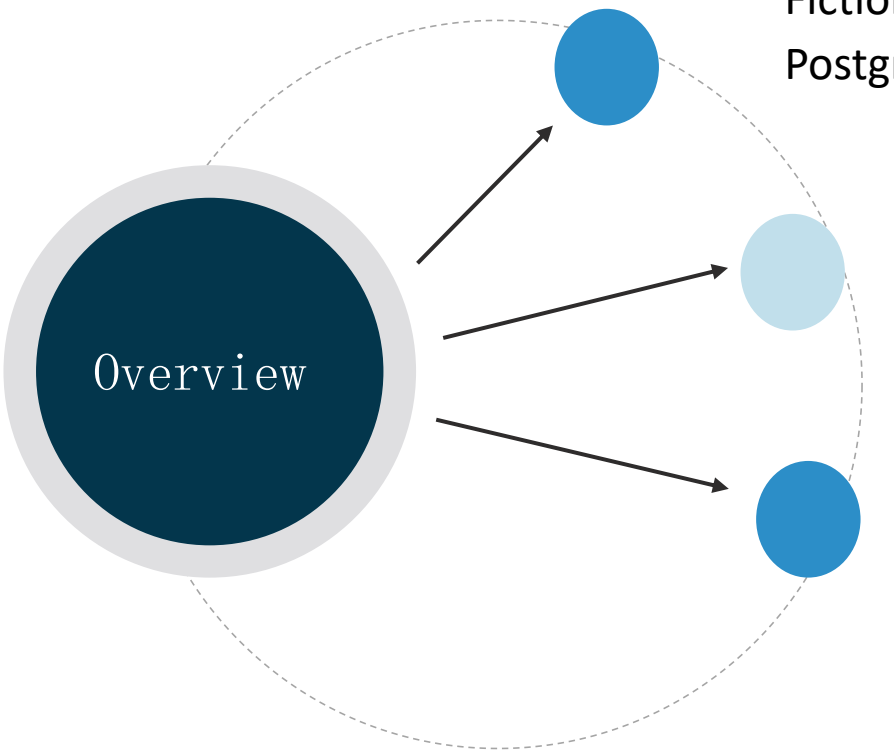
# Hospital Data SQL Analysis Project


# Project Overview




Fictional Hospital Database analysis in PostgreSQL.

Simulated real-world healthcare reporting for decision-making.

Insights: patient volume, doctor availability, stay durations, demand, and cost efficiency.

# Dataset Used

Table:
hospital

Columns:
- hospital_name
- location
- department
- patients_count
- doctors_count
- medical_expenses
- admission_date
- discharge_date

# Objectives

- Analyze patient loads
- Evaluate doctor availability
- Monitor expenses

- Compare performance city-wise
- Measure stay duration
- Improve efficiency

# Business Problems

- Total patients treated
- High/low patient volume departments
- Cost per patient-day

- City with highest demand
- Top expense hospitals
- Overburdened departments
- Avg. stay by department

