SOCIAL PLATFORM ANALYSIS

Project for SQL module

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Project Description:

The "Social Platform Analysis" project aims to provide comprehensive insights into user behaviour, engagement, and content interaction on a social media platform. By analysing various aspects such as user demographics, content popularity, reaction types, and session activities, this project seeks to uncover valuable patterns and trends to inform decision-making and enhance the user experience.

Tables:

Content Table: Contains information about the content shared on the social platform, including content ID, category, user ID, URL, and type (e.g., photo, video, text).

Users Table: Stores user profiles with details such as user ID, username and email.

Reactions Table: Records user reactions to content, including the user ID, content ID, reaction type, and datetime (on which date and timing it was posted).

Reactiontypes Table: Defines the types of reactions available on the platform, such as sentiment (positive and negative), Type of reaction along with their corresponding scores or weights.

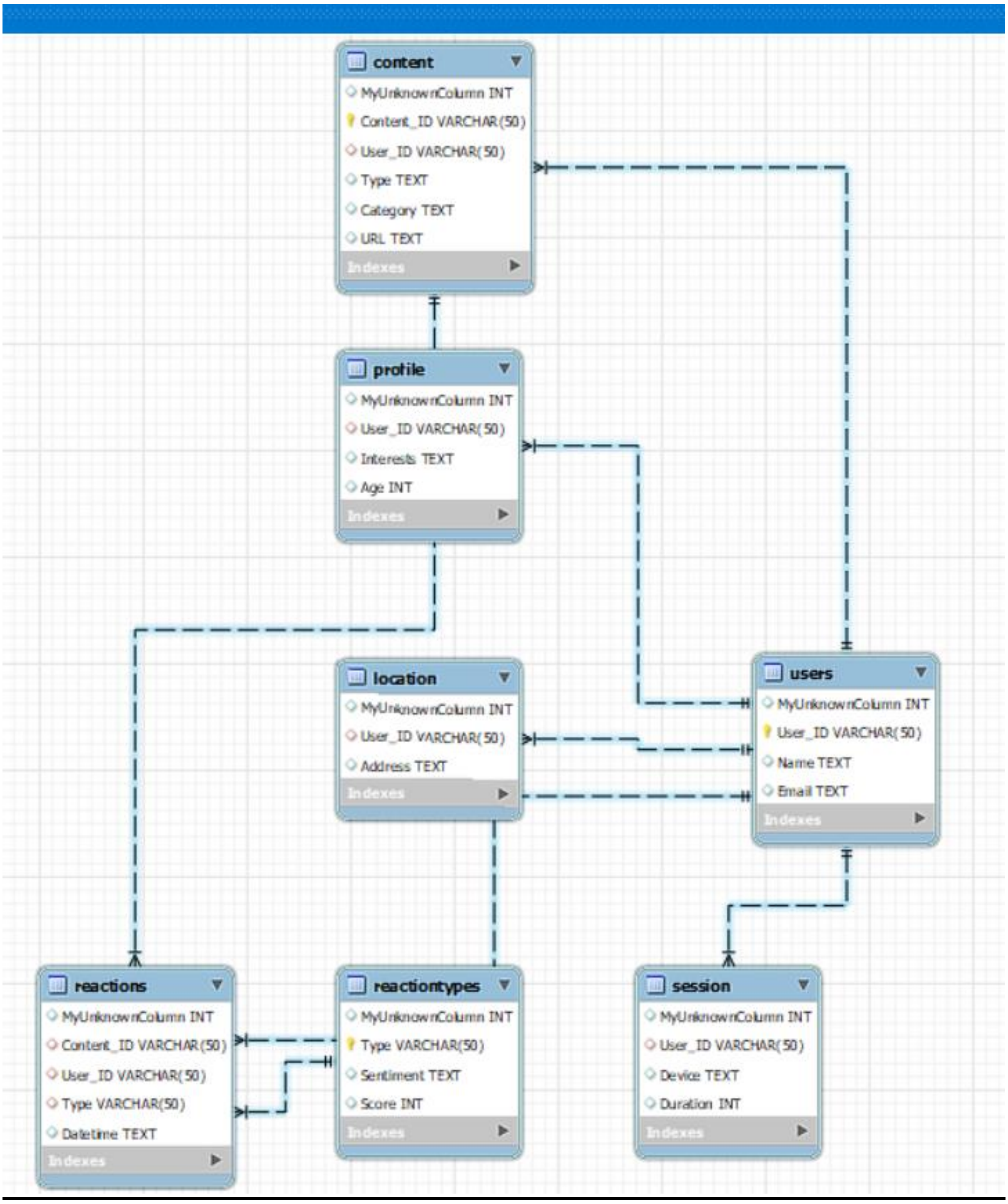
Profile Table: Contains additional profile information for users, such as age, interests and User id.

