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Data analytics Trainee

Project : Instagram User Analytics

Analysis done on the following points:-

Part (A). Marketing :-

1. Rewarding Most Loyal Users
2. Remind Inactive Users to Start Posting
3. Declaring the contest winners
4. Hashtag Researching
5. Launch AD Campaign

Part (B). Investor Metrics :-

1. User Engagement
2. Bots and Fake Accounts

Software used : MySQL Workbench 8.0 CE

Marketing

Rewarding the most Loyal users: People who have been using the platform for the longest time.(Top 5 oldest Instagram users)

To find the most loyal i.e. the top 5 oldest users of Instagram:

1. We will use the data from the **users** table by selecting the **username** and **created_at** columns.
2. Then using the **order by** function we will order the desired output by sorting with the **created_at** column in **ascending** order.
3. Then using the **limit** function, the output will be displayed for top 5 oldest Instagram users.

Program/Query:

```
select username, created_at
from users
order by created_at ASC
limit 5;
```

Marketing

Rewarding the most Loyal users: People who have been using the platform for the longest time.(Top 5 oldest Instagram users)

Output/Result

username	created_at
Darby_Herzog	06-05-2016 00:14
Emilio_Bernier52	06-05-2016 13:04
Elenor88	08-05-2016 01:30
Nicole71	09-05-2016 17:30
Jordyn.Jacobson2	14-05-2016 07:56

Marketing

Remind Inactive Users to Start Posting: Remind Inactive users to Start Posting(Users who never posted a single photo on Instagram)

To Find the most inactive users i.e. the users who have never posted a single photo on Instagram:

1. We will first select **username** column from the **users** table.
2. Then we will **left join photos** table on the **users** table, **on users.id = photos.user_id** because, both the users.id and photos.user_id have common contents in them.
3. Then we will find rows from the users table where the **photos.id IS NULL**

Program/Query:

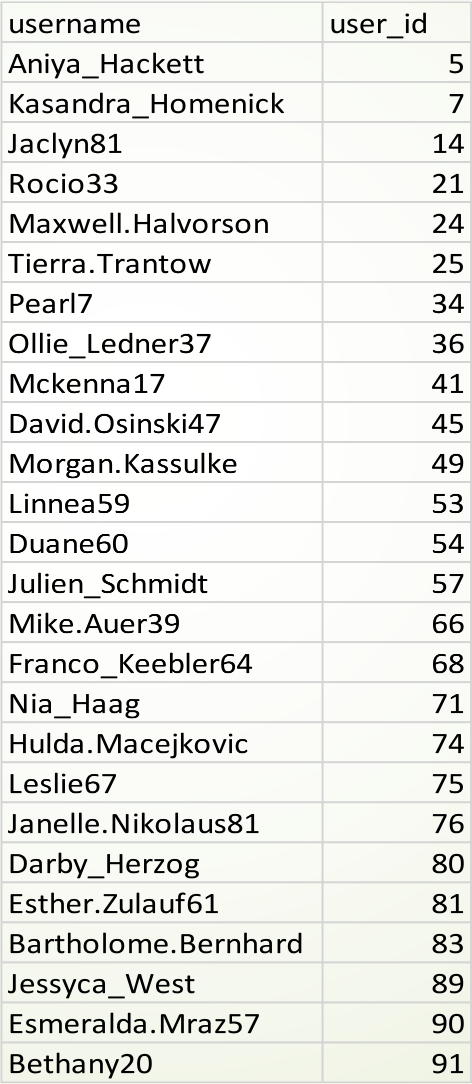
```
select username, users.id as user_id
from users
left join photos
on users.id = photos.user_id
where photos.id IS NULL
order by users.id;
```

Marketing

Remind Inactive Users to Start Posting:

Remind Inactive users to Start Posting(Users who never posted a single photo on Instagram)

Output/Result



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

So, there are in total 26 users of the 100 users who have never posted a single photo on Instagram

Marketing

Declaring Contest Winner : The team started a contest and the user who gets the most likes on a single photo will win the contest now they wish to declare the winner. Identify the winner of the contest and provide their details to the team.

