# ECE 356

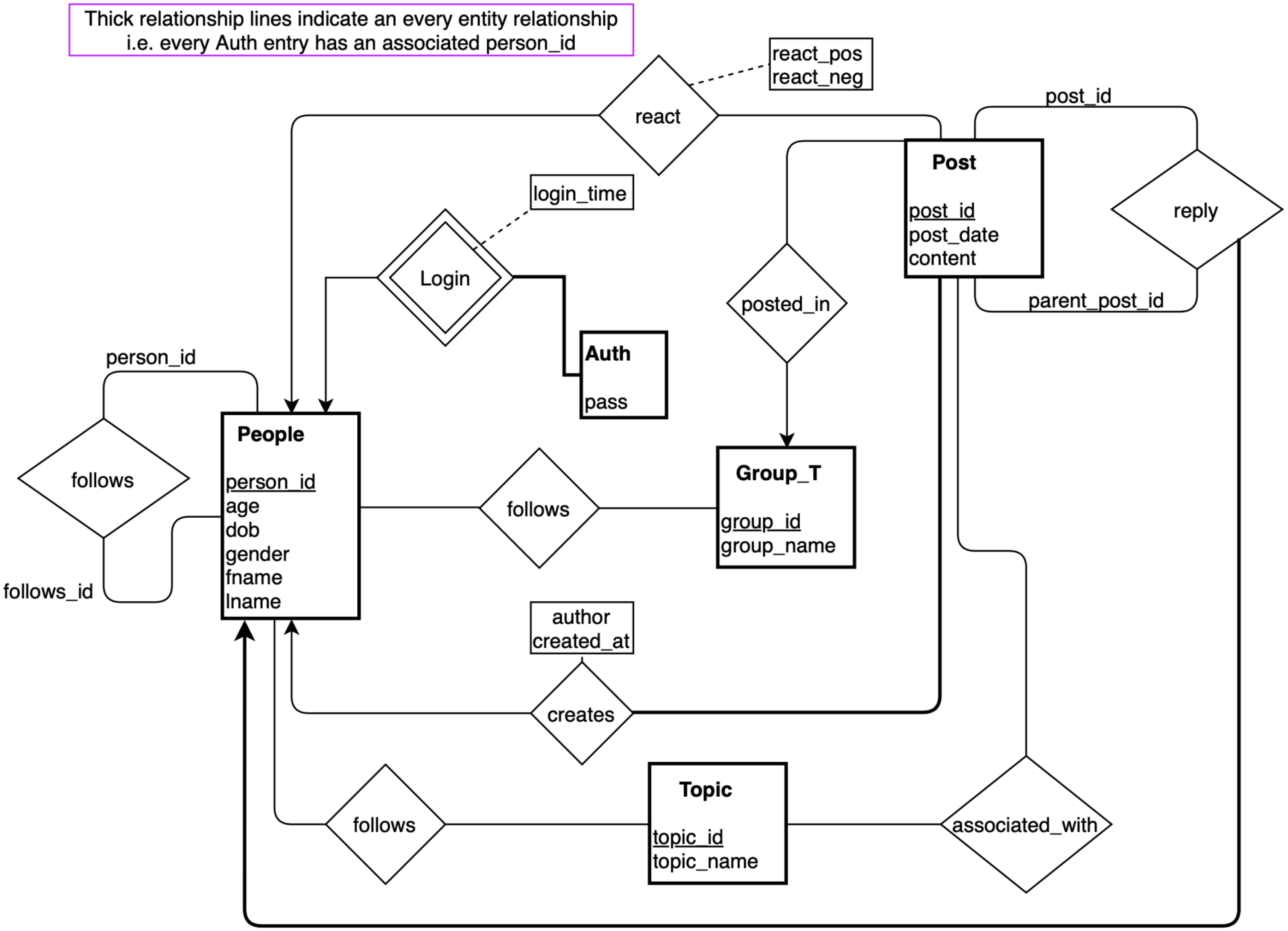
## Project

## Social Media Database

## Winter 2020

By:

Mohammad Ameen Khan (20659395)



Thick relationship lines indicate an every entity relationship
i.e. every Auth entry has an associated person_id

# ER Diagram

There are 4 main entities in this social media database: People, Posts. Groups, Topics

The People entity contains all the information for a user of the platform such as their first name and age. To login into the client the user will need to authenticate their id and password. Therefore a weak entity called Auth is created – it only stores every user's password and login time. Auth is a weak entity because a user's password and last login timestamp cannot exist without the user itself existing. For the scope of this project, the login timestamp for a user is used to determine which posts are unread by comparing the user's latest login time to the creation time of posts they follow.

The Posts entity stores all the information related to a post such as: its author, content, created_time, post_id and reaction counters. The Topic and Group entities simply store each topic's and group's id and name.

A person can follow multiple topics and groups, therefore there is a many-to-many relationships between people and topics as well as people and groups. A person can also follow another person therefore there is a many-to-many relationship between people and itself with the relation of follows.

When a post is created, it needs to be authored by exactly one user. This is why there exists a many to one creates relationship between post and people with an author and created_at timestamp attribute for the relationship. Many posts can be authored by exactly one person thus there exists a many-to-one relationship between both the entities. Furthermore, each post can be replied to and that reply can further be replied to infinitely. This relationship is defined as a reply and attributed by the parent_post_id in a post object identifying which post this reply is in response to. As expected, every reply can only be authored by one person.

Additionally, many people can react to many posts and therefore there exists a many-to-many relationship between People and Posts. Lastly, whenever a post is created it can only be associated to one group – a many-to-one relationship between Posts and Groups – but a post can be associated with multiple topics, and hence there exists a many-to-many relationship between posts and Topics.

The next page defines the requirements I set and met for myself whilst creating this project. Each requirement was met from a database query instead of complex application logic.

# Requirements

1. A PERSON should have their login AUTHENTICATED
2. Update their login time to do the unread/ read check

3. A PERSON can list all POSTS ordered by creation date
4. All POSTS from people they follow, their posts, groups they follow and topics they follow
5. with a limit
6. Only posts they have posted
7. Unread Posts

8. A PERSON can search for POSTS using a keyword

9. A PERSON can create a POST with multiple TOPICS if the PERSON follows the GROUP assigned to a GROUP if the PERSON follows the GROUP

10. A PERSON can view post details only if it exists
11. determine who created a certain POST
12. determine +/- reactions count
13. can respond to a POST with a +/-1
14. can respond to a POST with another POST

15. A PERSON can list all the
    a. TOPICS
    b. PERSONS → Friend's list
    c. and GROUPS they follow

16. A PERSON can
    a. add a friend if they know their ID
    b. can follow a GROUP with another PERSON
    c. can follow a TOPIC

17. Details of Entities
    a. TOPICS should know how many followers and groups there are
    b. GROUPS should know how many followers and groups there are

# CODE

## MySQL

The MySQL code used in this project is split into two files:

1. src/queries.sql
    a. This file contains all the queries used in the application
2. src/load_db.sql
    a. This file contains all the table creation and data loading commands

## Application

The instructions to run the application are provided in the README file.