



**ACTIVIDADES POR DESARROLLAR:**

- Consumir servicios API en Python.

**EVIDENCIA(S) A ENTREGAR:**

**EV1 Desarrollar la actividad a desarrollar propuesta en el taller**

**CONTROL DEL DOCUMENTO**

	Nombre	Cargo	Dependencia	Fecha
Autor (es)	JOSE FERNANDO GALINDO SUAREZ	INSTRUCTOR	CGMLTI	12/01/2022

**CONTROL DE CAMBIOS** (diligenciar únicamente si realizan ajustes al taller)

	Nombre	Cargo	Dependencia	Fecha	Razón del Cambio
Autor (es)					

**CONSUMIENDO LOS SERVICIOS DE LA API REST CONSTRUIDA EN PYTHON**

Construir el archivo “ejemplo.py”

**IMPORTANDO LAS LIBRERÍAS NECESARIAS**

```
import urllib.request
import numpy as np
import json

import sqlite3
import requests
```

## CREAR UN MÉTODO PARA EJECUTAR POR TIPO DE SERVICIO

```
def EjecutaRest(url, metodo, datos):  
    url=url.replace(chr(32), '+') 1  
    try:  
        if metodo=="POST": 2  
            miurl=requests.post(url, json=datos)  
        if metodo=="PUT": 3  
            miurl=requests.put(url, json=datos)  
        if metodo=="DELETE": 4  
            miurl=requests.delete(url)  
        if metodo=="GET": 5  
            miurl1=urllib.request.urlopen(url)  
            miurl=json.loads(miurl1.read().strip())  
        return miurl  
    except ValueError:  
        messagebox.showerror("Rutinas/EjecutaRest", "Ocurrió un error")
```

## OBTENER LOS REGISTROS DE LA BASE DE DATOS

```
def CargaDatos(url):  
    try:  
        url=url.replace(chr(32), '+') 1  
        #print("->" + url)  
        miurl=urllib.request.urlopen(url) 2  
  
        miarreglo=json.loads(miurl.read().strip()) 3  
        miarreglo.reverse() 4  
        return miarreglo 5  
    except:  
        messagebox.showerror("Conectando", "Ocurrió un error")
```

## UTILIZAR EL SERVICIO

```
print(CargaDatos('http://127.0.0.1:5000/usua/s/0'))
```

```
<Response [200]>
[[57, None, 'Juan', 'Galindo Sotomonte', 'jjgalindo@gmail.com'], [54, None, 'Yolanda', 'Suarez',
'ysuarez@gmail.com'], [53, None, 'Marian', 'Suarez', 'msuarez@gmail.com'], [51, None, 'Alfonso', 'Suarez',
'asuarez@gmail.com'], [42, None, 'Jose Fernando', 'Galindo', 'a@b.com'], [40, None, 'Eduard', 'Rodriguez',
'erodriguez@gmail.com'], [39, None, 'Julieta Maria', 'Castro', 'jcastro@gmail.com'], [38, None, 'Carmen Julia',
'Vargas', 'c'], [2, 'fegasu', 'JOSE FERNANDO', 'GALINDO SUAREZ', 'fegasu@misena.edu.co']]
[Finished in 2.5s]
```

## INSERTAR UN NUEVO REGISTRO

```
datos={
    "nombre":"Rosa",
    "apellido":"Rico",
    "email":"rrico@gmail.com"
}

print(EjecutaRest('http://127.0.0.1:5000/usua/i', 'POST', datos))
print(CargaDatos('http://127.0.0.1:5000/usua/s/0'))
```

