Software Installation

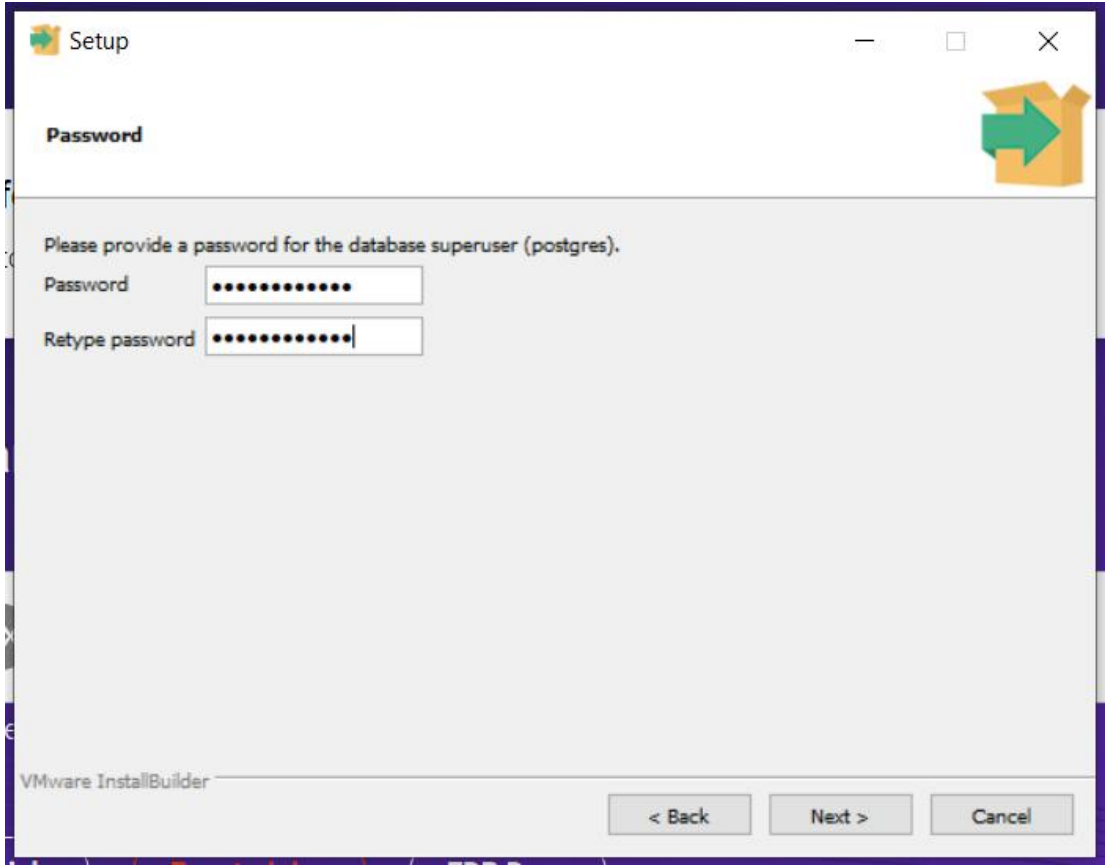
On a Personal Laptop

Stack of Software

1. Postgresql
2. PgAdmin
3. SQLite : https://sqlitestudio.pl/
4. Git Bash
5. Git
6. QGIS

Before Starting the Download

- **Save your passwords and usernames** and make sure you can find them if needed any time anywhere.
- You will be asked multiple times for creating a password.
- It is wise **to choose the same password** for all PostgreSQL related programs.


Setup
Password
Please provide a password for the database superuser (postgres).
Password
Retype password
VMware InstallBuilder
< Back
Next >
Cancel

You can download:

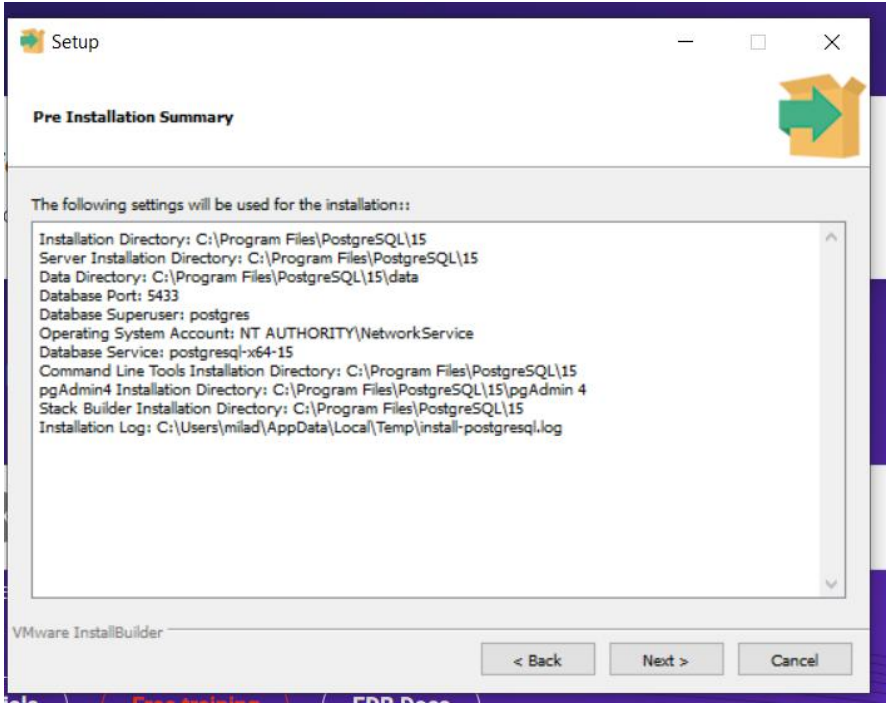
- ➔ PgAdmin
- ➔ PostgreSQL
  - ◆ But by installing PostgreSQL you will automatically get the PgAdmin as well.

