PostgreSQL 16
Object-Relational DBMS

Presented By:

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Introduction

PostgreSQL is an object-relational database management system (ORDBMS) based on POSTGRES, Version 4.2, developed at the University of California at Berkeley Computer Science Department.

It is a powerful, open-source relational database management system (RDBMS) known for its reliability, robustness, and extensive feature set. It has been under active development for over three decades, making it one of the most mature and feature-rich database systems available.

Key Features

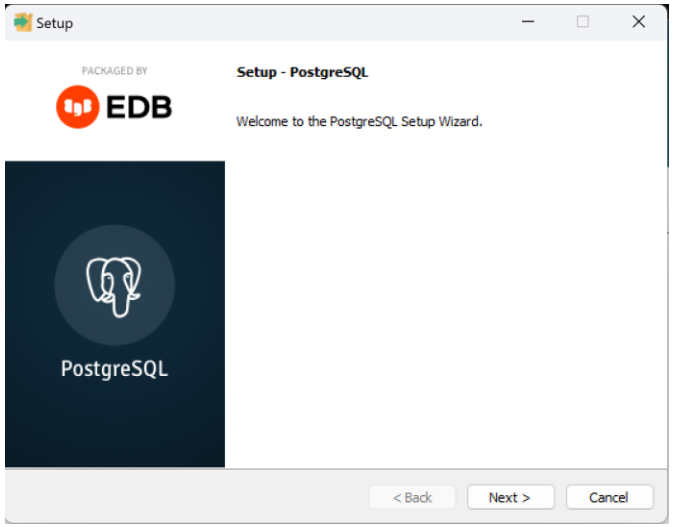
- complex queries
- foreign keys
- triggers
- updatable views
- transactional integrity
- multiversion concurrency control

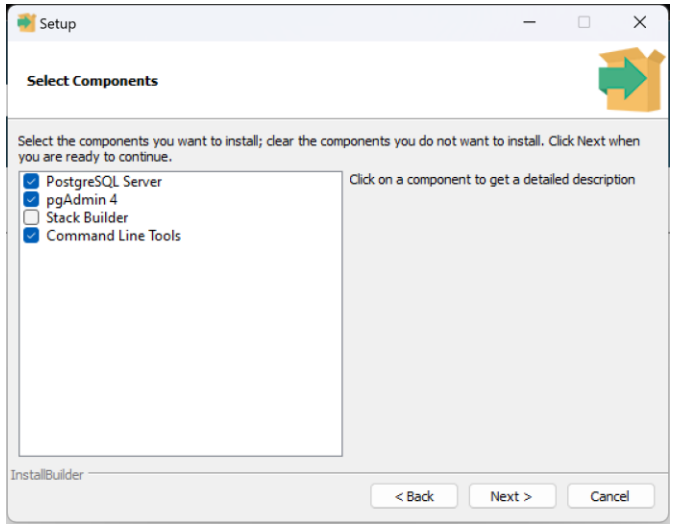
Installation

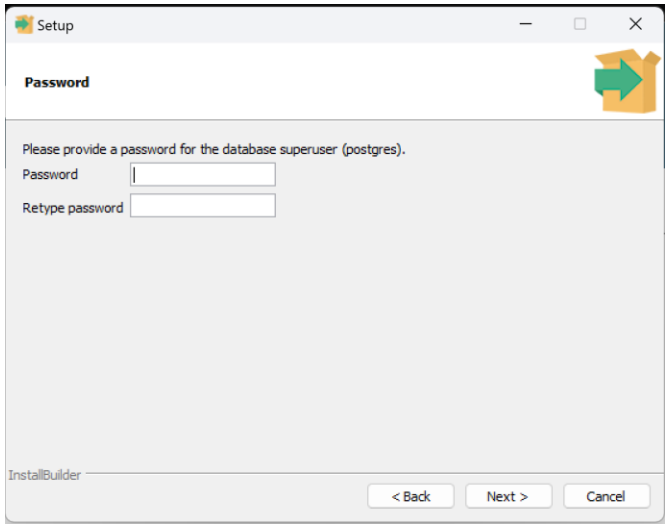
- PostgreSQL can be installed by any unprivileged user; no superuser (root) access is required.
- Available for download as ready-to-use packages or installers for various platforms, as well as a source code archive if you want to build it yourself.
- To download packages and installers: ***https://www.postgresql.org/download/***
- Select your operating system, download the package compatible with your system.
- Can also directly download from ***https://www.enterprisedb.com/downloads/postgres-postgresql-downloads***.
- The PostgreSQL source code for released versions can be obtained from the download section of: ***https://www.postgresql.org/ftp/source/***.

