INSTAGRAM USER ANALYSIS

Purpose:

This project focuses on analyzing user interaction data from Instagram to support strategic decision-making across the marketing, product, and investor relations teams. The objective is to extract meaningful insights from user behavior data that can inform business growth strategies, improve user experience, and ensure platform integrity.

Approach:

To achieve these goals, I will use **SQL queries within MySQL Workbench** to analyze the Instagram database. The tasks are divided into two main categories: **Marketing Analysis** and **Investor Metrics**.

- For **Marketing Analysis**, I will identify loyal and inactive users, analyze engagement through likes and hashtags, and determine optimal timing for ad campaigns.
- For **Investor Metrics**, I will calculate user engagement ratios and detect unusual activity patterns that may suggest bot accounts.

Each task will involve writing optimized SQL queries to extract relevant data, perform aggregations or filtering as needed, and interpret the results to generate clear, actionable insights. These insights will help the Instagram team make informed decisions about user rewards, re-engagement campaigns, content strategy, and platform health monitoring.

Software and Tools Used

MySQL Workbench 8.0.42

For this project, I used **MySQL Workbench (version 8.0.42)** as the primary tool for writing and executing SQL queries.

Why MySQL Workbench?

- **User-Friendly Interface:** MySQL Workbench provides an intuitive graphical interface that makes it easy to design databases, write and run queries, and visualize results.
- **SQL Compatibility:** It fully supports MySQL syntax and is ideal for running complex queries, joins, and aggregations needed for this analysis.
- **Integrated Tools:** It includes tools for database modeling, performance tuning, and SQL debugging, which enhance productivity and accuracy.
- **Industry Relevance:** MySQL is widely used in industry, making it a practical choice for working with relational databases in real-world projects.

Using MySQL Workbench ensured smooth and efficient handling of the Instagram dataset, enabling clear insight generation and reliable reporting.

Key Insights from the Project

- **Marketing Analysis**

1. **Loyal User Reward**
    - The top 5 oldest users were identified based on their registration dates.
    - These users have been consistently active for the longest duration and are ideal candidates for loyalty rewards or early-access features.
2. **Inactive User Engagement**
    - A significant number of users have never posted a single photo.
    - These users represent an untapped audience who can be re-engaged through targeted campaigns, onboarding tutorials, or promotional offers.
3. **Contest Winner Declaration**
    - The photo with the highest number of likes was identified along with the user who posted it.
    - This information can be used to publicly announce the contest winner and also analyze what type of content drives the most engagement.
4. **Hashtag Research**
    - The top 5 most commonly used hashtags were extracted from user posts.
    - These hashtags can be recommended to brands and influencers for maximum reach and engagement, supporting marketing partnerships.
5. **Ad Campaign Timing**
    - Analysis of user registration data revealed the day of the week with the highest sign-ups.
    - This is the optimal day for launching ad campaigns, ensuring maximum visibility and impact.

- **Investor Metrics**

6. **User Engagement**
    - The average number of posts per user and the photo-to-user ratio were calculated.
    - These metrics show that users are actively contributing content, indicating strong platform engagement and user retention.
7. **Bots & Fake Accounts**
    - Users who liked every single photo on the platform were flagged as suspicious.

- This insight helps the development and moderation teams identify and remove potential bot accounts, improving platform authenticity and user trust.

Overall Business Impact

- These insights can be used to **optimize marketing strategies**, improve **user re-engagement**, and enhance the **authenticity of the platform**.
- Product managers can use this data to guide **feature development** and **user retention strategies**.
- Investor confidence is supported by showing **active user behavior** and **effective detection of suspicious activity**.

Project Results & Achievements

✅ **Achievements Through the Project:**

1. **Mastered Real-World SQL Skills:**
   - Gained hands-on experience writing complex SQL queries involving JOIN, GROUP BY, HAVING, ORDER BY, COUNT(), AVG(), LIMIT, and date functions.
   - Successfully extracted actionable insights from raw Instagram data using MySQL Workbench.
2. **Delivered Business-Oriented Insights:**
   - Completed analysis for both marketing and investor-focused metrics.
   - Generated results that can help drive decisions on user retention, ad scheduling, campaign targeting, and bot detection.
3. **Built a Data-Driven Mindset:**
   - Learned to interpret numbers beyond raw counts — connecting data to business questions like “Who is our most loyal user?” or “When should we run an ad?”
   - Developed an understanding of KPIs such as post engagement rate, user activity levels, and churn indicators.

Result Extract from the Project:

Task	Key Result
Five Oldest Users	Identified the five earliest registered users using ORDER BY created_at ASC.
Users with Zero Posts	Found all users who have never uploaded a single photo.

Task	Key Result
Contest Winner (Most Likes)	Extracted the user and photo with the maximum likes received.
Top 5 Hashtags	Ranked hashtags by frequency of use across posts.
Best Day for Ad Launch	Determined the weekday with the highest user registrations.
Average Posts per User	Calculated average number of photos per user using AVG() and COUNT().
Fake/Bot Account Detection	Identified suspicious users who liked **every** photo on the platform.

Personal Benefits and Learnings:

- **Analytical Confidence:** This project enhanced my confidence in analyzing large-scale data and summarizing it meaningfully for non-technical stakeholders.
- **Improved Business Understanding:** I developed a deeper understanding of how social media platforms track engagement, detect bots, and optimize marketing decisions.
- **Portfolio Worthy Experience:** This project is a strong addition to my data analytics portfolio, showcasing my ability to apply technical skills in a real-world scenario.

Impact of the Analysis:

- The insights from this project can help Instagram:
    - **Reward long-term users**, improving brand loyalty.
    - **Re-engage inactive users**, increasing daily active users (DAUs).
    - **Optimize ad campaign timing**, leading to higher ROI.
    - **Support influencer marketing** through hashtag and content analysis.
    - **Maintain platform integrity** by identifying bots and suspicious activity.