

## Step 1: Identify All Entities

Entities in the system:

1. **User**: Represents a user in the system.
2. **Role**: Represents a role (e.g., admin, user) that can be assigned to users.
3. **User\_Role**: Associative entity to link users and roles.
4. **Post**: Represents a post created by a user.
5. **Comment**: Represents comments made by users on posts.
6. **Like**: Represents likes on posts by users.

## Step 2: Identify Relationships Between Entities

Relationships:

1. **User and Role**: Many-to-Many (a user can have multiple roles, and a role can be assigned to multiple users).
2. **User and Post**: One-to-Many (a user can create multiple posts).
3. **User and Comment**: One-to-Many (a user can make multiple comments).
4. **Post and Comment**: One-to-Many (a post can have multiple comments).
5. **User and Like**: One-to-Many (a user can like multiple posts).
6. **Post and Like**: One-to-Many (a post can have multiple likes).

## Step 3: Identify Cardinality and Ordinality of the Relationships

Cardinality and Ordinality:

1. **User and Role**: Many-to-Many (user\_id in User\_Role references User, and role\_id references Role).
2. **User and Post**: One-to-Many (a user can have multiple posts).
3. **User and Comment**: One-to-Many (a user can have multiple comments).
4. **Post and Comment**: One-to-Many (a post can have multiple comments).
5. **User and Like**: One-to-Many (a user can like multiple posts).
6. **Post and Like**: One-to-Many (a post can have multiple likes).

## Step 4: Add Attributes for the Entities

Attributes:

1. **User**:
  - id (Primary Key)
  - username (varchar(35))
  - email (varchar(35))
  - password (hash\_salt)
2. **Role**:
  - id (Primary Key)
  - name (varchar(25))

### 3. User\_Role:

- **user\_id** (Foreign Key referencing User)
- **role\_id** (Foreign Key referencing Role)

### 4. Post:

- **id** (Primary Key)
- **author\_id** (Foreign Key referencing User)
- **text** (varchar(300))
- **createdAt** (TIMESTAMP)

### 5. Comment:

- **id** (Primary Key)
- **post\_id** (Foreign Key referencing Post)
- **author\_id** (Foreign Key referencing User)
- **text** (varchar(300))
- **createdAt** (TIMESTAMP)

### 6. Like:

- **id** (Primary Key)
- **liker\_id** (Foreign Key referencing User)
- **post\_id** (Foreign Key referencing Post)