Let’s Download PostgreSQL

1. Go to https://www.postgresql.org/download/
2. Choose the platform (Windows, macOS or Linux)
3. Click the link Download the installer in the first paragraph
4. Choose the latest version for your system
5. Download the installer for your system version
6. Allow the file to access your computer if prompted
7. Choose the directory where you want to install
    a. It is recommended to stick to the path suggested by the installer
8. Keep all the suggested components and click next
9. Accept the Data Directory

Let’s Download PostgreSQL

9. Check the summary and make sure you have enough space in the chosen directory

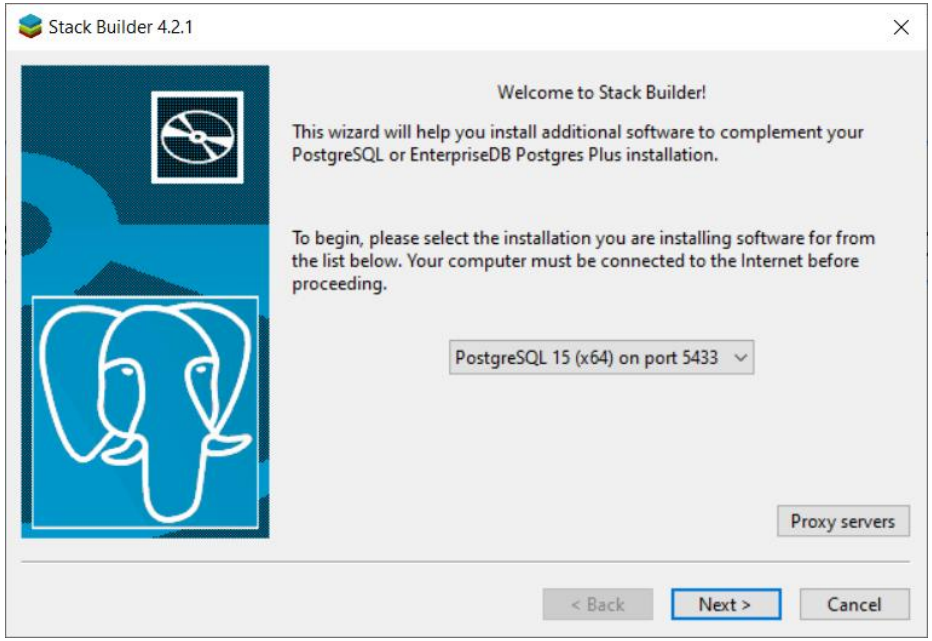


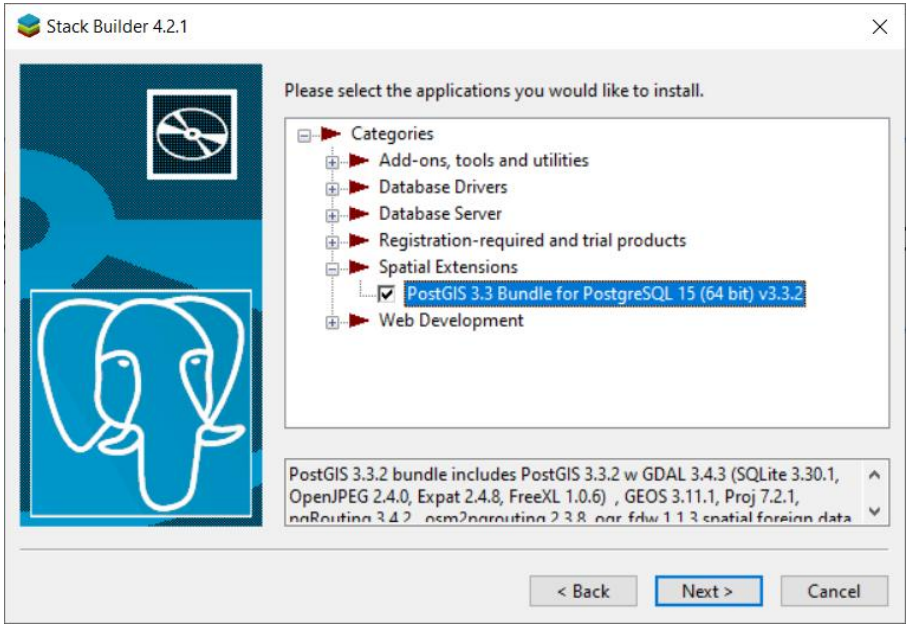
Let’s Download PostgreSQL

10. Start the installation (it will take a few minutes)
11. Activate Stack Builder checkbox and continue installation
12. Choose the PostgreSQL 15 and click Next

