Hands-on Lab: Create Tables and Load Data in PostgreSQL using pgAdmin



Estimated time needed: 20 minutes

In this lab, you will learn how to create tables and load data in the PostgreSQL database service using the pgAdmin graphical user interface (GUI) tool. The pgAdmin GUI provides an alternative to the command line for interacting with a PostgreSQL database using a graphical interface. This GUI provides a number of key features for interacting with a PostgreSQL database in an easy to use format.

Software used in this lab

In this lab, you will use <u>PostgreSQL Database</u>. PostgreSQL is a Relational Database Management System (RDBMS) designed to efficiently store, manipulate, and retrieve data.



To complete this lab you will utilize the PostgreSQL relational database service available as part of IBM Skills Network Labs (SN Labs) Cloud IDE. SN Labs is a virtual lab environment used in this course.

Database used in this lab

You will use the Books database in this lab.

The following diagram shows the structure of the "myauthors" table from the Books database:

myauthors	
author_id	int
first_name	varchar(100)
middle_name	varchar(50)
last name	varchar(100)

Objectives

After completing this lab, you will be able to use pgAdmin with PostgreSQL to:

- Create databases and tables in a PostgreSQL instance
- Load data into tables manually using the pgAdmin GUI
- · Load data into tables from a text/script file

Lab Structure

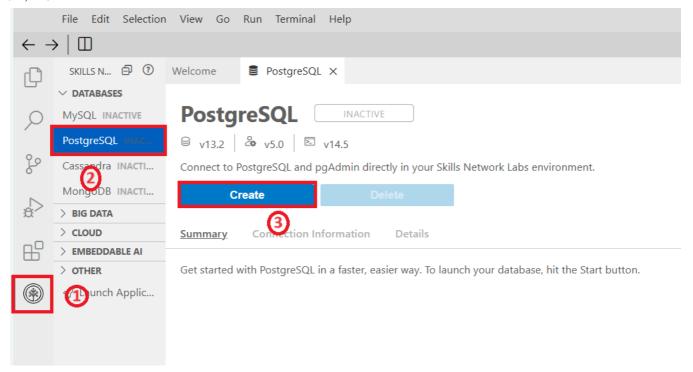
In this lab, you will complete several tasks in which you will learn how to create tables and load data in the PostgreSQL database service using the pgAdmin graphical user interface (GUI) tool.

Task A: Create a database

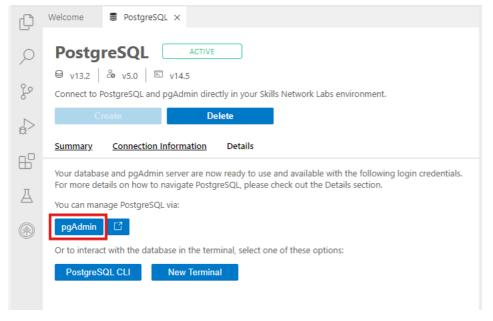
First, to create a database on a PostgreSQL server instance, you'll first launch a PostgreSQL server instance on Cloud IDE and open the pgAdmin Graphical User Interface.

- 1. Click the Skills Network extension button on the left side of the window.
- 2. Open the DATABASES menu and click PostgreSQL.
- 3. Click Create. PostgreSQL may take a few moments to start.

