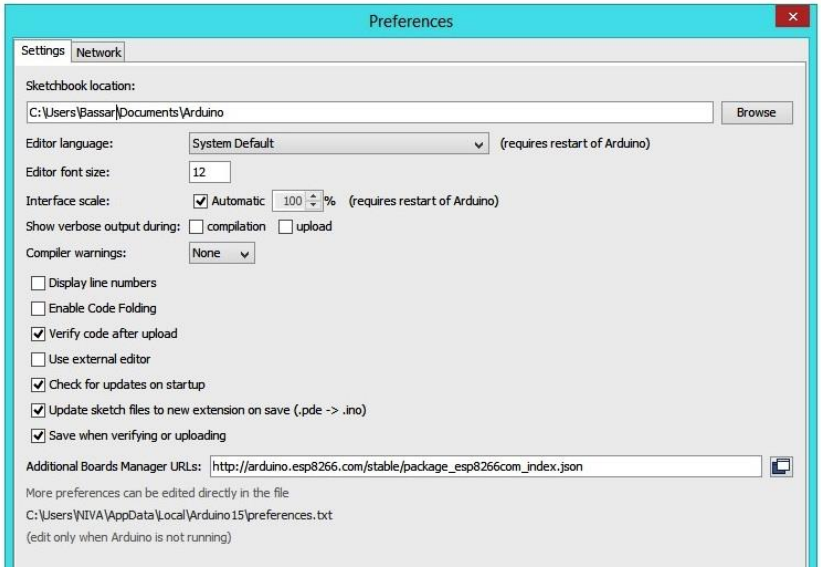
3. Circuit Diagram(TinkerCad):



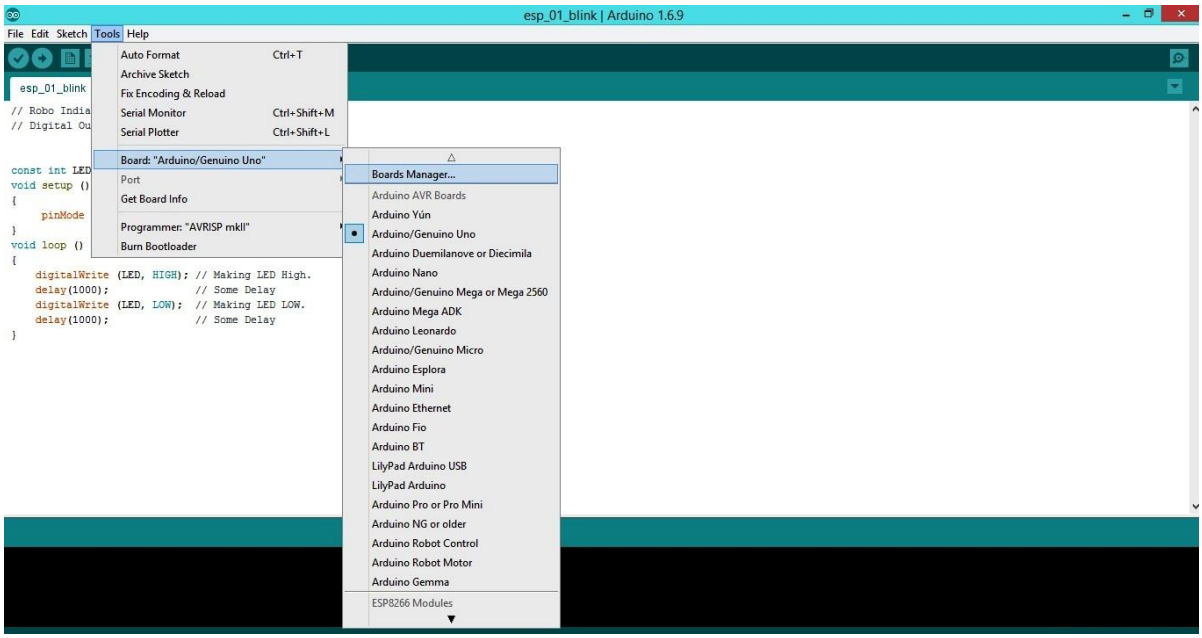
4. Steps to run Node MCU in Arudio IDE:

Installing the NodeMCU Support for the Arduino

1. First open the Arduino IDE
2. Go to files and click on the preference in the Arduino IDE



3. Paste below URL in the Additional boards Manager
   http://arduino.esp8266.com/stable/package_esp8266com_index.json
4. click OK, It will close the preference Tab.
5. Now, Go to Tools and board, and then select board Manager



6. Navigate to ESP8266 by ESP8266 community and install the software.

7. Once all the above process is completed we are ready to program our NodeMCU with Arduino IDE.

5. Coding:

```
#include <dht.h>

dht DHT;

#define DHT11_PIN 2
void setup(){

Serial.begin(9600);
}
void loop(){
  int chk = DHT.read11(DHT11_PIN);
  Serial.print("Temperature = ");
  Serial.println(DHT.temperature);
  Serial.print("Humidity = ");
  Serial.println(DHT.humidity);
  delay(1000);
```

Output:

```
Humidity = 12.00
Temperature = 27.00
Humidity = 12.00
Temperature = 27.00
Humidity = 12.00
Temperature = 27.00
Humidity = 12.00
Temperature = 27.00
Humidity = 12.00
Temperature = 27.00
```

5. Learning outcomes (What I have learnt):

1. Understanding how Node MCU work.
2. How to send code to Node MCU.
3. How to interface DHT11 Sensor in Node MCU.