Instagram User Analytics

- **Project Description:** The goal of this project was to analyze Instagram's user and engagement data in order to derive meaningful insights about marketing strategies and investor-focused metrics. The tasks were executed systematically using SQL queries in order to ensure data accuracy and generate actionable insights.

- **Approach:**

A) Marketing Analysis:

- **Loyal User Reward:** The marketing team aims to reward the most loyal users, i.e., those who have been using the platform for the longest time. To achieve this, I identified the five oldest users on Instagram by analyzing the **created_at** field in the provided **Users** table. This was done using the **ORDER BY** clause to sort the users based on their registration date and time in ascending order, ensuring that the longest-serving users were accurately identified.

- **Inactive User Engagement:** The team aims to encourage inactive users to start posting by sending them promotional emails. To achieve this, I identified users who have never posted a single photo on Instagram. This was accomplished by analyzing the **Users** table and the **Photos** table. Using a **LEFT JOIN** between the two tables and filtering for **user_id** values that are **NULL** in the **Photos** table, inactive users were accurately identified, ensuring their precise selection for the promotional campaign.

- **Contest Winner Declaration:** The team has organized a contest where the user with the most likes on a single photo win. To determine the winner, I identified the photo with the highest number of likes by analyzing the **Likes** table and calculating the like count for each photo. Using this data, I joined the **Likes** table with the **Photos** table, and then retrieved the user details from the **Users** table by further **joining** it with the **Photos** table. This ensured the accurate identification of the winner. The user details, including **their photo_id, username, and number of likes**, were then provided to the team for the announcement.

- **Hashtag Research:** A partner brand wants to know the most popular hashtags to use in their posts to reach the most people. To achieve this, I analyzed the **Photo_tags** and **Tags** tables to identify the top five most commonly used hashtags on the platform. By counting the occurrences of each **tag_id**, grouping by **tag_name**, and ordering them in descending order, I identified the most frequently used hashtags. This provided the brand with the most effective hashtags to improve post visibility and reach a larger audience.

- **Ad Campaign Launch:** The team wants to know the best day of the week to launch ads. To determine this, I analyzed the **Users** table and identified the day of the week when most users registered on Instagram. Using SQL functions like **DAYNAME** to extract the day of the week and **COUNT** to measure the number of registrations, I found that **Thursdays** had the highest registration activity. This insight makes Thursday the ideal day to schedule ad campaigns for maximum reach and engagement.

B) Investor Metrics

- **User Engagement:** Investors want to know if users are still active and posting on Instagram or if they are making fewer posts. To provide this insight, I calculated the **average number of posts per user** on Instagram by dividing the total number of photos by the total number of users. This metric shows how active users are on the platform and whether engagement is increasing or decreasing.

- **Bots & Fake Accounts:** Investors want to know if the platform is crowded with fake and dummy accounts. To detect potential bots, I identified users who have liked every single photo on the platform, as this is unusual behavior for a typical user. By comparing the total number of photos and likes per user, I identified users whose activity matched this pattern.

• Tech-Stack Used

MySQL Workbench (Version 8.0): Used for writing and executing SQL queries due to its user-friendly interface and ability to visualize results.

- **Insights**

A) Marketing Analysis

- **Loyal User Reward**: Identified the five oldest users based on registration dates, highlighting loyal users who can be rewarded to strengthen engagement and retention.

- **Inactive User Engagement**: Highlighted inactive users, providing an opportunity to re-engage them with personalized campaigns.

- **Contest Winner Declaration**: Determine the winner of the contest based on the highest photo likes, showcasing their popularity and engagement.

- **Hashtag Research**: Discovered the top five most-used hashtags, providing valuable input for optimizing post visibility.

- **Ad Campaign Launch:** Thursdays were identified as the peak registration day, making it an ideal time to schedule ad campaigns.