about:blank 1/23

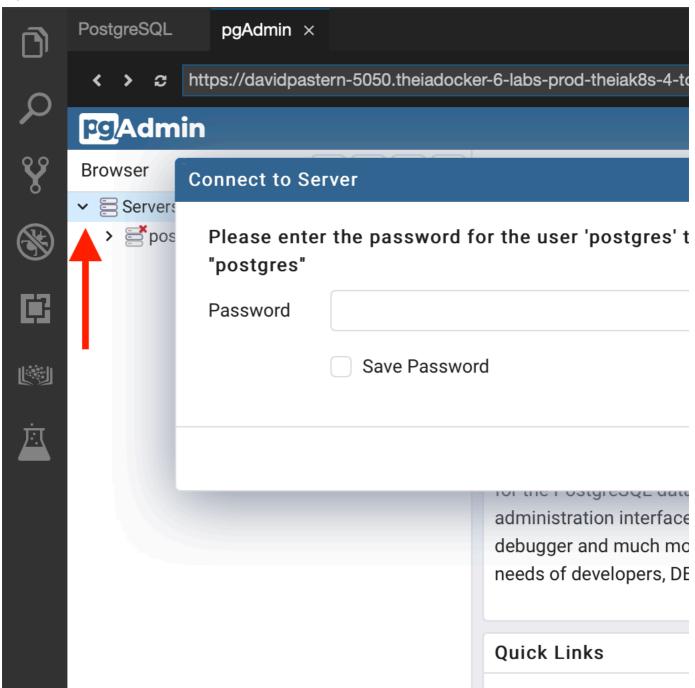


4. Next, open the pgAdmin Graphical User Interface by clicking pgAdmin in the Cloud IDE interface.



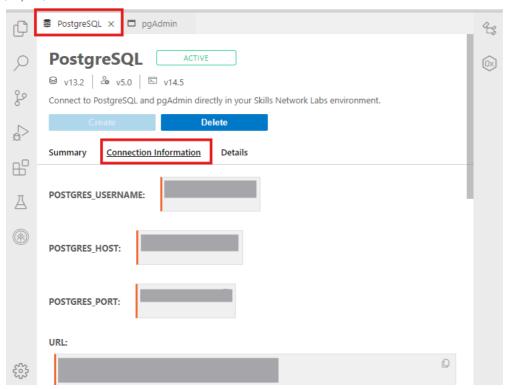
5. Once the pgAdmin GUI opens, click Servers tab on the left side of the page. You will be prompted to enter a password.

about:blank 2/23

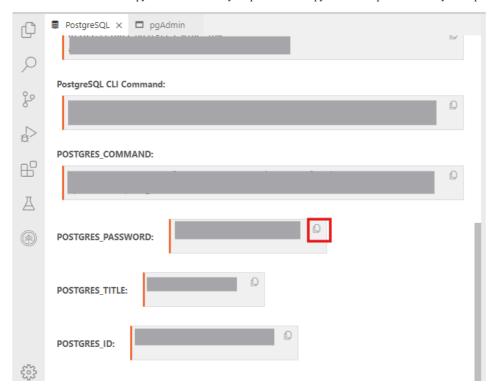


6. To retrieve your password, click PostgreSQL tab near the top of the interface and select Connection Information tab.

about:blank 3/23

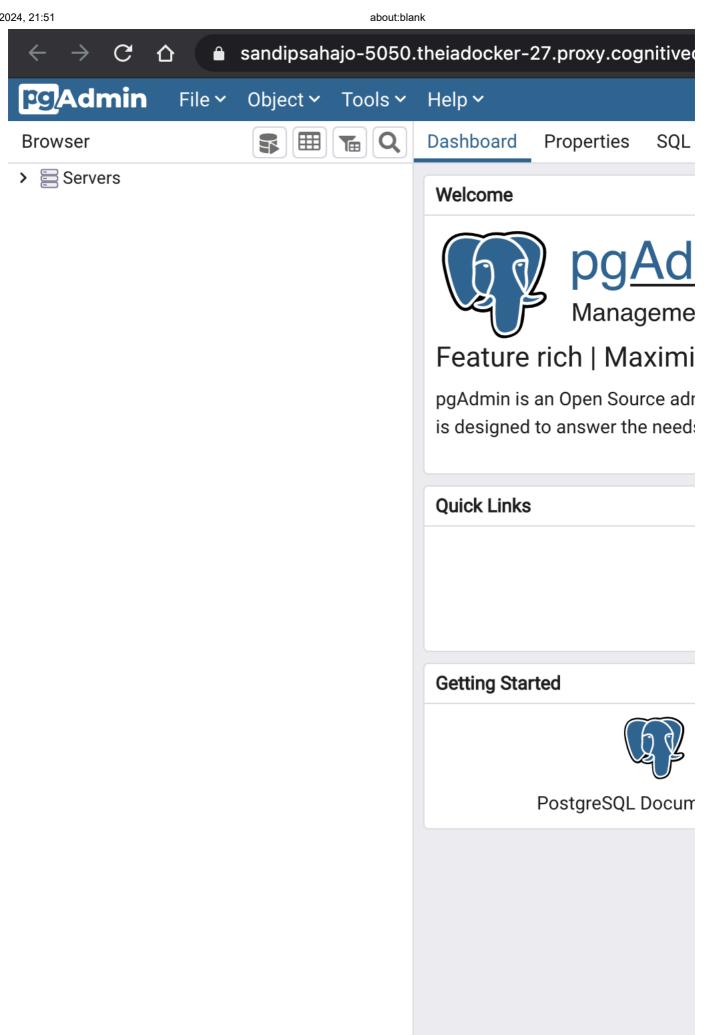


7. Scroll down and click the Copy icon on the left of your password to copy the session password onto your clipboard.



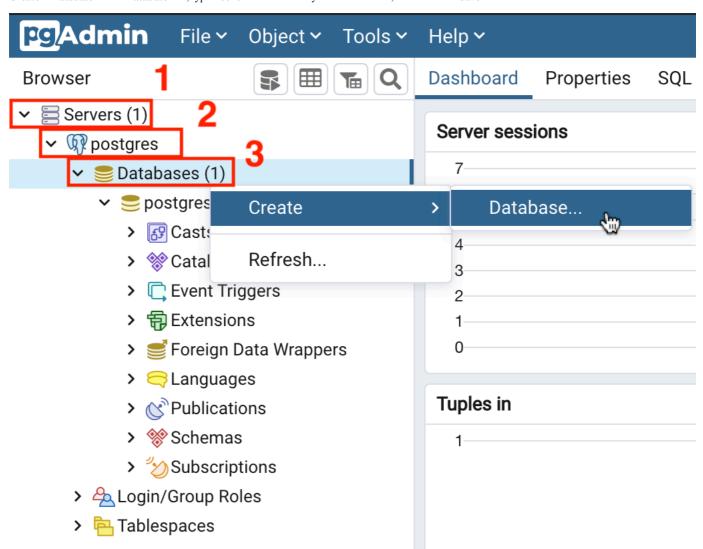
- 8. Navigate back to the **pgAdmin** tab and paste in your password, then click **OK**.
- 9. You will then be able to access the pgAdmin GUI tool.

