

# COMPSCI 2DB3 Assignment 1

Luca Mawyin

Dr. Jelle Hellings

February 4, 2026

McMaster University

**Student Number:** 400531739

**MacID:** mawyinl

## P.1

### Requirements

- User has attributes: username, email, password, and optional location
- Users can follow other users, with stored date of following
- Types of users: admin, disabled, basic, normal
- Basic users can become normal users if approved by an admin
- Only normal users/admins can create posts
- Admins can remove posts

### Ignored Details

- Length of passwords as hash salt combinations
- Validation of email address via validation link
- Conversion of basic user to normal user upon admin approval

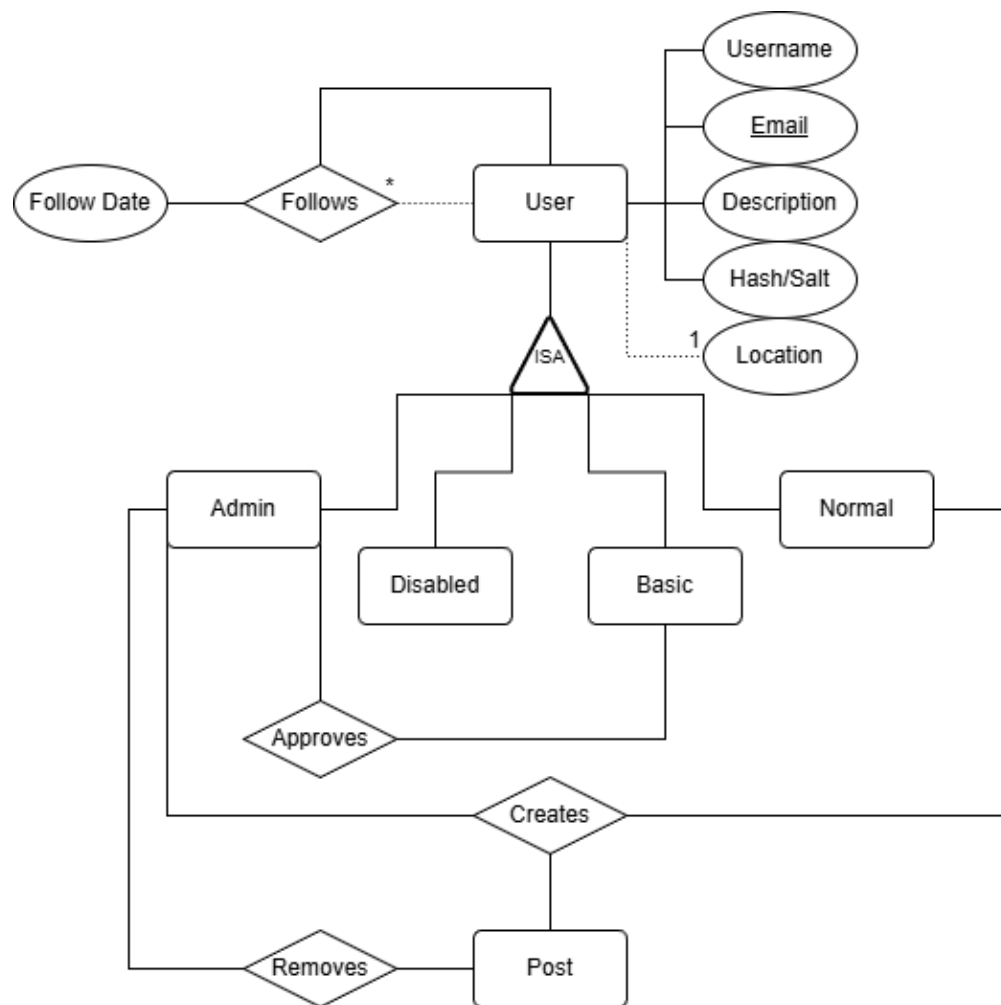


Figure 1: User ER Diagram

A constraint for the given ER diagram is the attributes of the user. As the problem did not state a user ID attribute, nor that the username is to be unique, the only possible identifier for a user is the email.

Another constraint which affected the representation in the diagram is the different types of users. Representing the basic user is difficult, as it can transform into a normal user. However, it is not possible to represent this accurately, as the transformation depends on whether or not the admin approves the basic user.