# Methodology

01 Data assumption & preparation

02 Advanced analysis

03 Basic SQL exploration

04 KPI modeling

05 Insights generation

# Key Insights

- Total patient volume

- Top crowded departments



- Cost per day per hospital

- Top spending hospital

- Longest stay case

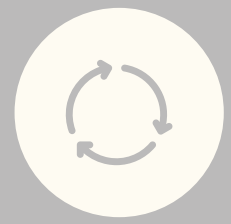
# Key Insights

• City-wise patient distribution

• Underutilized departments



• Monthly expenses trend



• Avg. stay duration

# Skills Gained

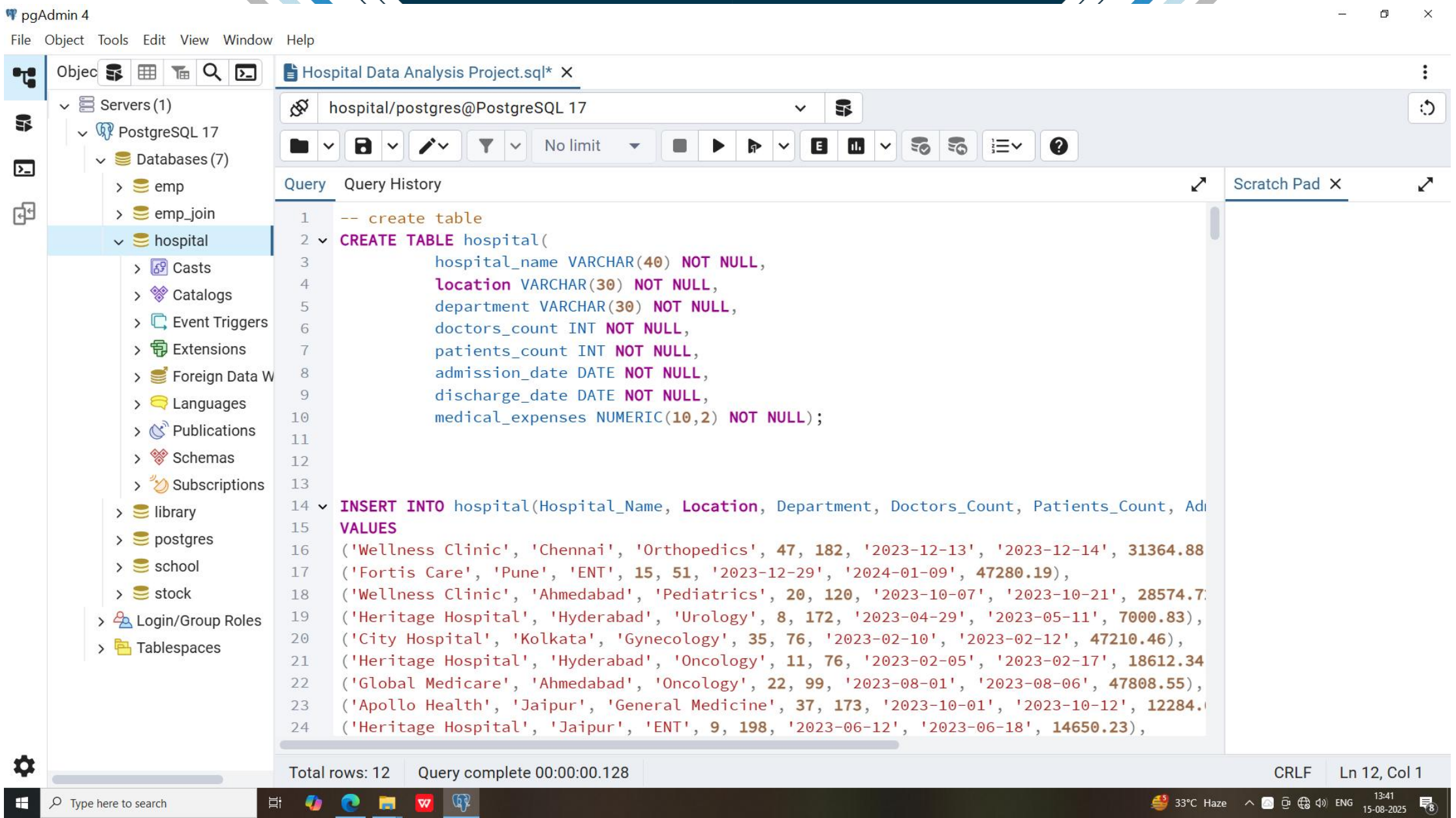

- Business-focused SQL queries

- Date & financial calculations

- Translating KPIs to SQL

- Grouping, ranking, summarizing
- Healthcare data analytics

# Sample Table



# Sample SQL Queries

Advanced:

patients per city, avg. doctors, avg. stay by dept, highest expenses, cost/day, monthly expenses, least patient dept, longest stay

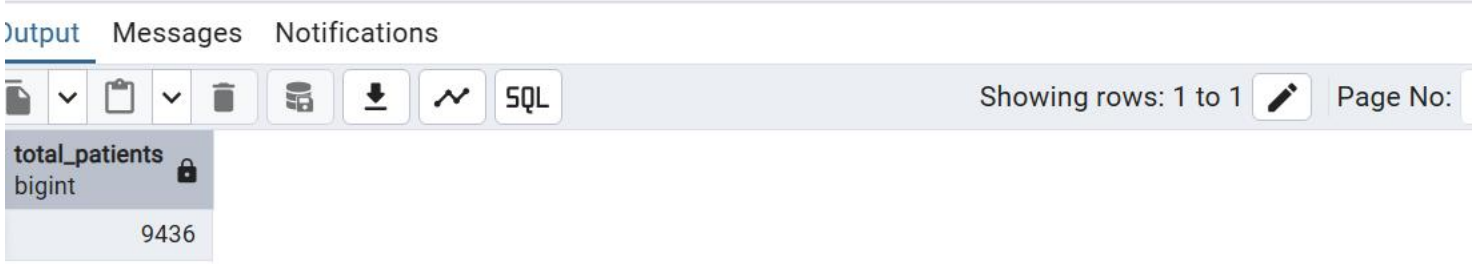
Basic:

