Final Assignment - Database Administration - Part 1

Estimated time needed: **45** minutes.

About This SN Labs Cloud IDE

This Skills Network Labs Cloud IDE provides a hands-on environment for course and project related labs. It utilizes Theia, an open-source IDE (Integrated Development Environment) platform, that can be run on desktop or on the cloud. To complete this lab, we will be using the Cloud IDE based on Theia and PostgreSQL database running in a Docker container.

Important Notice about this lab environment

Please be aware that sessions for this lab environment are not persisted. Every time you connect to this lab, a new environment is created for you. Any data you may have saved in the earlier session would get lost. Plan to complete these labs in a single session, to avoid losing your data.

Scenario

You have assumed the role of database administrator for the PostgreSQL server and you will perform the User Management tasks and handle the backup of the databases.

Objectives

In Part 1 of this assignment you will be working on the following aspects of Database Administration.

- Installation/Provisioning
- Configuration
- User Management
- Backup

Note - Screenshots

Throughout this lab you will be prompted to take screenshots and save them on your own device. These screenshots will need to be uploaded for peer review in the next section of the course. You can use various free screengrabbing tools to do this or use your operating system's shortcut keys to do this (for example *Alt+PrintScreen* in Windows).

Exercise 1.1 - Set up the lab environment

Before you proceed with the assignment

- Start the PostgreSQL Server
- Download the lab setup bash file "postgres-setup.sh" from the following URL:
  https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/-o-CVNqamn9K4hGlSpFCYg/postgres-setup.sh

While downloading, you might encounter the following error.

```
2024-10-23 09:19:52 (110 MB/s) - 'setup.sql.1' saved [244/244]

psql: error: connection to server at "localhost" (::1), port 5432 failed: Conne
ction refused
        Is the server running on that host and accepting TCP/IP connections?
connection to server at "localhost" (127.0.0.1), port 5432 failed: Connection r
efused
        Is the server running on that host and accepting TCP/IP connections?
psql: error: connection to server at "localhost" (::1), port 5432 failed: Conne
ction refused
        Is the server running on that host and accepting TCP/IP connections?
connection to server at "localhost" (127.0.0.1), port 5432 failed: Connection r
efused
        Is the server running on that host and accepting TCP/IP connections?
theia@theiadocker-nmalumo:/home/project$
```
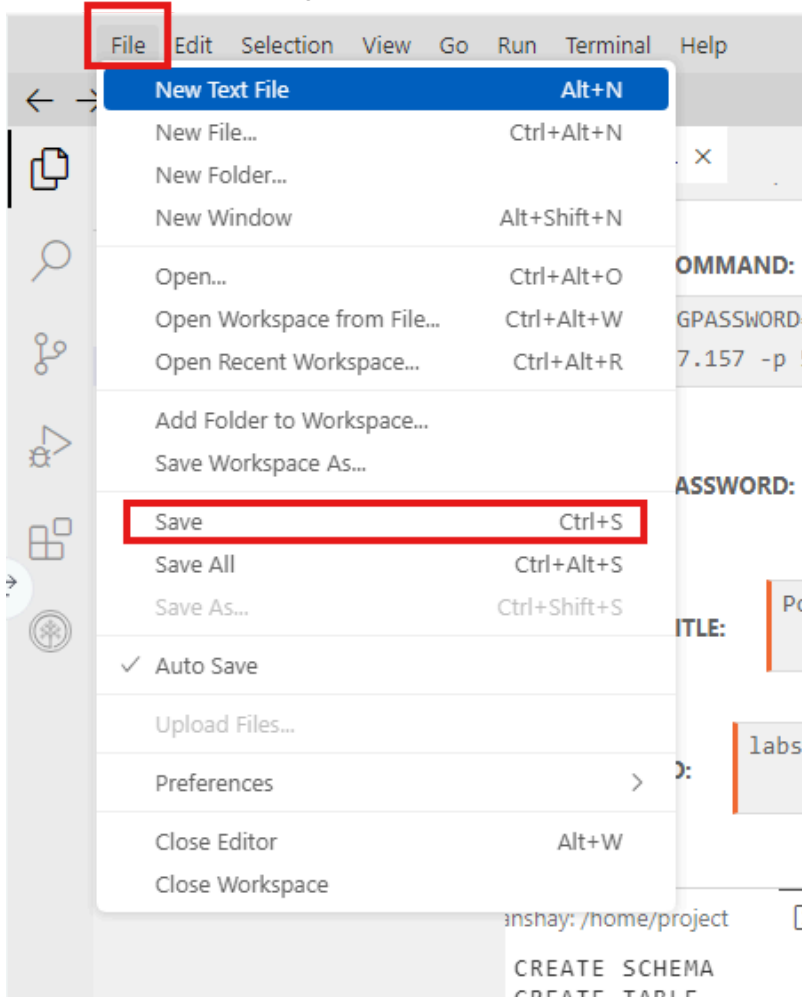
To resolve it, you need to edit the PostgreSQL file as follows:

