CS307-Database Project 1

Group session: Thursday 3-4

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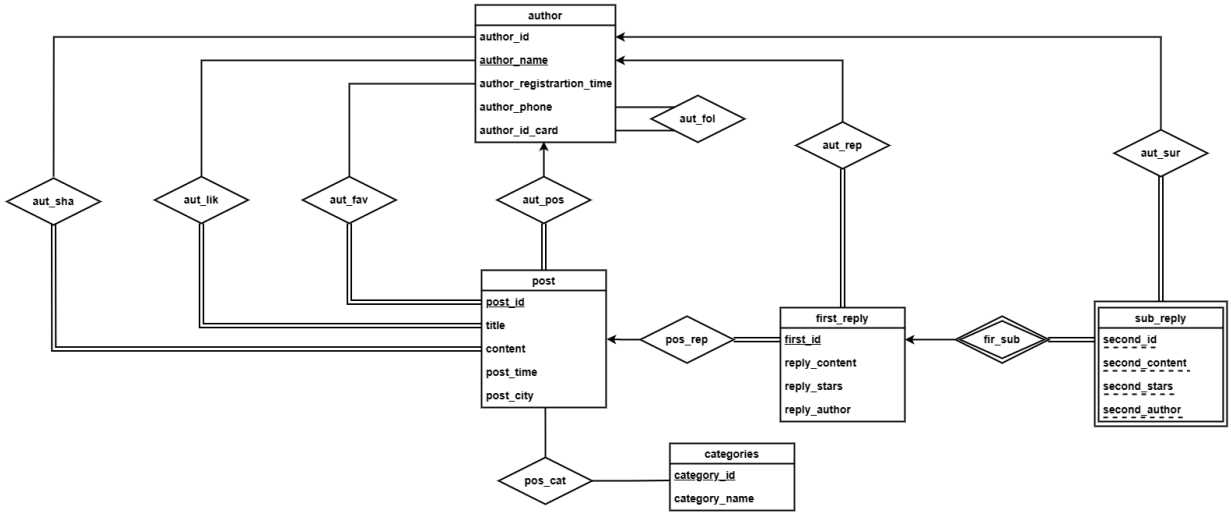
Contribution: 钟志源（Database Design、Data Import）刘浩贤（E-R Diagram、 Database Design）

percentages of contributions： 50% : 50%

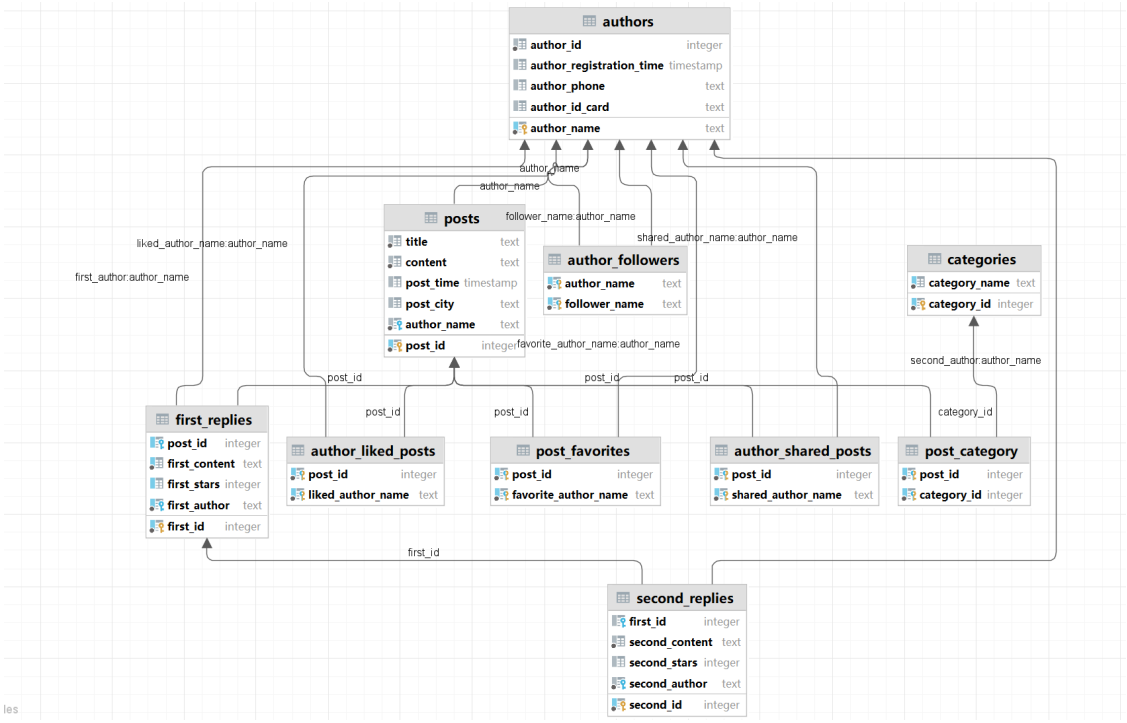
Task 1: E-R Diagram

- The E-R Diagram is draw with diagrams.net



Task 2: Relational Database Design

- The E-R diagram generated by DataGrip



- **Briefly describe the table designs and the meanings of each table and column.**