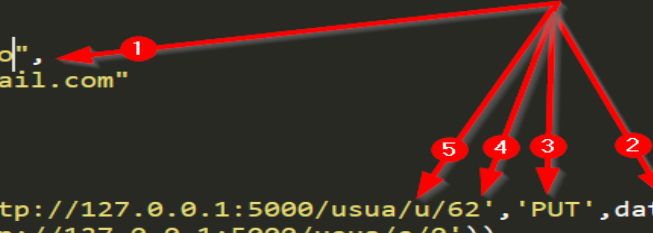


```
<Response [200]>
[[62, None, 'Rosa', 'Rico', 'rrico@gmail.com'], [57, None, 'Juan', 'Galindo Sotomonte', 'jjgalindo@gmail.com'], [
54, None, 'Yolanda', 'Suarez', 'ysuarez@gmail.com'], [53, None, 'Marian', 'Suarez', 'msuarez@gmail.com'], [51,
None, 'Alfonso', 'Suarez', 'asuarez@gmail.com'], [42, None, 'Jose Fernando', 'Galindo', 'a@b.com'], [40, None,
'Eduard', 'Rodriguez', 'erodriguez@gmail.com'], [39, None, 'Julieta Maria', 'Castro', 'jcastro@gmail.com'], [38,
None, 'Carmen Julia', 'Vargas', 'c'], [2, 'fegasu', 'JOSE FERNANDO', 'GALINDO SUAREZ', 'fegasu@misena.edu.co']]
[Finished in 1.9s]
```

## ACTUALIZAR UN REGISTRO DE LA BASE DE DATOS

```
datos={
    "nombre":"Rosa",
    "apellido":"Melano",
    "email":"rrico@gmail.com"
}


print(EjecutaRest('http://127.0.0.1:5000/usua/u/62', 'PUT', datos))
print(CargaDatos('http://127.0.0.1:5000/usua/s/0'))
```





```
<Response [200]>
[[62, None, 'Rosa', 'Melano', 'rrico@gmail.com'], [57, None, 'Juan', 'Galindo Sotomonte', 'jjgalindo@gmail.com'], [
54, None, 'Yolanda', 'Suarez', 'ysuarez@gmail.com'], [53, None, 'Marian', 'Suarez', 'msuarez@gmail.com'], [51,
None, 'Alfonso', 'Suarez', 'asuarez@gmail.com'], [42, None, 'Jose Fernando', 'Galindo', 'a@b.com'], [40, None,
'Eduard', 'Rodriguez', 'erodriguez@gmail.com'], [39, None, 'Julieta Maria', 'Castro', 'jcastro@gmail.com'], [38,
None, 'Carmen Julia', 'Vargas', 'c'], [2, 'fegasu', 'JOSE FERNANDO', 'GALINDO SUAREZ', 'fegasu@misena.edu.co']]
[Finished in 1.8s]
```

## BORRAR UN REGISTRO DE LA BASE DE DATOS



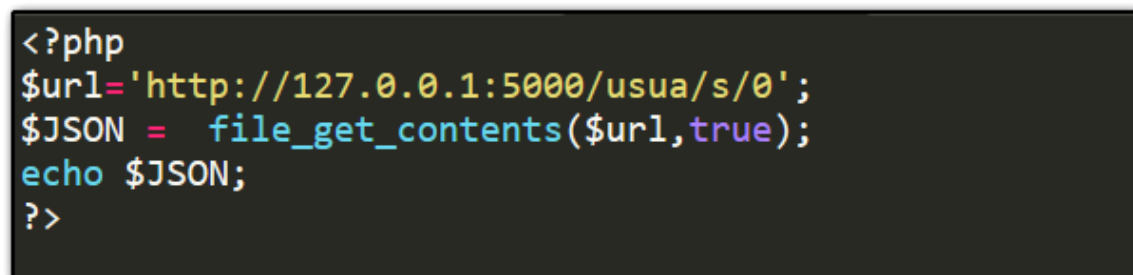
```
print(EjecutaRest('http://127.0.0.1:5000/usua/d/61', 'DELETE', None))
print(CargaDatos('http://127.0.0.1:5000/usua/s/0'))
```

```
<Response [200]>
[[57, None, 'Juan', 'Galindo Sotomonte', 'jjgalindo@gmail.com'], [54, None, 'Yolanda', 'Suarez',
'ysuarez@gmail.com'], [53, None, 'Marian', 'Suarez', 'msuarez@gmail.com'], [51, None, 'Alfonso', 'Suarez',
'asuarez@gmail.com'], [42, None, 'Jose Fernando', 'Galindo', 'a@b.com'], [40, None, 'Eduard', 'Rodriguez',
'erodriguez@gmail.com'], [39, None, 'Julieta Maria', 'Castro', 'jcastro@gmail.com'], [38, None, 'Carmen Julia',
'Vargas', 'c'], [2, 'fegasu', 'JOSE FERNANDO', 'GALINDO SUAREZ', 'fegasu@misena.edu.co']]
[Finished in 2.5s]
```

