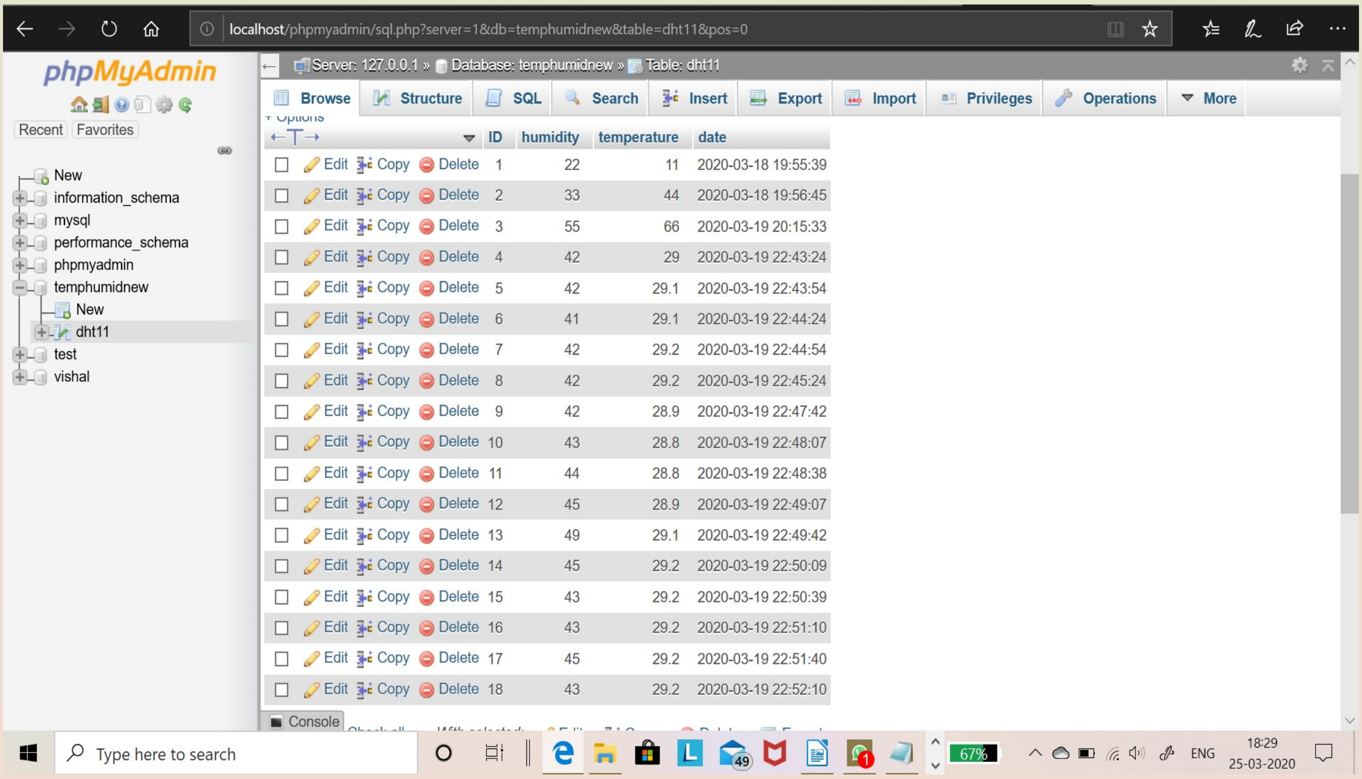
NODEMCU Sending temperature and humidity values to local server(PHPMYADMIN)