17/11/2024, 21:51

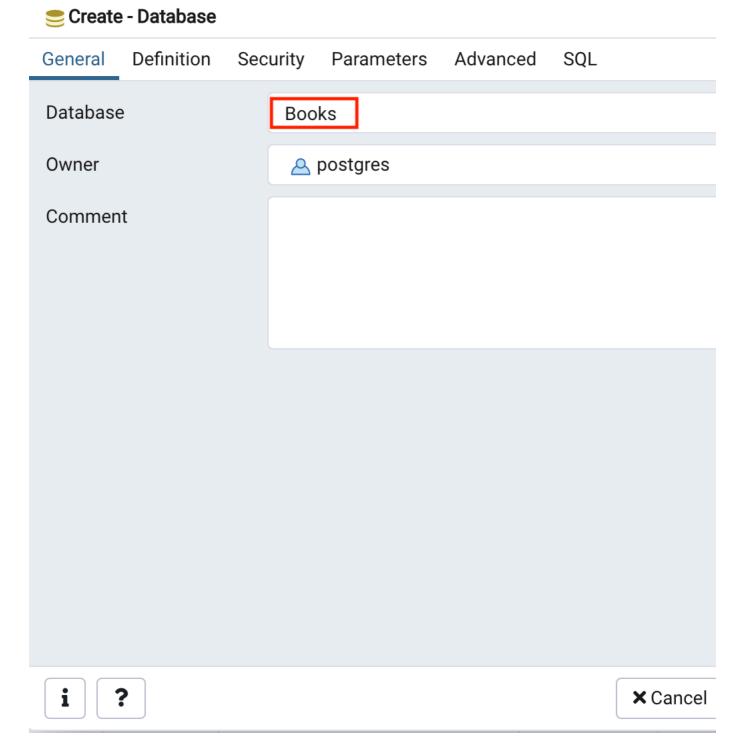


5/23 about:blank

10. In the tree-view, expand Servers > postgres > Databases. If prompted, enter your PostgreSQL service session password. Right-click on Databases and go to Create > Database. In the Database box, type Books as the name for your new database, and then click Save. Proceed to Task B.



about:blank 6/23

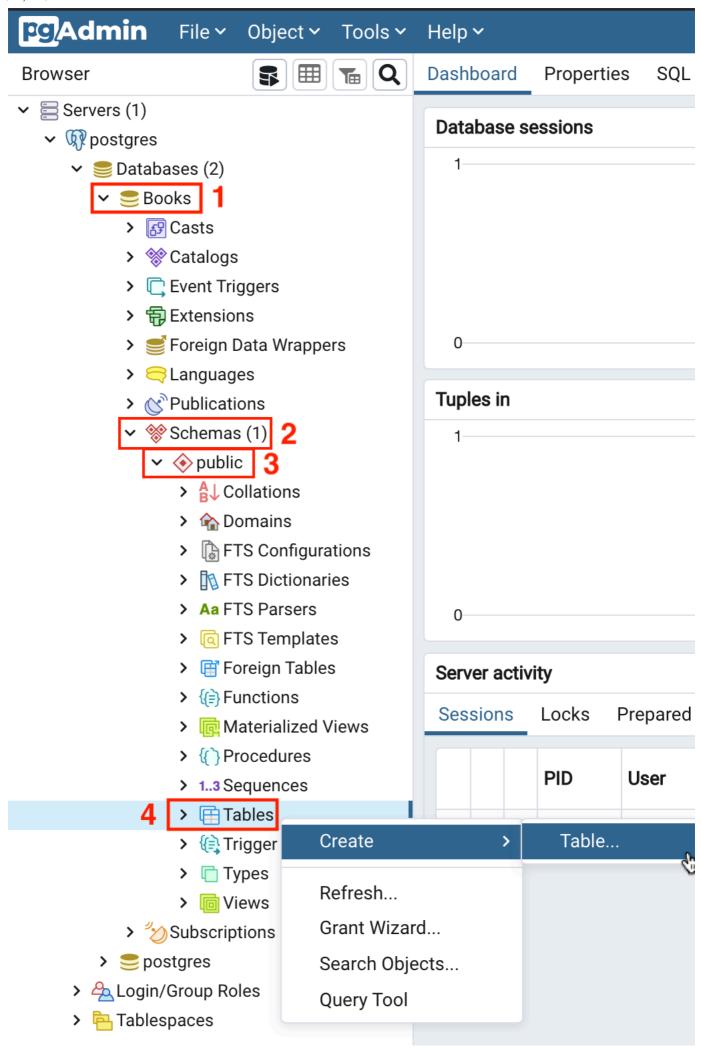


Task B: Create tables

Now that you have your PostgreSQL service active and have created the **Books** database using pgAdmin, let's create a few tables to populate the database and store the data that you wish to eventually upload into it.