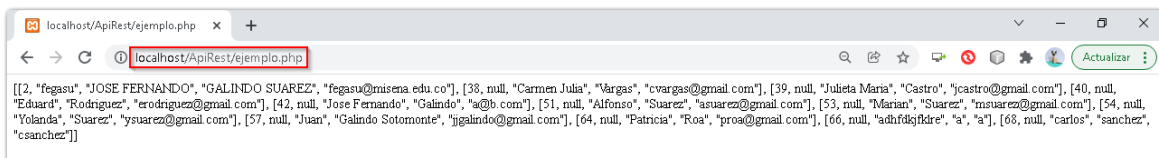
## CONSUMIR SERVICIO DE LA API-REST DESDE PHP



Crear en htdocs la carpeta “ApiRest” y construya el archivo “ejemplo.php”



Ejecute desde el navegador.



### Ingresar a la consola mysql

```
XAMPP for Windows - mysql --user=root --password=root

JOSE F GALINDO@DESKTOP-PTN88OT c:\xampp
# mysql --user=root --password=root 1
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 22
Server version: 10.1.37-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 registro; 2
Query OK, 1 row affected (0.01 sec)

MariaDB [(none)]> use registro; 3
Database changed
MariaDB [registro]>
```

### Crear la tabla "USUARIO"

```
CREATE TABLE IF NOT EXISTS `USUARIO` (
  `idUserio` INTEGER PRIMARY KEY AUTO_INCREMENT,
  `login` varchar ( 30 ) UNIQUE,
  `nombre` TEXT,
  `apellido` TEXT,
  `email` TEXT
);
```

Field	Type	Null	Key	Default	Extra
idUserio	int(11)	NO	PRI	NULL	auto_increment
login	varchar(30)	YES	UNI	NULL	
nombre	text	YES		NULL	
apellido	text	YES		NULL	
email	text	YES		NULL	

5 rows in set (0.02 sec)

### Cargar los siguientes registros:

```
INSERT INTO `USUARIO` (idUserio,login,nombre,apellido,email)
VALUES (2,'fegasu','JOSE FERNANDO','GALINDO
SUAREZ','fegasu@misena.edu.co');
INSERT INTO `USUARIO` (idUserio,login,nombre,apellido,email)
VALUES (38,NULL,'Carmen Julia','Vargas','cvargas@gmail.com');
```

```
MariaDB [registro]> select * from usuario;
```

idUsuario	login	nombre	apellido	email
2	fegasu	JOSE FERNANDO	GALINDO SUAREZ	fegasu@misena.edu.co
38	NULL	Carmen Julia	Vargas	cvargas@gmail.com

```
2 rows in set (0.00 sec)
```

Cambiar el archivo “servi.py”

```
#####CONECTANDO CON SQLITE #####
import sqlite3
#bd="init.dat"
#cnx1=sqlite3.connect(bd)
#cursor=cnx1.cursor()

#####CONECTANDO CON MYSQL #####
import mysql.connector
cnx1=mysql.connector.connect(user="root",password="root",host="localhost",
                             database="registro")
cursor=cnx1.cursor()
def EjecutarQuery(bd,sql):
    global cnx1,cursor
    cursor.execute(sql)
    rows = cursor.fetchall()
    return json.dumps(rows)

def Ejecutar(bd,sql):
    global cnx1,cursor
    cursor.execute(sql)
    cnx1.commit()
    return json.dumps("200")
```

Instalar el modulo “mysql.connector” antes de compilar.

pip install mysql-connector-python

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Versión 10.0.19042.1466]
(c) Microsoft Corporation. Todos los derechos reservados.