				ID	humidity	temperature	date
□	Edit	Copy	Delete	1	22	11	2020-03-18 19:55:39
□	Edit	Copy	Delete	2	33	44	2020-03-18 19:56:45
□	Edit	Copy	Delete	3	55	66	2020-03-19 20:15:33
□	Edit	Copy	Delete	4	42	29	2020-03-19 22:43:24
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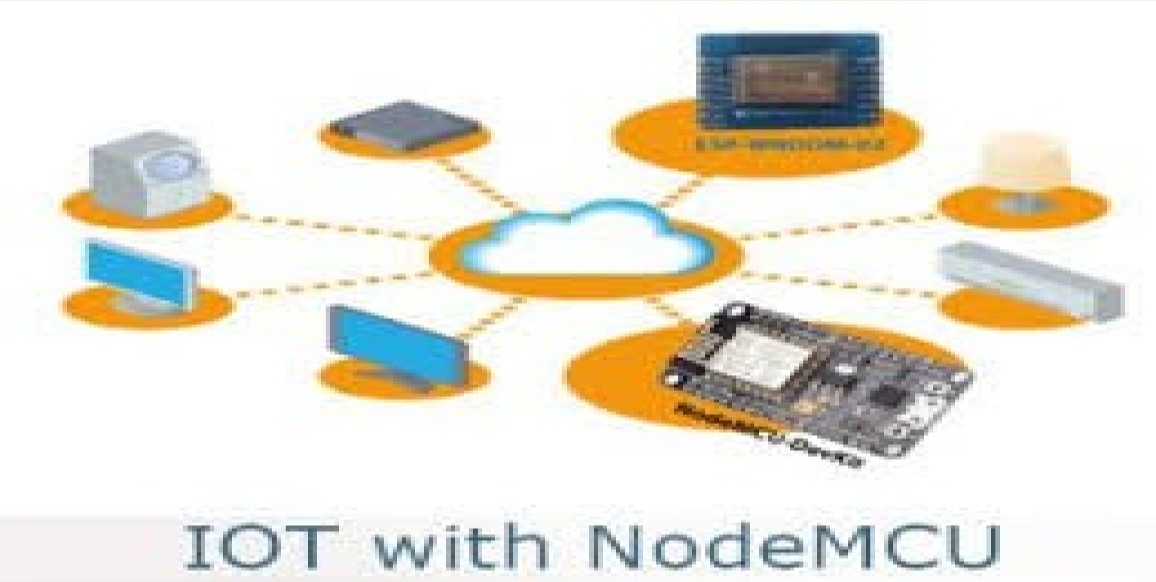
□	Edit	Copy	Delete	15	43	29.2	2020-03-19 22:50:39
□	Edit	Copy	Delete	16	43	29.2	2020-03-19 22:51:10
□	Edit	Copy	Delete	17	45	29.2	2020-03-19 22:51:40
□	Edit	Copy	Delete	18	43	29.2	2020-03-19 22:52:10

ABOUT THIS PROJECT

- in this project we are sending the values from DHT11 sensor(temperature and humidity) to PHPMYADMIN database.
- We utilize NODEMCU – ESP8266 as it comes with an on board Wi-Fi system and can be coded using ARDUINO IDE.
- This project serves as a base for IoT innovations and understanding data server systems.



Components required:

1. ESP8366 (NodeMCU):

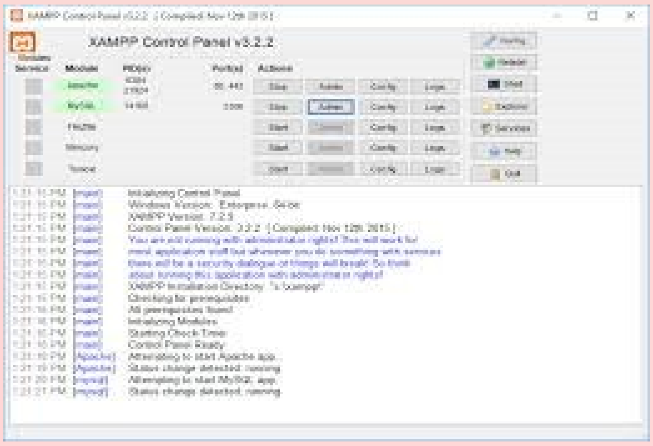
   NodeMCU is an open-source firmware and development kit that helps you to prototype or build IoT product. It includes firmware which runs on the **ESP8266** Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module. NodeMCU utilises ARDUINO IDE as source code program.

2. DHT11

   The **DHT11** is a basic, ultra low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and spits out a digital signal on the data pin (no analog input pins needed). Its fairly simple to use, but requires careful timing to grab data.

3. XAMPP (PhpMyAdmin Server)

   XAMPP is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.

