# INFO 210 — Database Management Systems Assignment – Milestone 1

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# Catalogue

# 1. Introduction

We are going to design a database of forum websites. It is well known that the data flow of the forum website is unusually large, in order to efficiently query user Posting information, user subscription information, group discussion information and so on to promote interaction between users, our team is ready to design a database of the forum website. The database revolves around users, posts, comments as the core, and increases the user's group interaction, adding friends between users.

# 2. Motivation regarding our database

**Motivation:**

(1) Data storage and management: Database ensures structured storage of data and efficient management of large amounts of data in forums.

(2) Data Query and Retrieval: Databases enable users to quickly search and retrieve information on the forum.

(3) Permission Management: The database stores permission information. It ensures only authorized users can perform certain actions.

(4) Data Consistency and Integrity: Database design helps ensure data consistency and integrity in a forum.

(5) Data Backup and Recovery: Database design enhances data backup and recovery strategies to address data loss, corruption, or unavailability.

**Data considered and its importance:**

For users, usernames, email, passwords are important because user profiles allow users to have a unique identity on the platform and enable authentication and authorization processes. For posts and comments, id and content are important because storing this data allows users to create and participate in discussions. In addition to these two important types of data, there is more data that needs to be stored, which will be mentioned later in the report.

# 3. Sample queries

(1) Query all the comments that belongs to a user.

(2) Find out the number of posts for a certain user.

(3) Query which categories a user A subscribes to the same as user B.

(4) Queries the number of the same users in two different groups

(5) Query the IDs of all advertisements posted by the administrator.

(6) Get a limited number of posts from the database except the posts published by the users in the black list of a certain user.

(7) Administrator create a group given a group id and description.

(8) Find out the commenter according to a comment in a certain post.

(9) Find out all the posts that belong to a selected category.

(10) Show up all the posts that the poster is in the friend list of the current user.

# 4. Data requirement

(1) The Blog Website has user. Every user has a unique uid. In addition, they have a email, password and personal profile. Besides, user might be a administer that has property of permission level and able to manage the Website.

(2) To form a forum, a user can add, modify and delete a post. A post has a unique uid, and it has property like title, content and datetime to store the post content. Each post can be add/modify/del by one and only one user.

(3) To well manage the content of the website, posts should be divided into different categories, which are managed by administrators. A category has a unique cat_id and other propertied such as cat_name and cat_desc. In addition, each category can have none or many posts and a post should be classified into one or many categories. Besides, a category can be subscribed by 0 or more users and a user can subscribe none or many categories.

(4) To increase the interaction of users, one post can have none or many comments. A single comment has a unique cid, and property such as content and datetime. For each comment, it should belong to one and
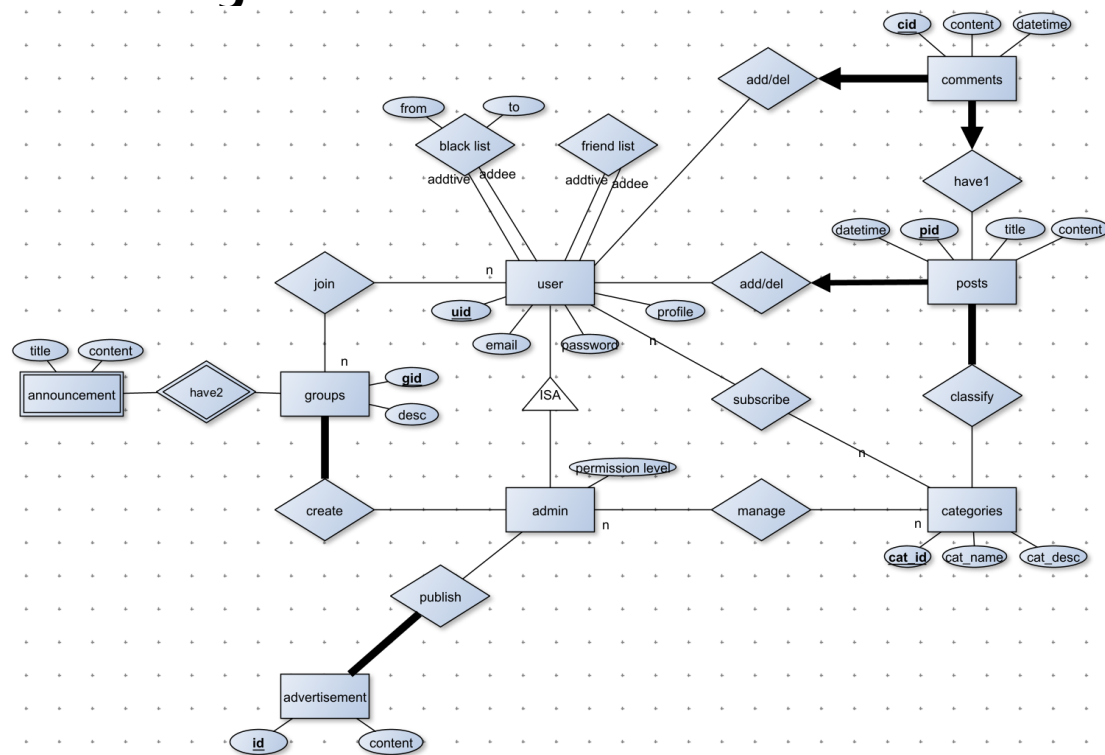
only one post and be add/del/modify by one and only one user.  One user can manage many comments and one post can have many comments.

(5) In order to enable user to discuss their interested topic in their social group, a group that created by administer allow many users to join in and users can choose different groups to join in. A single group has a unique gid and a property desc to describe the group. Besides, a group have announcements which are weak entity that rely on the exist of group, and announcement have property of title and content to store its content.

(6) So as to enable users to control the social relationship themselves, user can add other users in the black list or friend list.

(7) Finally, to help the website to profit, administer can publish advertisements which have a unique id and a property of content to earn some fund for the website.

# 5. ER diagram

# 6. Requirements not captured

In fact, depending on the need, the administrator, as a user with high permission level, can manage (delete) certain posts and comments, but this is not represented in the ER diagram.

Reason: Because we stipulate in our requirements that a post or a comment can only be added/deleted/edited by one user. Note that this is reasonable in most cases, but in exceptional cases, offending posts and comments should be removed by administrators. But because the administrator in the ER diagram inherits from the user parent class, and the relationship between posts/comments and users is represented by a thick arrow. Once the administrator is added to manage posts and comments, then the relationship between comments/posts and users is not many-to-one (but actually, we need them to be many-to-one in most cases).