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 provides a number of key features for interacting with a PostgreSQL database in an easy to use format.

Software Used in this Lab

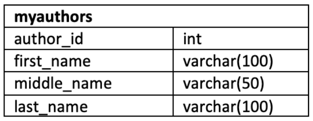
In this lab, you will use PostgreSQL Database. PostgreSQL is a Relational Database Management System (RDBMS) designed to efficiently store, manipulate, and retrieve data.

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

Books database has been used 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.

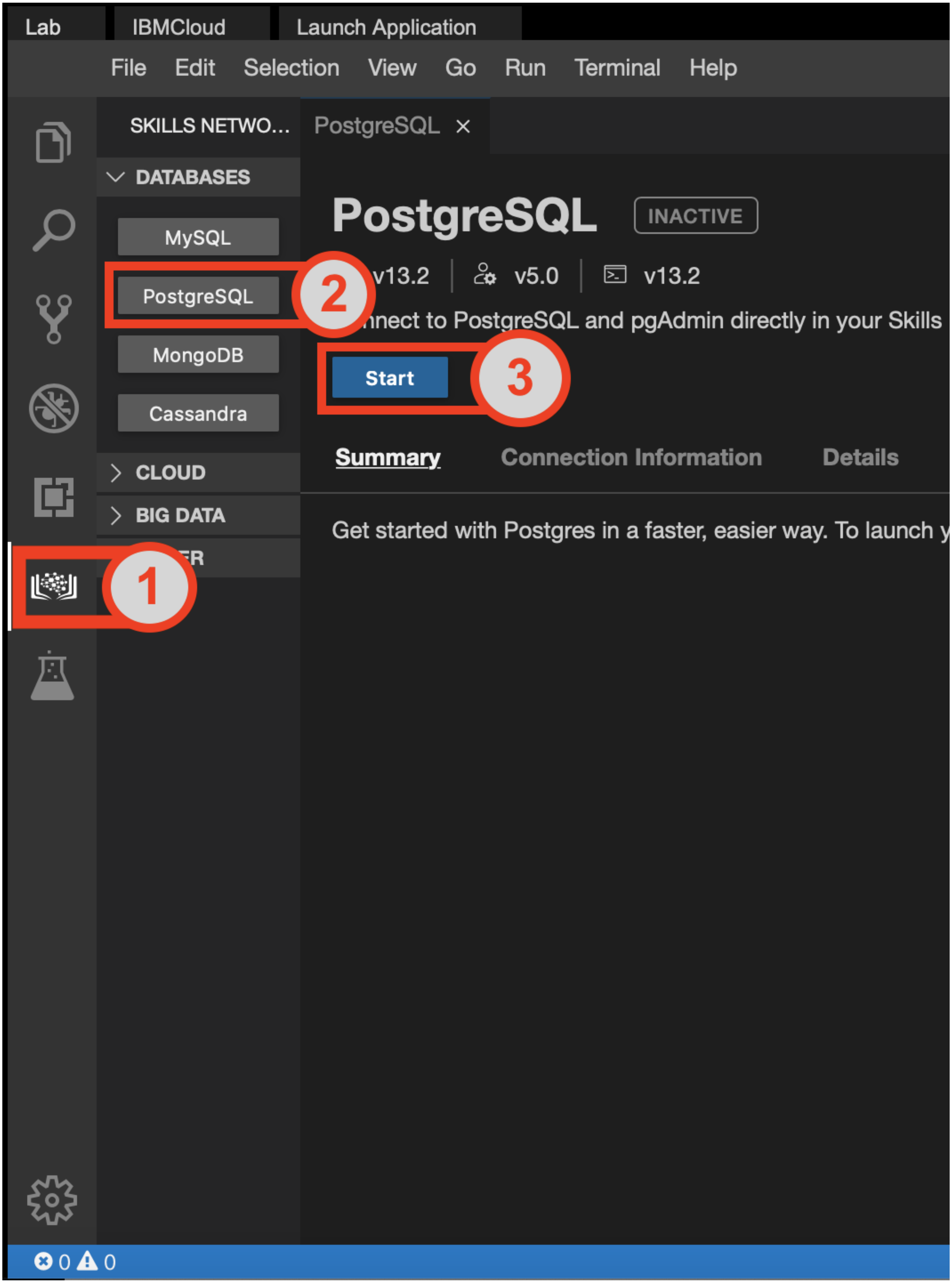
Task A: Create a database

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

1. Click on the Skills Network extension button on the left side of the window.

2. Open the “DATABASES” drop down menu and click on “PostgreSQL”

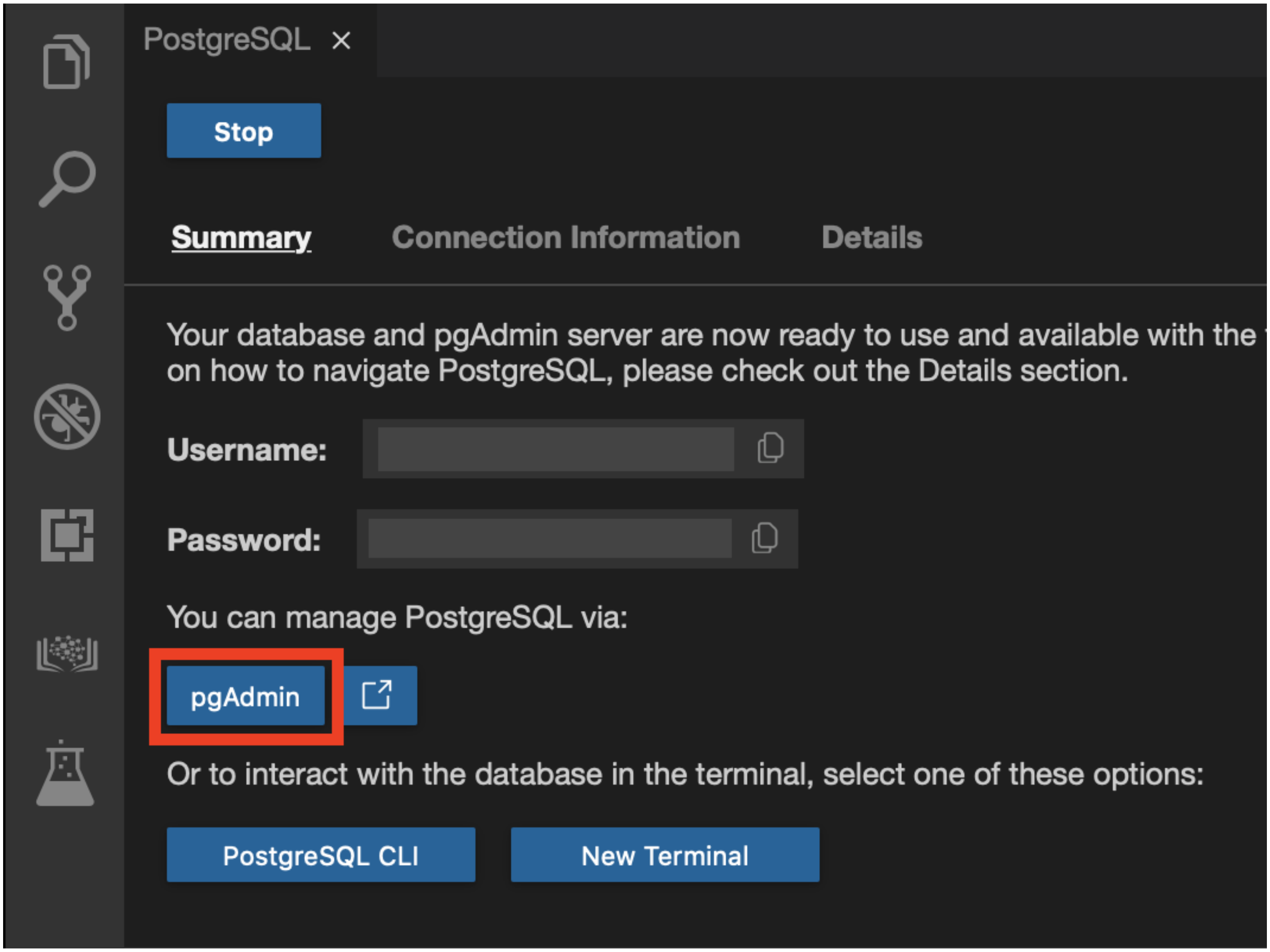
3. Click on the “Start” button. PostgreSQL may take a few moments to start.



nnect to PostgreSQL and pgAdmin directly in your Skills

Get started with Postgres in a faster, easier way. To launch y

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



Your database and pgAdmin server are now ready to use and available with the
on how to navigate PostgreSQL, please check out the Details section.

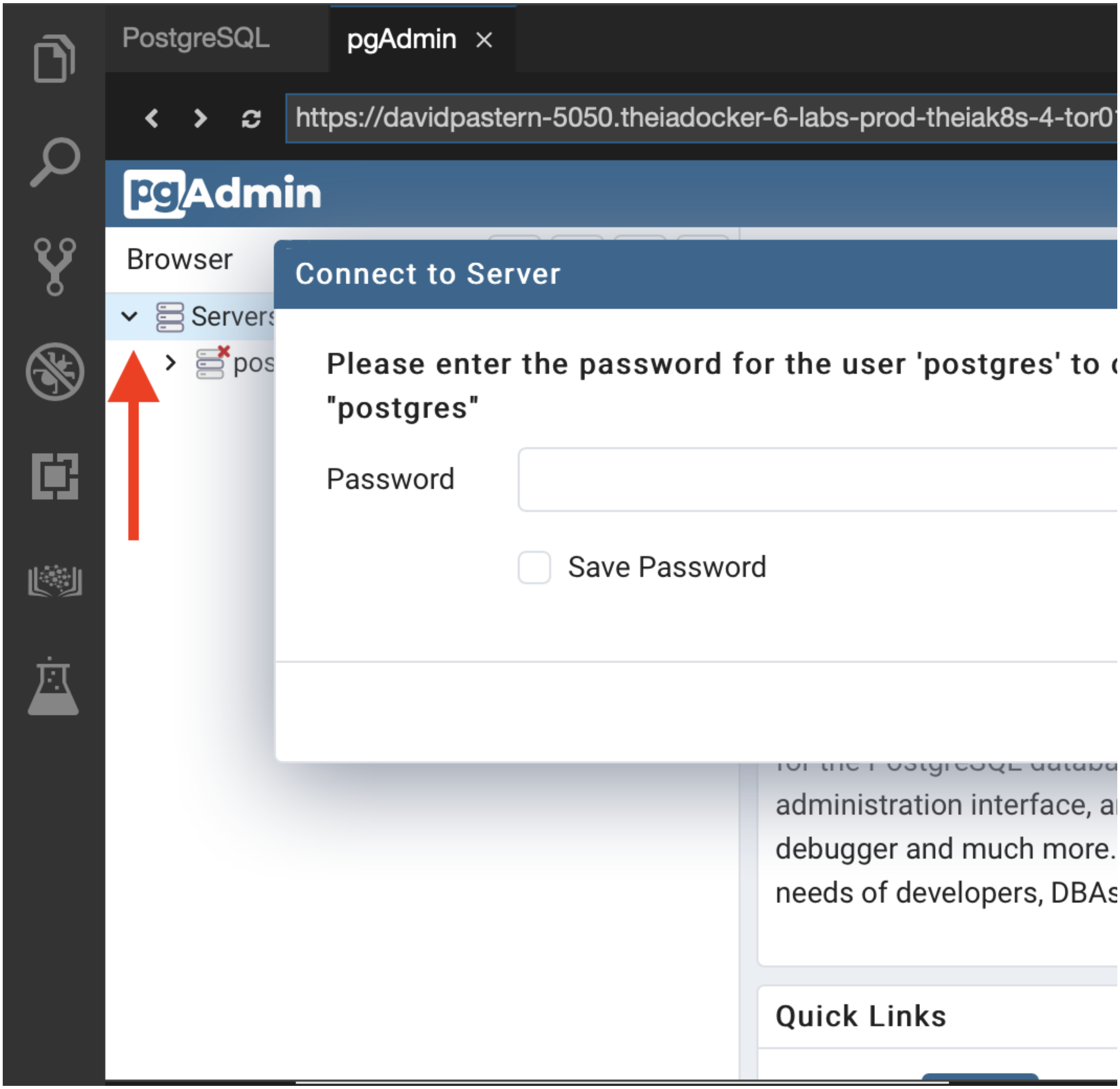
Username:

Password:

You can manage PostgreSQL via:

Or to interact with the database in the terminal, select one of these options:

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


PostgreSQL
pgAdmin ×
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pgAdmin
Browser
Servers
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Quick Links

Connect to Server

Please enter the password for the user 'postgres' to c
"postgres"

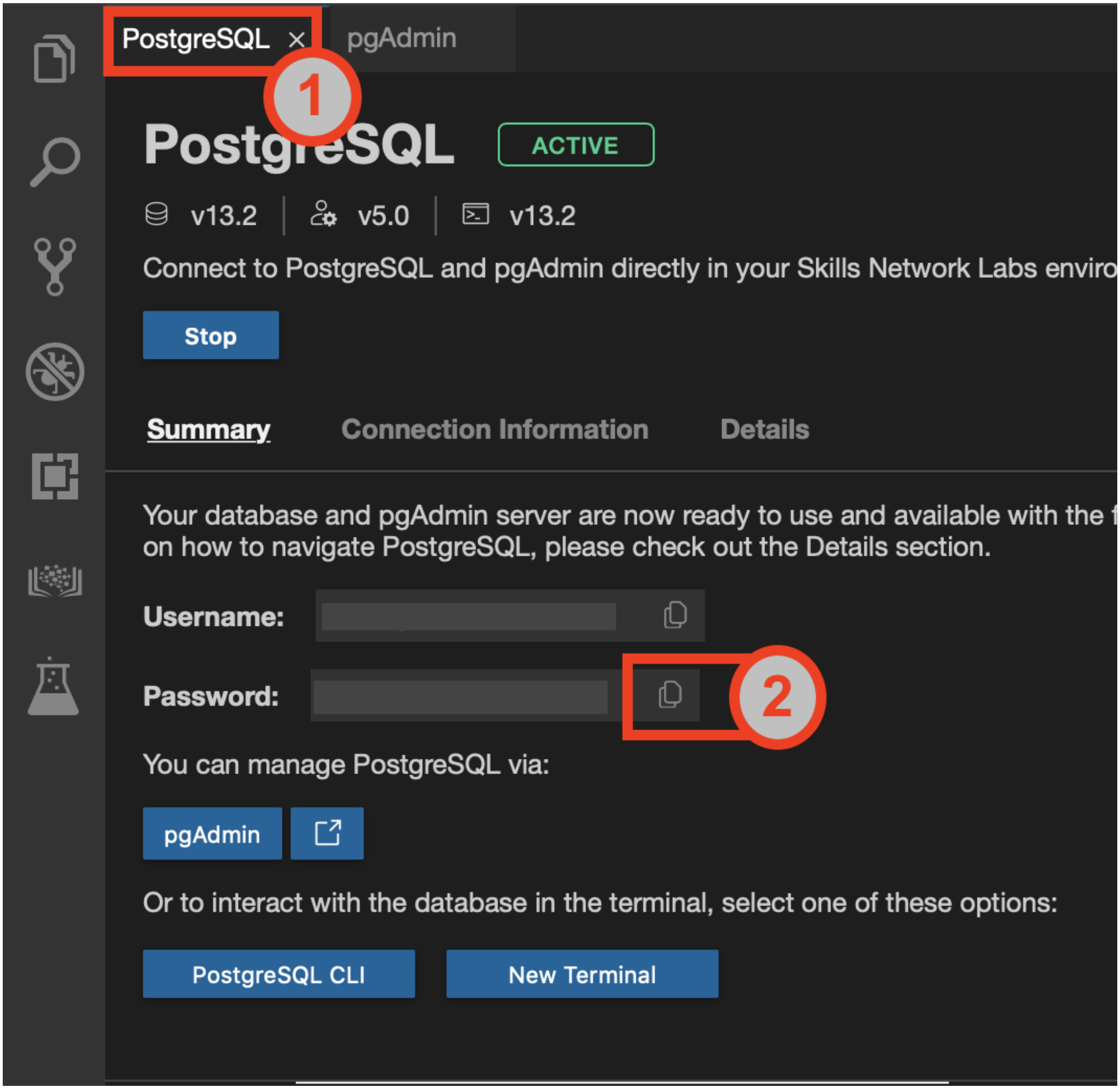
Password

□ Save Password

for the PostgreSQL databa
administration interface, a
debugger and much more.
needs of developers, DBAs

6. To retrieve your password, click on the "PostgreSQL" tab near the top of the interface.

7. Click on the Copy icon to the left of your password to copy the session password onto your clipboard.



PostgreSQL

Connect to PostgreSQL and pgAdmin directly in your Skills Network Labs enviro

Your database and pgAdmin server are now ready to use and available with the f
on how to navigate PostgreSQL, please check out the Details section.

Username: [redacted]

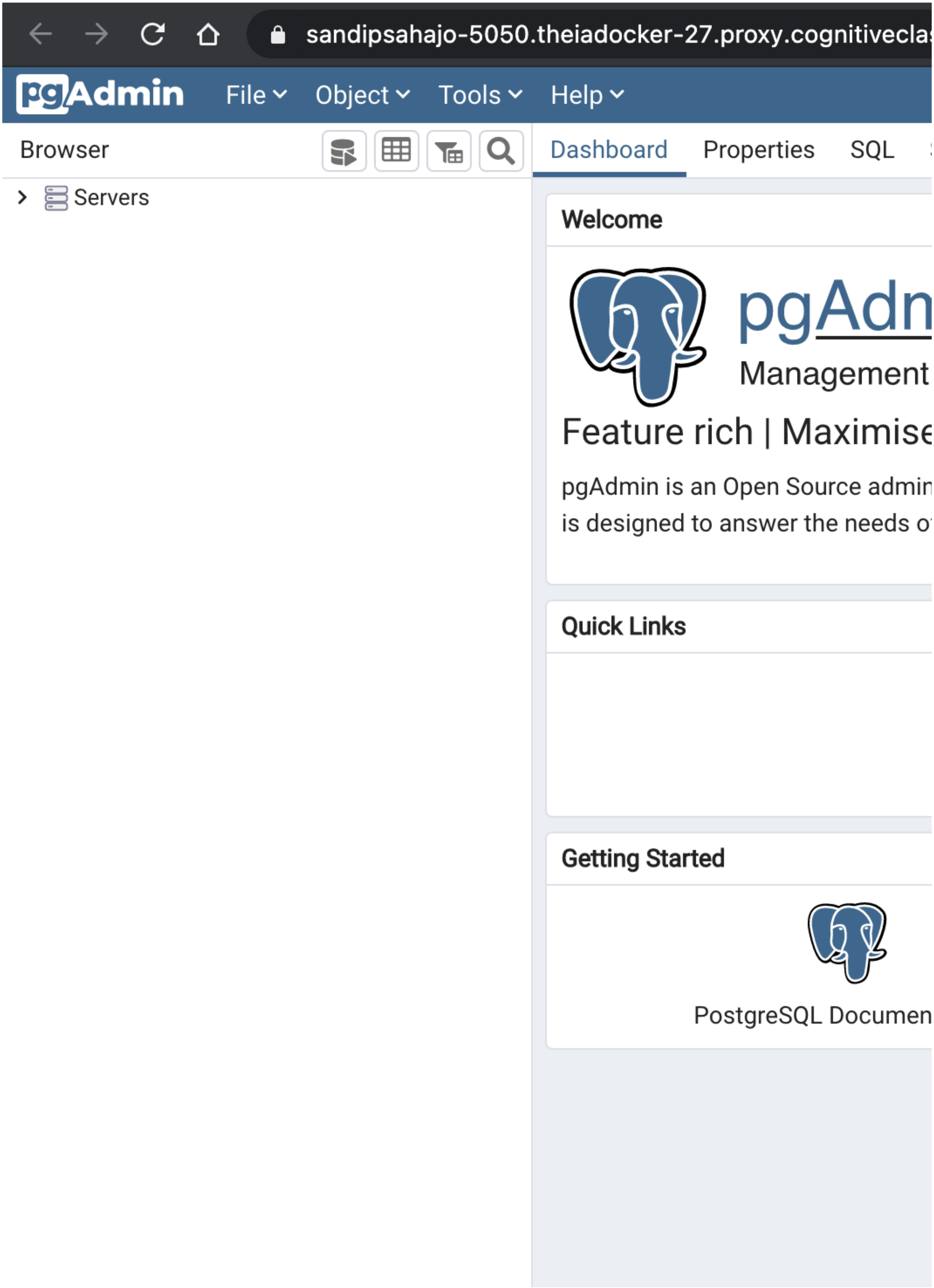
Password: [redacted]

You can manage PostgreSQL via:

Or to interact with the database in the terminal, select one of these options:

8. Navigate back to the "pgAdmin" tab and paste in your password, then click OK

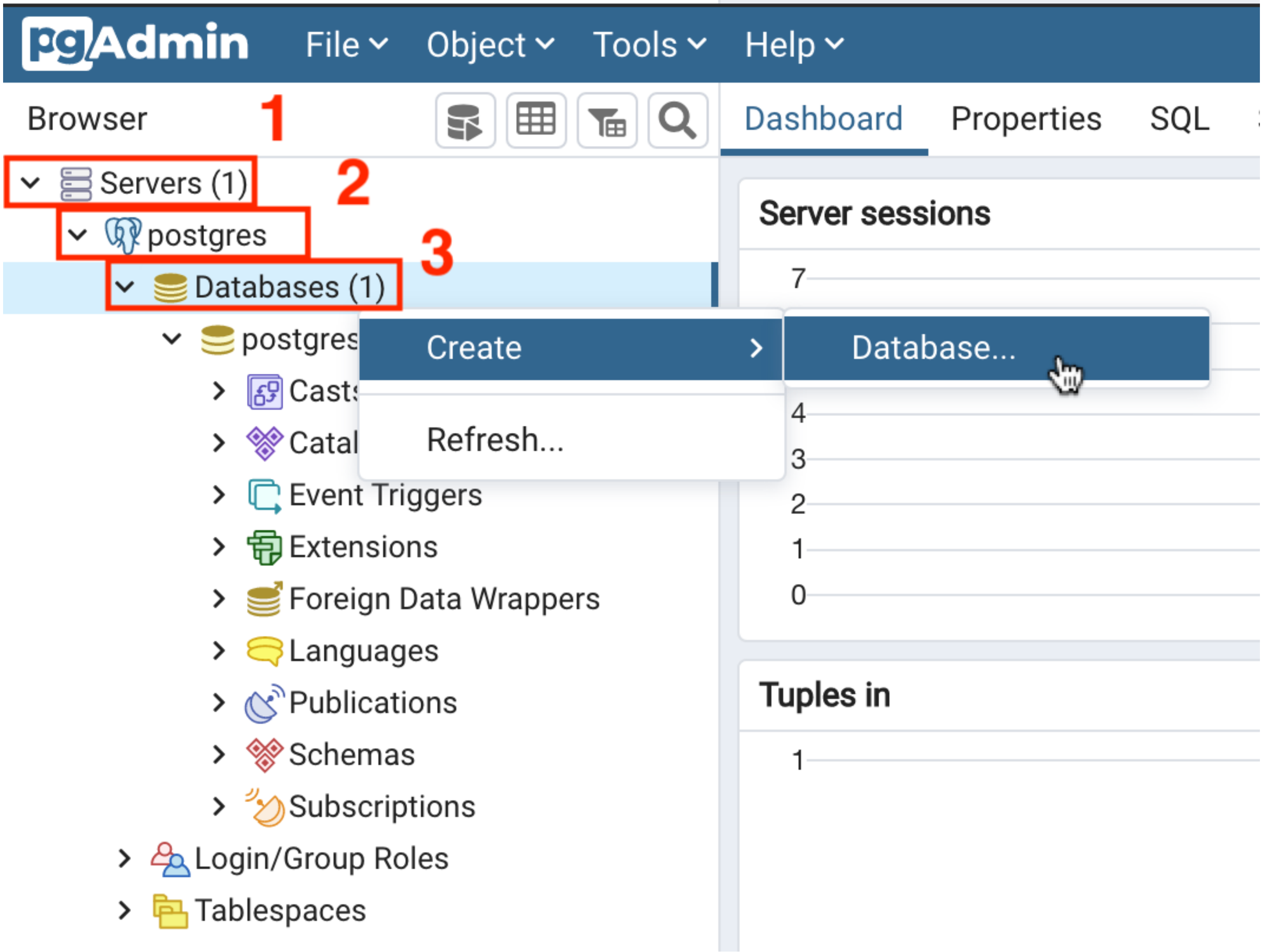
9. You will then be able to access the pgAdmin GUI tool.

