

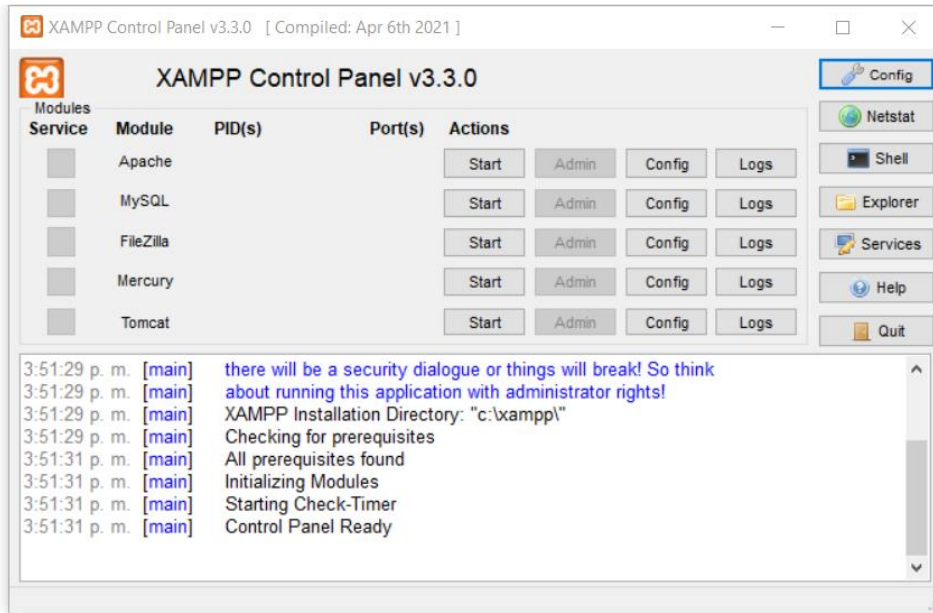
Taller 7. Servidor IoT-MySQL

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Facultad de Ingeniería, Universidad Autónoma de Occidente

Cali, Valle del Cauca

INSTALACIÓN DEL AMBIENTE DE TRABAJO:



Instalación de las librerías necesarias:

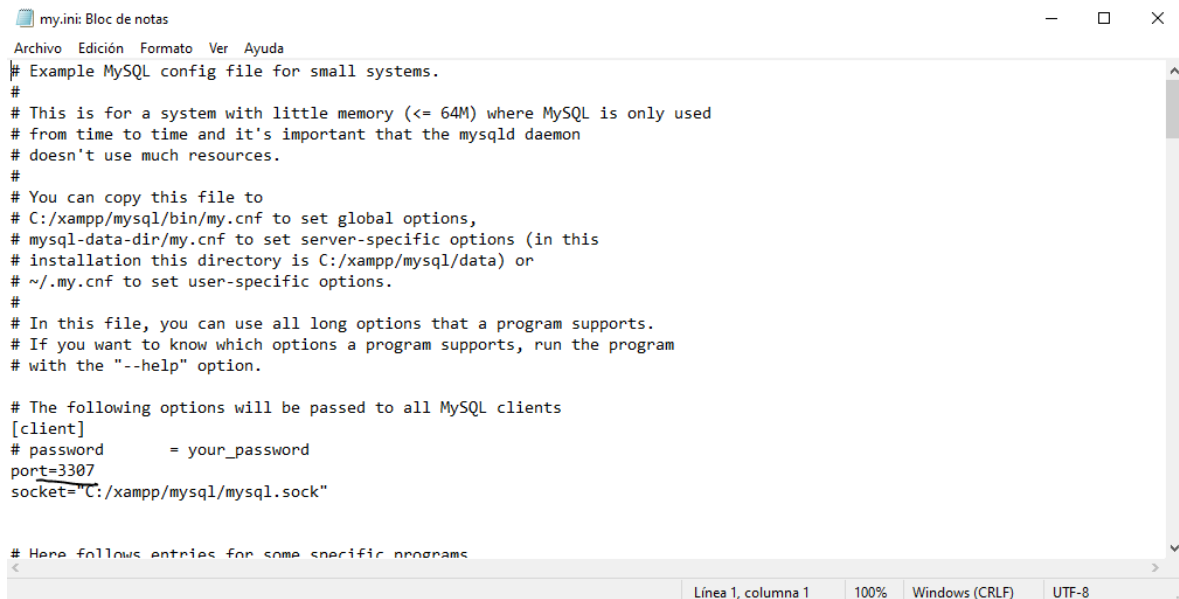
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  JUPYTER

Windows PowerShell
Copyright (C) Microsoft Corporation. Todos los derechos reservados.