Session Table: Tracks user sessions on the platform, including user ID, user device and session duration.

Location Table: Stores geographic location data, such as,city, country, and any other relevant location details.

EER diagram / Table schema:

This shows how the tables relate to primary and foreign keys based on the common columns / attributes.



content
MyUnknownColumn INT
Content_ID VARCHAR(50)
User_ID VARCHAR(50)
Type TEXT
Category TEXT
URL TEXT
Indexes

profile
MyUnknownColumn INT
User_ID VARCHAR(50)
Interests TEXT
Age INT
Indexes

location
MyUnknownColumn INT
User_ID VARCHAR(50)
Address TEXT
Indexes

users
MyUnknownColumn INT
User_ID VARCHAR(50)
Name TEXT
Email TEXT
Indexes

reactions
MyUnknownColumn INT
Content_ID VARCHAR(50)
User_ID VARCHAR(50)
Type VARCHAR(50)
Datetime TEXT
Indexes

reactiontypes
MyUnknownColumn INT
Type VARCHAR(50)
Sentiment TEXT
Score INT
Indexes

session
MyUnknownColumn INT
User_ID VARCHAR(50)
Device TEXT
Duration INT
Indexes

Commands:

Tables are imported through import wizard in MySQL workbench.

Following commands are used to define the table structure:

- Assign Primary key constraints -

  ```
  -- assiging primary key in table users
  alter table users modify User_ID varchar(50)primary key;
  -- assiging primary key in table content
  alter table content modify Content_ID varchar(50)primary key;
  ```

- Modifying the data type –

  ```
  -- modify the datatype from text to varchar for table content
  alter table content modify User_ID varchar(50);

  -- modify the datatype from text to varchar for table profile
  alter table profile modify User_ID varchar(50) ;

   -- modify the datatype from text to varchar for table session
   alter table session modify User_ID varchar(50) ;

   -- modify the datatype from text to varchar for table reactions
   alter table reactions modify User_ID varchar(50) ;

   --  modify the datatype from text to varchar for table location
   alter table location modify User_ID varchar(50) ;

  -- modify the datatype from text to varchar for table reactiontypes
  alter table reactiontypes modify Type varchar(50)primary key;

  -- modify the datatype from text to varchar for table reactions
  alter table reactions modify Content_ID varchar(50) ;

  -- modify the datatype from text to varchar for table reactions
  alter table reactions modify Type varchar(50);
  ```

- Assign foreign key to relate the tables –

  ```
  -- connecting users to content on user_id
  alter table content add constraint contents foreign key (User_ID)
  references users(User_ID);

   -- connecting users to location on user_id
  alter table location add constraint locations foreign key (User_ID)
  references users(User_ID);

  -- connecting users to profile on user_id
  alter table profile add constraint profiles foreign key (User_ID) references
  users(User_ID);

  -- connecting users to session on user_id
  alter table session add constraint sessions foreign key (User_ID)
  references users(User_ID);

  -- connecting reactions to content on Content_ID
  alter table reactions add constraint reactionss foreign key (Content_ID)
  references content(Content_ID);

  -- connecting reactions to reactiontypes on Type
  alter table reactions add constraint reactionsss foreign key (Type)
  references reactiontypes(Type);
  ```

