# Instagram User Analytics

- **Project Description:**
  The project focuses on analysing user's data from Instagram to generate actionable and useful insights that can drive business decisions across multiple teams, including marketing, product development and investor relations. By examining user interactions and their engagement with the platform, it aims to provide and enhance the user experience, optimize marketing strategies and techniques and thus it ensures the continuous growth of the platform.

- **Approach:**
  1. **Database setup:**
     - **1.1.** Created the necessary database using the SQL commands that has been provided.
     - **1.2.** Imported data into MySQL Workbench for analysis.

  2. **Task Execution:**
     - **2.1. Marketing analysis:**
       - **2.1.1. Loyal user reward:** Identified the five oldest users on Instagram.
       - **2.1.2. Inactive user engagement:** Identified users who have never posted a single photo on Instagram.
       - **2.1.3. Contest winner declaration:** Identified the user with the most likes on a single photo on Instagram.
       - **2.1.4. Hashtag research:** Identified the top 5 most commonly used hashtags on Instagram.
       - **2.1.5. Ad campaign launch:** Analysed the best day of the week to launch ads based on user registration data.

     - **2.2. Investor metrics:**

2.2.1. **User engagement:** Calculated the average number of posts per user and provided the total no. of photos divided by the total no. of users.

2.2.2. **Bots & fake accounts:** Identified potential bots who have liked every photo on Instagram platform.

3. **SQL Queries:**

   3.1. Constructed and executed the SQL queries to extract required data and information for each task.

- **Tech-Stack used:**
  1. **Software:** MySQL workbench
  2. **Version:** v8.0.38
  3. **Reason of use:** User-friendly interface, extensive community support, used for database management, query execution and data analysis.

- **Insights:**

1. **Loyal users:** Identify the five oldest users on Instagram.

### 1.1. SQL Query:

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

### 1.2. Output:

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

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

### 2.1. SQL Query:

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

### 2.2. Output:

| username |
|---|
| Aniya_Hackett |
| Kasandra_Homenick |
| Jaclyn81 |
| Rocio33 |
| Maxwell.Halvorson |
| Tierra.Trantow |
| Pearl7 |
| Ollie_Ledner37 |
| Mckenna17 |
| David.Osinski47 |
| Morgan.Kassulke |
| Linnea59 |
| Duane60 |
| Julien_Schmidt |
| Mike.Auer39 |
| Franco_Keebler64 |
| Nia_Haag |
| Hulda.Macejkovic |
| Leslie67 |
| Janelle.Nikolaus81 |
| Darby_Herzog |
| Esther.Zulauf61 |
| Bartholome.Bernhard |
| Jessyca_West |
| Esmeralda.Mraz57 |
| Bethany20 |

## 3. Contest winner: Determine the winner of the contest.

### 3.1. SQL Query:

```
SELECT
   *
FROM
   users,
   photos,
   likes;
SELECT
   username,
   photos.id,
   photos.image_url,
   COUNT(likes.user_id) AS total_likes
FROM
   photos
      INNER JOIN
   likes ON photos.id = likes.photo_id
      INNER JOIN
   users ON photos.user_id = users.id
GROUP BY photos.id
ORDER BY total_likes DESC
LIMIT 1;
```

### 3.2. Output:

| username | id | image_url | total_likes |
|---|---|---|---|
| Zack_Kemmer93 | 145 | https://jarret.name | 48 |

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

### 4.1. SQL query:

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

### 4.2. Output:

| tag_name | total_times_tag_used |
|---|---|
| smile | 59 |
| beach | 42 |
| party | 39 |
| fun | 38 |
| concert | 24 |

5. **Optimal ad campaign launch day:** Determine the day of the week when most users register on Instagram.

### 5.1. SQL Query:

```
SELECT
  created_at
FROM
  users;
SELECT
  DAYNAME(created_at) AS day,
  COUNT(*) AS total_users_registered
FROM
  users
GROUP BY day
ORDER BY total_users_registered DESC
LIMIT 1;
```

### 5.2. Output:

| day | total_users_registered |
|---|---|
| Thursday | 16 |

6. **User engagement:** Calculate the average number of posts per user and provided the total no. of photos divided by the total no. of users.

### 6.1. SQL Query:

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

### 6.2. Output:

| avg_posts_per_user |
|---|
| 2.57 |

7. **Fake account or bot detection:** Identify users (potential bots) who have liked every single photo on the site.

### 7.1. SQL Query:

```
SELECT
   id, users.username, COUNT(*) AS num_likes
FROM
   users
      JOIN
   likes ON users.id = likes.user_id
GROUP BY users.id
HAVING num_likes = (SELECT
      COUNT(*)
   FROM
      photos);
```

### 7.2. Output:

| id | username | num_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 |

- **Result:**

1. **Loyal Users**: Identified five oldest users (joined in May 2016).
2. **Inactive Users**: Found users who have never posted a photo.
3. **Contest Winner**: **Zack_Kemmer93** won with 48 likes on a photo.
4. **Trending Hashtags**: Top hashtags: smile, beach, party, fun, concert.
5. **Optimal Ad Day**: Most users register on **Thursday**.
6. **User Engagement**: Average posts per user: **2.57**.
7. **Bot Detection**: Identified users who liked all photos as potential bots.

- **Recommendations:**

1. **Loyal Users**: Reward long-term users with incentives.
2. **Inactive Users**: Re-engage inactive users with campaigns and tutorials.
3. **Contest Winner**: Feature **Zack_Kemmer93** in promotions.
4. **Hashtag Campaigns**: Promote content with top hashtags to boost engagement.
5. **Ad Launch Day**: Launch ads on **Thursday** when user registrations peak.
6. **User Engagement**: Encourage more posts through rewards or incentives.
7. **Bot Activity**: Strengthen bot detection and verification measures.