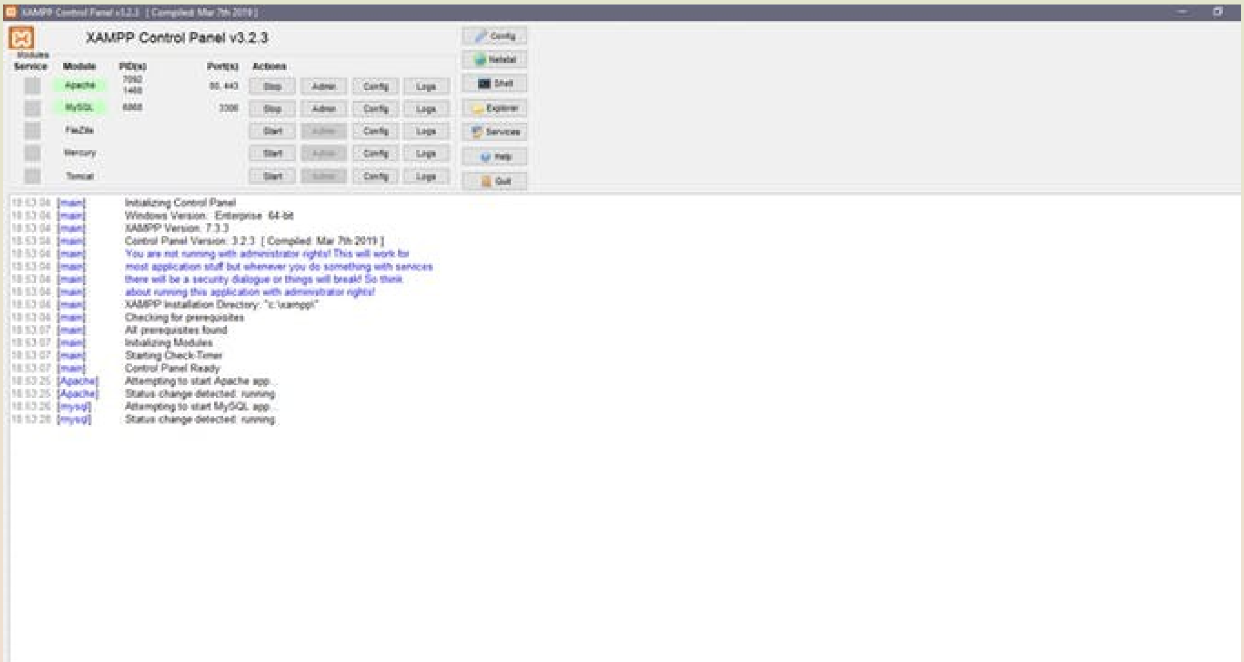


```
[illegible] PM  [main]     Initializing Control Panel
[illegible] PM  [main]     Windows Version: Enterprise 64-bit
[illegible] PM  [main]     XAMPP Version: 7.2.5
[illegible] PM  [main]     Control Panel Version: 3.2.2  [ Compiled: Nov 12th 2015 ]
[illegible] PM  [main]     You are not running with administrator rights! This will work for
[illegible] PM  [main]     most application stuff but whenever you do something with services
[illegible] PM  [main]     there will be a security dialogue or things will break! So think
[illegible] PM  [main]     about running this application with administrator rights!
[illegible] PM  [main]     XAMPP Installation Directory: "c:\xampp\"
[illegible] PM  [main]     Checking for prerequisites
[illegible] PM  [main]     All prerequisites found
[illegible] PM  [main]     Initializing Modules
[illegible] PM  [main]     Starting Check-Timer
[illegible] PM  [main]     Control Panel Ready
[illegible] PM  [Apache]   Attempting to start Apache app...
[illegible] PM  [Apache]   Status change detected: running
[illegible] PM  [mysql]    Attempting to start MySQL app...
[illegible] PM  [mysql]    Status change detected: running
```

Procedure

1. install XAMPP

   Here we are using XAMPP server it can be used both in windows and Linux, but my suggestion is that if you are in Ubuntu(Any Linux platform) then go with LAMP. Now since we are in windows so we have preferred XAMPP server. So you can download XAMPP server from this link.



