INDIAN DATA CLUB

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# 21 DAYS SQL CHALLENGE

CHALLENGE STARTS FROM

**3RD NOVEMBER 2025**

REGISTRATION IS **LIVE**

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#SQLWithIDC

# *Day 9 (12/11): Date Functions*

## 🎯 *Objective*

To understand and apply SQL **Date & Time functions** such as **DATEADD, DATEDIFF, and ISDATE**, perform **date arithmetic** for calculating or adjusting dates, and use the **EXTRACT** function to retrieve specific components (like year, month, or day) from date fields for effective time-based analysis.

## 🔍 *Topics Covered*

- **DATEADD()** – Adds a specified number of days, months, or years to a date.
- **DATEDIFF()** – Calculates the difference between two dates (in days, months, or years).
- **ISDATE()** – Checks whether a value is a valid date.
- **EXTRACT()** – Retrieves a specific part (like year, month, or day) from a date.
- **Date Arithmetic** – Performs calculations directly on date values (e.g., departure_date - arrival_date).

# *DATE FUNCTIONS*

Date functions in SQL are used to **work with date and time values** — they help you **extract, calculate, add, or compare** dates to analyze time-based data easily.

## 📅 *DATE FUNCTIONS (MySQL Workbench)*

1. **YEAR()** – Extracts the **year** from a date.
☞ **Syntax:** YEAR(date)
🗒 *Example:* SELECT YEAR(arrival_date) FROM patients;

2. **MONTH()** – Extracts the **month number** (1–12) from a date.
☞ **Syntax:** MONTH(date)
🗒 *Example:* SELECT MONTH(arrival_date) FROM patients;

3. **MONTHNAME()** – Returns the **name of the month** (e.g., January, February).
☞ **Syntax:** MONTHNAME(date)
🗒 *Example:* SELECT MONTHNAME(arrival_date) FROM patients;

## 📅 *DATE FUNCTIONS (MySQL Workbench*)

**4. DAY()** – Extracts the **day of the month** (1–31) from a date.
☞ **Syntax:** DAY(date)
🗒 *Example*: SELECT DAY(arrival_date) FROM patients;

**5. DATEDIFF()** – Calculates the **difference (in days)** between two dates.
☞ **Syntax:** DATEDIFF(date1, date2)
🗒 *Example*: SELECT DATEDIFF(departure_date, arrival_date) AS stay_duration FROM patients;

**6. DATE_ADD()** – Adds a specified **time interval** to a date.
☞ **Syntax:** DATE_ADD(date, INTERVAL value unit)
🗒 *Example*: SELECT DATE_ADD(arrival_date, INTERVAL 7 DAY);

**7. DATE_SUB()** – Subtracts a specified **time interval** from a date.
☞ **Syntax:** DATE_SUB(date, INTERVAL value unit)
🗒 *Example*: SELECT DATE_SUB(departure_date, INTERVAL 3 DAY);

## 📅 ***DATE FUNCTIONS (MySQL Workbench*****)**

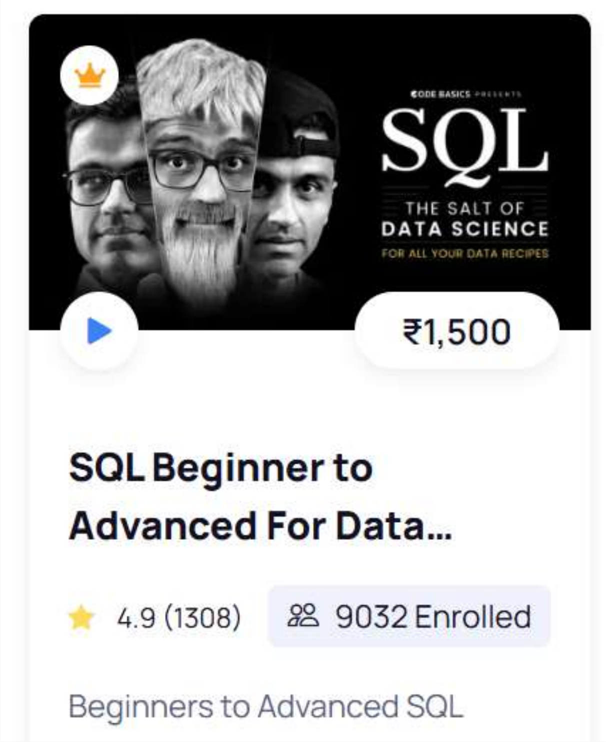
**8. CURDATE()** – Returns the **current date**.
☞ **Syntax:** CURDATE()
📄 *Example*: SELECT CURDATE();