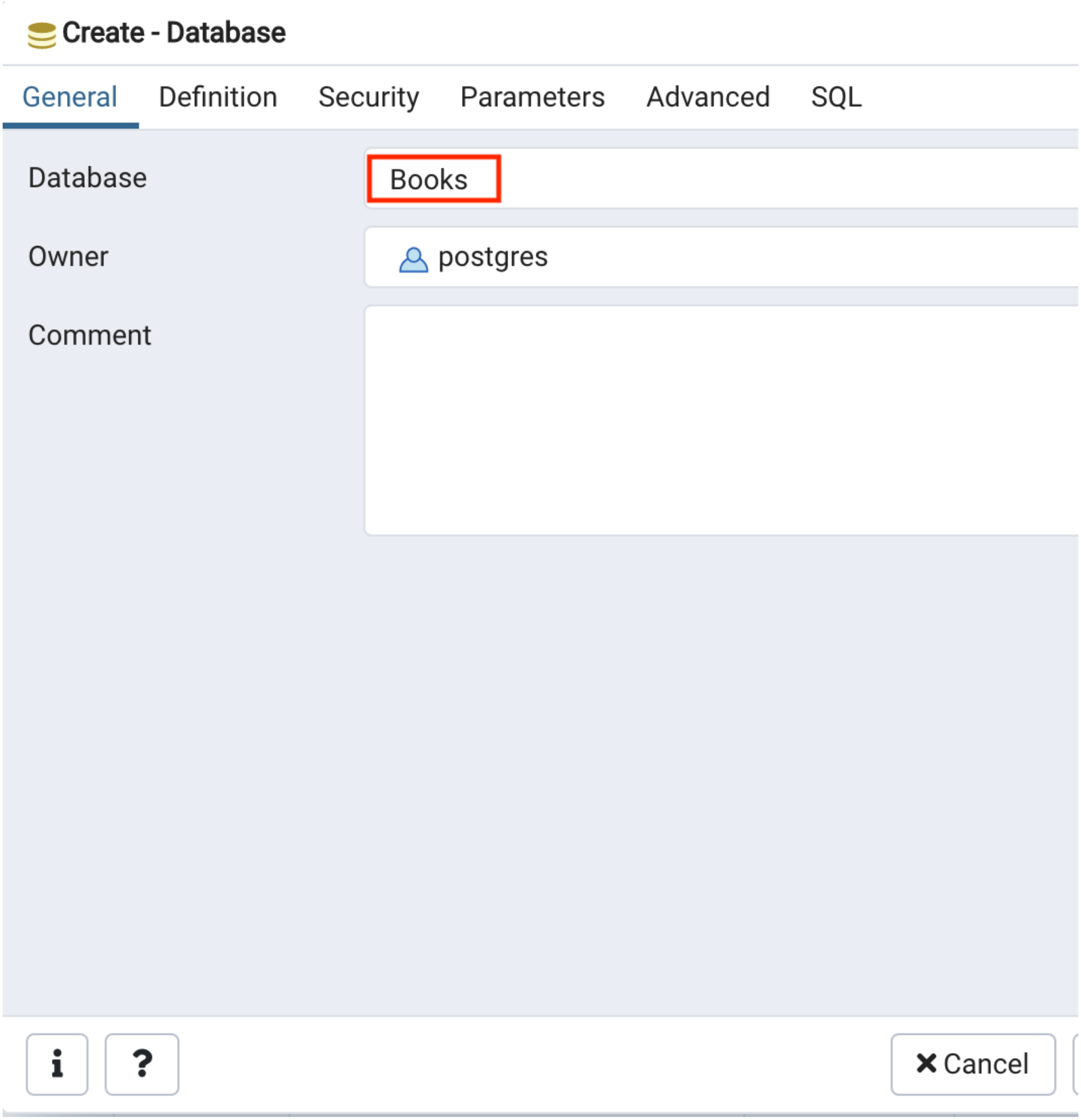


Feature rich | Maximise

pgAdmin is an Open Source admin
is designed to answer the needs o

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.





Database: Books

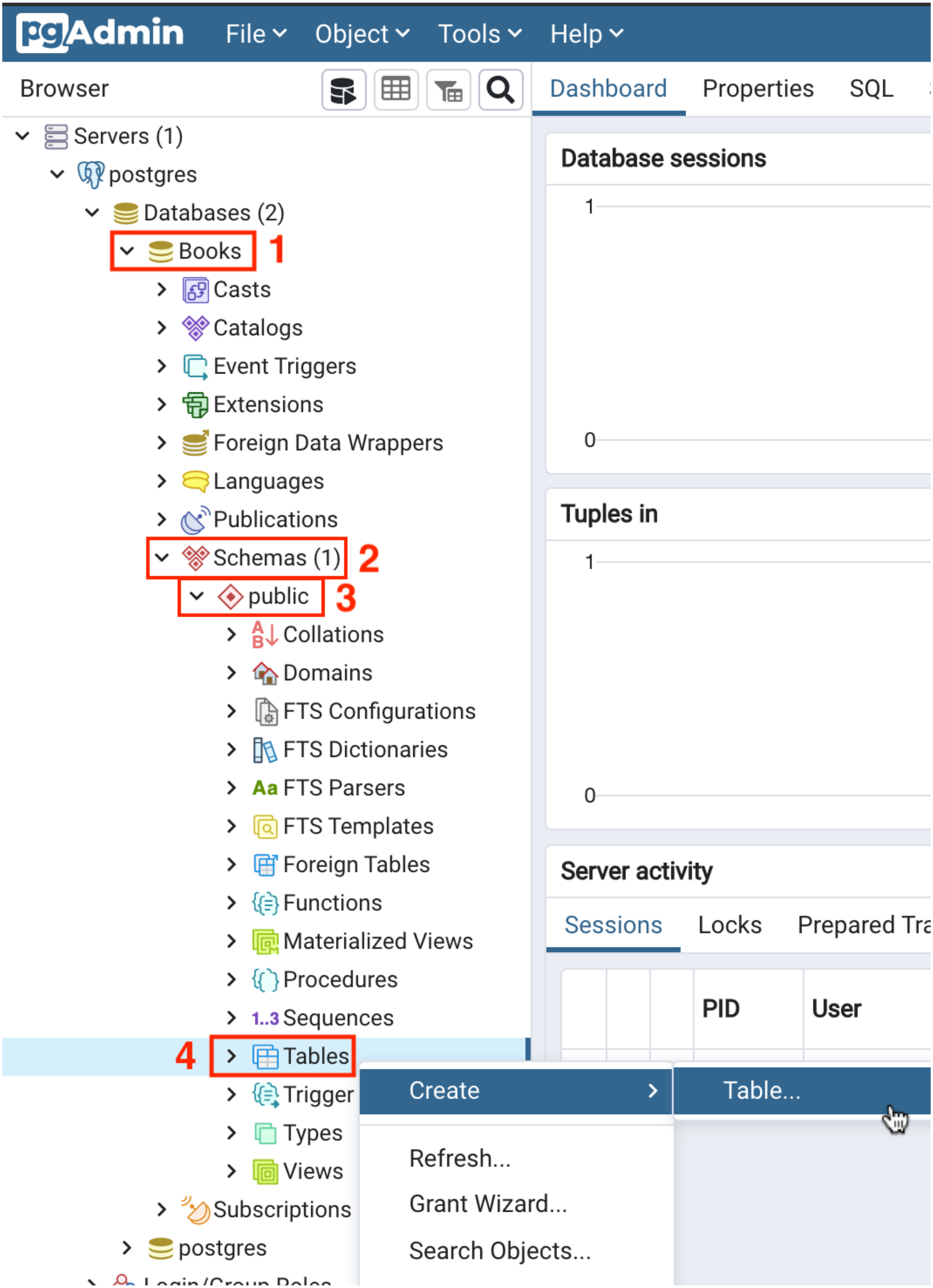
Owner: postgres

Comment:

Task B: Create tables

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

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


pgAdmin
File
Object
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Dashboard
Properties
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Servers (1)
postgres
Databases (2)
Books
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Casts
Catalogs
Event Triggers
Extensions
Foreign Data Wrappers
Languages
Publications
Schemas (1)
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FTS Configurations
FTS Dictionaries
FTS Parsers
FTS Templates
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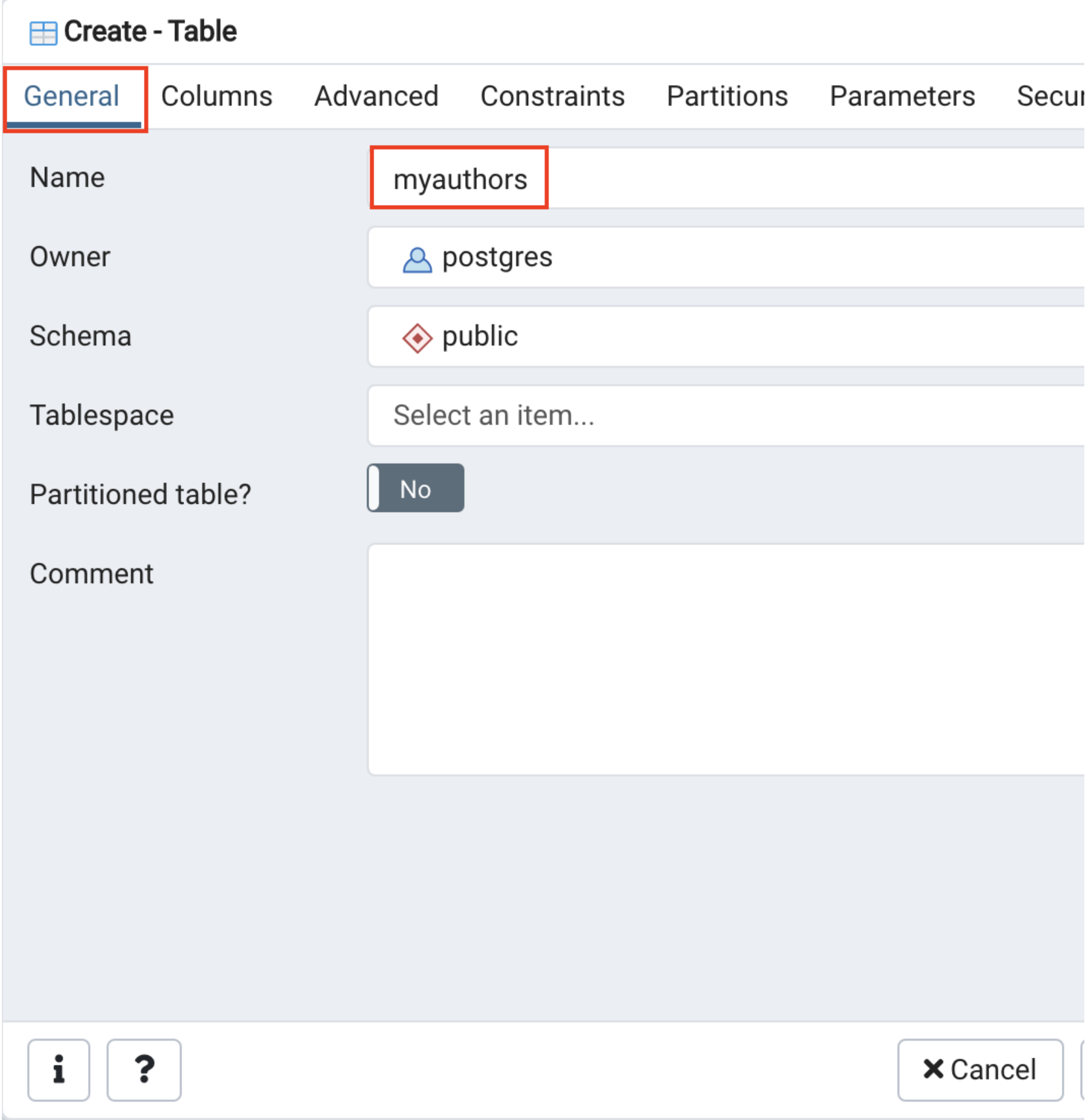
Table...
Refresh...
Grant Wizard...
Search Objects...

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.



Create - Table

Name: myauthors

Owner: postgres

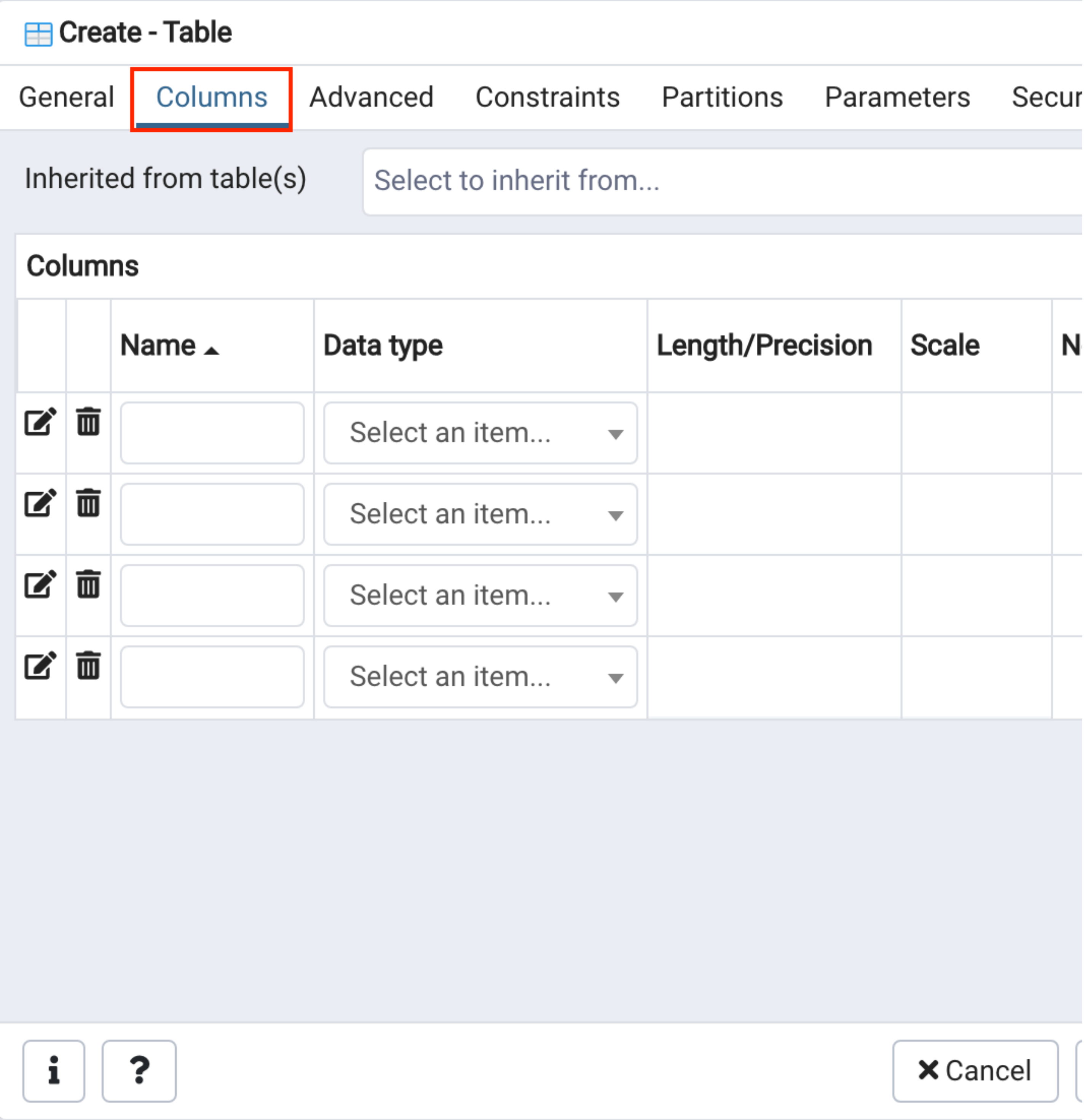
Schema: public

Tablespace: Select an item...

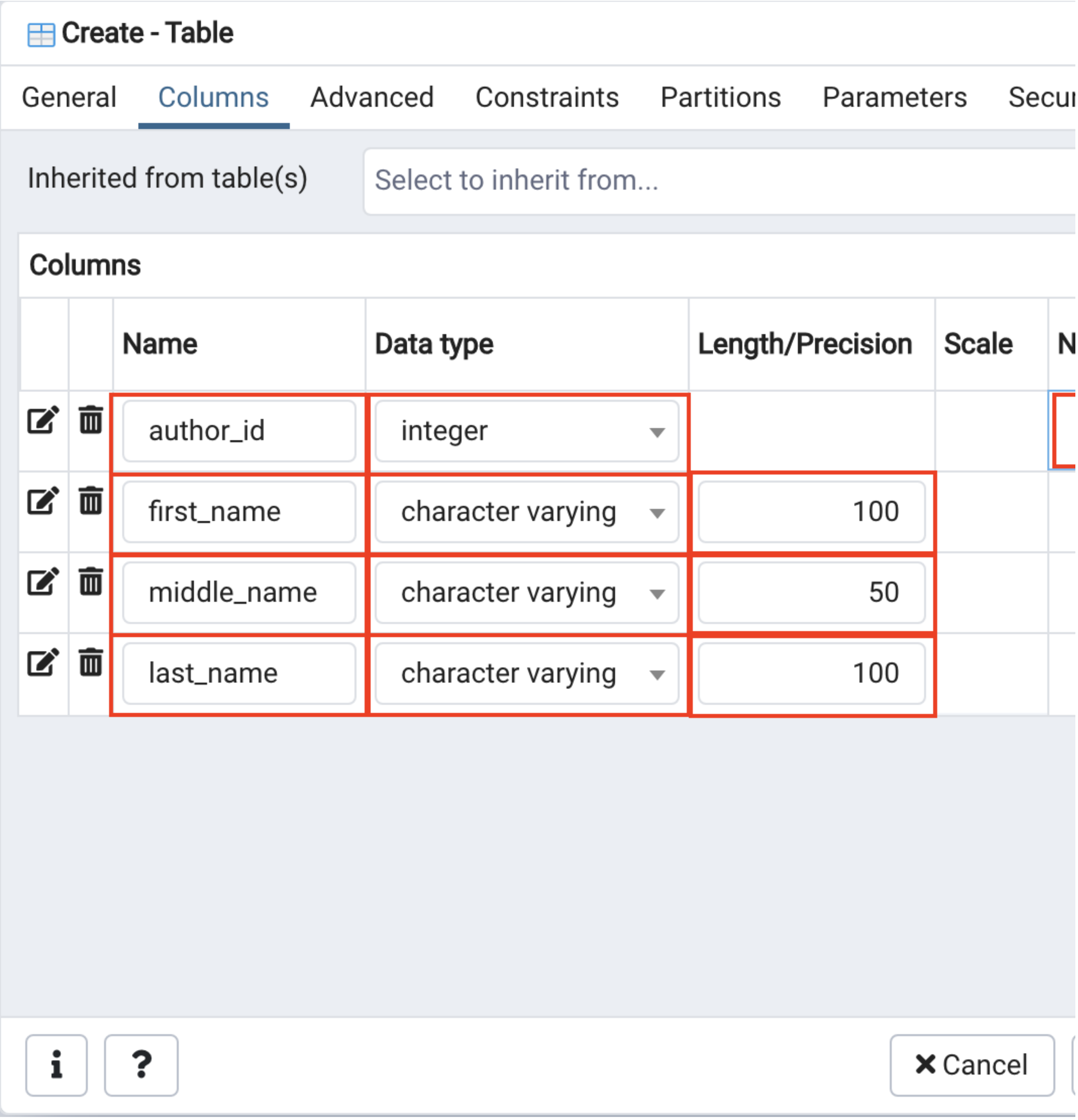
Partitioned table?: No

Comment:

3. Switch to 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.



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.



Inherited from table(s): Select to inherit from...