- Following command disables checking for foreign key constraints in MySQL –

  ```
  SET FOREIGN_KEY_CHECKS=0;
  ```

Link for the project: SOCIAL PLATFORM ANALYSIS

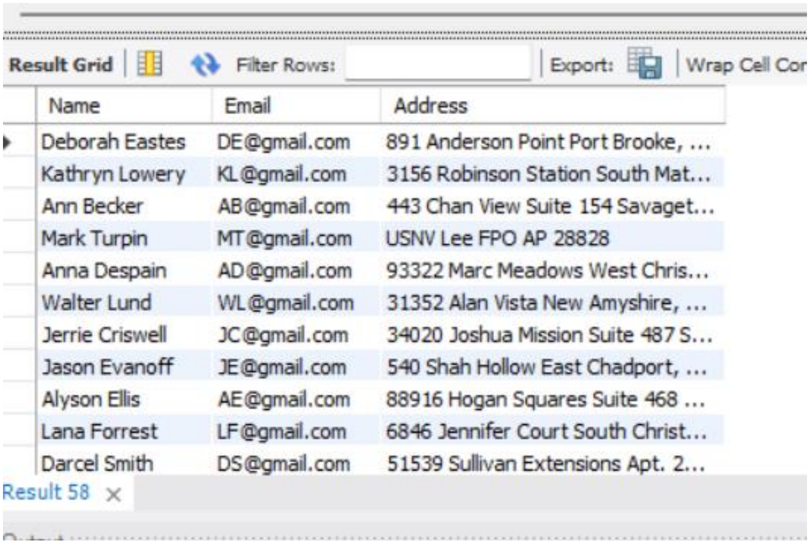
Operations Performed:

1. Identifying the users location –

   Query –

```
SELECT
    users.Name, users.Email, location.Address
FROM
    users
        LEFT JOIN
    location ON users.User_ID = location.User_ID;
```

   Results-



Name	Email	Address
Deborah Eastes	DE@gmail.com	891 Anderson Point Port Brooke, ...
Kathryn Lowery	KL@gmail.com	3156 Robinson Station South Mat...
Ann Becker	AB@gmail.com	443 Chan View Suite 154 Savaget...
Mark Turpin	MT@gmail.com	USNV Lee FPO AP 28828
Anna Despain	AD@gmail.com	93322 Marc Meadows West Chris...
Walter Lund	WL@gmail.com	31352 Alan Vista New Amyshire, ...
Jerrie Criswell	JC@gmail.com	34020 Joshua Mission Suite 487 S...
Jason Evanoff	JE@gmail.com	540 Shah Hollow East Chadport, ...
Alyson Ellis	AE@gmail.com	88916 Hogan Squares Suite 468 ...
Lana Forrest	LF@gmail.com	6846 Jennifer Court South Christ...
Darcel Smith	DS@gmail.com	51539 Sullivan Extensions Apt. 2...

