Modeling: ER Diagrams for MySQL

Professor Arends
CSCI 240-01
By Trevor Nei
09/07/25

Lab Description:

To start the project, you will need to decide what content will be included in your database. The aim is for there to be enough complexity to demonstrate knowledge, but not so much that you get overwhelmed. It is easy to over-commit when creating a database. This project will be semester-long, so try to choose something that interests you.

Lab Completion Steps:

Describe the database and the application that it is built for…

1) Scritchpigeon.com is going to be a ~~sh**~~ meme-posting app for the cybersecurity school. This will be a very basic social media application that allows users to create text posts only.

Two – Entities and Description:

Four Entities: Figma Screenshots for each Entity.

1. Users: Anyone who uses the application has to be a user.
    a. Bjron Lote
    b. Karl Vonmeuch
    c. Nortich Eueltup
    d. Vivek Ramaswamy
2. Posts: Each post will contain text content that is associated with the posts author (user in the database).
    a. “Why Windows is the 24/7 365 dumpster fire
    b. “What is systemD”
    c. “Where is Phil Collins”
    d. “Why Phil Collins decided to fly to Mars”
3. Comments: Each post has the ability for a user to add a comment, but posts don’t have to have comments. Each comment is associated with a user and a post id.
4. Liked Posts: Each post has the functionality to be liked but doesn’t necessarily mean that it has likes. Each like is associated with a user and a post.

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5. Feed: Feeds are the wild west. The most recent post is the post that is displayed first and then each post is rendered to the client based on the time that it was uploaded.

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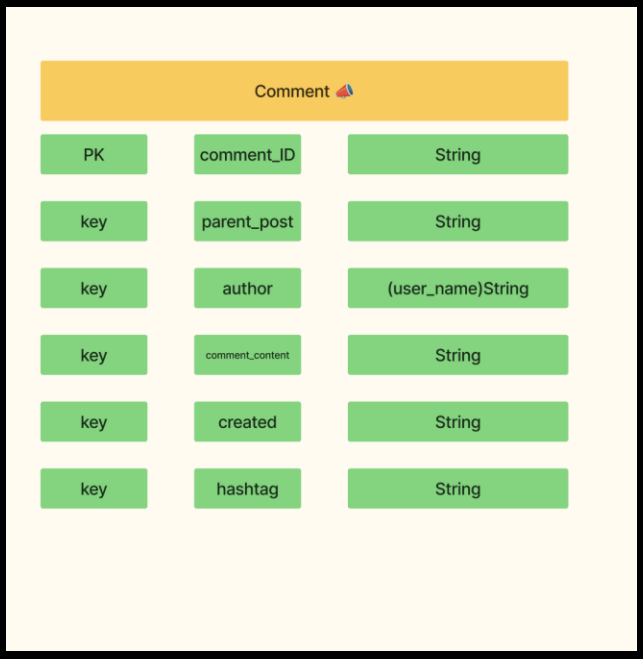

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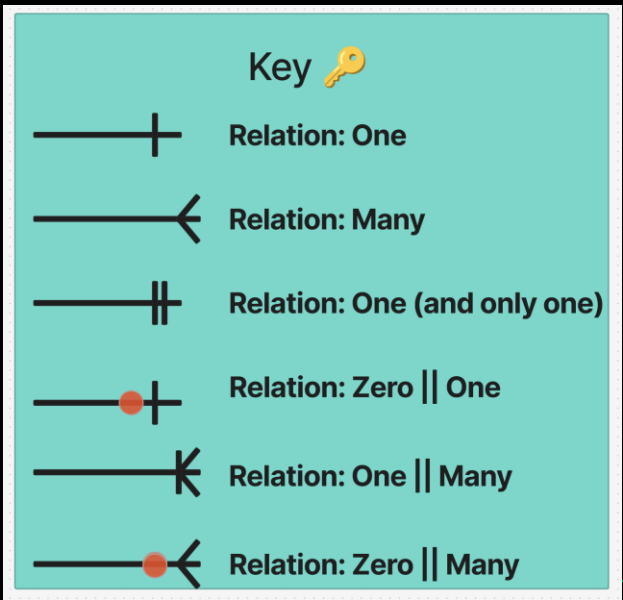