- Start the PostgreSQL server. Once it shows as active, switch to the credentials tab and copy the server password.
- Open the downloaded file from the left panel in the file section.
- Enter the password in the specified area.
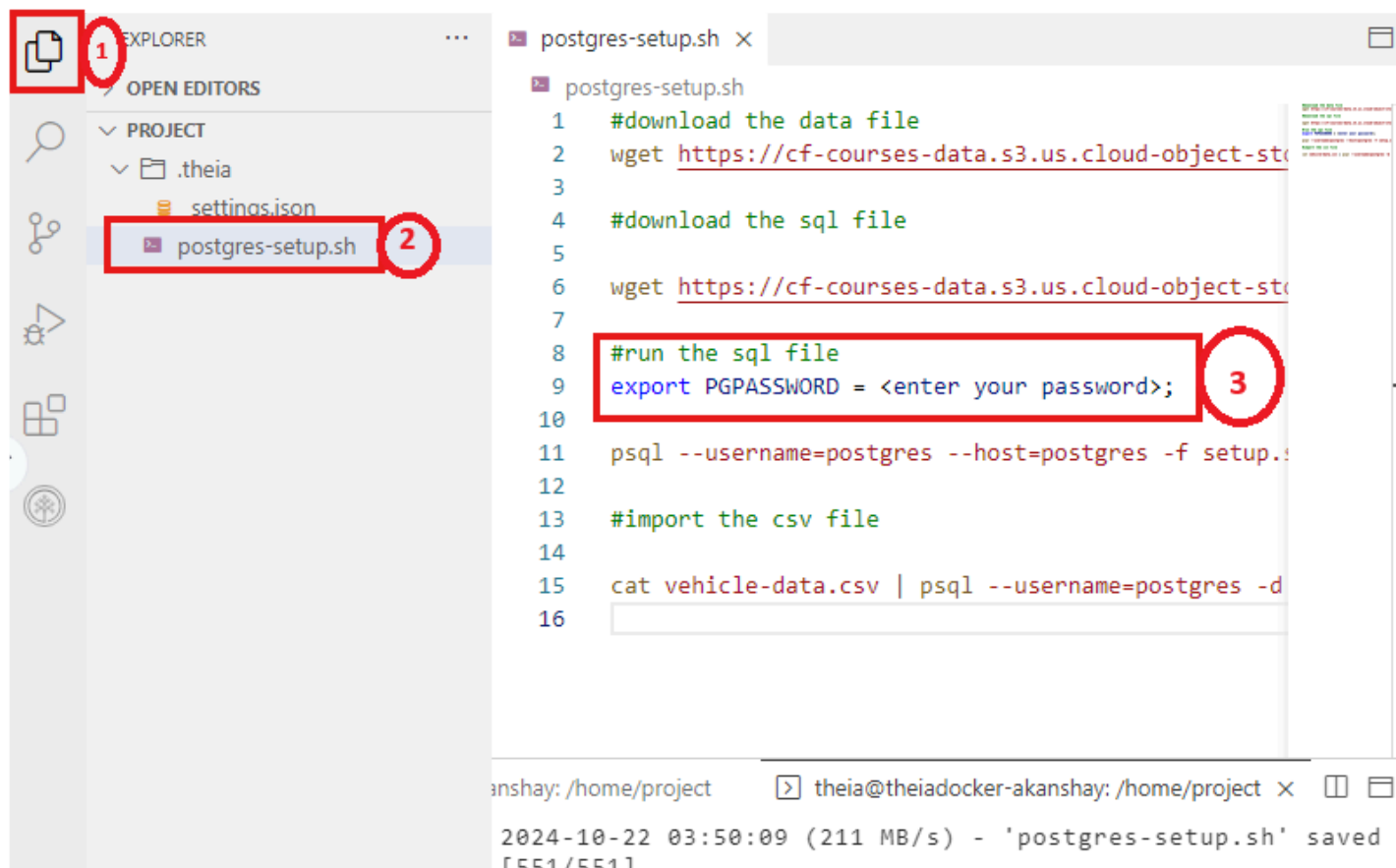
- Go to file to save the changes.

- Run the bash file.

Task 1.1 - Find the settings in PostgreSQL

What is the maximum number of connections allowed for the postgres server on theia lab?

Hint: Use the **show** command.