B) Investor Metrics

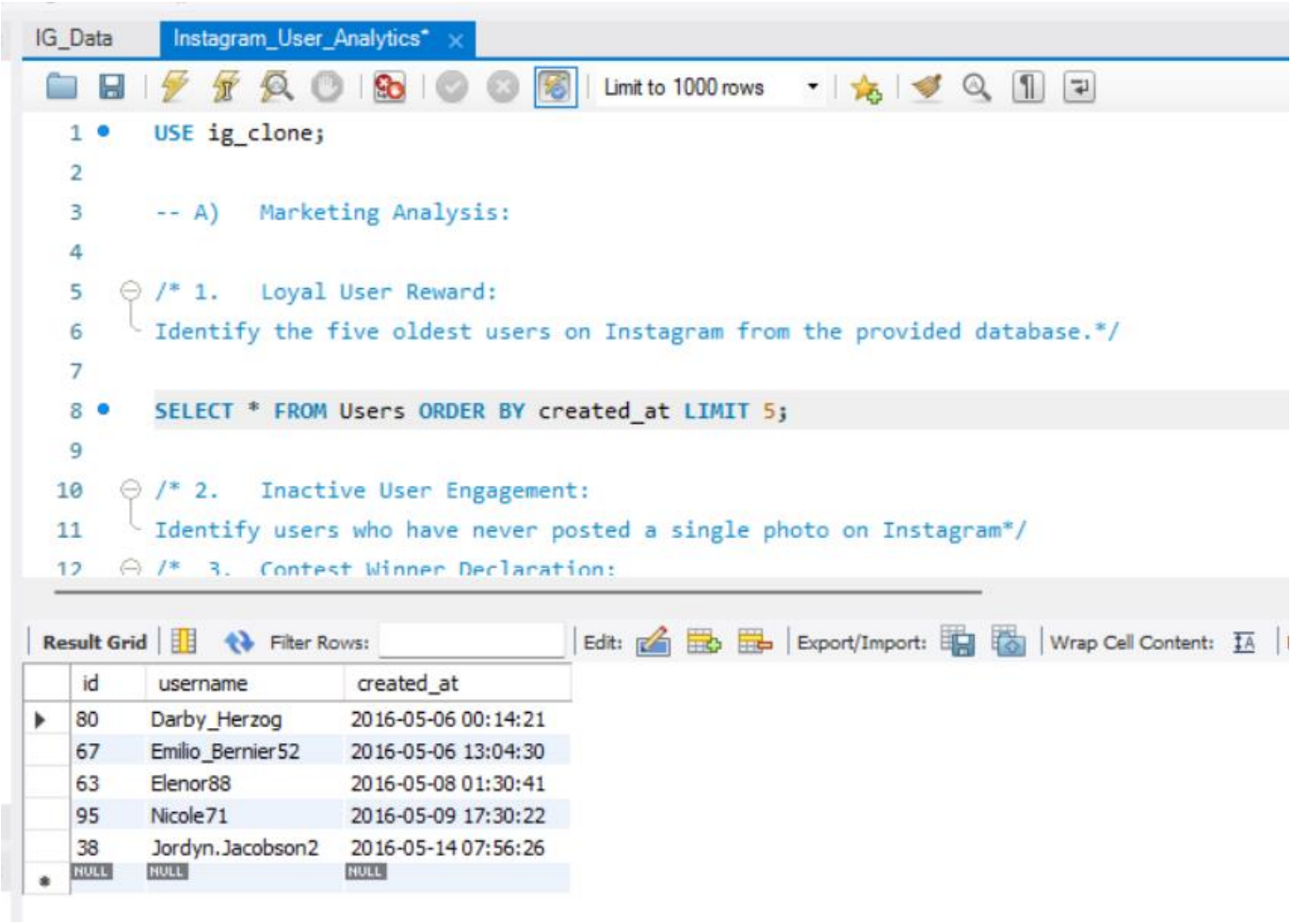
- **User Engagement**: Measured content generation and user activity trends, showing healthy engagement rates and platform activity.

- **Bots & Fake Accounts**: Identified suspicious accounts with bot-like behavior, ensuring better platform integrity and reliability for investors.