Setting up with the Installer

- Follow the steps in the installer.

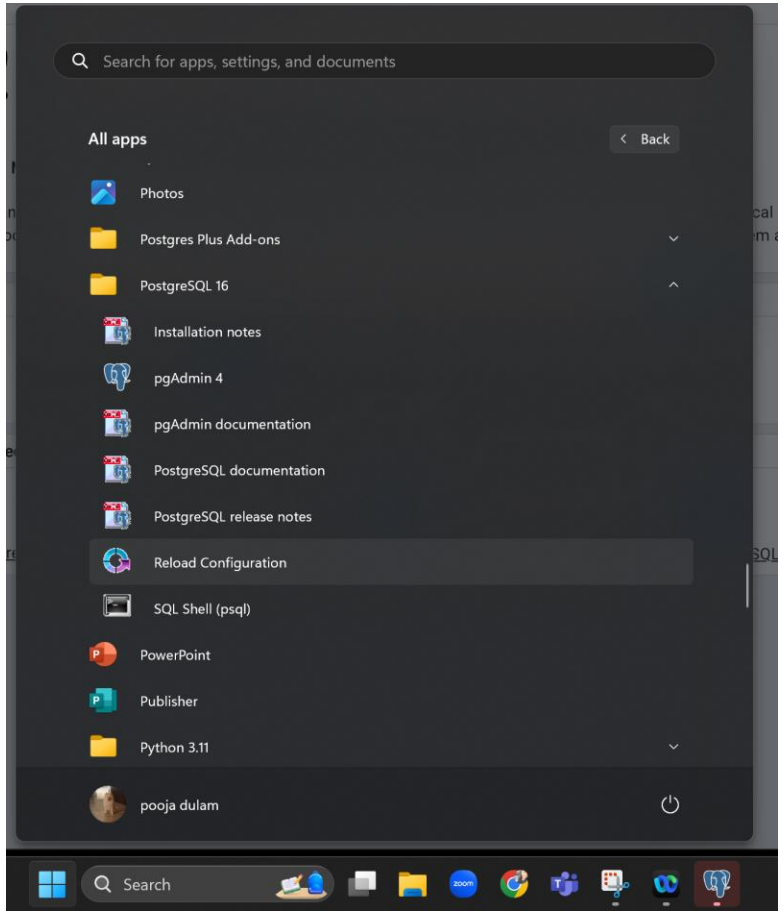




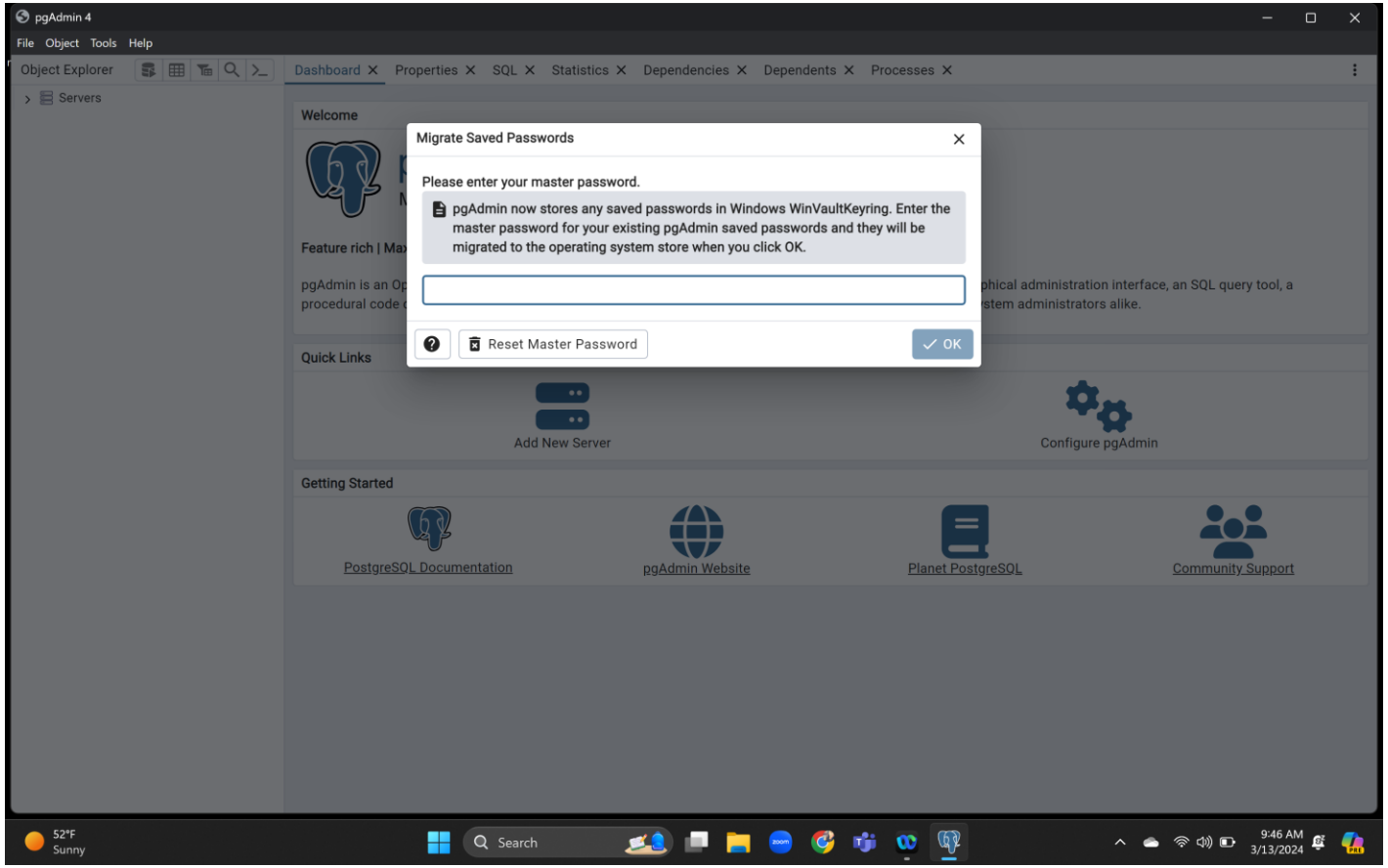


