Mini Project in Database Systems
First Stage

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1 Proposal

Ask Us is a hypothetical organisation who want to create a website where people can ask and answer questions to the general public on any topic. Our task is to analyse the data needs of such a website, to the ends of creating a database for them along with a website to interface with it.

Ask Us will need to store information on its users, as well as all the questions and answers. They would also like each question and answer to have its own comment thread, for people to contribute helpful information regarding answers as well as for short follow up questions.

All questions, answers, and comments should be scored by the users in some way, so that people can see what posts were considered good by the general public and which were disliked. This should help people evaluate the answers and comments they receive.

Additionally, they would like questions to be organised by topic, where each question can be associated with multiple topics. Users should also be able to follow topics they are interested in, so they can see questions related to their interests.

2 Entity Relationship Diagram

2.1 Entities

We will have seven entities: user, post, Q&A post, question, answer, comment, and topic.

A user is any individual writing a post on Ask Us. The user entity will have five attributes: ID, name, email, password, and points. A user's points are the sum of all the points of all their posts. ID will be the primary key.

A post is anything a user writes. This can either be a question, answer, or comment. The post entity wil have four attributes: ID, body, date-time, and points. Here, points is the number of points that have been awarded to any specific post. ID is the primary key.

A Q&A post is either a question or an answer that a user posts. The Q&A post entity has no attributes of its own, since it is a weak entity. Its primary key is the post's ID.

A question is what a user would post if he wanted to receive a solution to his inquiry. The question entity has one attribute called title, as well as the attributes it 'inherits' from post. Since it is a weak entity, its primary key is the post's ID.

An answer is what a user would post if he wanted to give a solution to a question. The answer entity has a boolean attribute called accepted. Other than that, all the rest of the attributes are 'inherited' from post.

A comment is a type of post, and is typically a short piece of text that a user writes beneath any other post. A comment itself has no attributes. Since it is a weak entity, its primary key is the post's ID.

A topic is a way for users to categorize their questions, thus getting better targeted responses. A user can also follow a topic of interest. The topic entity will have three attributes: ID, name, and description. ID will once again be the primary key.

2.2 Relations

The user entity has a relation with the topic enitity, called follows. In the follows relation, there can be many topics a user can follow but it is not mandatory for a user to follow any topic. In the same light, there can be topics followed by no one or by one or many users.

The user entity also has a relation with the post enitity, called wrote. In the wrote relation, the user can write anywhere from many to no posts. A post can only be written by exactly one user.

The comment enitity has two relations with the post enitity. One relation is called belongs to. In the belongs to relation, a post can have no or one or many comments. In this relation, a comment can only be a comment on exactly one post. The other relation is called is a. In the is a relation, a particular comment is related to exactly one post. In this relation, a post does not neccessarily have to be related to a comment, but if it is, it is related to exactly one comment.

The post enitity also has a relation with the Q&A post enitity, called is a. In this relation, a particular Q&A post is related to exactly one post. A post doe not neccessarily have to have a relation with a Q$A post, but if it does, it is related to exactly one Q&A post.

2.3 Diagram

Figure 1 shows the entity relationship diagram for the database we are to make for Ask Us.
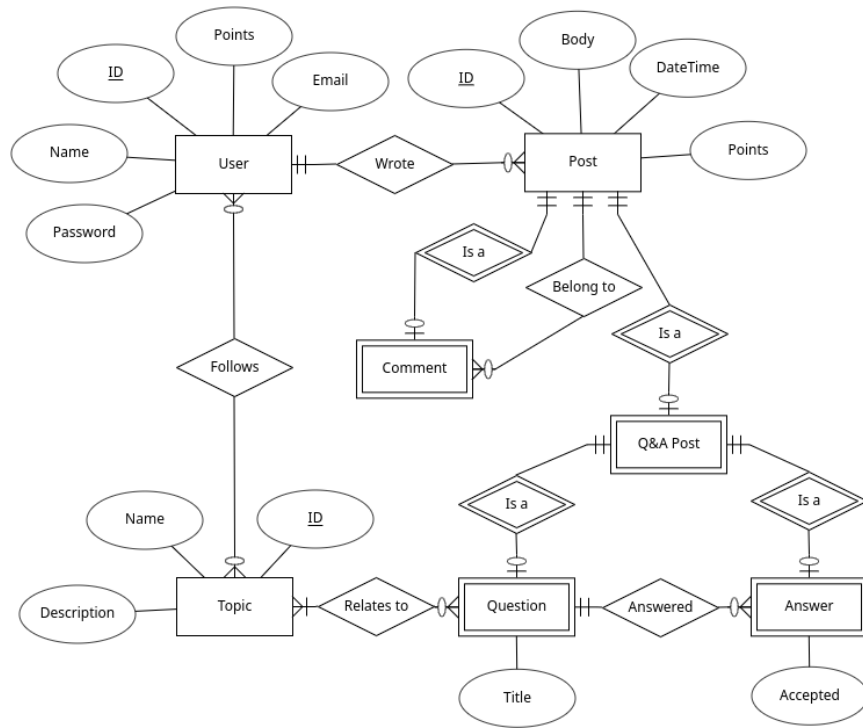
Figure 1: An ERD for the database for Ask Us

3   Logical Schema

We are to convert the ERD in the previous section into a logical schema. First
we will convert the entities into tables, and then we will add tables for some of
the relations where required.

See the entity tables below. An underlined value indicates a primary key.
An *Italicized* value indicates a foreign key.

USER (<u>ID</u>, Name, Email, Password, Points)

TOPIC (<u>ID</u>, Name, Description)

POST (<u>ID</u>, DateTime, Body, Points)

COMMENT (*<u>Post ID</u>*)

Q&A POST (*<u>Post ID</u>*)

QUESTION (*<u>Post ID</u>*, Title)

ANSWER (*Post ID*, Accepted)

USER (<u>ID</u>, Name, Email, Password, *TeamID*)

GAME (<u>Timestamp</u>, *<u>Winning team ID</u>*, *<u>Losing team ID</u>*)

See the relationship tables below.

WROTE ()

FOLLOWS ()

BELONGS TO ()

RELATES TO ()

ANSWERED ()