hospitals in Bangalore, <50 patients, admission after 2023-01-01, <10 doctors

# Sample SQL Queries

## 1. Total Number of Patients

```
-- 1. Total Number of Patients
-- Write an SQL query to find the total number of patients across all hospitals.
SELECT SUM(patients_count) AS total_patients
FROM hospital;
```

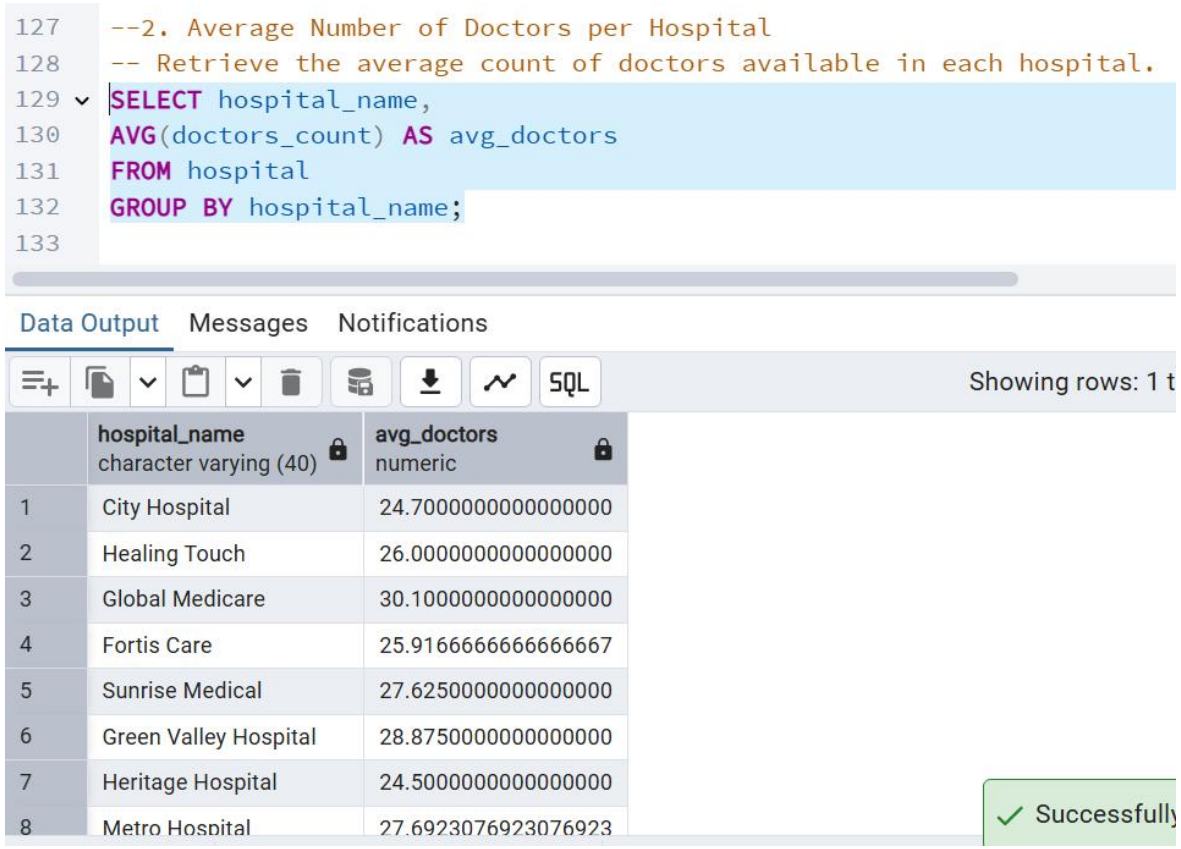



SELECT SUM(patients_count) AS total_patients
FROM hospital;