Prueba la nueva tecnología PowerShell multiplataforma https://aka.ms/pscore6

PS C:\Users\User\Desktop\projects_arduino\taller_6> npm i mysql
```

Si hay un error de puesto cambiarlo , darle en config

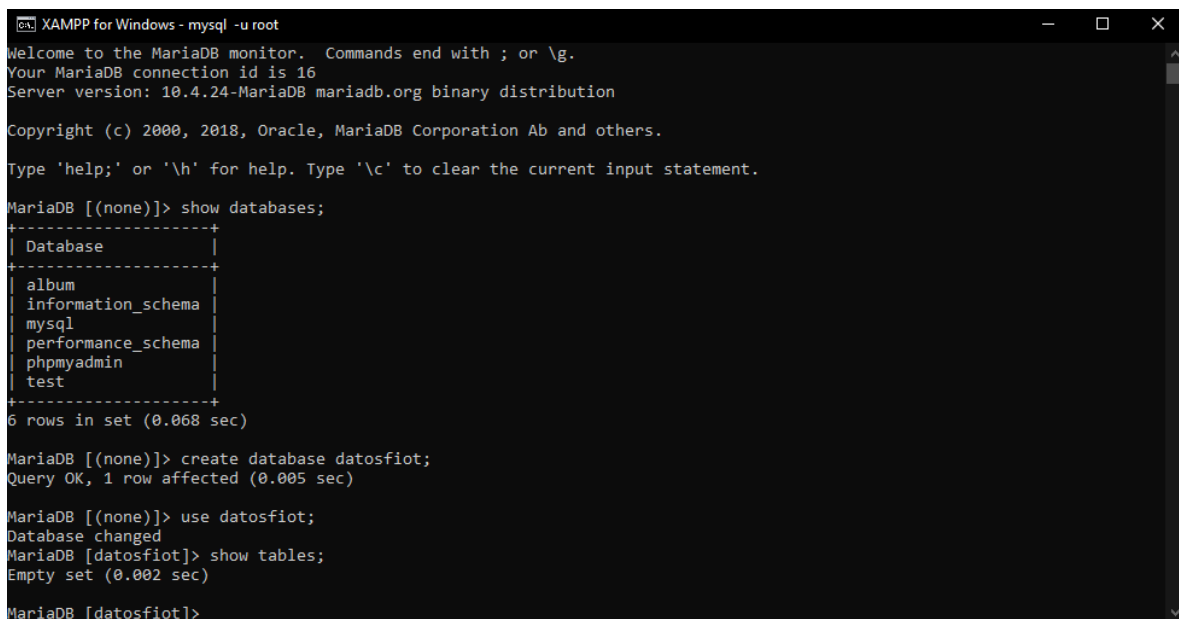


```
my.ini: Bloc de notas
Archivo Edición Formato Ver Ayuda
# Example MySQL config file for small systems.
#
# This is for a system with little memory (<= 64M) where MySQL is only used
# from time to time and it's important that the mysqld daemon
# doesn't use much resources.
#
# You can copy this file to
# C:/xampp/mysql/bin/my.cnf to set global options,
# mysql-data-dir/my.cnf to set server-specific options (in this
# installation this directory is C:/xampp/mysql/data) or
# ~/.my.cnf to set user-specific options.
#
# In this file, you can use all long options that a program supports.
# If you want to know which options a program supports, run the program
# with the "--help" option.

# The following options will be passed to all MySQL clients
[client]
# password          = your_password
port=3307
socket="C:/xampp/mysql/mysql.sock"

# Here follows entries for some specific programs
<  Línea 1, columna 1  100%  Windows (CRLF)  UTF-8
```

Conxion con mysql y creación de base de datos en mysql



```
XAMPP for Windows - mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 16
Server version: 10.4.24-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> show databases;
+-----+
| Database |
+-----+
| album    |
| information_schema |
| mysql    |
| performance_schema |
| phpmyadmin |
| test     |
+-----+
6 rows in set (0.068 sec)

MariaDB [(none)]> create database datosfiot;
Query OK, 1 row affected (0.005 sec)

MariaDB [(none)]> use datosfiot;
Database changed
MariaDB [datosfiot]> show tables;
Empty set (0.002 sec)

MariaDB [datosfiot]>
```

Creación de la tabla y de categorías

```

MariaDB [datosfiot]> create table datos (
  -> id int auto_increment,
  -> nodo int,
  -> temperatura float,
  -> humedad float,
  -> fecha varchar(25),
  -> primary key(id));
Query OK, 0 rows affected (0.075 sec)