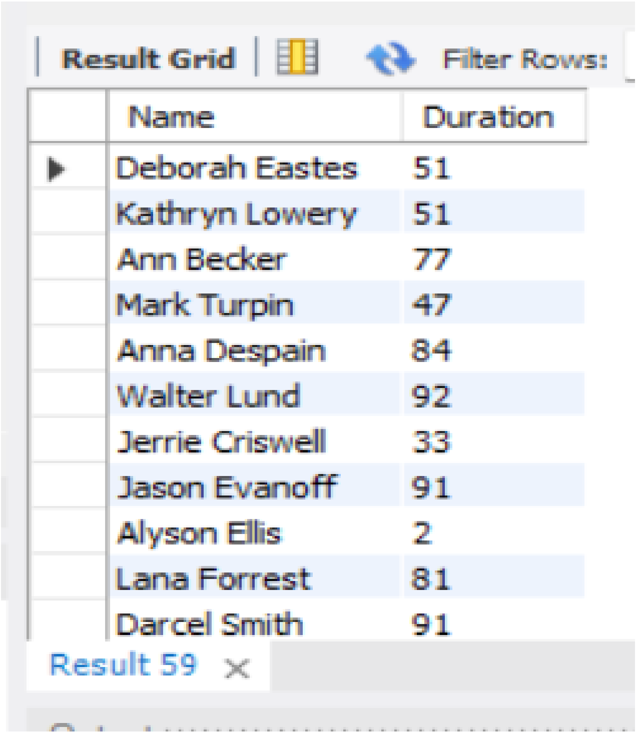
2. Time spent by users –

   Query-

```
SELECT

    users.Name, session.Duration

FROM

    users
```

```
        INNER JOIN
    session ON users.User_ID = session.User_ID;
```

Results-



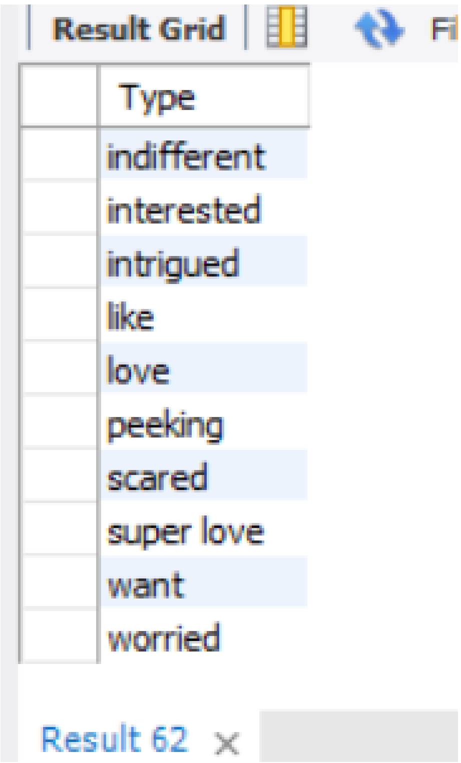
Name	Duration
Deborah Eastes	51
Kathryn Lowery	51
Ann Becker	77
Mark Turpin	47
Anna Despain	84
Walter Lund	92
Jerrie Criswell	33
Jason Evanoff	91
Alyson Ellis	2
Lana Forrest	81
Darcel Smith	91

3. Types of user reactions-

Query-

```
SELECT DISTINCT
    (reactiontypes.Type)
FROM
    reactions
        LEFT JOIN
    reactiontypes ON reactions.Type = reactiontypes.Type;
```

Results –

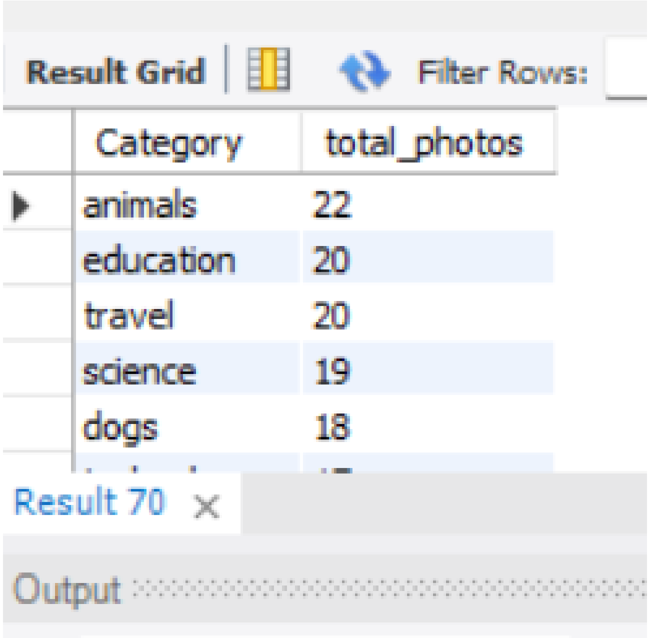


	Type
	indifferent
	interested
	intrigued
	like
	love
	peeking
	scared
	super love
	want
	worried

