Contents

[TOPIC: Instagram 1](#_Toc188959526)

[1. Project Idea: 2](#_Toc188959527)

[2. Description 2](#_Toc188959528)

[3. Identified Entities: 4](#_Toc188959529)

[4. Attributes for Each Entity: 5](#_Toc188959530)

[5. RELATIONSHIPS 8](#_Toc188959531)

# DATABASE FINAL PROJECT

# TOPIC: Instagram

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1. Project Idea:

Our project focuses on creating a database of Instagram specifically aimed on storing and managing data of user and ads. This database will allow for most user interaction features of Instagram. This includes handling users' personal and public information, their activity (posts, stories, reactions, etc.), as well as managing ads and tracking their performance.

1. Description

The project involves creating a comprehensive relational database for Instagram, designed to store, manage, and optimize data associated with users, their interactions, and advertisements. Each user will have an account with both personal and public information. Users can engage in multiple activities, including posting content, creating stories, liking posts, reacting to stories, messaging others, forming groups, and receiving notifications. Additionally, the database will support advertisement management, storing ad content, and tracking ad performance metrics (e.g., interactions in different regions).

**Assumptions:**

1. Each user has a unique identifier (USER\_ID) and stores both personal (e.g., name, email, DOB) and public (e.g., username, bio, status) information.
2. A single User may follow many other users.
3. Users may create multiple posts, stories, and live events.
4. Posts may include captions, hashtags, and tags, and may be liked or commented on by other users.
5. Posts may also be archived or reported as inappropriate.
6. Stories are time-limited and may receive multiple reactions or be associated with live events.
7. Users may message each other, and these messages may contain polls.
8. Users may create or join multiple groups, and groups store additional data such as name, description, and status etc.
9. Each Post may have ads, and each ad is tracked using many performance metrics (e.g., interactions, region).
10. Ads and performance metrics are treated as separate entities with their own unique identifiers and attributes.
11. Users receive notifications for events like post reactions, story updates, messages from other users etc.
12. Every interaction (e.g., like, comment, reaction) is tied to an identifier and includes data such as timestamps.

**Procedures and System Flow:**

1. Users register by providing personal information (e.g., name, email, password) and set up public details (e.g., username, status).
2. Users create posts with captions, hashtags, and tags.
3. Posts can be commented on, liked, or reported by others. They may also be archived.
4. Stories are created with time-limited visibility and can be linked to live events and reactions.
5. Reactions to stories and posts are stored with metadata (e.g., reaction type, timestamp).
6. Users send messages to others, which may include polls.
7. Groups are created and managed, storing relevant group data
8. Ads are associated with posts and have metadata like start and end dates.
9. Performance metrics for ads track interactions by region and other parameters
10. Users receive notifications for actions like comments on their posts, likes, or messages from other users.
11. Ad performance metrics provide insights into user interactions, region-wise engagement, and overall efficiency of ads
12. Identified Entities:

1. **USER**
2. **POST**
3. **TAG**
4. **COMMENT**
5. **FOLLOWER**
6. **LIKE**
7. **HASHTAG**
8. **STORY**
9. **REACTIONS**
10. **LIVE EVENT**
11. **GROUP**
12. **MESSAGE**
13. **ADS**
14. **AdPerformanceMetrics**
15. **REPORT**
16. **ARCHIVE**
17. **NOTIFICATIONS**
18. **POLL**
19. **LIVE EVENT INTERACTIONS**
20. **POST HASHTAG**

## Attributes for Each Entity:

#### 1. ****USER****

* USER\_ID (Primary Key)
* USER\_NAME
* FIRST\_NAME
* LAST\_NAME
* DATE\_OF\_BIRTH
* EMAIL
* PASSWORD
* ACCOUNT\_CREATED
* PROFILE\_PICTURE
* FOLLOWERS\_COUNT
* STATUS
* BIO
* STATUS

#### 2. ****POST****

* POST\_ID (Primary Key)
* USER\_ID (Foreign Key)
* CONTENT
* CAPTION
* TIMESTAMP
* LIKES\_COUNT
* COMMENTS\_COUNT