- **Result:**

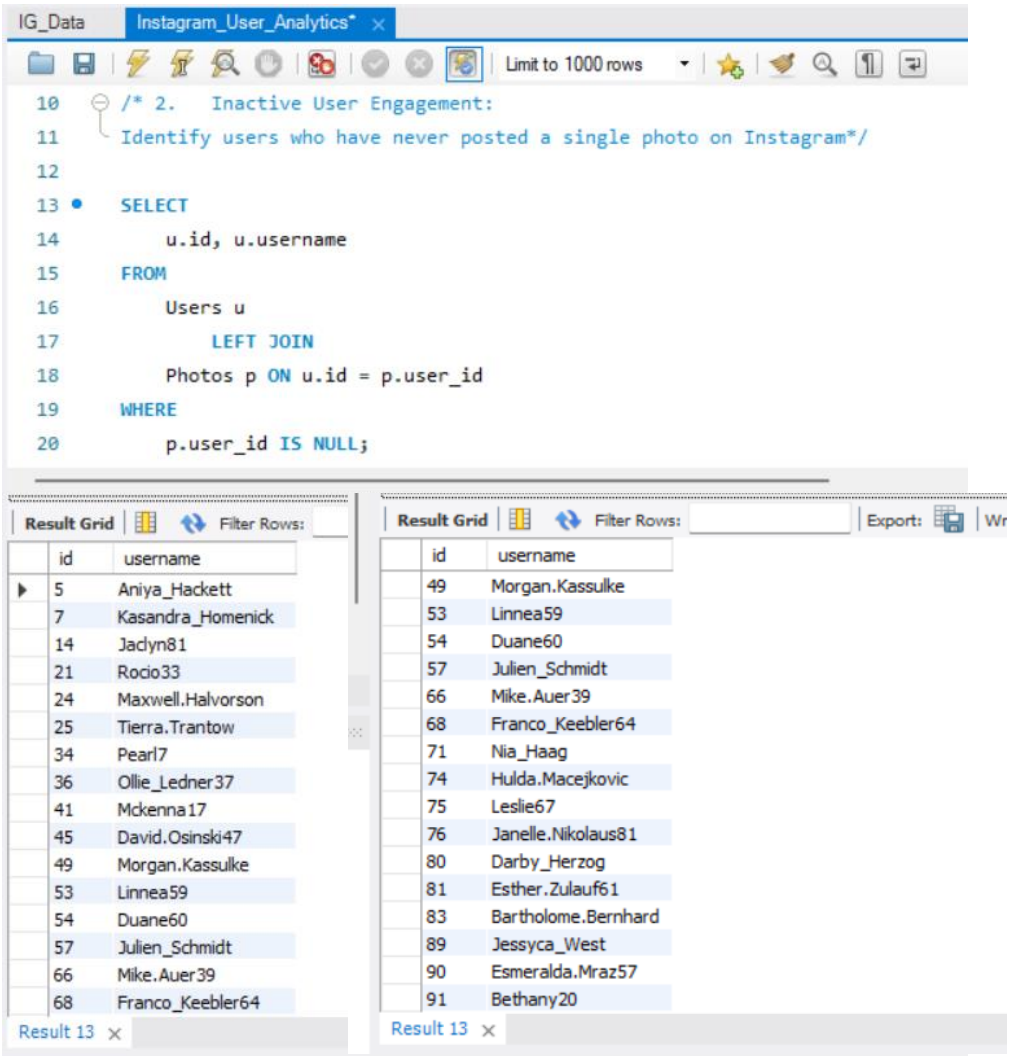
A) Marketing Analysis:

1. **Loyal User Reward:** Identify the five oldest users on Instagram from the provided database.

