SQL Case Study: User Activity & Sessions

Dataset: users, logins Goal: Solve business questions on user activity using SQL

N **by Nagasudha S**

Q1: Users with No Login in Last 5 Months

Objective:

Find users inactive for the past 5 months.

Approach:

- Get the latest login date.
- Filter users whose last login was before 5 months from that date.

Key SQL Concepts:

DATEADD(), MAX(), NOT IN, HAVING MAX()

Q2: Quarterly Summary – User & Session Count

Objective:

Show user count and session count per quarter.

Approach:

- Use DATETRUNC(QUARTER) to group by quarter.
- Count distinct USER_IDs and SESSION_IDs.

Key SQL Concepts:

DATETRUNC, COUNT(DISTINCT), GROUP BY

Q3: Users Logged in Jan 2024 but Not Nov 2023

Objective:

Filter users who were active in Jan 2024 but not in Nov 2023.

Approach:

- Use MONTH() and YEAR() filters.
- Exclude those present in Nov 2023 using NOT IN.

Key SQL Concepts:

MONTH(), NOT IN, DISTINCT

Q4: Add % Change in Sessions from Last Quarter

Objective:

Extend Q2 with quarter-over-quarter session growth.

Approach:

- Use LAG() window function to get previous quarter's session count.
- Calculate % change using a formula.

Key SQL Concepts:

LAG(), CTE, ROUND(), OVER(ORDER BY)

Q5: Top User by Score per Day

Objective:

Find user with highest total session score each day.

Approach:

- Group by DATE and USER_NAME.
- Use ROW_NUMBER() to rank users by daily score and filter for rn = 1.

Key SQL Concepts:

ROW_NUMBER(), PARTITION BY, SUM(), CTE

Q6: Best Users – Logged in Every Day Since First Login

Objective:

Identify users who logged in every single day since their first login.

Approach:

- Get first_login per user.
- Count required days and compare with actual unique login days.

Key SQL Concepts:

DATEDIFF(), HAVING, COUNT(DISTINCT)

Q7: Dates with No Login Activity

Objective:

List dates with zero logins from start to '2024-06-28'.

Approach:

- Generate a date calendar using recursive CTE.
- Exclude dates found in logins.

Key SQL Concepts:

Recursive CTE, DATEADD(), NOT IN, MAXRECURSION