Instagram User Analytics

Project Description :

The name of the project **Instagram User Analytics** it self contains the whole description of the project. In this valuable project we are going to analyse the data of application named Instagram. Particularly, focus on the data related to users of Instagram and make valuable decisions for future planning. There are several tables available in database ig_clone and we performed accurate queries on it and tried to give perfect answers of the task.

The insights derived from this analysis can be used by various teams within the business. This project will help specially the Marketing team, product team as well as development team to take the perfect decision to improve the business.

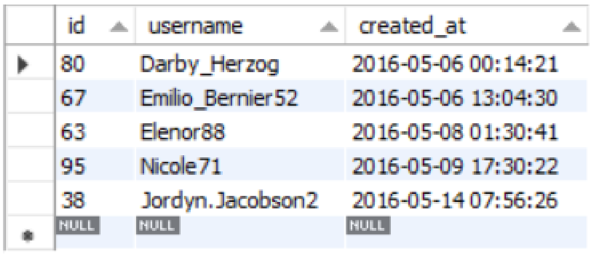
A) Marketing Analysis:

1. **Loyal User Reward:** The marketing team wants to reward the most loyal users, i.e., those who have been using the platform for the longest time.
Your Task: Identify the five oldest users on Instagram from the provided database.

Query :

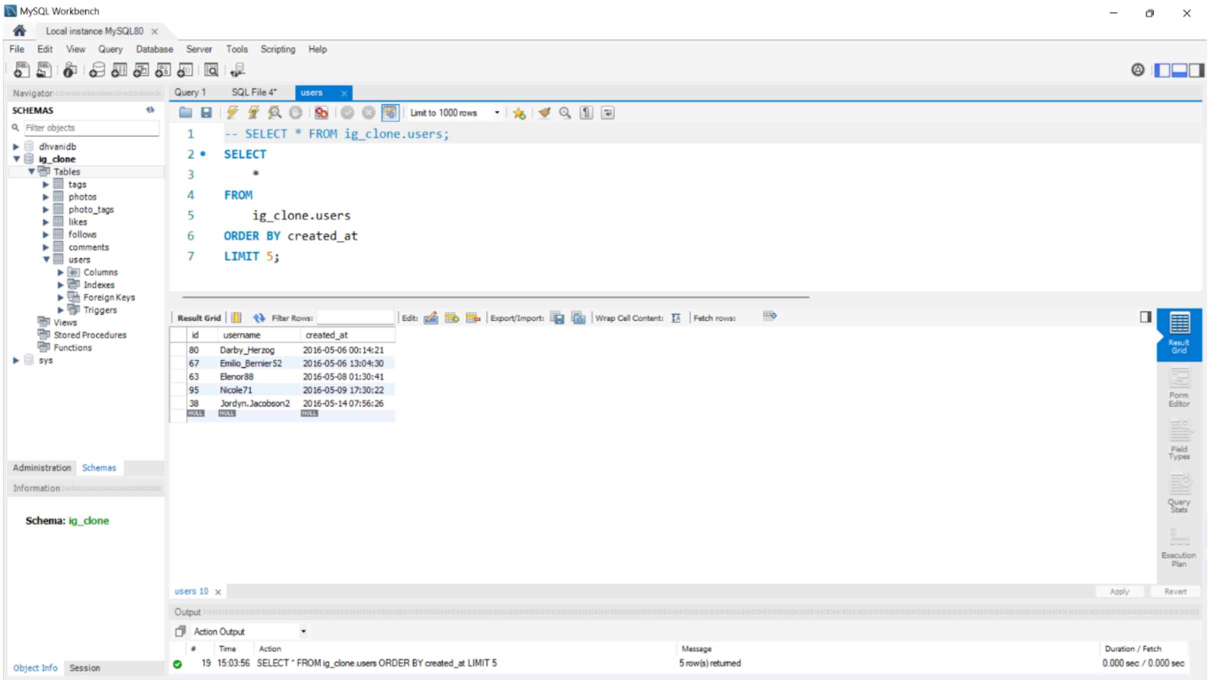
```
SELECT
*
FROM
ig_clone.users
ORDER BY created_at
LIMIT 5;
```

OUTPUT:



	id	username	created_at
▶	80	Darby_Herzog	2016-05-06 00:14:21
	67	Emilio_Bernier52	2016-05-06 13:04:30
	63	Elenor88	2016-05-08 01:30:41
	95	Nicole71	2016-05-09 17:30:22
	38	Jordyn.Jacobson2	2016-05-14 07:56:26
*	NULL	NULL	NULL

Insight :
This are the tops five users who are using Instagram for the long time. Marketing team can give the rewards to this five oldest users on Instagram.



