Comp353/2 -F Fall 2024

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Group Project

Community Online Social Network -- COSN

Demos Dates: Early Dec. 2024 = to be posted in CrsMgr

Being concerned with the new form of colonialism/imperialism and ravage of the environment by farms of data centers controlled by a limited number of foreign[1] corporations your group has decided to create an open source system that can be used by local communities based on not for profit organizations. Your objective is to design a relational database system for a "realistic" Private Online Community Social Network System (**COSN**) sketched out below. This is followed by an implementation, deployment and demo of a working system followed by making required update of the system. It is expected that it would involve appropriate use of: CSS, HTML, Javascript, MariaDB-MySQL, and PHP.

The application is a two-tier system, which support Firefox or any popular web browser at the client side and secure http server with PHP parser and a MySQL database at the server side. The system is expected to support all "representative" queries and operations required by a realistic COSN system. Each team member will be responsible for the entire project with each teammate being primarily responsible for an equitable and clearly defined portion of the project, to be agreed on by the team members. You will be provided a 25 minutes time slot to demonstrate that your system performs as expected in early Dec. 2024. A schedule for the demos will be posted on CrsMgr (first come first reserve). The project report as well as tar-gzipped (or zipped) file with the entire system including scripts to install and initialize a virgin system and details of all updates and bug fixes made since the demo must be uploaded to CrsMgr soon after the demo time.

Project Description

Use MySQL Database Management System to develop the Private Online Community Social Network System - COSN. One of the objectiveis to first flesh out the requirement of the system bearing in mind the minimum as sketched below. The application would include a collection of tables and services hosted by COSN. Hence COSN would enable members to access a local community based server to share information and ideas. It provides services for people sharing interests, activities, and backgrounds among themselves. The COSN system allow its members to create a profile, to create a list of other members with whom to share contents, and to view and add comments and contents - if enabled by the owner member of the web page. It also allows members to interact among each other via self-contained messaging system. The objective is the sharing of news, pictures, posts, activities, events, interests with members in the community. Also, it allows members to create groups that share common interests or affiliations and hold discussions in forums.

1Mainly Usain!

Requirements Specification

You are required to develop a database system that will store at least the information about the following entities and relationships:

- *Details on members:* ID, password, other personal information such as address, internal interaction pseudonym etc. Members have family, friends and colleagues, privilege and status. A member can specify what part of his/her personal information is public and what part is accessible to which members of his/her group or is private.

A new person in the community can become a member by entering his details and validate it by entering the required details such as the name and appropriate ID of an existing member or by being introduced to the system by an existing member. Only public information is visible to other non-members. Privilege can be either administrator, senior or junior. A member with an administrator privilege has the full power on all services such as creation, deletion, editing of all members and groups. The administrator could also post public items (accessible to the world). A member can post new items and specify which of his groups can access the post and who in each group can comment on it or add content to the post. An item could also be accessible to any other members.

A member with a senior privilege can create groups and manipulate groups created by him/her. The group is owned by the member who created it. Also, a member with a senior privilege can add new members to the COSN. A member can add a list of members and specify them as family members, friend members or colleague members. Status of a member can be either active, inactive or suspended. An active member can have access to all the functionalities of a member. An inactive member will not be visible to other members. A suspended member will not be able to login to the COSN system until his/her status is changed.

All new members start by default as junior members. Only a member with an administrator privilege can change the privilege of another member. The system by default has one member with username admin and password admin created initially(Both of these must be changed after the first login). Only members with administrator privileges can change the status of other members to suspended or reset it to active or inactive. A member with junior privilege can edit his/her profile, create a posting and communicate with other members. Also a junior member can post to groups that he/she is a member of only. A junior member can request to become a senior member. Each member can only have one profile including one email address.

When installed on a operational system with functioning email server, the system could send out messages to indicate new contents to the members of the associated group. However, since there is a restriction of sending emails by AITS (No email messages are allowed to be sent out of the system), emails have to be simulated by a pop-up window and internal and sent email boxes.

Guidelines

Flesh out these guideline for you implementation.

Details about groups: Records of information on each group, owner of the group, list of members belonging to the group. Owner of the group can add new members or remove members from the group. Members of a group can share a forum of information such as photos, videos and posts. Adding any member to a group requires the knowledge of the persons email address[2], first name and DOB. For a business member, the DOB is the date of incorporation of the business.

Each member has a home page which has an index of his/her contents as well as the contents of each of the groups where he is an owner or member. The owner has a feature to view and manage the permissions to any content; the permissions can be changed only by the owner.

Detail on contents and the permissions: Each content added by a member can have a profile which indicates who can do what with it. Content can be classified as view only, view and comment or view and add or link to other contents.

- Non-person entities[3], local businesses, local organization etc. could become members as long as they behave in a civil manner. The person members could always organize a plebiscite of person members to oust an non-person member and delete its contents.

-The administrators include the contents moderators. Each new contents would be reviewed by a moderator before it could be posted. Any uncivil contents is black-listed (not posted) and the member posting it is warned about the non-conformity of the posted contents. A 'real person.' member is suspended for a duration of time once the number of warnings exceeds 3. A business person is fined after the second warning. If the number of suspensions or fines exceeds 3, the member is suspended for at least a year.

- The membership is free for a 'real-person' whereas for a business member there is a fee based on the number of postings made by it.