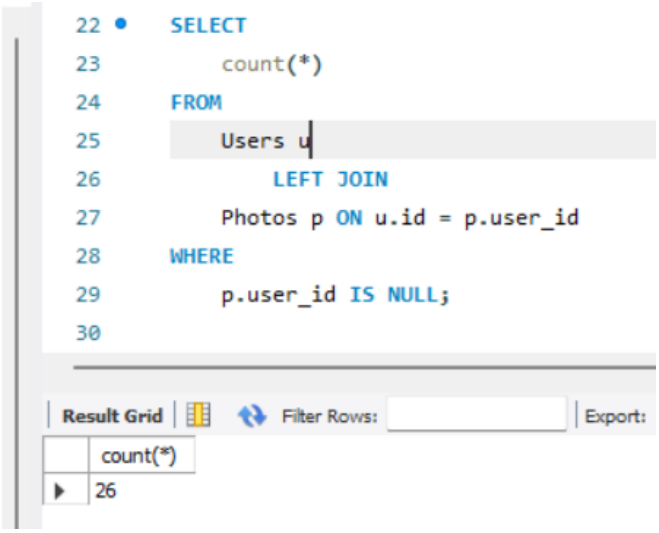


The five oldest users on Instagram are **User IDs 80, 67, 63, 95, and 38**.

2. **Inactive User Engagement:** Identify users who have never posted a single photo on Instagram.



There is total **26 users** who have never posted a single photo on Instagram.



3. **Contest Winner Declaration:** Determine the winner of the contest and provide their details to the team (The user with the most likes on a single photo wins).

