From Database to Dashboard: Northwind Lab (GitHub Submission)

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🎯 **Objective**

Students will learn how to:

- Create a database in **pgAdmin**
- Load a sample database using an SQL script
- Write basic SQL queries
- Connect PostgreSQL to **Microsoft Power BI**

Link: https://github.com/pthom/northwind_psql

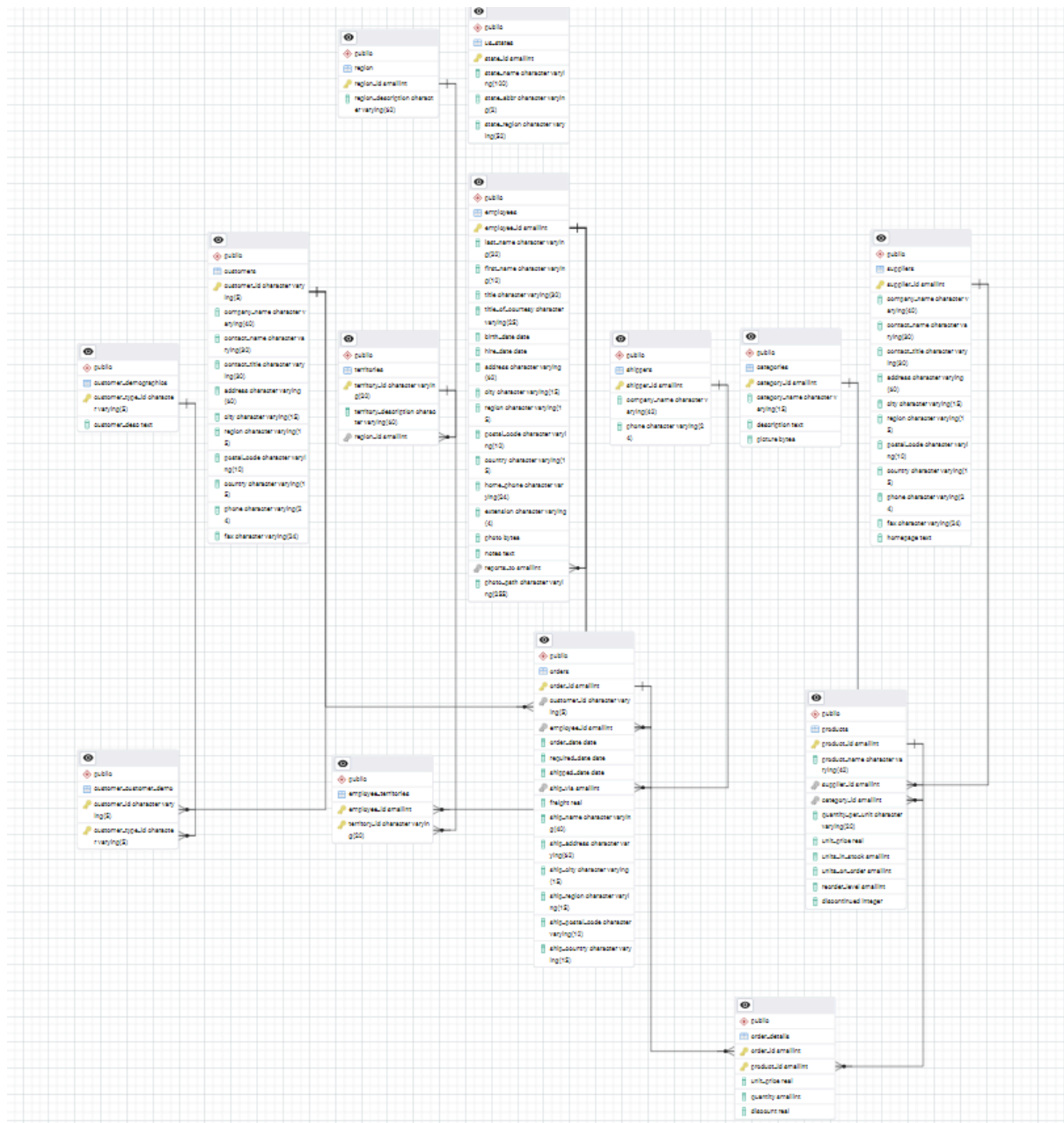🛠️ **Part 1 — Setup Database**

Step 1: Create the Database

1. Open **pgAdmin**
2. Right-click **Databases → Create → Database**
3. Database name: **Northwind**
4. Click **Save**

Step 2: Load the Northwind Data

1. Select the newly created **Northwind** database
2. Click **Tools → Query Tool**
3. Open the file **northwind.sql** (downloaded from the provided GitHub link)
4. Click **Execute (▸)** to run the script
5. Refresh **Schemas → Tables** to confirm all tables are created

You should now see tables like:
 customers, orders, order_details, products, employees, suppliers, etc.