To find the most the username, photo_id, image_url and total_number_of_likes of that image:

1. First we will select the **users.username, photos.id, photos.image_url and count(*) as total**
2. Then, we will inner join the three tables wiz : photos, likes and users, **on likes.photo_id = photos.id** and **photos.user_id = users.id**
3. Then, by using **group by** function we will group the output on the basis of **photos.id**
4. Then, using **order by** function we will sorting the data on the basis of the **total** in **descending** order
5. Then, to find the most liked photo we will using **limit** function to view only the top liked photo's information

Marketing

Declaring Contest Winner : The team started a contest and the user who gets the most likes on a single photo will win the contest now they wish to declare the winner. Identify the winner of the contest and provide their details to the team.

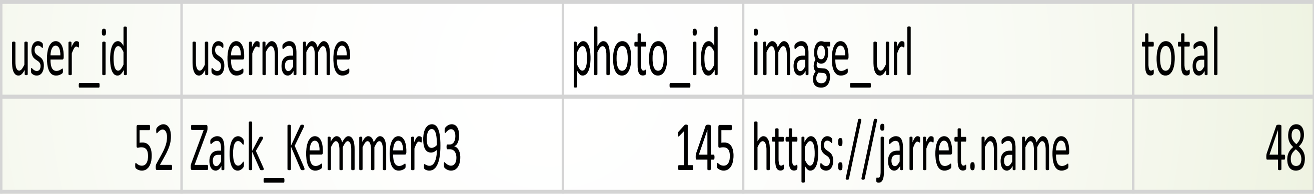
Program/Query :

```
select users.id as user_id, users.username, photos.id as photo_id,
photos.image_url, count(*) as total

from photos
inner join likes
on likes.photo_id = photos.id
inner join users
on photos.user_id = users.id

group by photos.id
order by total DESC
limit 1;
```

Marketing

Declaring Contest Winner : The team started a contest and the user who gets the most likes on a single photo will win the contest now they wish to declare the winner. Identify the winner of the contest and provide their details to the team.

Output/Result



user_id	username	photo_id	image_url	total
52	Zack_Kemmer93	145	https://jarret.name	48

So, the user named **Zack_Kemmer93** with **user_id 52** is the winner of the contest cause his photo with **photo_id 145** has the **highest number of likes i.e. 48**

Marketing

Hashtag Researching : A partner brand wants to know, which hashtags to use in the post to reach the most people on the platform.(Top 5 commonly used #Hashtags on Instagram)

To find the top 5 most commonly used hashtags on Instagram:

1. We need to select the **tag_name** column from the **tag** table and the **count(*) as total** function so as to count the number of tags used individually.
2. Then, we need to **join tags** table and **photo_tags** table, **on tags.id = photo_tags.tag_id** cause they contain the same content in them i.e. tag_id
3. Then using the **group by** function we need to group the desired output on the basis of **tags.tag_name**
4. Then using the **order by** function we need to sort the output on the basis of **total**(total number of tags per tag_name) in **descending** order
5. Then, to find the top 5 most used tag names we will use the **limit 5** function.

Marketing

Hashtag Researching : A partner brand wants to know, which hashtags to use in the post to reach the most people on the platform.(Top 5 commonly used #Hashtags on Instagram)

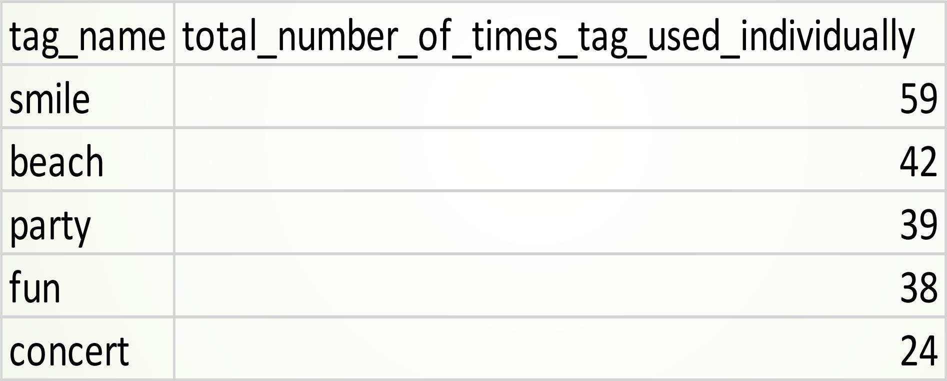
Program/Query :

```
select tags.tag_name, count(*) as total_number_of_times_tag_used_individually
from tags
join photo_tags
on tags.id = photo_tags.tag_id
group by tags.tag_name
order by total_number_of_times_tag_used_individually DESC
limit 5;
```

