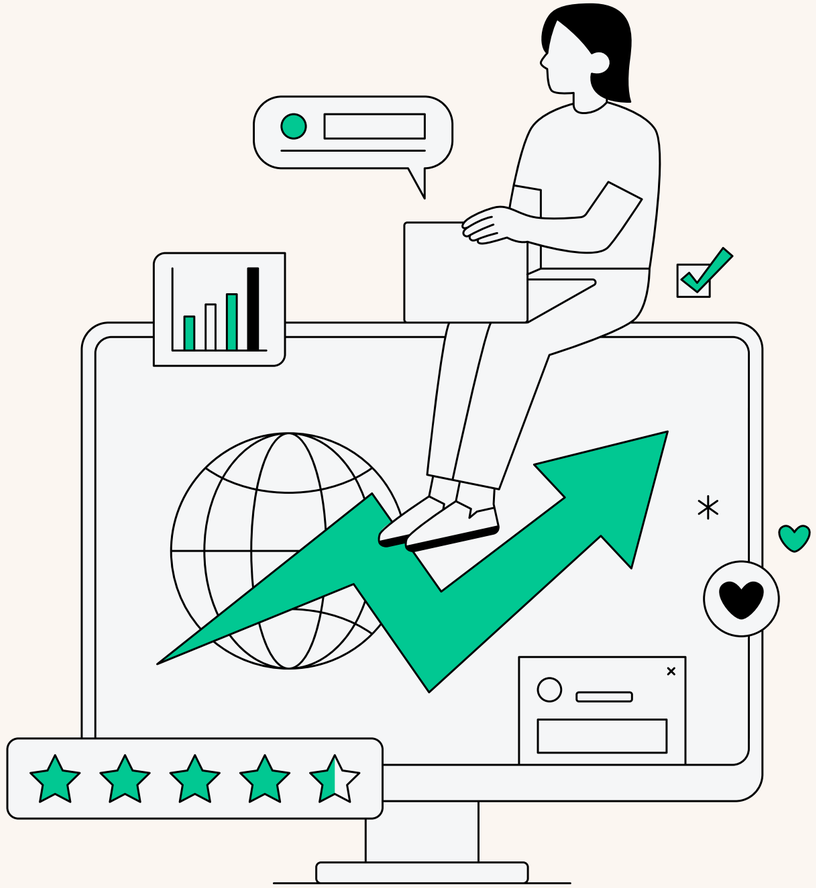
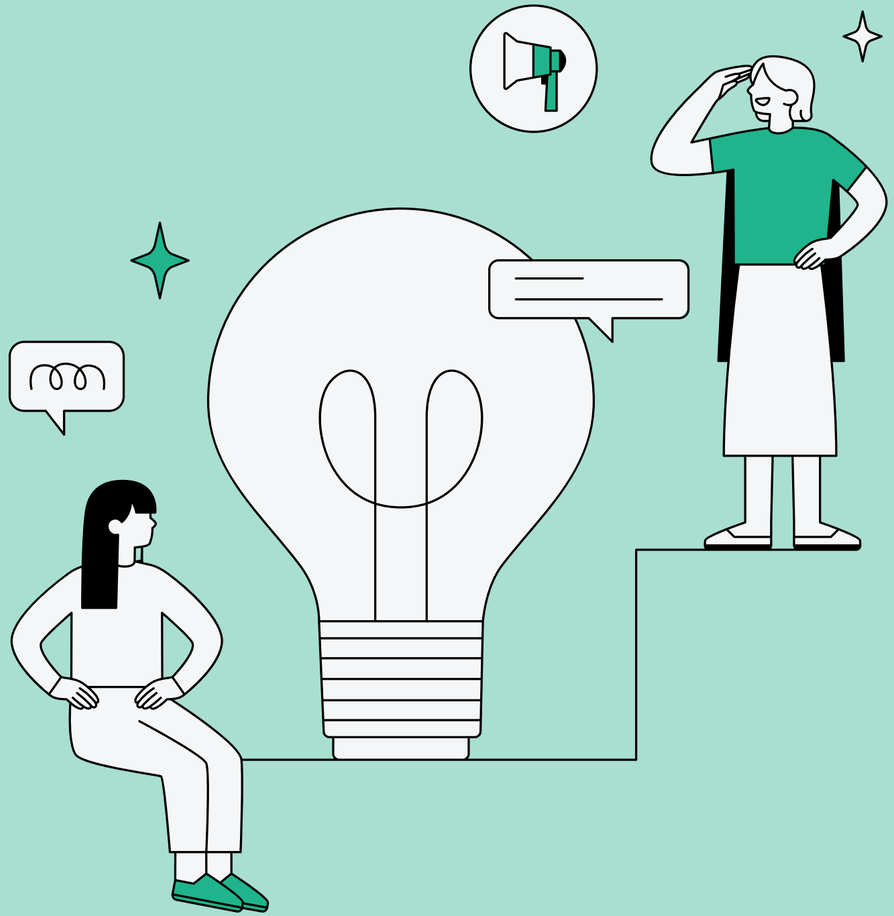
Instagram User Analytics

