National University of Modern Languages

Group Members:

Abdulwasay (SP-21362)

Asmatullah(SP - 21365)

Amir(SP -21354)

Saifullah SP-21326)

(Database Project)

Instagram Database

What is Instagram database ?

The Instagram database is a structured collection of data that stores and manages information related to the Instagram platform. It includes tables for user profiles, posts, comments, likes, followers, and other relevant entities.

Why we choose Instagram database ?

We waste a lot of time on Instagram daily, but as students of software engineering, if we think about how our data, like photos and videos,that we post on Instagram is saved on Instagram database, this project helps us to understand this.

Overview of project

The Instagram database is help us to understand the various functionalities and features of the Instagram platform. key uses of the Instagram database

User Profiles:

The database stores information about user profiles, including usernames, profile pictures, biographies, and account .

Posts and Media Content

Instagram's database stores data related to user-generated content, such as images.

Interactions:

Information about user interactions, such as likes, comments, , is stored in the database. This data is crucial for displaying engagement metrics, determining popular content, and facilitating social interactions.

Followers and Following:

The database maintains relationships between users, indicating who follows whom and tracking follower counts. This supports the social networking aspect of Instagram, allowing users to connect and share content with their followers.

Business Rules:

1. One user can upload multiple photos.
2. Many user can give many comments.
3. One user can like multiple photos.
4. One user have many followers.
5. One user can use many tags.
6. One photo have multiple comments.
7. One comment like by many users.
8. One photo have multiple likes.
9. One photo have many tags.

Entities

Strong entities

1. Users
2. Photos
3. Comments
4. Followers

Weak Entities

1. Likes
2. photo tag

Relation and cardinality

User and photos : one to many.

User and comments: many to many .

User and likes : one to many .

User and followers: one to many.

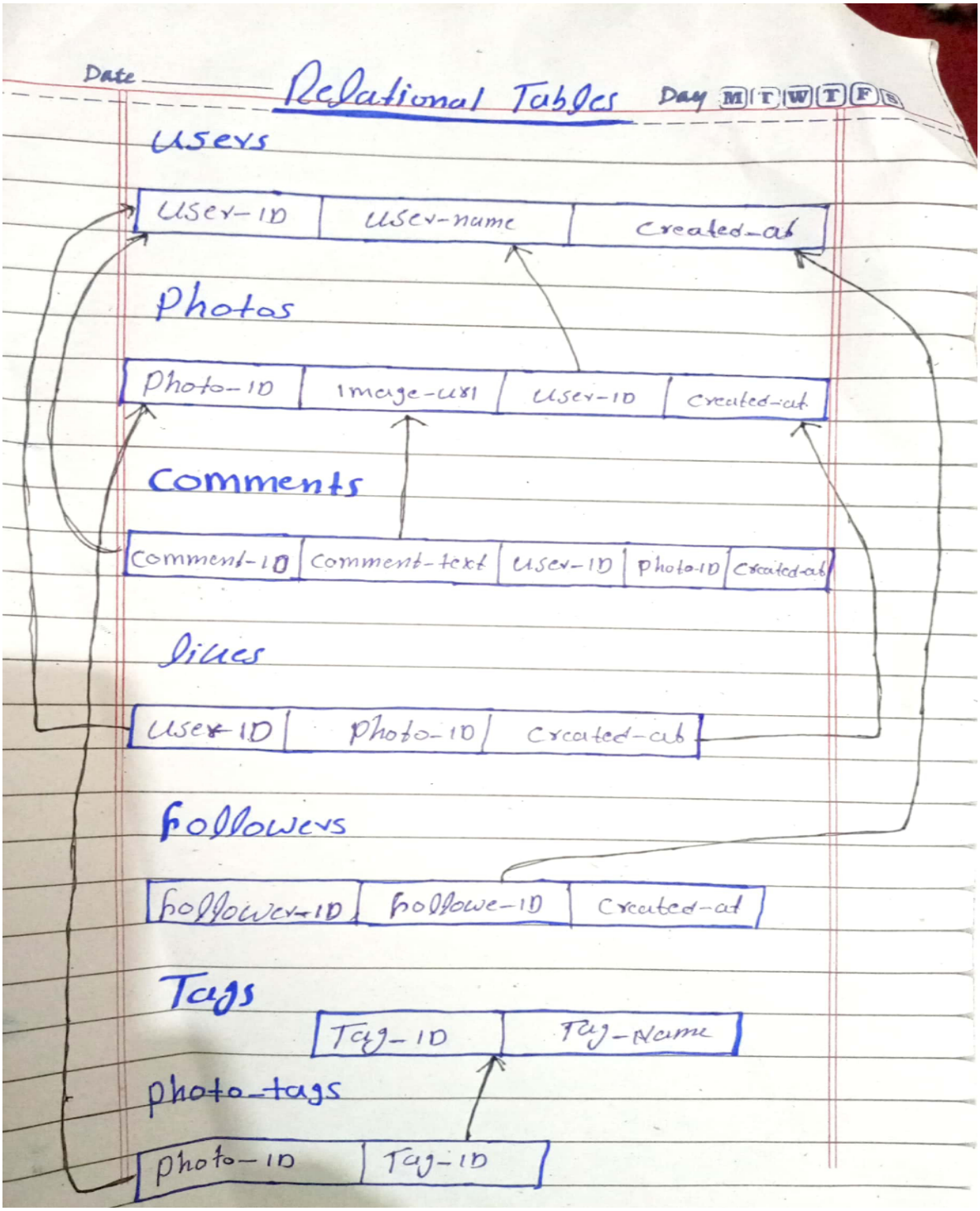
User and tags : one to many.