When getting to the Stack Builder

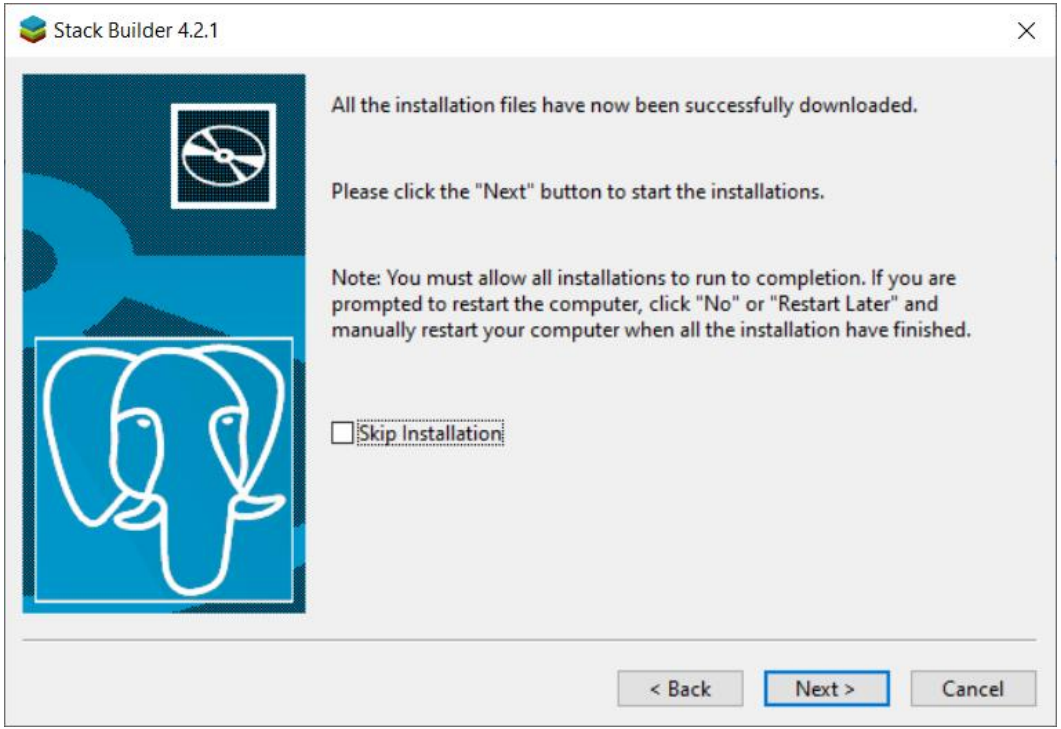
➔ Remember that for now you only need **to activate PostGIS 3.x Bundle for PostgreSQL** under **Spatial Extensions**



