# SOCIAL MEDIA ANALYTICS BACKEND PROJECT REPORT

## Introduction

This project showcases a MySQL-based simulation of a social media platform, featuring core components like Users, Posts, Likes, and Comments.

It demonstrates the use of views, triggers, and window functions to analyze engagement and maintain data consistency.

## Abstract

The system models basic social media interactions using relational database principles.

It employs foreign key relationships to ensure integrity and includes automation via SQL triggers.

Analytical insights are generated using views and ranking functions to assess user engagement performance.

## Tools Used

- **DBMS**: MySQL Server 8.0
- **Interface**: MySQL Workbench
- **Languages**: SQL (DDL, DML, Views, Triggers, Window Functions)
- **Export**: CSV Export using SELECT INTO OUTFILE

## Steps Involved in Building the Project

- **Database & Tables Creation**:
  Created the MySQL_Projects database with Users, Posts, Likes, and Comments tables.
- **Data Insertion**:
  Populated the database with multiple users and posts to test relationships.
- **Views Creation**:
  Built the TopPosts and EngagementScore views to analyze performance metrics.
- **Window Functions**:
  Applied RANK() to rank posts based on likes count.
- **Triggers**:
  Created triggers to automatically update the likes_count when likes are added or removed.
- **Data Export**:
  Exported engagement data into a CSV file using MySQL's SELECT INTO OUTFILE.

## Key SQL Features Summary

| Feature | Description |
| --- | --- |
| • Views | Used to display ranked post data (TopPosts, EngagementScore). |
| • Triggers | Automatically update post like counts on insert/delete. |
| • Window Function | Ranks posts by likes using RANK() for engagement analytics. |

## Learning Outcomes

- Gained experience in relational modeling for social media systems.
- Learned the use of SQL views, triggers, and window functions.
- Developed insight into data-driven engagement analytics.
- Understood MySQL export and report generation techniques.

## Conclusion

This project successfully demonstrates how relational databases can model social media interactions.

The use of SQL triggers, views, and ranking functions supports automated updates and meaningful analytics, enabling scalable and maintainable social media data management.