## **P.2**

### **Requirements**

- Recipe has attributes: title, prepare duration, number of servings, ingredients, and instructions.
- Ingredient has attributes: unit, measurement
- Ingredient can be replaced by one or more ingredients, with optional impact on recipe.
- Recipe belongs to zero or more categories of hierarchical order.
- Cookie belongs to pastry belongs to baking.

### **Ignored Details**

- Searching for recipes based on ingredients available.
- Validation for whether or not an ingredient can be replaced.

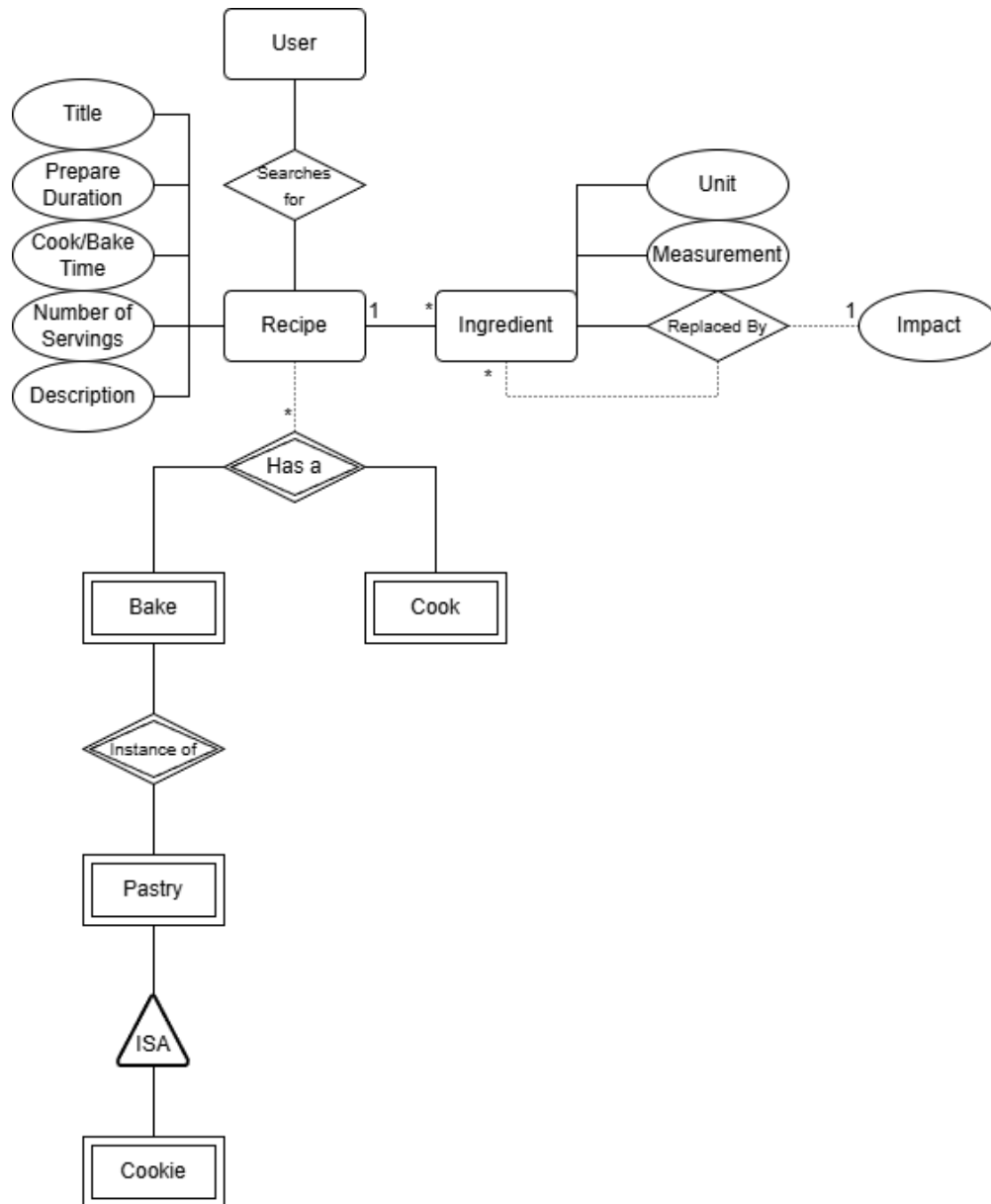


Figure 2: Recipe ER Diagram

A constraint in the given ER diagram that was difficult to represent is the ingredients. An ingredient in a recipe can be replaced, which is easily represented by a *Replaced By* relation, with an optional impact on the recipe. However, some replacements may only be used with the presence of another ingredient. Due to this constraint, it is difficult to represent a replacement ingredient in this conditional context.

