Data Science Without Borders

Set up the environment within PostgreSQL using PgAdmin and Command Prompt to run the database

A. Create the Database:

Using the Graphical Interface in pgAdmin:

a) Open pgAdmin and connect to your PostgreSQL server.
b) In the Object Explorer (left panel), right-click on Databases.
c) Select Create > Database….
d) In the Create Database window:
    a. Enter the Database Name (e.g., dswb_training).
    b. Select an Owner (default is postgres).
    c. Click Save to create the database.

Alternatively, using SQL Command in pgAdmin Query Tool:

CREATE DATABASE dswb_training;

This command creates a new database named synthetic_dswb_training with default settings.

B. Create the Schema:

To create a schema under a database in pgAdmin, you can either use the graphical interface or execute an SQL command.

Using the Graphical Interface in pgAdmin

a) Open pgAdmin and connect to your PostgreSQL server.
b) Expand the database where you want to create the schema (e.g., synthetic_dswb_training).
c) Right-click on Schemas in the left panel.
d) Select Create > Schema….
e) In the Create Schema dialog:
    a. Enter the Schema Name (e.g., synthetic_dswb_training).
    b. Choose an Owner (default is postgres).
    c. Click Save.

Alternatively, using SQL Command in pgAdmin Query Tool

CREATE SCHEMA synthetic_dswb_training AUTHORIZATION postgres;

This command creates a new schema named synthetic_dswb_training and assigns ownership to postgres.

C. Restoring a .sql Dump File Using psql

a) Open Command Prompt (cmd). Press Win + R, type cmd, and press Enter.
b) Navigate to the PostgreSQL bin Directory
    a. Change the directory to the PostgreSQL installation folder:
    b. Example: cd "C:\Program Files\PostgreSQL\17\bin"
    Ensure the version number 17 matches your installed PostgreSQL version
c) Execute the Restore Command
    a. Use the psql command to restore the database from the .sql dump file:
    b. psql -U username -d database_name -f dump_file.sql
    -U username → Specifies the PostgreSQL user (e.g., postgres).
    -d database_name → Specifies the target database where the dump will be restored.
    -f dump_file.sql → Specifies the .sql dump file to be restored.
d) Example: To restore source_dataset_fake.sql into the dswb_training database using the postgres user, run:
    psql -U postgres -d dswb_training -f source_dataset_fake.sql
    If authentication is required, enter the PostgreSQL password when prompted.

D. Restoring a .backup File

a) Open Command Prompt (cmd). Press Win + R, type cmd, and press Enter.
b) Navigate to the PostgreSQL bin Directory
    a. Change the directory to the PostgreSQL installation folder:
    b. Example: cd "C:\Program Files\PostgreSQL\17\bin"
    Ensure the version number 17 matches your installed PostgreSQL version
c) Execute the Restore Command
    a. Use the pg_restore command to restore the database from the .backup file:
    b. pg_restore -U username -d database_name -1 dump_file.backup
    -U username → Specifies the PostgreSQL user (e.g., postgres).
    -d database_name → Specifies the target database where the backup will be restored.
    -1 → Ensures the entire restore runs as a single transaction (optional but recommended).
d) Example: To restore source_dataset_fake.backup into the dswb_training database using the postgres user, run:
    pg_restore -U postgres -d dswb_training -1 source_dataset_fake.backup
    If authentication is required, enter the PostgreSQL password when prompted.

E. Taking a PostgreSQL Backup
a) Open Command Prompt (cmd). Press Win + R, type cmd, and press Enter.
b) Navigate to the PostgreSQL bin Directory
    a. Change the directory to the PostgreSQL installation folder:
    b. Example: cd "C:\Program Files\PostgreSQL\17\bin"
    Ensure the version number 17 matches your installed PostgreSQL version
c) Execute the Backup Command
    a. To Take a Backup in .sql Format (Plain SQL Dump):
    b. pg_dump -U username -d database_name -f backup_file.sql
    -U username → Specifies the PostgreSQL user (e.g., postgres).
    -d database_name → Specifies the database to be backed up.
    -f backup_file.sql → Specifies the filename where the backup will be saved.
d) Example: To back up the dswb_training database into source_dataset_fake.sql:
    pg_dump -U postgres -d dswb_training -f source_dataset_fake.sql

e) To Take a Compressed Backup in .backup Format (Custom Format for pg_restore):
    a. pg_dump -U username -d database_name -F c -f backup_file.backup
    -F c → Specifies the custom format (compressed, required for pg_restore).
f) Example: To back up dswb_training into dswb_backup.backup:
    pg_dump -U postgres -d dswb_training -F c -f dswb_backup.backup