C:\Users\JOSE F GALINDO>pip install mysql-connector-python
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
Requirement already satisfied: mysql-connector-python in c:\python39\lib\site-packages (8.0.28)
Requirement already satisfied: protobufs=3.0.0 in c:\python39\lib\site-packages (from mysql-connector-python) (3.19.3)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: You are using pip version 21.1.3; however, version 21.3.1 is available.
You should consider upgrading via the 'c:\python39\python.exe -m pip install --upgrade pip' command.
```

Si no se reconoce el modulo

conda install mysql-connector-python

```
C:\WINDOWS\system32\cmd.exe

C:\Users\JOSE F GALINDO>conda install mysql-connector-python
Collecting package metadata (current_repodata.json): done
Solving environment: done

# All requested packages already installed.
```

Ejecutar el archivo “ejemplo.py”



```
datos={
    "nombre":"Angela",
    "apellido":"Madera de Gallo",
    "email":"emadera@gmail.com"
}

#print(EjecutaRest('http://127.0.0.1:5000/usua/i','POST',datos))
#print(EjecutaRest('http://127.0.0.1:5000/usua/s/0','GET',None))
#print(EjecutaRest('http://127.0.0.1:5000/usua/u/70','PUT',datos))
#print(EjecutaRest('http://127.0.0.1:5000/usua/d/69','DELETE',datos))
print(EjecutaRest('http://127.0.0.1:5000/usua/s/0','GET',None))
```

```
[[2, 'fegasu', 'JOSE FERNANDO', 'GALINDO SUAREZ', 'fegasu@misena.edu.co'], [38, None, 'Carmen Julia', 'Vargas', 'cvargas@gmail.com']]
```

Ingresamos un nuevo usuario

```
datos={
    "nombre":"Angela",
    "apellido":"Madera de Gallo",
    "email":"emadera@gmail.com"
}

print(EjecutaRest('http://127.0.0.1:5000/usua/i','POST',datos))
#print(EjecutaRest('http://127.0.0.1:5000/usua/s/0','GET',None))
#print(EjecutaRest('http://127.0.0.1:5000/usua/u/70','PUT',datos))
#print(EjecutaRest('http://127.0.0.1:5000/usua/d/69','DELETE',datos))
print(EjecutaRest('http://127.0.0.1:5000/usua/s/0','GET',None))
```





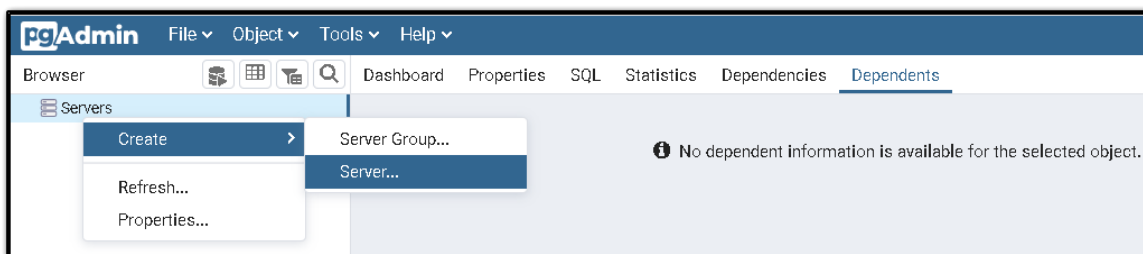
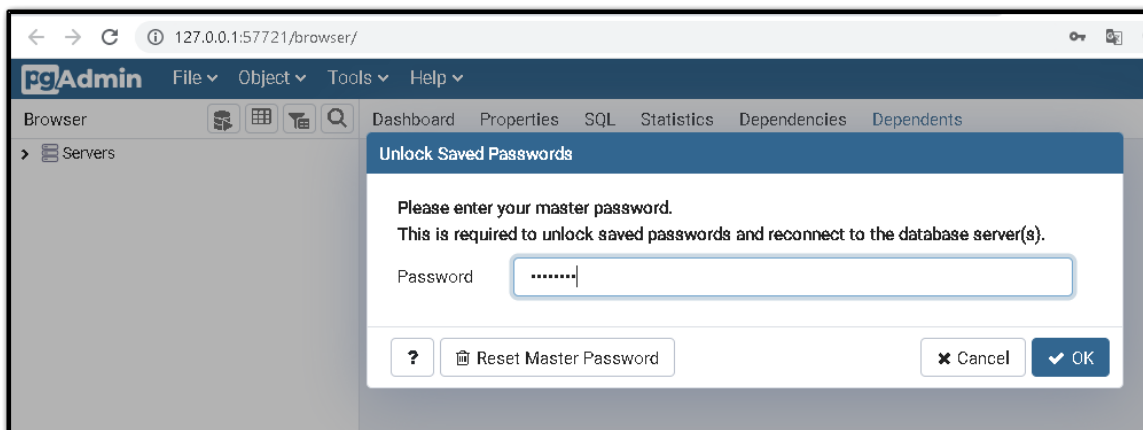
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CURSO BACKEND PARA PYTHON

