SOCIAL NETWORK SYSTEM

SUBJECT

Database Management Systems

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1. Scope

Social Network System is about conversations, community, connecting with the audience, and building relationships.

Social network allows individuals to keep in touch with friends and extended family. Some people will use it to network and find career opportunities, connect with people across the globe with like-minded interests, and share their thoughts, feelings, and insights online.

The scope of social networking is widening, and today it offers strong support to the companies in providing the much-desired touch of concern.

2. Description

Social Network System is a platform that allows users, who sign-up for free profiles by supplying a real name and valid email address, to connect with friends, work colleagues, or people they don't know online. It will then take you through the process of filling out your profile.

It allows users to share pictures, music, videos, and articles, as well as their own thoughts and opinions. Users can post almost anything to their "timeline", a snapshot of what is happening in their social circle at any given time. Likes and comments are additional ways users can interact with each other's content.

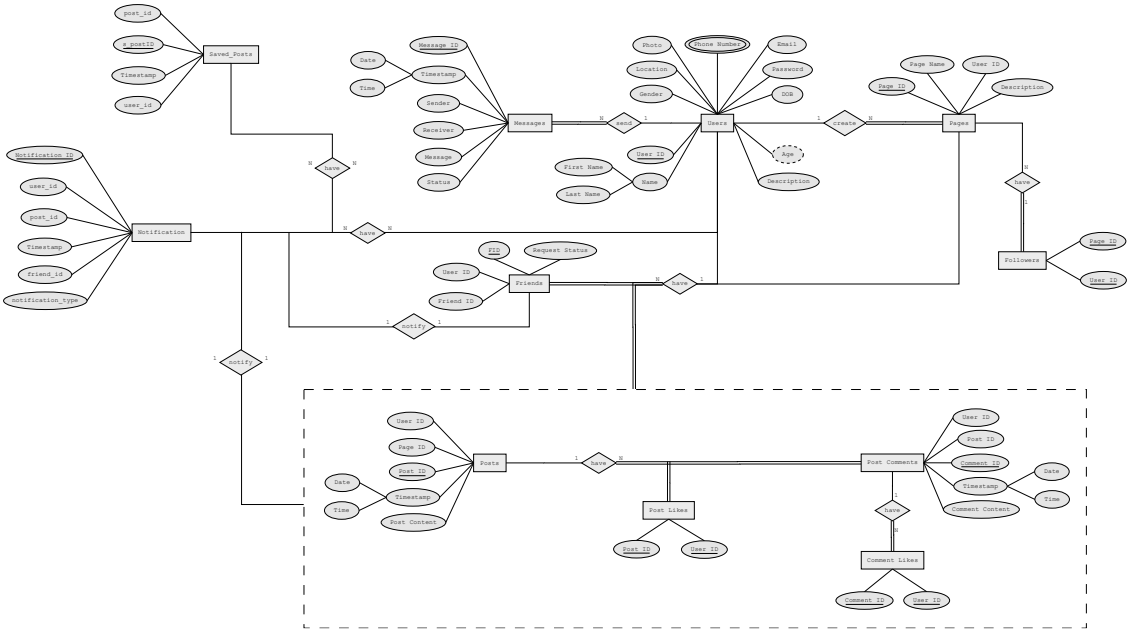
It provides a private messaging function, which lets you exchange messages with your friends. Users can also create and join groups that are based on shared interests and experiences.

Artists, public figures, businesses, brands, organizations, and non-profits can create pages to connect with their fans or customers. Users can like or follow other pages which interest them.

Following are sample queries the system is expected to answer:

1) Retrieve all user details where userid = 101
2) Retrieve all latest notifications of user where userid = 101
3) Retrieve all posts of the user and display the number of likes and comments to that post.
4) Display the post which doesn't have any likes and comments.
5) Retrieve all posts of a particular user where the created date is between '2021-03-03' and '2021-09-01' and likes > 1000.
6) Retrieve all common friends of userid = 106 and userid = 104.
7) Display group name, group description, total members, and total posts of any particular group.
8) Retrieve all users where city name = 'Ahmedabad' and born after 2001 and studied at Gujarat University, and status is unmarried.
9) Retrieve all friend requests of a particular user after 2011.
10) Retrieve page name, page details, and total followers of any particular page.