4. Highest category posted for content type PHOTOS –
Query –

```
SELECT
   Category, COUNT(Type) AS total_photos
FROM
   content
WHERE
   Type IN ('photo')
GROUP BY Category
ORDER BY 2 DESC;
```

Results-



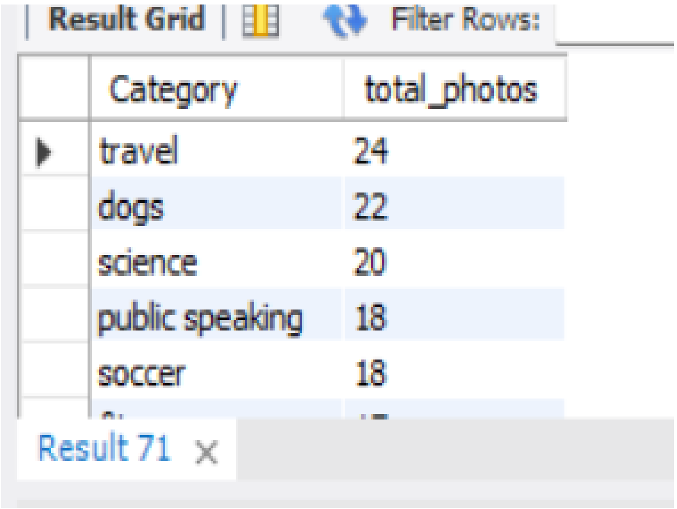
Category	total_photos
animals	22
education	20
travel	20
science	19
dogs	18

5. <u>Highest category posted for content type VIDEOS –</u>

<u>Query-</u>

```
SELECT
    Category, COUNT(Type) AS total_photos
FROM
    content
WHERE
    Type IN ('Video')
GROUP BY Category
ORDER BY 2 DESC;
```

<u>Results –</u>



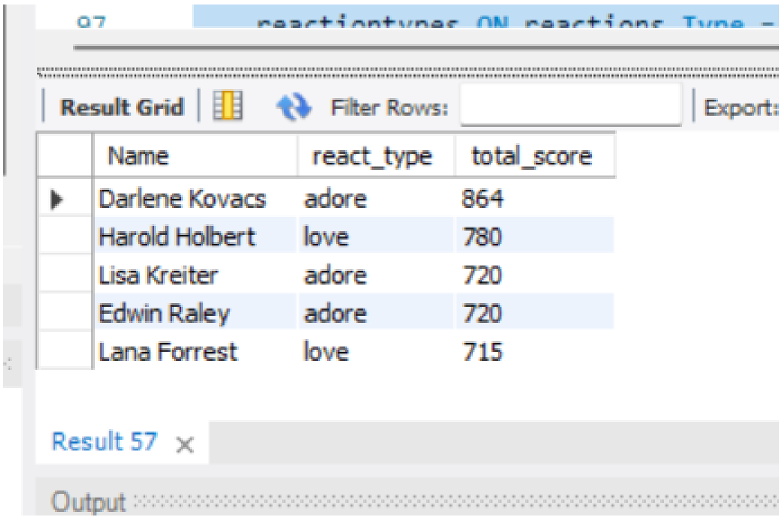
Category	total_photos
travel	24
dogs	22
science	20
public speaking	18
soccer	18

6. Maximum reaction score for a user –

Query -

```
SELECT
    users.Name,
    reactiontypes.Type AS react_type,
    SUM(reactiontypes.score) AS total_score
FROM
    users
        INNER JOIN
    reactions ON users.User_ID = reactions.User_ID
        INNER JOIN
    reactiontypes ON reactions.Type = reactiontypes.Type
GROUP BY users.Name , reactiontypes.Type
order by total_score desc limit 5;
```