To show the relationship between different entities in the database I created my own key map in Figma. I borrowed the logic from https://www.youtube.com/watch?v=xsg9BDiwiJE

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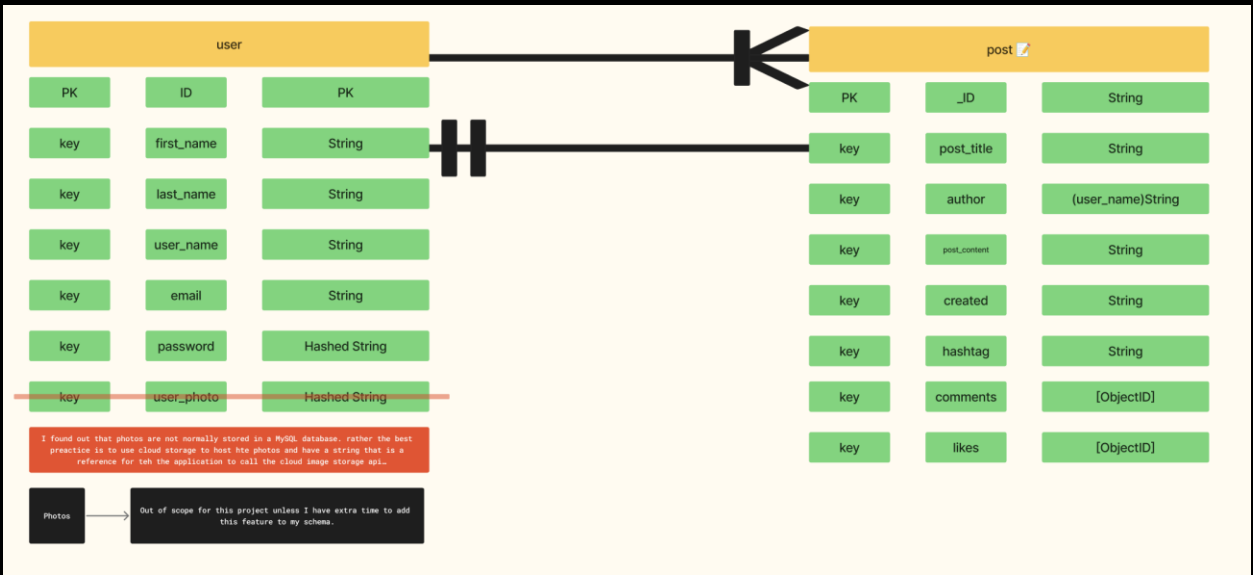
The relationship between the user entity and the post entity.

User to post: this is a zero to many relationship because you can have users that have no posts but you can't have a post without a user (hence the "one and only one relationship" between a *post and a user*).