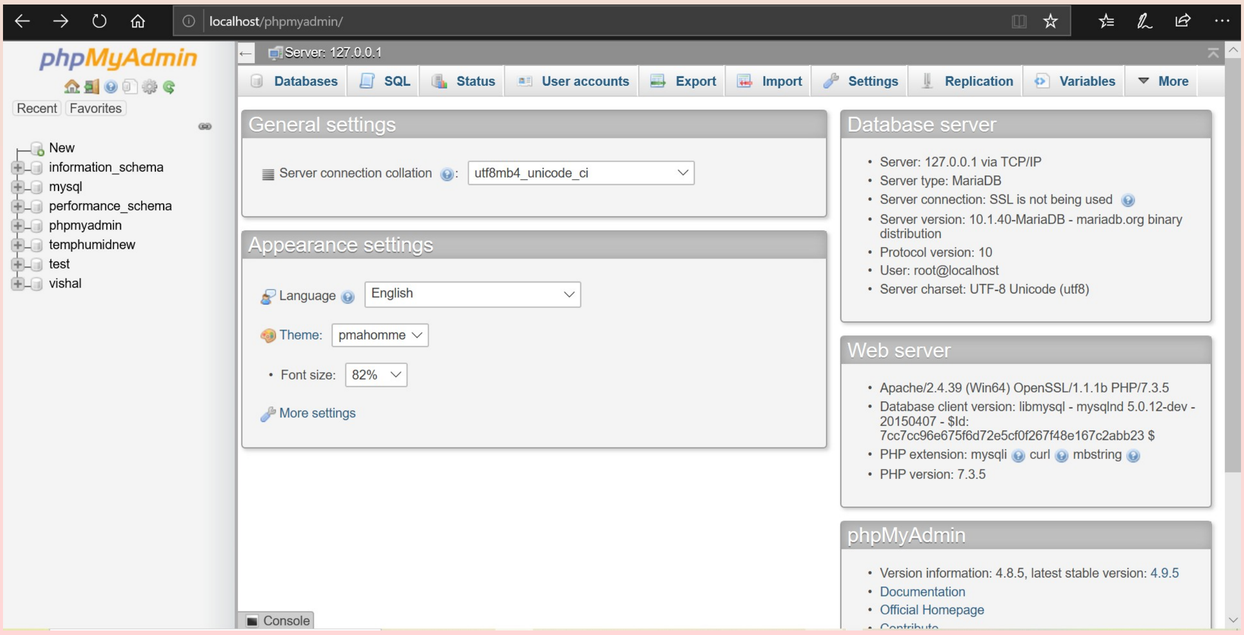
XAMPP Control Panel v3.2.3 [Compiled: Mar 7th 2019]
XAMPP Control Panel v3.2.3
Config
Netstat
Shell
Explorer
Services
Help
Quit

```
Modules
Service  Module     PID(s)  Port(s)   Actions
         Apache     7092    80, 443   Stop   Admin  Config  Logs
                    1468
         MySQL      6068    3306      Stop   Admin  Config  Logs
         FileZilla                    Start  Admin  Config  Logs
         Mercury                      Start  Admin  Config  Logs
         Tomcat                       Start  Admin  Config  Logs
```

```
18:53:04  [main]     Initializing Control Panel
18:53:04  [main]     Windows Version:  Enterprise  64-bit
18:53:04  [main]     XAMPP Version: 7.3.3
18:53:04  [main]     Control Panel Version: 3.2.3  [ Compiled: Mar 7th 2019 ]
18:53:04  [main]     You are not running with administrator rights! This will work for
18:53:04  [main]     most application stuff but whenever you do something with services
18:53:04  [main]     there will be a security dialogue or things will break! So think
18:53:04  [main]     about running this application with administrator rights!
18:53:04  [main]     XAMPP Installation Directory: "c:\xampp\"
18:53:04  [main]     Checking for prerequisites
18:53:07  [main]     All prerequisites found
18:53:07  [main]     Initializing Modules
18:53:07  [main]     Starting Check-Timer
18:53:07  [main]     Control Panel Ready
18:53:25  [Apache]   Attempting to start Apache app...
18:53:25  [Apache]   Status change detected: running
18:53:26  [mysql]    Attempting to start MySQL app...
18:53:26  [mysql]    Status change detected: running
```

2. Start Apache and MySQL on XAMPP control panel.

3. Type - http://localhost/phpmyadmin/ in your local browser . If your XAMPP is installed properly then this should take you to the phpmyadmin database home screen.



- New
- information_schema
- mysql
- performance_schema
- phpmyadmin
- temphumidnew
- test
- vishal

General settings

Server connection collation: utf8mb4_unicode_ci

Appearance settings

Language: English

Theme: pmahomme

- Font size: 82%

More settings

Database server

- Server: 127.0.0.1 via TCP/IP
- Server type: MariaDB
- Server connection: SSL is not being used
- Server version: 10.1.40-MariaDB - mariadb.org binary distribution
- Protocol version: 10
- User: root@localhost
- Server charset: UTF-8 Unicode (utf8)

Web server

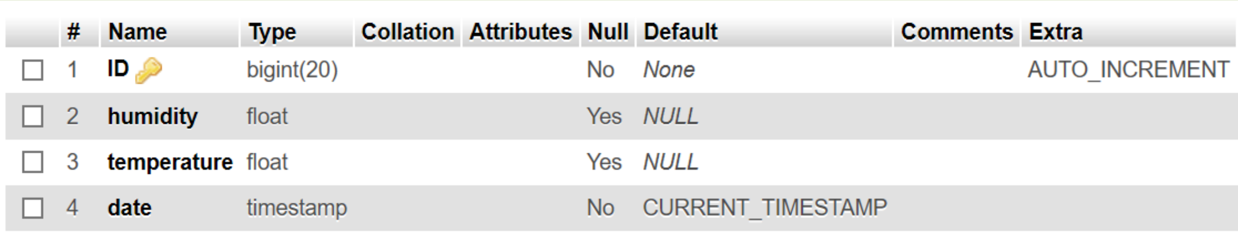
- Apache/2.4.39 (Win64) OpenSSL/1.1.1b PHP/7.3.5
- Database client version: libmysql - mysqlnd 5.0.12-dev - 20150407 - $Id: 7cc7cc96e675f6d72e5cf0f267f48e167c2abb23 $
- PHP extension: mysqli curl mbstring
- PHP version: 7.3.5

phpMyAdmin

- Version information: 4.8.5, latest stable version: 4.9.5
- Documentation
- Official Homepage
- Contribute