Trends and challenges



Project Description

We aim to find useful insights and patterns for the various teams at Instagram. Analysis is carried out using SQL and results are shared.



Steps followed

01.

Ask the right questions. Understand the business needs and work towards solving them. In this project I was provided the necessary problems.

02.

Ran the necessary queries to upload the given data.

03.

Carried the analysis in SQL, Extracted the data useful for analysis and derived insights through them.

Challenges and proposed solutions

01.

Loyal User Reward given to the 5 oldest users of Instagram.

```
mysql> select * from 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 |
+----+------------------+---------------------+
5 rows in set (0.00 sec)
```

02.

Inactive users of Instagram who have never posted a single photo.

```
mysql> select * from users
    -> left join photos
    -> on users.id = photos.user_id
    -> where photos.id is NULL;
+----+---------------------+---------------------+------+-----------+---------+-------------+
| id | username            | created_at          | id   | image_url | user_id | created_dat |
+----+---------------------+---------------------+------+-----------+---------+-------------+
|  5 | Aniya_Hackett       | 2016-12-07 01:04:39 | NULL | NULL      |    NULL | NULL        |
|  7 | Kasandra_Homenick   | 2016-12-12 06:50:08 | NULL | NULL      |    NULL | NULL        |
| 14 | Jaclyn81            | 2017-02-06 23:29:16 | NULL | NULL      |    NULL | NULL        |
| 21 | Rocio33             | 2017-01-23 11:51:15 | NULL | NULL      |    NULL | NULL        |
| 24 | Maxwell.Halvorson   | 2017-04-18 02:32:44 | NULL | NULL      |    NULL | NULL        |
| 25 | Tierra.Trantow      | 2016-10-03 12:49:21 | NULL | NULL      |    NULL | NULL        |
| 34 | Pearl7              | 2016-07-08 21:42:01 | NULL | NULL      |    NULL | NULL        |
| 36 | Ollie_Ledner37      | 2016-08-04 15:42:20 | NULL | NULL      |    NULL | NULL        |
| 41 | Mckenna17           | 2016-07-17 17:25:45 | NULL | NULL      |    NULL | NULL        |
| 45 | David.Osinski47     | 2017-02-05 21:23:37 | NULL | NULL      |    NULL | NULL        |
| 49 | Morgan.Kassulke     | 2016-10-30 12:42:31 | NULL | NULL      |    NULL | NULL        |
| 53 | Linnea59            | 2017-02-07 07:49:34 | NULL | NULL      |    NULL | NULL        |
| 54 | Duane60             | 2016-12-21 04:43:38 | NULL | NULL      |    NULL | NULL        |
| 57 | Julien_Schmidt      | 2017-02-02 23:12:48 | NULL | NULL      |    NULL | NULL        |
| 66 | Mike.Auer39         | 2016-07-01 17:36:15 | NULL | NULL      |    NULL | NULL        |
| 68 | Franco_Keebler64    | 2016-11-13 20:09:27 | NULL | NULL      |    NULL | NULL        |
| 71 | Nia_Haag            | 2016-05-14 15:38:50 | NULL | NULL      |    NULL | NULL        |
| 74 | Hulda.Macejkovic    | 2017-01-25 17:17:28 | NULL | NULL      |    NULL | NULL        |
| 75 | Leslie67            | 2016-09-21 05:14:01 | NULL | NULL      |    NULL | NULL        |
| 76 | Janelle.Nikolaus81  | 2016-07-21 09:26:09 | NULL | NULL      |    NULL | NULL        |
| 80 | Darby_Herzog        | 2016-05-06 00:14:21 | NULL | NULL      |    NULL | NULL        |
| 81 | Esther.Zulauf61     | 2017-01-14 17:02:34 | NULL | NULL      |    NULL | NULL        |
| 83 | Bartholome.Bernhard | 2016-11-06 02:31:23 | NULL | NULL      |    NULL | NULL        |
| 89 | Jessyca_West        | 2016-09-14 23:47:05 | NULL | NULL      |    NULL | NULL        |
| 90 | Esmeralda.Mraz57    | 2017-03-03 11:52:27 | NULL | NULL      |    NULL | NULL        |
| 91 | Bethany20           | 2016-06-03 23:31:53 | NULL | NULL      |    NULL | NULL        |
+----+---------------------+---------------------+------+-----------+---------+-------------+
26 rows in set (0.00 sec)
```

