Experiment - 3

Student Name: Manjot Singh
UID: 23BCS12549
Branch: BE-CSE
Section/Group: KRG-2A
Semester: 6th
Date of Performance: 27/01/2026
Subject Name: System Design
Subject Code: 23CSH-314

Aim:

To design a **Social Media Platform** that allows users to register, login, create posts, follow other users, and interact with posts through likes and comments, ensuring high availability, scalability, and low latency.

Objectives:

1. To understand the working of a Social Media system
2. To identify **functional requirements** of the system
3. To identify **non-functional requirements** such as performance and scalability
4. To design a high-level system flow using **draw.io**
5. To understand core entities involved in the platform

Procedure-

1. Identify functional requirements of a social media platform.
2. Define non-functional requirements such as scalability, latency, and availability.
3. Analyze CAP theorem trade-offs for social media systems.
4. Identify core entities required for system implementation.
5. Design the system architecture using Draw.io.
6. Validate the design against real-world social media behavior.

Functional Requirements -

1. Users should be able to **register and login** to the application.
2. Users should be able to **create posts** (text / image / video).
3. Users should be able to **follow other users** or send friend requests.
4. Users should be able to **like and comment** on posts.
5. Users should be able to **view a feed** consisting of posts from users they follow.

Non-functional Requirements

A. Scalability

System should support up to 500 million daily active users (DAU).

B. Consistency and Availability

The system prioritizes high availability over strong consistency.
Temporary delays in post propagation are acceptable.

Justification:

If the application is unavailable during peak time, it leads to a major business loss.
Example:
If Instagram is down for 1 hour → **critical issue**
If a post reaches followers in 500 ms instead of instantly → **acceptable**
Hence,
Availability >>> Consistency

C. Latency

Post upload and publish latency should be around **500 ms**.

Outcome / Result -

A complete high-level design of a social media platform was successfully created, identifying its functional requirements, non-functional constraints, core entities, and feed management strategy.

REQUIRED SYSTEM DESIGN -