#### 3. ****TAG****

* TAG\_ID (Primary Key)
* TAG\_NAME

#### 4. ****COMMENT****

* COMMENT\_ID (Primary Key)
* USER\_ID (Foreign Key)
* POST\_ID (Foreign Key)
* TEXT
* TIMESTAMP

#### 5. ****FOLLOWER****

* USER\_ID (Foreign Key)
* FOLLOWER\_ID (Foreign Key)

#### 6. ****LIKE****

* LIKE\_ID (Primary Key)
* USER\_ID (Foreign Key)
* POST\_ID (Foreign Key)

#### 7. ****HASHTAG****

* HASHTAG\_ID (Primary Key)
* HASHTAG\_TEXT

#### 8. ****STORY****

* STORY\_ID (Primary Key)
* USER\_ID (Foreign Key)
* CONTENT
* TIMESTAMP
* EXPIRY\_TIME

#### 9. ****REACTIONS****

* REACTION\_ID (Primary Key)
* STORY\_ID (Foreign Key)
* REACTION\_TYPE

#### 10. ****LIVE EVENT****

* EVENT\_ID (Primary Key)
* STORY\_ID (Foreign Key)
* MAIN\_STORY (Foreign Key)
* EVENT\_NAME
* TIMESTAMP

#### 11. ****GROUP****

* GROUP\_ID (Primary Key)
* GROUP\_NAME
* STATUS
* DESCRIPTION
* CREATION\_DATE

#### 12. ****MESSAGE****

* MESSAGE\_ID (Primary Key)
* SENDER\_ID (Foreign Key)
* RECEIVER\_ID (Foreign Key)
* CONTENT
* TIMESTAMP

#### 13. ****ADS****

* AD\_ID (Primary Key)
* AD\_CONTENT
* STARTDATE
* ENDDATE
* POST\_ID (Foreign Key)

#### 14. ****AdPerformance Metrics****

* METRIC\_ID (Primary Key)
* REGION
* INTERACTIONS
* AD\_ID (Foreign Key)

#### 15. ****REPORT****

* REPORT\_ID (Primary Key)
* POST\_ID (Foreign Key)
* REASON
* TIMESTAMP

#### 16. ****ARCHIVE****

* ARCHIVE\_ID (Primary Key)
* POST\_ID (Foreign Key)
* TIMESTAMP

#### 17. ****NOTIFICATIONS****

* NOTIFICATION\_ID (Primary Key)
* USER\_ID (Foreign Key)
* TIMESTAMP
* NOTIFICATION\_TYPE

#### 18. ****POLL****

* POLL\_ID (Primary Key)
* MESSAGE\_ID (Foreign Key)
* QUESTIONS

#### 19. POST HASH TAG

* POST\_ID (Foreign Key)
* HASHTAG\_ID (Foreign Key)

#### 20. LIVE EVENT INTERACTION

* EVENT\_ID (Foreign Key)
* INTERACTION\_ID(Primary Key)

## RELATIONSHIPS

1. User one (optional) to Followers many (mandatory).
2. User one (optional) to Story many (mandatory).
3. Story many (optional) to Reactions many (mandatory).
4. Story one (optional) to Live Event one (mandatory).
5. Live Event one (mandatory) to Live Event Interaction many (mandatory).
6. User one (optional) to Message many (mandatory).
7. Message one (optional) to Polls one (mandatory).
8. User one (optional) to Groups many (mandatory).
9. User one (optional) to Notifications many (mandatory).
10. User many (optional) to Likes many (mandatory).
11. User many (optional) to Comments many (mandatory).
12. User one (optional) to Posts many (mandatory).
13. Posts one (optional) to Comments many (mandatory).
14. Posts one (optional) to Ads one (mandatory).
15. Ads one (mandatory) to Ad Performance metrics many (mandatory).
16. Posts one (optional) to Report many (mandatory).
17. Posts one (optional) to Archive one (mandatory).
18. Posts many (optional) to Tag many (mandatory).
19. Posts one (optional) to Like many (mandatory).
20. Posts one (optional) to Post Hashtag many (mandatory).
21. Post Hashtag many (mandatory) to Hashtag one (mandatory).