Post Installation

- Should be able to see the application in start menu.
- Open **pgAdmin4.**

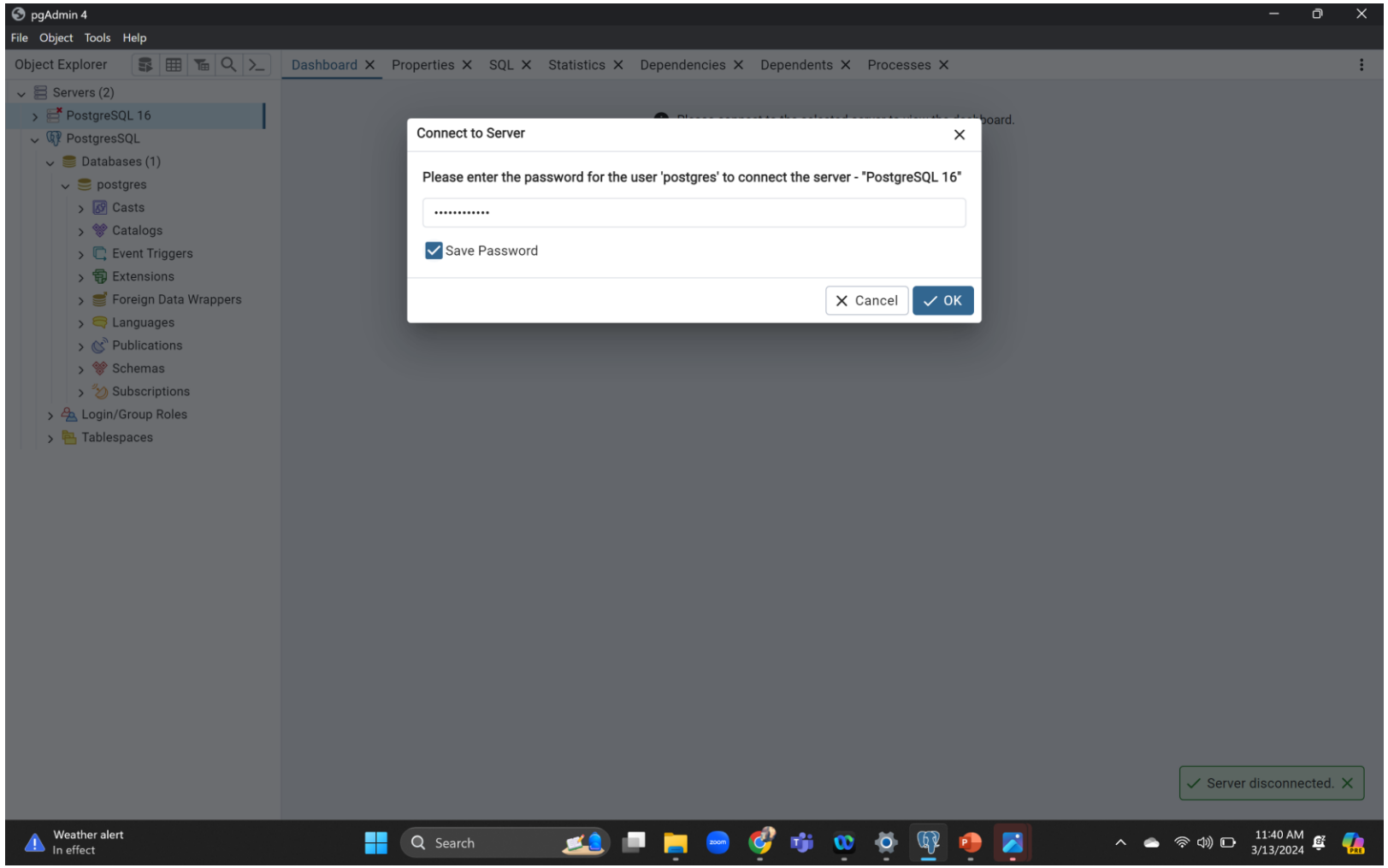