Marketing

Hashtag Researching : A partner brand wants to know, which hashtags to use in the post to reach the most people on the platform.(Top 5 commonly used #Hashtags on Instagram)

Output/Result



tag_name	total_number_of_times_tag_used_individually
smile	59
beach	42
party	39
fun	38
concert	24

Marketing

Launch AD Campaign : The team wants to know, which day would be the best day to launch ADs. (What day of the week do most users register on?)

To find the day of week on which most users register on Instagram:

1. First we define the columns of the desired output table using **select dayname(created_at) as day_of_week** and **count(*) as total_number_of_users_registered** from the **users** table
2. Then using the **group by** function we group the output table on the basis of **day_of_week**
3. Then using the **order by** function we order/sort the output table on the basis of **total_number_of_users_registered** in **descending** order

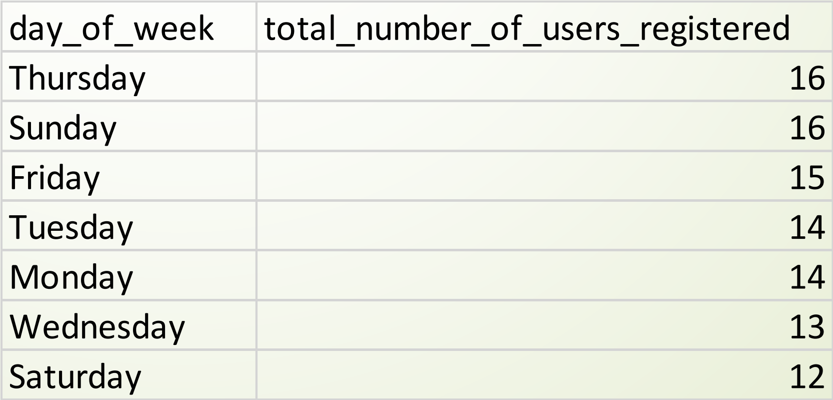
Marketing

Launch AD Campaign : The team wants to know, which day would be the best day to launch ADs. (What day of the week do most users register on?)

Program/Query :

```
select dayname(created_at) as day_of_week,
count(*) as total_number_of_users_registered
from users

group by day_of_week
order by total_number_of_users_registered DESC;
```

Output/Result



day_of_week	total_number_of_users_registered
Thursday	16
Sunday	16
Friday	15
Tuesday	14
Monday	14
Wednesday	13
Saturday	12

Most of the users registered on **Thursday** and **Sunday** i.e. **16** and hence it would prove beneficial to start AD Campaign on these two days

