Project Proposal Report

CS 353 - Database Systems

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1 Project statement

1.1 Introduction

In this project, we will build a database system for a social discussion website similar to Reddit. There will be many topics which the users can open themselves and on which every user can discuss with each other via commenting. Each topic belongs to a certain category. Categories will be predefined prior to being opened or users can create a new category. Users of this system can follow other users and should be able to comment others posts or comments on a particular discussion topic.

Webpage link: https://ebsenol.github.io/fara.github.io/

1.2 Categories

This platform will have several predefined categories inside which users can post relevant discussion topics. The predefined topics so far are provided below:

- Education
- Entertainment
- Sport
- Art
- Science
- Life Style

However, users will be able to add a new category in case their post will not be relevant to any of the predefined categories.

1.3 User functions

Users of this system will be able to do a various set of tasks specified as below:

- Open a new category: Users can open a new category in the case that no predefined category is relevant.
- Open a new topic: Users can open a new topic associated with an existing category.
- Comment posts: users will be able to leave comments under existing posts or comments.
- Create a new category: A new category might be created if needed. The user created the category is assigned to be a moderator of that category. The name of the category cannot be similar to the names of existing categories.
- Follow other users: Users will be able to follow other users activities. They will be notified if target user posts any type of content.
- Upvote/Downvote comments and posts: Users will be able to upvote or downvote posts and comments. Users can change their vote later.

2 Use of database

A database will be used to store the information regarding users, categories and topics, subtopics and comments. This database will allow the user to search information regarding other users and categories. For example, the user can select to see a list of topics that fall under a certain category via the web-page interface. This will result in a query being used to project only the topics under the category, sorted alphabetically. The user can also sort the list of topics by other attributes such as "popularity", derived from the number of people who have upvoted the topic, or "latest", derived from the date when the topic is posted.

Similarly, the users will also be stored in the database, and will be identified by their unique user name, which is the primary key. The user information will also consist of attributes such as joined date, password and status. Moreover, the various relationships that will be present, such as when the user opens a new category or creates a new topic will be supported by the entities of the relationships.

The database is going to be the integral part of the system and most of the idea is based around the database. It will be loaded onto the webpage which will be used as the interface by which the user access the database. However, the user will not be able to see the database structure and instead will only see relevant information displayed on the webpage. Hence the queries that will be used to retrieve the information and alter the tables will be automatically generated upon the selection of the user on the webpage interface.

3 Requirements and limitations

3.1 Requirements

- **Database:** To store the user information, categories, topics, subtopics, comments and date of creation of each post and category.
  - A server to store the database shall be established on one of the laptops of a group member.
  - The database will be implemented using SQL and the user will interact with the interface by using queries automatically generated upon interaction with UI of the webpage.
- **Webpage:** User interface to enable users to interact with our program.
  - Will be implemented using HTML, JavaScript and CSS. This will form the User Interface for the user.
  - Through selections on the webpage, a query will be automatically generated
- **Response time:** - Amount of time system will take to respond to a specific user request.
  - The response time is estimated to be approximately 100 milliseconds.

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3.2 System Limitations

- **User limitations:** Users will be constrained in their ability to manage content. User is only allowed to edit or delete content posted by him. However there will be a group of super-users which will have privilege to edit others content. Privileges of these super-users will be constrained by the scope of the categories they are assigned to.
- **Scalability:** The system is not going to be designed to process a large amount information, therefore is designed for a small community. The initial design will not support advanced distributed techniques to make the platform scalable.
- **Personal Information:** The users registered on the platform will provide personal information to be registered. Provided data will be private and will not be displayed in the system.

3.3 Technical Limitations

- **Variety of Data:** The type of the database we use for our design constraints us to be careful about the structure of the data we use. The data stored must be structured.
- **Velocity of Data:** The velocity of the data we process is also constrained to the functionality of the database. In order to overcome this limitation we will need to provide extra functionality using Information Retrieval techniques.
- **Volume:** This technical limitation also refers to the scalability potential of the system. Our ability to support a large amount of data is limited to the constraints of MySql database.

4 ER-Diagram

Below we provided the first version of the design of the database for social discussion platform. Users moderate the categories, and can also create new ones, which is also shown in the image below. The content is considered to be a raw text that can be posted under topics and subtopics. Topics and subtopics can be associated to a category. Also, the content can be either a comment or a post, where a user can comment on both comments and posts. Every content is associated to a user in the sense that the user posts the content in a specific date.