Experiment - 3

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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 –