Comments and users : one to many.

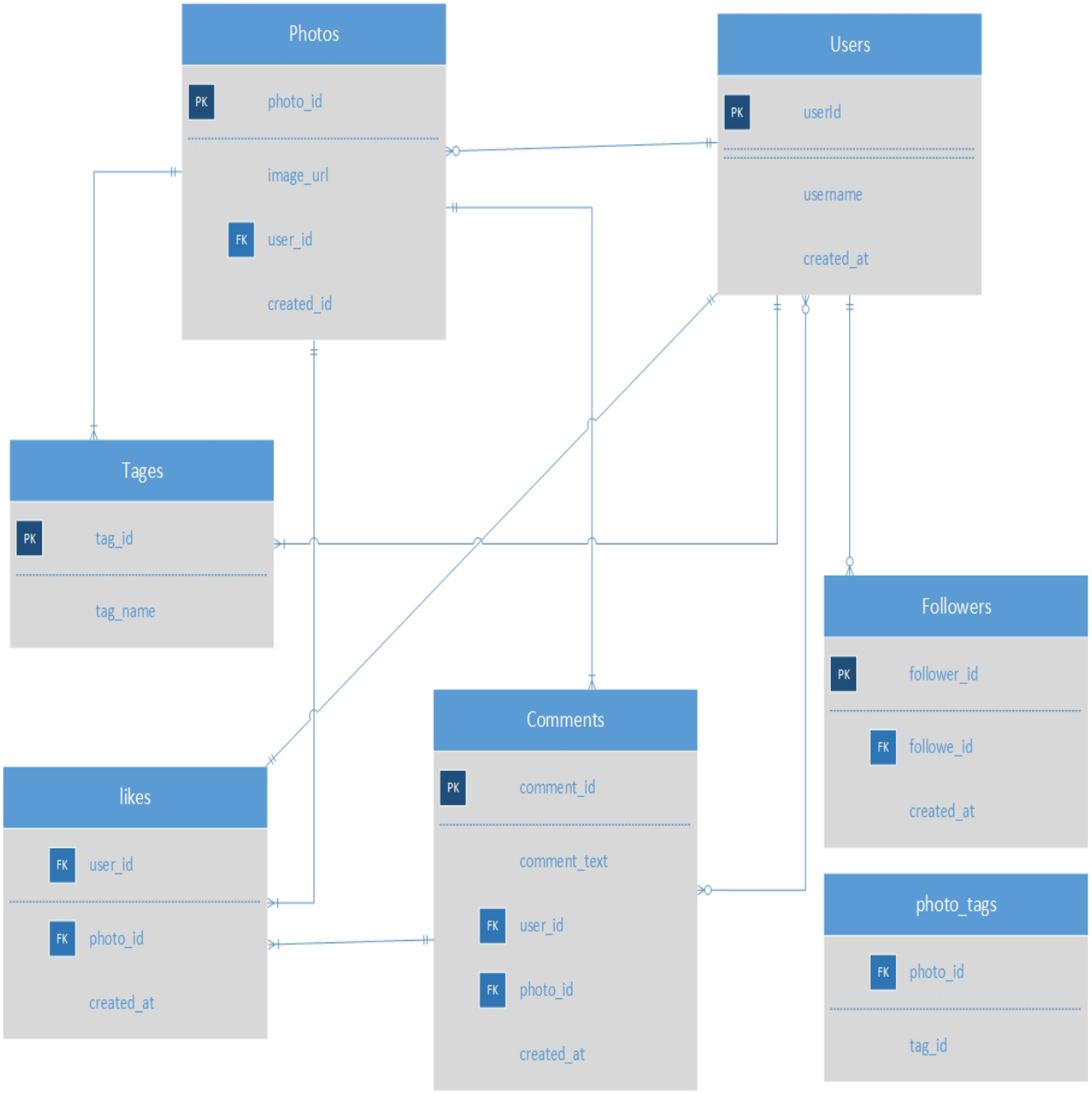
Photos and likes : one to many.