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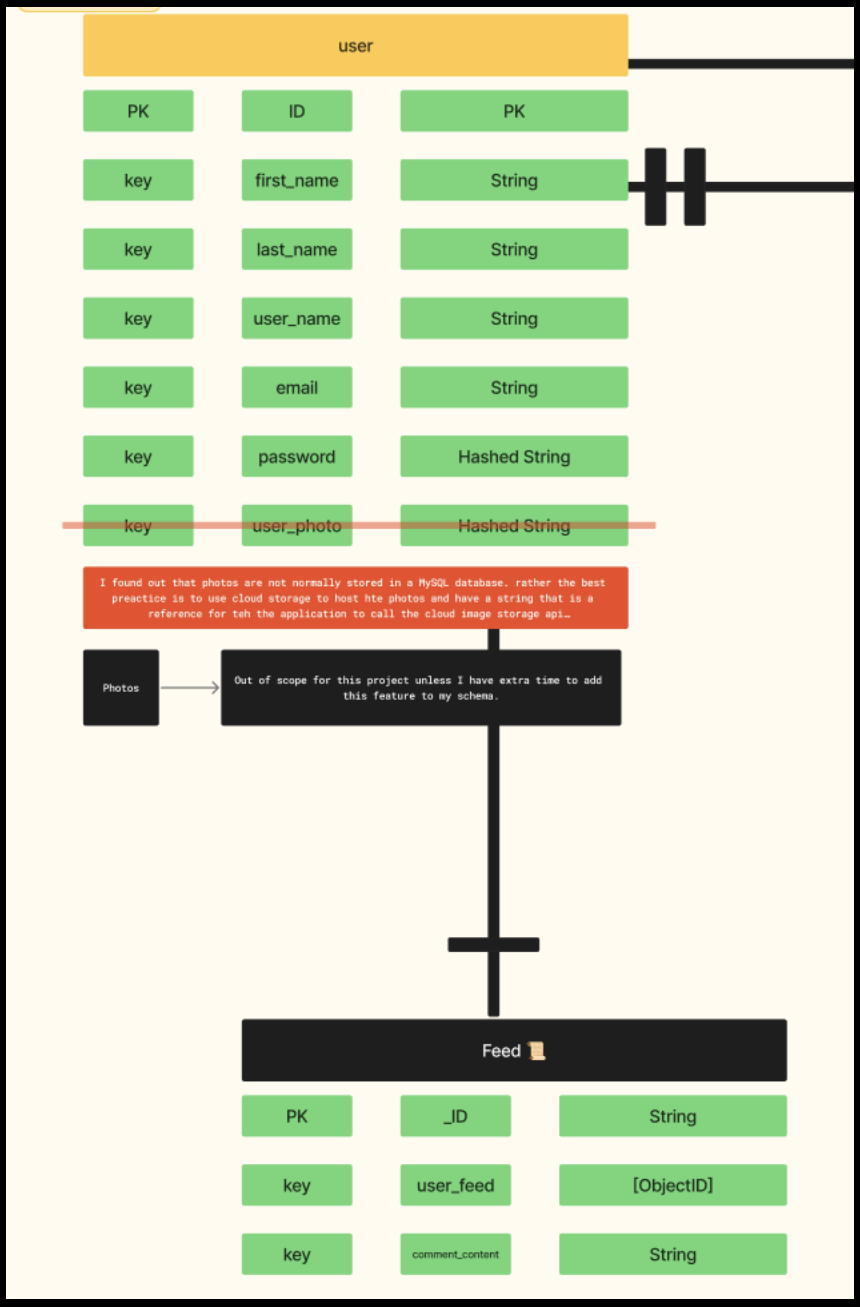

User to Feed Relationship: a user only has one feed for this web application. I made sure to use the “one” relationship instead of having the “one and only one”. I made this distinction because there might be a time in the future where there are different kinds of feeds. A real-world example of this Meta’s Facebook has the “Home” tab and the “Feed Tab” they have similar functionality but pull data from different parts or “views” of the database. I am borrowing from