PgAdmin4



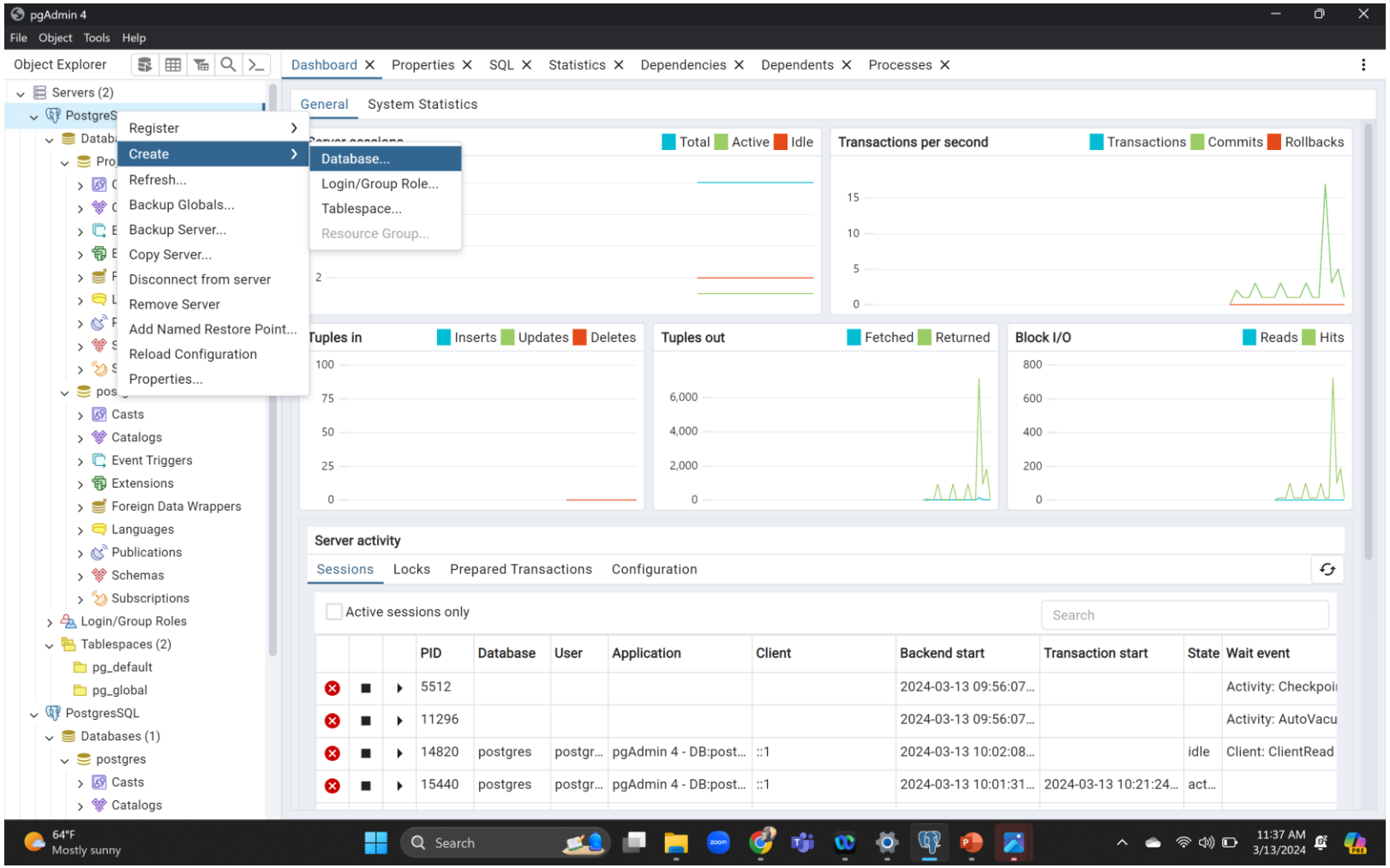
- If it's your first time using pgAdmin4, it will prompt you to create a Master Password. This password will be used to open the pgAdmin4.
- You can also reset your password but will lose all the saved passwords for different servers.