Schema: ig_clone

```sql
-- SELECT * FROM ig_clone.users;
SELECT
    *
FROM
    ig_clone.users
ORDER BY created_at
LIMIT 5;
```

id	username	created_at
80	Darby_Herzog	2016-05-06 00:14:21
67	Emilio_Bernier52	2016-05-06 13:04:30
63	Elenor88	2016-05-08 01:30:41
95	Nicole71	2016-05-09 17:30:22
38	Jordyn.Jacobson2	2016-05-14 07:56:26
NULL	NULL	NULL

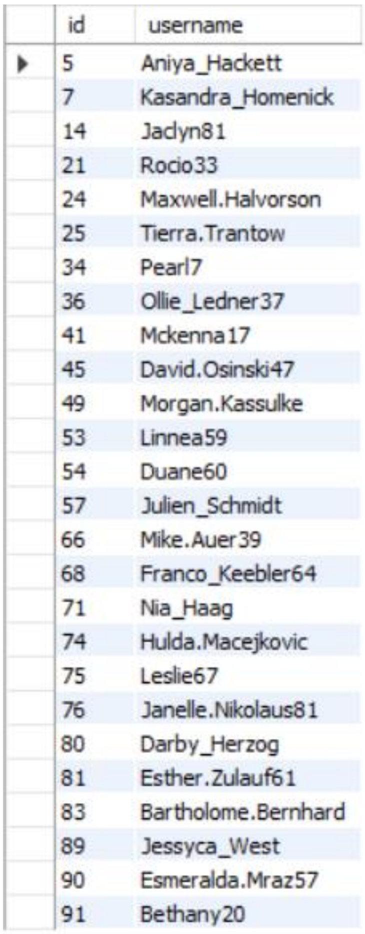
```
   #   Time      Action                                                   Message              Duration / Fetch
   19  15:03:56  SELECT * FROM ig_clone.users ORDER BY created_at LIMIT 5  5 row(s) returned    0.000 sec / 0.000 sec
```

2. **Inactive User Engagement:** The team wants to encourage inactive users to start posting by sending them promotional emails.
   Your Task: Identify users who have never posted a single photo on Instagram.

Query:

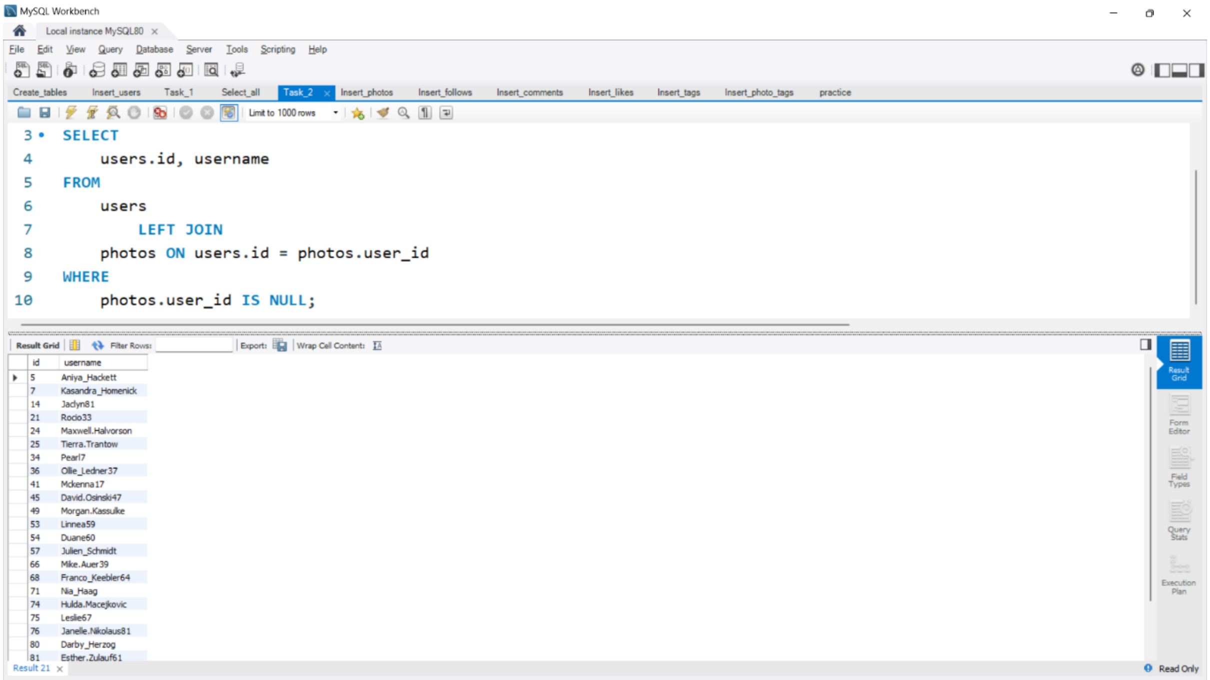
```
SELECT
   users.id, username
FROM
   users
      LEFT JOIN
   photos ON users.id = photos.user_id
WHERE
   photos.user_id IS NULL;
```

