SQL Assignment: Hospital Data Analysis Project

📌 Objective:

Use SQL queries to perform analysis on a hospital dataset to extract key insights on patients, departments, medical expenses, and hospital performance.

📂 **Dataset:** https://drive.google.com/drive/u/1/folders/19qYuFkNjzbxMxnOBLQoLmFEIJvmlELLq

Creating Table

```
CREATE TABLE hospital (
    hospital_name         VARCHAR(100) NOT NULL,
    location              VARCHAR(50) NOT NULL,
    department            VARCHAR(50) NOT NULL,
    doctors_count         INT,
    patients_count        INT,
    admission_date        DATE NOT NULL,
    discharge_date        DATE NOT NULL,
    medical_expenses      NUMERIC(10, 2) NOT NULL
);
```

Inserting Data

```
COPY hospital
FROM 'C:/Users/admin/hospital_data.csv'
WITH (FORMAT csv, HEADER true, DELIMITER ',')
```

Retrieve Data

```
SELECT * FROM hospital;
```

Queries & Outputs

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;
```

2) **Average Number of Doctors per Hospital:**
   Retrieve the average count of doctors available in each hospital.

```
SELECT AVG(doctors_count) AS avg_doctors
FROM hospital;
```

3) **Top 3 Departments with the Highest Number of Patient:**
   Find the top 3 hospital departments that have the highest number of patients.

```
SELECT department, SUM(patients_count) AS top3_department
FROM hospital
GROUP BY department
ORDER BY top3_department DESC
LIMIT 3;
```

4) **Hospital with the Maximum Medical Expenses:**
   Identify the hospital that recorded the highest medical expenses.

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

5) **Daily Average Medical Expenses:**
   Calculate the average medical expenses per day for each hospital.

```
SELECT hospital_name, medical_expenses,
(medical_expenses/GREATEST((discharge_date - admission_date), 1)) AS day_expense
FROM hospital;
```

6) **Longest Hospital Stay:**
   Find the patient with the longest stay by calculating the difference between Discharge Date and Admission Date.

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

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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;
```

8) **Average Length of Stay Per Department**
Calculate the average number of days patients spend in each department.

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

9) **Identify the Department with the Lowest Number of Patients**
Find the department with the least number of patients.

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

10) **Monthly Medical Expenses Report**
Group the data by month and calculate the total medical expenses for each month.

```
SELECT EXTRACT(MONTH FROM admission_date) AS month_number,
TO_CHAR(admission_date, 'Month') AS month_name,
SUM(medical_expenses) AS total_expenses
FROM hospital
GROUP BY month_number, month_name
ORDER BY month_number;
```

Conclusion

This project helped me apply SQL skills to analyze real-world hospital data. I practiced using functions like SUM, AVG, GROUP BY, and date calculations to draw meaningful insights. It was a great hands-on experience to strengthen my data analysis abilities.

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