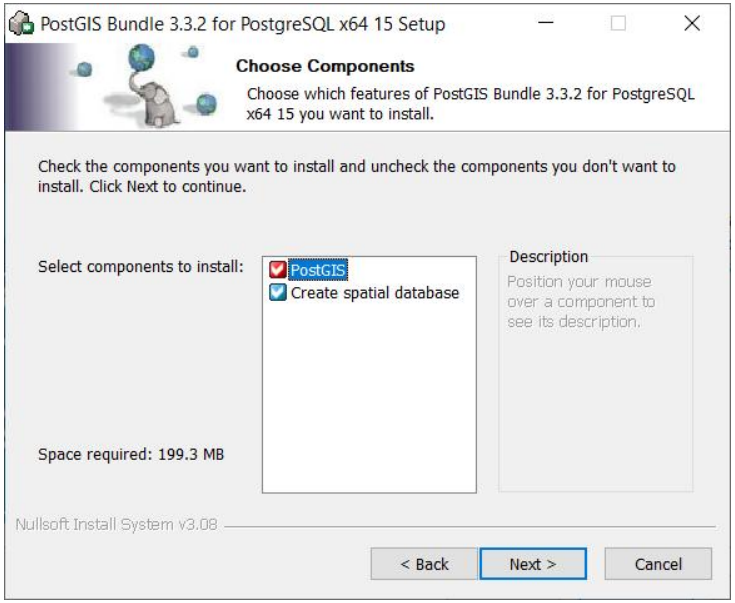


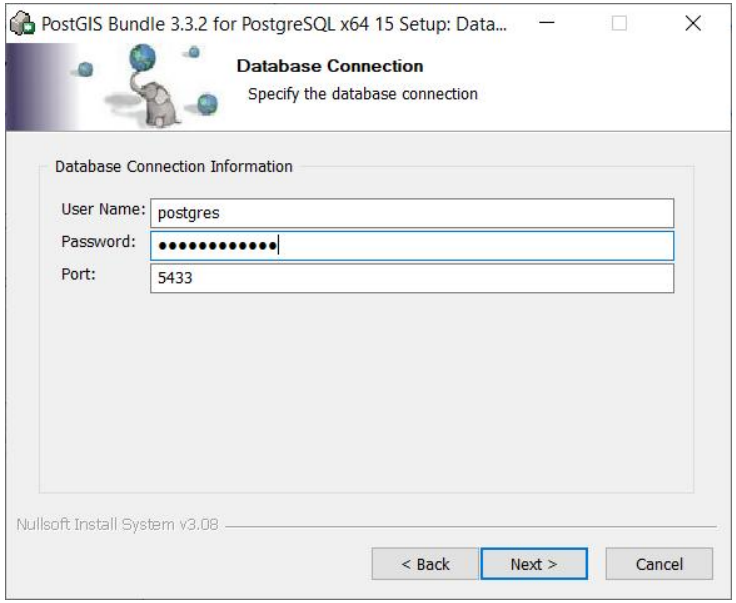
Let’s Download PostgreSQL

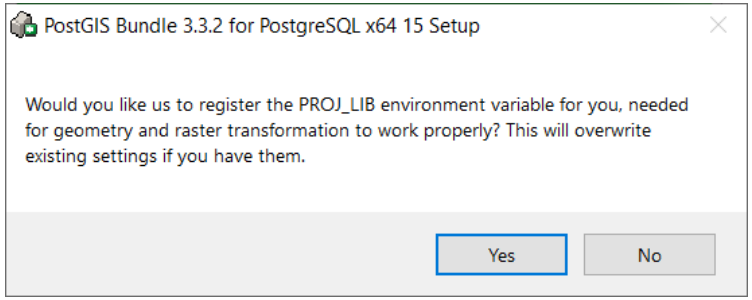
13. Do not skip installation and click Next

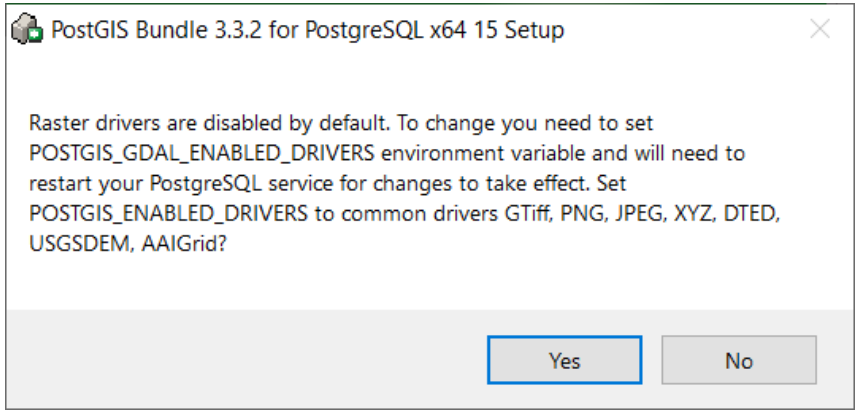


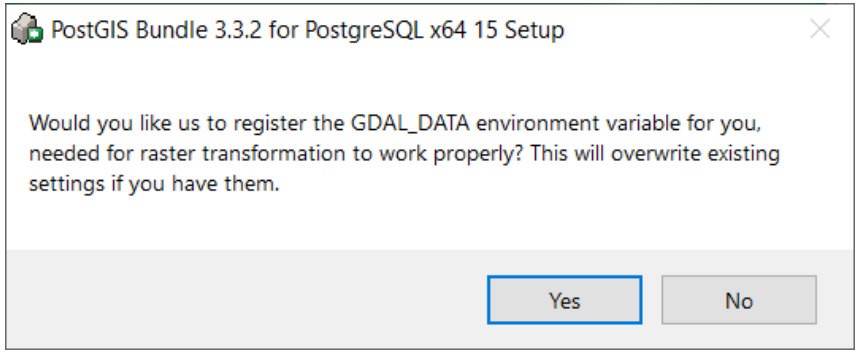
14. Allow the creation of a spatial database
15. Choose a password and click Next (same you chose before)
16. Tell yes to all the suggested addition (next slide)
17. Finish the installation