MariaDB [datosfiot]> desc datos;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id    | int(11) | NO   | PRI | NULL    | auto_increment |
| nodo  | int(11) | YES  |     | NULL    |                |
| temperatura | float | YES  |     | NULL    |                |
| humedad | float | YES  |     | NULL    |                |
| fecha | varchar(25) | YES  |     | NULL    |                |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.036 sec)

MariaDB [datosfiot]>

```

Modificar en la base datosvalores

```

MariaDB [(none)]> use datosfiot;
Database changed
MariaDB [datosfiot]> insert into datos (id,nodo) values (null,1)
-> ;
Query OK, 1 row affected (0.008 sec)

MariaDB [datosfiot]> insert into datos values (null,1,23.5,55,"27/09/2022 4:35 p.m.");
Query OK, 1 row affected (0.007 sec)

MariaDB [datosfiot]> select * from datos
-> ;
+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | fecha |
+-----+-----+-----+-----+-----+
| 1 | 2 | 24.5 | 56 | 27/09/2022 4:31 p.m. |
| 2 | 1 | NULL | NULL | NULL |
| 3 | 1 | 23.5 | 55 | 27/09/2022 4:35 p.m. |
+-----+-----+-----+-----+-----+
3 rows in set (0.003 sec)

MariaDB [datosfiot]>

```

Para solo ver las columnas que se requieren visualizar

```

MariaDB [datosfiot]> select id, nodo from datos;
+-----+-----+
| id | nodo |
+-----+-----+
| 1 | 2 |
| 2 | 1 |
| 3 | 1 |
+-----+-----+
3 rows in set (0.000 sec)

```

Para filtrar elementos

```

MariaDB [datosfiot]> select * from datos where nodo=2;
+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | fecha |
+-----+-----+-----+-----+-----+
| 1 | 2 | 24.5 | 56 | 27/09/2022 4:31 p.m. |
+-----+-----+-----+-----+-----+
1 row in set (0.010 sec)

MariaDB [datosfiot]> select * from datos temperatura>24;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server version for the right syntax to use near '>24' at line 1
MariaDB [datosfiot]> select * from datos where temperatura>24;
+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | fecha |
+-----+-----+-----+-----+-----+
| 1 | 2 | 24.5 | 56 | 27/09/2022 4:31 p.m. |
+-----+-----+-----+-----+-----+
1 row in set (0.002 sec)

MariaDB [datosfiot]>

```

Ahora en el esp32

En la carpeta creada

Connection Details

Connection name

mosquitto

Connection color scheme

Hostname

tcp://

localhost

Port

1883

Client ID

lens_aD6VRgtZkzm7L42Sm6yXZZcGnJM

Generate a random ID

Session

☒ Clean Session

Automatic Connection

☒ Automatic Connection

Keep Alive

120

seconds

Credentials

Username

Enter username

Password

Enter password

Last-Will

Connection: mosquitto

Subscribe

topic 0 - at most once

Publish

topico1 0 - at most once ☐ Retained

Message

```
{
  "idnodo":1,
  "temperatura":23.6,
  "humedad":45,
  "timesatamp":"27/09/2022 4:55 p.m."
}
```

Subscriptions

```
PS C:\Users\User\Desktop\proyectos_arduino\taller_6> node .\src\indexmqtt2.js
{
  idnodo: 1,
  temperatura: 23.6,
  humedad: 45,
  timesatamp: '27/09/2022 4:55 p.m.'
}
Conexion correcta.
datos almacenados
[]
```

Ahora se visualiza el cambio en base de datos creada "datosfiot"

```
XAMPP for Windows - mysql -u root
+----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | fecha |
+----+-----+-----+-----+-----+
| 1 | 2 | 24.5 | 56 | 27/09/2022 4:31 p.m. |
| 2 | 1 | NULL | NULL | NULL |
| 3 | 1 | 23.5 | 55 | 27/09/2022 4:35 p.m. |
+----+-----+-----+-----+-----+
3 rows in set (0.002 sec)

MariaDB [datosfiot]> select * from datos;
+----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | fecha |
+----+-----+-----+-----+-----+
| 1 | 2 | 24.5 | 56 | 27/09/2022 4:31 p.m. |
| 2 | 1 | NULL | NULL | NULL |
| 3 | 1 | 23.5 | 55 | 27/09/2022 4:35 p.m. |
+----+-----+-----+-----+-----+
3 rows in set (0.001 sec)

MariaDB [datosfiot]> select * from datos;
+----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | fecha |
+----+-----+-----+-----+-----+
| 1 | 2 | 24.5 | 56 | 27/09/2022 4:31 p.m. |
| 2 | 1 | NULL | NULL | NULL |
| 3 | 1 | 23.5 | 55 | 27/09/2022 4:35 p.m. |
| 4 | 1 | 23.6 | 45 | NULL |
+----+-----+-----+-----+-----+
4 rows in set (0.001 sec)