These are the minimum requirements for your system. It is expected to discuss this application among yourselves, with the tutors and lab instructors as well as talk to people knowledgeable in the domain to enrich the application and make it more realistic[4].

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2 CONS will allow only Proton email addresses!

3The legislation in many jurisdictions has recognized a business corporation as a 'person' with all the rights but not the responsibility of one. Hence the businesses have been able to get away with acts for which an ordinary person is sent to jail! It is gratifying that the EU and some countries have started to take action to hold the CEO responsible for the act of such non-person organizations.

4 Front Porch is an example of community on-line network that could, it is hoped, wipe out the existing behemoths.

Implementation Details: Functions and Reports

Design and implement the user interface using HTML and PHP for the required operations described above. Details on how to use PHP and HTML with MySQL will be provided by the lab instructors. Populate your tables with enough data to show the functionality of your system.

The system should support at least the following functionalities through its interface:

1. Create/Delete/Edit/Display a member.
2. Create/Delete/Edit/Display a group.
3. Create/Delete/Edit/Display list of friends for a member.
4. Member request to be a friend of other member or join a group.
5. Member's ability to block another member or to be withdrawn from a group.
6. Member's ability to post texts, images or videos as well as to view posts by other members and comment on them.
7. Members can either post or view posts of only groups that they belong to.
8. Member's main page shows the best and latest posts from their groups and friends.
9. Members can send a private message to their friends.
10. Report of groups or members by specific category such as interest, age, profession, region, etc.
11. Ability to organize an event for the group by voting on date/time/place from a set posted and/ or alternates suggested by one of the group members
12. Registry and/or Gift exchange ideas among a family (secret Santa) or a group.

Note: The system would be run by an administrator on a private server (could be on a cloud). There must be no facility to download any contents except through screen capture. Each team is to implement the COSN system. The team must have a designated leader (DBA) who coordinates the work. It is expected that the team is to meet regularly during lab hours and each meeting is logged with the names of group members participating. In addition to the implementation, the team is required to prepare a machine printed preliminary report documenting their project which must include the E-R model, the DB design and its normalization. This preliminary report is due before the demo. The implementation of the system including the database system must be demonstrated by each team at a pre-designated time. Remember that the database is the foundation of your system and if it is not sound, it will bring the whole structure down. Just like the building foundation, the database is not visible; what is visible is the structure above ground (in this case, the interface and its functionality). It must be attractive, non-intrusive, non-intimidating and functional (a.k.a user friendly).

1. Develop an E/R diagram for the entity sets and relationships described above. Determine the attributes and the multiplicity of the relationships. The design should be as compact as possible without sacrificing the required objectives. Make sure you state clearly any reasonable assumption made in your design, which is not specified in the requirements specified above.

2. Convert your E/R diagram into a relational database schema. Make necessary refinements to the schema, if possible. Identify various integrity constraints such as primary keys, foreign keys, functional dependencies, and referential constraints. Make sure that your database schema is at least in 3NF.

Final Report & submissions

Your report should include: project description, the assumptions, the design decisions made and give rational explanations for all assumptions, the limitations, the applications supported, E-R diagrams and relational database design; responsibility of each member of the team and the joint responsibility; the interface design rational, the script to create the database (clearing any old tables and data that may be hanging around) and populate the tables. Include also the contents of the tables, the queries, and their responses. In addition, the source code of any procedures, triggers, programs, the dump of the database, etc., must also be submitted. Include the screen shots of the interfaces for various members and a log of the entire session. Also, submit the on-line log of work done (who, when, what, why) mentioned above.

All programs/code/scripts must have adequate internal and external documentation. The project submission would also include all codes etc. in a single directory with appropriate sub-directories. This directory could be compressed to a single file with its size limited to 15 Mbytes which means you need to upload a tar-gzipped ball (or rar, zip, etc.). This tar-gzipped ball must also include a report in LaTex or word processor form your project report documenting your project and must include details on

- The design of the DB using an E/R data model.
- Its conversion into a relational model satisfying at least 3NF.
- The user-interface for each supported role, application and reports.
- A sample session for each application (user guide).
- An installation guide.
- All codes and scripts.(list only the directory structures and the names of all modules- not the actual code: the code must be uploaded in the tarball to CrsMgr)
- List of team members' contribution as its last part. The title of this section should be "Contributions", indicating who did what in the project. It is wise to be realistic since the lab instructors will also evaluate each team member's contributions.

Also include a "README" text file detailing the team (group) ID, the names, student IDs and ENCS accounts of each member of the team, the group account, PW, URL for the project and list of files included in the submission. Also include: the user IDs and passwords of all users for testing the system and any other information required to install, run and test the system during the final grading by the course professor on his own server.

For the demo, your system must be installed and running on a designated ENCS server.

If you have made changes, enhancements, fixed bugs, etc. since your demo then highlight these in the README file and make sure it is also reflected in your final report. A working version of

the project should be presented by the group to the lab instructors during the presentation. Every member of the group MUST be present during their demo.:

Note 1: The document report should be included in the upload. The source of the code you demonstrate at demo time should be uploaded with your report at demo time as part of your project report.

Note 2: Your project report must include official names of the team members, student ID's clearly appearing on the cover. Inappropriate submissions will be penalized.

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