IG_Data | Instagram_User_Analytics*

Limit to 1000 rows

```
/*  3.  Contest Winner Declaration:
Determine the winner of the contest and provide
(The User with the most likes on a single photo

SELECT
    likes.photo_id,
    users.username,
    COUNT(likes.user_id) AS no_of_likes
FROM
    likes
        INNER JOIN
    photos ON likes.photo_id = photos.id
        INNER JOIN
    users ON photos.user_id = users.id
GROUP BY likes.photo_id , users.username
ORDER BY no_of_likes DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content

photo_id	username	no_of_likes
145	Zack_Kemmer93	48
127	Malinda_Streich	43
182	Adelle96	43
123	Seth46	42
30	Presley_McClure	41
52	Annalise.McKenzie16	41
61	Delpha.Kihn	41
147	Meggie_Doyle	41

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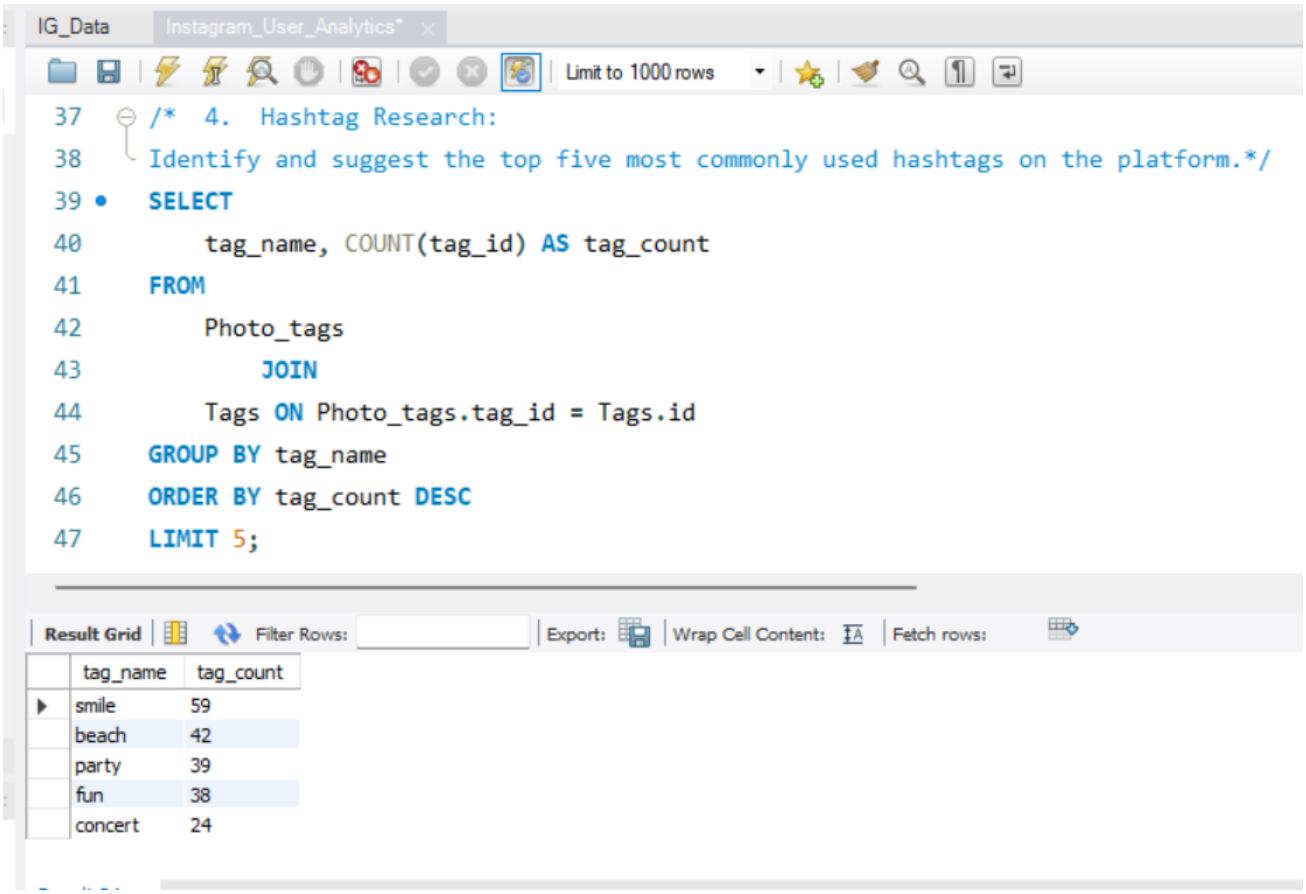
61	Delpha.Kihn	41
147	Meggie_Doyle	41
174	Elenor88	41
192	Kathryn80	41
256	Javonte83	41