ER Diagram


post_id
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Message
Status
Messages
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Email
Location
Password
Gender
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Users
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First Name
Last Name
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Followers
have
have
FID
Request Status
User ID
Friend ID
Friends
notify
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Post ID
Date
Time
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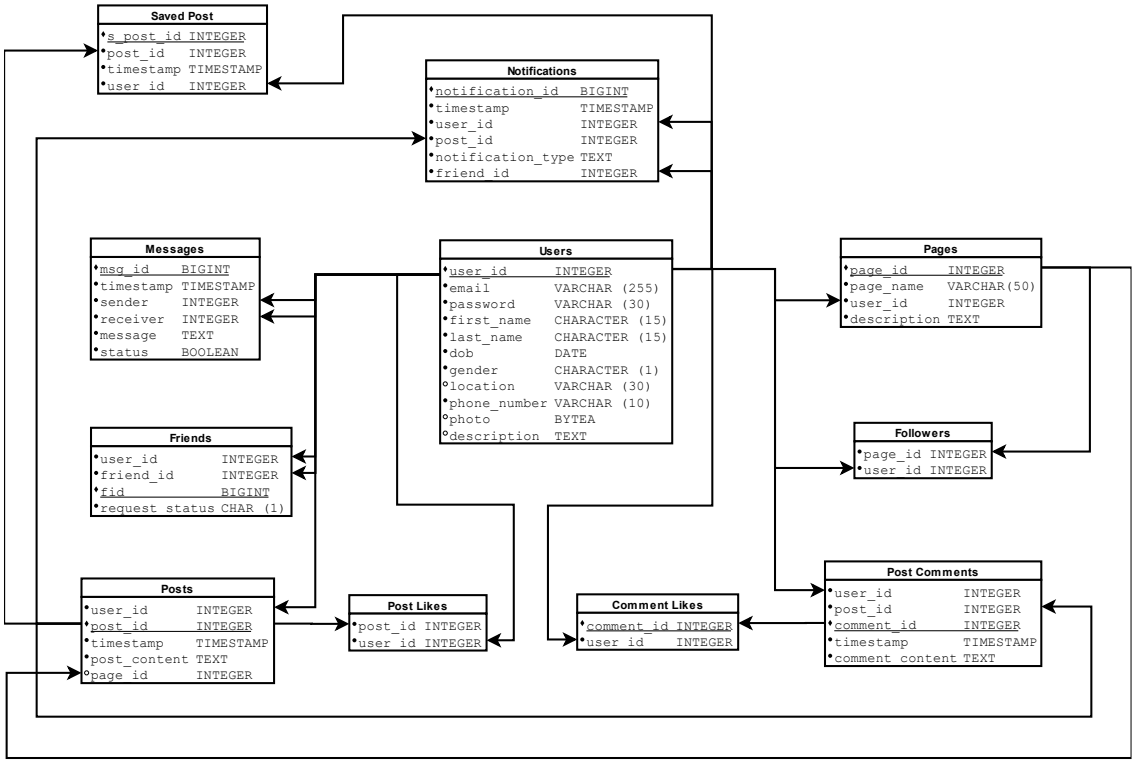
Relational Schema



Functional Dependencies & Constraints Classification

1. Users Table

Functional Dependencies

user_id -> user_id

user_id -> email

user_id -> password

user_id -> first_name

user_id -> last_name

user_id -> dob

user_id -> gender

user_id -> location

user_id -> phone_number

user_id -> photo

user_id -> description

Constraints

a) Primary Key: user_id

b) Foreign Key: None

c) Unique: email, phone_number

d) Referential: Post Table, Post Comments Table, Pages Table, Messages Table

e) Domain:

- Candidate Key: **user_id**
- Here, as we have **user_id** as candidate key which defines all the attributes, so our relation is in BCNF Form.

2. Messages Table

Functional Dependencies

msg_id -> msg_id

msg_id -> timestamp

msg_id -> message

msg_id -> status

Constraints

a) Primary Key: msg_id

b) Foreign Key: sender, receiver

c) Referential: None

d) Domain:

- Candidate Key: **msg_id**
- Here, as we have **msg_id** as candidate key which defines all the attributes, so our relation is in BCNF Form.

3. Posts Table

Functional Dependencies

post_id -> post_id

post_id -> timestamp

post_id -> post_content

Constraints

a) Primary Key: post_id

b) Foreign Key: user_id

c) Referential: Page Comments Table, Post Likes Table

d) Domain:

- Candidate Key: **page_id**
- Here, as we have **post_id** as candidate key which defines all the attributes, so our relation is in BCNF Form.

4. Pages Table

Functional Dependencies

page_id -> page_id

page_id -> page_name

page_id -> description

Constraints

e) Primary Key: page_id

f) Foreign Key: user_id

g) Referential: Followers

h) Domain:

- Candidate Key: **page_id**
- Here, as we have **page_id** as candidate key which defines all the attributes, so our relation is in BCNF Form.

5. Post Comments Table

Functional Dependencies

comment_id -> comment_id

comment_id -> timestamp

comment_id -> comment_content

Constraints

i) Primary Key: comment_id

j) Foreign Key: post_id, user_id

k) Referential: Comment Like Table

l) Domain:

- Candidate Key: **comment_id**
- Here, as we have **comment_id** as candidate key which defines all the attributes, so our relation is in BCNF Form.

6. Notifications Table

Functional Dependencies

notification_id -> notification_id

notification _id -> timestamp

notification _id -> notification_type

Constraints

m) Primary Key: notification_id

n) Foreign Key: post_id, user_id, friend_id

o) Referential: None

p) Domain:

- Candidate Key: **notification_id**
- Here, as we have **notification_id** as candidate key which defines all the attributes, so our relation is in BCNF Form.

7. Saved Posts Table

Functional Dependencies

s_post_id -> s_post_id

s_post_id -> timestamp

Constraints

q) Primary Key: s_post_id

r) Foreign Key: post_id, user_id

s) Referential: None

t) Domain:

- Candidate Key: **s_post_id**
- Here, as we have **s_post_id** as candidate key which defines all the attributes, so our relation is in BCNF Form.