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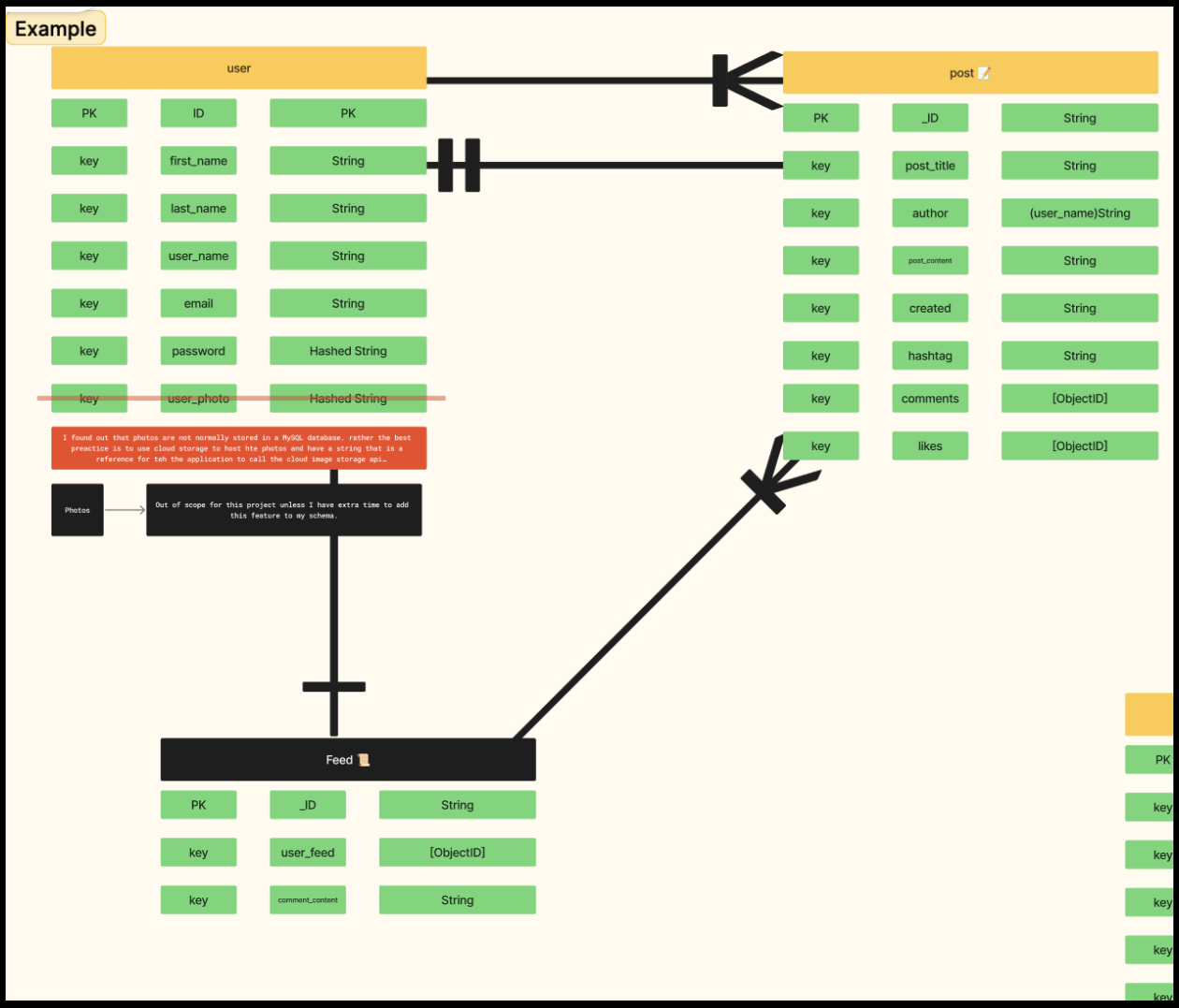
a principle from our book, “…is flexible enough to allow for changes as new information needs arise” (p. 60, Ricardo, C.M.)



Feed to posts: There is a one-to-many relationship (because there will always be at least one post in a feed). Each user will have a feed that auto populates posts from everyone in the database.

Post to Feed: none ; data doesn’t flow this direction.