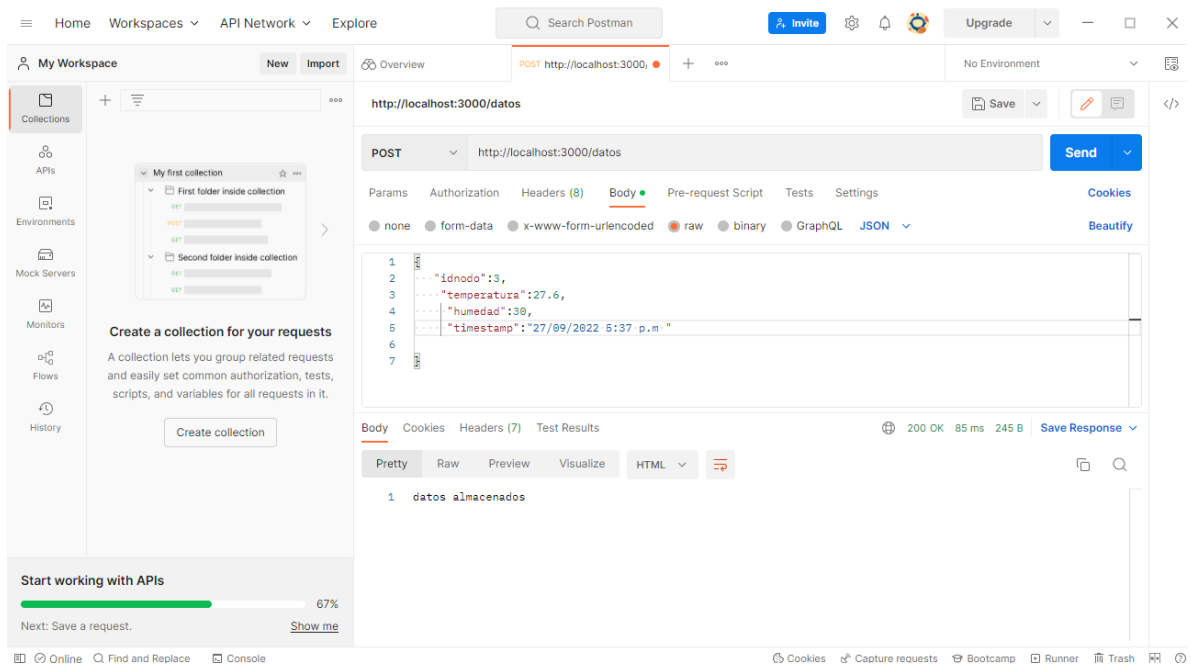
MariaDB [datosfiot]>
```

Con rest

```
JS indexmqtt2.js JS datos.js JS indexrest.js
taller_6 > src > rutas > JS datos.js > router.get("/datos") callback > connection.getConnection() callback > tempConn.query("SELECT * FROM datos") callback