Results –



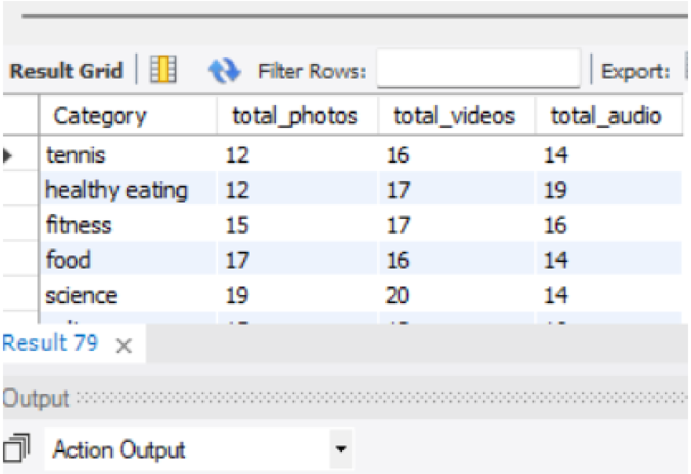
Name	react_type	total_score
Darlene Kovacs	adore	864
Harold Holbert	love	780
Lisa Kreiter	adore	720
Edwin Raley	adore	720
Lana Forrest	love	715

7. Types and category wise distribution-

Query-

```
SELECT
    Category,
    SUM(Type = 'photo') AS total_photos,
    SUM(Type = 'video') AS total_videos,
    SUM(Type = 'audio') AS total_audio
FROM
    content
GROUP BY Category
```

Results-

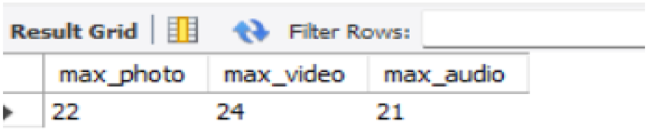


Category	total_photos	total_videos	total_audio
tennis	12	16	14
healthy eating	12	17	19
fitness	15	17	16
food	17	16	14
science	19	20	14

Query for max Value for each type –

```
SELECT
   MAX(total_photos) AS max_photo,
   MAX(total_videos) AS max_video,
   MAX(total_audio) AS max_audio
FROM
   (SELECT
      Category,
         SUM(Type = 'photo') AS total_photos,
         SUM(Type = 'video') AS total_videos,
         SUM(Type = 'audio') AS total_audio
   FROM
      content
   GROUP BY Category) AS max_value_each;
```

Results –



max_photo	max_video	max_audio
22	24	21

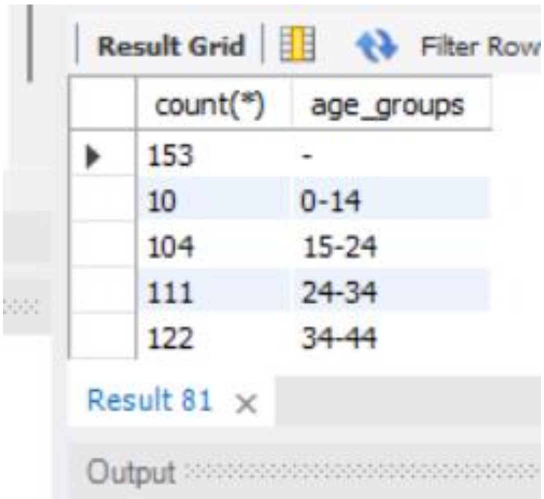
8. Finding what age group people are on this platform-

Query-

```
SELECT

   COUNT(*),

   CASE

      WHEN age = 0 AND age <= 14 THEN '0-14'

      WHEN age > 14 AND age <= 24 THEN '15-24'

      WHEN age > 24 AND age <= 34 THEN '24-34'

      WHEN age > 34 AND age <= 44 THEN '34-44'
```

```
        ELSE '-'
    END AS age_groups
FROM
    profile
GROUP BY 2
ORDER BY 2;
```