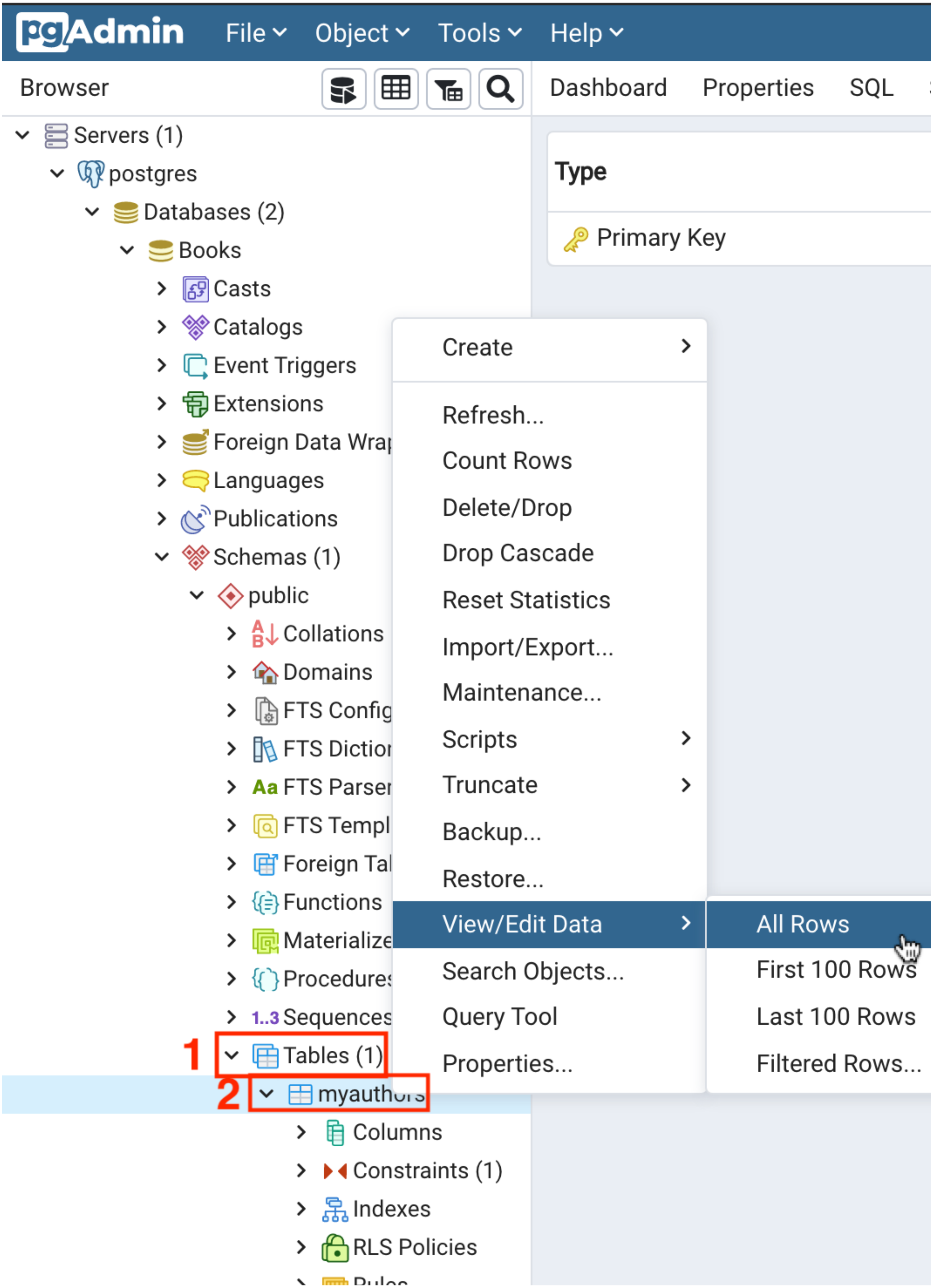
Columns

Name	Data type	Length/Precision	Scale	N
author_id	integer			
first_name	character varying	100		
middle_name	character varying	50		
last_name	character varying	100		

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

Great! 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 on **myauthors** and go to **View/Edit Data > All Rows**.


pgAdmin
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Delete/Drop
Drop Cascade
Reset Statistics
Import/Export...
Maintenance...
Scripts
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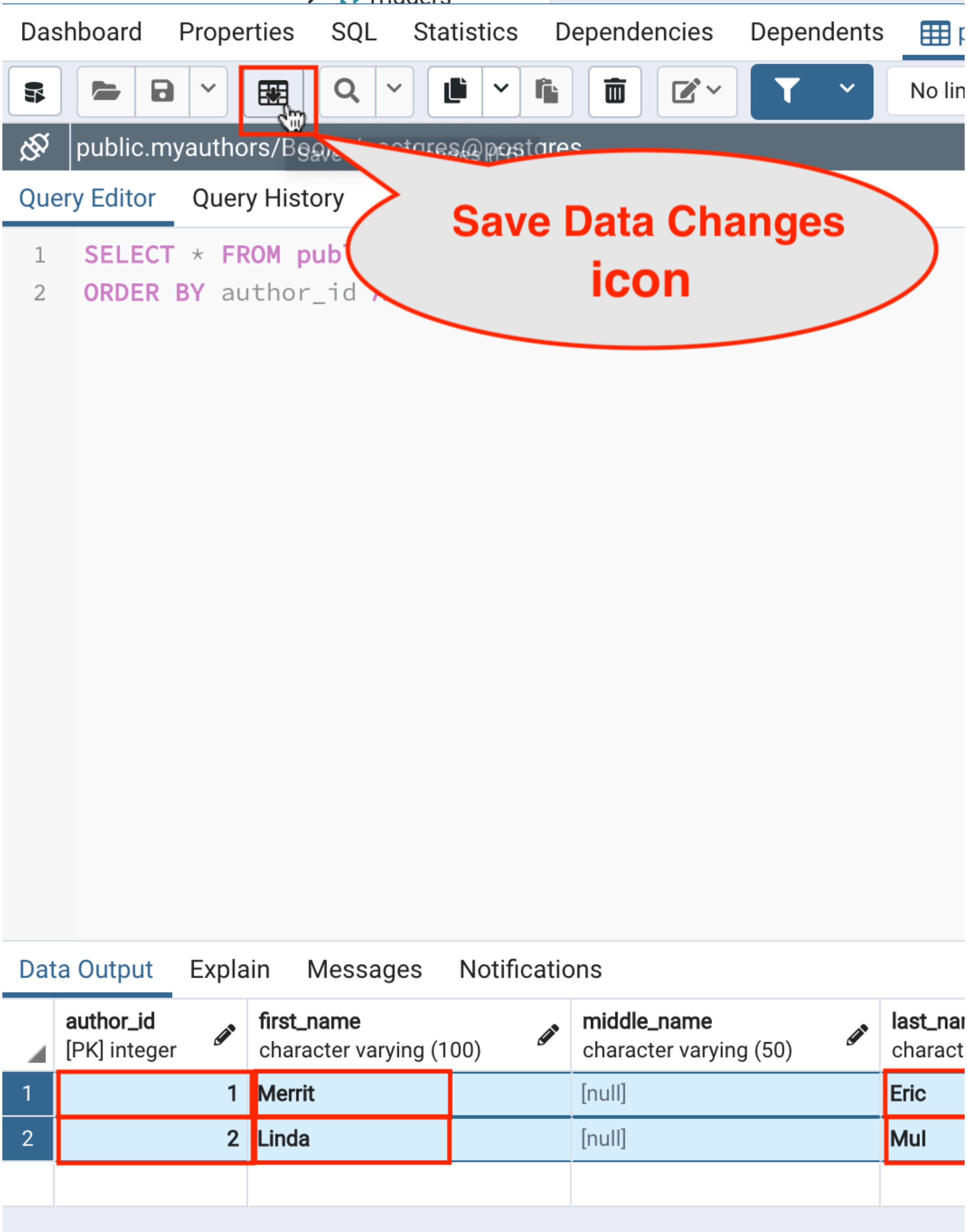
Backup...
Restore...
View/Edit Data
Search Objects...
Query Tool
Properties...
All Rows
First 100 Rows
Last 100 Rows
Filtered Rows...

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** button. Proceed to Task D.



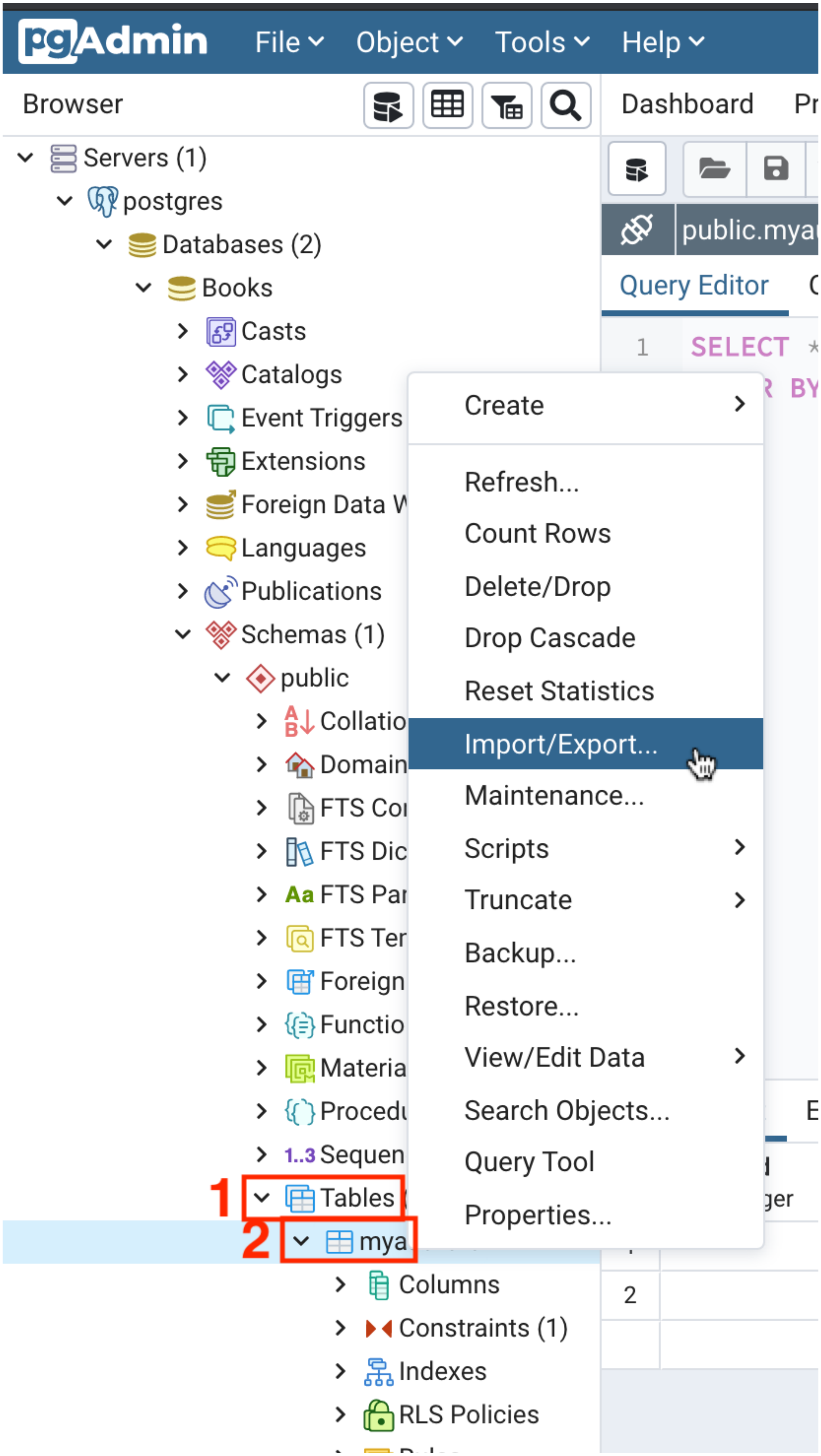
```
SELECT * FROM pub
ORDER BY author_id
```

	author_id [PK] integer	first_name character varying (100)	middle_name character varying (50)	last_nai charact
1	1	Merrit	[null]	Eric
2	2	Linda	[null]	Mul

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, that process becomes far too 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. Finally, 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**.