23 //ejecución de la consulta
24 tempConn.query("SELECT * FROM datos", function (error, result) {
25   var resultado = result; //se almacena el resultado de la consulta en la variable resultado
26   if (error) {
27     throw error;
28     res.send("error en la ejecución del query");
29   } else {
30     tempConn.release(); //se libera la conexión
31     for (i = 0; i < resultado.length; i++) {
32       //se lee el resultado y se arma el json
33       json1 = {
34         "idnodo": resultado[i].nodo,
35         "temperatura": resultado[i].temperatura,
36         "humedad": resultado[i].humedad,
37         "fecha": resultado[i].fecha,
38       };
39       console.log(json1); //se muestra el json en la consola
40       //se guarda el json en el archivo
```

Usando postman



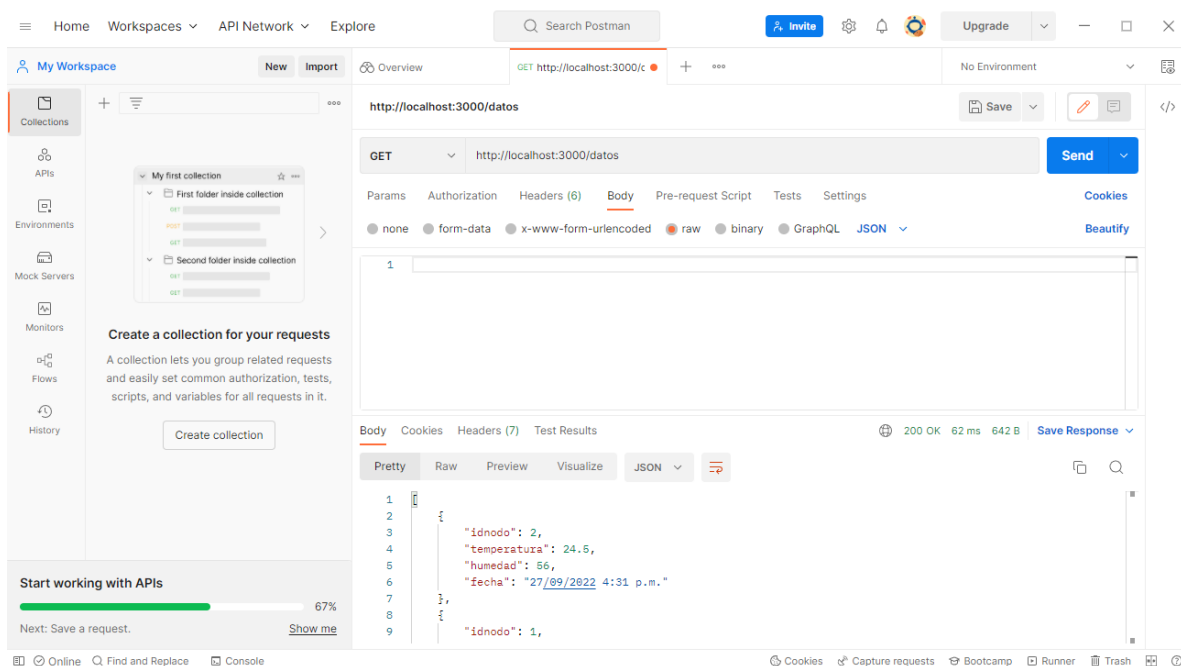
```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
Conexion correcta.
datos almacenados
PS C:\Users\User\Desktop\proyectos_arduino\taller_6> node .\src\indexrest.js
Servidor funcionando
{
  idnodo: 3,
  temperatura: 27.6,
  humedad: 30,
  timesatamp: '27/09/2022 5:37 p.m.'
}
Conexion correcta.
POST /datos 200 387.581 ms - 17
```

Ahora se visualiza en la basa de datos

```
MariaDB [datosfiot]> select * from datos;
+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | fecha |
+-----+-----+-----+-----+-----+
| 1 | 2 | 24.5 | 56 | 27/09/2022 4:31 p.m. |
| 2 | 1 | NULL | NULL | NULL |
| 3 | 1 | 23.5 | 55 | 27/09/2022 4:35 p.m. |
| 4 | 1 | 23.6 | 45 | NULL |
| 5 | 3 | 27.6 | 30 | NULL |
| 6 | 3 | 27.6 | 30 | 27/09/2022 5:37 p.m |
+-----+-----+-----+-----+-----+
6 rows in set (0.001 sec)

MariaDB [datosfiot]>
```

Ahora usando postman con GET



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
temperatura: 23.5,
humedad: 55,
fecha: '27/09/2022 4:35 p.m.'
}
{ idnodo: 1, temperatura: 23.6, humedad: 45, fecha: null }
{ idnodo: 3, temperatura: 27.6, humedad: 30, fecha: null }
{
  idnodo: 3,
  temperatura: 27.6,
  humedad: 30,
  fecha: '27/09/2022 5:37 p.m.'
}
GET /datos 200 40.532 ms - 405
```

PARA EL PROYECTO-----

```
C:\> XAMPP for Windows - mysql -u root

Setting environment for using XAMPP for Windows.
User@DESKTOP-JMGBVNR c:\xampp
# mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 16
Server version: 10.4.24-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database datosproyecto;
Query OK, 1 row affected (0.004 sec)

MariaDB [(none)]>
```



```
MariaDB [datosproyecto]> show tables;
Empty set (0.017 sec)
```

```
MariaDB [datosproyecto]> create table datos (
  -> id int auto_increment,
  -> nodo int,
  -> temperatura float,
  -> humedad float,
  -> ph int,
  -> fecha varchar(25),
  -> hora varchar(25),
  -> primary key(id));
```

Query OK, 0 rows affected (0.072 sec)

```
MariaDB [datosproyecto]> desc datos
-> ;
```

Field	Type	Null	Key	Default	Extra
id	int(11)	NO	PRI	NULL	auto_increment
nodo	int(11)	YES		NULL	
temperatura	float	YES		NULL	
humedad	float	YES		NULL	
ph	int(11)	YES		NULL	
fecha	varchar(25)	YES		NULL	
hora	varchar(25)	YES		NULL	

7 rows in set (0.030 sec)