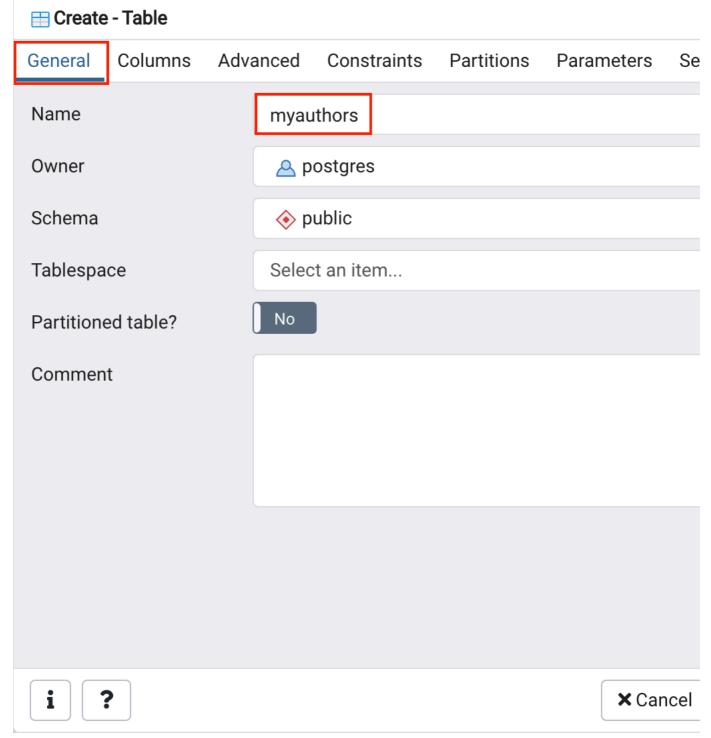
1. In the tree-view, expand **Books** > **Schemas** > **public**. Right-click on **Tables** and go to **Create** > **Table**.