**9. NOW()** – Returns the **current date and time**.
☞ **Syntax:** NOW()
📄 *Example*: SELECT NOW();

**10. EXTRACT()** – Extracts a **specific part** (like YEAR, MONTH, DAY) from a date.
☞ **Syntax:** EXTRACT(part FROM date)
📄 *Example*: SELECT EXTRACT(YEAR FROM arrival_date);

***(These are the most commonly used functions in reporting and analysis.)***

# 📚 Resources:



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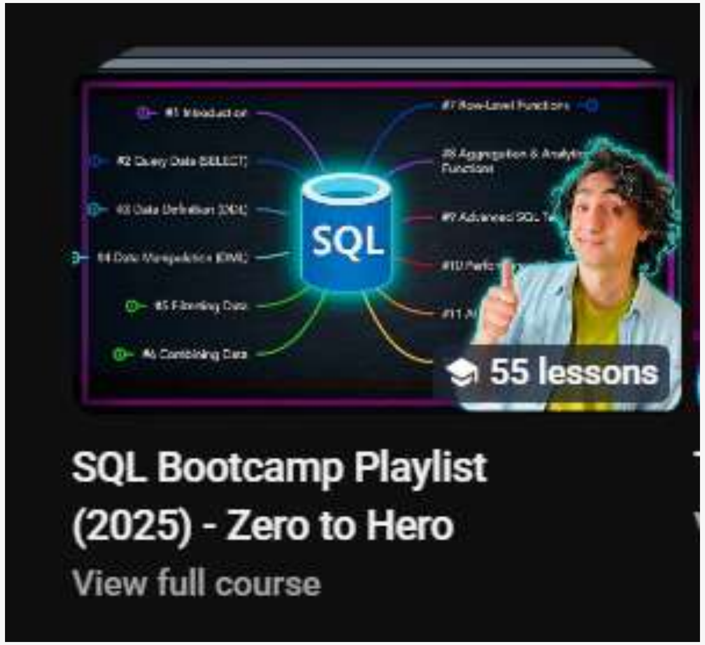
SQL Beginner to Advanced For Data...