🧠 Part 2 — SQL Practice Questions

Question 1 — Simple SQL (Single Table)

👉 Show all products that cost more than **$20**

Expected skills: SELECT, WHERE

```
1 ⌄ /*
2   Date: 2025-06-02
3   Author: Tran Ngoc Trung Hieu
4   */
5   -- Question 1 Show all products that cost more than $20
6
7 ⌄ select unit_price from products
8   where unit_price > 20;
9
```

Data Output   Messages   Notifications

Showing rows: 1 to 830   Page No: 1   of 1

order_id smallint	company_name character varying (40)	order_date date
1	10248	Vins et alcools Chevalier	1996-07-04
2	10249	Toms Spezialitäten	1996-07-05
3	10250	Hanari Carnes	1996-07-08
4	10251	Victuailles en stock	1996-07-08
5	10252	Suprêmes délices	1996-07-09
6	10253	Hanari Carnes	1996-07-10
7	10254	Chop-suey Chinese	1996-07-11
8	10255	Richter Supermarkt	1996-07-12
9	10256	Wellington Importadora	1996-07-15
10	10257	HILARION-Abastos	1996-07-16
11	10258	Ernst Handel	1996-07-17
12	10259	Centro comercial Moctezuma	1996-07-18
13	10260	Ottilies Käseladen	1996-07-19
14	10261	Que Delicia	1996-07-19
15	10262	Rattlesnake Canyon Grocery	1996-07-22
16	10263	Ernst Handel	1996-07-23
17	10264	Folk och fä HB	1996-07-24
18	10265	Blondesddsl père et fils	1996-07-25
19	10266	Wartian Herkku	1996-07-26
20	10267	Frankenversand	1996-07-29
21	10268	GROSELLA-Restaurante	1996-07-30
22	10269	White Clover Markets	1996-07-31

Total rows: 830   Query complete 00:00:00.078

CRLF   Ln 10, Col 1

There are 37 products that cost more than **$20**

Question 2 — JOIN Two Tables

👉 Display the **Order ID, Customer Company Name, and Order Date**

You must join:

- orders
- customers

Expected skills: INNER JOIN, foreign keys

```
8    where unit_price > 20;
9
10   -- Question 2 Display the Order ID, Customer Company Name, and Order Date
11
12 ⌄ SELECT
13       orders.order_id,
14       customers.company_name,
15       orders.order_date
16   FROM orders
17   INNER JOIN customers ON orders.customer_id = customers.customer_id;
```