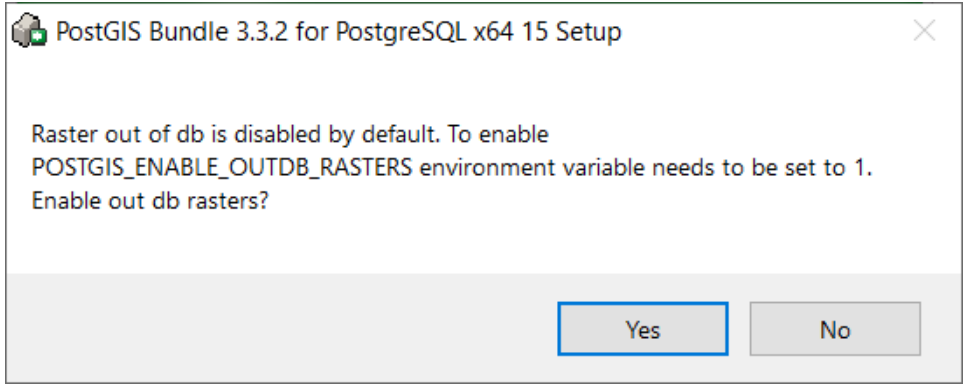





PostGIS Bundle 3.3.2 for PostgreSQL x64 15 Setup
Would you like us to register the PROJ_LIB environment variable for you, needed for geometry and raster transformation to work properly? This will overwrite existing settings if you have them.
Yes
No


PostGIS Bundle 3.3.2 for PostgreSQL x64 15 Setup
Raster drivers are disabled by default. To change you need to set POSTGIS_GDAL_ENABLED_DRIVERS environment variable and will need to restart your PostgreSQL service for changes to take effect. Set POSTGIS_ENABLED_DRIVERS to common drivers GTiff, PNG, JPEG, XYZ, DTED, USGSDEM, AAIGrid?
Yes
No


PostGIS Bundle 3.3.2 for PostgreSQL x64 15 Setup
Would you like us to register the GDAL_DATA environment variable for you, needed for raster transformation to work properly? This will overwrite existing settings if you have them.
Yes
No


PostGIS Bundle 3.3.2 for PostgreSQL x64 15 Setup
Raster out of db is disabled by default. To enable POSTGIS_ENABLE_OUTDB_RASTERS environment variable needs to be set to 1. Enable out db rasters?
Yes
No

Let’s Start with PgAdmin 4

1. Search for PgAdmin in your search bar and open the software
2. If your password is not accepted then reset the password
3. You should be able to see PostgreSQL 15 under the Servers in the left panel
4. That server contains two databases (next slide)
    i. One is the default postgres database
    ii. The other one is the database we created while installing PostgreSQL
5. If one of the servers has a red cross on it it means that it is not connected
    i. You can click on it to have access
    ii. Sometimes you are required to provide the password
6. Drop the menu of postgis_33_sample
    i. This is a spatially enabled database
    ii. You can check whether a database is spatially enabled by checking the Extensions menu of a database
    iii. If a database is spatially enabled it means that it has at least one extension called postgis

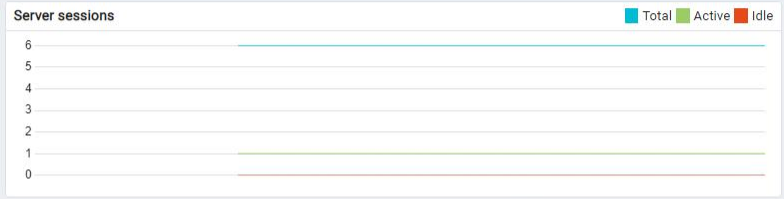
pgAdmin 4

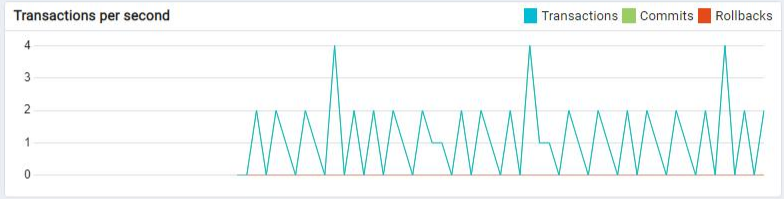
File Object Tools Help

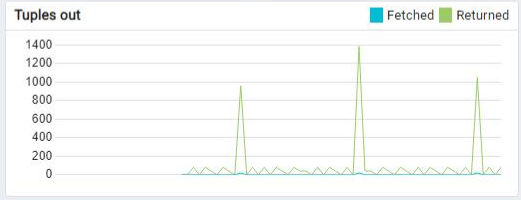
Browser

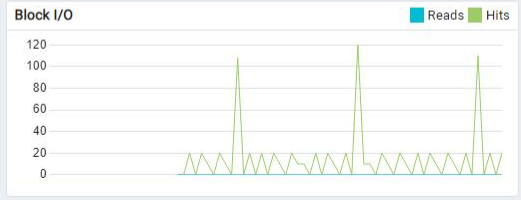
- Servers (1)
  - PostgreSQL 15
    - Databases (2)
      - postgis_33_sample
      - postgres
    - Login/Group Roles
    - Tablespaces
    - pgAgent Jobs