# Sample SQL Queries

## 2. Average Number of Doctors per Hospital

```
SELECT hospital_name,
AVG(doctors_count) AS avg_doctors
FROM hospital
GROUP BY hospital_name;
```



# Sample SQL Queries

## 3. Top 3 Departments with the Highest Number of Patients

```
SELECT department,
SUM(patients_count) AS total_patients
FROM hospital
GROUP BY department
ORDER BY total_patients DESC
LIMIT 3;
```

```
--3. Top 3 Departments with the Highest Number of Patients
-- Find the top 3 hospital departments that have the highest number of patients.
SELECT department,
SUM(patients_count) AS total_patients
FROM hospital
GROUP BY department
ORDER BY total_patients DESC
LIMIT 3;
```

Data Output | Messages | Notifications

Showing rows: 1 to 3 | Page

| | department character varying (30) | total_patients bigint |
|---|---|---|
| 1 | Urology | 1825 |
| 2 | Neurology | 1229 |
| 3 | Pediatrics | 1127 |

# Sample SQL Queries

## 4. Hospital with the Maximum Medical Expenses

```
SELECT hospital_name, location, medical_expenses
FROM hospital
ORDER BY medical_expenses DESC
LIMIT 1;
```

```
142
143  --4. Hospital with the Maximum Medical Expenses
144  -- Identify the hospital that recorded the highest medical expenses.
145  SELECT hospital_name, location, medical_expenses
146  FROM hospital
147  ORDER BY medical_expenses DESC
148  LIMIT 1;
149
150  --5. Daily Average Medical Expenses
```

Data Output | Messages | Notifications

Showing rows: 1

| | hospital_name character varying (40) | location character varying (30) | medical_expenses numeric (10,2) |
|---|---|---|---|
| 1 | Healing Touch | Mumbai | 49955.41 |

# Sample SQL Queries

## 5. Daily Average Medical Expenses

```
SELECT hospital_name, location,
       ROUND(medical_expenses / (discharge_date - admission_date), 2) AS daily_avg_expenses
FROM hospital;
```

```
147  ORDER BY medical_expenses DESC
148  LIMIT 1;
149
150  --5. Daily Average Medical Expenses
151  -- Calculate the average medical expenses per day for each hospital.
152  SELECT hospital_name, location,
153         ROUND(medical_expenses / (discharge_date - admission_date), 2) AS daily_avg_expenses
154  FROM hospital;
155
```

Data Output | Messages | Notifications

Showing rows: 1 to 100 | Page No: 1

| | hospital_name character varying (40) | location character varying (30) | daily_avg_expenses numeric |
|---|---|---|---|
| 1 | Wellness Clinic | Chennai | 31364.88 |
| 2 | Fortis Care | Pune | 4298.20 |
| 3 | Wellness Clinic | Ahmedabad | 2041.05 |
| 4 | Heritage Hospital | Hyderabad | 583.40 |
| 5 | City Hospital | Kolkata | 23605.23 |
| 6 | Heritage Hospital | Hyderabad | 1551.03 |
| 7 | Global Medicare | Ahmedabad | 9561.71 |
| 8 | Apollo Health | Jaipur | 1116.79 |

Successfully run. Total query runtime: 138 m

Total rows: 100 | Query complete 00:00:00.138

# Sample SQL Queries

## 6. Longest Hospital Stay

```
SELECT hospital_name, location, department,
      (discharge_date - admission_date) AS
stay_duration
FROM hospital
ORDER BY stay_duration DESC
LIMIT 1;
```

```
155
156  --6. Longest Hospital Stay
157  -- Find the patient with the longest stay by calculating the difference between Discharge D
158  SELECT hospital_name, location, department,
159         (discharge_date - admission_date) AS stay_duration
160  FROM hospital
161  ORDER BY stay_duration DESC
162  LIMIT 1;
```

Data Output | Messages | Notifications

Showing rows: 1 to 1 | Page No: 1

| | hospital_name character varying (40) | location character varying (30) | department character varying (30) | stay_duration integer |
|---|---|---|---|---|
| 1 | Apollo Health | Lucknow | ENT | 15 |

# Sample SQL Queries

## 7. Total Patients Treated Per City

SELECT location AS city,
SUM(patients_count) AS total_patients
FROM hospital
GROUP BY location
ORDER BY total_patients DESC;

```
--7. Total Patients Treated Per City
-- Count the total number of patients treated in each city.
SELECT location AS city,
SUM(patients_count) AS total_patients
FROM hospital
GROUP BY location
ORDER BY total_patients DESC;
```