about:blank 7/23



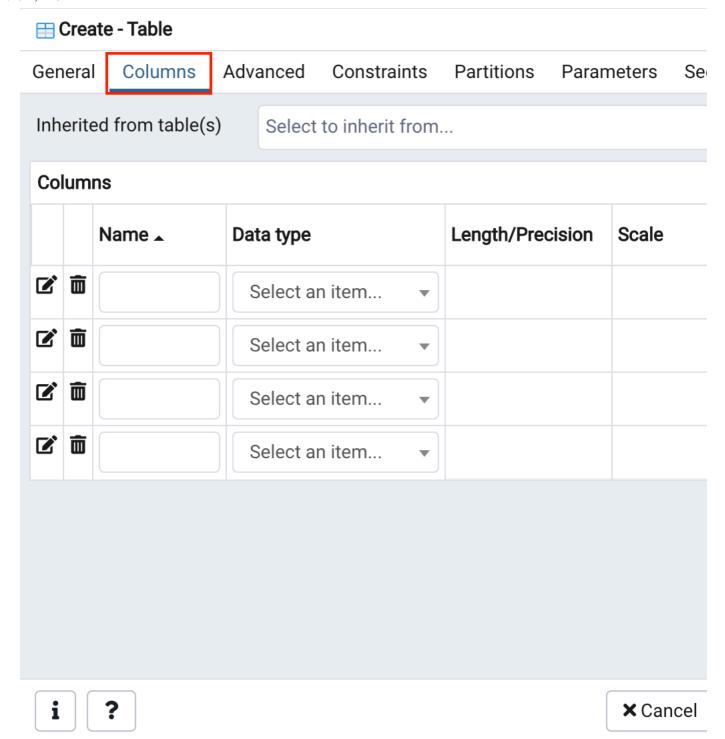
about:blank 8/23

2. On the General tab, in the Name box, type myauthors as name of the table. Don't click Save, proceed to the next step.



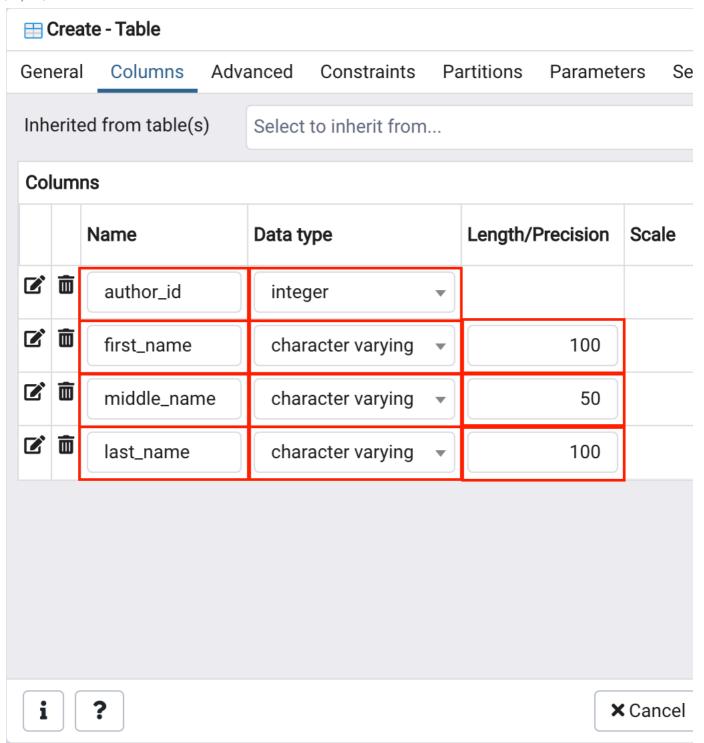
3. Switch to the tab Columns and click the Add new row button four times to add 4 column placeholders. Don't click Save, proceed to the next step.

about:blank 9/23



^{4.} Enter the **myauthors** table definition structure information as shown in the image below in the highlighted boxes. Then click **Save**. Proceed to Task C.

about:blank 10/23

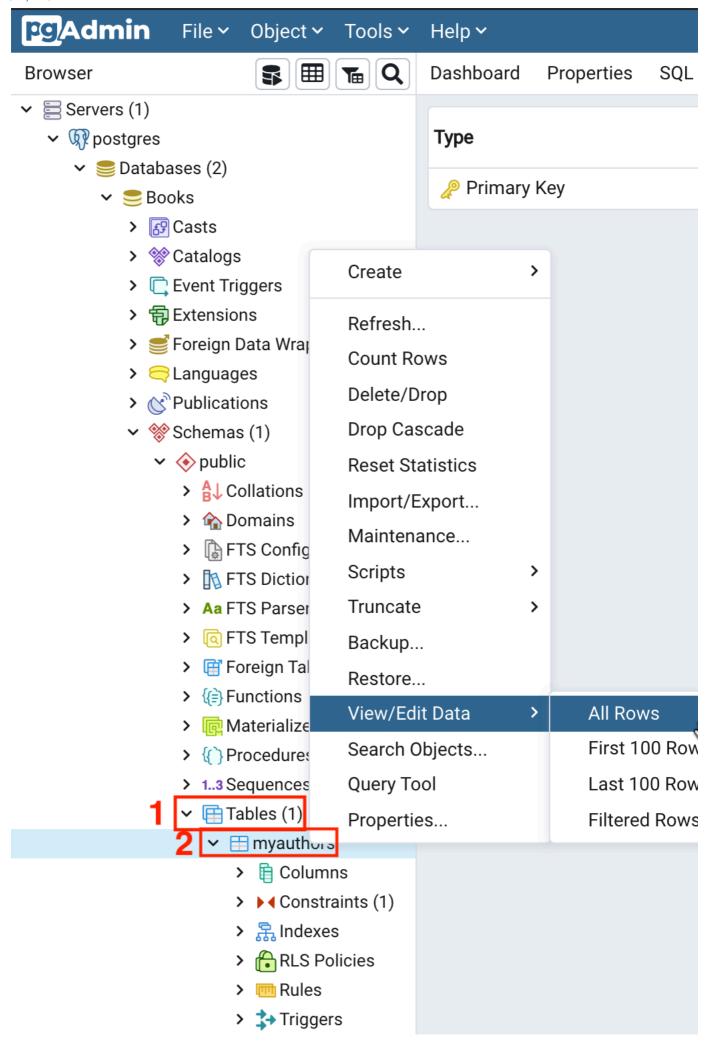


Task C: Load data into tables manually using the pgAdmin GUI

You now have a database and have created tables within it. With the pgAdmin GUI, you can insert values into the tables manually. This is useful if you have a few new entries you wish to add to the database. Let's see how to do it.

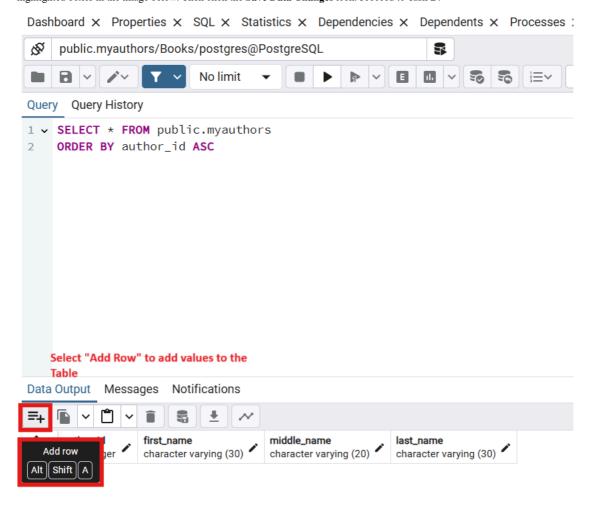
1. In the tree-view, expand Tables. Right-click myauthors and go to View/Edit Data > All Rows.