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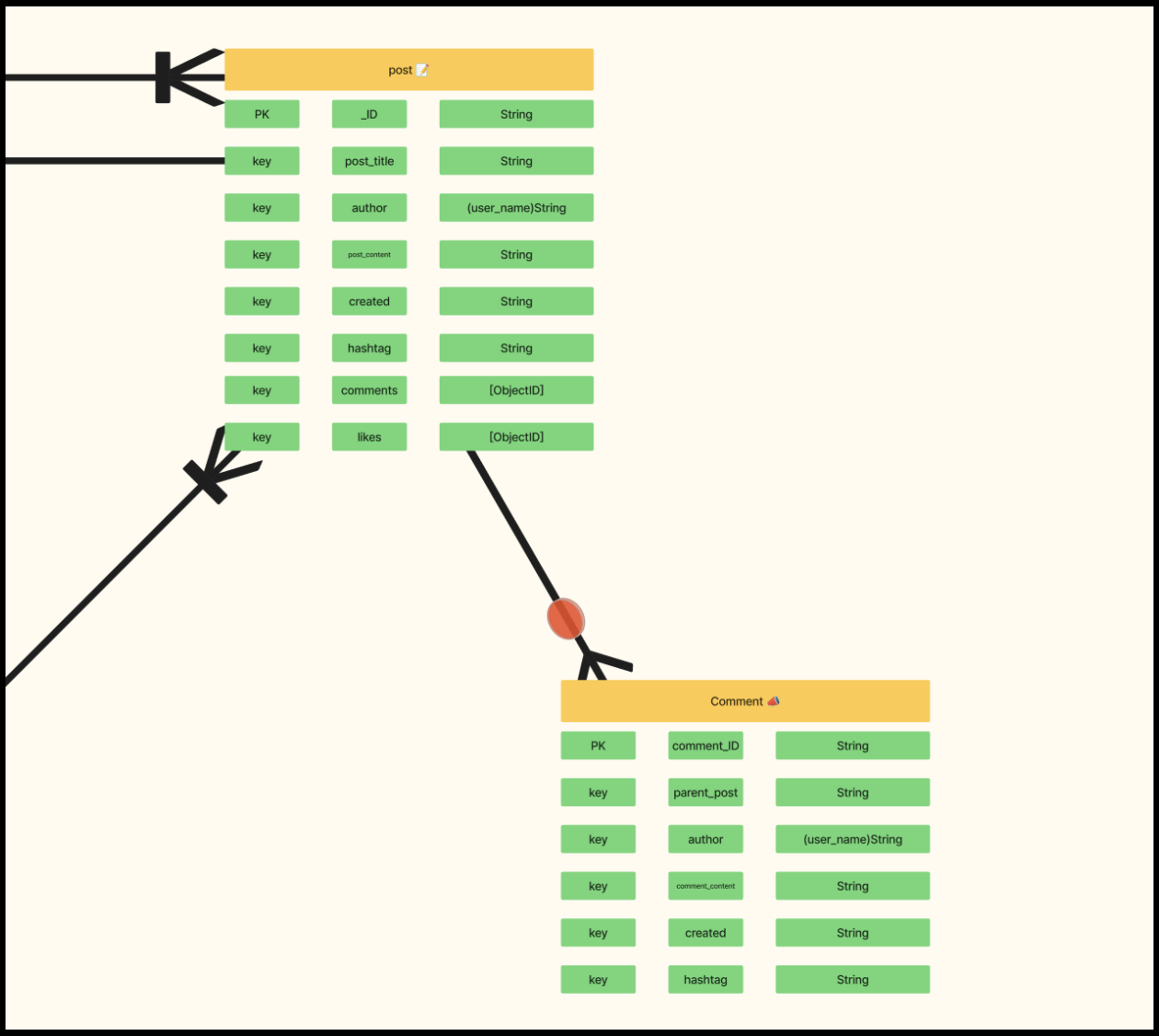

This screenshot shows the relationship between posts and comments. There is a *none to many relationship* because posts can have no comments to many.