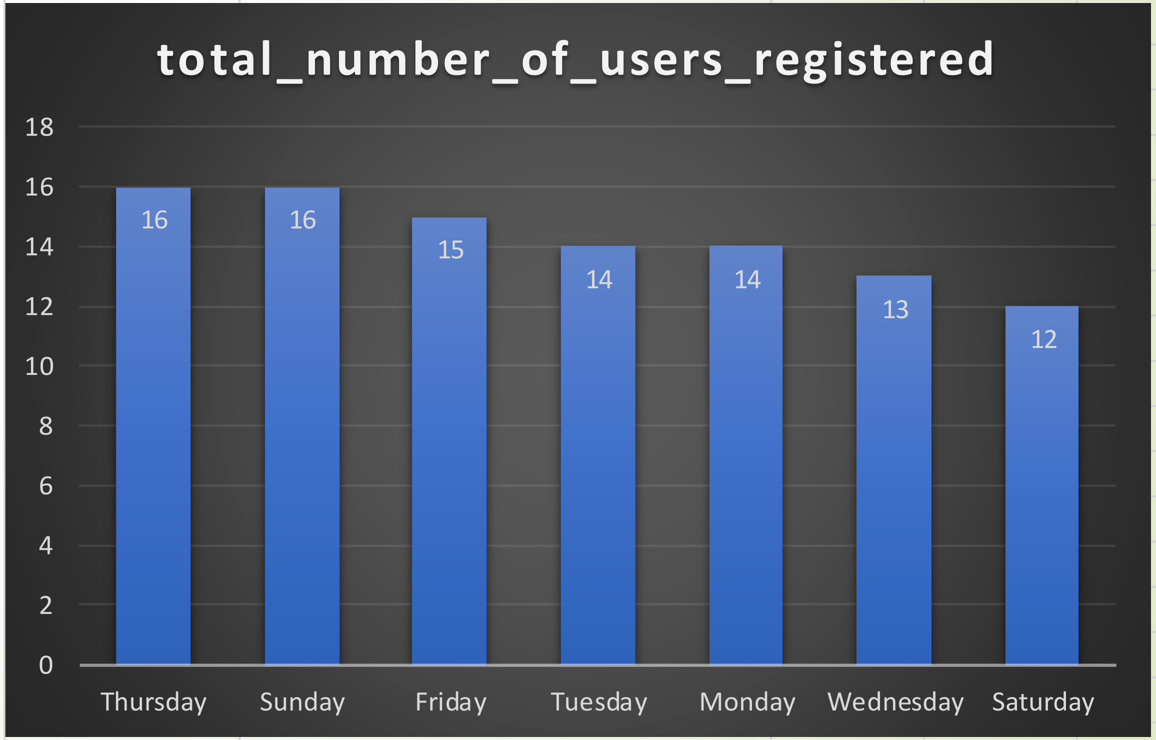
Marketing

Launch AD Campaign :

The team wants to know, which day would be the best day to launch ADs. (What day of the week do most users register on?)

Most of the users registered on **Thursday** and **Sunday** i.e. **16** and hence it would prove beneficial to start AD Campaign on these two days

day_of_week	total_number_of_users_registered
Thursday	16
Sunday	16
Friday	15
Tuesday	14
Monday	14
Wednesday	13
Saturday	12



Investor Metrics

User Engagement : Are users still as active and post on Instagram or they are making fewer posts.
How many times does average user posts on Instagram?
Also, provide the total number of photos on Instagram/total number of users.

To find the how many times does average posts on Instagram:

1. First, we need to find first the count number of photos(posts) that are present in the **photos.id** column of the **photos** table i.e. **count(*) from photos**
2. Similarly, we need to find the number of users that are present in the **users.id** column of the **users** table i.e. **count(*) from users**
3. Next, we need to divide both the values i.e. **count(*) from photos/count(*) from users** and hence we would get the total number of photos / total number of users
4. To find how many times the users posts on Instagram we need to find the total occurrences of each user_id in photos table

Investor Metrics

User Engagement : Are users still as active and post on Instagram or they are making fewer posts.
How many times does average user posts on Instagram?
Also, provide the total number of photos on Instagram/total number of users.

Program/Query to find (total number of photos/total number of users) :

```
select
(select count(*) from photos)/(select count(*) from users) as
total_photos_divide_total_photos;
```

Output/Result

total_photos_divide_total_photos
2.57

So, there are in total 257 rows i.e. 257 photos in the photos table and 100 rows i.e. 100 ids in the users table which makes the desired output to be 257/100 = 2.57

Investor Metrics

User Engagement : Are users still as active and post on Instagram or they are making fewer posts.
How many times does average user posts on Instagram?
Also, provide the total number of photos on Instagram/total number of users.