4. Create a new database with name temphumidnew and create a new table with name dht11.

5. Create table dht11 with the following attributes:



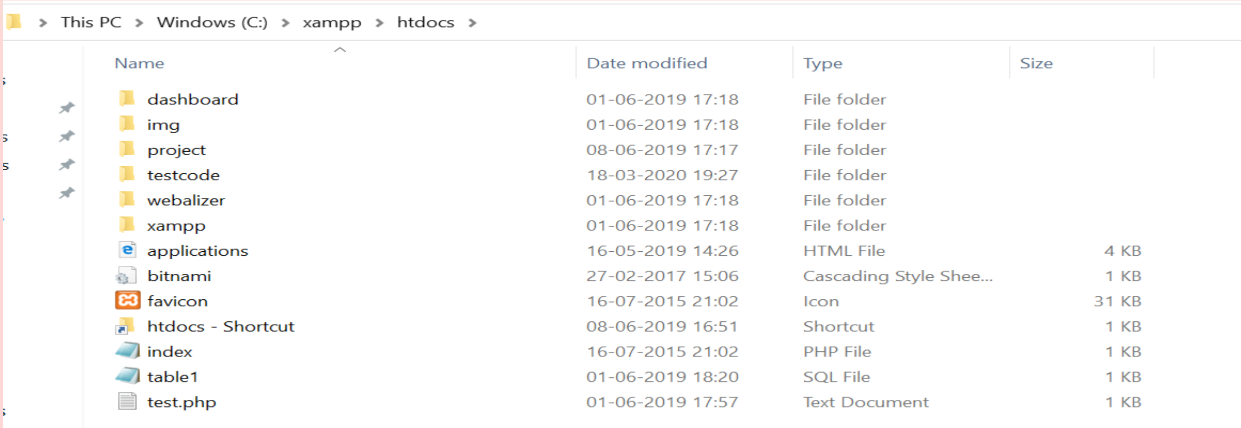
	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
□	1	**ID** 🔑	bigint(20)			No	*None*		AUTO_INCREMENT
□	2	**humidity**	float			Yes	*NULL*		
□	3	**temperature**	float			Yes	*NULL*		
□	4	**date**	timestamp			No	CURRENT_TIMESTAMP		

6. After creation of the table the database is ready for uploading the values.

7. now create a PHP code <dht.php> to push the data to the database using HTML commands:

```
<?php
class dht11
{
 public $link='';
 function __construct($temperature, $humidity)
{
  $this->connect();
  $this->storeInDB($temperature, $humidity);
 }
 function connect(){
  $this->link = mysqli_connect('localhost','root','') or die('Cannot connect to the DB');
  mysqli_select_db($this->link,'temphumidnew') or die('Cannot select the DB');
 }
 function storeInDB($temperature, $humidity){
  $query = "insert into dht11 set humidity='".$humidity."', temperature='".$temperature."'";
  $result = mysqli_query($this->link,$query) or die('Errant query:  '.$query);
 }
}
if($_GET['temperature'] != '' and  $_GET['humidity'] != ''){
 $dht11=new dht11($_GET['temperature'],$_GET['humidity']);
}
?>
```

8. place the php code in this path <C:\xampp\htdocs\testcode> creating a new folder <testcode>.



Name	Date modified	Type	Size
dashboard	01-06-2019 17:18	File folder	
img	01-06-2019 17:18	File folder	
project	08-06-2019 17:17	File folder	
testcode	18-03-2020 19:27	File folder	
webalizer	01-06-2019 17:18	File folder	
xampp	01-06-2019 17:18	File folder	
applications	16-05-2019 14:26	HTML File	4 KB
bitnami	27-02-2017 15:06	Cascading Style Shee...	1 KB
favicon	16-07-2015 21:02	Icon	31 KB
htdocs - Shortcut	08-06-2019 16:51	Shortcut	1 KB
index	16-07-2015 21:02	PHP File	1 KB
table1	01-06-2019 18:20	SQL File	1 KB
test.php	01-06-2019 17:57	Text Document	1 KB

9. now to check wether the code is working or not we can manually push the values into the database using HTML commands.