⭐ 4.9 (1308) 9032 Enrolled

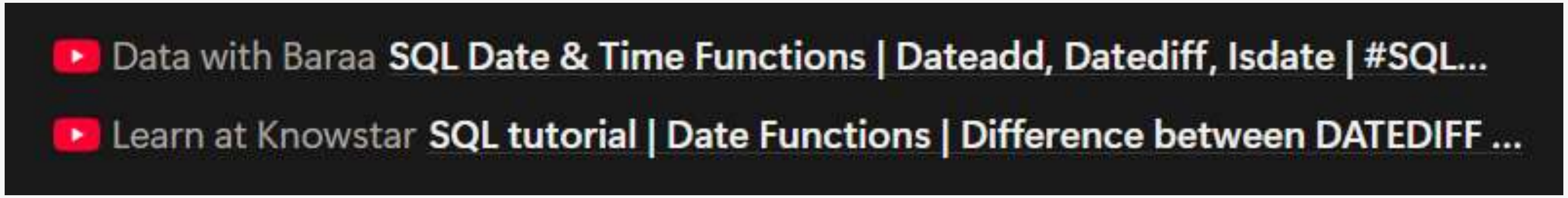
Beginners to Advanced SQL



55 lessons

SQL Bootcamp Playlist (2025) - Zero to Hero

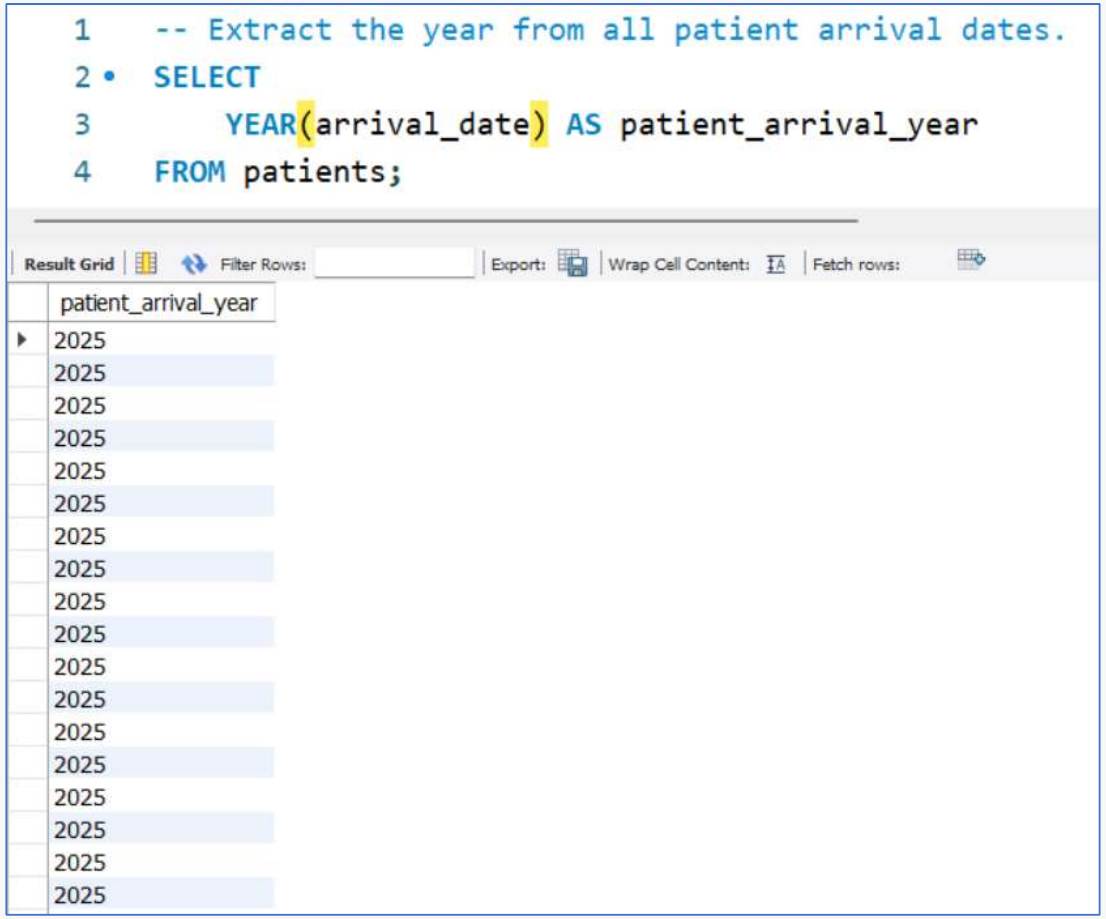
View full course



Data with Baraa SQL Date & Time Functions | Dateadd, Datediff, Isdate | #SQL...

Learn at Knowstar SQL tutorial | Date Functions | Difference between DATEDIFF ...

