SOCIAL MEDIA DATA ANALYSIS WITH SQL

UNLOCKING INSIGHTS FROM SOCIAL MEDIA PLATFORMS WITH SQL

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Purpose:

Social media platforms generate massive volumes of user activity every second. Analyzing this data helps organizations, brands, and individuals make smarter decisions based on user behavior and engagement patterns.

Use Case Examples:

📊 Engagement Tracking: Identify which posts, topics, or times of day get the most interaction (likes, comments, shares).
🌟 Top Influencers: Discover which users have the highest reach and influence in the network.
⏰ Peak Activity Times: Find out when users are most active to schedule posts for maximum visibility.

Brief Summary:

We use SQL to analyze structured data from social media platforms, helping us uncover trends, measure performance, and understand user behavior.

DATABASE DESIGN

```sql
CREATE DATABASE Socialmedia;
USE Socialmedia;
```

```sql
CREATE TABLE Users (
    User_id INT PRIMARY KEY,
    Name VARCHAR(50),
    Join_Date DATE,
    Gender VARCHAR(10),
    Age INT
);
```

```sql
INSERT INTO Users (User_id, Name, Join_Date, Gender, Age) VALUES
(1, 'Raghunandan_Ram', '2024-01-22', 'Male', 20),
(2, 'Priya_Sen', '2023-01-15', 'Female', 28),
(3, 'Rock_lee', '2023-02-01', 'Male', 22),
(4, 'Deepali_Singh', '2023-03-12', 'Female', 30),
(5, 'Sid_Kapoor', '2023-03-18', 'Male', 27),
(6, 'Lucy_Williams', '2023-04-05', 'Female', 26),
(7, 'Rohit_Sharma', '2023-04-10', 'Male', 24),
(8, 'Alia_Bhat', '2023-04-15', 'Female', 23),
(9, 'Nick_Poland', '2023-04-18', 'Male', 31),
(10, 'Preety_Singh', '2023-05-01', 'Female', 35),
(11, 'Priya_Mehra', '2023-05-10', 'Female', 29),
(12, 'Raj_Rerma', '2023-05-12', 'Male', 21),
(13, 'Nina_Chaudhary', '2023-05-15', 'Female', 26),
(14, 'Anil_Rai', '2023-05-18', 'Male', 32),
(15, 'Sara_Ali', '2023-05-20', 'Female', 24),
(16, 'Dhram_Veer', '2023-05-22', 'Male', 27),
(17, 'Meena_Gupta', '2023-05-25', 'Female', 30),
(18, 'Vishal_Singh', '2023-06-01', 'Male', 23),
(19, 'Lisa_Kumari', '2023-06-03', 'Female', 22),
(20, 'Aarav_Jain', '2023-06-05', 'Male', 28),
(21, 'Zoya_Akther', '2023-06-06', 'Female', 26),
(22, 'Ravi_Kumar', '2023-06-07', 'Male', 29),
(23, 'Shruti_Rani', '2023-06-08', 'Female', 27),
(24, 'Aditya_Thakur', '2023-06-09', 'Male', 24),
(25, 'Ananya_Sen', '2023-06-10', 'Female', 25);
```

```sql
CREATE TABLE Posts (
    Post_Id INT PRIMARY KEY,
    User_Id INT,
    Post_Date DATETIME,
    Content TEXT,
    Likes INT,
    Comments INT,
    FOREIGN KEY (User_Id) REFERENCES Users(User_Id)
);
```

```sql
INSERT INTO Posts (Post_Id, User_Id, Post_Date, Content, Likes, Comments) VALUES
(101, 1, '2023-06-01 10:00:00', 'Hello World!', 10, 3),
(102, 2, '2023-06-01 11:00:00', 'Enjoying the beach!', 15, 4),
(103, 3, '2023-06-02 09:30:00', 'SQL is fun!', 20, 5),
(104, 4, '2023-06-02 13:00:00', 'Power of analytics!', 5, 2),
(105, 5, '2023-06-02 15:45:00', 'What a sunny day!', 8, 1),