   e.g.: <http://localhost/testcode/dht.php?humidity=11&temperature=22>

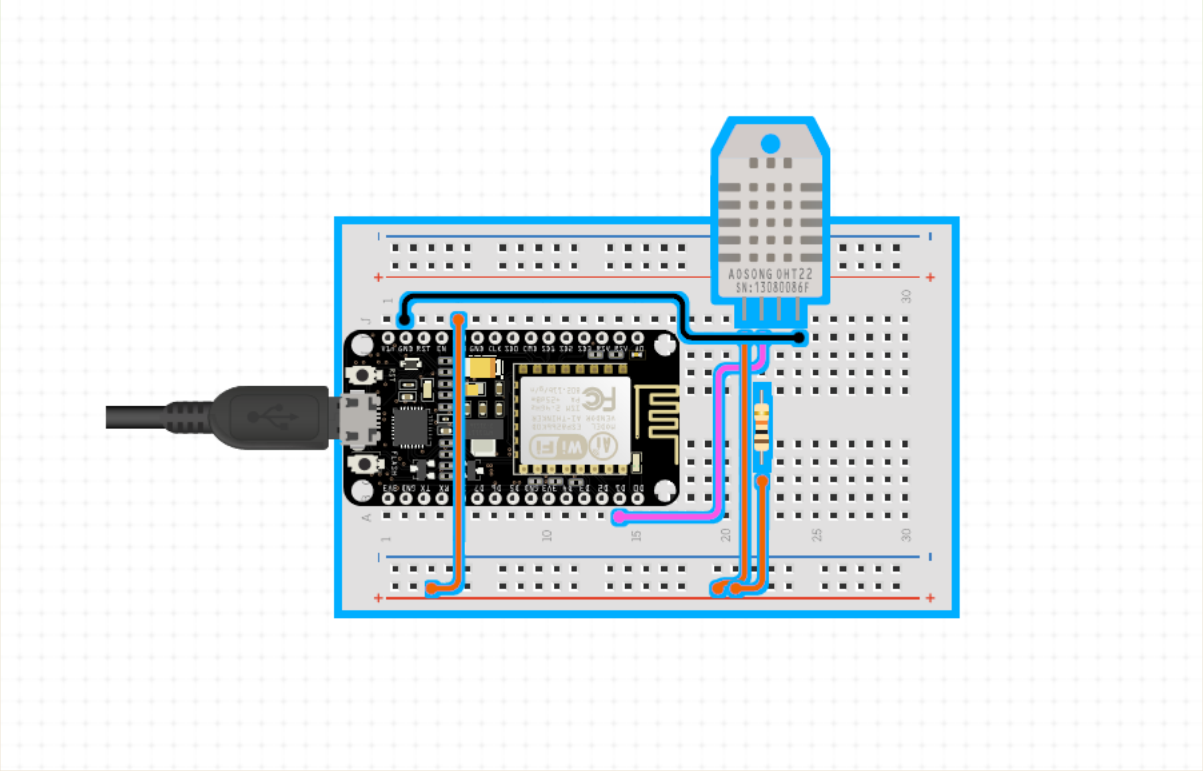
   <http://localhost/testcode/dht.php?humidity=33&temperature=44>

10. Now check weather these values reflect in your database by clicking refresh, if yes then we are ready to go with NODEMCU.

11. Dump the following code into NodeMCU:

```
/* This arduino code is sending data to mysql server every 30 seconds.
Created By vishal singh*/
#include "DHT.h"
#include <ESP8266WiFi.h>
#include <WiFiClient.h>
#include <ESP8266WebServer.h>
#include <ESP8266mDNS.h>
#include <SPI.h>
#include <MFRC522.h>
#define DHTPIN D2
#define DHTTYPE DHT11
DHT dht(DHTPIN,DHTTYPE);
float humidityData;
float temperatureData;
const char* ssid = "SSID";
const char* password = " wifi password";
//WiFiClient client;
char server[] = "local IP";
WiFiClient client;
void setup(){
 Serial.begin(115200);
  delay(10);
  dht.begin();
  // Connect to WiFi network
  Serial.println();
  Serial.println();
  Serial.print("Connecting to ");
  Serial.println(ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println("");
  Serial.println("WiFi connected");
  // Start the server
 // server.begin();
  Serial.println("Server started");
  Serial.print(WiFi.localIP());
  delay(1000);
  Serial.println("connecting...");
 }
void loop(){
  humidityData = dht.readHumidity();
  temperatureData = dht.readTemperature();
  Sending_To_phpmyadmindatabase();
  delay(30000); // interval
 }
 void Sending_To_phpmyadmindatabase()   //CONNECTING WITH MYSQL{
   if (client.connect(server,80)){
    Serial.println("connected");
    // Make a HTTP request:
    Serial.print("POST /testcode/dht.php?humidity=");
    client.print("POST /testcode/dht.php?humidity=");
    Serial.println(humidityData);
    client.print(humidityData);
    client.print("&temperature=");
    Serial.println("&temperature=");
    client.print(temperatureData);
    Serial.println(temperatureData);
    client.print(" ");      //SPACE BEFORE HTTP/1.1
    client.print("HTTP/1.1");
    client.println();
    client.println("Host: local IP");
    client.println("Connection: close");
    client.println();
  }
  else {
    // if you didn't get a connection to the server:
    Serial.println("connection failed");
 }
 }
```

