

From Database to Dashboard: Northwind Lab (GitHub Submission)

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🎯 Objective

Students will learn how to:

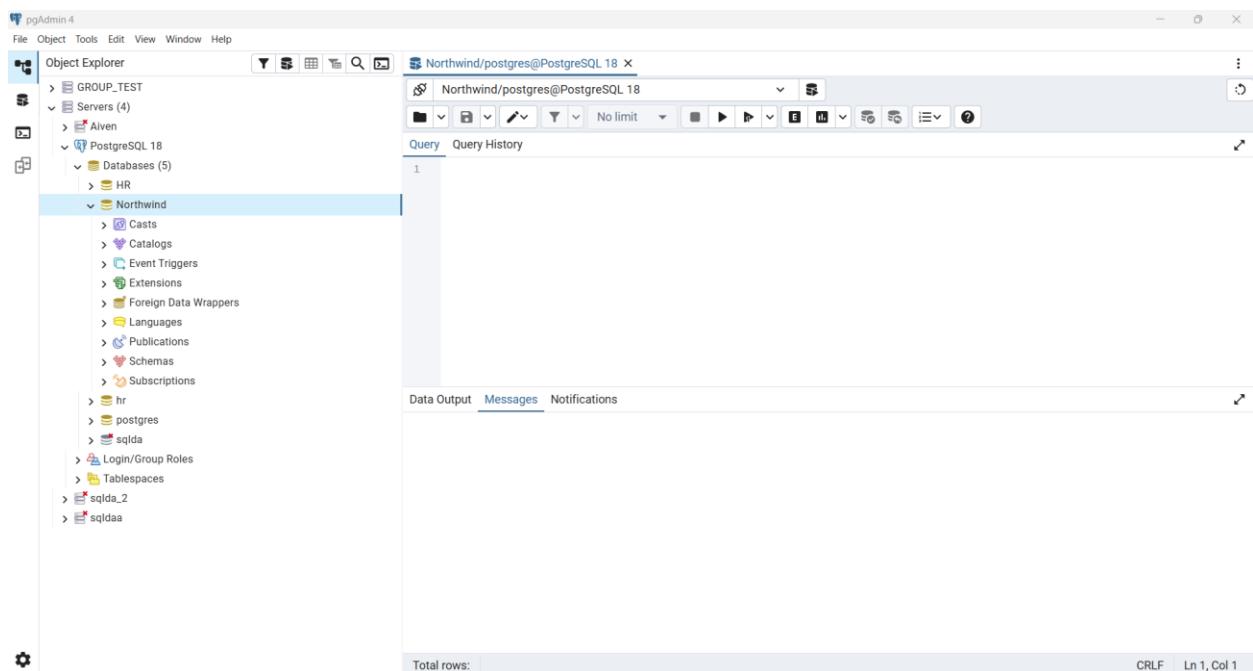
- Create a database in **pgAdmin**
- Load a sample database using an SQL script
- Write basic SQL queries
- Connect PostgreSQL to **Microsoft Power BI**

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

```

1  --
2  -- PostgreSQL database dump
3  --
4
5  SET statement_timeout = 0;
6  SET lock_timeout = 0;
7  SET client_encoding = 'UTF8';
8  SET standard_conforming_strings = on;
9  SET check_function_bodies = false;
10 SET client_min_messages = warning;
11
12
13
14  SET default_tablespace = '';
ALTER TABLE

```

Total rows: Query complete 00:00:00.421 LF Ln 1, Col 1

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

The screenshot shows the pgAdmin 4 interface. In the Object Explorer on the left, the 'Tables (14)' section is expanded, with 'products' selected. The SQL tab contains the following query:

```
--Show all products that cost more than $20
SELECT *
FROM products
WHERE unit_price > 20;
```

The Data Output tab displays the results of the query, showing 37 rows of product information. The columns are:

	product_id [PK] smallint	product_name character varying (40)	supplier_id smallint	category_id smallint	quantity_per_unit character varying (20)	unit_price real	units_in_stock smallint	units_on_order smallint	reorder_level smallint
1	4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22	53	0	0
2	5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35	0	0	0
3	6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25	120	0	0
4	7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30	15	0	0
5	8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40	6	0	0
6	9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97	29	0	0
7	10	Ikura	4	8	12 - 200 ml jars	31	31	0	0
8	11	Queso Cabrales	5	4	1 kg pkg.	21	22	30	0

Total rows: 37 Query complete 00:00:00.142 CRLF Ln 3, Col 14

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

The screenshot shows the pgAdmin 4 interface. In the Object Explorer, under the 'Tables (14)' section, several tables are listed: categories, customer_customer_demo, customer_demographics, customers, employee_territories, employees, order_details, orders, products, region, shippers, suppliers, territories, us_states, Trigger Functions, Types, and Views. In the main window, a query is being run:

```

1 -- Question 2: Join orders and customers
2 SELECT
3     o.order_id,
4     c.company_name,
5     o.order_date
6     FROM orders o
7     INNER JOIN customers c
8     ON o.customer_id = c.customer_id;