Dashboard Properties SQL Statistics Dependencies Dependents









Server activity

Sessions Locks Prepared Transactions Configuration

Search

			PID	Database	User	Application	Client	Backend start	Transaction start	State	Wait event	Blocking PIDs
			2896					2023-01-08 12:54:21 CST			Activity: AutoVacuumMain	
			4808					2023-01-08 12:54:21 CST			Activity: BgWriterHibernate	
			13880	postgres	postgres	pgAdmin 4 - DB:postgres	::1	2023-01-08 13:09:19 CST	2023-01-08 13:09:52 CST	active		
			16144		postgres			2023-01-08 12:54:21 CST			Activity: LogicalLauncher...	
			19264					2023-01-08 12:54:21 CST			Activity: WalWriterMain	
			24260					2023-01-08 12:54:21 CST			Timeout: CheckpointWrite...	

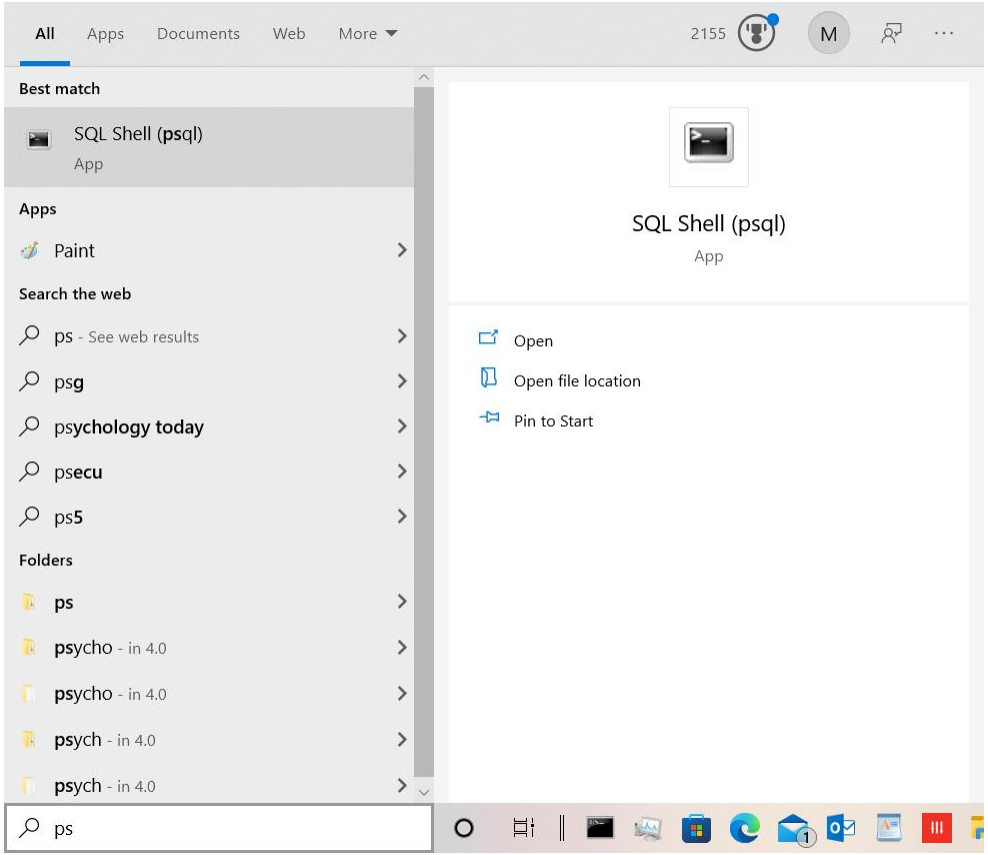
What is PgAdmin?

- The leading Open Source management tool for **PostgreSQL**
- A powerful graphical interface that simplifies the creation, maintenance and use of database objects.
- Written in Python, JavaScript, Flask, JQuery…etc.
- https://github.com/pgadmin-org/pgadmin4

What if I do not (want to) use PgAdmin?