Results-

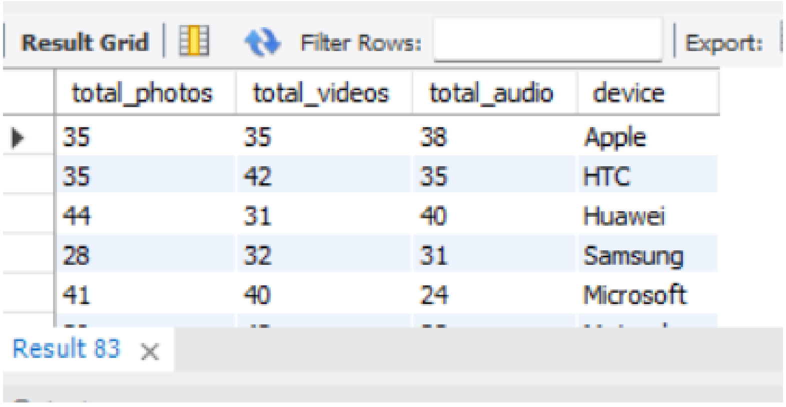


count(*)	age_groups
153	-
10	0-14
104	15-24
111	24-34
122	34-44

9. Classifying total values of content types for each device -
Query-

```
SELECT
    SUM(Type = 'photo') AS total_photos,
    SUM(Type = 'video') AS total_videos,
    SUM(Type = 'audio') AS total_audio,
    session.device
FROM
    content
        INNER JOIN
    session ON content.User_ID = session.User_ID
GROUP BY session.device;
```

Results -



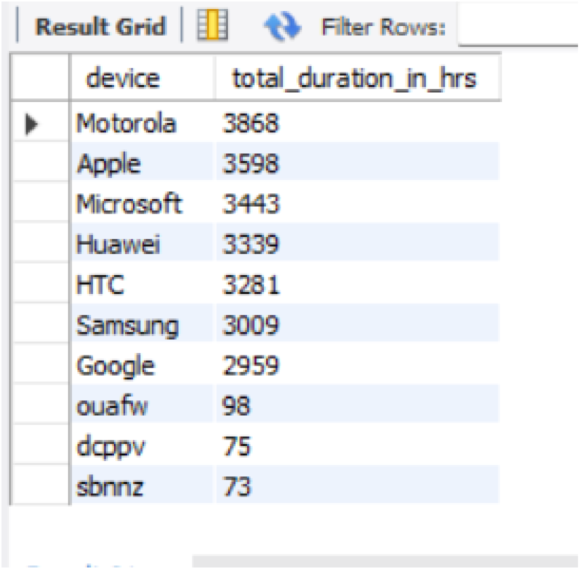
total_photos	total_videos	total_audio	device
35	35	38	Apple
35	42	35	HTC
44	31	40	Huawei
28	32	31	Samsung
41	40	24	Microsoft

10. Top 10 devices with respect to duration use-

Query-

```
SELECT
    device, SUM(duration) AS total_duration_in_hrs
FROM
    session
GROUP BY 1
ORDER BY total_duration_in_hrs DESC
LIMIT 10;
```

Results-



device	total_duration_in_hrs
Motorola	3868
Apple	3598
Microsoft	3443
Huawei	3339
HTC	3281
Samsung	3009
Google	2959
ouafw	98
dcppv	75
sbnnz	73

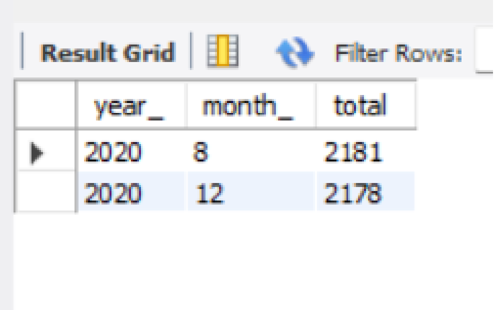
11. At what time of the year there is more posting / traffic on platform:
    Query for all year present in the data:

```
SELECT
   YEAR(datetime) AS year_,
   MONTH(datetime) AS month_,
   COUNT(*) AS total
FROM
   reactions
GROUP BY 1 , 2
ORDER BY 3 DESC;
```

Query for the year 2020 –

```
SELECT
   YEAR(datetime) AS year_,
   MONTH(datetime) AS month_,
   COUNT(*) AS total
FROM
   reactions
WHERE
   YEAR(datetime) = 2020
GROUP BY 1 , 2
ORDER BY 3 DESC
LIMIT 2;
```