Another constraint is identifying attributes for entities. The problem does not state any unique attributes for any entities in the problem, and therefore it may be difficult to refer to specific instances of such.

## P.3

### Requirements

- Thread has attributes: title, description, publication date.
- Recipe is entity with no explicit attributes.
- User can rate recipe with attributes difficulty and quality.
- Article has attributes: title (unique), body, publication date.
- Article can reference zero or more recipes.
- Reaction has attributes: text, publication date, link.
- Reaction link links to article, recipe, thread, or other reaction.
- User can write reaction or article.
- User can flag a thread with a keyword.
- User can upvote or downvote a thread.
- Admin is a type of user.
- Admin can close or hide a thread.

### Ignored Details

- Scale or ratings for difficulty and quality of recipes.
- Checking whether or not a thread is closed before allowing reactions.
- Sorting threads in search results based on number of flags.
- Specification of voting allowed on threads (i.e. upvote or downvote only).

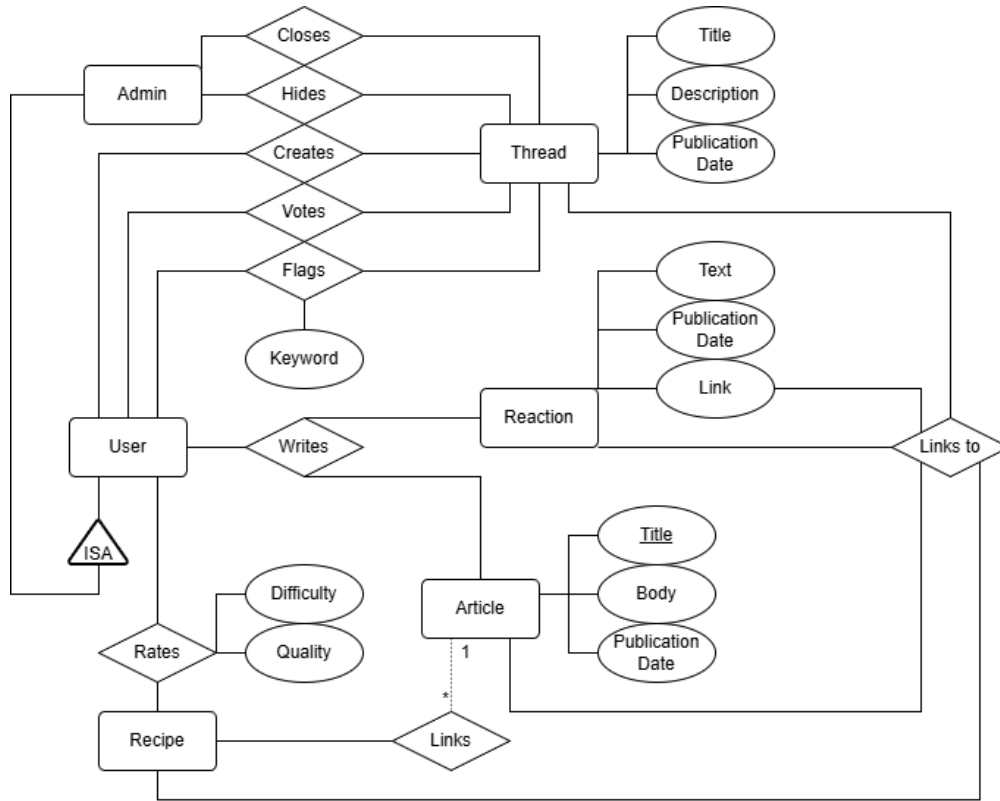


Figure 3: Forum ER Diagram

One constraint on the diagram is reactions to threads. The problem states that users can only react to a thread if it is not closed, however there is no way to represent this condition in the ER diagram.

Another constraint is users reacting to other types of posts (articles, recipes, threads, reactions). The problem states that the user can react to everything, with the reaction containing a link to the post being reacted to. However, it is confusing to represent both the relation of the link to the post being reacted to, and the relation of the reaction to the post being reacted to. The diagram represents the link relation only in order to avoid confusion and redundancy.

The problem also states that the more a thread is flagged with a certain keyword, the higher the thread will show up in search results. Given this condition, it is difficult to represent in the ER diagram, as it is not logistically feasible to represent a thread appearing higher in a search result given the number of flags.