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
```

```
{\"nodo\":2,\"temperatura\":26.20000076,\"humedad\":56,\"ph\":4,\"fecha\":\"2022-09-29\",\"hora\":\"11:50:00\"}  
Attempting MQTT connection...connected  
{\"nodo\":2,\"temperatura\":26.20000076,\"humedad\":55,\"ph\":4,\"fecha\":\"2022-09-29\",\"hora\":\"11:50:00\"}  
Attempting MQTT connection...connected  
{\"nodo\":2,\"temperatura\":26.20000076,\"humedad\":55,\"ph\":4,\"fecha\":\"2022-09-29\",\"hora\":\"11:50:00\"}  
Attempting MQTT connection...connected  
{\"nodo\":2,\"temperatura\":26.20000076,\"humedad\":55,\"ph\":4,\"fecha\":\"2022-09-29\",\"hora\":\"11:50:00\"}  
Attempting MQTT connection...connected  
{\"nodo\":2,\"temperatura\":26.20000076,\"humedad\":55,\"ph\":4,\"fecha\":\"2022-09-29\",\"hora\":\"11:50:00\"}  
Attempting MQTT connection...connected  
{\"nodo\":2,\"temperatura\":26.20000076,\"humedad\":55,\"ph\":4,\"fecha\":\"2022-09-29\",\"hora\":\"11:50:00\"}  
Attempting MQTT connection...connected
```

node
PlatformIO: Upload (esp32doit-devkit-v1) (t... ✓
PlatformIO: Monitor (esp32doit-devk... 🛑 🗑 🔄

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

JUPYTER

```
}
Conexion correcta.
datos almacenados
{
  nodo: 2,
  temperatura: 26.20000076,
  humedad: 56,
  ph: 4,
  fecha: '2022-09-29',
  hora: '11:50:00'
}
Conexion correcta.
datos almacenados
```

node

PlatformIO: Upload (esp32doit-devkit-v1) (t... ✓

PlatformIO: Monitor (esp32doit-devkit-v1) (t... ↻

```
XAMPP for Windows - mysql -u root
5 rows in set (0.001 sec)

MariaDB [datosproyecto]> select * from datos;
+----+-----+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | ph | fecha | hora |
+----+-----+-----+-----+-----+-----+-----+
| 1 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 2 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 3 | 2 | 26.2 | 56 | 9 | 2022-09-29 | 11:50:00 |
| 4 | 2 | NULL | NULL | 4 | 2022-09-29 | 11:50:00 |
| 5 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 6 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
+----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.001 sec)

MariaDB [datosproyecto]> select * from datos;
+----+-----+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | ph | fecha | hora |
+----+-----+-----+-----+-----+-----+-----+
| 1 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 2 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 3 | 2 | 26.2 | 56 | 9 | 2022-09-29 | 11:50:00 |
| 4 | 2 | NULL | NULL | 4 | 2022-09-29 | 11:50:00 |
| 5 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 6 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
+----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.001 sec)

MariaDB [datosproyecto]>
```

```
XAMPP for Windows - mysql -u root
6 rows in set (0.001 sec)

MariaDB [datosproyecto]> select * from datos;
+----+-----+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | ph | fecha | hora |
+----+-----+-----+-----+-----+-----+-----+
| 1 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 2 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 3 | 2 | 26.2 | 56 | 9 | 2022-09-29 | 11:50:00 |
| 4 | 2 | NULL | NULL | 4 | 2022-09-29 | 11:50:00 |
| 5 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 6 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 7 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 8 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 9 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 10 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 11 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 12 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 13 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 14 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 15 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 16 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 17 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 18 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 19 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 20 | 2 | 26.2 | 54 | 4 | 2022-09-29 | 11:50:00 |
+----+-----+-----+-----+-----+-----+-----+
20 rows in set (0.002 sec)

MariaDB [datosproyecto]>
```

Ahora con el esp32

Utilizando mqtt o mosquitto

```
C:\xampp>mysql -u root

Setting environment for using XAMPP for Windows.
User@DESKTOP-JMGBVNR c:\xampp
# mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 16
Server version: 10.4.24-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database datosproyecto;
Query OK, 1 row affected (0.004 sec)

MariaDB [(none)]>
```

```
MariaDB [datosproyecto]> show tables;
Empty set (0.017 sec)

MariaDB [datosproyecto]> create table datos (
  -> id int auto_increment,
  -> nodo int,
  -> temperatura float,
  -> humedad float,
  -> ph int,
  -> fecha varchar(25),
  -> hora varchar(25),
  -> primary key(id));
Query OK, 0 rows affected (0.072 sec)