```
<Response [200]>
[[2, 'fegasu', 'JOSE FERNANDO', 'GALINDO SUAREZ', 'fegasu@misena.edu.co'], [38, None, 'Carmen Julia', 'Vargas', 'cvargas@gmail.com'], [39, None, 'Angela', 'Madera de Gallo', 'emadera@gmail.com']]
[Finished in 1.7s]
```

```
MariaDB [registro]> select * from usuario;
+-----+-----+-----+-----+-----+
| idUsuario | login | nombre | apellido | email |
+-----+-----+-----+-----+-----+
| 2 | fegasu | JOSE FERNANDO | GALINDO SUAREZ | fegasu@misena.edu.co |
| 38 | NULL | Carmen Julia | Vargas | cvargas@gmail.com |
| 39 | NULL | Angela | Madera de Gallo | emadera@gmail.com |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
C:\Users\JOSE F GALINDO> pip install psycpg2
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
Collecting psycpg2
  Downloading psycpg2-2.9.3-cp39-cp39-win_amd64.whl (1.2 MB)
    | 1.2 MB 218 kb/s
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
Installing collected packages: psycpg2
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
Successfully installed psycpg2-2.9.3
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -p (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: You are using pip version 21.1.3; however, version 21.3.1 is available.
You should consider upgrading via the 'c:\python39\python.exe -m pip install --upgrade pip' command.
```

Nombre	Fecha de modificación	Tipo	Tamaño
bin	11/08/2020 08:41 a. m.	Carpeta de archivos	
data	22/01/2022 04:55 p. m.	Carpeta de archivos	
doc	11/08/2020 08:41 a. m.	Carpeta de archivos	
include	11/08/2020 08:41 a. m.	Carpeta de archivos	
lib	11/08/2020 08:41 a. m.	Carpeta de archivos	
pgAdmin 4	11/08/2020 08:41 a. m.	Carpeta de archivos	
share	11/08/2020 08:41 a. m.	Carpeta de archivos	
StackBuilder	11/08/2020 08:41 a. m.	Carpeta de archivos	
Make Cluster.bat	09/01/2017 01:12 p. m.	Archivo por lotes ...	1 KB
PgAdmin4.bat	28/04/2017 10:29 p. m.	Archivo por lotes ...	1 KB