Photos and tags: one to many

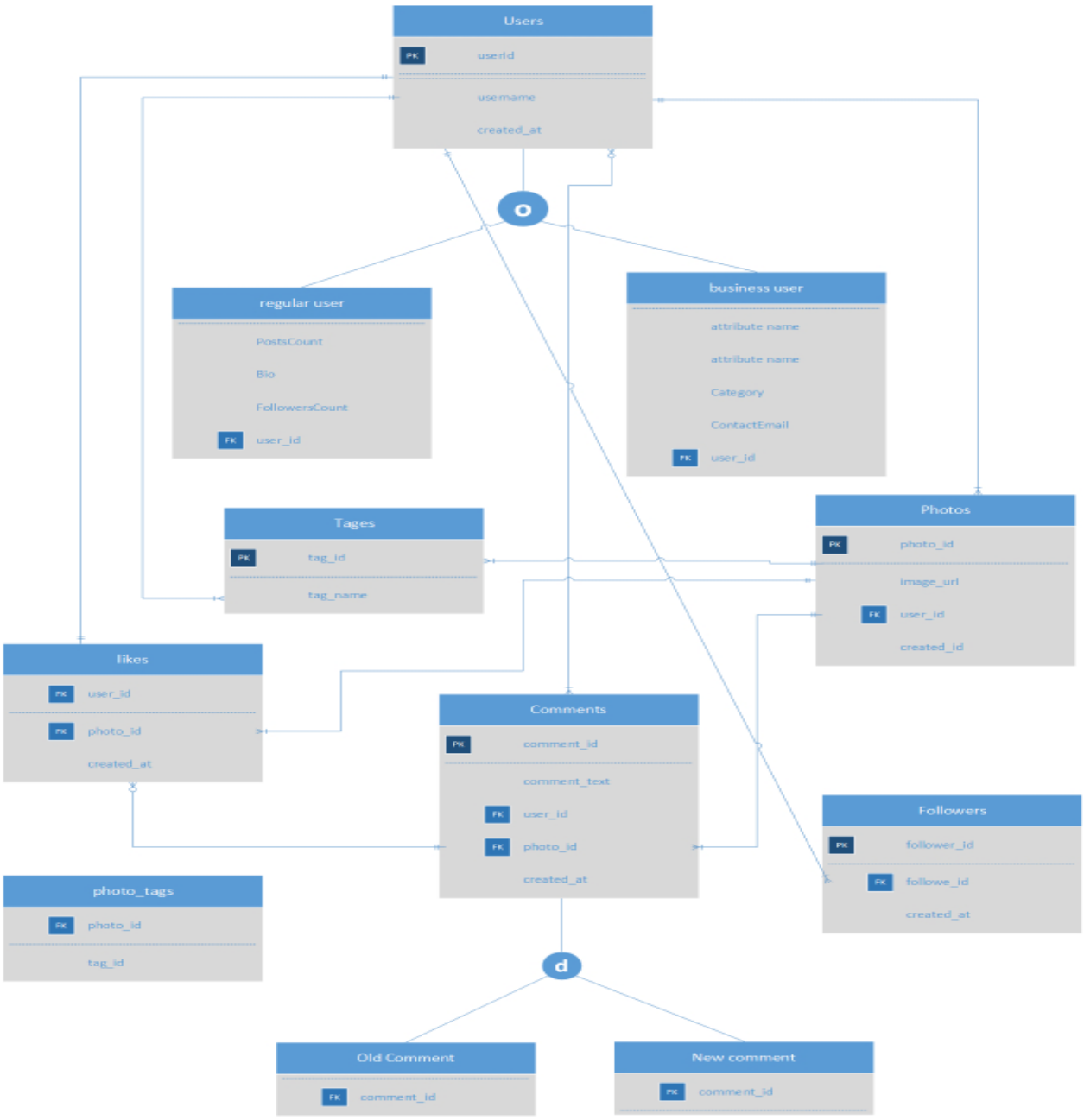
Relation tables



ERD Diagram:



EERD



(Creation of Database)

```
create table users(
id int primary key,
username varchar(20) not null,
 created_at DATETIME DEFAULT GETDATE()
);
create sequence users_id start with 1 increment by 1;
insert into users( id ,username)
values(next value for users_id,'Asmat Allah Atal'),
        (next value for users_id,'Amir sohil'),
        (next value for users_id,'Saif Allah'),
        (next value for users_id,'Abdul Wasy'),
        (next value for users_id,'Nimat Allah'),
        (next value for users_id,'Sameer Khan'),
        (next value for users_id,'Sami Allah'),
        (next value for users_id,'Imran Khan'),
        (next value for users_id,'Basheer khan'),
        (next value for users_id,'Kamran khan');

create table photos(
 id int primary key,
 image_url varchar(255) not null,
 usr_id int ,
 created_at DATETIME DEFAULT GETDATE(),
 foreign key(usr_id) references users(id)
```

```
create sequence photo_id
start with 1 increment by 1;

insert into photos(id,image_url,usr_id)
            values(next value for photo_id,'/askdj',1),
                  (next value for photo_id,'/khj',1),
                  (next value for photo_id,'/lmn',2),
                  (next value for photo_id,'/asm',3),
                  (next value for photo_id,'/opq',4),
                  (next value for photo_id,'/blo',5);


create table comments(
id int primary key,
comment_text varchar(255) not null,
usr_id  int,
photo_id int,
created_at datetime  default getdate(),
foreign key (usr_id) references  users(id),
foreign key (photo_id) references photos(id)
);

create sequence comm_id
start with 1 increment by 1;
```

```
insert into comments(id,comment_text,usr_id,photo_id)
                values(next value for comm_id,'Amazing',1,4),
                      (next value for comm_id,'Cute',6,3),
                      (next value for comm_id,'Fantastic',2,3),