pgAdmin
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Import/Export...
Maintenance...
Scripts
Truncate
Backup...
Restore...
View/Edit Data
Search Objects...
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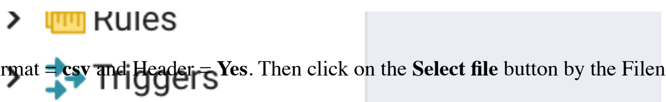
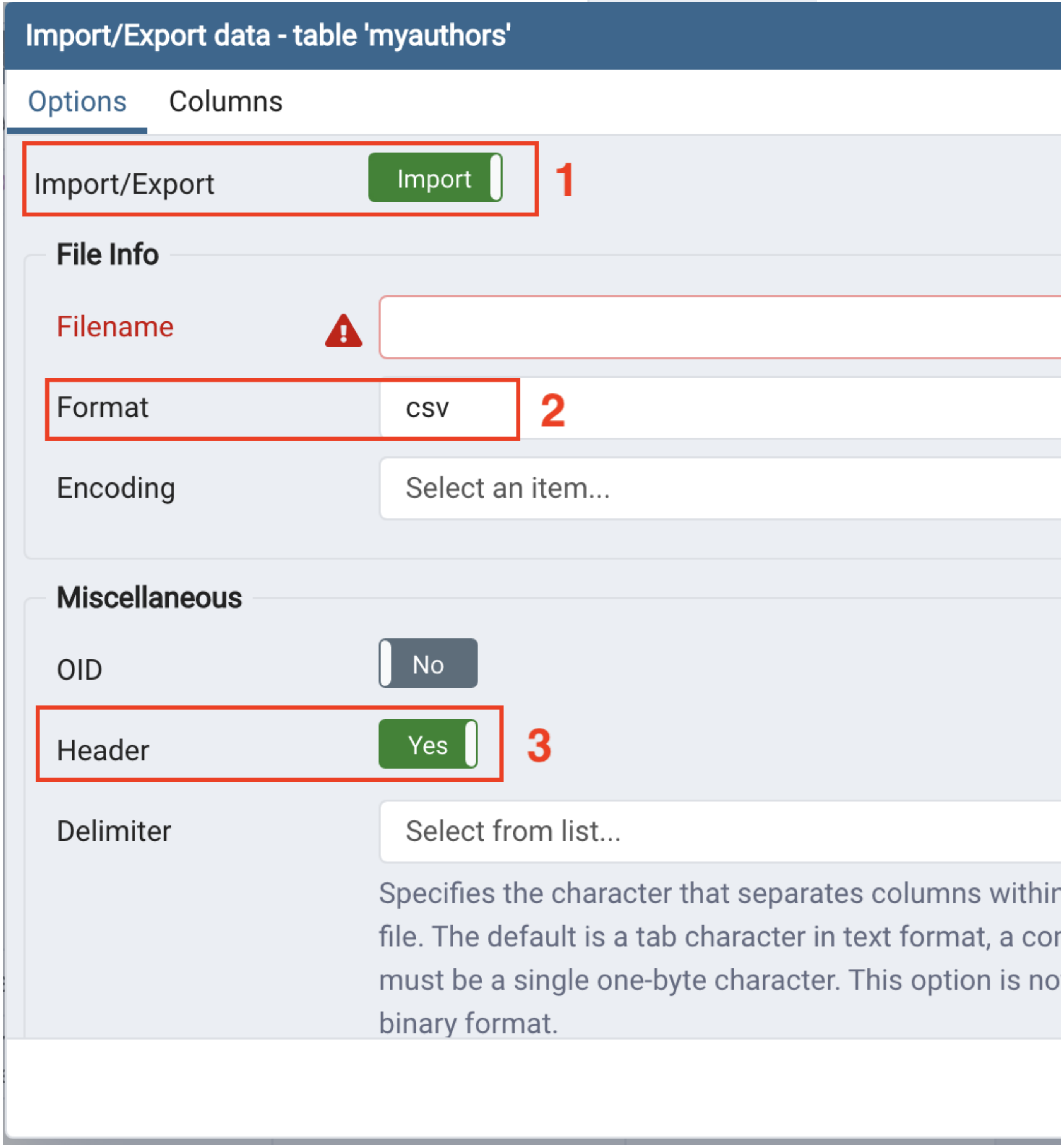
3. Follow the instructions below to import:



- Make sure Import/Export is set to **Import**, Format = **csv** and Header = **Yes**. Then click on the **Select file** button by the Filename box.



Import/Export data - table 'myauthors'

Import/Export: Import

1

File Info

Filename

Format: csv

2

Encoding: Select an item...

Miscellaneous

OID: No

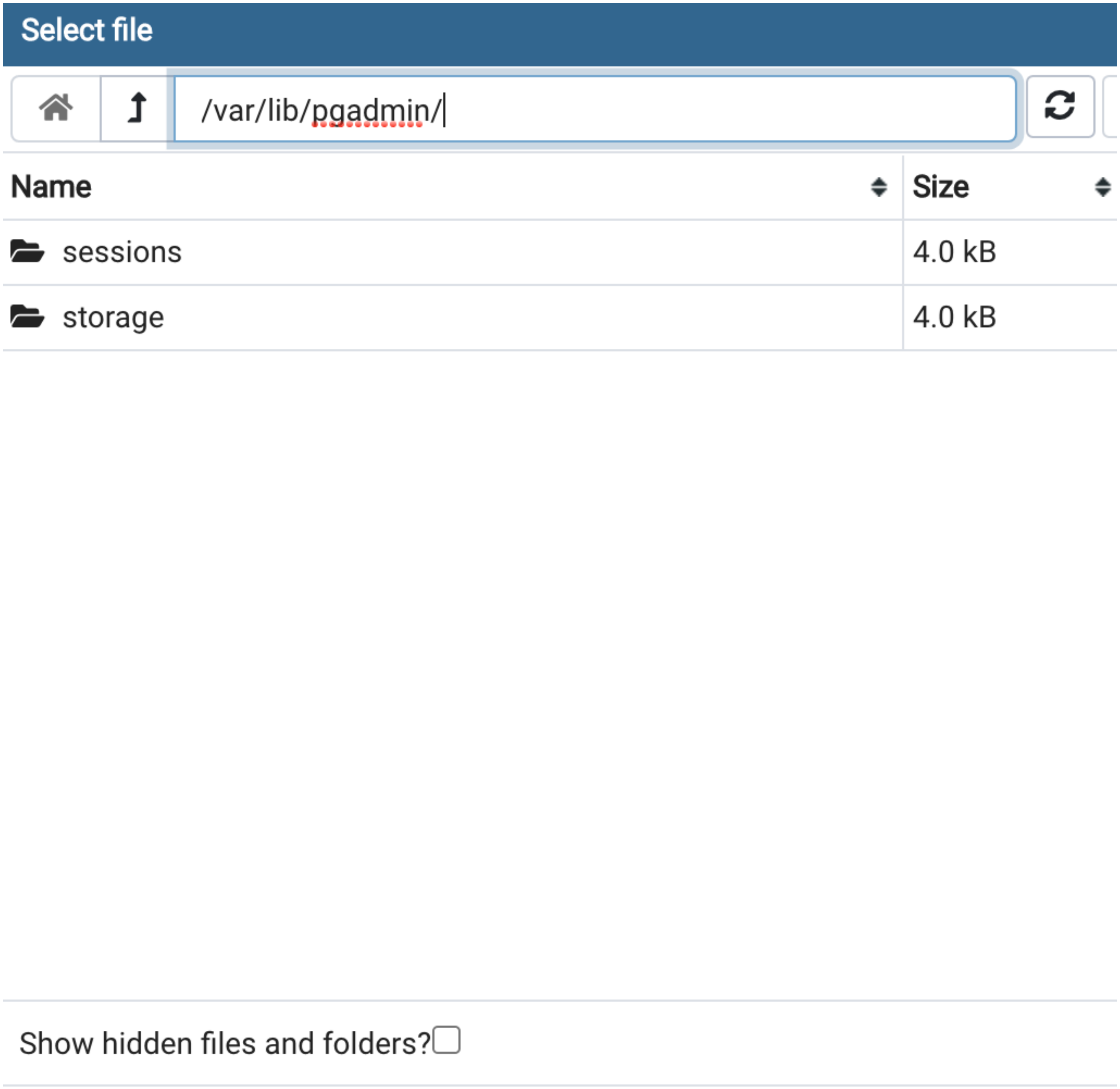
Header: Yes

3

Delimiter: Select from list...

Specifies the character that separates columns withir file. The default is a tab character in text format, a cor must be a single one-byte character. This option is no binary format.

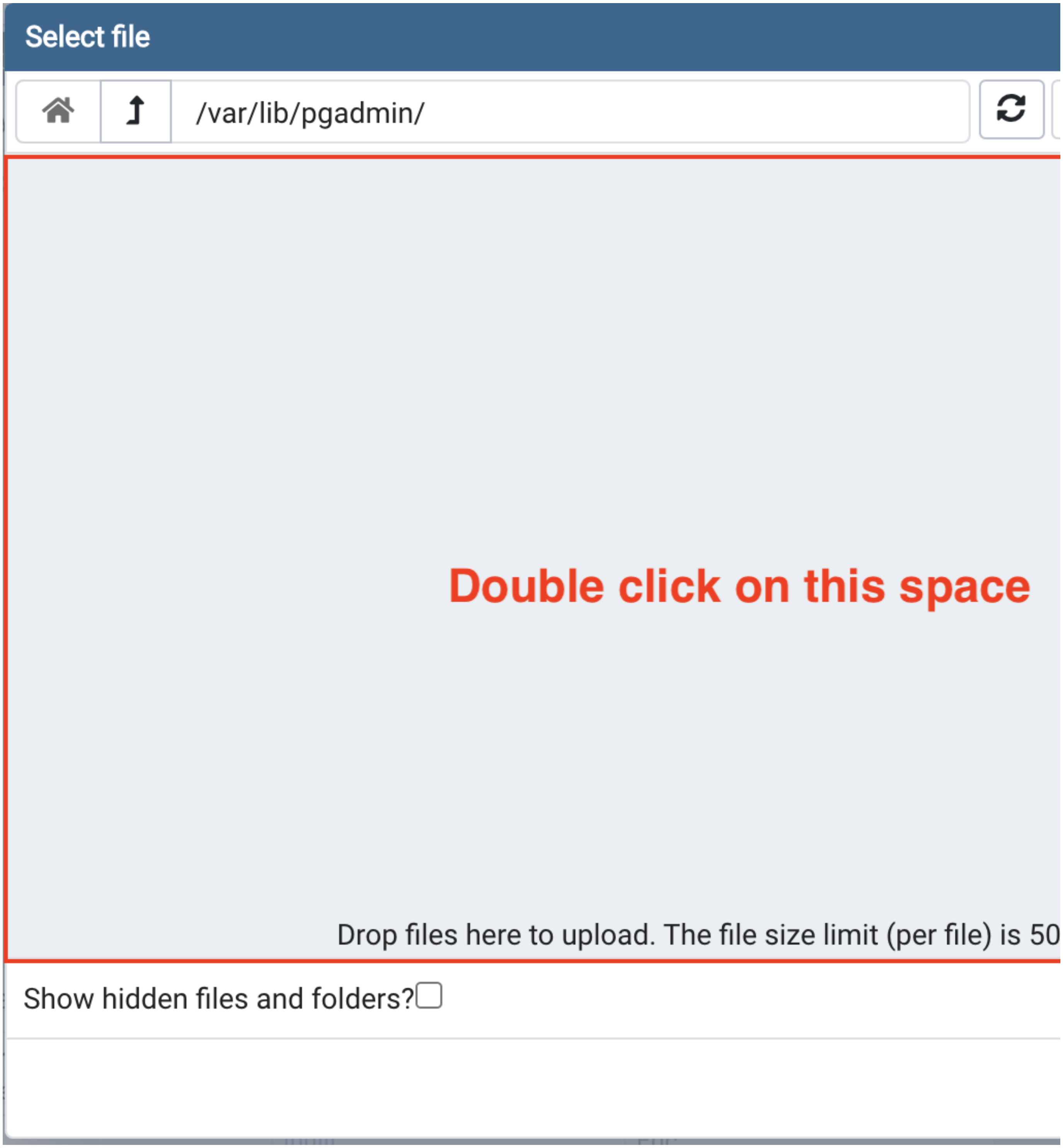
- Click the **Upload File** button.