MariaDB [datosproyecto]> desc datos
-> ;
```

Field	Type	Null	Key	Default	Extra
id	int(11)	NO	PRI	NULL	auto_increment
nodo	int(11)	YES		NULL	
temperatura	float	YES		NULL	
humedad	float	YES		NULL	
ph	int(11)	YES		NULL	
fecha	varchar(25)	YES		NULL	
hora	varchar(25)	YES		NULL	

```
7 rows in set (0.030 sec)
```

[illegible]

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
}
Conexion correcta.
datos almacenados
{
  nodo: 2,
  temperatura: 26.20000076,
  humedad: 56,
  ph: 4,
  fecha: '2022-09-29',
  hora: '11:50:00'
}
Conexion correcta.
datos almacenados
```

```
XAMPP for Windows - mysql -u root
6 rows in set (0.001 sec)

MariaDB [datosproyecto]> select * from datos;
+----+-----+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | ph | fecha | hora |
+----+-----+-----+-----+-----+-----+-----+
| 1 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 2 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 3 | 2 | 26.2 | 56 | 9 | 2022-09-29 | 11:50:00 |
| 4 | 2 | NULL | NULL | 4 | 2022-09-29 | 11:50:00 |
| 5 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 6 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
+----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.001 sec)

MariaDB [datosproyecto]> select * from datos;
+----+-----+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | ph | fecha | hora |
+----+-----+-----+-----+-----+-----+-----+
| 1 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 2 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 3 | 2 | 26.2 | 56 | 9 | 2022-09-29 | 11:50:00 |
| 4 | 2 | NULL | NULL | 4 | 2022-09-29 | 11:50:00 |
| 5 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 6 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
+----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.001 sec)

MariaDB [datosproyecto]>
```

```
XAMPP for Windows - mysql -u root
6 rows in set (0.001 sec)

MariaDB [datosproyecto]> select * from datos;
+----+-----+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | ph | fecha | hora |
+----+-----+-----+-----+-----+-----+-----+
| 1 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 2 | 2 | 26.2 | 56 | 0 | 2022-09-29 | 11:50:00 |
| 3 | 2 | 26.2 | 56 | 9 | 2022-09-29 | 11:50:00 |
| 4 | 2 | NULL | NULL | 4 | 2022-09-29 | 11:50:00 |
| 5 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 6 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 7 | 2 | 26.2 | 56 | 4 | 2022-09-29 | 11:50:00 |
| 8 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 9 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 10 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 11 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 12 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 13 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 14 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 15 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 16 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 17 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 18 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 19 | 2 | 26.2 | 55 | 4 | 2022-09-29 | 11:50:00 |
| 20 | 2 | 26.2 | 54 | 4 | 2022-09-29 | 11:50:00 |
+----+-----+-----+-----+-----+-----+-----+
20 rows in set (0.002 sec)

MariaDB [datosproyecto]>
```

Ahora con metodo REST

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
PS C:\Users\User\Desktop\projects_arduino\taller_6> node .\src\indexrest.js
Servidor funcionando
{
  nodo: 1,
  temperatura: -26,
  humedad: 61,
  ph: 14,
  fecha: '2106-02-07',
  hora: '01:28:19'
}
POST / 200 134.784 ms - 19
{
  nodo: 1,
```

```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  JUPYTER
a": "01:28:24")
200
datos almacenados
dato a enviar: {"nodo":1,"temperatura":26.20000076,"humedad":60,"ph":14,"fecha":"2106-02-07","hor
a": "01:28:30"}
200
datos almacenados
dato a enviar: {"nodo":1,"temperatura":26.20000076,"humedad":60,"ph":14,"fecha":"2106-02-07","hor
a": "01:28:35"}
200
datos almacenados
dato a enviar: {"nodo":1,"temperatura":26.20000076,"humedad":60,"ph":14,"fecha":"2106-02-07","hor
a": "01:28:40"}
200

```

Con el nodo 1 significa que fue enviado con rest y nodo 2 con mqtt o mosquito