Circuit diagram:



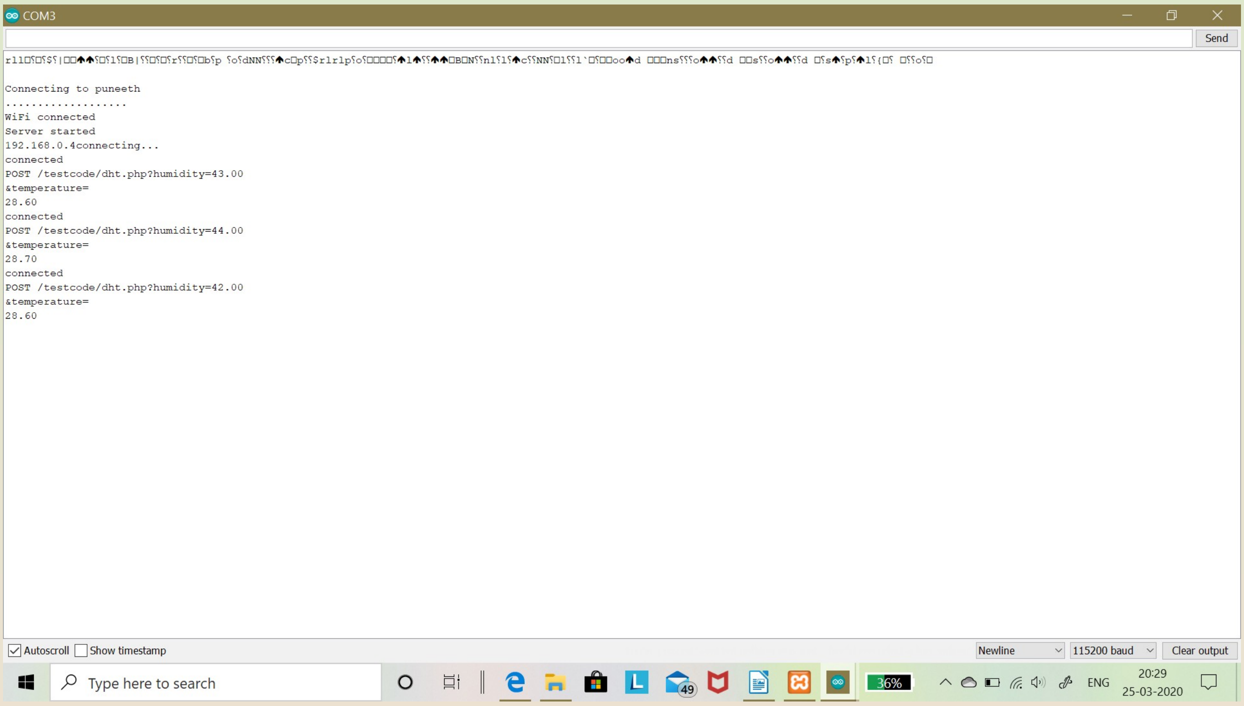
connections:

NodeMCU	DHT11
D2 GND 3V3	Data GND VCC

Values Input Method:

1. upload the code into NodeMCU. Power NodeMCU using USB port form your PC this is required so as to serial monitor the values, once the code is working we can shift to separate power system.
2. Open the serial monitor in arduino IDE and press the reset button on NodeMCU.
3. We will start getting the pairing request to the given Wi-Fi , soon it should pair to the given Wi-Fi.
4. Now the connection to the local host server should start and be established.