# *Practice Questions:*

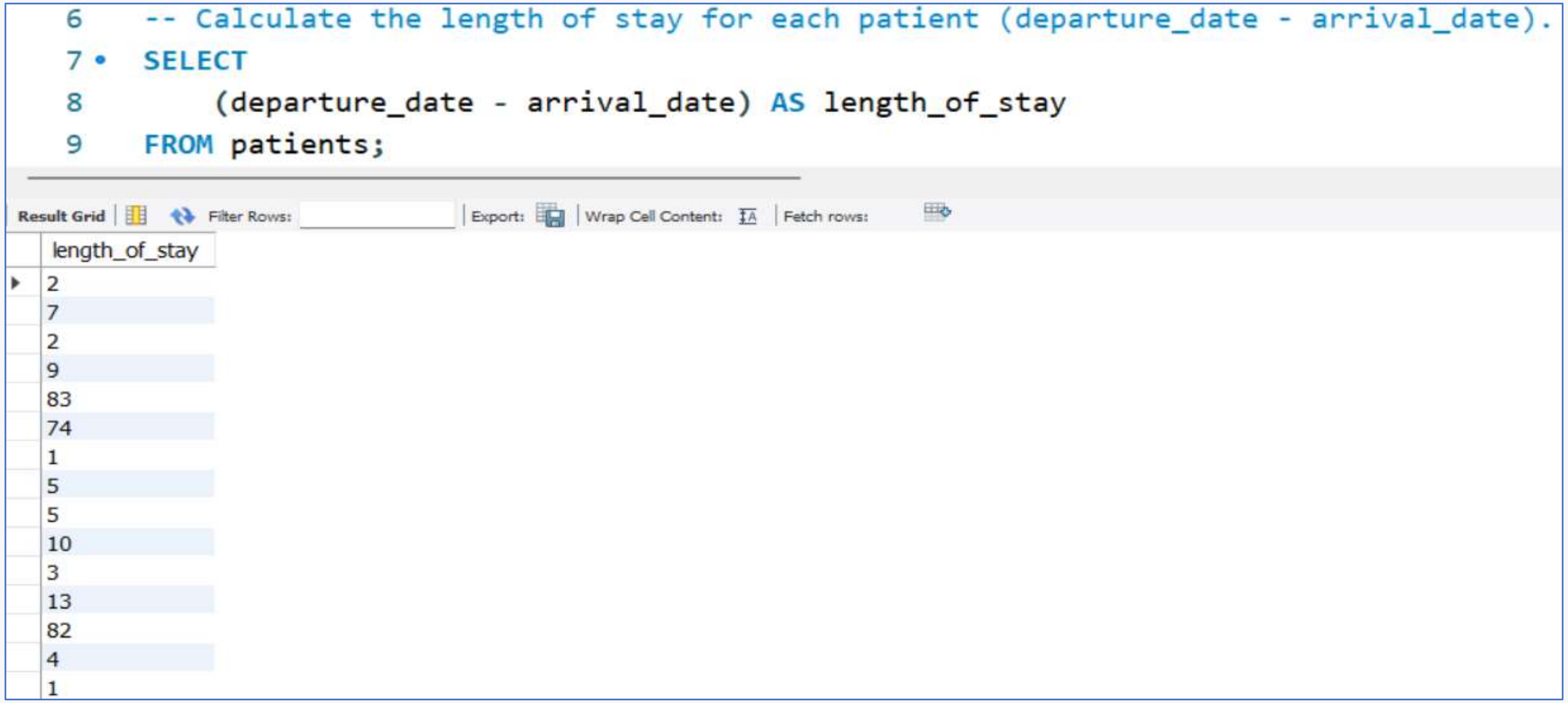


```sql
-- Extract the year from all patient arrival dates.
SELECT
    YEAR(arrival_date) AS patient_arrival_year
FROM patients;
```

```
patient_arrival_year
2025
2025
2025
2025
2025
2025
2025
2025
2025
2025
2025
2025
2025
2025
2025
2025
2025
2025
```

- **YEAR(arrival_date)** → extracts the year from each patient's arrival date.
- **AS patient_arrival_year** → renames the output column to patient_arrival_year.
- **FROM patients** → retrieves data from the patients table.