03.

The user with the most likes on a single photo.

```
mysql> select * from users
    -> inner join(
    -> select count(likes.user_id) as likes_on_photo, photos.id as photo_id, photos.image_url, photos.user_id
    -> from likes
    -> inner join photos
    -> on likes.photo_id = photos.id
    -> group by photo_id
    -> ) as like_count
    -> on users.id = like_count.user_id
    -> order by likes_on_photo desc
    -> limit 1;
+----+--------------+---------------------+----------------+----------+---------------------+----------+
| id | username     | created_at          | likes_on_photo | photo_id | image_url           | user_id |
+----+--------------+---------------------+----------------+----------+---------------------+----------+
| 52 | Zack_Kemmer93 | 2017-01-01 05:58:22 |             48 |      145 | https://jarret.name |      52 |
+----+--------------+---------------------+----------------+----------+---------------------+----------+
1 row in set, 1 warning (0.01 sec)
```

04.

The top 5 most commonly used hashtags on Instagram.

```
mysql> select tags.id, tags.tag_name, count(photo_tags.photo_id) as tag_count
    -> from photo_tags
    -> left join tags
    -> on tags.id = photo_tags.tag_id
    -> group by tags.tag_name
    -> order by tag_count desc
    -> limit 5;
+------+----------+-----------+
| id   | tag_name | tag_count |
+------+----------+-----------+
|   21 | smile    |        59 |
|   20 | beach    |        42 |
|   17 | party    |        39 |
|   13 | fun      |        38 |
|   18 | concert  |        24 |
+------+----------+-----------+
5 rows in set (0.01 sec)
```

05.

The best day of the week to launch ads when most users register on Instagram.

```
mysql> select weekday(created_at) as week_day, count(weekday(created_at)) as day_count
    -> from users
    -> group by week_day
    -> order by day_count desc
    -> limit 1;
+----------+-----------+
| week_day | day_count |
+----------+-----------+
|        3 |        16 |
+----------+-----------+
1 row in set (0.00 sec)
```

06.