OUTPUT:



	id	username
▶	5	Aniya_Hackett
	7	Kasandra_Homenick
	14	Jaclyn81
	21	Rocio33
	24	Maxwell.Halvorson
	25	Tierra.Trantow
	34	Pearl7
	36	Ollie_Ledner37
	41	Mckenna17
	45	David.Osinski47
	49	Morgan.Kassulke
	53	Linnea59
	54	Duane60
	57	Julien_Schmidt
	66	Mike.Auer39
	68	Franco_Keebler64
	71	Nia_Haag
	74	Hulda.Macejkovic
	75	Leslie67
	76	Janelle.Nikolaus81
	80	Darby_Herzog
	81	Esther.Zulauf61
	83	Bartholome.Bernhard
	89	Jessyca_West
	90	Esmeralda.Mraz57
	91	Bethany20

Insight :
From this, marketing team can decide that which users are not engaging on application. They can send the mails to encourage them to share their thoughts via posts.


MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
Create_tables Insert_users Task_1 Select_all Task_2 Insert_photos Insert_follows Insert_comments Insert_likes Insert_tags Insert_photo_tags practice
Limit to 1000 rows
Result Grid Filter Rows: Export: Wrap Cell Content:
Result Grid
Form Editor
Field Types
Query Stats
Execution Plan
Result 21
Read Only

```
SELECT
    users.id, username
FROM
    users
        LEFT JOIN
    photos ON users.id = photos.user_id
WHERE
    photos.user_id IS NULL;
```

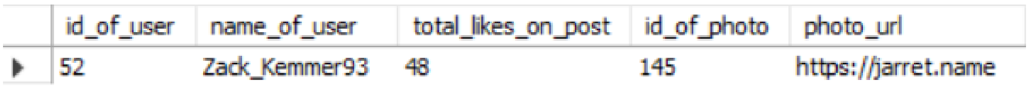
id	username
5	Aniya_Hackett
7	Kasandra_Homenick
14	Jaclyn81
21	Rocio33
24	Maxwell.Halvorson
25	Tierra.Trantow
34	Pearl7
36	Ollie_Ledner37
41	Mckenna17
45	David.Osinski47
49	Morgan.Kassulke
53	Linnea59
54	Duane60
57	Julien_Schmidt
66	Mike.Auer39
68	Franco_Keebler64
71	Nia_Haag
74	Hulda.Macejkovic
75	Leslie67
76	Janelle.Nikolaus81
80	Darby_Herzog
81	Esther.Zulauf61

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

QUERY:

```
SELECT
   photos.user_id AS id_of_user,
   users.username AS name_of_user,
   COUNT(likes.photo_id) AS total_likes_on_post,
   likes.photo_id AS id_of_photo,
   photos.image_url AS photo_url
FROM
   photos
      RIGHT JOIN
   likes ON photos.id = likes.photo_id
      LEFT JOIN
   users ON photos.user_id = users.id
GROUP BY id_of_photo
ORDER BY total_likes_on_post DESC
LIMIT 1;
```

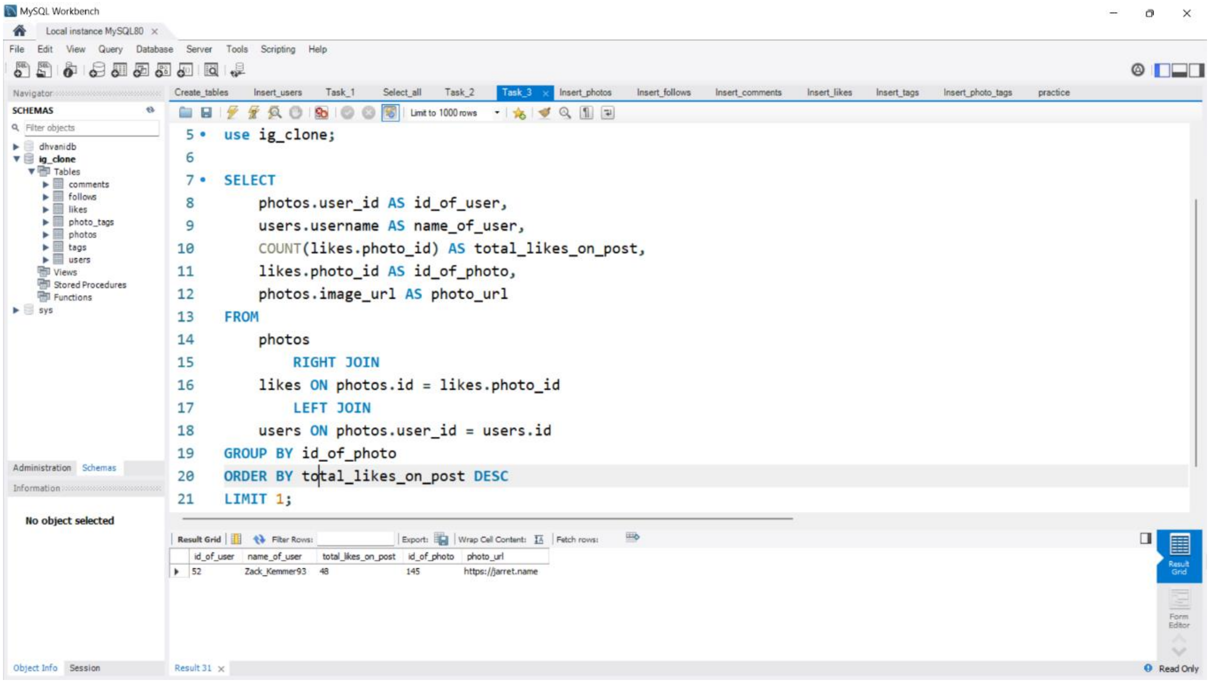
OUTPUT:



	id_of_user	name_of_user	total_likes_on_post	id_of_photo	photo_url
▶	52	Zack_Kemmer93	48	145	https://jarret.name

Insight:

Marketing team should give the price to the user whose user name is Zack_Kemmer93, which contains the highest likes amongst all which is around 48.



```
use ig_clone;

SELECT
    photos.user_id AS id_of_user,
    users.username AS name_of_user,
    COUNT(likes.photo_id) AS total_likes_on_post,
    likes.photo_id AS id_of_photo,
    photos.image_url AS photo_url
FROM
    photos
        RIGHT JOIN
    likes ON photos.id = likes.photo_id
        LEFT JOIN
    users ON photos.user_id = users.id
GROUP BY id_of_photo
ORDER BY total_likes_on_post DESC
LIMIT 1;
```

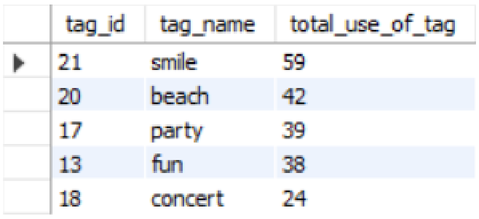
	id_of_user	name_of_user	total_likes_on_post	id_of_photo	photo_url
▶	52	Zack_Kemmer93	48	145	https://jarret.name

4. **Hashtag Research:** A partner brand wants to know the most popular hashtags to use in their posts to reach the most people. Your Task: Identify and suggest the top five most commonly used hashtags on the platform.

QUERY:

```
SELECT
   photo_tags.tag_id,
   tags.tag_name,
   COUNT(photo_tags.tag_id) AS total_use_of_tag
FROM
   photo_tags
      LEFT JOIN
   tags ON photo_tags.tag_id = tags.id
GROUP BY photo_tags.tag_id
ORDER BY total_use_of_tag DESC
LIMIT 5;
```

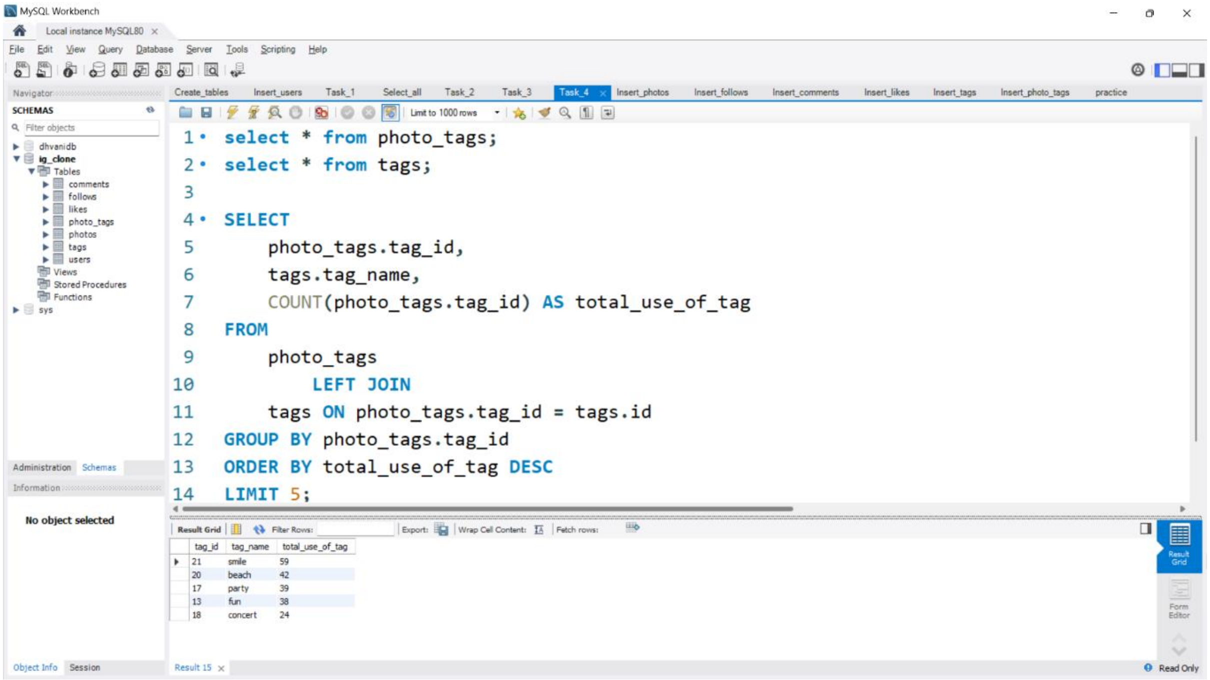
OUTPUT:



tag_id	tag_name	total_use_of_tag
21	smile	59
20	beach	42
17	party	39
13	fun	38
18	concert	24

Insight :

There are five tags which can be suggested to users to use in their posts to reach the most people which are smile, beach, party, fun and concert.


MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
Create_tables Insert_users Task_1 Select_all Task_2 Task_3 Task_4 Insert_photos Insert_follows Insert_comments Insert_likes Insert_tags Insert_photo_tags practice
SCHEMAS
dhvanidb
ig_clone
Tables
comments
follows
likes
photo_tags
photos
tags
users
Views
Stored Procedures
Functions
sys
Limit to 1000 rows
Administration Schemas
Information
No object selected
Object Info Session
Result Grid Filter Rows: Export: Wrap Cell Content: Fetch rows:
Result Grid
Form Editor
Result 15
Read Only

```
select * from photo_tags;
select * from tags;

SELECT
    photo_tags.tag_id,
    tags.tag_name,
    COUNT(photo_tags.tag_id) AS total_use_of_tag
FROM
    photo_tags
        LEFT JOIN
    tags ON photo_tags.tag_id = tags.id
GROUP BY photo_tags.tag_id
ORDER BY total_use_of_tag DESC
LIMIT 5;
```

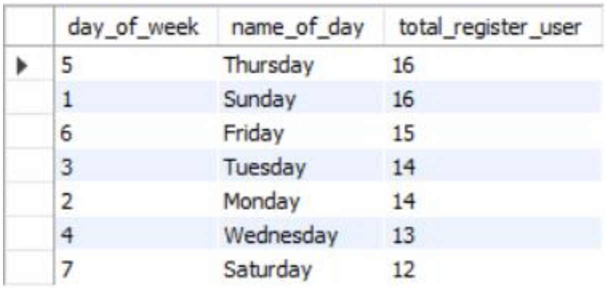
tag_id	tag_name	total_use_of_tag
21	smile	59
20	beach	42
17	party	39
13	fun	38
18	concert	24

5. **Ad Campaign Launch:** The team wants to know the best day of the week to launch ads. Your Task: Determine the day of the week when most users register on Instagram. Provide insights on when to schedule an ad campaign.

QUERY:

```
SELECT
   DAYOFWEEK(created_at) AS day_of_week,
   DAYNAME(created_at) AS name_of_day,
   COUNT(DAYNAME(created_at)) AS total_register_user
FROM
   users
GROUP BY name_of_day , day_of_week
ORDER BY total_register_user DESC;
```

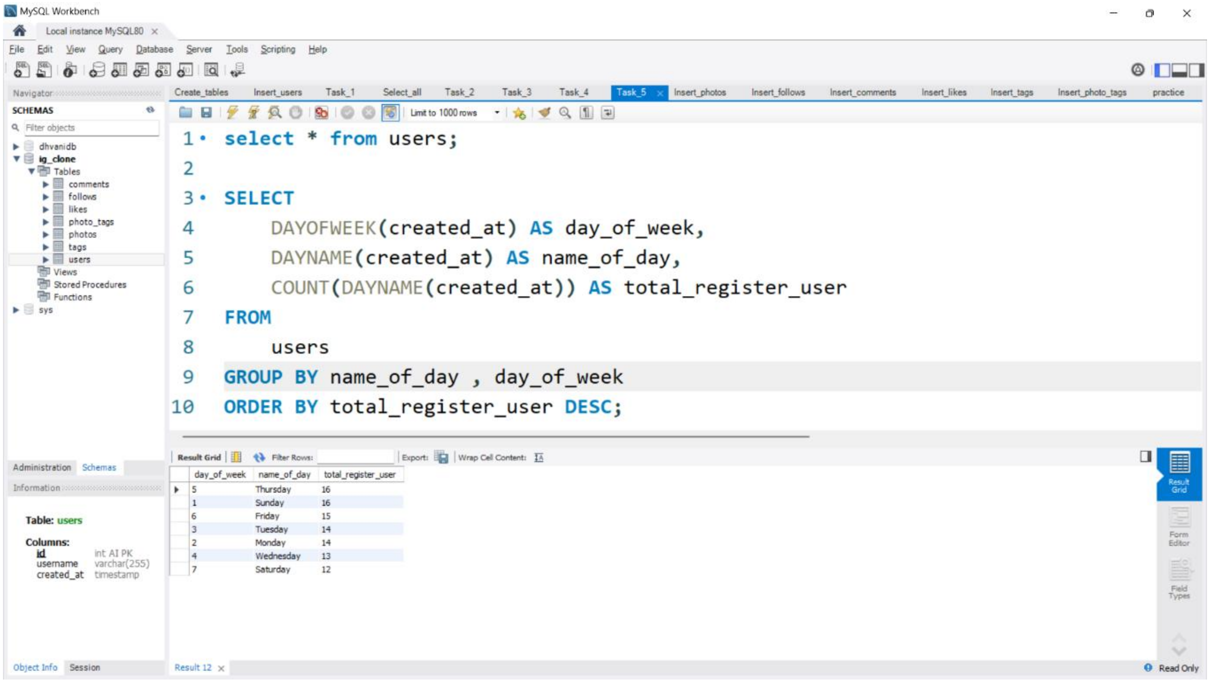
OUTPUT:



day_of_week	name_of_day	total_register_user
5	Thursday	16
1	Sunday	16
6	Friday	15
3	Tuesday	14
2	Monday	14
4	Wednesday	13
7	Saturday	12

Insight :

Marketing team can launch the new campaign on Thursday or Sunday because it can be shown that in this days most user registered on Instagram.



```
select * from users;

SELECT
    DAYOFWEEK(created_at) AS day_of_week,
    DAYNAME(created_at) AS name_of_day,
    COUNT(DAYNAME(created_at)) AS total_register_user
FROM
    users
GROUP BY name_of_day , day_of_week
ORDER BY total_register_user DESC;
```

Table: users

Columns:

id	int AI PK
username	varchar(255)
created_at	timestamp

day_of_week	name_of_day	total_register_user
5	Thursday	16
1	Sunday	16
6	Friday	15
3	Tuesday	14
2	Monday	14
4	Wednesday	13
7	Saturday	12

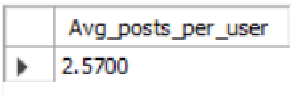
B) Investor Metrics:

1. **User Engagement:** Investors want to know if users are still active and posting on Instagram or if they are making fewer posts.
   Your Task: Calculate the average number of posts per user on Instagram.

QUERY:

```
SELECT
    (SELECT
            COUNT(id)
        FROM
            photos) / (SELECT
            COUNT(id)
        FROM
            users) AS Avg_posts_per_user;
```

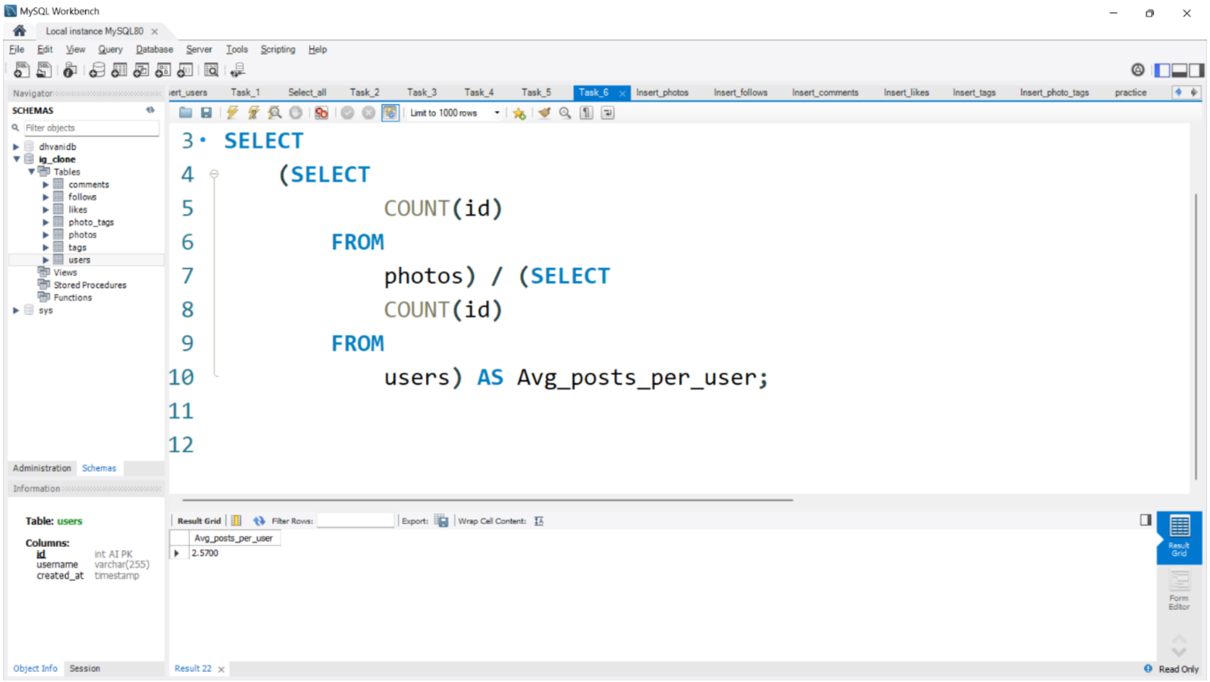
OUTPUT:



	Avg_posts_per_user
▶	2.5700

Insight :

From this, It can be said that every user post atleast around 3 posts in their account.



```
SELECT
    (SELECT
            COUNT(id)
        FROM
            photos) / (SELECT
            COUNT(id)
        FROM
            users) AS Avg_posts_per_user;
```

	Avg_posts_per_user
▶	2.5700

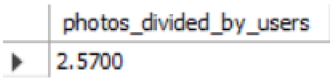
- Also, provide the total number of photos on Instagram divided by the total number of users.