(106, 6, '2023-06-03 08:20:00', 'Data is beautiful.', 12, 3),
(107, 7, '2023-06-03 09:10:00', 'Just watched a movie!', 25, 6),
(108, 8, '2023-06-03 10:00:00', 'AI is the future.', 30, 8),
(109, 9, '2023-06-04 14:00:00', 'Working on a project.', 7, 2),
(110, 10, '2023-06-04 16:30:00', 'New blog post out now!', 13, 3),
(111, 11, '2023-06-05 11:00:00', 'Morning vibes.', 6, 1),
(112, 12, '2023-06-05 12:00:00', 'Let’s code!', 9, 2),
(113, 13, '2023-06-05 14:00:00', 'Design tips today.', 11, 2),
(114, 14, '2023-06-05 17:00:00', 'Met my old friends!', 16, 5),
(115, 15, '2023-06-06 10:00:00', 'Baking something special.', 4, 1),
(116, 16, '2023-06-06 11:30:00', 'Hiking adventures!', 18, 4),
(117, 17, '2023-06-06 13:00:00', 'Coffee and code.', 7, 2),
(118, 18, '2023-06-06 15:00:00', 'SQL joins made easy.', 14, 4),
(119, 19, '2023-06-07 09:00:00', 'Writing a book.', 10, 2),
(120, 20, '2023-06-07 10:30:00', 'Startup journey begins.', 17, 3),
(121, 21, '2023-06-07 12:00:00', 'Photography love.', 13, 3),
(122, 22, '2023-06-07 14:00:00', 'Back to the gym!', 6, 1),
(123, 23, '2023-06-07 15:00:00', 'Cooking pasta!', 12, 3),
(124, 24, '2023-06-08 10:00:00', 'Travel diary update.', 9, 2),
(125, 25, '2023-06-08 11:00:00', 'Learning Python.', 15, 4),
-- Repeat or vary content
```

```sql
-- Repeat or vary content
(126, 1, '2023-06-08 12:30:00', 'Weekend plans?', 8, 2),
(127, 2, '2023-06-08 14:00:00', 'Music playlist drop.', 10, 3),
(128, 3, '2023-06-09 08:00:00', 'Exam tips.', 7, 1),
(129, 4, '2023-06-09 09:00:00', 'SQL tricks.', 11, 2),
(130, 5, '2023-06-09 10:00:00', 'Rainy day feels.', 9, 2),
(131, 6, '2023-06-09 11:00:00', 'Python > Java?', 13, 4),
(132, 7, '2023-06-09 13:00:00', 'Festival mood.', 16, 5),
(133, 8, '2023-06-09 15:00:00', 'Dark theme lovers!', 14, 3),
(134, 9, '2023-06-10 08:30:00', 'Late night code.', 5, 1),
(135, 10, '2023-06-10 10:00:00', 'Fitness tracker review.', 8, 2),
(136, 11, '2023-06-10 11:30:00', 'Good morning all.', 10, 3),
(137, 12, '2023-06-10 13:00:00', 'Just read a great book.', 12, 2),
(138, 13, '2023-06-10 14:00:00', 'Travel checklist.', 11, 3),
(139, 14, '2023-06-10 15:30:00', 'Trekking in Manali.', 17, 4),
(140, 15, '2023-06-10 16:00:00', 'Chocolate cake recipe.', 9, 2),
(141, 16, '2023-06-11 09:00:00', 'Football finals tonight!', 14, 3),
(142, 17, '2023-06-11 10:00:00', 'Mobile photography tips.', 13, 3),
(143, 18, '2023-06-11 11:00:00', 'Hackathon ready!', 20, 5),
(144, 19, '2023-06-11 12:00:00', 'Tech talk weekend.', 12, 3),
(145, 20, '2023-06-11 14:00:00', 'Startup wins!', 18, 4),
(146, 21, '2023-06-11 15:00:00', 'Organizing workspace.', 8, 1),
(147, 22, '2023-06-11 16:00:00', 'New blog published.', 6, 2),
(148, 23, '2023-06-11 17:00:00', 'Coffee art!', 10, 3),
(149, 24, '2023-06-11 18:00:00', 'Sunset shot today.', 9, 2),
(150, 25, '2023-06-11 19:00:00', 'SQL project complete!', 15, 4);
```

```sql
CREATE TABLE Followers (
  Follower_Id INT,
  Following_Id INT,
  Follow_Date DATE,
  PRIMARY KEY (Follower_Id, Following_Id)