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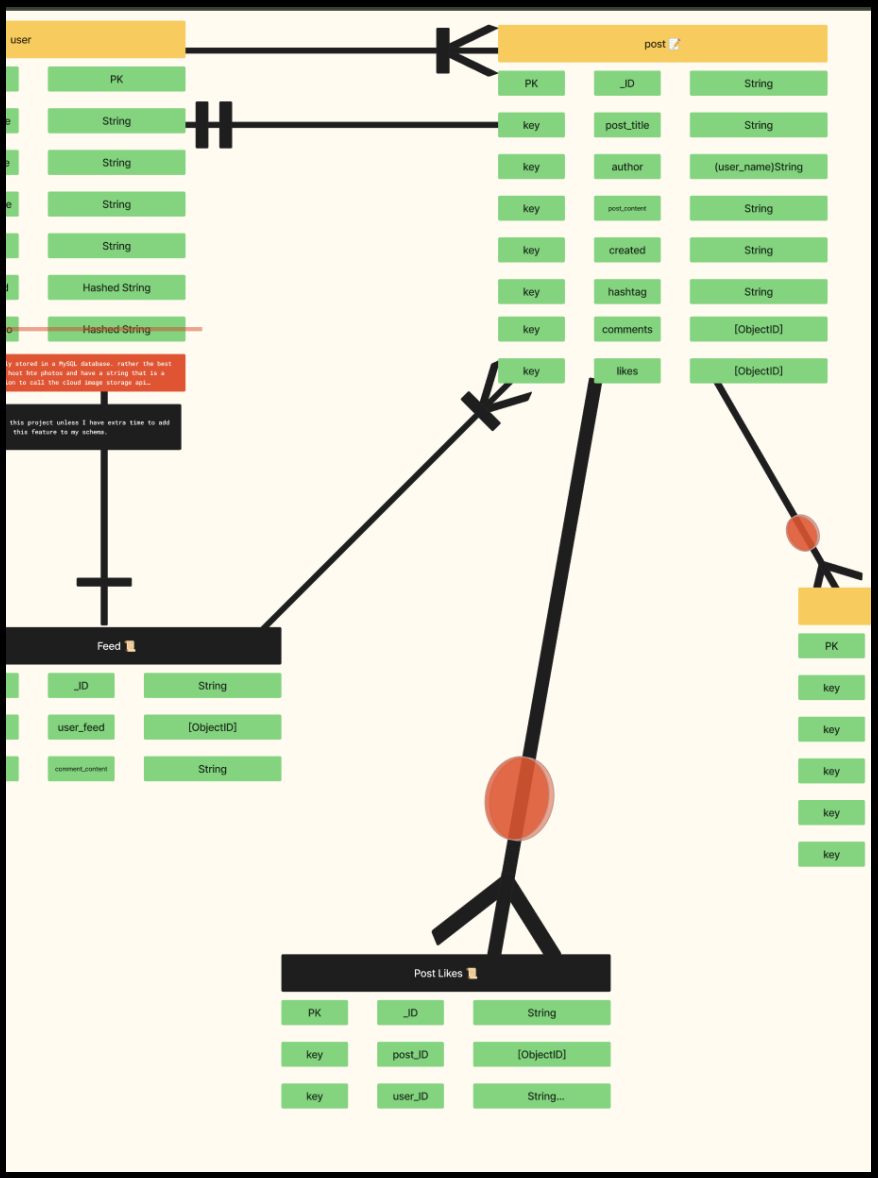

The same can be said about the Post to Post Likes relationship. Any give post doesn't have to have any likes but *maximally it could have many.*

This is a Global view of the ER Diagram.