QUERY:

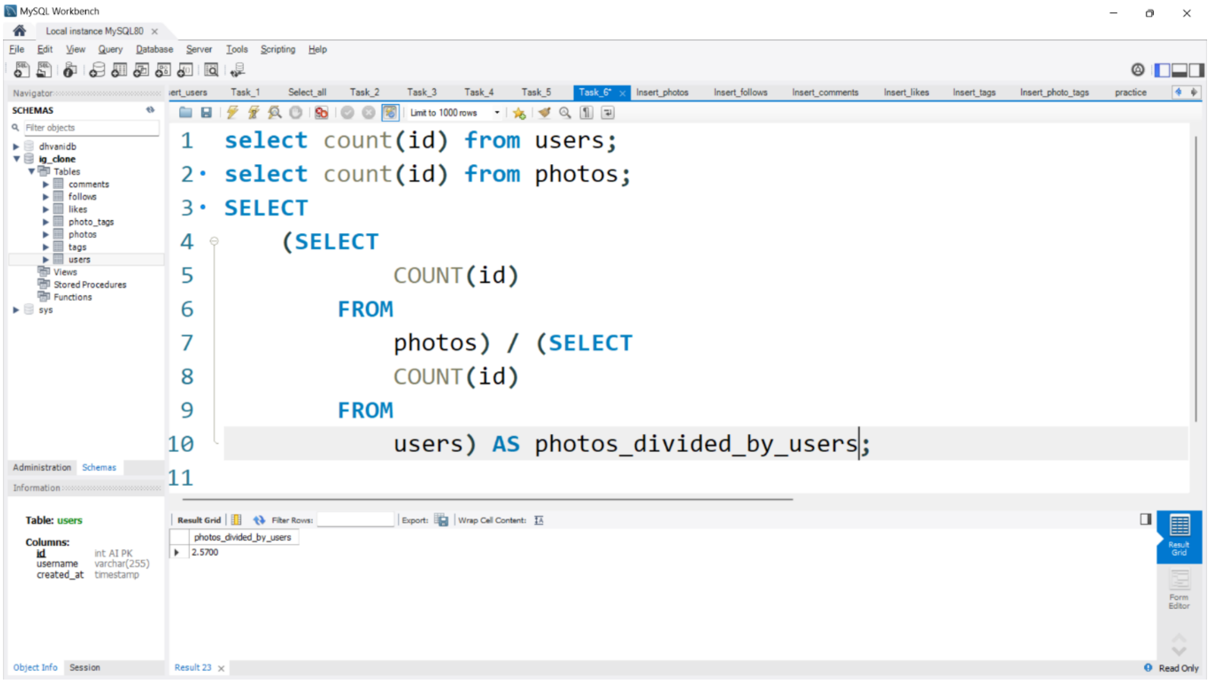
```
SELECT
    COUNT(id)
FROM
    users;
SELECT
```

```
    COUNT(id)
FROM
    photos;SELECT
    (SELECT
            COUNT(id)
        FROM
            photos) / (SELECT
            COUNT(id)
        FROM
            users) AS photos_divided_by_users;
```

OUTPUT:



	photos_divided_by_users
▶	2.5700



```
select count(id) from users;
select count(id) from photos;
SELECT
    (SELECT
            COUNT(id)
        FROM
            photos) / (SELECT
            COUNT(id)
        FROM
            users) AS photos_divided_by_users;
```

Table: users

Columns:

id	int AI PK
username	varchar(255)
created_at	timestamp

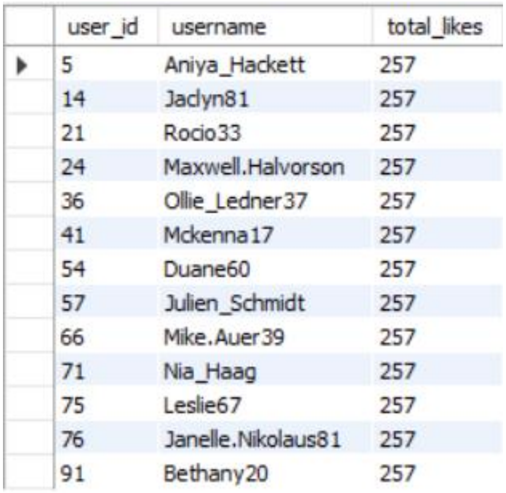
	photos_divided_by_users
▶	2.5700

2. **Bots & Fake Accounts:** Investors want to know if the platform is crowded with fake and dummy accounts.
   Your Task: Identify users (potential bots) who have liked every single photo on the site, as this is not typically possible for a normal user.