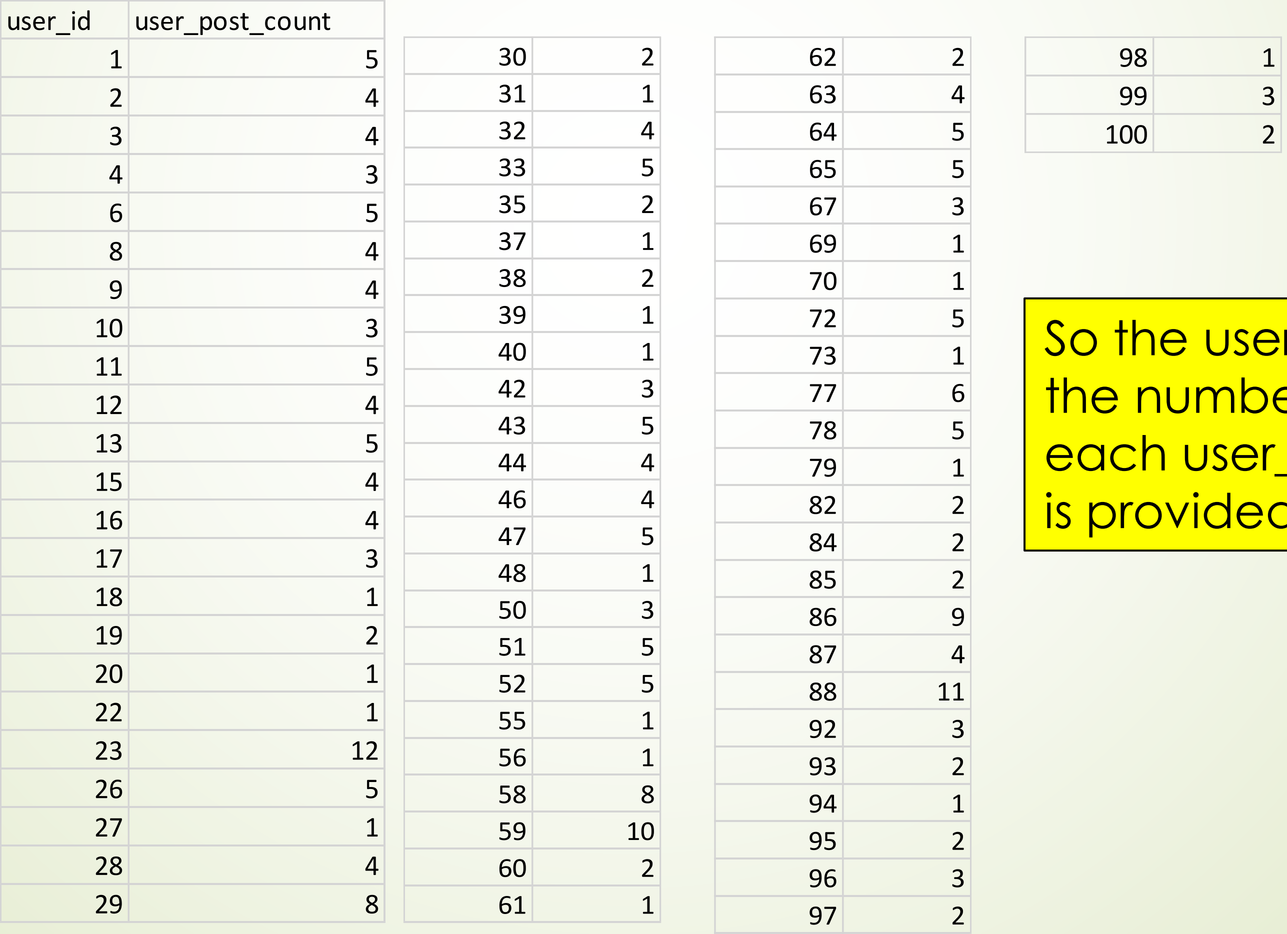
Program/Query to find the times each user posts on Instagram :

```
select user_id,count(*) as user_post_count
from photos
group by user_id
order by user_id;
```

Investor Metrics

User Engagement : Are users still as active and post on Instagram or they are making fewer posts.
How many times does average user posts on Instagram?
Also, provide the total number of photos on Instagram/total number of users.