/var/lib/pgadmin/

Name	Size
sessions	4.0 kB
storage	4.0 kB

- Double-click on the drop files area and load the **myauthors.csv** you downloaded earlier from your local computer storage.



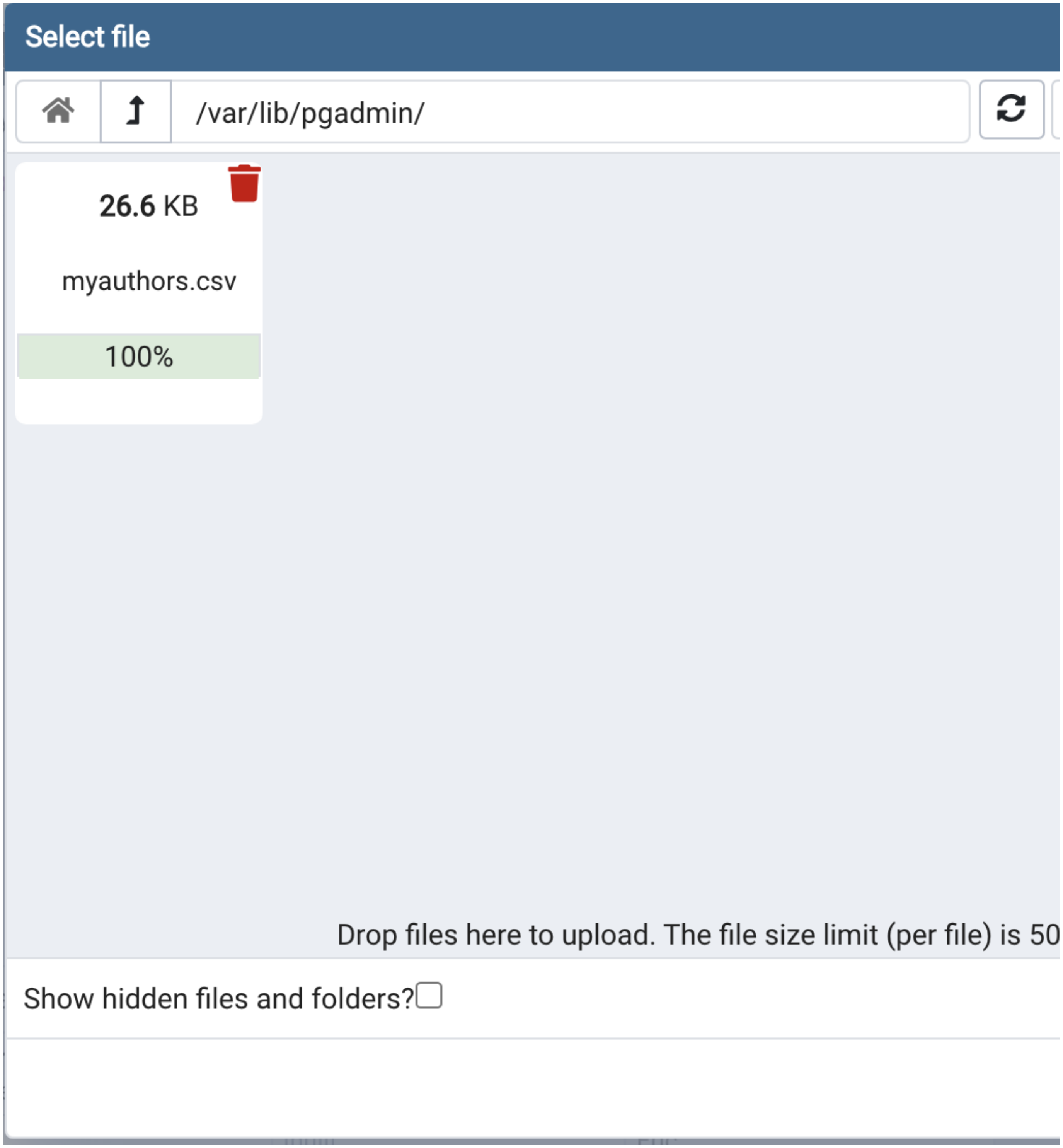
Select file

/var/lib/pgadmin/

Drop files here to upload. The file size limit (per file) is 50

Show hidden files and folders?□

- When the upload is complete, close the drop files area clicking the **X** button.



Select file

/var/lib/pgadmin/

26.6 KB

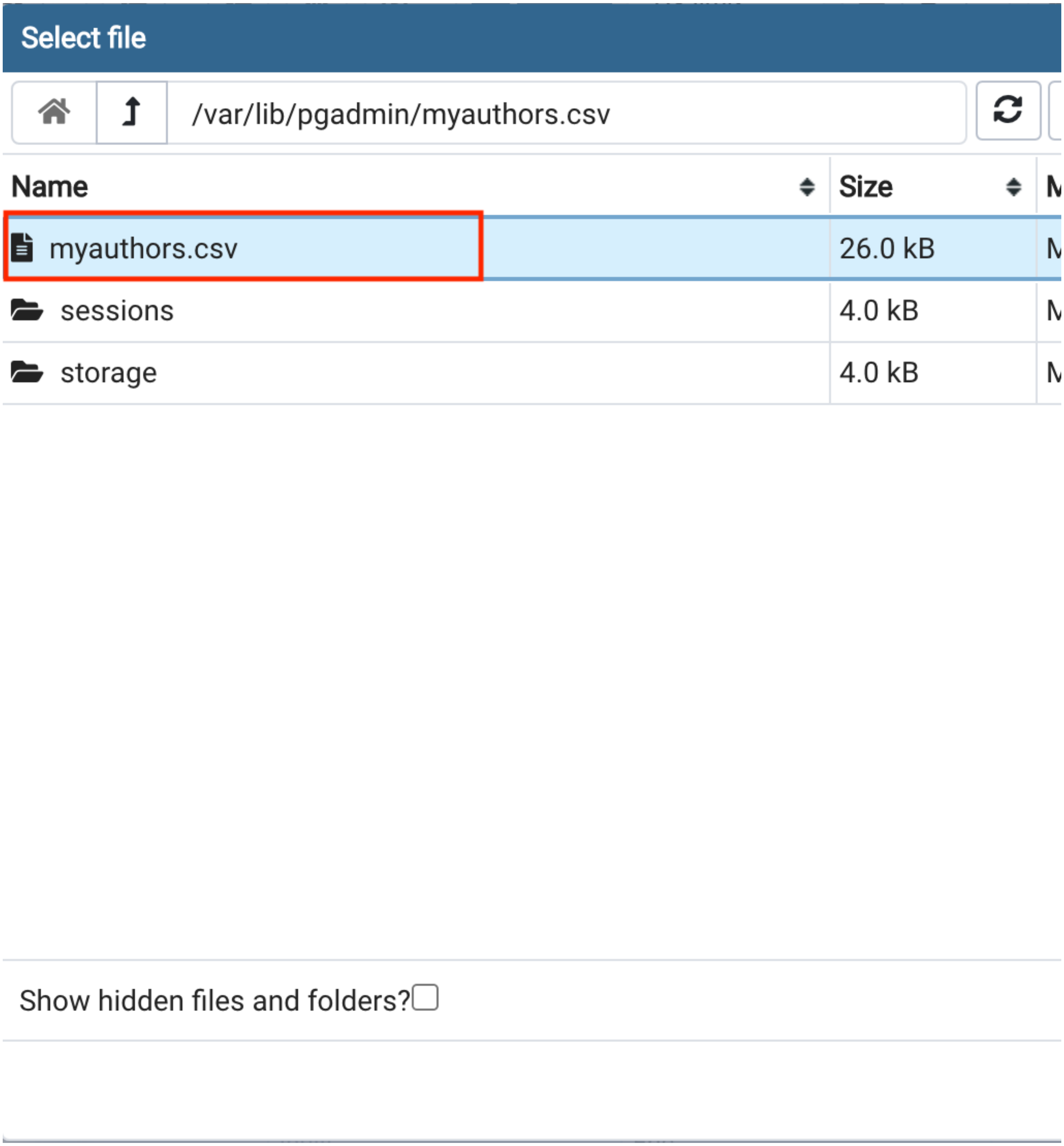
myauthors.csv

100%

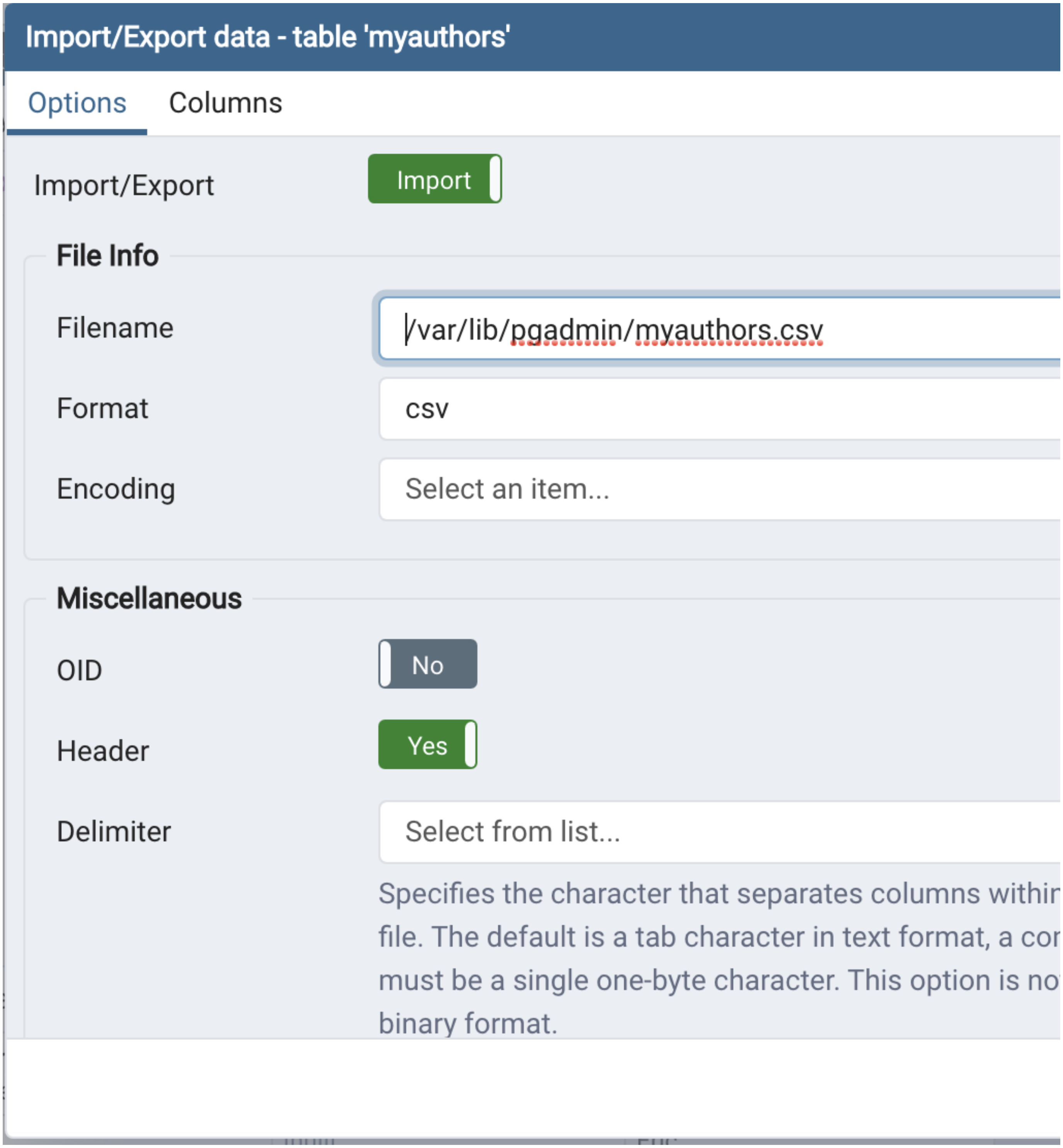
Drop files here to upload. The file size limit (per file) is 50

Show hidden files and folders?□

- Select the uploaded **myauthors.csv** file from the list and click the **Select** button.