# Practice Questions:

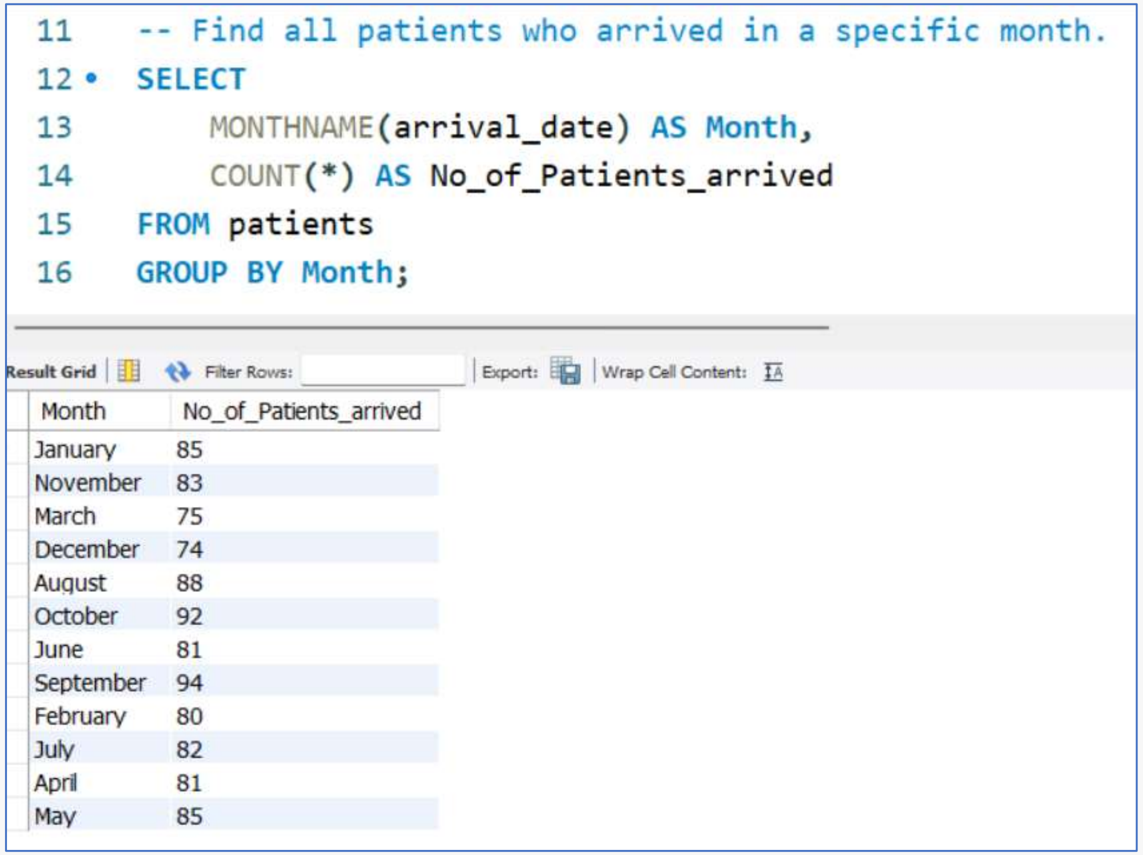


```sql
-- Calculate the length of stay for each patient (departure_date - arrival_date).
SELECT
    (departure_date - arrival_date) AS length_of_stay
FROM patients;
```

| length_of_stay |
|---|
| 2 |
| 7 |
| 2 |
| 9 |
| 83 |
| 74 |
| 1 |
| 5 |
| 5 |
| 10 |
| 3 |
| 13 |
| 82 |
| 4 |
| 1 |

- **(departure_date - arrival_date)** → calculates the number of days each patient stayed.
- **AS length_of_stay** → renames the output column to length_of_stay.
- **FROM patients** → retrieves data from the patients table.