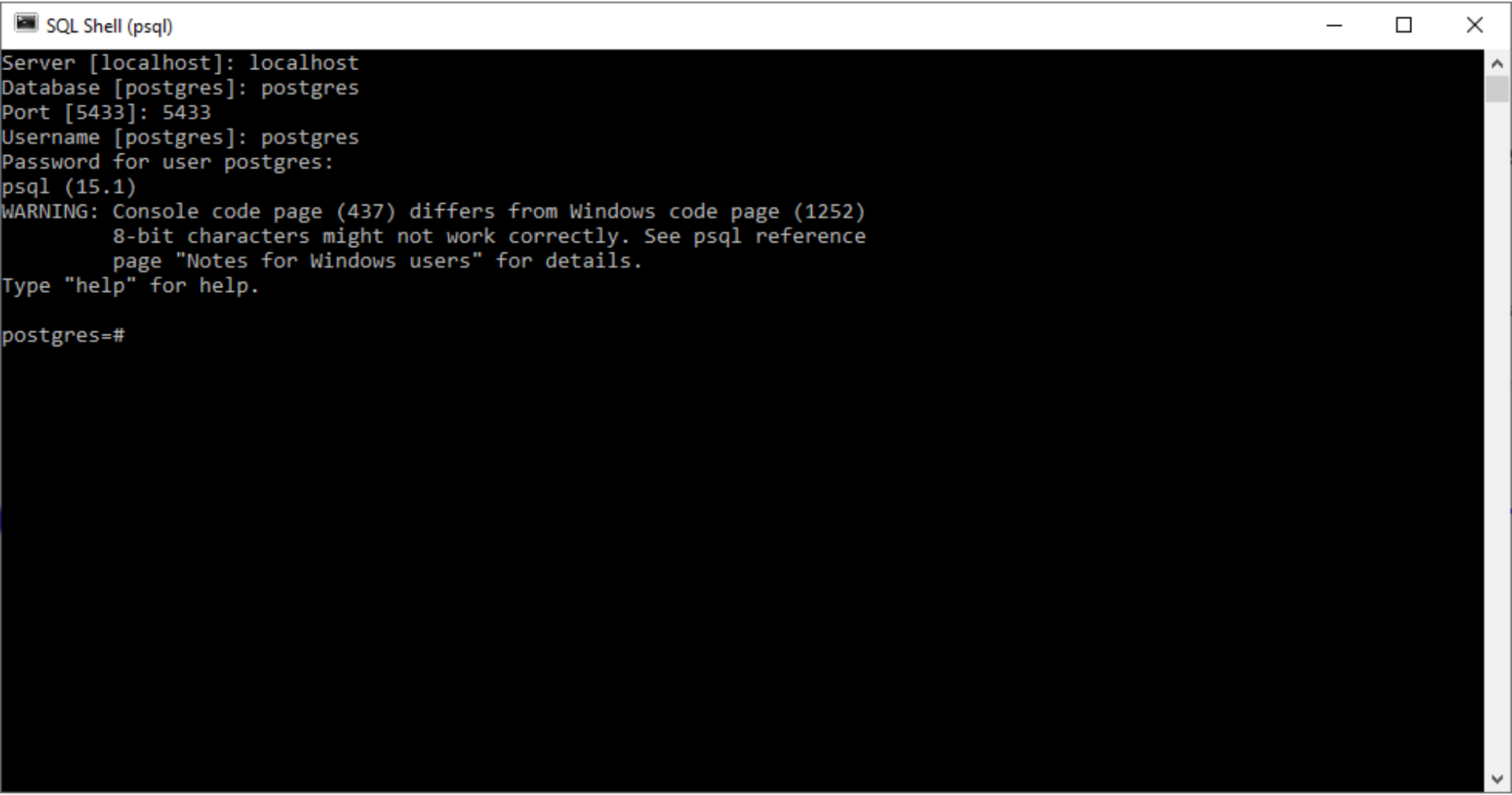
PSQL

You can use the Psql command line as well!



Check…

- ➔ Extensions
- ➔ Schemas
- ➔ Functions
- ➔ …


SQL Shell (psql)
Server [localhost]: localhost
Database [postgres]: postgres
Port [5433]: 5433
Username [postgres]: postgres
Password for user postgres:
psql (15.1)
WARNING: Console code page (437) differs from Windows code page (1252)
8-bit characters might not work correctly. See psql reference
page "Notes for Windows users" for details.
Type "help" for help.
postgres=#