- Click **OK** and notification of import success should appear.



Import/Export data - table 'myauthors'

Import/Export: Import

File Info

Filename: /var/lib/pgadmin/myauthors.csv

Format: csv

Encoding: Select an item...

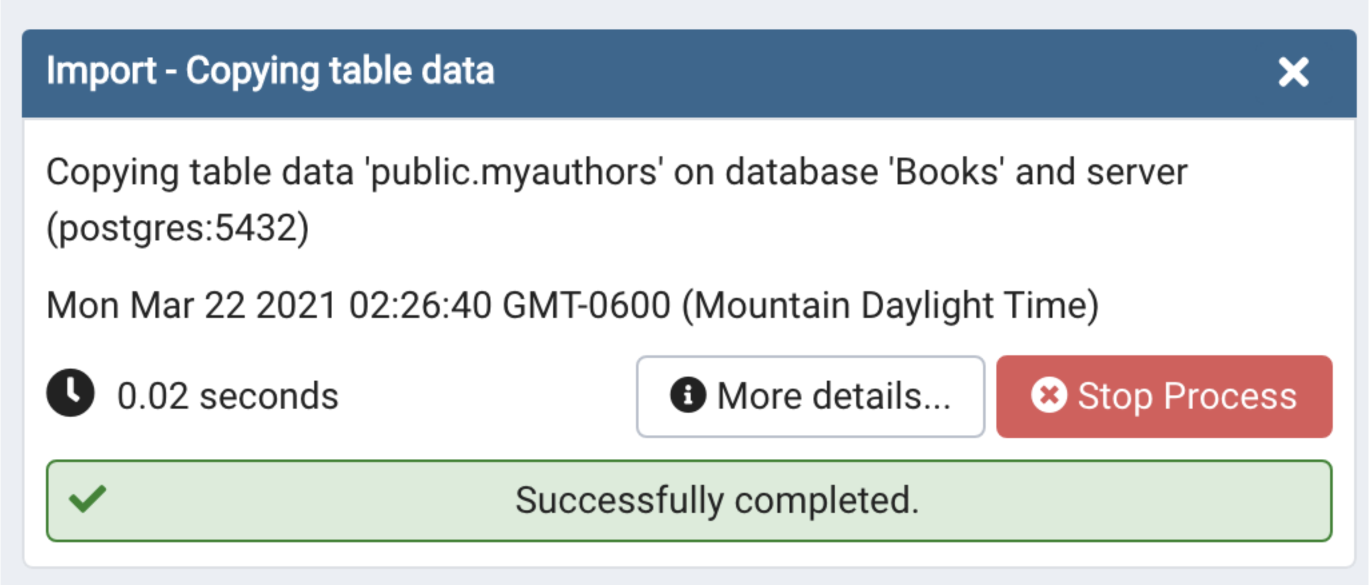
Miscellaneous

OID: No

Header: Yes

Delimiter: Select from list...

Specifies the character that separates columns withir file. The default is a tab character in text format, a cor must be a single one-byte character. This option is no binary format.



Import - Copying table data

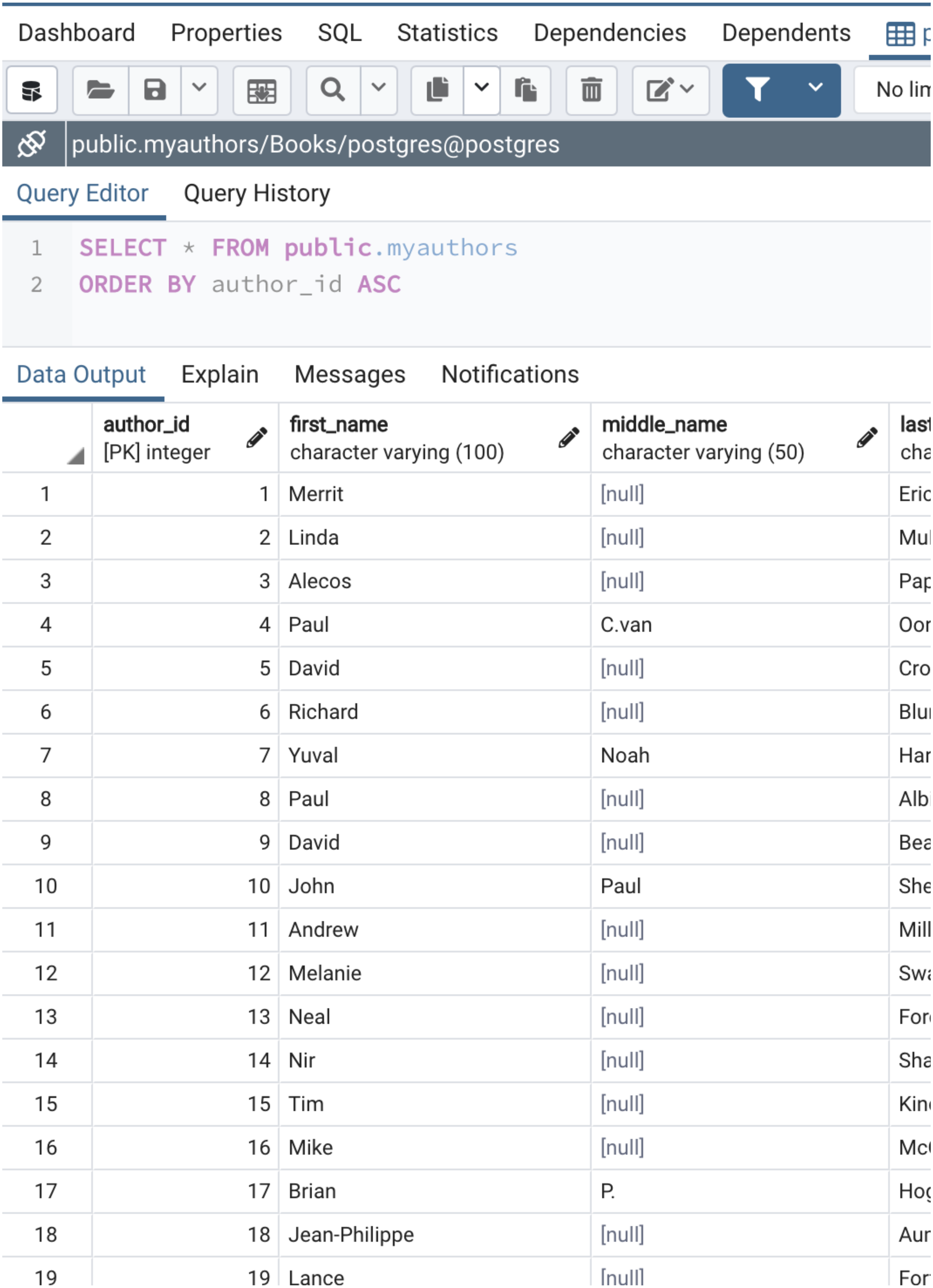
Copying table data 'public.myauthors' on database 'Books' and server (postgres:5432)

Mon Mar 22 2021 02:26:40 GMT-0600 (Mountain Daylight Time)

0.02 seconds

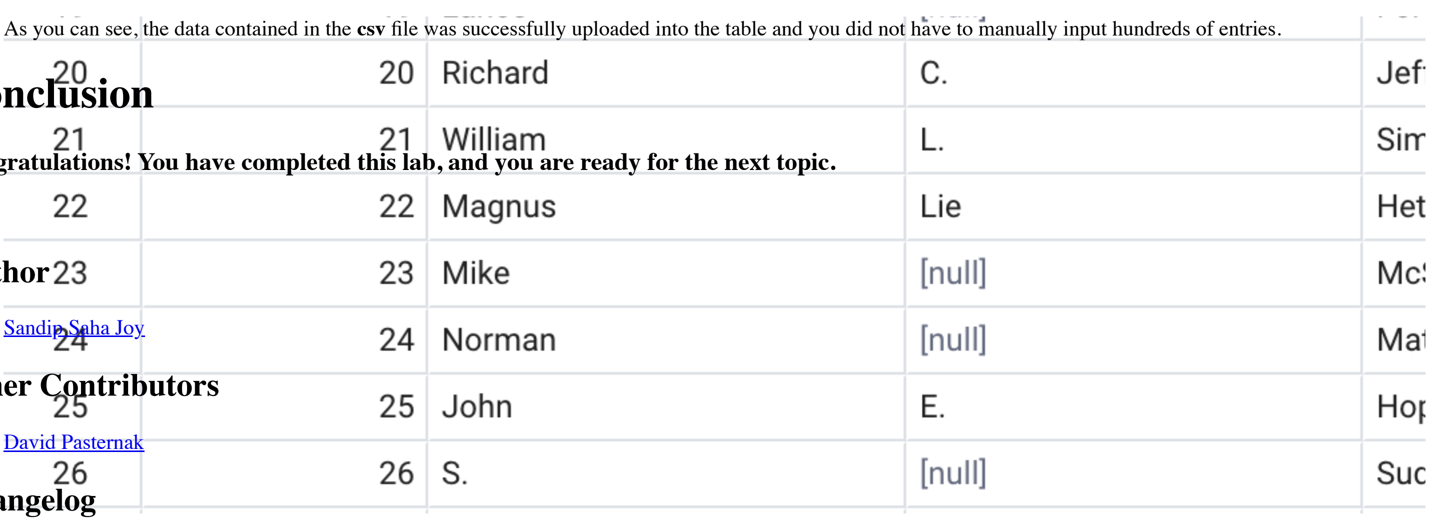
Successfully completed.

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



```
SELECT * FROM public.myauthors
ORDER BY author_id ASC
```

	author_id [PK] integer	first_name character varying (100)	middle_name character varying (50)	last cha
1	1	Merrit	[null]	Eric
2	2	Linda	[null]	Mul
3	3	Alecos	[null]	Pap
4	4	Paul	C.van	Oor
5	5	David	[null]	Cro
6	6	Richard	[null]	Blu
7	7	Yuval	Noah	Har
8	8	Paul	[null]	Albi
9	9	David	[null]	Bea
10	10	John	Paul	She
11	11	Andrew	[null]	Mill
12	12	Melanie	[null]	Swa
13	13	Neal	[null]	For
14	14	Nir	[null]	Sha
15	15	Tim	[null]	Kin
16	16	Mike	[null]	Mc
17	17	Brian	P.	Hog
18	18	Jean-Philippe	[null]	Aur
19	19	Lance	[null]	For



20	20	Richard	C.	Jef
21	21	William	L.	Sim
22	22	Magnus	Lie	Het
23	23	Mike	[null]	McS
24	24	Norman	[null]	Mat
25	25	John	E.	Hop
26	26	S.	[null]	Suc

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 are ready for the next topic.

Author

- Sandip Saha Joy

Other Contributors

- David Pasternak

Changelog

Date	Version	Changed by	Change Description
2021-03-15	1.0	Sandip Saha Joy	Created initial version
2021-10-18	1.1	David Pasternak	Updated lab instructions