about:blank 11/23

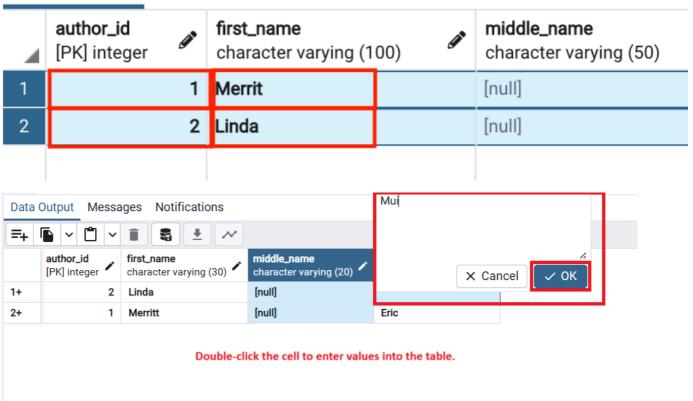


about:blank 12/23

2. You will insert 2 rows of data into the **myauthors** table. In the lower **Data Output** pane, enter **myauthors** table data information for 2 rows as shown in the highlighted boxes in the image below. Then click the **Save Data Changes** icon. Proceed to Task D.

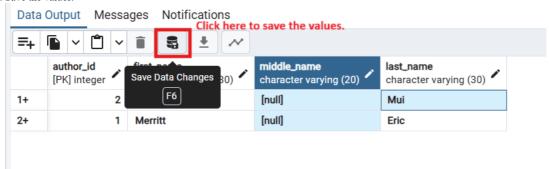


3. Enter the values into the table as shown below:



about:blank 13/23

4. Save the values.

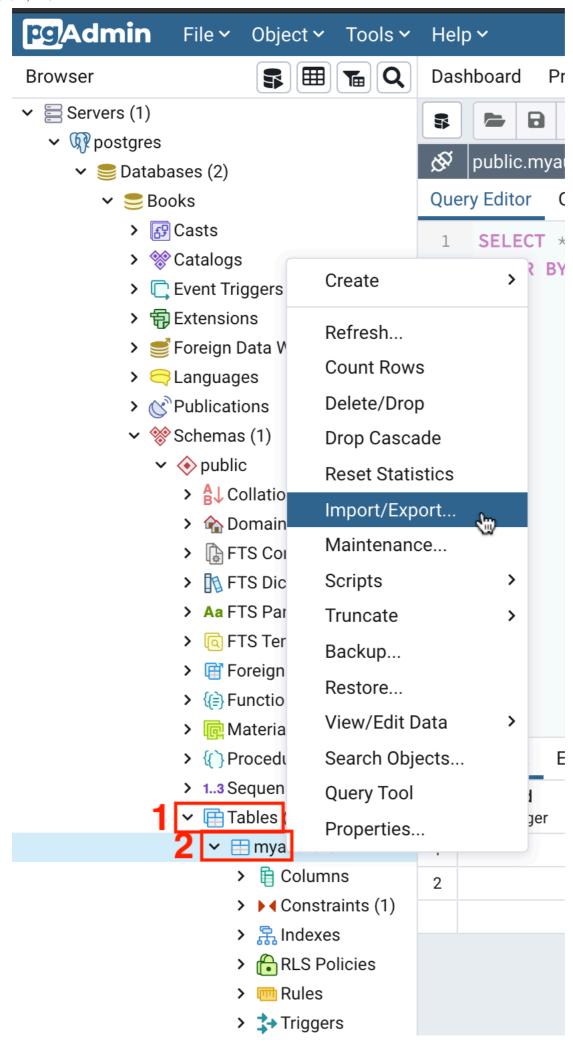


Task D: Load data into tables using a text/script file

In the previous task, you entered some data entries into a table manually with pgAdmin. While this method can be useful for small additions, if you wish to upload large amounts of data at once, the process becomes tedious. An alternative is to load data into tables from a text or script file containing the data you wish to enter. Let's take a look at how to do this.

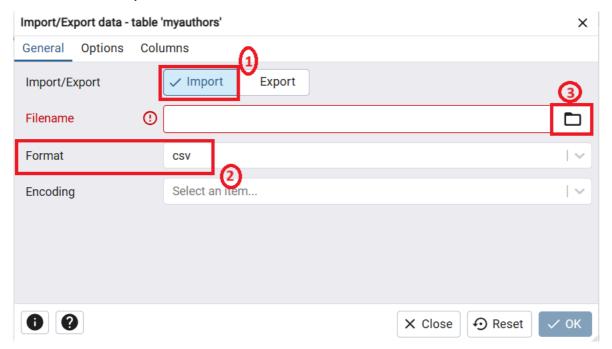
- 1. You will import the remainder of the myauthors table data from a csv text file. Download the csv file below to your local computer:
 - myauthors.csv
- 2. In the tree-view, right-click on myauthors and go to Import/Export.

about:blank 14/23



about:blank 15/23

- 3. Follow the instructions below to import:
 - 1. Make sure Import/Export is set to Import,
 - 2. Format = csv.
 - 3. Then click **Select file** icon by the **Filename** box.