1. Table Name: authors (Entity set)
    - Description: This table stores information about authors, including their ID, name, registration time, phone number, and ID card.
    - Columns:
        - author_id: a unique identifier for each author, automatically incremented by the system (SERIAL type)
        - author_name: the author's name (text type, not null and unique)
        - author_registration_time: the date and time when the author registered (TIMESTAMP type)
        - author_phone: the author's phone number (text type)
        - author_id_card: the author's identification card number (text type)
    - Primary Key: author_name
    - Foreign Keys: None
    - Mandatory Columns: author_name
2. Table Name: posts (Entity set)
    - Description: This table stores information about posts made by authors, including the post's title, content, posting time, location, and the author who made the post.
    - Columns:
        - post_id: a unique identifier for each post, automatically incremented by the system (SERIAL type, primary key)
        - title: the title of the post (text type, not null)
        - content: the content of the post (text type, not null)
        - post_time: the date and time when the post was published (TIMESTAMP type)
        - post_city: the city where the post was published (text type)
        - author_name: the name of the author who published the post (text type, foreign key to authors.author_name, not null)
    - Primary Key: post_id
    - Foreign Keys: author_name referencing authors(author_name)
    - Mandatory Columns: title, content, author_name
3. Table Name: categories (Entity set)
    - Description: This table stores information about post categories, including the category's ID and name.
    - Columns:
        - category_id: a unique identifier for each category, automatically incremented by the system (SERIAL type, primary key)
        - category_name: the name of the category (text type, not null and unique)

- Primary Key: category_id
- Foreign Keys: None
- Mandatory Columns: category_name

4. Table Name: post_category (Relationship set)
   - Description: This table represents the many-to-many relationship between posts and categories. Each row represents a post and its associated category.
   - Columns:
     - post_id: the id of the post (integer type, foreign key to posts.post_id)
     - category_id: the id of the category (integer type, foreign key to categories.category_id)
   - Primary Key: (post_id, category_id)
   - Foreign Keys: post_id referencing posts(post_id), category_id referencing categories(category_id)
   - Mandatory Columns: post_id, category_id
5. Table Name: author_followers (Relationship set)
   - Description: This table represents the many-to-many relationship between authors and their followers. Each row represents an author and their follower.
   - Columns:
     - author_name: the name of the author being followed (text type, foreign key to authors.author_name)
     - follower_name: the name of the follower (text type, foreign key to authors.author_name, not null)
   - Primary Key: (author_name, follower_name)
   - Foreign Keys: author_name referencing authors(author_name), follower_name referencing authors(author_name)
   - Mandatory Columns: author_name, follower_name
6. Table Name: post_favorites (Relationship set)
   - Description: This table represents the many-to-many relationship between authors and their followers. Each row represents an author and their follower.
   - Columns:
     - post_id: the id of the post being favorited (integer type, foreign key to posts.post_id)
     - favorite_author_name: the name of the author who favorited the post (text type, foreign key to authors.author_name, not null)
   - Primary Key: (post_id, favorite_author_name)
   - Foreign Keys: post_id referencing posts(post_id), favorite_author_name referencing authors(author_name)
   - Mandatory Columns: post_id, favorite_author_name
7. Table Name: author_shared_posts (Relationship set)

- Description: This table represents the many-to-many relationship between authors and posts that they have shared. Each row represents a post and the author who shared it.
- Columns:
  - post_id: the id of the post being shared (integer type, foreign key to posts.post_id)
  - shared_author_name: the name of the author who shared the post (text type, foreign key to authors.author_name, not null)
- Primary Key: (post_id, shared_author_name)
- Foreign Keys: post_id referencing posts(post_id), shared_author_name referencing authors(author_name)
- Mandatory Columns: post_id, shared_author_name

8. Table Name: author_liked_posts (Relationship set)
   - Description: This table represents the many-to-many relationship between authors and posts that they have liked. Each row represents a post and the author who liked it.
   - Columns:
     - post_id: the id of the post being liked (integer type, foreign key to posts.post_id)
     - liked_author_name: the name of the author who liked the post (text type, foreign key to authors.author_name, not null)
   - Primary Key: (post_id, liked_author_name)
   - Foreign Keys: post_id referencing posts(post_id), liked_author_name referencing authors(author_name)
   - Mandatory Columns: post_id, liked_author_name
9. Table Name: first_replies (Entity set)
   - Description: This table stores information about the first reply to a post, including the reply's ID, content, rating, and author.
   - Columns:
     - post_id: the id of the post being replied to (integer type, foreign key to posts.post_id)
     - first_id: a unique identifier for each first reply, automatically incremented by the system (SERIAL type, primary key)
     - first_content: the content of the first reply (text type, not null)
     - first_stars: the number of stars received by the first reply (integer type)
     - first_author: the name of the author who wrote the first reply (text type, foreign key to authors.author_name, not null)
   - Primary Key: first_id
   - Foreign Keys: post_id referencing posts(post_id), first_author referencing authors(author_name)
   - Mandatory Columns: post_id, first_content, first_author
10. Table Name: second_replies (Entity set)

- Description: This table stores information about the second reply to a post, including the reply's ID, content, rating, and author, as well as the ID of the first reply that it is associated with.
- Columns:
  - second_id: a unique identifier for each second reply, automatically incremented by the system (SERIAL type, primary key)
  - first_id: the id of the first reply being replied to (integer type, foreign key to first_replies.first_id)
  - second_content: the content of the second reply (text type, not null)
  - second_stars: the number of stars received by the second reply (integer type)
  - second_author: the name of the author who wrote the second reply (text type, foreign key to authors.author_name, not null)
- Primary Key: second_id
- Foreign Keys: first_id referencing first_replies(first_id), second_author referencing authors(author_name)
- Mandatory Columns: first_id, second_content, second_author