);
```

```sql
INSERT INTO Followers (Follower_Id, Following_Id, Follow_Date) VALUES
(1, 2, '2023-06-01'),
(1, 3, '2023-06-01'),
(2, 1, '2023-06-01'),
(2, 5, '2023-06-02'),
(3, 2, '2023-06-02'),
(4, 3, '2023-06-02'),
(5, 1, '2023-06-02'),
(6, 2, '2023-06-03'),
(7, 6, '2023-06-03'),
(8, 7, '2023-06-03'),
(9, 8, '2023-06-04'),
(10, 9, '2023-06-04'),
(11, 10, '2023-06-04'),
(12, 11, '2023-06-05'),
(13, 12, '2023-06-05'),
(14, 13, '2023-06-05'),
(15, 14, '2023-06-05'),
(16, 15, '2023-06-06'),
(17, 16, '2023-06-06'),
(18, 17, '2023-06-06'),
(19, 18, '2023-06-07'),
(20, 19, '2023-06-07'),
(21, 20, '2023-06-07'),
(22, 21, '2023-06-07'),
(23, 22, '2023-06-07'),
(24, 23, '2023-06-08'),
(25, 24, '2023-06-08'),
```

```sql
(25, 24, '2023-06-08'),
(2, 4, '2023-06-08'),
(3, 5, '2023-06-09'),
(5, 7, '2023-06-09'),
(6, 9, '2023-06-09'),
(7, 10, '2023-06-10'),
(8, 11, '2023-06-10'),
(9, 12, '2023-06-10'),
(10, 13, '2023-06-10'),
(11, 14, '2023-06-10'),
(12, 15, '2023-06-10'),
(13, 16, '2023-06-11'),
(14, 17, '2023-06-11'),
(15, 18, '2023-06-11');
```

```sql
CREATE TABLE Comments (
  Comment_Id INT PRIMARY KEY,
  Post_Id INT,
  user_Id INT,
  Comment_Date DATETIME,
  Content TEXT,
  FOREIGN KEY (Post_Id) REFERENCES Posts(Post_Id),
  FOREIGN KEY (user_Id) REFERENCES Users(User_Id)
);
```

```sql
INSERT INTO Comments (Comment_Id, Post_Id, User_Id, Comment_Date, Content) VALUES
(1, 101, 2, '2023-06-01 10:30:00', 'Nice post!'),
(2, 101, 3, '2023-06-01 11:00:00', 'Welcome!'),
(3, 102, 1, '2023-06-01 11:30:00', 'Looks fun!'),
(4, 103, 4, '2023-06-02 10:00:00', 'Totally agree.'),
(5, 104, 5, '2023-06-02 13:30:00', 'Interesting!'),
(6, 105, 6, '2023-06-02 16:00:00', 'Beautiful.'),
(7, 106, 7, '2023-06-03 09:00:00', 'I love this.'),
(8, 107, 8, '2023-06-03 09:30:00', 'Which movie?'),
(9, 108, 9, '2023-06-03 10:30:00', 'Absolutely true.'),
(10, 109, 10, '2023-06-04 14:30:00', 'Great work.'),
(11, 110, 11, '2023-06-04 17:00:00', 'Read it!'),
(12, 111, 12, '2023-06-05 11:30:00', 'Good morning!'),
(13, 112, 13, '2023-06-05 12:30:00', 'Yes!'),
(14, 113, 14, '2023-06-05 14:30:00', 'Helpful tips.'),
(15, 114, 15, '2023-06-05 17:30:00', 'That’s nice.'),
(16, 115, 16, '2023-06-06 10:30:00', 'Yummy!'),
(17, 116, 17, '2023-06-06 12:00:00', 'Cool view.'),
(18, 117, 18, '2023-06-06 13:30:00', 'Same here.'),
(19, 118, 19, '2023-06-06 15:30:00', 'Very useful.'),
(20, 119, 20, '2023-06-07 09:30:00', 'Great!'),
(21, 120, 21, '2023-06-07 11:00:00', 'Best wishes!'),
(22, 121, 22, '2023-06-07 12:30:00', 'Wow!'),
(23, 122, 23, '2023-06-07 14:30:00', 'Back on track.'),
(24, 123, 24, '2023-06-07 15:30:00', 'Show recipe?'),
(25, 124, 25, '2023-06-08 10:30:00', 'Cool place.'),
(26, 125, 1, '2023-06-08 11:30:00', 'Python rocks.'),
(27, 126, 2, '2023-06-08 13:00:00', 'Count me in.'),
(28, 127, 3, '2023-06-08 14:30:00', 'Love it!'),
(29, 128, 4, '2023-06-09 08:30:00', 'Great tips.'),
(30, 129, 5, '2023-06-09 09:30:00', 'Bookmarking this.');
```