13	Harley_Lind18	40
97	Irwin.Larson	40
153	Aurelie71	40
161	Cesar93	40
244	Damon35	40
44	Alexandro35	39
62	Kenneth64	39
66	Eveline95	39
100	Yvette.Gottlieb91	39
107	Yazmin_Mills95	39
110	Kelsi26	39
118	Janet.Armstrong	39
119	Janet.Armstrong	39
144	Zack_Kemmer93	39

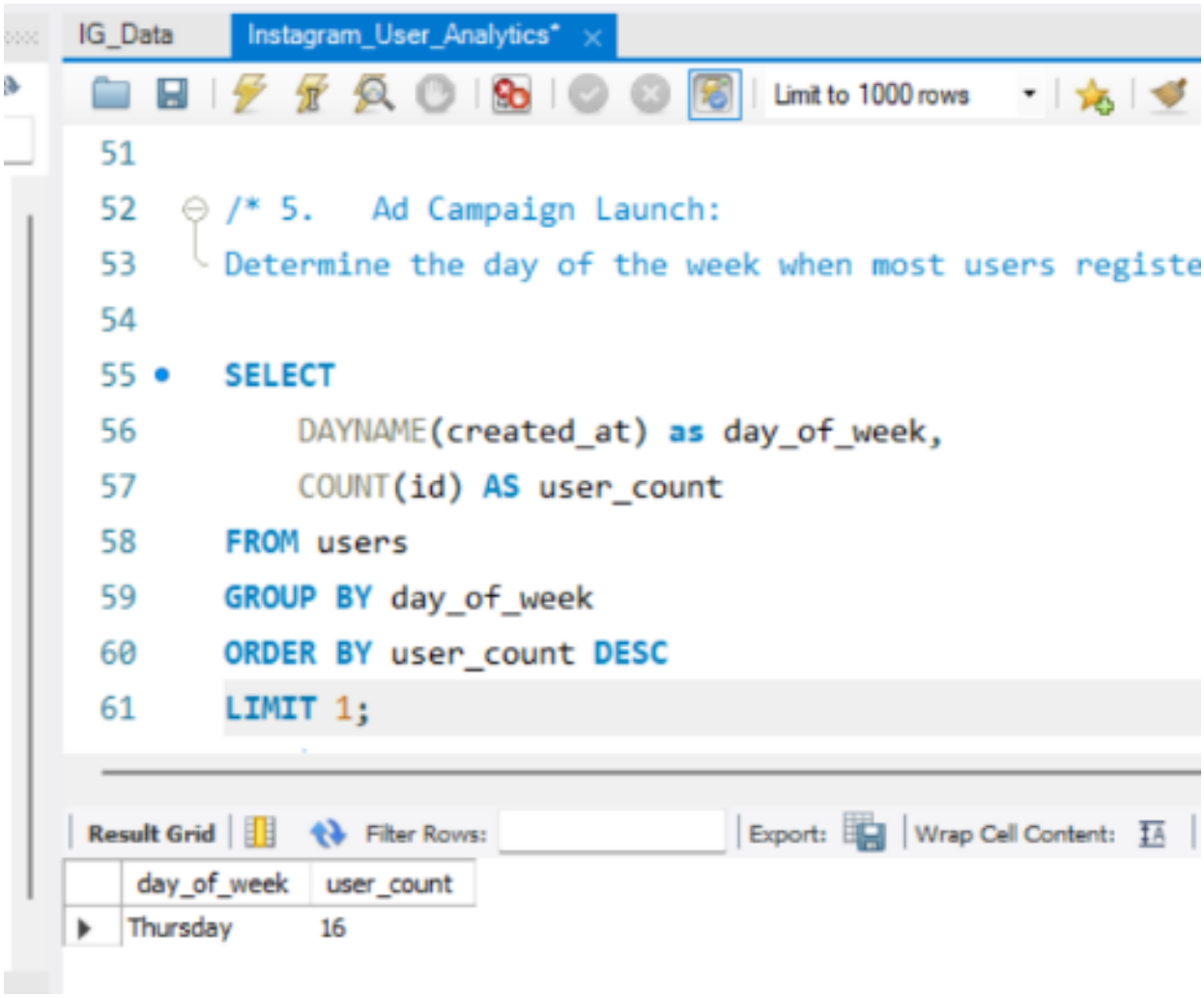
4. **Hashtag Research:** Identify and suggest the top five most commonly used hashtags on the platform.



Smile, Beach, Party, Fun, Concert are the top five most commonly used hashtags on the platform.

5. **Ad Campaign Launch:**

Determine the day of the week when most users register on Instagram. Provide insights on when to schedule an ad campaign.

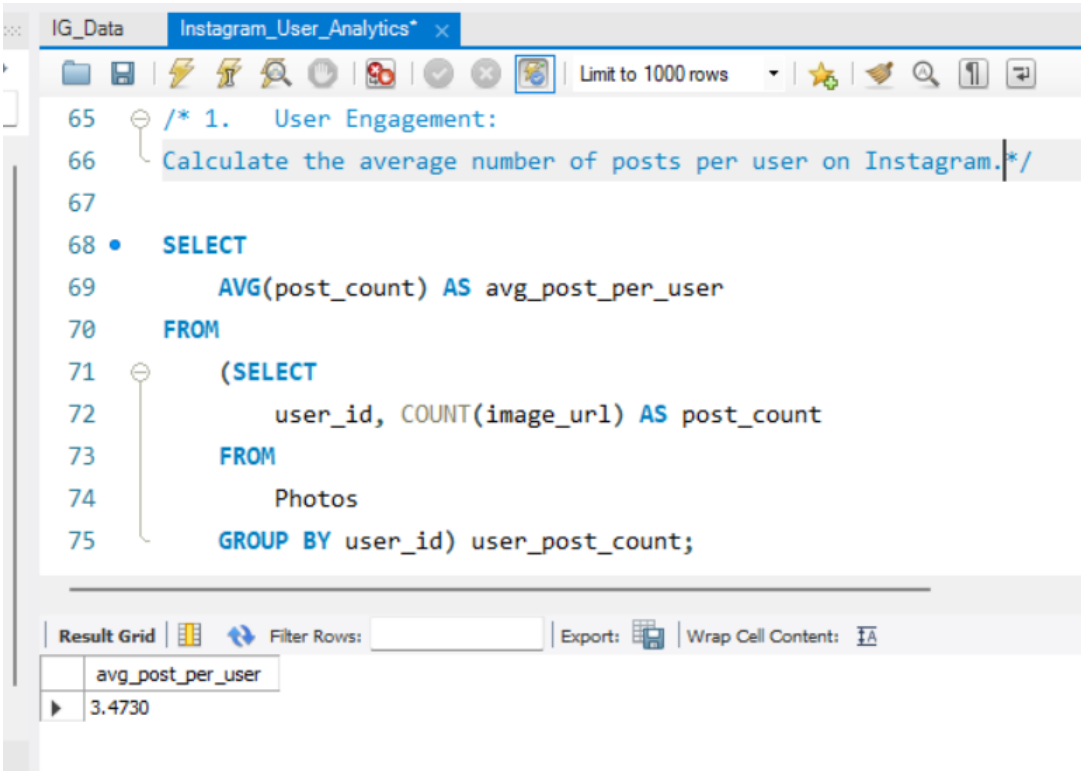


Most of the users register on Instagram **on Thursday**

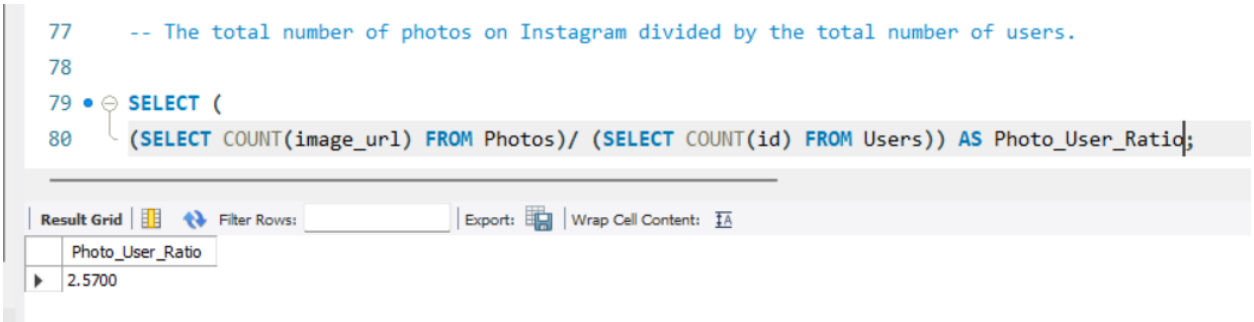
B) Investor Metrics:

1. User Engagement:

Calculate the average number of posts per user on Instagram. Also, provide the total number of photos on Instagram divided by the total number of users.



The average number of posts per user on Instagram is **3.4730**



The Photo-User Ratio is **2.5700**

2. Bots & Fake Accounts:

Identify users (potential bots) who have liked every single photo on the site, as this is not typically possible for a normal user.

```
/* 2.   Bots & Fake Accounts:
Identify users (potential bots) who have liked every single photo on the site, as this is not typically
possible for a normal user.*/

SELECT user_id
FROM
    Likes
GROUP BY user_id
HAVING COUNT(photo_id) = (SELECT COUNT(id) FROM Photos);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

user_id
5
14
21
24
36
41
54
57
66
71
75
76
91

Likes 52

- **Drive Link**

Dataset:
https://drive.google.com/file/d/1_g5WfqGCzsedJzpgRlLoJNdZSJCdLRPX/view?usp=sharing

SQL File:
https://drive.google.com/file/d/1EsCQ_cmFeDSnkPpmlbVZErqwgVh0DJv6/view?usp=sharing