```

XAMPP for Windows - mysql -u root
MariaDB [datosproyecto]> select * from datos;
+----+-----+-----+-----+-----+-----+-----+
| id | nodo | temperatura | humedad | ph | fecha | hora |
+----+-----+-----+-----+-----+-----+-----+
| 1  | 2    | 26.2        | 56       | 0  | 2022-09-29 | 11:50:00 |
| 2  | 2    | 26.2        | 56       | 0  | 2022-09-29 | 11:50:00 |
| 3  | 2    | 26.2        | 56       | 9  | 2022-09-29 | 11:50:00 |
| 4  | 2    | NULL        | NULL     | 4  | 2022-09-29 | 11:50:00 |
| 5  | 2    | 26.2        | 56       | 4  | 2022-09-29 | 11:50:00 |
| 6  | 2    | 26.2        | 56       | 4  | 2022-09-29 | 11:50:00 |
| 7  | 2    | 26.2        | 56       | 4  | 2022-09-29 | 11:50:00 |
| 8  | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 9  | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 10 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 11 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 12 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 13 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 14 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 15 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 16 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 17 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 18 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 19 | 2    | 26.2        | 55       | 4  | 2022-09-29 | 11:50:00 |
| 20 | 2    | 26.2        | 54       | 4  | 2022-09-29 | 11:50:00 |
| 21 | 2    | 26.2        | 54       | 4  | 2022-09-29 | 11:50:00 |
| 22 | 2    | 26.2        | 54       | 4  | 2022-09-29 | 11:50:00 |
| 23 | 2    | 26.2        | 54       | 4  | 2022-09-29 | 11:50:00 |
| 24 | 2    | 26.2        | 54       | 4  | 2022-09-29 | 11:50:00 |
| 25 | 1    | 25.8        | 60       | 14 | 2106-02-07 | 01:28:19 |
| 26 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:28:24 |

```

```

XAMPP for Windows - mysql -u root
+----+-----+-----+-----+-----+-----+-----+
| 29 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:28:40 |
| 30 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:28:45 |
| 31 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:28:51 |
| 32 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:28:56 |
| 33 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:29:01 |
| 34 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:29:07 |
| 35 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:29:12 |
| 36 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:29:18 |
| 37 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:29:23 |
| 38 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:29:28 |
| 39 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:29:33 |
| 40 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:29:38 |
| 41 | 1    | 26.2        | 60       | 14 | 2106-02-07 | 01:29:46 |
| 42 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:29:51 |
| 43 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:29:56 |
| 44 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:02 |
| 45 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:07 |
| 46 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:12 |
| 47 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:17 |
| 48 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:23 |
| 49 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:28 |
| 50 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:33 |
| 51 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:38 |
| 52 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:43 |
| 53 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:49 |
| 54 | 1    | 26.2        | 59       | 14 | 2106-02-07 | 01:30:54 |
+----+-----+-----+-----+-----+-----+-----+
54 rows in set (0.006 sec)
MariaDB [datosproyecto]>

```

Codigo:

```
#include <Arduino.h>

#include <ArduinoJson.h>

#include <HTTPClient.h>

//LIBRERIAS PARA DHT11 (TEMPERATURA Y HUMEDAD)
#include <Adafruit_Sensor.h>
#include <DHT.h>

//LIBRERIAS PARA FECHA Y HORA
#include <WiFi.h>

//DEFINICION DE PINES DHT11
#define DHTPIN 14 // 4 = PIN D4
#define DHTTYPE DHT11
DHT dht(DHTPIN, DHTTYPE);

//potenciometro ph
const int portPin=34;
int valorPh=0;


const char* ssid = "mi_wifi";//name wifi
const char* password = "diego_Dios"; // clave de wifi


void setup_wifi() {
  delay(10);

  // We start by connecting to a WiFi network
  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");
Serial.println("IP address: ");
Serial.println(WiFi.localIP());

}

void setup() {
  Serial.begin(9600); //Serial connection
  setup_wifi(); //WiFi connection
  delay(1500);
}

void loop() {

  //temperatura y humedad
  float h= dht.readHumidity();
  float t =dht.readTemperature();

  //potenciometro ph
  valorPh=analogRead(portPin)/292.5;
  //-----

  String variable;

  int nodo_numero = 1;

  DynamicJsonDocument doc(1024); //creacion del json

```

```
doc["nodo"] = nodo_numero;
doc["temperatura"] = t;
doc["humedad"] = h;
doc["ph"]=valorPh;
doc["fecha"] = "lunes";
doc["hora"] = "3:00 pm";
```

```
serializeJson(doc, variable);
Serial.println("dato a enviar: "+ variable);
HTTPClient http; //Declare object of class HTTPClient
WiFiClient client;
//Specify request destination
//http.begin(client,"URL DEL SERVIDOR");
//http.begin(client,"http://192.***:3000/"); //para mosquito o mqtt
http.begin(client,"http://192.***:3000/datos");// para rest mysql
// http.begin(client,"http://192.***:3000/datosm");// mongo
http.addHeader("Content-Type", "application/json"); //Specify contenttype header
int httpCode = http.POST(variable); //Send the request
String payload = http.getString(); //Get the response payload
Serial.println(httpCode); //Print HTTP return code
Serial.println(payload); //Print request response payload
http.end(); //Close connection
delay(5000); //Send a request every 5 seconds
}
```