                      (next value for comm_id,'Outstanding',10,5);
```

```
create table likes(
usr_id int not null,
photo_id int not null,
created_at DATETIME DEFAULT GETDATE(),
foreign key (usr_id) references users(id),
foreign key(photo_id) references photos(id));
insert into likes(usr_id,photo_id)
             values(1,1),
                   (2,1),
                   (3,2),
                   (4,3),
                   (4,4);
```

```
create table followers(
flllower_id int not null,
 f_name varchar(100),
followee_id int,
```

```
 f_name varchar(100),
followee_id int,
created_at datetime default getdate(),
foreign key(followee_id) references users(id));
insert into followers(flllower_id, f_name,followee_id)
                values(1,'Tahir',1),
                      (1,'Umar',2),
                      (2,'Ismael',3),
                      (4,'ibrahim',5);



CREATE TABLE tags (
  id INTEGER PRIMARY KEY,
  tag_name VARCHAR(255) ,
  created_at datetime DEFAULT getdate()
);
insert into tags(id,tag_name)
           values          (1,'cute'),
                           (2,'amazing'),
                            (3,'nature'),
                            (4,'smile'),
                            (5,'sad');
CREATE TABLE photo_tags (
    photo_id INTEGER NOT NULL,
```

```sql
CREATE TABLE photo_tags (
    photo_id INTEGER NOT NULL,
    tag_id INTEGER NOT NULL,
    FOREIGN KEY(photo_id) REFERENCES photos(id),
    FOREIGN KEY(tag_id) REFERENCES tags(id),
);
insert into photo_tags(photo_id,tag_id)
                values(1,1),
                       (2,1),
                       (3,3);
select *from comments;
```

```
insert into comments(id,comment_text,usr_id,photo_id)
            values(next value for comm_id,'Amazing',1,4),
                  (next value for comm_id,'Cute',6,3),
                  (next value for comm_id,'Fantastic',2,3),
                  (next value for comm_id,'Outstanding',10,5);
```