QUERY:

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

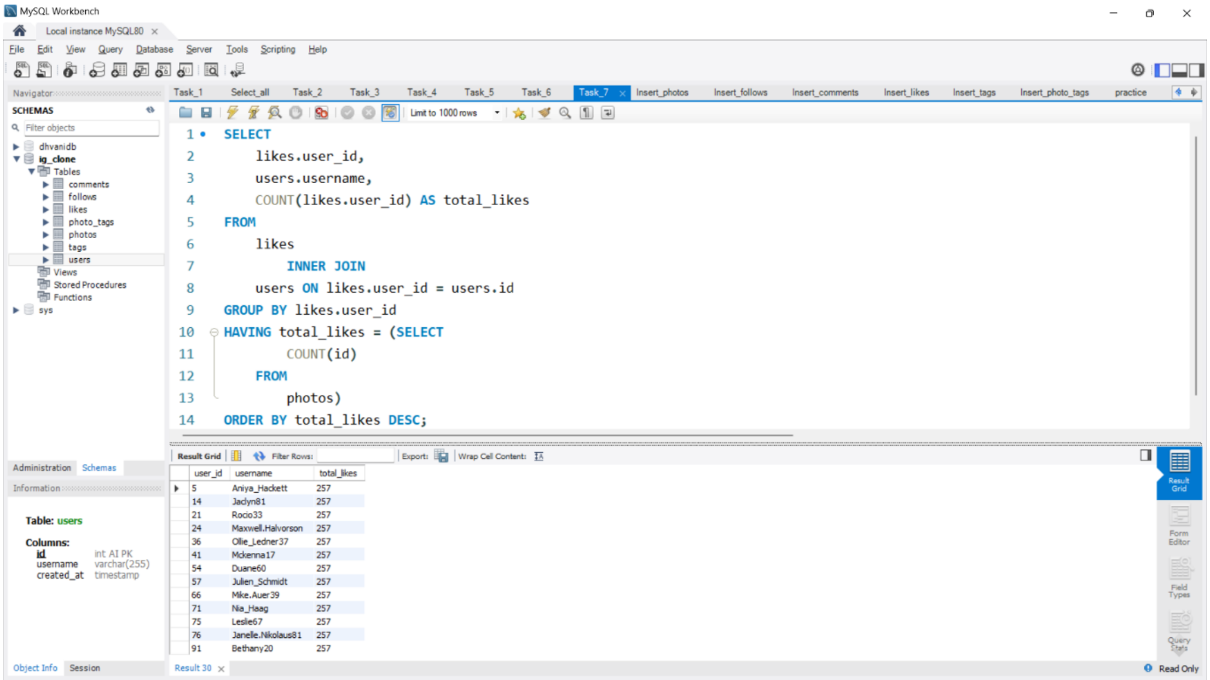
OUTPUT:



user_id	username	total_likes
5	Aniya_Hackett	257
14	Jaclyn81	257
21	Rocio33	257
24	Maxwell.Halvorson	257
36	Ollie_Ledner37	257
41	Mckenna17	257
54	Duane60	257
57	Julien_Schmidt	257
66	Mike.Auer39	257
71	Nia_Haag	257
75	Leslie67	257
76	Janelle.Nikolaus81	257
91	Bethany20	257

Insight :

This are the users which can be fake and can misuse the application, so team can analyse this accounts and delete this accounts to save the privacy of the other users.



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

Table: users

Columns:

id	int AI PK
username	varchar(255)
created_at	timestamp

user_id	username	total_likes
5	Aniya_Hackett	257
14	Jaclyn81	257
21	Rocio33	257
24	Maxwell.Halvorson	257
36	Ollie_Ledner37	257
41	Mckenna17	257
54	Duane60	257
57	Julien_Schmidt	257
66	Mike.Auer39	257
71	Nia_Haag	257
75	Leslie67	257
76	Janelle.Nikolaus81	257
91	Bethany20	257

Approach:

- The first step that I took towards this project was, I understand the connection between different tables and its data. Then, try to understand how I can make insights from the given data.
- Then after, I started from first query and understood the question, perform a step-by-step process to reach the perfect output.
- Finally, make some insights out of the derived output.

Tech-Stack Used:

In this project, I specifically used the **MYSQL Workbench 8.0 CE** to perform the required queries.

There are several **reasons** why I used such software:

1. MySQL is a specific type of SQL database management system.
2. MYSQL is easy to understand and provide easy way to perform the require queries.
3. MySQL is a relational database management system (RDBMS) that uses SQL as the standard query language, it’s known for its scalability and open-source availability.

Result :

- I learnt the valuable things from this projects that how to perform queries, like I have to understand what I have to derive from the data and then perform query step-by-step.
- Moreover, I understand how this insights can help various teams in various field to make decisions and how this decision can help to grow the business.
- Last but not least, I learnt how to perform and how to interact with multiple tables and take desired outcomes from the data.
- This project give me the basic ideas how to work with the data and how to cross check the output.