Take a screenshot of the config file that clearly shows this information.
Name the screenshot as **max-connections.jpg**. (images can be saved with either .jpg or .png extension)

Exercise 1.2 - User Management

Perform these user management tasks on your PostgreSQL server.
Perform the tasks 1.2 to 1.5 using the PostgreSQL CLI. DO NOT USE THE PGADMIN GUI.
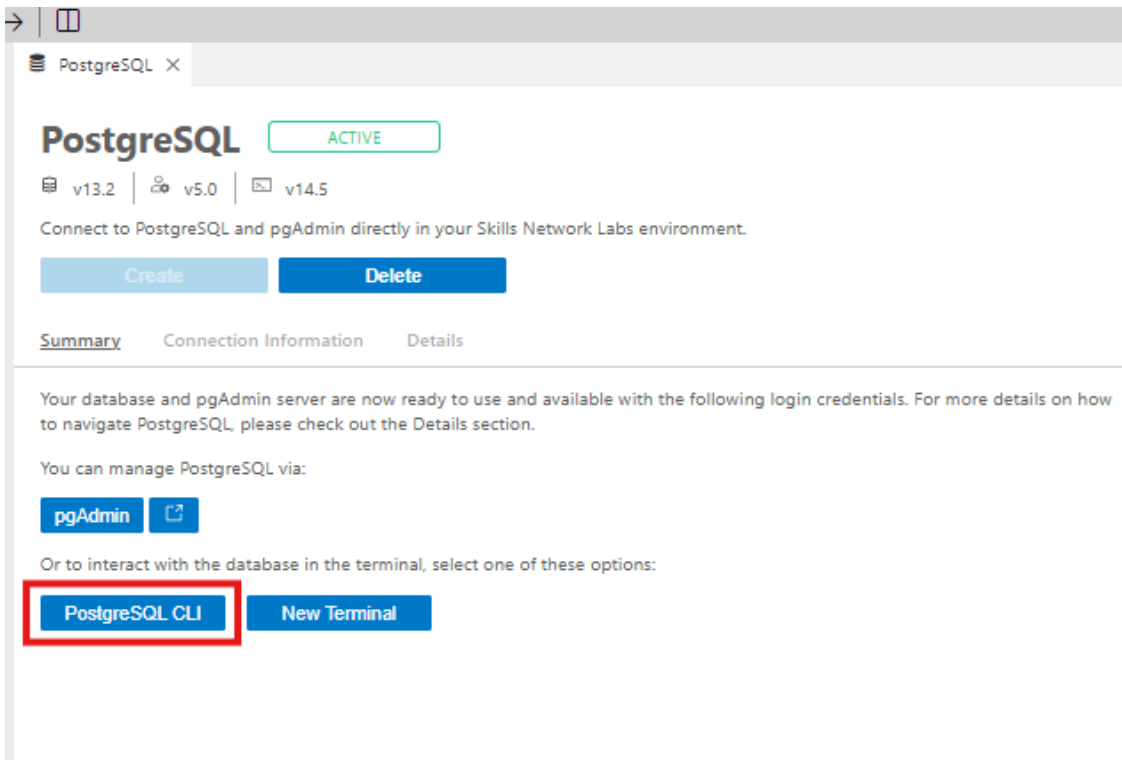
Task 1.2 - Create a User

Create a user named `backup_operator`.

Take a screenshot of the command you used and the output.
Name the screenshot as **create-user.jpg**. (images can be saved with either .jpg or .png extension)

Task 1.3 - Create a Role

Create a role named `backup`.

Take a screenshot of the command you used and the output.
Name the screenshot as **create-role.jpg**. (images can be saved with either .jpg or .png extension)

Task 1.4 - Grant privileges to the role

Grant the following privileges to the `backup` role.

- CONNECT ON DATABASE tolldata .
- SELECT ON ALL TABLES IN SCHEMA toll.

Take a screenshot of the command you used and the output.
Name the screenshot as **grant-privs-to-role.jpg**. (images can be saved with either .jpg or .png extension)

Task 1.5 - Grant role to an user

Grant the role `backup` to `backup_operator`

Take a screenshot of the command you used and the output.
Name the screenshot as **grant-role.jpg**. (images can be saved with either .jpg or .png extension)

Exercise 1.3 - Backup

Task 1.6 - Backup a database on PostgreSQL server

Backup the database `tolldata` using PGADMIN GUI.

Backup the database `tolldata` into a file named `tolldatabackup.tar`, select the backup format as `Tar`

Take a screenshot of the window that shows the filename and format you have specified.
Name the screenshot as **backup-database.jpg**. (images can be saved with either .jpg or .png extension)

End of assignment - Part 1.

Authors

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