Output | Messages | Notifications

Showing rows: 1 to 10

| city<br>character varying (30) | total_patients<br>bigint |
|---|---|
| Ahmedabad | 1555 |
| Jaipur | 1505 |
| Hyderabad | 1303 |
| Lucknow | 1264 |
| Chennai | 974 |
| Bangalore | 812 |
| Kolkata | 596 |
| Mumbai | 592 |

Successfully run. Total qu

# Sample SQL Queries

## 8. Average Length of Stay Per Department

```
SELECT department,
ROUND(AVG(discharge_date - admission_date), 2) AS avg_stay_days
FROM hospital
GROUP BY department
ORDER BY avg_stay_days DESC;
```

```
--8. Average Length of Stay Per Department
-- Calculate the average number of days patients spend in each department.
SELECT department,
ROUND(AVG(discharge_date - admission_date), 2) AS avg_stay_days
FROM hospital
GROUP BY department
ORDER BY avg_stay_days DESC;
```

Output | Messages | Notifications

SQL | Showing rows: 1 to 10

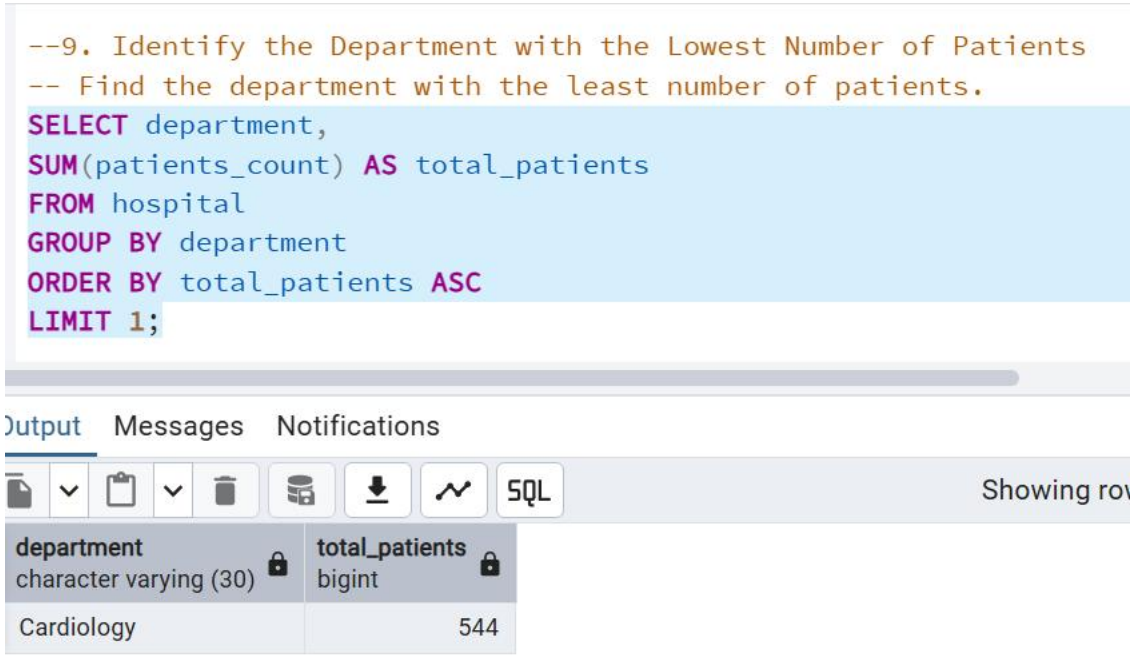
| department<br>character varying (30) | avg_stay_days<br>numeric |
|---|---|
| Pediatrics | 9.60 |
| Neurology | 9.25 |
| Urology | 8.89 |
| ENT | 8.56 |
| Orthopedics | 7.86 |
| General Medicine | 7.75 |
| Oncology | 7.70 |
| Gynecology | 7.67 |