Connect to Server



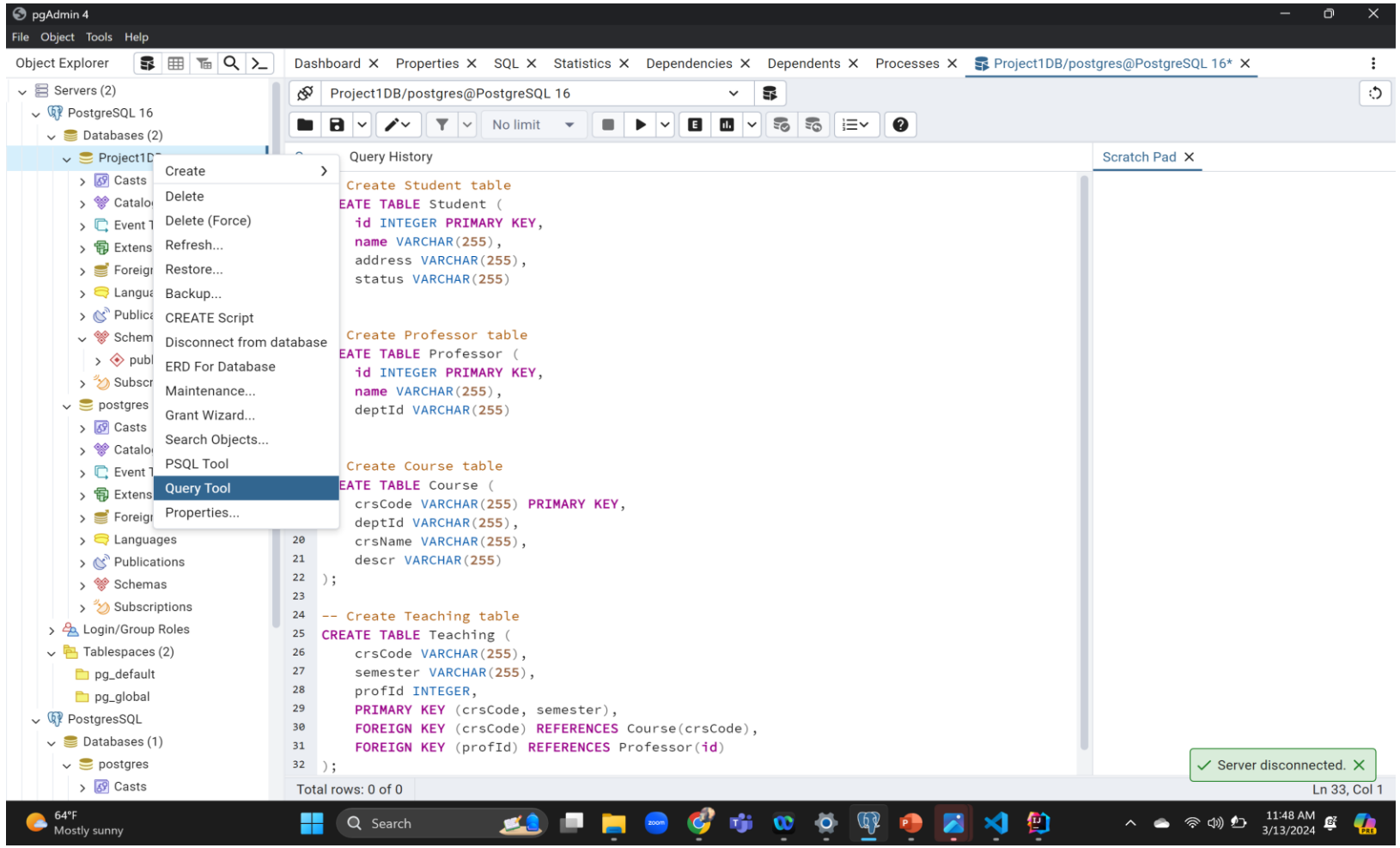
- From the Object Explorer, expand the servers branch and then click on PostgreSQL server.
- It will prompt you to enter the server password. This is the password that was used during the installation process.

Create New Database



- Once connected successfully.
- Right click on the server and select ***Create> Database***
- Enter the DB name and configure any other DB setting you need.

Create New Tables



- Right click on the DB and select Query Tool. This will open a new tab with ***Dbname/postgres@PostgreSQL 16***
- From here you can run all your queried to Create, Update/Modify and Retrieve tables.
- You can view these tables under ***Schemas-> public-> Tables***

Performance Improvements

- PostgreSQL 16 delivers significant performance enhancements, including optimized query execution, improved indexing strategies, and enhanced parallelism.
- These improvements result in faster query processing and improved overall database performance.

New SQL Capabilities

- PostgreSQL 16 introduces new SQL capabilities that empower developers and database administrators to tackle complex tasks more efficiently.
- From advanced window functions to expanded support for JSON and XML data types, PostgreSQL 16 offers a rich set of SQL features.

Security & Scalability Enhancements

- Security is paramount in PostgreSQL 16, with enhancements aimed at fortifying data protection and access control.
- New authentication mechanisms, encryption enhancements, and improved auditing capabilities bolster the security posture of PostgreSQL deployments.
- PostgreSQL 16 brings scalability improvements that enable seamless handling of growing workloads and datasets.
- Enhanced connection pooling, improved resource management, and optimizations for distributed environments ensure PostgreSQL scales effortlessly.

Thank You