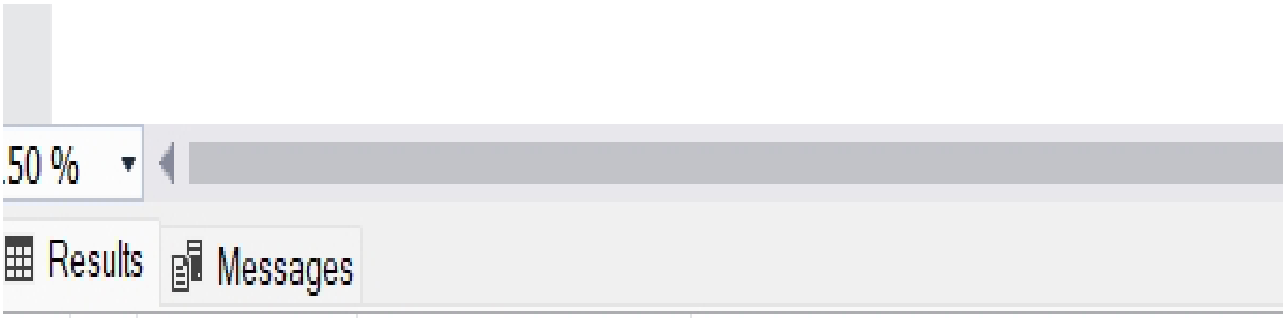
```
create table likes(
usr_id int not null,
photo_id int not null,
created_at DATETIME DEFAULT GETDATE(),
foreign key (usr_id) references users(id),
foreign key(photo_id) references photos(id));
insert into likes(usr_id,photo_id)
            values(1,1),
                  (2,1),
                  (3,2),
                  (4,3),
                  (4,4);
```

```
create table followers(
flllower_id int not null,
 f_name varchar(100),
followee_id int,
```

```sql
SELECT top 5* FROM users
ORDER BY created_at
SELECT TOP 3
    DATENAME(WEEKDAY, created_at) AS day,
    COUNT(*) AS total
FROM users
GROUP BY DATENAME(WEEKDAY, created_at)
ORDER BY total DESC;
SELECT username
FROM users
LEFT JOIN photos
    ON users.id = photos.usr_id
WHERE photos.id IS NULL;
SELECT TOP 1
    users.username,
    photos.id,
    photos.image_url,
    COUNT(*) AS total
FROM photos
INNER JOIN likes
    ON likes.photo_id = photos.id
INNER JOIN users
    ON photos.usr_id = users.id
GROUP BY users.username, photos.id, photos.image_url
```

```sql
SELECT TOP 1
    users.username,
    photos.id,
    photos.image_url,
    COUNT(*) AS total
FROM photos
INNER JOIN likes
    ON likes.photo_id = photos.id
INNER JOIN users
    ON photos.usr_id = users.id
GROUP BY users.username, photos.id, photos.image_url
ORDER BY total DESC;
SELECT (SELECT Count(*)
        FROM   photos) / (SELECT Count(*)
                          FROM   users) AS avg;
```

Results



	id	username	created_at
1	1	Asmat Allah Atal	2023-12-16 00:11:37.600
2	2	Amir sohil	2023-12-16 00:11:37.600
3	3	Saif Allah	2023-12-16 00:11:37.600
4	4	Abdul Wasy	2023-12-16 00:11:37.600
5	5	Nimat Allah	2023-12-16 00:11:37.600
6	6	Sameer Khan	2023-12-16 00:11:37.600
7	7	Sami Allah	2023-12-16 00:11:37.600
8	8	Imran Khan	2023-12-16 00:11:37.600
9	9	Basheer khan	2023-12-16 00:11:37.600
10	10	Kamran khan	2023-12-16 00:11:37.600