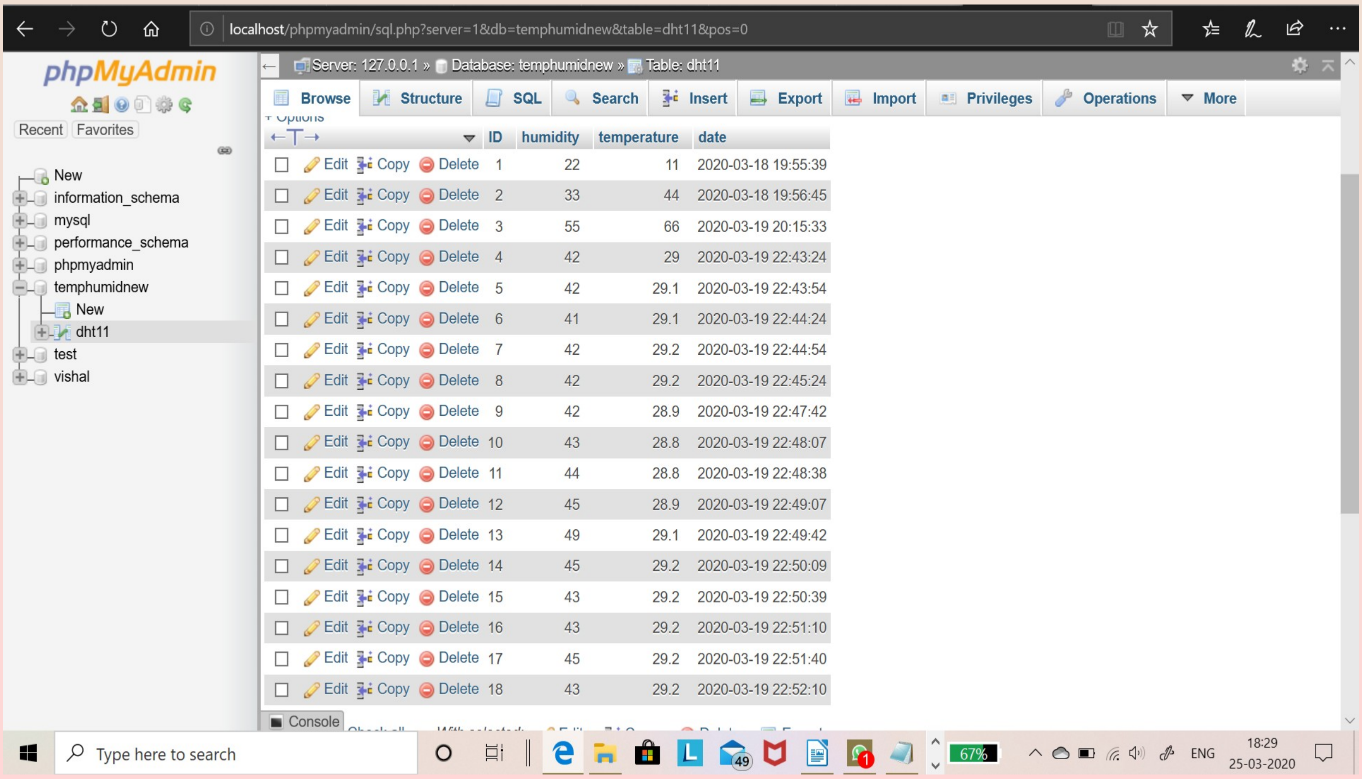
5. finally the values being pushed will be displayed in the serial monitor window this implies we are receiving values to the database.



```
rl1□ʕ□ʕ$ʕ|□□⬆⬆ʕ□ʕlʕ□B|ʕʕ□ʕ□ʕrʕʕ□ʕ□bʕp ʕoʕdNNʕʕʕ⬆c□pʕʕ$rlrlpʕoʕ□□□□ʕ⬆l⬆ʕʕ⬆⬆□B□Nʕʕnlʕlʕ⬆cʕʕNNʕ□lʕʕl`□ʕ□□oo⬆d □□□nsʕʕʕo⬆⬆ʕʕd □□sʕʕo⬆⬆ʕʕd □ʕs⬆ʕpʕ⬆lʕ{□ʕ □ʕʕoʕ□

Connecting to puneeth
...................
WiFi connected
Server started
192.168.0.4connecting...
connected
POST /testcode/dht.php?humidity=43.00
&temperature=
28.60
connected
POST /testcode/dht.php?humidity=44.00
&temperature=
28.70
connected
POST /testcode/dht.php?humidity=42.00
&temperature=
28.60
```

6. Now go on to the phpmyadmin page and click refresh, this should display the values being pushed (note that according to the code the values are pushed every 30 seconds).



localhost/phpmyadmin/sql.php?server=1&db=temphumidnew&table=dht11&pos=0

Server: 127.0.0.1 » Database: temphumidnew » Table: dht11

				ID	humidity	temperature	date
□	Edit	Copy	Delete	1	22	11	2020-03-18 19:55:39
□	Edit	Copy	Delete	2	33	44	2020-03-18 19:56:45
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THANK YOU