Data Output   Messages   Notifications

Showing rows: 1 to 830   Page No: 1   of 1

order_id smallint	company_name character varying (40)	order_date date
1	10248	Vins et alcools Chevalier	1996-07-04
2	10249	Toms Spezialitäten	1996-07-05
3	10250	Hanari Carnes	1996-07-08
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Total rows: 830   Query complete 00:00:00.078
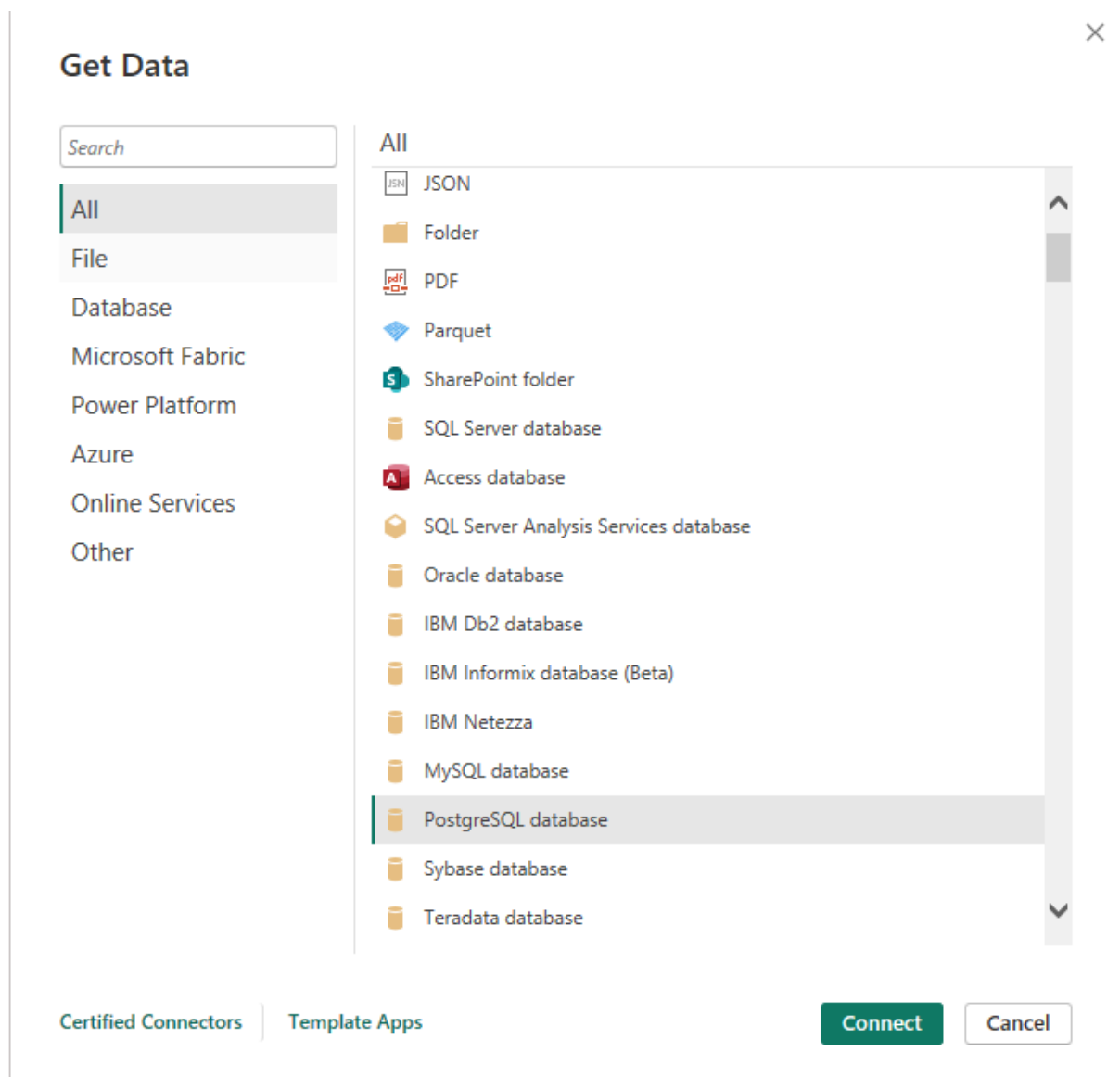
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IS 830

Question 3 — Connect to Power BI

👉 Import the **orders** table into **Power BI** and create a simple visualization.

Steps students should perform:

1. Open **Power BI Desktop**
2. Click **Get Data → PostgreSQL database**
3. Server: localhost
4. Database: Northwind
5. Load the **orders** table
6. Create a simple chart:
    - **X-axis:** Order Date (Year or Month)
    - **Y-axis:** Count of Order ID

PostgreSQL database

Server

localhost

Database

Northwind

Data Connectivity mode ⓘ

◉ Import

◯ DirectQuery

▷ Advanced options

OK   Cancel

Navigator

Display Options ▾

▲ 📁 localhost: Northwind [14]
- ☐ ▦ public.categories
- ☐ ▦ public.customer_customer_demo
- ☐ ▦ public.customer_demographics
- ☑ ▦ public.customers
- ☐ ▦ public.employee_territories
- ☐ ▦ public.employees
- ☐ ▦ public.order_details
- ☑ ▦ public.orders
- ☑ ▦ public.products
- ☐ ▦ public.region
- ☐ ▦ public.shippers
- ☐ ▦ public.suppliers
- ☐ ▦ public.territories
- ☐ ▦ public.us_states

