Instagram User Analytics

SQL REPORT

1. Project Description

The purpose of this project is to analyse user interactions and engagement on the Instagram platform/ App using SQL. As a data analyst working with the product team, I used SQL queries in mySQL Workbench to extract insights for the marketing decisions, user behaviour analysis, and investor reporting. Our main goal is to drive product improvements and make strategic decisions.

2. Approach

1. Created the database and tables using the provided SQL script (ig_clone schema).
2. Inserted sample data into users, photos, likes, comments, follows, tags, and photo_tags.
3. Executed specific SQL queries to answer business questions from the marketing and investor teams.
4. Collected outputs and compiled insights based on the results.
5. Documented the SQL code and query results in this report.

3. Tech Stack Used

Tool	Version	Purpose
MySQL Workbench	Any version	Running SQL scripts and queries
SQL (MySQL)	Standard	Data analysis and querying
Microsoft Word / Google Docs	Any version	Creating and exporting report

4. SQL Queries and Insights

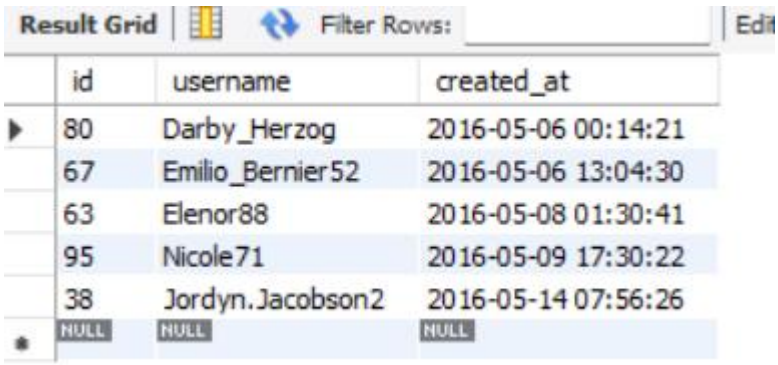
A) Marketing Analysis

1. Loyal User Reward – Five Oldest Users:

CODE:

```
SELECT id, username, created_at
FROM users
ORDER BY created_at
LIMIT 5;
```

RESULT:



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: These users have been on the platform the longest and are eligible for loyalty rewards.

2. Inactive Users – Users who have never posted:

CODE:

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

RESULT:

Result Grid | Filter Rows:

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

3. Contest Winner – Most liked photo:

CODE:

```
SELECT p.id AS photo_id, p.user_id, u.username, COUNT(l.photo_id) AS total_likes
FROM photos p
JOIN likes l ON p.id = l.photo_id
```

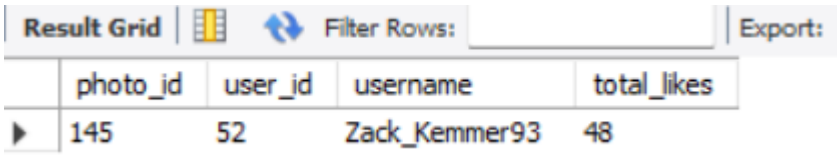
JOIN users u ON u.id = p.user_id

GROUP BY p.id

ORDER BY total_likes DESC

LIMIT 1;

RESULT:


Result Grid | Filter Rows: | Export:

photo_id	user_id	username	total_likes
145	52	Zack_Kemmer93	48

4. Hashtag Research – Most popular hashtags:

CODE:

SELECT t.tag_name, COUNT(*) AS tag_count

FROM photo_tags pt

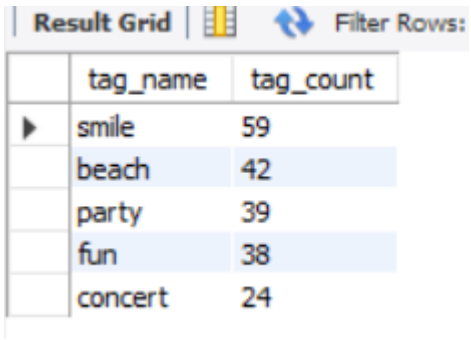
JOIN tags t ON pt.tag_id = t.id

GROUP BY pt.tag_id

ORDER BY tag_count DESC

LIMIT 5;

RESULT:


Result Grid | Filter Rows:

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

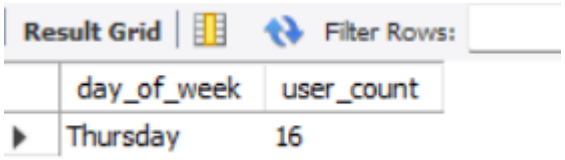
5. Ad Campaign Timing – Best registration day:

CODE:

SELECT DAYNAME(created_at) AS day_of_week, COUNT(*) AS user_count

```
FROM users
GROUP BY day_of_week
ORDER BY user_count DESC
LIMIT 1;
```

RESULT:



Result Grid | Filter Rows:

day_of_week	user_count
Thursday	16

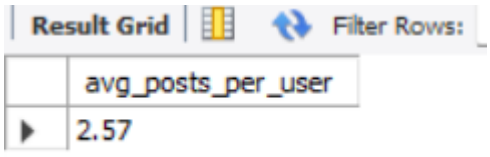
B) Investor Metrics

1. Average Posts per User:

CODE:

```
SELECT ROUND(COUNT(*) / (SELECT COUNT(*) FROM users), 2) AS
avg_posts_per_user
FROM photos;
```

RESULT:



Result Grid | Filter Rows:

avg_posts_per_user
2.57

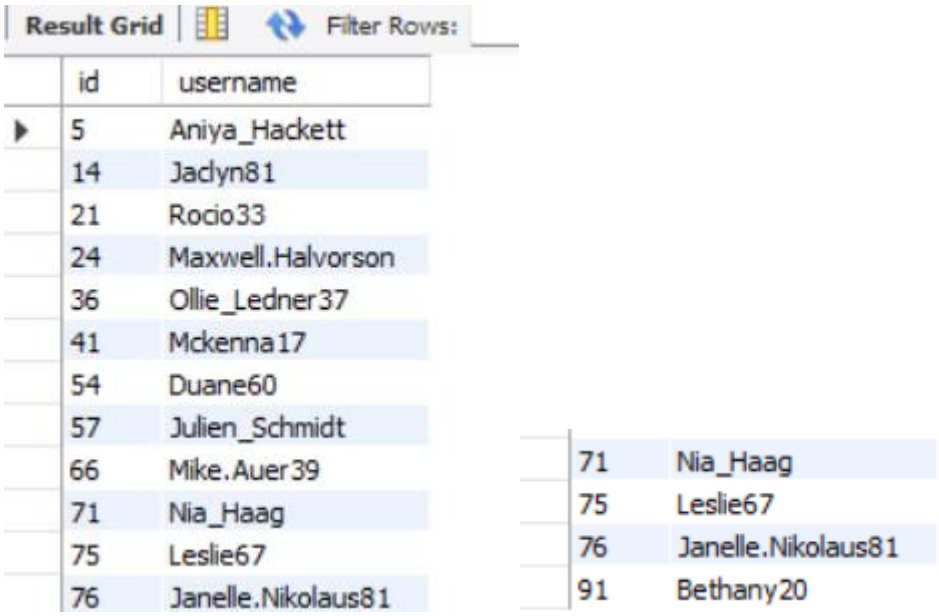
2. Bots Detection – Users who liked all the photos:

CODE:

```
SELECT u.id, u.username
FROM users u
JOIN likes l ON u.id = l.user_id
GROUP BY u.id
```

HAVING COUNT(DISTINCT l.photo_id) = (SELECT COUNT(*) FROM photos);

RESULT:



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76	Janelle.Nikolaus81
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5. Insights Summary

- Oldest users were identified to reward loyalty.
- Discovered a segment of inactive users to target for re-engagement.
- Contest winner and most engaging post were identified.
- The top 5 hashtags can guide brand collaborations.
- Thursday is the most popular signup day – ideal for ad launches.
- The average posts per user provides a benchmark of platform activity.
- Potential bot users were identified for further investigation.

6. Result & Impact

This project improved my practical understanding of SQL and MySQL Workbench. The insights can help Instagram's marketing team plan better campaigns, improve user engagement, and give confidence to investors by showcasing active platform usage and addressing fake account issues.

7. Google Drive Link

https://drive.google.com/drive/folders/1u21g3ltYbghrfTsy06PPfmQh7K0TxXiN?usp=sharing