# *Practice Questions:*

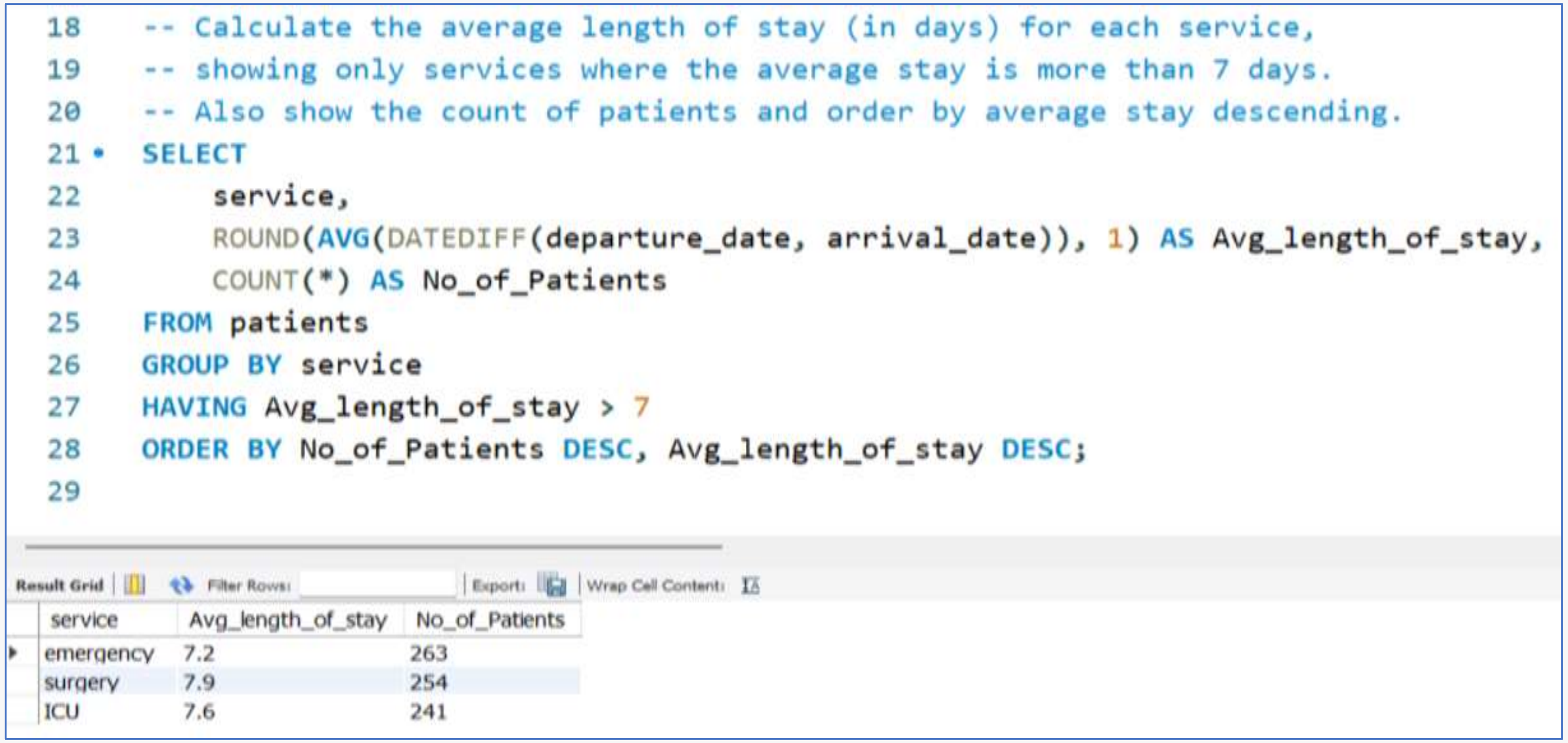


```sql
-- Find all patients who arrived in a specific month.
SELECT
    MONTHNAME(arrival_date) AS Month,
    COUNT(*) AS No_of_Patients_arrived
FROM patients
GROUP BY Month;
```

| Month | No_of_Patients_arrived |
|---|---|
| January | 85 |
| November | 83 |
| March | 75 |
| December | 74 |
| August | 88 |
| October | 92 |
| June | 81 |
| September | 94 |
| February | 80 |
| July | 82 |
| April | 81 |
| May | 85 |

- **MONTHNAME(arrival_date)** → extracts the month name from each patient’s arrival date.
- **COUNT(*)** → counts the number of patients arrived in that month.
- **GROUP BY Month** → groups the records by month to get total patients per month.
- **FROM patients** → retrieves data from the patients table.

# Daily Challenge:



```
-- Calculate the average length of stay (in days) for each service,
-- showing only services where the average stay is more than 7 days.
-- Also show the count of patients and order by average stay descending.
SELECT
    service,
    ROUND(AVG(DATEDIFF(departure_date, arrival_date)), 1) AS Avg_length_of_stay,
    COUNT(*) AS No_of_Patients
FROM patients
GROUP BY service
HAVING Avg_length_of_stay > 7
ORDER BY No_of_Patients DESC, Avg_length_of_stay DESC;
```

| service | Avg_length_of_stay | No_of_Patients |
|---|---|---|
| emergency | 7.2 | 263 |
| surgery | 7.9 | 254 |
| ICU | 7.6 | 241 |

- **DATEDIFF(departure_date, arrival_date)** → calculates the number of days between arrival and departure.
- **AVG(...)** → finds the average stay duration per service.
- **ROUND(...,2)** → rounds the average to 2 decimal places.
- **COUNT(*)** → counts patients in each service.
- **HAVING Avg_length_of_stay > 7** → shows only services with average stay above 7 days.
- **ORDER BY** → sorts results by number of patients and average stay in descending order.