public.customers

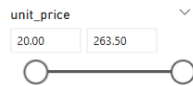| customer_id	company_name	contact_name	contact_
ALFKI	Alfreds Futterkiste	Maria Anders	Sales
ANATR	Ana Trujillo Emparedados y helados	Ana Trujillo	Owne
ANTON	Antonio Moreno Taquería	Antonio Moreno	Owne
AROUT	Around the Horn	Thomas Hardy	Sales
BERGS	Berglunds snabbköp	Christina Berglund	Orde
BLAUS	Blauer See Delikatessen	Hanna Moos	Sales
BLONP	Blondesddsl père et fils	Frédérique Citeaux	Mark
BOLID	Bólido Comidas preparadas	Martín Sommer	Owne
BONAP	Bon app'	Laurence Lebihan	Owne
BOTTM	Bottom-Dollar Markets	Elizabeth Lincoln	Acco
BSBEV	B's Beverages	Victoria Ashworth	Sales
CACTU	Cactus Comidas para llevar	Patricio Simpson	Sales
CENTC	Centro comercial Moctezuma	Francisco Chang	Mark
CHOPS	Chop-suey Chinese	Yang Wang	Owne
COMMI	Comércio Mineiro	Pedro Afonso	Sales
CONSH	Consolidated Holdings	Elizabeth Brown	Sales
DRACD	Drachenblut Delikatessen	Sven Ottlieb	Orde
DUMON	Du monde entier	Janine Labrune	Owne
EASTC	Eastern Connection	Ann Devon	Sales
ERNSH	Ernst Handel	Roland Mendel	Sales
FAMIA	Familia Arquibaldo	Aria Cruz	Mark
FISSA	FISSA Fabrica Inter. Salchichas S.A.	Diego Roel	Acco
FOLIG	Folies gourmandes	Martine Rancé	Assis

Select Related Tables   **Load**   Transform Data   Cancel

Show all products that cost more than $20

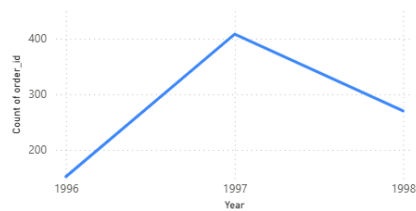| product_name	Sum of unit_price
Wimmers gute Semmelknödel	33.2!
Vegie-spread	43.9(
Uncle Bob's Organic Dried Pears	30.0(
Tofu	23.2!
Thüringer Rostbratwurst	123.7!
Tarte au sucre	49.3(
Sirop d'érable	28.5(
Sir Rodney's Marmalade	81.0(
Schoggi Schokolade	43.9(
Rössle Sauerkraut	45.6(
Raclette Courdavault	55.0(
Queso Manchego La Pastora	38.0(
Total	**1,695.1**

unit_price ⌄

20.00	263.50

Display the Order ID, Customer Company Name, and Order Date

product_name
Alice Mutton
Camembert Pierrot
Carnarvon Tigers
Chef Anton's Cajun Seasoning
Chef Anton's Gumbo Mix
Côte de Blaye
Flotemysost
Gnocchi di nonna Alice
Grandma's Boysenberry Spread
Gravad lax
Gudbrandsdalsost

Count of order_id by Year

37

Count of unit_price

830

Count of customer_id

🎂 Submission Requirement – Northwind Database Lab

You must upload your work to your **GitHub account**.

📂 Repository Structure

Create a folder named exactly:

MIS443/

Inside that folder, include the following files:

🧾 1️⃣ SQL Answers File

File name: northwind_queries.sql

This file must contain:

- Your answers for **Question 1 and Question 2**
- Clear **comments** explaining each query

📒 2️⃣ Dataset File

Upload the original database script:

File name: northwind.sql

📊3 Output / Results File

File name: northwind_results.docx **or** northwind_results.pdf

This file must include:

- Screenshot of pgAdmin showing the **Northwind tables**
- Output result of **Query 1**
- Output result of **Query 2**
- Screenshot of your **Power BI visualization**

📈4 Power BI File

File name: northwind_powerbi.pbix

This file must contain:

- The imported **orders** table
- At least **one visualization**

✅ Final GitHub Folder Example

MIS443/

|── northwind.sql

|── northwind_queries.sql

|── northwind_results.pdf

|── northwind_powerbi.pbix

⚠️ Important Notes

- Your GitHub repository must be **public**
- Make sure files open correctly before submitting
- Missing files = incomplete submission

<u>End</u>