Output/Result



user_id	user_post_count
1	5
2	4
3	4
4	3
6	5
8	4
9	4
10	3
11	5
12	4
13	5
15	4
16	4
17	3
18	1
19	2
20	1
22	1
23	12
26	5
27	1
28	4
29	8
30	2
31	1
32	4
33	5
35	2
37	1
38	2
39	1
40	1
42	3
43	5
44	4
46	4
47	5
48	1
50	3
51	5
52	5
55	1
56	1
58	8
59	10
60	2
61	1
62	2
63	4
64	5
65	5
67	3
69	1
70	1
72	5
73	1
77	6
78	5
79	1
82	2
84	2
85	2
86	9
87	4
88	11
92	3
93	2
94	1
95	2
96	3
97	2
98	1
99	3
100	2

So the user_id along with the number of times each user_id has posted is provided.

Investor Metrics

Bots and Fake Accounts : The investors want to know if the platform is crowded with fake and dummy accounts. Provide data on users (bots) who have liked every single photo on the site (since any normal user would not be able to do this).

To find the bots and fake accounts :

1. First, we select the **user_id** column from the **photos** table
2. Then we select the **username** column from the **users** table
3. Then, we select the **count(*)** function to count total number of likes from the **likes** table
4. Then we **inner join users** and **likes** table on the basis of **users.id** and **likes.user_id**, using the **on** function/clause
5. Then by using the **group by** function we group the desired output table on the basis of **likes.user_id**
6. Then, we search for the values from the **cout(*) from photos** having equal values with the **total_likes_per_user**

Investor Metrics

Bots and Fake Accounts : The investors want to know if the platform is crowded with fake and dummy accounts. Provide data on users (bots) who have liked every single photo on the site (since any normal user would not be able to do this).

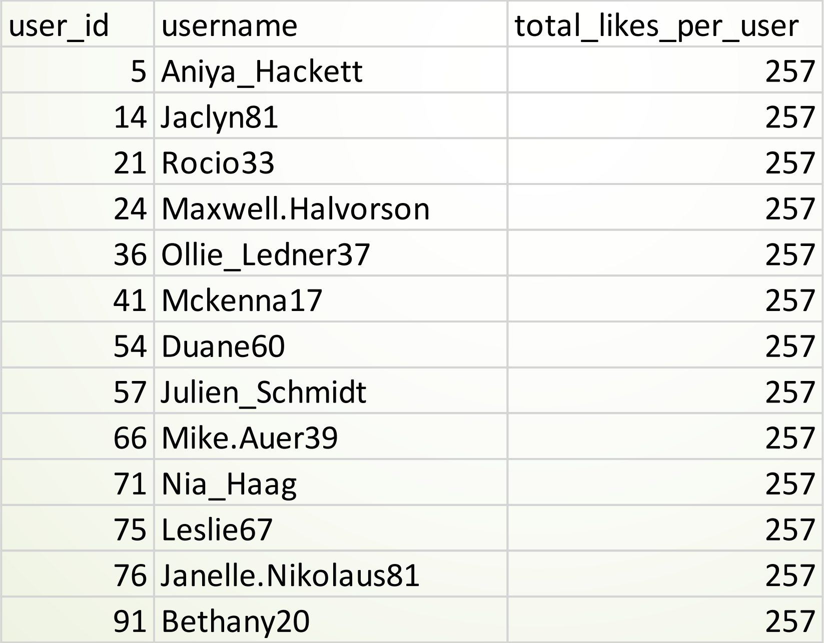
Program/Query :

```
select user_id, username, count(*) as total_likes_per_user
from users
inner join likes
on users.id = likes.user_id

group by likes.user_id
having total_likes_per_user = (select count(*) from photos);
```

Investor Metrics

Bots and Fake Accounts : The investors want to know if the platform is crowded with fake and dummy accounts. Provide data on users (bots) who have liked every single photo on the site (since any normal user would not be able to do this).

Output/Result



user_id	username	total_likes_per_user
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

So, the users along with their respective username, user_id and total_likes_per_user have been provided. This user_ids may be bots or fake accounts

Hence, all the questions given as part of Trainity Data Analytics Trainee Task 2 : Instagram user analytics have been provided with answers along with graphs.

In this task all the basic as well as advanced concepts related to SQL in Data Analytics have been implemented using the MySQL workbench 8.0 CE