Accessing a Database Using NodeMcu

Aim: We are going to see how to access a database created on a local server using NodeMcu.

Hardware :

- NodeMcu

Software:

- Arduino IDE: This Integrated Development Environment is used to write and upload the code on Arduino compatible boards but can also be used to program a NodeMCU after installing a driver and NodeMCU board in the IDE.
- Appache XAMPP: XAMPP is a free and open source platform web server solution stack package developed by Apache Friends. XAMPP will help us to create a local server and a database.

SETTING UP A LOCAL SERVER & CREATING A DATABASE:

- *STEP 1:*

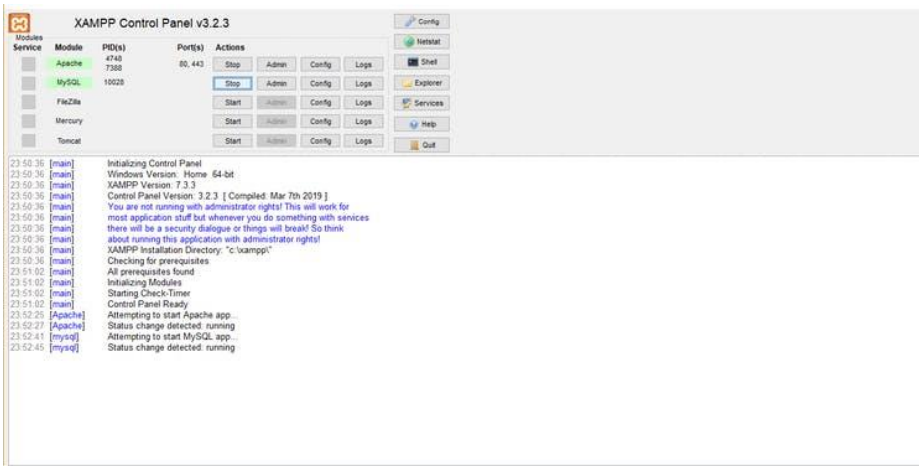

Figure 1

Open up the XAMPP. Under the Action column click on the first 'start ' button and wait for 'Apache' to turn green. Next, click on the second 'start' button and wait for 'MySQL' to turn green. After it had turned green click on the second 'Admin' button (under admin column) and a local host page will open on your default browser.

- *STEP 2:*

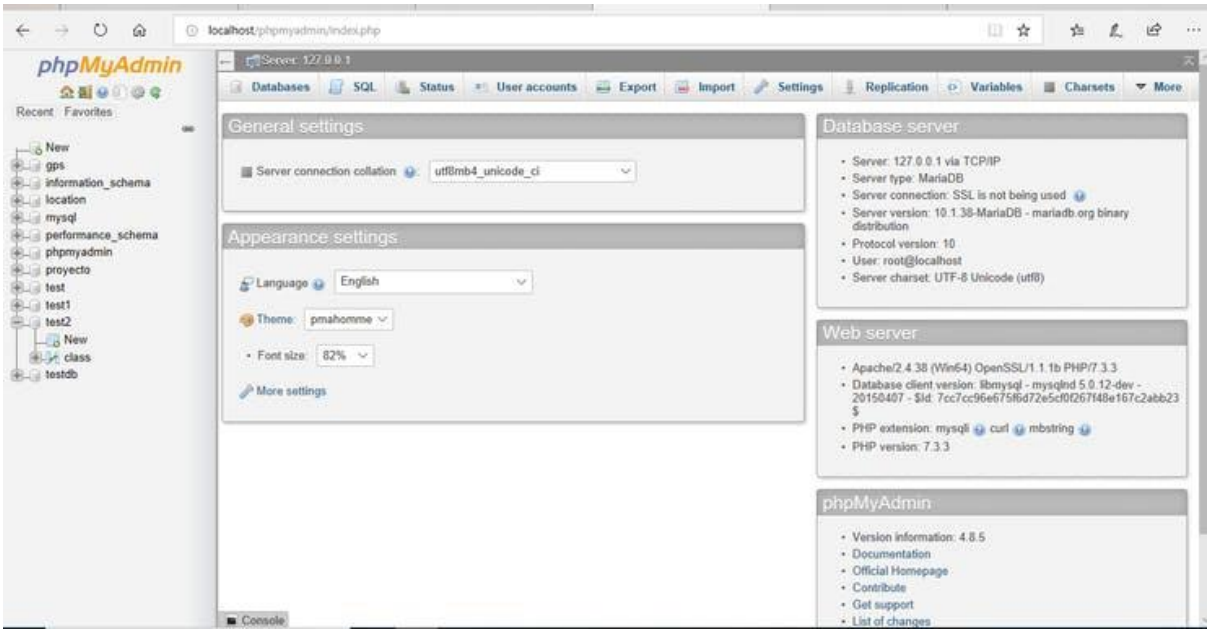

Figure 2

Click on 'New' and give a name to your database. Next, give a name to your table and select the number of columns. In my case I named my database and table 'test2' and 'class' respectively, having 4 columns.