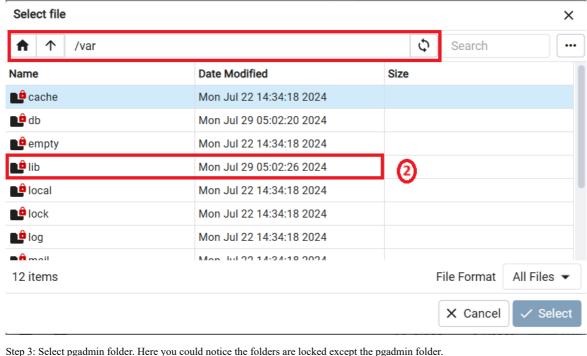
4. Steps to Upload File.

o Step 1: Initially make sure the folder details empty and select the var option from the list as shown in the screenshot below. Select var folder Select file × Search ••• Name **Date Modified** Size - run 1110 0cp 0 20.00.40 2024 **■** sbin Mon Jul 29 05:02:19 2024 **■** srv Mon Jul 22 14:34:18 2024 **■** sys Thu Sep 5 20:08:48 2024 tmp Thu Sep 5 20:09:17 2024 **■** usr Mon Jul 29 05:02:18 2024 1 📭 var Mon Jul 29 05:02:20 2024 venv Mon Jul 29 04:58:51 2024 21 items File Format All Files ▼

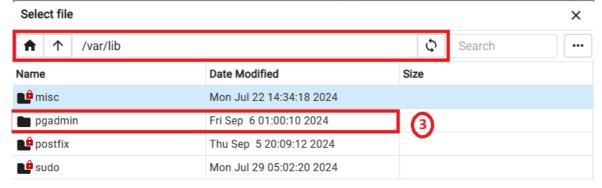
X Cancel

• Step 2: Select lib folder.

about:blank 16/23

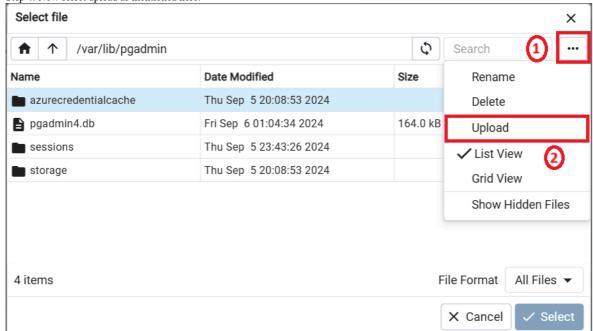


o Step 3: Select pgadmin folder. Here you could notice the folders are locked except the pgadmin folder.



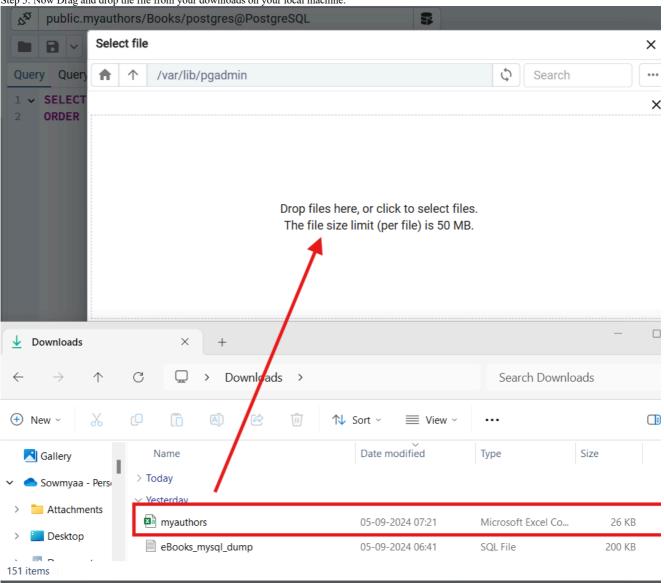


o Step 4: Now select upload as mentioned here.

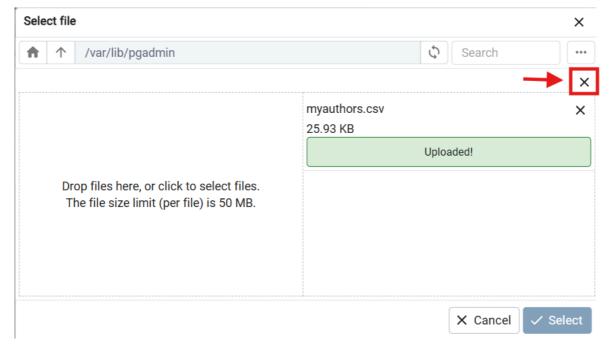


17/23 about:blank

• Step 5: Now Drag and drop the file from your downloads on your local machine.