150 %

Results Messages

	id	image_url	usr_id	created_at
1	1	/askdj	1	2023-12-16 00:11:37.617
2	2	/khj	1	2023-12-16 00:11:37.617
3	3	/lmn	2	2023-12-16 00:11:37.617
4	4	/asm	3	2023-12-16 00:11:37.617
5	5	/opq	4	2023-12-16 00:11:37.617
6	6	/blo	5	2023-12-16 00:11:37.617

.50 %

Results Messages

	id	comment_text	usr_id	photo_id	created_at
1	1	Amazing	1	4	2023-12-16 00:11:37.627
2	2	Cute	6	3	2023-12-16 00:11:37.627
3	3	Fantastic	2	3	2023-12-16 00:11:37.627
4	4	Outstanding	10	5	2023-12-16 00:11:37.627

150 %

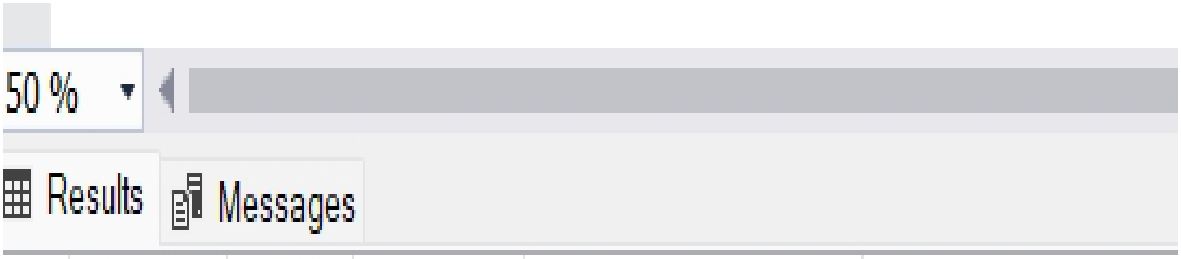
Results Messages

	usr_id	photo_id	created_at
1	1	1	2023-12-25 23:20:23.737
2	2	1	2023-12-25 23:20:23.737
3	3	2	2023-12-25 23:20:23.737
4	4	3	2023-12-25 23:20:23.737
5	4	4	2023-12-25 23:20:23.737

150 %

Results Messages

	id	username	image_url	comment_text
1	1	Asmat Allah Atal	/askdj	Amazing
2	2	Amir sohil	/khj	Cute
3	3	Saif Allah	/lmn	Fantastic
4	4	Abdul Wasy	/asm	Outstanding



	flllower_id	f_name	followee_id	created_at
1	1	Tahir	1	2023-12-25 23:35:33.637
2	1	Umar	2	2023-12-25 23:35:33.637
3	2	Ismael	3	2023-12-25 23:35:33.637
4	4	ibrahim	5	2023-12-25 23:35:33.637

Results Messages

	id	tag_name	created_at
1	1	cute	2023-12-25 23:56:55.623
2	2	amazing	2023-12-25 23:56:55.623
3	3	nature	2023-12-25 23:56:55.623
4	4	smile	2023-12-25 23:56:55.623
5	5	sad	2023-12-25 23:56:55.623

150 %

Results Messages

	photo_id	tag_id
1	1	1
2	2	1
3	3	3

150 %

Results | Messages

	id	username	image_url	comment_text
1	1	Asmat Allah Atal	/askdj	Amazing
2	2	Amir sohil	/khj	Cute
3	3	Saif Allah	/lmn	Fantastic
4	4	Abdul Wasy	/asm	Outstanding

Results Messages

	id	username	fllower_id	f_name
1	1	Asmat Allah Atal	1	Tahir
2	2	Amir sohil	1	Umar
3	3	Saif Allah	2	Ismael
4	5	Nimat Allah	4	ibrahim

Results Messages

	image_url	username
1	/askdj	Asmat Allah Atal
2	/khj	Asmat Allah Atal
3	/lmn	Amir sohil
4	/asm	Saif Allah
5	/opq	Abdul Wasy
6	/blo	Nimat Allah

Results Messages

	username	id	image_url	total
1	Asmat Allah Atal	1	/askdj	2

The END