- *STEP 3:*

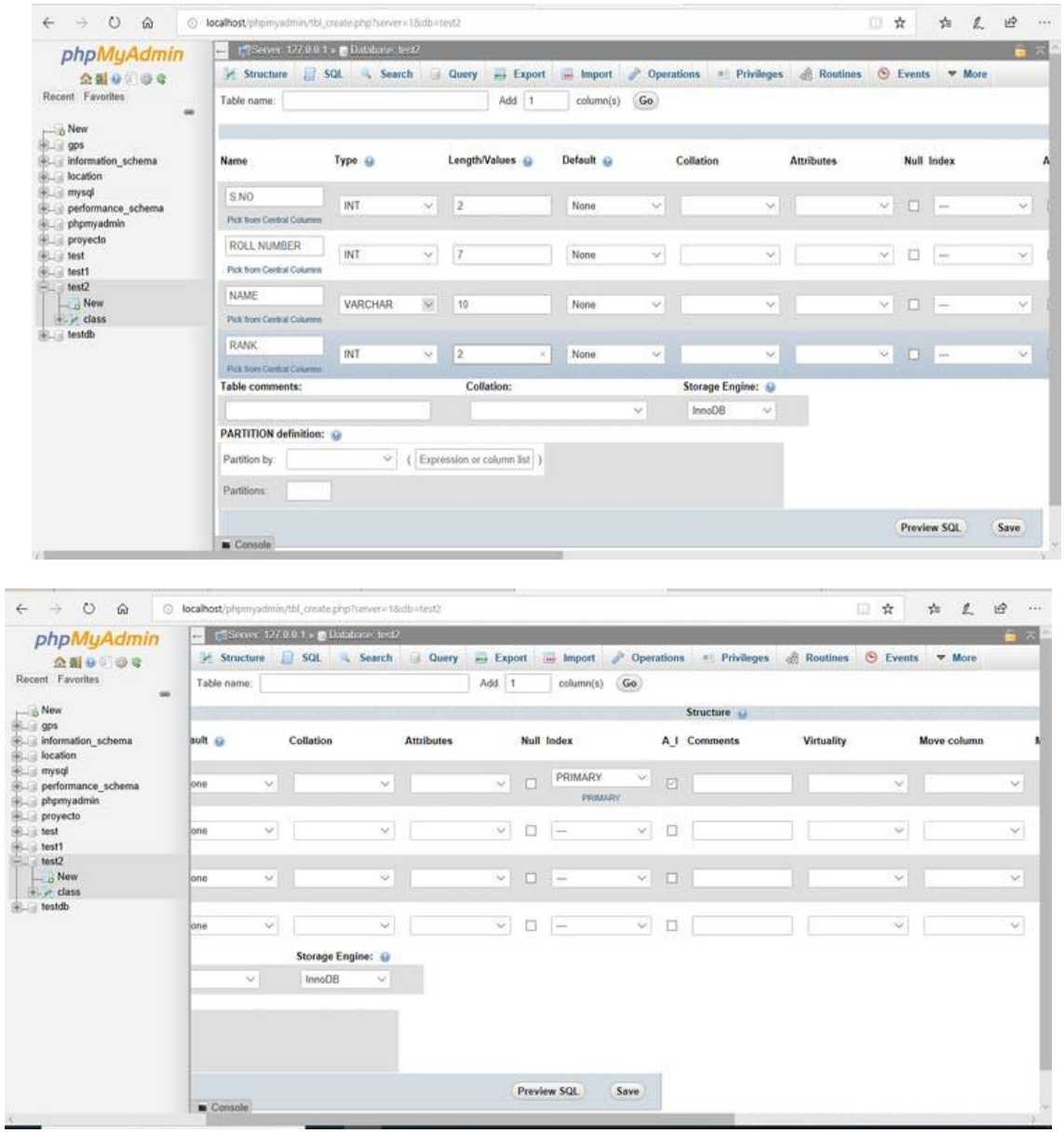

Figure 3

Give name to the attributes, like S.NO, ROLL NUMBER, RANK, NAME and check A.I(auto increment) box. After finishing up click on 'Save'.

Your table has been created. Now we need to enter data in it.