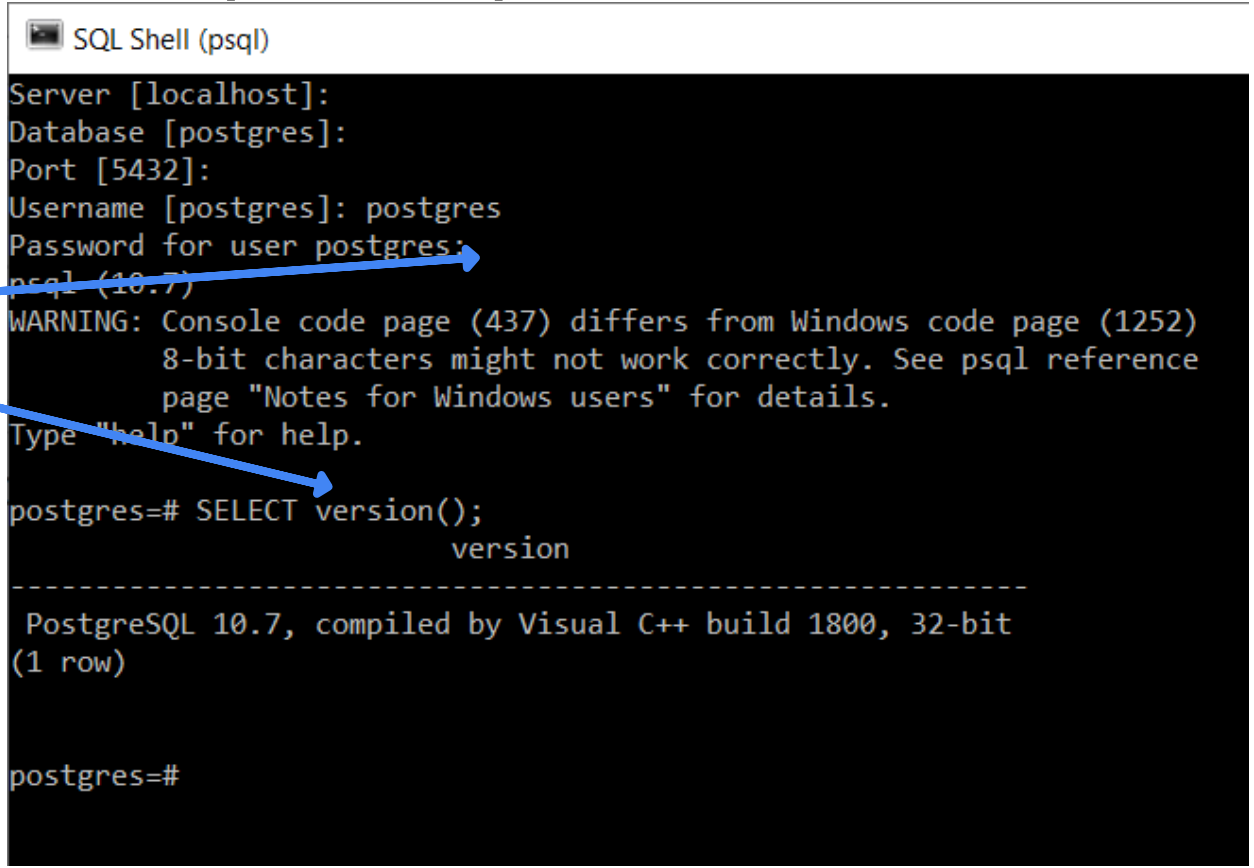
Check the version of PostgreSQL in two different platforms

```
SELECT version();
```

Comment in PostgreSQl and SQL

How to check for the version of PostgreSQL on your machine! (SQL shell)

1. Hit enter 3 times until you are asked for the Username then enter your username
2. Enter password
3. Use SELECT version(); to find the version of psql
4. Notice the fact that here I am checking the version of psql installed on my machine and not the one coming from Docker!



Which of the following tools do you use most often to connect to PostgreSQL for queries and administration tasks?

State of PostgreSQL 2022

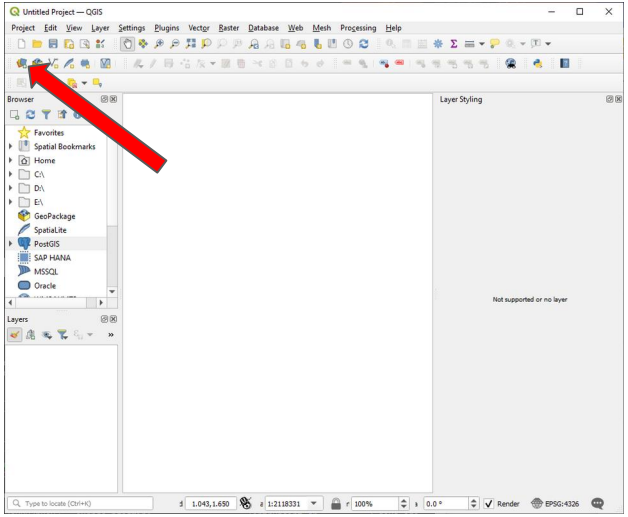
How to install PostGIS in PostgreSQL!

- **This can happen if you skipped the addition of PostGIS while installing PostgreSQL**

- Drop down one of the available databases (Postgres)
- Find Extension tab
- Right click the Extension tab → Create → Extension → SQL
- Type CREATE EXTENSION postgis
- Check if the extension is added to the extensions tab

Let’s learn how to connect to a database by QGIS

QGIS



1. Open QGIS
2. Start an empty project
3. Open Data Source Manager (upper left corner)
4. Click PostgreSQL icon
5. Click New
6. Assign any name you wish but avoid first capitalized letter
7. Type localhost for the Host
8. Set the port to 5432 if you want to try to connect to postgres or postgis_33_sample
9. Check the name of the database
10. Leave SSL as it is
11. Click Basic under Authentication and insert credentials for chosen database
12. Hit Test Connection

QGIS continued...

14. Click ok and make sure that the chosen database is appearing on the menu
15. Choose the database from the menu
16. Insert credentials one more time and hit ok
17. If your database has no content it is OK!
18. Check also list tables with no geometry
19. Check the drop down menu for schemas (if you have any)
20. You successfully imported a series of geometries from your Database to QGIS (if you have any)
21. You can double click any of the components to add it to the Layers in QGIS
22. If nothing is showing up it is because the tables are empty for now or there is no geometry registered. We will learn about the geometry soon.