 \circ Step 6: Finally, the upload is successful. When the upload is complete, close the drop files area by clicking X.



 $\circ~$ Select the uploaded $myauthors.csv~{\rm file}$ from the list and click Select.

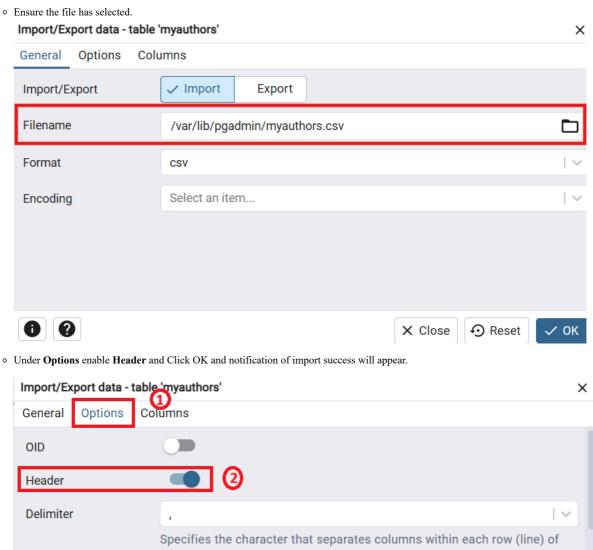
about:blank 18/23

Select file						
1	*	t	/var/lib/pgadmin/myauthors.csv			C
Name \$ Size		Size	\$			
B	myauthors.csv		rs.csv		26.0 kB	
sessions		4.0 kB				
► storage		4.0 kB				

Show hidden files and folders?	

about:blank 19/23

Quote



the file. The default is a tab character in text format, a comma in CSV format. This must be a single one-byte character. This option is not allowed

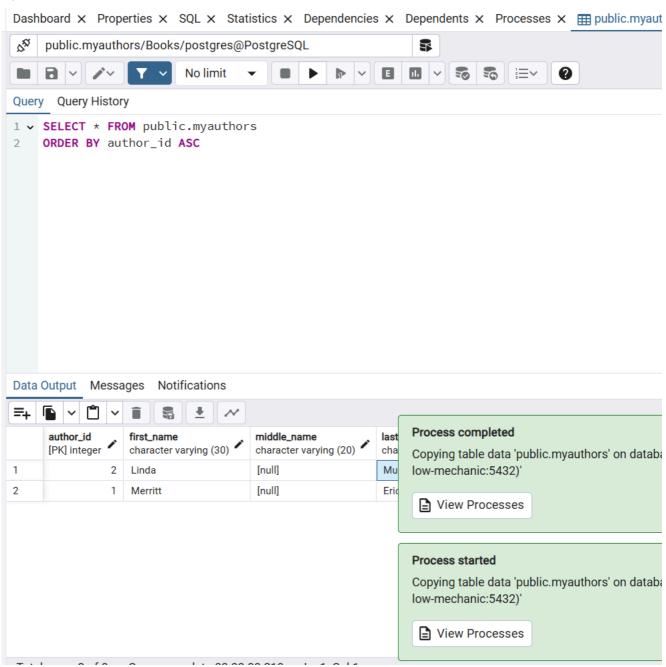
Specifies the quoting character to be used when a data value is quoted.

X Close

Reset

when using binary format.

20/23 about:blank



4. Repeat Task C Step 1 to check that the newly imported data rows appear along with your previously inserted 2 rows.

about:blank 21/23



Query Editor Query History

- 1 SELECT * FROM public.myauthors
- 2 ORDER BY author_id ASC

Data O	utput Explain	Messages Notifications	
4	author_id [PK] integer	first_name character varying (100)	middle_name character varying (50)
1	1	Merrit	[null]
2	2	Linda	[null]
3	3	Alecos	[null]
4	4	Paul	C.van
5	5	David	[null]
6	6	Richard	[null]
7	7	Yuval	Noah
8	8	Paul	[null]
9	9	David	[null]
10	10	John	Paul
11	11	Andrew	[null]
12	12	Melanie	[null]
13	13	Neal	[null]
14	14	Nir	[null]
15	15	Tim	[null]
16	16	Mike	[null]
17	17	Brian	P.
18	18	Jean-Philippe	[null]
19	19	Lance	[null]
20	20	Richard	C
21	21	William	

22	22	Magnus	Lie	
23	23	Mike	[null]	
24	24	Norman	[null]	
25	25	John	E.	
26	26	S.	[null]	-

As you can see, the data contained in the csv file was successfully uploaded into the table and you did not have to manually input hundreds of entries.

Conclusion

Congratulations! You have completed this lab, and you have learned how to create databases and tables in a PostgreSQL instance, load data into tables manually using the pgAdmin GUI, and load data into tables from a text/script file.

Author

• Sandip Saha Joy

Other Contributors

• David Pasternak



© IBM Corporation. All rights reserved.

about:blank 23/23