```

The Data Output tab displays the results of the query, showing 830 rows. The columns are order_id, company_name, and order_date.

	order_id	company_name	order_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

Total rows: 830 Query complete 00:00:00.067

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

northwind • Last saved: Today at 5:45 PM ▾

File Home Insert Modeling View Optimize Help

Cut Copy Format painter Get Excel OneLake SQL Enter Dataverse Recent sources Transform refresh data New visual Text box More visuals New visual calculation New measure Quick measure Sensitivity Publish Prep data for Copilot AI Share

Clipboard Data Queries Insert Calculations

Number of Orders by Year

Year	Count of order_id
1996	~180
1997	~400

Products that cost more than \$20

37

product_name	product_id	unit_price
Wimmers gute Semmelknödel	64	33.25
Vegie-spread	63	43.90
Uncle Bob's Organic Dried Pears	7	30.00
Tofu	14	23.25
Thüringer Rostbratwurst	29	123.79
Tarte au sucre	62	49.30
Sir Rodney's Marmalade	61	28.50
Schnipsel Schokolade	27	43.90
Rössle Sauerkraut	28	45.60
Raclette Courdavault	59	55.00
Queso Manchego La Pastora	12	38.00
Queso Cabriles	11	21.00
Perth Pastries	53	32.80
Pâté chinois	55	24.00
Nord-Ost Matjeshering	8	40.00
Mozzarella di Giovanni	72	34.80
Mishi Kobe Niku	9	97.00
Mascarpone Fabioli	32	32.00
Manjumup Dried Apples	51	53.00
Louisiana Fiery Hot Pepper Sauce	65	21.05
Ipoú Coffee	43	46.00
Ikura	10	31.00
Gustaf's Knäckebrodd	22	21.00
Gummibärchen	26	31.23
Gudbrandsdalost	69	36.00
Gravad lax	37	26.00
Grandma's Boysenberry Spread	6	25.00
Gnocchi di nonna Alice	56	38.00
Fletemyost	71	21.50

Orders and customers

Sum of order_id	Year	Quarter	Month	Day	company_name
10248	1996	Qtr 3	July	4	Vins et alcools Chevalier
10249	1996	Qtr 3	July	5	Toms Spezialitäten
10250	1996	Qtr 3	July	8	Hanari Carnes
10251	1996	Qtr 3	July	8	Victuailles en stock
10252	1996	Qtr 3	July	9	Suprêmes délices
10253	1996	Qtr 3	July	10	Hanari Carnes
10254	1996	Qtr 3	July	11	Stop-Suey Chinese
10255	1996	Qtr 3	July	12	Ridge Supermarkt
10256	1996	Qtr 3	July	13	Wellington Importadora
10257	1996	Qtr 3	July	16	HILARION-Abastos
10258	1996	Qtr 3	July	17	Ernst Handel
10259	1996	Qtr 3	July	18	Centro comercial Moctezuma
10260	1996	Qtr 3	July	19	Ottilies Käseladen
10261	1996	Qtr 3	July	19	Que-Délices
10262	1996	Qtr 3	July	22	Rattlesnake Canyon Grocery
10263	1996	Qtr 3	July	23	Ernst Handel
10264	1996	Qtr 3	July	24	Folk och fä HB
10265	1996	Qtr 3	July	25	Blondeddsö pâté et fil
10266	1996	Qtr 3	July	26	Wantan Herku
10267	1996	Qtr 3	July	29	Frankenversand
10268	1996	Qtr 3	July	30	GROSELLA-Restaurante
10269	1996	Qtr 3	July	31	White Clover Markets
10270	1996	Qtr 3	August	1	Wantan Herku
10271	1996	Qtr 3	August	1	Split Rail Beer & Ale
10272	1996	Qtr 3	August	2	Rattlesnake Canyon Grocery
10273	1996	Qtr 3	August	5	QUICK-Stop
10274	1996	Qtr 3	August	6	Vins et alcools Chevalier
10275	1996	Qtr 3	August	7	Magazzini Alimentari Riuniti
10276	1996	Qtr 3	August	8	Tortuga Restaurante
10277	1996	Qtr 3	August	9	Morgenstern Gesundkost
10278	1996	Qtr 3	August	11	Bonduelle Fructus

8848875

Filters

Data

Search

- ship_city
- ship_country
- ship_name
- ship_postal_code
- ship_region
- Σ ship_via
- shipped_date
- public products
 - category_id
 - Σ discontinued
 - product_id
 - product_name
 - quantity_per_unit
 - Σ reorder_level
 - supplier_id
 - Σ unit_price
 - Σ units_in_stock
 - Σ units_on_order
- public region
- public shippers
- public suppliers
- public territories
- public us_states

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 **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:

 **1 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
-

 **2 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**
-

 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

End