✓ Successfully run. Total q

# Sample SQL Queries

## 9. Identify the Department with the Lowest Number of Patients

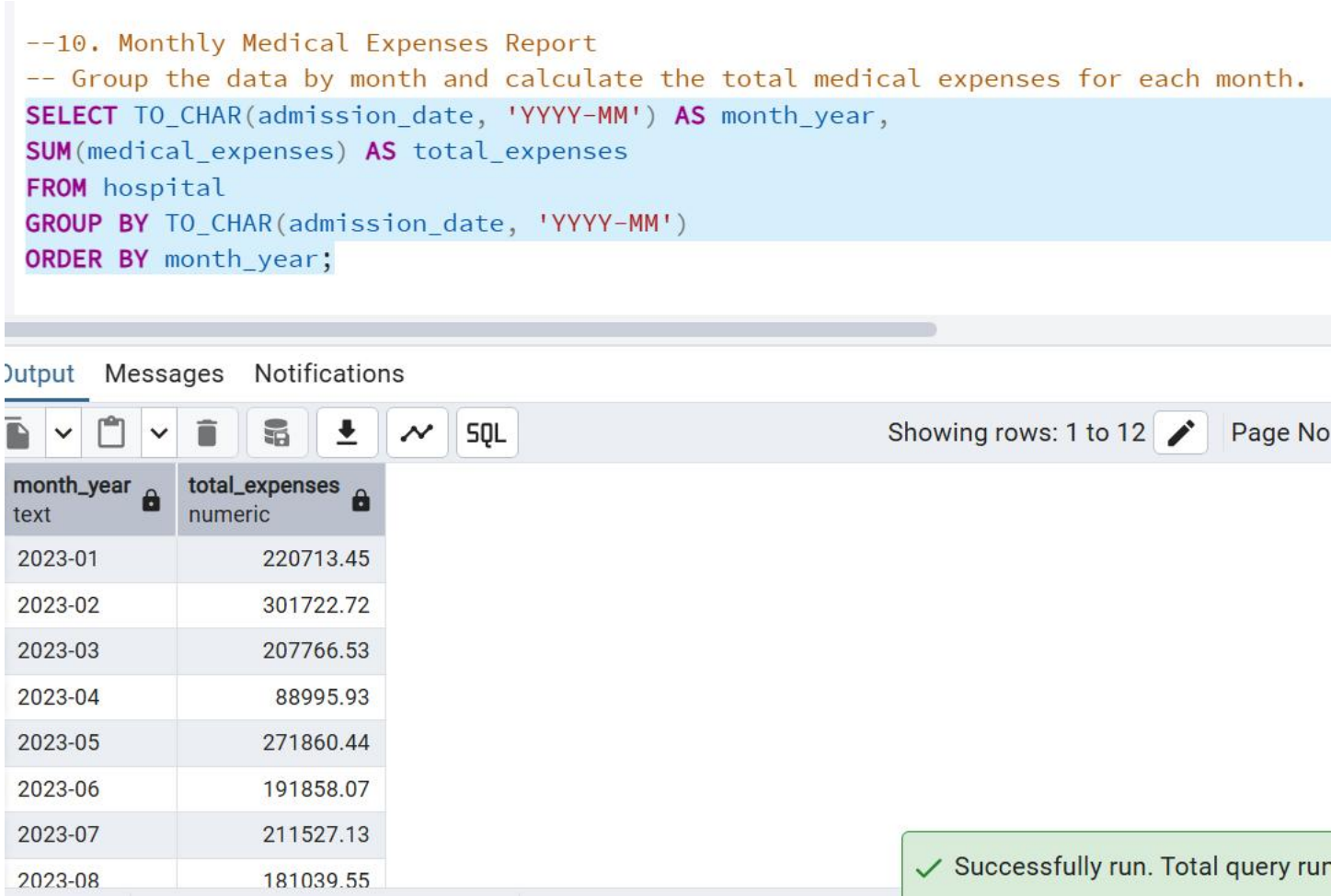
```
SELECT department,
SUM(patients_count) AS total_patients
FROM hospital
GROUP BY department
ORDER BY total_patients ASC
LIMIT 1;
```



# Sample SQL Queries

## 10. Monthly Medical Expenses Report

```
SELECT TO_CHAR(admission_date, 'YYYY-MM') AS month_year,
SUM(medical_expenses) AS total_expenses
FROM hospital
GROUP BY TO_CHAR(admission_date, 'YYYY-MM')
ORDER BY month_year;
```



# Thank You!

Every great presentation is complete with a great audience
— and that’s you!