Results-

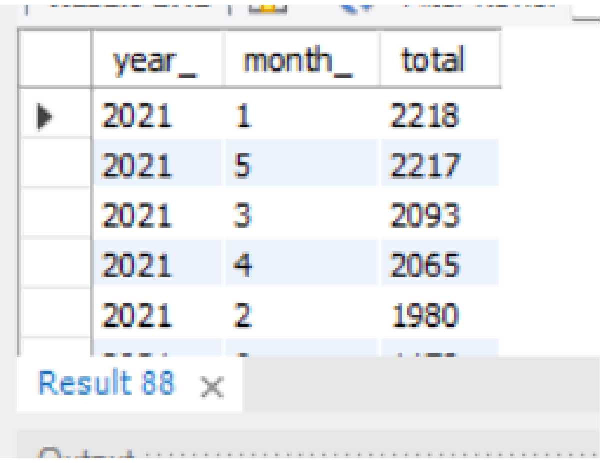


year_	month_	total
2020	8	2181
2020	12	2178

Query for the year 2021 –

```
SELECT
   YEAR(datetime) AS year_,
   MONTH(datetime) AS month_,
   COUNT(*) AS total
FROM
   reactions
WHERE
   YEAR(datetime) = 2021
GROUP BY 1 , 2
ORDER BY 3 DESC;
```

Results-



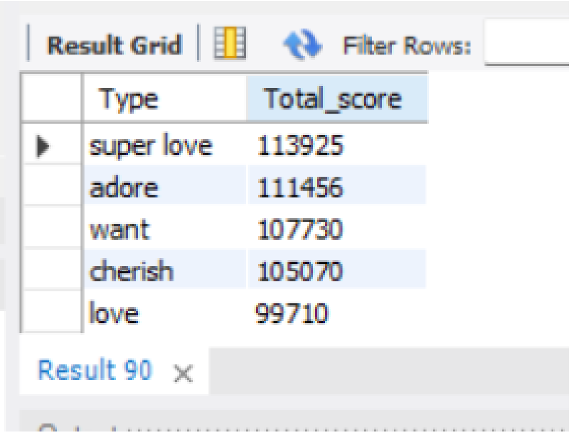
year_	month_	total
2021	1	2218
2021	5	2217
2021	3	2093
2021	4	2065
2021	2	1980

12.Identifying top 5 categories/Reaction Types –

Query –

```
SELECT
   Type, MAX(total_type * score) AS Total_score
FROM
   (SELECT
      COUNT(*) AS total_type,
         reactions.Type,
         reactiontypes.score AS score
   FROM
      reactions
   INNER JOIN reactiontypes ON reactions.Type = reactiontypes.Type
   GROUP BY reactions.Type) AS total
GROUP BY 1
ORDER BY 2 DESC
LIMIT 5;
```

Results-



Type	Total_score
super love	113925
adore	111456
want	107730
cherish	105070
love	99710

CONSLUSION-

The analysis of user behaviour and content interaction on the social platform provides valuable insights for enhancing user experience and platform performance. By examining user location data, we can better understand where our users are located, allowing us to tailor content and features to their preferences. Understanding the time users spend on the platform helps us gauge engagement levels and optimize platform usability. Identifying the types of reactions users have towards content gives us insight into user sentiment and preferences. Additionally, analysing the most popular categories for photo and video content helps us pinpoint trending topics and themes. By determining the maximum reaction score for a user, we can highlight the most positively received interactions. Examining the distribution of reactions and content categories provides a comprehensive overview of user engagement patterns. Classifying users into age groups reveals the platform's demographic composition, informing targeted marketing strategies. Understanding content consumption across different devices aids in optimizing platform compatibility and user experience. Identifying the devices with the longest usage durations informs device-specific optimization strategies. Analysing posting and traffic trends throughout the year helps us identify peak activity periods and optimize content scheduling. Overall, these insights enable us to make informed decisions to enhance user satisfaction, increase engagement, and drive the sustainable growth of the platform.