Average number of posts per user on Instagram.

```
mysql> select avg(post_count)
    -> from (
    -> select users.id, count(photos.id) as post_count
    -> from users
    -> left join photos
    -> on users.id = photos.user_id
    -> group by users.id) as photo_count;
+------------------+
| avg(post_count) |
+------------------+
|           2.5700 |
+------------------+
1 row in set (0.00 sec)
```

07.

Potential bots.

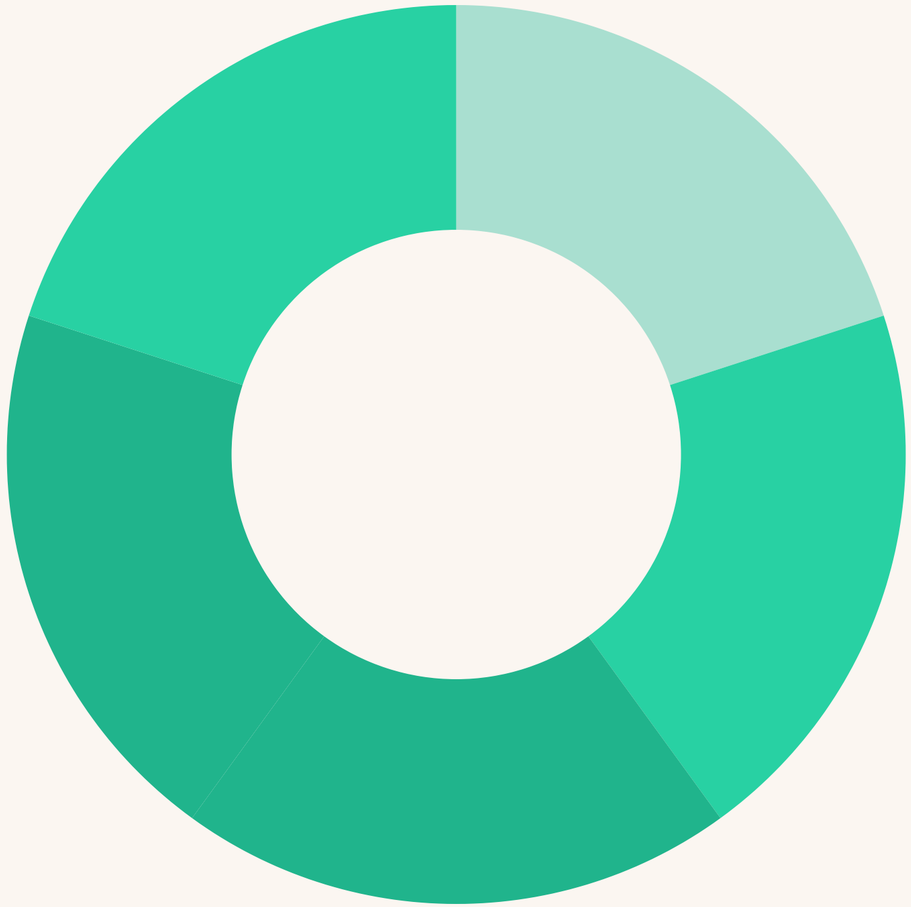
```
mysql> select count(likes.photo_id) as photos_liked, users.id, users.username
    -> from likes
    -> inner join users
    -> on likes.user_id = users.id
    -> group by likes.user_id
    -> having photos_liked = (
    -> select count(id) from photos);
+--------------+----+--------------------+
| photos_liked | id | username           |
+--------------+----+--------------------+
|          257 |  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          |
+--------------+----+--------------------+
13 rows in set (0.01 sec)
```

Tech - Stack used

The project was done using MySQL platform. SQL queries are quite useful for data extraction and analysis. The database uploaded can include large amount of data that can be updated any time as needed. Queries are simple and easy to run and learn.

Insights

- The users on Instagram have high rate of registration per day but 26% of users don't engage through posts.
- The third day of the week has the highest registrations and hence works best for promotions and ads.
- On an average 2.57 photos are uploaded by active users.
- 13% of users seem to bots due to their unusual engagements.



Thank you very much!