Top 5 most active users (based on posts)

```sql
SELECT
    u.Name, COUNT(p.Post_Id) AS Post_Count
FROM
    Users u
        JOIN
    Posts p ON u.User_Id = p.User_Id
GROUP BY u.Name
ORDER BY Post_Count DESC
LIMIT 5;
```

OUTPUT

Name	Post_Count
Raghunandan_Ram	2
Priya_Sen	2
Rock_lee	2
Deepali_Singh	2
Sid_Kapoor	2

Most liked posts

```sql
SELECT
    Post_Id, Content, Likes
FROM
    Posts
ORDER BY Likes DESC
LIMIT 5;
```

OUTPUT

Post_Id	Content	Likes
108	AI is the future.	30
107	Just watched a movie!	25
103	SQL is fun!	20
143	Hackathon ready!	20
145	Startup wins!	18

Average comments per post

```sql
SELECT
    AVG(Comments) AS Avg_Comments
FROM
    Posts;
```

OUTPUT

Avg_Comments
2.9000

Daily new posts trend

```sql
SELECT
    DATE(Post_Date) AS Post_Day, COUNT(*) AS Total_Posts
FROM
    Posts
GROUP BY Post_Day
ORDER BY Post_Day;
```

OUTPUT

Post_Day	Total_Posts
2023-06-01	2
2023-06-02	3
2023-06-03	3
2023-06-04	2
2023-06-05	4
2023-06-06	4
2023-06-07	5
2023-06-08	4
2023-06-09	6
2023-06-10	7
2023-06-11	10

User engagement summary

```sql
SELECT
    u.Name,
    COUNT(DISTINCT p.Post_Id) AS Total_Posts,
    SUM(p.Likes) AS Total_Likes,
    SUM(p.Comments) AS Total_Comments
FROM
    Users u
        JOIN
    Posts p ON u.User_Id = p.User_Id
GROUP BY u.Name
```

OUTPUT

Name	Total_Posts	Total_Likes	Total_Comments
Aarav_Jain	2	35	7
Aditya_Thakur	2	18	4
Alia_Bhat	2	44	11
Ananya_Sen	2	30	8
Anil_Rai	2	33	9
Deepali_Singh	2	16	4
Dhram_Veer	2	32	7
Lisa_Kumari	2	22	5
Lucy_Williams	2	25	7
Meena_Gupta	2	20	5
Nick_Poland	2	12	3
Nina_Chaudhary	2	22	5
Preety_Singh	2	21	5
Priya_Mehra	2	16	4
Priya_Sen	2	25	7
Raghunandan_Ram	2	18	5
Raj_Rerma	2	21	4
Ravi_Kumar	2	12	3
Rock_lee	2	27	6
Rohit_Sharma	2	41	11
Sara_Ali	2	13	3
Shruti_Rani	2	22	6
Sid_Kapoor	2	17	3
Vishal_Singh	2	34	9
Zoya_Akther	2	21	4

Conclusion

Analyzing social media data using SQL allows us to unlock valuable insights from structured information. By writing and executing queries, we can:

- Identify user engagement trends
- Track the most influential users
- Discover peak activity times
- Evaluate content performance through likes, shares, and comments

This analysis not only helps in understanding platform behavior but also supports better decision-making for marketers, influencers, and businesses.

Thank You

Your time and attention are appreciated- Feel free to ask any questions!

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