PostgreSQL-Restart.bat	06/04/2012 09:42 a. m.	Archivo por lotes ...	1 KB
PostgreSQL-Start.bat	28/04/2017 09:46 p. m.	Archivo por lotes ...	1 KB
PostgreSQL-Stop.bat	06/04/2012 09:43 a. m.	Archivo por lotes ...	1 KB
Service - Delete.bat	29/08/2020 11:25 p. m.	Archivo por lotes ...	1 KB
Service - Maker.bat	29/08/2020 11:26 p. m.	Archivo por lotes ...	1 KB





Create - Server

General1ConnectionSSLSSH TunnelAdvanced

Name

Sena2

Server group

Servers

Background

X

Foreground

X

Connect now?

☒

Comments

Either Host name, Address or Service must be specified.

X Cancel

Reset

Save



Create - Server

General

Connection

SSL

SSH Tunnel

Advanced

Host name/address

localhost

Port

5432

Maintenance database

postgres

Username

postgres

Password

Save password?

☐

Role

Service

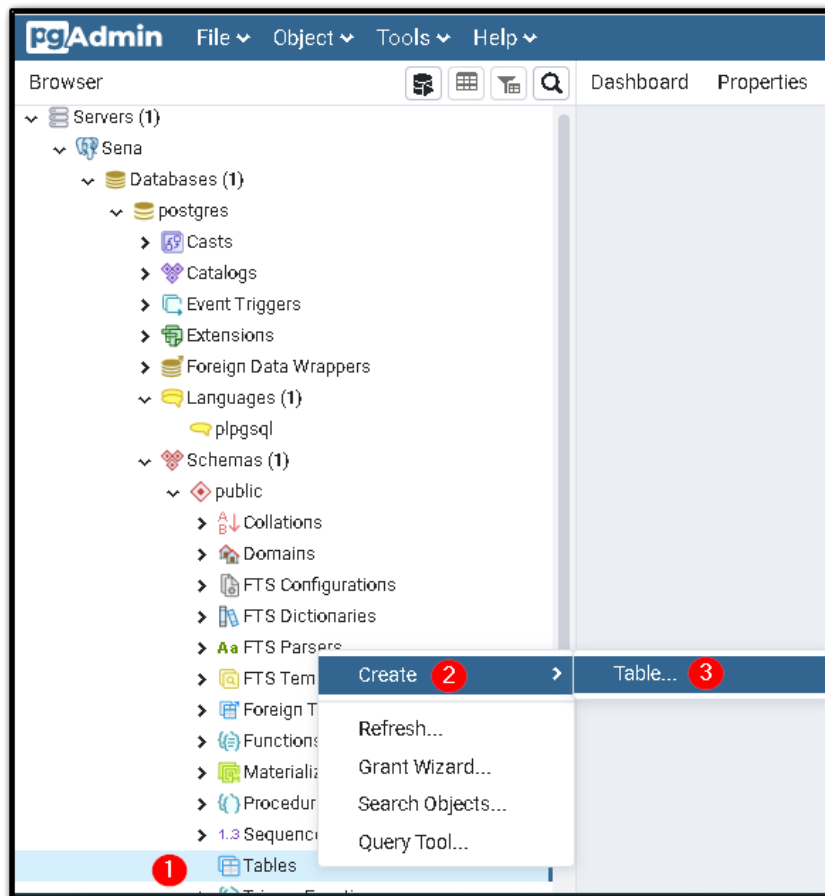
i

?

Cancel

Reset

Save



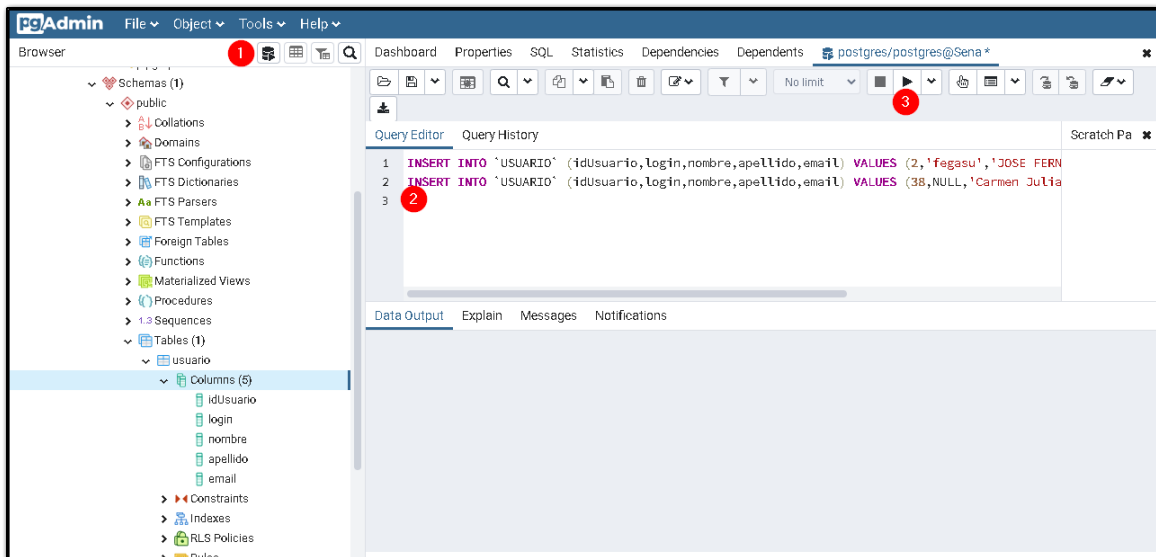


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CURSO BACKEND PARA PYTHON

The image shows a 'Create - Table' dialog box with the following fields and values:

- Name: usuario (marked with a red circle 1)
- Owner: postgres
- Schema: public
- Tablespace: Select an item...
- Partitioned table?: No
- Comment: (empty text area)

At the bottom, there are buttons for 'Cancel', 'Reset', and 'Save'.



Create - Table

General

Columns

Advanced

Constraints

Partitions

Parameters











Security

SQL

Inherited from table(s)

Columns

+

	Name	Data type	Length/Precision	Scale	Not NULL?	Primary key?
 	idUsuario	numeric			<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> Yes
 	login	character	30		<input type="checkbox"/> No	<input type="checkbox"/> No
 	nombre	character	60		<input type="checkbox"/> No	<input type="checkbox"/> No
 	apellido	character	60		<input type="checkbox"/> No	<input type="checkbox"/> No
 	email	character	60		<input type="checkbox"/> No	<input type="checkbox"/> No

i

?

Cancel

Reset

Save