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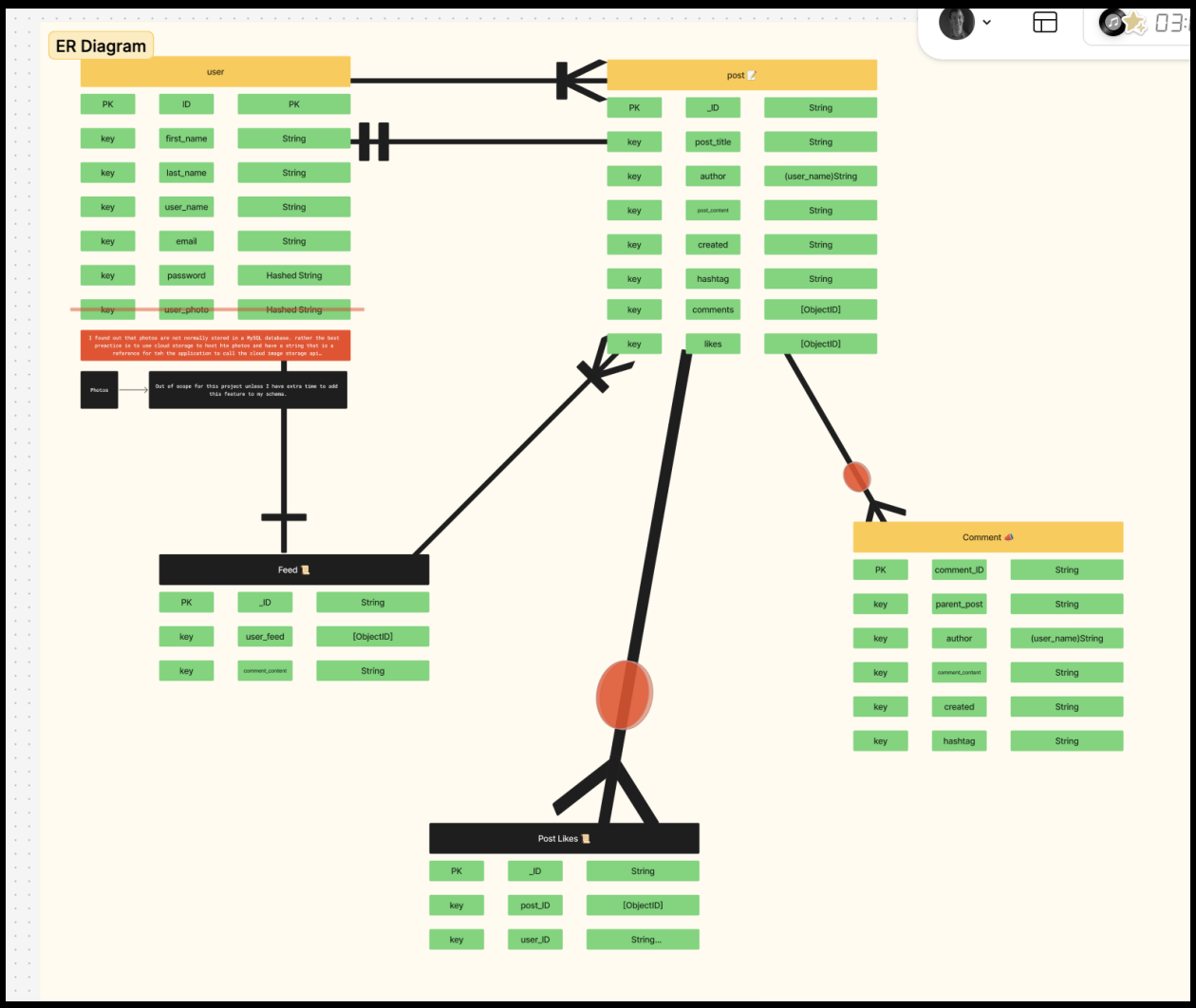

From my Home Cyber Lab Ubuntu Instance: I cd'd into /opt/mysql and made sure that the mysql Daemon was running.

Three – Questions:

1 – I want the database to tell the super users how many posts have been made within a given time frame.

2 – I want the database to tell normal users (through the application layer) who posted any post through their feed.

3 – I want super users to be able to query who has posted the most.

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