- *STEP 4:*

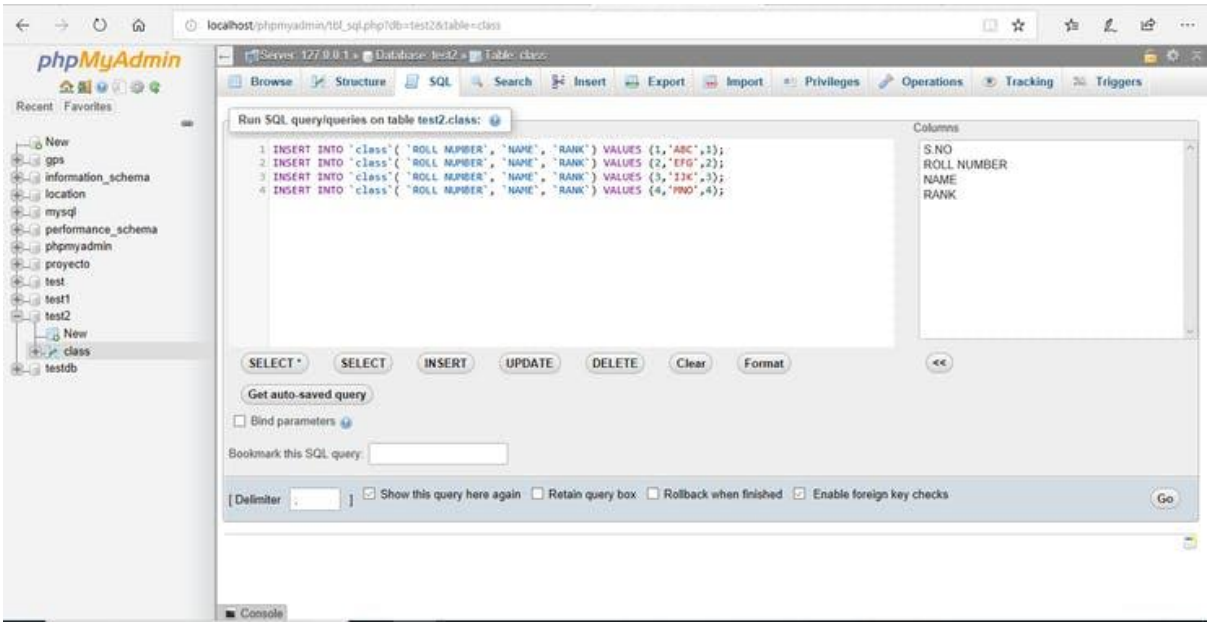

Figure 4

Click on 'SQL' and write the commands to insert data into the table. Click on 'Go'.

The username of the database by default is 'root' and password is "", didn't set them up.

Our database is ready and local server has been setup . All that remains is writing a PHP code and a code for NODEMCU. Both of these are in CODE section.

Save the php code in 'htdocs' folder:

- The PHP code must be saved with extension.php in htdocs folder (C->xampp->htdocs).

Code:

- *NODE MCU:*

```
#include<ESP8266WiFi.h>
const char* ssid="";//enter the name of your wifi
const char* password="";//wifi password
const char* host="192.168.43.11";//LOCAL IPv4 ADDRESS...ON CMD WINDOW TYPE ipconfig/all
const uint16_t port=80;//PORT OF THE LOCAL SERVER
int rank=4;//THE RANK WHOSE DATA YOU WANT TO FETCH
void setup() {

 Serial.begin(115200);
 Serial.println("STARTING CONNECTION TO WIFI");
 WiFi.mode(WIFI_STA);
 WiFi.begin(ssid,password);
 while(WiFi.status()!=WL_CONNECTED)//waiting for device to be connected to the network
 {Serial.print(".");
 delay(500);
}
Serial.println("CONNECTED TO WIFI");
Serial.print("IP:");
Serial.println(WiFi.localIP());
}

void loop(){
  String l="";
  String lengthh="";
  Serial.print("Connecting to: ");
  Serial.print(host);
  Serial.print(":");
  Serial.println(port);
  WiFiClient client;
  if(!client.connect(host,port))//IF THIS OCCURS MAKE THEN FIREWALL IS STOPPING THE CONNECTION OR THE IP ADDRESS/PORT OF THE SERVER IS INCORRECT.
  {Serial.println("CONNECTION FAILED");
  delay(4000);
  return;
  }
  else{
   Serial.println("CONNECTED TO THE SERVER");
   client.print(String("GET ")+"/test2.php?RANK="+rank+" HTTP/1.1\r\n"+"Host:"+host+"\r\n"+"Connection:close\r\n\r\n");
    unsigned long timeout=millis();


```

```
while(client.available()==0)
    {
      //close the connection if it has been connected for more than 5 seconds
      if(millis()-timeout>5000){
      Serial.println(">>> Client Timeout !");
      client.stop();
      delay(5000);
      return;
      }}
       Serial.println("receiving from remote server");

//Start reading the response from the server
  while (client.available()) {
    char ch = static_cast<char>(client.read());
  Serial.print(ch);
  }
  // Close the connection
  Serial.println();
  Serial.println("closing connection");
  client.stop();
  delay(6000);
  }
  }
```

- *PHP CODE:*

```
<?php
$server="localhost";
$username="root";//THE DEFAULT USERNAME OF THE DATABASE
$password="";
$dbname="test2";
$con=mysqli_connect($server,$username,$password,$dbname) or die("unable to connect");
$rank=$_GET["RANK"];
$sql="SELECT NAME from class where RANK=$rank";//WE ARE TRYING TO GET THE NAME OF THE STUDENT BY ENTERING THE RANK
$result=mysqli_query($con,$sql);
if ($result->num_rows > 0) {
    while($row = $result->fetch_assoc()) {
      echo  $row["NAME"];
}
}
?>
```