```
CREATE TABLE public.usuario
(
    "idUsuario" SERIAL NOT NULL,
    login character(30),
    nombre character(60),
    apellido character(60),
    email character(60),
    PRIMARY KEY ("idUsuario")
);

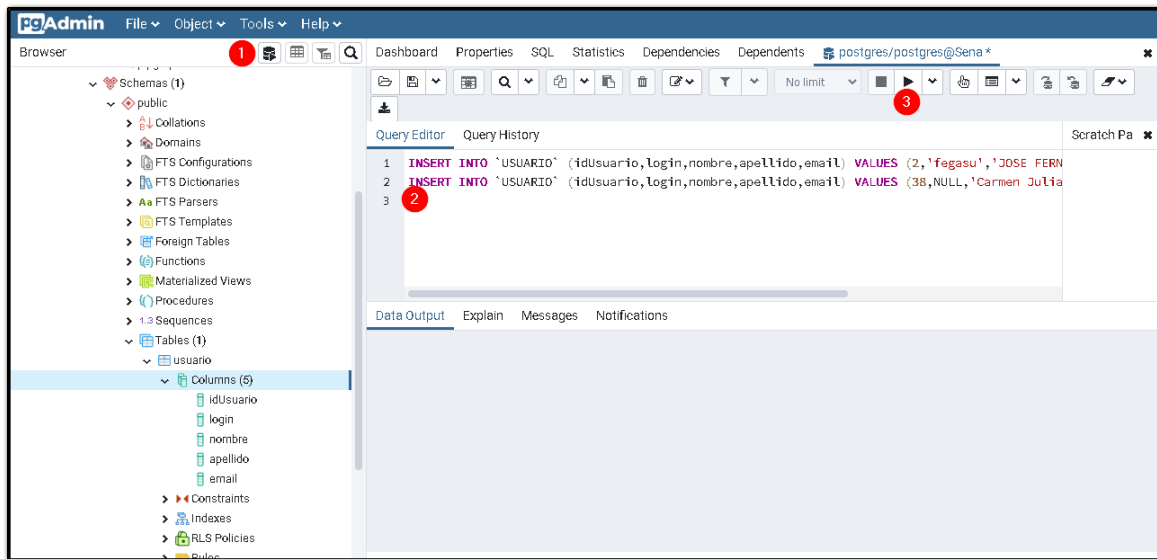
ALTER TABLE public.usuario
    OWNER to postgres;
```





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CURSO BACKEND PARA PYTHON

```
INSERT INTO USUARIO (login,nombre,apellido,email) VALUES  
( 'fegasu', 'JOSE FERNANDO', 'GALINDO  
SUAREZ', 'fegasu@misena.edu.co');
```





```
#####CONECTANDO CON SQLITE #####
import sqlite3
#bd="init.dat"
#cnx1=sqlite3.connect(bd)
#cursor=cnx1.cursor()

#####CONECTANDO CON MYSQL #####
import mysql.connector
#cnx1=mysql.connector.connect(user="root",password="root",host="localhost",
#    database="registro")
#####CONECTANDO CON POSTGRES #####
import psycopg2
cnx1 = psycopg2.connect(database="postgres", user="postgres", password="",
    host="127.0.0.1", port="5432")

cursor=cnx1.cursor()
def EjecutarQuery(bd,sql):
    global cnx1,cursor
    cursor.execute(sql)
    rows = cursor.fetchall()
    return json.dumps(rows)

def Ejecutar(bd,sql):
    global cnx1,cursor
    cursor.execute(sql)
    cnx1.commit()
    return json.dumps("200")
```

Realizado por el instructor José Fernando Galindo  
Suárez

[jgalindos@sena.edu.co](mailto:jgalindos@sena.edu.co) 2022

